



The Sizewell C Project

6.1 Volume 1 Introduction to the Environmental Statement Chapter 6 EIA Methodology Appendix 6A - EIA Scoping Report

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**Sizewell C Proposed
Nuclear Development**

Sizewell C EIA Scoping Report

May 2019

Planning Inspectorate Ref:EN010012

Request for scoping opinion under
Regulation 10 (1) of the Infrastructure
Planning (Environmental Impact
Assessment) Regulations 2017



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1 INTRODUCTION

1.1 Background to the proposed development and Scoping Report

1.1.1 EDF Energy¹ is proposing to submit an application under the Planning Act 2008 for an order granting development consent for a new nuclear power station comprising two United Kingdom European Pressure Reactors™ (UK EPRs™) at Sizewell in Suffolk, known as Sizewell C (hereafter referred to as ‘the proposed development’). Located to the north of the existing Sizewell B power station, the proposed development would have a total expected electrical capacity of approximately 3,240 megawatts (MW). This would generate enough electricity to supply approximately 6 million homes (20% of Britain’s homes).

1.1.2 EDF Energy obtained an Environmental Impact Assessment (EIA) Scoping Opinion from the Secretary of State in June 2014 (**Appendix 1B**) (Ref 1.1) (hereafter referred to as the 2014 EIA Scoping Opinion). However, since then, the proposals for the proposed development have evolved substantially, particularly with regard to the temporary and permanent off-site associated development sites away from the main development site for the power station (see **Chapter 3** of this EIA Scoping Report). In addition, the 2014 EIA Scoping Opinion was obtained prior to the transposition of the 2014 EIA Directive (Ref 1.2) into United Kingdom (UK) legislation in 2017 (see **Chapter 2** of this EIA Scoping Report). This established the requirement for additional environmental effects to be considered within the EIA process, in particular: climate change, human health and risk of major accidents and disasters. The proposed assessment methodologies for these additional environmental effects are outlined in **Chapter 6** of this EIA Scoping Report.

1.1.3 The purpose of this EIA Scoping Report is to present the proposed scope of the EIA for the new elements of the proposed development (not scoped in 2014 EIA Scoping Opinion) and to scope the additional environmental effects required by the 2014 EIA Directive and the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the ‘EIA Regulations’) (Ref 1.3).

1.1.4 Extensive reference is made within this EIA Scoping Report to the 2014 EIA Scoping Report (**Appendix 1A**) (Ref 1.4) and 2014 EIA Scoping Opinion.

¹ NNB Generation Company Limited, whose registered office is 90 Whitfield Street, London, W1T 4EZ (referred to in this document as ‘EDF Energy’).

1.2 Intention to apply for a Development Consent Order at Sizewell

1.2.1 EDF Energy intends to submit an application for development consent to the Planning Inspectorate to develop the proposed development. In addition to the nuclear power station, the application will seek consent for on-site and off-site associated temporary and permanent developments that are considered necessary for the construction and/or operation of the nuclear power station. The application will comprise details of the proposed development and will be accompanied by an Environmental Statement (ES) conforming to the requirements of the EIA Regulations, as well as other relevant documents in accordance with the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (Ref 1.5).

1.3 Purpose of this EIA Scoping Report

1.3.1 The scoping process forms an important stage of the EIA process. This EIA Scoping Report sets out the proposed content, methodologies to be adopted and the key matters to be considered in the EIA.

1.3.2 A Scoping Opinion is requested from the Secretary of State to inform the EIA and the ES that will be submitted as part of the application for development consent. Through the scoping process, the views of statutory consultees and other relevant organisations will be sought on the proposed scope of the assessment.

1.4 Request for an EIA Scoping Opinion

1.4.1 This report accompanies a written request to the Planning Inspectorate for a Scoping Opinion in accordance with Regulation 10(1) of the EIA Regulations.

1.4.2 As detailed in Regulation 10(3) of the EIA Regulations, this request for a Scoping Opinion includes:

- a plan sufficient to identify the land (i.e. the main development site and the off-site associated development sites) (see **Figure 1.1**);
- a description of the proposed development, including its location and technical capacity (see **Chapter 3**);
- an explanation of the likely significant effects of the proposed development on the environment (see **Chapter 6**); and
- such other information or representations as EDF Energy has chosen to provide or make.

1.5 The consultation process

a) Summary of consultation to date

1.5.1 EDF Energy is undertaking pre-application consultation in accordance with the Planning Act 2008 (as amended), having regard to the (then) Department for Communities and Local Government's Planning Act 2008: Guidance on the Pre-application Process (Ref 1.6) (2015) and other relevant guidance, including the Planning Inspectorate's Advice Note Six: Preparation and submission of application documents (Ref 1.7) (2016, version 7) which provides advice on the applicant's pre-application duties.

1.5.2 EDF Energy has undertaken pre-application consultation in formal stages with the local community, statutory consultees, other interested parties and the general public. Stage 1 consultation on EDF Energy's initial proposals and options took place between November 2012 and February 2013. Stage 2 consultation on the updated proposals took place between November and February 2016, having regard to feedback from Stage 1 consultation, ongoing engagement, further technical work and environmental studies. Stage 3 consultation took place between January and March 2019, informed by feedback from previous stages of consultation, ongoing engagement, further technical work and environmental studies. All stages of consultation were supported by the publication of Preliminary Environmental Information (PEI).

1.5.3 In addition to the formal stages of pre-application consultation, EDF Energy continues to hold informal engagement with the key statutory consultees and other interested parties, as appropriate in order to refine the proposed development, the EIA and assist in the development of any required mitigation.

b) East Suffolk Council

1.5.4 On the 1st April 2019, East Suffolk Council (ESC) was created, covering the former districts of Suffolk Coastal District Council (SCDC) and Waveney District Council (WDC). With regards to all the consultation and engagement which has taken place prior to 1st April 2019, this was carried out with SCDC and WDC and, therefore, referred to as such within this report.

1.6 Structure of the EIA Scoping Report

1.6.1 The structure of this EIA Scoping Report is as follows:

- **Chapter 2** describes the legislative and regulatory regime for the proposed development and other assessments that will be undertaken in support of the application for development consent;
- **Chapter 3** sets out a description of the proposed development, including new proposed development;
- **Chapter 4** summarises the alternatives that have been considered;
- **Chapter 5** details the proposed approach to the EIA, including potential inter-relationships and cumulative effects, for the proposed development;
- **Chapter 6** details the baseline, approach to the assessment and potential environmental impacts and mitigation measures for those environmental topics (including the new topics) that will be considered as part of the EIA;
- **Chapter 7** provides a summary of the EIA Scoping Report, sets out the proposed structure of the ES and identifies where within the ES it is proposed to include the information requirements detailed within Schedule 4 of the EIA Regulations; and
- **Chapter 8** presents the proposed next steps.

2 NATIONAL POLICY AND REGULATORY CONTEXT

2.1 Nationally Significant Infrastructure Projects

a) Development Consent Order

2.1.1 Nationally Significant Infrastructure Projects (NSIPs) require a Development Consent Order (DCO) under the Planning Act 2008 (Ref 2.1). Applications for a DCO are determined by the Secretary of State (SoS) following a detailed examination of the proposed development by the Planning Inspectorate, acting on behalf of the SoS.

b) Environmental Impact Assessment

2.1.2 Environmental Impact Assessments (EIAs) for NSIPs are governed by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 which divide development into two classes: Schedule 1 projects where EIA is always required; and Schedule 2 projects requiring EIA only if the particular project in question is judged likely to give rise to significant environmental effects by virtue of factors such as its nature, size or location.

2.1.3 The proposed development is classified as a Schedule 1 development, as identified in the EIA Regulations Schedule 1, Descriptions of development, paragraph 2(2). Therefore, an EIA will be undertaken, and an ES will be submitted in support of the application for development consent.

c) National Policy Context

2.1.4 In the 2008 White Paper on Nuclear Power (Ref 2.2) the Government made clear that new nuclear power stations should have a role to play in the UK's energy mix, alongside other low-carbon sources. Nuclear power can contribute to meeting the UK's binding targets for emissions reductions, and at the same time contribute to diversity and security of supply.

2.1.5 Nuclear power is a technology that the UK has utilised for more than 50 years for electricity generation which, at its peak in 1998, accounted for 26% of UK electricity generation. However, as the older nuclear power stations reach the end of their lives, this share will continue to decline. In 2018, nuclear power provided 20% of UK electricity.

2.1.6 The Government's Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 2.3) states that for the Government to meet its energy and climate change objectives, there is an urgent need for new electricity

generating stations. It is Government policy that new nuclear power should be able to contribute as much as possible to the UK's need for new capacity. New nuclear power stations will help to ensure a diverse mix of technology and fuel sources, which will increase the resilience of the UK's energy system. It will reduce exposure to the risks of supply interruptions and of sudden and large spikes in electricity prices that can arise when a single technology or fuel dominates electricity generation.

- 2.1.7 Sizewell is identified in the NPS for Nuclear Power Generation (NPS EN-6) (Ref 2.4) as one of eight potentially suitable sites for deployment of new nuclear power stations by 2025. The eight sites were identified based on a Strategic Siting Assessment (SSA) carried out by the Government. The Government has assessed the suitability of the site based on a strategic level review against a number of criteria. To inform its policy, the Government also carried out an Appraisal of Sustainability (AoS) (Ref 2.5) which assessed the sustainability of the NPS on nuclear power generation, taking account of alternative strategies and the potential impacts of nominated sites. The conclusion of NPS EN-6 is that, in principle, the Sizewell site is potentially suitable for development of a nuclear power station by 2025.
- 2.1.8 In 2017 and 2018, the government consulted on the development of a new NPS for nuclear power with single reactor capacity over 1 gigawatt beyond 2025. According to the government's response to the consultation issued in July 2018 (Ref 2.6), the government is proposing to consult on a draft Nuclear NPS in spring/summer 2019 and lay the final NPS in parliament in spring 2020.
- 2.1.9 The proposed development would be able to generate enough electricity to supply approximately 6 million homes (20% of Britain's homes) and will avoid the emission of around 10 million tonnes of carbon dioxide (CO₂) during each year of operation. This will represent a significant contribution towards the Government's energy policy and climate change goals.
- ## 2.2 Regulatory Context
- 2.2.1 In addition to a DCO, before a new nuclear power station can be built and operated the operator must obtain a number of key site specific permissions from regulators and Government. These include a nuclear site licence and relevant consents from ONR and environmental permits from the Environment Agency.
- a) **Generic Design Assessment**
- 2.2.2 The Generic Design Assessment (GDA) process is carried out jointly by the Office for Nuclear Regulation (ONR) and the Environment Agency separate

to the licensing process. Under the GDA process, the ONR and Environment Agency engage with nuclear reactor vendors on the generic aspect of their design, perform technical assessment work on their submissions, consult with overseas regulators, implement a comments process and consult. This is done in order to assess the environmental, safety and security aspects of reactor designs before construction of the reactor starts.

2.2.3 In December 2012 the ONR issued a Design Acceptance Confirmation (DAC) (Ref 2.7) and the Environment Agency issued a Statement of Design Acceptability (SoDA) (Ref 2.8) for the UK EPR™ Reactor Design, concluding the corresponding GDA process.

b) Licensing

i. Nuclear Site Licence

2.2.4 The Nuclear Installations Act 1965 (Ref 2.9) (as amended) (NIA) requires a site licence to be issued prior to the construction and operation of a Nuclear Facility. The ONR is the responsible body which legislates and grants licenses for all nuclear activities from the time an application is first received to design and construct an installation, to long after the plant finally closes.

2.2.5 The NSL sets out 36 standard licence conditions for which the Licensee develops and implements arrangements. These conditions are available on the ONR website (Ref 2.10). Prior to being granted an NSL, the Licensee must demonstrate that it complies with its arrangements to meet the Licence conditions and have appropriate organisational capabilities and governance in place to ensure nuclear safety. Licensees must also be able to demonstrate they have control over the site in terms of security of tenure. The arrangements are proportionate to the activities being carried out by the Licensee.

2.2.6 The ONR provides guidance on its website to assist potential applicants. The NSL must be in place prior to any construction activity that may impact on nuclear safety, since this requires ONR permission in the form of consents. Once granted, the NSL is an obligation until the site is de-licensed.

ii. Transport

2.2.7 The ONR is responsible for regulating safety with regards to nuclear transport and security arrangements and has published a series of guidance documents and other resources on its website.

iii. Security

2.2.8 The ONR includes a specialist Civil Nuclear Security and Safeguards (CNSS) division. The CNSS is the security regulator for the UK's civil nuclear industry, ensuring that the requirements of the Nuclear Industries Security Regulations 2003 (as amended) (Ref 2.11) are met by operators. The ONR CNSS division approves Construction Site Security Plans, Nuclear Site Security Plans, Transport Security Plans and Temporary Security Plans.

c) Other permits and licences

i. Environmental permits

2.2.9 Under the Environmental Permitting (England and Wales) Regulations 2016 (Ref 2.12), EDF Energy requires a number of operational permits, granted by the Environment Agency, to operate the proposed development. These will be subject to public consultation. The three key permits are to:

- dispose of radioactive waste, known as the Radioactive Substances Regulation (RSR) permit;
- discharge cooling water effluents, known as the operational Water Discharge Activity (WDA) permit; and
- the operation of the emergency diesel generators, known as the Combustion Activity (CA) permit.

2.2.10 Article 37 of the Euratom Treaty requires Member States to submit a document containing “general data” assessing the potential transboundary radiological impacts to a Member States from the development, as specified by the Commission Recommendation of 11 October 2010 (2010/635/Euratom).

2.2.11 The commission will provide an opinion on the acceptability of the potential radiological impacts from the proposed operation of the new development.

2.2.12 SZC is required to produce the Article 37 Submission on behalf of UK Government. This is to be submitted by UK Government to the European Commission in January 2020 to ensure a favourable outcome is obtained to support the grant of the SZC Radioactive Substances Regulation Environmental Permit.

ii. Marine licences

2.2.13 Under the Marine and Coastal Access Act (2009) provision for marine licences will be included in the application for development consent . This

will include licenses for activities including (but not limited to) construction, deposits, removals and dredging that occur below Mean High Water Spring tides. The Marine Licence would be ‘Deemed’ and issued within the DCO decision.

iii. Other

- 2.2.14 Additional permits (e.g. a construction WDA permit) and licences (e.g. Protected Species Licences) will be required to support the construction and commissioning activities.

2.3 Related assessments

- 2.3.1 In addition to the EIA, the proposed development will be subject to assessment pursuant to other regulatory regimes, including the Habitats Directive (Ref 2.13) and Water Framework Directive (Ref 2.14). Further information on these regimes is provided below.

a) Habitat Regulations Assessment

- 2.3.2 The European ‘Habitats Directive’ on the Conservation of Natural Habitats and Wild Flora and Fauna (92/43/EEC) and the European ‘Birds Directive’ on the conservation of wild birds (79/409/EEC – as amended by Directive 2009/147/EC) (Ref 2.15) aim to put in place a network of habitats and species of European importance and to require the competent authorities of Member States to undertake ‘Appropriate Assessment’ of any plan or project not directly connected with or necessary to the management of a European site but likely to have a significant effect thereon, either individually or in combination with other plans or projects. This requirement has been transposed into UK law through ‘the Conservation of Habitats and Species Regulations 2017 (Ref 2.16) (as amended), referred to in this EIA Scoping Report as the ‘Habitats Regulations’.

- 2.3.3 An Appropriate Assessment carried out by the Secretary of State (Ref 2.17) for inclusion of the proposed development in the Nuclear NPS (EN-6) found that potential significant adverse effects on certain European sites could not, at that stage, be ruled out. It was noted that a project-specific Appropriate Assessment will need to be carried out. The Nuclear NPS (EN-6) Appropriate Assessment was used by EDF Energy to develop and agree an ‘Evidence Plan’ for the proposed development with Natural England and other relevant stakeholders. This voluntary process is designed to agree in advance the evidence needed for a project-specific Appropriate Assessment that will need to be undertaken in the context of the application for development consent and applications for environmental permits. At the time of writing the assessment of the impacts of the proposed development on the European sites is ongoing and the relevant

assessment report(s) will be submitted as part of the application for development consent to enable the Appropriate Assessment to be carried out. Reference will be made to Planning Inspectorate Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects (Ref 2.18) where necessary.

b) Flood Risk Assessments

2.3.4 Flood Risk Assessments (FRAs) will be undertaken and will form part of the application for development consent. In accordance with the Overarching NPS for Energy (EN-1), the Nuclear NPS (EN-6) and the National Planning Policy Framework (Ref 2.19) (NPPF), the FRAs will assess the flood risk both to and from the main development site and off-site associated development sites, where relevant, and demonstrate how that flood risk, from all sources, will be managed over the lifetime of the site, taking into account the effects of climate change, including sea-level rise. Decommissioning will be the subject of a separate FRA.

2.3.5 In accordance with the NPPF, the FRAs will consider potential sources of flooding from: fluvial; coastal; groundwater; surface water resulting from intense rainfall (pluvial) events; sewers (also resulting from intense pluvial events); and non-natural water bodies (i.e. canals and reservoirs), either from individual or multiple sources. The FRAs will also take account of any future geomorphological change, including the potential for increased flooding risk due to coastal erosion.

2.3.6 The FRAs will be prepared in consultation with the Environment Agency and submitted as part of the application for development consent. A summary of the flood risk assessment will be provided in the groundwater and surface water chapters of the ES, in order to ensure that it meets the requirements of the regulations.

c) Water Framework Directive

2.3.7 The EU Water Framework Directive (WFD) (2000) was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 2.20). Two 'daughter' directives, one aimed at protecting groundwater, the second aimed at reducing pollution of surface water (rivers, lakes, estuaries and coastal waters) by pollutants on a list of priority substances, have been adopted at European level.

2.3.8 To meet the requirements of the WFD, the competent authority (the Environment Agency) has set environmental objectives for each water body. A default objective in all water bodies will be to prevent deterioration in either the 'Ecological Status' (for natural water bodies) or the 'Ecological

Potential' (for heavily modified or artificial water bodies). A WFD Compliance Assessment will be prepared in consultation with the Environment Agency and submitted with the application for development consent. A summary of the WFD Compliance Assessment will be provided in the ES in order to ensure that it meets the requirements of the regulations.

d) Transport Assessment

- 2.3.9 The application for development consent will be accompanied by a Transport Assessment. This will include assessments of the construction and operational phases, with particular focus on the construction phase as this will have a greater traffic impact than the operational phase.
- 2.3.10 The Transport Assessment will assess the impact of the proposed development on road and network capacity, the operation of junctions and journey times both locally, and where necessary, in the wider context, taking account of the transport strategy adopted for the proposed development and the proposed mitigation. The Transport Assessment and the associated traffic modelling which supports the assessment will form the basis of the transport chapter included within the ES, as well as related other chapters such as noise and vibration, and air quality, which assess the noise and emissions impacts associated with the changes in traffic figures.
- 2.3.11 The transport section (**Section 6.3**) of this EIA Scoping Report summarises the approach to the Transport Assessment and traffic modelling being adopted and the status of discussions with the local highway authority (Suffolk County Council). The Transport Assessment will be submitted as part of the application for development consent, separate from the ES.

e) Sustainability Strategy and Appraisal

- 2.3.12 The sustainability of nuclear new build is founded on its attributes of low carbon emissions, secure electricity supply, and stable, affordable prices once nuclear stations are constructed. Building on these inherent benefits, EDF Energy will apply a strategy to enhance the sustainable delivery of the proposed development, as appropriate, exploiting opportunities available in design, procurement and construction.
- 2.3.13 An appraisal will form part of the application for development consent, which will have regard to:
- the Government's Appraisal of Sustainability (AoS) of the Nuclear NPS (EN-6) and the AoS Site Report for Sizewell;

- relevant legislation and planning policy;
- EDF Energy’s own corporate sustainability policy; and
- best practices set by other major infrastructure projects in the UK.

3 THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This chapter describes the proposed development. Reference is made to Chapter 3 of the 2014 EIA Scoping Report to identify how the proposed development has evolved.

3.1.2 Large scale projects are complex, and it is not possible to define all aspects of the final project design at the time an application for development consent is made. There is always the necessity for some flexibility and, as a result, a number of options within the project design will remain under consideration until after a decision is made by the Secretary of State (SoS) and following further geotechnical investigations, detailed engineering design and procurement processes have taken place.

3.1.3 To accommodate this, the EIA is based on the established principle of the ‘Design Envelope’. This approach is set out in the cases of *R v Rochdale Metropolitan Borough Council ex p Milne (No. 2) (2000)* and *R v Rochdale Metropolitan Borough Council ex p Tew (No. 1) (1999)*.

3.1.4 Planning Inspectorate Advice Note Nine: Rochdale Envelope (Ref 3.1) sets out a number of key principles that describe the level of detail that a project must provide to enable a proper assessment of potential impacts and the subsequent development of mitigation, where necessary.

3.1.5 The Design Envelope is determined based on project design parameters, which in turn are used to assess the maximum adverse scenarios for each receptor (the ‘worst case scenario’). The worst case scenario may differ from topic to topic and is based on the full range of design options which will be set out in the proposed development chapter of the ES and the technical assessment chapters.

3.1.6 The approach to be adopted within the assessment will be to identify the realistic worst case scenario, using the design parameters for the proposed development. This approach will ensure that the EIA is based on clearly defined parameters that govern the full range of development possibilities. Therefore, the Secretary of State can be assured that the environmental impacts of the proposed development would be no greater than those identified in the ES. This approach is consistent with the objectives of the EIA Directive and EIA Regulations, as well as the guidance provided by Planning Inspectorate Advice Note Nine.

3.2 Overview of the proposed development

3.2.1 As described in Chapter 3 of the 2014 EIA Scoping Report, the proposed development comprises the delivery of a new nuclear power station and on-site associated facilities (referred to as the ‘main development site’), and other permanent and temporary off-site associated development necessary to support the construction and operation of the power station.

a) Main development site

3.2.2 The main development site is located on the Suffolk Coast, to the north-east of the town of Leiston. The works at the main development site remain largely as described within paragraphs 3.2.1 to 3.2.6 of the 2014 EIA Scoping Report. A summary of the changes to the proposed permanent and temporary elements are described within **Section 3.3** of this EIA Scoping Report.

3.2.3 The main development site comprises four components, which are described below and illustrated in **Figure 3.1**:

- power station platform (main platform): the area that would become the power station itself;
- Sizewell B relocated facilities land: the area that certain Sizewell B facilities would be moved to in order to release other land for the proposed development;
- temporary construction area: the area located primarily to the north and west of the Site of Special Scientific Interest (SSSI) crossing, which would be used to support construction activity on the main platform; and
- Land east of Eastlands Industrial Estate (LEEIE): the area directly north of Sizewell Halt, which would be used to support construction on the main platform and temporary construction area.

3.2.4 The proposed nuclear power station and associated infrastructure would be located immediately to the north of the existing Sizewell B power station and would comprise two (UK EPR™) units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The new nuclear power station would represent the National Significant Infrastructure Project (NSIP) component of the proposed development. Further details of the main development site are provided in Section 3.3 of this EIA Scoping Report.

i. On-site associated development

3.2.5 As identified in the four components of the site (**Figure 3.1**), there are a number of associated development activities that will take place within the main development site. These include, but are not limited to, facilities for staff, sea defences, a beach landing facility and infrastructure to connect to the National Grid.

ii. Sizewell B relocated facilities

3.2.6 The proposed site for Sizewell C is to the north of the existing Sizewell B station. However, there are a number of facilities associated with Sizewell B which are currently located within this area of land. In April 2019 EDF Energy Nuclear Generation Ltd (NGL) submitted a planning application to ESC seeking permission to relocate existing Sizewell B facilities from within this area of land, as well as providing upgraded facilities to comply with current standards and regulations.

3.2.7 In applying for these proposed works through a planning application to ESC, this will facilitate the Government's policy objective of more rapid development of new nuclear power, by ensuring earlier delivery of Sizewell C, than if the relocation proposals were only included as part of EDF Energy (NGL)'s application for development consent. This is in line with the approach advocated in the (then) Department for Communities and Local Government's (DCLG) letter to local authorities (Ref 3.2), dated 16 July 2009, in relation to the new consenting process for Nationally Significant Infrastructure Projects.

3.2.8 Whilst the Sizewell B Relocated Facilities works are subject to a separate planning application, they facilitate the construction of Sizewell C, and there will also be an overlap of construction works. It is proposed that in addition to the separate planning application to ESC, the Sizewell B Relocated Facilities works will also be included within the development consent application for the Sizewell C Project. Therefore, the ES for the Sizewell C Project will consider the works associated with the Sizewell B Relocated Facilities as part of the proposed development for which development consent will be sought. It is proposed that the ES for the Sizewell B Relocated Facilities (submitted with the separate planning application to ESC) would be appended to the Sizewell C Project ES. The technical chapters would cross-reference to the Sizewell B Relocated Facilities ES with a description of any relevant changes to the assessment.

iii. Accommodation strategy

3.2.9 An accommodation strategy has been developed to ensure there is adequate accommodation for workers within a reasonable travelling

distance of the site whilst managing local impacts on accommodation capacity. This strategy includes the provision of temporary worker accommodation in the form of a campus and caravan site.

Temporary worker accommodation campus

3.2.10 As part of the proposed development a 2,400 bed accommodation campus is proposed within the main development site that would comprise:

- three to four storey modular buildings with self-contained rooms and en-suite facilities;
- car parking for residents (ratio of one parking space per 1.6 bed spaces, equating to approximately 1,500 parking spaces) including:
 - a two storey car park at the north of the campus; and
 - a surface level car park at the south of the campus;
- a canteen/restaurant and kitchen facilities;
- bars and recreational areas;
- central administration offices;
- a gym (on-site);
- waste recycling and facilities to supply energy to the site;
- site security area including fencing;
- perimeter road and appropriate lighting to ensure the safe and secure operation of the site;
- a shop;
- laundry service;
- refuse stores for each block; and
- other utilities and services, including a foul water pump station.

Temporary worker accommodation caravan site

3.2.11 A caravan site at LEEIE is also proposed which would comprise approximately 400 pitches, equivalent to 600 bed spaces.

b) Off-site associated development

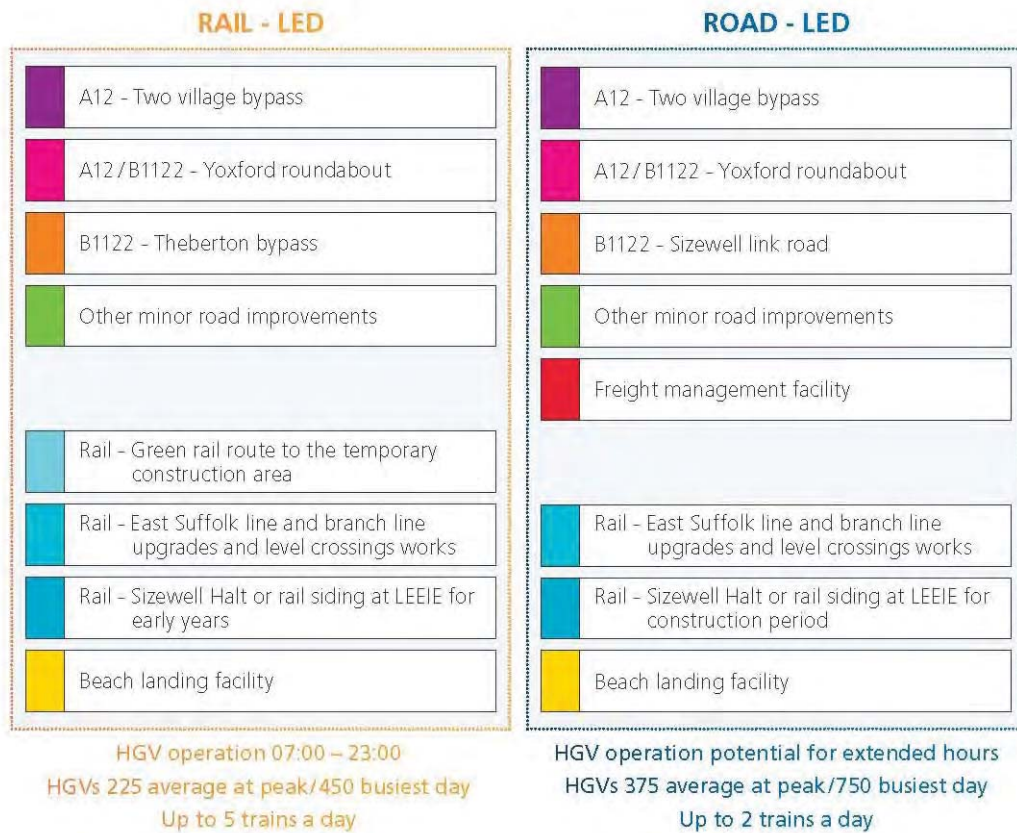
3.2.12 The off-site associated development is located at a number of different locations, as shown on **Figure 1.1**. The off-site associated development described within Section 3.3 and Sections 8.2 to 8.5 of the 2014 EIA Scoping Report has been revised and now includes a number of rail and road elements as part of two potential alternative freight management strategies.

i. Transport strategy

3.2.13 The descriptions of rail route options and road improvements provided in paragraphs 3.3.2 to 3.3.7 of the 2014 EIA Scoping Report have been revised. The elements described within these paragraphs are either no longer proposed or have been altered. The transport strategy now consists of two alternative freight management strategies: a rail-led and a road-led strategy.

3.2.14 A decision is still to be made as to whether to adopt a rail-led or road-led strategy to support the construction of the power station. Therefore, this EIA Scoping Report addresses both when considering the likely significant environmental effects of the proposed development. The main components of these two strategies are set out in **Plate 3.1**. Full details of the components of the rail-led and road-led strategies are provided in Sections 3.5 to 3.11 of this EIA Scoping Report respectively.

Plate 3.1: Freight management strategy options



3.2.1 The operational differences between these strategies are set out in **Table 3.1**.

Table 3.1: Operational differences between transport strategy options

	“Rail-led”	“Road-led”
HGV operational hours	07:00-23:00	Potential for extended hours (i.e. beyond 07:00-23:00)
HGV average at peak	225	375
HGV busiest day	450	750
Trains per day	5	2

3.3 Main development site

3.3.1 The main development site comprises the total area needed for constructing and operating the proposed nuclear power station, which includes both permanent and temporary development.

a) Changes to permanent elements since the 2014 EIA Scoping Report

3.3.2 Of the description provided within the paragraphs 3.2.1 to 3.2.4 of the 2014 EIA Scoping Report the following elements have been updated:

- a jetty is no longer proposed, as the marine-led strategy for the movement of construction materials is no longer being considered;
- the beach landing facility (BLF) remains part of the proposals, but its role would be to facilitate the movement of some large and Abnormal Indivisible Loads (AILs) to the main development site;
- the bridge is no longer proposed to provide access to the main development site from the north and has been replaced with a causeway/culvert;
- there is now just one campus proposed on the main development site (from the options previously consulted on);
- overhead lines are proposed to connect the new 400kV substation to the National Grid rather than underground cables;
- the emergency landing site (helipad) to be shared between Sizewell B and Sizewell C is proposed to be located on land adjacent to Sizewell Gap;
- the training building is proposed within a different location, to the north of the power station; and
- proposals for the Sizewell B relocated facilities have been developed, including the provision of a joint visitor centre for both Sizewell C and Sizewell B.

3.3.3 A number of new permanent elements have been included within the proposed development. These include:

- the redevelopment of the Northern Mound;
- a Combined Heat and Power (CHP) plant is proposed to support the accommodation campus during the operational phase;

- a new substation east of Old Abbey Farm; and
 - emergency equipment and back up store at Upper Abbey Farm.
- b) [Changes to temporary development since the 2014 EIA Scoping Report](#)

3.3.4 Of the description provided within the paragraphs 3.2.5 to 3.2.7 of the 2014 EIA Scoping Report the following elements have been removed:

- a temporary jetty for the transport of bulk construction materials, equipment and abnormal indivisible loads by sea;
- a construction electrical supply; and
- a rail terminal north of King George’s Avenue.

3.3.5 New temporary development has been included within the proposed development. This includes:

- development on the LEEIE; and
- revision of spoil management to include borrow pits.

c) [Summary of proposals at the main development site](#)

i. [Permanent elements](#)

3.3.6 In summary, permanent development at the main development site would comprise the following building, engineering or other operations as shown in **Figure 3.2**:

- nuclear power station, including two UK EPR™ reactor units capable of exporting a total of approximately 3,340MW to the National Grid;
- associated buildings, plant and infrastructure within the power station perimeter, including overhead power lines and pylons, drainage and sewage infrastructure and fuel and waste facilities;
- associated buildings, plant and infrastructure outside of the power station perimeter, including a site entrance hub, main site office, a canteen, bus and parking areas, a training/simulator building, flood defences and coastal protection measures (including the redevelopment of the Northern Mound);

- marine works and associated infrastructure, including sea defence works, a cooling water system and combined drainage outfall in the North Sea;
- a permanent beach landing facility proposed for freight and Abnormal Indivisible Loads (AILs) arriving by sea during operation and construction;
- National Grid 400 Kilovolts (kV) substation and associated relocation of an existing pylon and power line south of the proposed development;
- emergency equipment store and back-up generator at Upper Abbey Farm;
- relocation of a number of Sizewell B facilities including the outage store, outage laydown area, training centre, visitor centre, operational car parking and access roads and outage car parking and access roads;
- vehicular and pedestrian crossing over the Sizewell Marshes SSSI south of Goose Hill in the form of a causeway/culvert;
- power station access road, linking the SSSI crossing with a new roundabout onto Abbey Road (B1122);
- public access works including permanent and temporary closures and diversions of public rights of way;
- construction electricity supply cable and substation (to be retained for permanent operations);
- diversion and installation of utilities and services;
- landscape restoration works and planting, including water management zones;
- fencing, lighting and other security provisions; and
- a helipad.

ii. **Temporary elements**

3.3.7 Temporary elements at the main development site can be seen on **Figures 7.4 and 7.5** and include:

- a temporary accommodation campus for up to 2,400 construction workers and associated facilities, buildings and infrastructure (including

roads and utilities), located within the main development site, to the east of Eastbridge Road;

- temporary construction compounds, parking, laydown areas and working areas (including common user facilities which comprises elements which need to be close to the main power station platform, such as concrete production), plus related works and structures;
- temporary site roads and access road;
- a temporary bridge between the main construction area and temporary construction area during the construction of the causeway;
- temporary spoil management areas, including borrow pits and stockpiles;
- temporary rail infrastructure associated with the green rail route (rail-led strategy only); and
- development on the LEEIE (**Figure 3.5** and **3.6**) comprising the following building, engineering or other operations. All development in this location would be temporary unless otherwise stated:
 - construction compounds, laydown areas and working areas, plus related works and structures;
 - spoil management areas and stockpiles;
 - accommodation for approximately 400 caravans and associated welfare and parking;
 - Heavy Good Vehicle (HGV) and bus management area;
 - park and ride facilities;
 - reconfiguration of the existing railhead at Sizewell Halt to accommodate longer trains (which would remain) and provision of an overhead conveyor system to transfer freight material into LEEIE over King George’s Avenue, or a new rail siding adjacent to the existing branch line on the LEEIE; and
 - landscape restoration works and planting (once construction of Sizewell C is complete).

3.3.8 Under the rail-led strategy there would be up to two rail deliveries per day to Sizewell Halt or the new rail siding on the LEEIE required during the early years of construction and up to five rail deliveries per day following the completion of the green rail route. Under the road-led strategy there would be up to two rail deliveries per day throughout the construction period.

d) Construction

3.3.9 Construction is anticipated to be undertaken in five main phases, with construction expected to last 9 to 12 years. The construction masterplan for the main development site is shown on **Figure 3.3** and **Figure 3.4**. At peak, EDF Energy expects the construction workforce to comprise about 5,600 people. The five phases are:

- **Phase 1:** site establishment and preparation for earthworks (years 1 to 2);
- **Phase 2:** main site earthworks and completion of temporary infrastructure (years 1 to 4);
- **Phase 3:** main civils and construction of the permanent infrastructure (years 3 to 9);
- **Phase 4:** mechanical and electrical (M&E) installation (years 4 to 11); and
- **Phase 5:** commissioning and land restoration (years 10 to 12).

i. Phase 1: Site establishment and preparation for earthworks

3.3.10 In order to prepare the main development site for development, some works and site clearance would need to take place before construction of the power station commences. As such this phase principally involves preparation of the site for development and establishment of temporary infrastructure to enable the later phases of construction.

3.3.11 Some permanent infrastructure would be constructed at this phase, including an access road from the B1122 to the main platform, including the construction of the SSSI crossing.

3.3.12 Site clearance (including removal of trees in wooded areas and removal of topsoil), initial excavation works and preparation of the piling platform would be undertaken on the main platform. The initial excavation works would include: the main platform; contractors' compound areas; borrow pits; site entrance hub; accommodation campus; batching plant area; early access roads; and LEEIE.

3.3.13 Works would also commence on the construction of the haul road, SSSI crossing, electricity substation, site entrance, accommodation campus and LEEIE.

- 3.3.14 During this phase, works on the foreshore would include excavation of Bent Hills along the foreshore, creation of the construction phase sea defence and ground preparation works.
- 3.3.15 Environmental work during this phase would involve archaeological excavations, translocation of protected species and the establishment of buffer zones and boundary treatments to minimise noise, landscape and ecology effects.
- ii. Phase 2: Main site earthworks and completion of temporary infrastructure
- 3.3.16 This phase would see the bulk of the earthworks take place, including the excavation of made ground at the main platform. The construction of the power station would involve the excavation of large amounts of spoil comprising soil, made ground, peat, alluvium and Crag sand to reach the foundation depths for the buildings and structures within the main development site. An additional source of engineering fill would be required to raise the level of the main development site platform to 7.3m Above Ordnance Datum (AOD). This extra material would either be sourced from within the temporary construction area, or sourced from off-site.
- 3.3.17 Excavated material would be stockpiled, and earth bunds would be created at locations around the perimeter of the site.
- 3.3.18 If the rail-led strategy is chosen (**Figure 3.3**), this phase would see the establishment of the temporary rail connection to service construction, including the Green Rail Route. In both the road and rail-led strategies, works would take place at LEEIE to either reconfigure the existing railhead (**Figure 3.5**) or to provide a new rail siding (**Figure 3.6**).
- 3.3.19 The accommodation campus would be under construction in this phase, with excavation of peat, clay and made ground ongoing.
- 3.3.20 The BLF and the sea defences would also be under construction.
- 3.3.21 Other permanent infrastructure to be constructed at this stage includes the new road junction of the B1122 (Abbey Road) and Lover's Lane.
- iii. Phase 3: Main civils and construction of the permanent infrastructure
- 3.3.22 During this phase construction of the permanent infrastructure (the power station and associated ancillary development) will start. The accommodation campus and green rail route extension (in the rail-led strategy) would be in full use, and backfill of the borrow pits would end in this phase.

iv. Phase 4: Mechanical and Electrical installation

3.3.23 Much of the permanent works will be complete by this phase, including the two reactor buildings and off-shore infrastructure relating to the cooling water system. Mechanical and Electrical (M&E) works start during this phase. Works would also continue on the construction of the National Grid 400kV substation.

3.3.24 Removal of temporary infrastructure and reinstatement of the land would begin in the temporary construction area.

v. Phase 5: Commissioning and land restoration

3.3.25 Testing and commissioning of the power station, construction tests, flushing and testing of fluid systems, and fuel loading and testing of the reactors will take place during this phase.

3.3.26 All temporary infrastructure will be removed (rail, accommodation, contractor's area, temporary services and bunds), and land reinstatement complete.

3.3.27 During this phase, the final landscaping of the main development site and wider EDF Energy Estate would be undertaken.

vi. Outline Construction Environmental Management Plan (OCEMP)

3.3.28 An Outline Construction Environmental Management Plan (OCEMP) will be prepared to accompany the ES and will be included as part of the application for development consent. This OCEMP will provide the framework for the development of the Construction Environmental Management Plans (CEMPs) to be prepared by the contractors, once appointed. The OCEMP will detail environmental measures that would be put in place during the construction of the proposed development in order to control environmental impacts. The measures included within the OCEMP are required to meet other existing legislative requirements, or actions that are considered to be standard practice.

e) Operation

i. Electricity generation

3.3.29 The proposed new nuclear power station would have a design life of 60 years. The electrical capacity of the nuclear power station would be approximately 1,670MW per unit, giving a total site capacity of 3,340MW.

3.3.30 Electricity generated in the two turbine halls (one for each UK EPR™ reactor) would be converted by transformers to high voltage (400kV), before being exported from the site. Electrical connections from Sizewell C would be made via overhead power cable from the site to a new National Grid 400kV sub-station would be located adjacent to the existing Sizewell B sub-station. This would provide the connection for Sizewell C to the existing national grid high voltage transmission system.

3.3.31 One existing National Grid pylon would be relocated to allow the existing overhead lines to connect to the new sub-station. The pylon to be relocated is currently situated adjacent to the Sizewell B power station, to the north of the west car park.

3.3.32 Four additional pylons and associated overhead lines would connect the turbine halls to the substation. The pylon towers are 65m high and to the European Design.

ii. Maintenance and refuelling

3.3.33 During the 60 year operational life, Sizewell C would undergo refuelling and maintenance shutdowns (otherwise known as ‘outages’) at approximately 18 month intervals. The length of these outages would vary according to the maintenance and inspections required, but would typically be up to three months in duration.

3.3.34 Maintenance outages would include ‘preventative maintenance’, incorporating inspections, tests, maintenance, repairs and replacements of equipment in order to ensure safety and comply with the Nuclear Site Licence and other regulatory requirements. Maintenance outages would normally be undertaken in conjunction with refuelling outages. The length of the maintenance outage would vary depending on the scope of the work required.

iii. Cooling systems

3.3.35 For the UK EPRs at Sizewell C there would be three cooling systems, comprising primary, secondary and open circuit systems.

3.3.36 The primary circuit system is housed in the reactor building and is a closed water-filled pressurised system to extract heat from the reactor core. The water in this system also helps to control and sustain the fission reaction.

3.3.37 The secondary circuit system is a closed system that operates at a lower pressure. When heated by the primary system saturated steam is produced, dried and used to power a large turbine-generator which

produces electricity. After leaving the turbine the steam is cooled and condensed back to liquid water and the process is repeated.

- 3.3.38 The open circuit system would be independent of the primary and secondary systems and would draw water directly from the sea through two seabed mounted intake heads and associated offshore tunnels. The cooling water would be screened, passed through condensers to cool the exhaust steam from the turbines, and then returned via outfall tunnels to the sea.

iv. Liquid discharges

- 3.3.39 In addition to the seawater volumes associated with the Fish Recovery and Return system, the potential liquid discharges associated with the operation of Sizewell C through the main cooling water return include:

- Return of abstracted cooling water, which will be characterised by thermal content and will be dosed with biocides to prevent biofouling of the cooling water infrastructure;
- Effluent associated with operations within the nuclear island discharged on a batch basis after processing and monitoring to remove contaminants;
- Demineralised water (known as ‘blowdown’) from the secondary cooling system. This would be processed and treated to remove non-radioactive corrosion products and dissolved salts before the water is recycled in the secondary circuit. As with the primary system, the non-recyclable blowdown effluent would be transferred to a separate system which monitors, and further processes effluents where required, before being discharged;
- Effluent from the Turbine Hall and uncontrolled area floor drains discharged on a batch basis after monitoring and treatment if necessary;
- Storm water run-off from site drainage network which will pass through an oil interceptor prior to discharge;
- Oily water from areas where oils or hydrocarbon fuels are stored or used, that is to be segregated to prevent contamination and disposed of off-site at an appropriately licensed waste management facility; and
- Sanitary effluent generated by on-site workforce to be treated in a Sewage Treatment Plant before being discharged to sea via the main cooling water system.

3.3.40 Water discharges associated with the operations of Sizewell C will be managed through the Operational Water Discharge Activity Permit.

v. Gaseous emissions

3.3.41 The potential operational emissions to air arising from the operation of Sizewell C would primarily include:

- Formaldehyde (H₂CO), that may in turn produce carbon monoxide (CO), emitted by the thermal decomposition of insulation material during reactor return to operation following maintenance outages;
- Ammonia (NH₃) discharged as the temperature rises in the steam generators during start-up following a maintenance outage;
- Sulphur dioxide (SO₂) nitrogen oxides (NO_x), carbon monoxide (CO) and particulate matter (PM₁₀ and PM_{2.5}) in the exhaust gases from engines of back-up diesel generators during periodic testing [TBC];
- SO₂, NO_x, CO, PM₁₀ and PM_{2.5} from plant including; firefighting and hydrant diesel pumps, and domestic heating boilers; and
- Discharge of radioactive gaseous effluents arising from the degassing of primary coolant and maintenance and operations in building areas containing radioactivity.

vi. Workforce and working hours

3.3.42 During operation, it is expected that approximately 900 staff would be employed. Approximately 1,000 additional staff would be employed during planned refuelling and maintenance outages.

3.3.43 A number of operational staff would work shift patterns to cover the 24 hour operation requirements but most staff would work day shifts (8:00-4:30). Outage staff would work day and night shifts.

f) Decommissioning

3.3.44 At the end of electricity generation, the nuclear power station and associated infrastructure would be decommissioned. The process of decommissioning would be divided into a number of activities leading to the clearance and de-licensing of the site and ultimately its release for re-use.

3.3.45 The UK EPR™ has been designed with decommissioning in mind, enabling radioactive waste quantities to be limited when decommissioning takes place.

- 3.3.46 The decommissioning strategy to be employed for the proposed development will be early site clearance. Decommissioning would begin as soon as practicable after the end of electricity generation at the main development site and, with the exception of the ISFS, could be achieved within approximately 20 years of the end of generation.
- 3.3.47 The ISFS would continue to operate until a UK Geological Disposal Facility is available and the spent fuel is ready for disposal.
- 3.3.48 Each technical ES chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning. Before decommissioning could take place, EDF Energy would need to obtain separate consent from the ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (Ref 3.3) (as amended in 2006 and 2018). This requires the submission of an ES following an EIA and a period of public consultation.

g) **Removal and reinstatement**

- 3.3.49 As detailed in Stage 5 of the construction methodology, the temporary elements of the main development site would be removed and/or reinstated at the end of the construction phase.

3.4 **Park and ride facilities**

a) **Description of development**

- 3.4.1 As described in paragraph 3.3.2 of the 2014 EIA Scoping Report, two temporary park and ride facilities are proposed. The park and ride facilities form part of both the road and rail-led strategies and are described below.
- 3.4.2 The temporary park and ride facilities would be constructed to reduce the amount of additional traffic generated by the construction workforce on local roads and through local villages.
- 3.4.3 As per the 2014 EIA Scoping Report, two facilities are proposed to be located at Darsham and Wickham Market. The northern park and ride at Darsham (**Figure 3.7** and **3.8**) is proposed for construction workers approaching Sizewell from the north on the A12 and the southern park and ride at Wickham Market (**Figure 3.9** and **3.10**) is proposed for those approaching from the south on the A12. The two park and ride facilities are proposed under both the rail-led and the road-led freight management strategies.

3.4.4 Since the 2014 EIA Scoping Report, access proposals for both sites have been revised. At Wickham Market, the proposed location of the site is on the land to the north which was identified in the 2014 Scoping Report as the ‘additional land identified for potential park and ride development’. This decision was made predominantly on the basis that the archaeological investigations of the indicative site in 2014, identified the presence of extensive archaeological remains associated with the Roman ‘small town’ of Hacheston.

3.4.5 At Wickham Market, it is also proposed to provide for access from the west in order to limit impacts on local communities. At Darsham, an alternative entrance located further north along the A12 via Willow Marsh Lane is now proposed.

3.4.6 Both facilities are envisaged to comprise of:

- car parking areas for up to 1,250 spaces (of which 40 would be accessible spaces and 10 would be pick up only spaces);
- 10 spaces for minibuses/buses/vans;
- 80 motorcycle parking spaces;
- secure cycle parking for approximately 20 bikes;
- secure bus terminus and parking, including shelters;
- perimeter security fencing and lighting;
- an amenity and welfare building comprising toilets, bus drivers’ rest room, security and administration offices;
- a security building and booth;
- on-site topsoil and sub-soil storage to facilitate site restoration following cessation of use of the park and ride facility; and
- external areas including roadways, footways, screening mounds, landscaping, surface water management areas and drainage infrastructure.

3.4.7 In addition, the southern park and ride facility at Wickham Market would include:

- a postal consolidation facility; and

- a Traffic Incident Management Area (TIMA) to enable HGVs to be held in the event of an emergency.

3.4.8 It is anticipated that the park and ride facilities would be operational seven days a week between 05:00 and 01:00. The movement of buses would respond to the shift patterns of workers coming to and from the main development site. There would typically be fewer shifts on Fridays and at weekends.

3.4.9 Both sites would have an operational workforce of approximately five members of staff on-site per shift (excluding bus drivers).

b) Construction

3.4.10 It is expected that construction work for the temporary park and ride facilities would take place over a period of approximately 12-18 months.

3.4.11 The construction programme comprises the five separate stages:

- Phase 1 - Preparation works: Clearance of vegetation, mobilisation of site compounds and setting up of site boundary fence and access;
- Phase 2 - Earthworks and excavation: Clearance of vegetation, removal of top-soil (and potentially sub-soil) for bund formation;
- Phase 3 - Laying of parking area: Delivery of, and laying of base materials, compaction of base layers, drainage works, kerbstone work and paving work;
- Phase 4 - Utilities second fix: Installation of lighting, CCTV, water and power supply cables, bus shelters, signage and site buildings; and
- Phase 5 - Final surface layer: delivery, application and roller finish layer to car parking areas and access way

c) Removal and reinstatement

3.4.12 Once the need for the facility has ceased, the buildings and associated infrastructure would be removed in accordance with a demolition and restoration plan, which would maximise the potential for re-use of building, modules and materials. When the sites have been cleared they will be returned to agricultural use.

3.4.13 Phased removal and reinstatement of the sites may be possible as worker numbers decrease, but this is still to be confirmed. If removal and

restoration takes place in one phase, it is expected that this would take 12 months.

3.4.14 It is anticipated that dismantling and site reinstatement would follow a programme which is broadly the reverse of construction. Key activities would include but are not limited to:

- formation of demolition site compound;
- demolition plant mobilisation and traffic movements;
- demolition and removal of temporary structures and services;
- breaking up of concrete and surfacing if required;
- management of waste and other materials; and
- environmental mitigation works.

3.5 Two village bypass (A12)

a) Description of development

3.5.1 The two village bypass forms part of both the road and rail-led strategies. It is described below and is an addition to the description of the proposed development provided in **Chapter 3** of the 2014 EIA Scoping Report.

3.5.2 The route would bypass the villages of Farnham and Stratford St Andrew with a new single carriageway road to the south (refer to **Figure 3.11** and **3.12**). Once operational, the bypass would form a new section of the A12. The proposed route runs approximately 2.4 kilometres (km) across predominantly agricultural land to the south of the existing A12, departing the A12 to the west of Stratford St Andrew via a new three arm roundabout near Parkgate Farm and re-joining the A12 with a second roundabout to the east of Farnham at the A12/A1094 Friday Street junction. The proposed route would cross the River Alde, pass to the south of both Nuttery Belt and Pond Wood and pass between Foxburrow Wood and Farnham Hall Cottages.

3.5.3 The two village bypass would cross existing local roads, for example the access road to Pond Barn Cottages and access to Farnham Hall. The route would also cross Public Rights of Way (PRoW) at four locations (E-243/001/0, E-243/003/0, E-243/004/0 and E-243/006/0).

3.5.4 The two village bypass would be open to public use alongside construction traffic associated with the proposed development. After completion of the

power station, it would be retained as a lasting legacy of the proposed development.

3.5.5 The proposed two village bypass would require road lighting at the A12 western roundabout and the A12/A1094 roundabout. The remaining junctions are similar to existing unlit A12 junctions and would be unlit as they have low minor road flows.

3.5.6 A new river bridge would be required where the route crosses the River Alde. In order to protect the River Alde, a diversion of the river under the structure would be necessary. In addition to the bridge, flood arch culverts would be provided through the embankment where the road crosses the floodplain. Drainage retention areas would be needed, and the existing drainage system would be used and improved, subject to further investigation. For areas outside of the floodplain, swale ditches would be provided. Existing local drainage would be culverted so that its use would continue unchanged. There is no intention to drain the bypass to any local drainage outside of the River Alde.

b) Construction

3.5.7 Construction of the two village bypass is expected to take 20-24 months. The completed bypass would be offered for adoption by Suffolk County Council (SCC) as part of the county road network.

c) Operation

3.5.8 The two village bypass would be open to public use alongside construction traffic associated with the proposed development. After completion of the power station, it would be retained as a lasting legacy of the proposed development.

3.6 Yoxford roundabout (A12/B1122) and other highway improvements

a) Description of development

3.6.1 The Yoxford roundabout forms part of both the road and rail-led strategies. It is described below and is an addition to the description of the proposed development provided in **Chapter 3** of the 2014 EIA Scoping Report.

3.6.2 The proposed roundabout (refer to **Figure 3.13** and **3.14**) would replace the existing A12/B1122 ghost island junction in Yoxford. The proposed roundabout is approximately 100 meters (m) north of the existing junction and would be built on agricultural land to the east of the existing A12. The

B1122 would be realigned to join the roundabout via a new section of road that starts north of “The Cottage” shown on **Figure 3.14**.

3.6.3 Existing trees and hedgerows adjoining the site boundary would be retained where possible. The proposed works would include some grassed areas, planting and grassed embankments.

b) **Construction**

3.6.4 The proposed roundabout is estimated to take 6-9 months to construct and work would start during the early years construction phase.

c) **Operation**

3.6.5 Post construction, the A12/B1122 Yoxford roundabout would remain in place as a permanent improvement to the highway network. Fence lines would be positioned in accordance with recognised standards and guidance for highway construction.

d) **Other highway improvements**

3.6.6 The following section provides an overview of the series of minor road highway improvements that would be delivered as part of the proposed development for both the rail and road-led strategies. This series of road improvements is in addition to the description of the proposed development provided in Chapter 3 of the 2014 EIA Scoping Report.

3.6.7 These options are subject to ongoing assessment and consultation with SCC. It is considered that any further changes are likely to be relatively minor and within the existing highway boundary.

i. **A140/B1078 west of Coddendam**

Description of development

3.6.8 The A140/B1078 junction is a priority T-junction on a dual carriageway. It is situated approximately 3.2km east of Needham Market and 650m north-east of the A14/A140 Beacon Hill junction. The proposed works would be implemented during the early years of the construction programme and include:

- Update signs to comply with highway regulations and provide sufficient notice in advance of the junction, where necessary.
- Vegetation maintenance: to improve visibility for vehicles turning right into the B1078 and left onto the A140;

- Signage and road markings:
 - change the existing ‘Give way’ sign at the right turn from the A140 northbound towards the B1078 to a ‘Stop’ sign, requiring drivers to observe oncoming vehicles on the A140 southbound before crossing safely; and
 - extend the existing hatching to the full length of the right turn lane on both sides, preventing vehicles from stopping parallel to each other and obscuring visibility. Road markings would be refreshed.

ii. B1078/B1079 east of Easton & Otley College

Description of development

3.6.9 The B1078/B1079 junction is a rural priority T-junction approximately 1.5km south of Otley and 400m east of the Otley campus of Easton & Otley College (see **Figure 3.15** and **3.16**). The proposed works would be implemented during the early years of the construction programme and include:

- Vegetation maintenance: to improve forward visibility on the B1078 and to increase visibility for vehicles at the B1078/B1079 junction.
- Signage and road markings: additional signs on the B1078 approach to the junction. The condition of roads signs would be checked, and where necessary, cleaned or replaced during the Sizewell C construction period. The centre warning line of the carriageway would be highlighted with road studs to increase driver awareness.

iii. A12/B1119 at Saxmundham

Description of development

3.6.10 The A12/B1119 junction is a ghost island staggered crossroads on the A12 situated 1.1km west of Saxmundham (see **Figure 3.17** and **3.18**). The proposed works would be implemented during the early years of the construction programme and include:

- Vegetation maintenance: to improve visibility from the B1119.
- Signage and road markings: existing signage interferes with driver visibility in some locations, so existing signs would be mounted higher, or relocated if necessary. New ‘Give way’ signs would also be situated before the bend on the B1119 approach to the northern junction to raise awareness of the junction.

- New road markings would be installed within the junction, to clarify the priority within the central reserve and allow right-turning vehicles from the B1119 to negotiate the junction in two manoeuvres, improving operation and safety.

iv. [A1094/B1069 south of Knodishall](#)

Description of development

3.6.11 The A1094/B1069 junction is a single carriageway priority T-junction situated approximately 2.6km south of Knodishall and 1.1km south-east of Friston (see **Figure 3.19** and **3.20**). The proposed works would be implemented during the early years of the construction programme and include:

- Vegetation maintenance: to improve visibility from the B1119.
- Signage and road markings: existing signage interferes with driver visibility in some locations, so existing signs would be mounted higher, or relocated if necessary. New 'Give way' signs would also be situated before the bend on the B1119 approach to the northern junction to raise awareness of the junction.
- New road markings would be installed within the junction, to clarify the priority within the central reserve and allow right-turning vehicles from the B1119 to negotiate the junction in two manoeuvres, improving operation and safety.

v. [A12/A1094 Friday Street, north of Farnham](#)

Description of development

3.6.12 It is proposed to replace the existing A12/A1094 junction with a T-junction situated on a dual carriageway section of the A12 approximately 1km north-east of Farnham with a four-arm roundabout as part of the two village bypass proposals (see **Figure 3.21** and **3.22**). This would enhance safety and provide sufficient capacity to accommodate forecast traffic volumes during Sizewell C construction.

vi. [A12/A144 south of Bramfield](#)

Description of development

3.6.13 The existing A12/A144 junction is a rural ghost island priority T-junction situated approximately 2.7km south of Bramfield and 950m north of the proposed northern park and ride access (see **Figure 3.23** and **3.24**).

- 3.6.14 To increase the capacity for the right-turn movement from the A144 onto the A12, a physical central reservation island and waiting area is proposed.

vii. Wickham Market Diversion Route via Valley Road & Easton Road

Description of development

- 3.6.15 Improvements are required to provide an alternative route from the B1078 to the proposed southern park and ride facility via Valley Road, Easton Road and the B1116.
- 3.6.16 As shown in **Figure 3.25** and **3.26**, the proposed diversion route starts on the B1078 west of Wickham Market. Valley Road is a rural single track road that provides access to Valley Farm and the associated equestrian centre. The road turns east and then north again before crossing the River Deben on a narrow bridge with single way working. The road continues north of the bridge past Glevering Mill golf course before it meets Easton Road. Easton Road is a largely straight road that continues to the north of the River Deben before joining the B1116 (Hacheston Road) at a simple priority junction.
- 3.6.17 The proposed highways improvements would include the maintenance of roadside vegetation. To provide a consistently wider (6m) road, a new Valley Road alignment is proposed to the east of the existing road. The existing junction just south of the bridge would be formalised by resurfacing, road markings and signage.
- 3.6.18 There would be no works to the bridge itself, which is listed. Road markings either side would clarify that only a single traffic direction can use it and the opposing traffic would need to give way accordingly.

viii. Mill Street (B1122)

Description of development

- 3.6.19 Highway improvements are proposed to the Mill Street (B1122) junction, to the west of the Theberton bypass but only under a rail-led strategy. It is proposed to improve the existing vertical alignment by reconstructing this part of the B1122 by reducing the road level west of the junction (see **Figure 3.27** and **3.28**).

3.7 Sizewell link road

a) Description of development

- 3.7.1 The Sizewell link road forms part of the road-led strategy only, as an alternative to Mill Street improvements of the rail-led strategy and is described below. This is an addition to the description of the proposed development provided in Chapter 3 of the 2014 EIA Scoping Report.
- 3.7.2 The proposed new road would originate south of Yoxford on the A12 and bypass both Middleton Moor and Theberton. The proposed route incorporates the design of the Theberton bypass (which is proposed as part of the rail-led strategy, described in Section 3.7 of this EIA Scoping Report) and extends the route further to bypass Middleton Moor, joining the A12 south of Yoxford (see **Figure 3.29** and **3.30**).
- 3.7.3 The Sizewell link road would bypass the B1122 with a new single carriageway road to the south-west. The proposed route would have a 50 miles per hour (mph) design speed and run approximately 6.8km to the south-west of the existing B1122. The road would cross over the existing East Suffolk railway line on a new 15m – 20m span bridge at approximately a 90-degree angle.
- 3.7.4 Where the link road crosses existing watercourses, typically on low embankments, new crossings would be built, sized to maintain the existing flows of surface water as well as to maintain ecological connectivity.
- 3.7.5 Vehicle restraint systems, in the form of permanent safety barriers, would be needed at culvert headwalls, on some embankments and at other features.
- 3.7.6 The proposed route would cross PRowS at eleven locations. Where demand for these crossings from vulnerable road users are necessary, solutions such as the provision of gates or stiles or possibly footpath diversions are likely to be used.
- 3.7.7 The proposed Sizewell link road would require only road lighting at the A12 roundabout and at junctions with the B1125 and the B1122 to the west and east of Theberton respectively.

b) Construction

- 3.7.8 The Sizewell link road would be built during the early years of construction and would take about 24 months.

c) Operation

3.7.9 After completion of the power station, the link road would remain as a permanent feature.

3.8 Theberton bypass (B1122)

a) Description of development

3.8.1 The Theberton bypass forms part of the rail-led strategy and is described below and is an addition to the description of the proposed development provided in Chapter 3 of the 2014 EIA Scoping Report.

3.8.2 If the rail-led strategy is adopted, the proposed route would bypass the B1122 through Theberton with a new single carriageway road to the south-west as shown in **Figure 3.31** and **3.32**. The proposed route would have a 50mph design speed and run approximately 2.6km across predominantly agricultural land to the south-west of the existing B1122.

3.8.3 Running from north to south, the proposed route would start at Anneson's Corner, near to Coronation Cottages and initially head in a south-east direction crossing Plumtreehills Covert in a 1.5m cutting. A new ghost island junction would be formed at existing ground level with an extension of the B1125 and reconfiguration of the existing B1122 to form suitable new junctions. The route would continue along an embankment over an existing watercourse and PRow. There would be a new priority junction with Pretty Road on the south-west side of the bypass, which would be in a cutting. The north side of Pretty Road would be stopped up where it meets the bypass and access to the bypass gained at the new B1125 junction. The bypass would continue on a low embankment that would cross another watercourse and PRow before a longer length of cutting with a new junction at Moat Road to maintain access to the existing properties. The route would continue at ground level with a new junction to provide access to Theberton and would re-join the B1122 on a low embankment adjacent to Brown's Plantation.

3.8.4 The proposed Theberton bypass would require road lighting only at the junctions with the B1125 and the B1122 to the west and east of Theberton respectively.

3.8.5 The bypass would relieve the B1122 through Theberton of HGV traffic, the construction workers arriving by car, Light Goods Vehicles (LGVs) from the north and park and ride buses from both the northern and southern park and ride sites. The bypass would also be open to use by the general public and would attract existing through traffic, also removing this traffic from Theberton.

b) Construction

3.8.6 The Theberton bypass would be built during the early years of construction and would take about 12 months.

c) Operation

3.8.7 After completion of the power station, the bypass would be retained as a lasting legacy of the proposed development

3.9 Freight management facility

a) Description of development

3.9.1 The possible requirement for a temporary freight management facility (FMF) is identified in paragraph 4.4.6 of the 2014 EIA Scoping Report. Two sites are currently being considered for the temporary FMF which forms part of the road-led strategy only.

3.9.2 The FMF would accommodate approximately 150 parking spaces for HGVs. It would assist in allowing a controlled pattern of deliveries to site with reduced movements during peak or sensitive hours on the network. It could provide facilities where paperwork and goods can be checked prior to delivery to the main development site, and a location where HGVs are held while they wait to enter the site or in the event of an accident on the local road network which prevented access to the site.

3.9.3 The two sites currently being considered are the A12/A14 Seven Hills site and the Innocence Farm site, both of which are located on the A14 south east of Ipswich and currently comprise arable land. The Seven Hills site is approximately 9.9 hectare (ha) in area and would be accessed from Old Felixstowe Road (see **Figure 3.33**). The Innocence Farm site is approximately 9ha in area and would be accessed from Croft Lane (see **Figure 3.34**).

3.9.4 When the chosen site is no longer required for use as a FMF by EDF Energy it would be returned to the existing arable use.

3.10 Green rail route

a) Description of development

3.10.1 Paragraph 3.3.2 of the 2014 EIA Scoping Report describes two potential extensions of the Saxmundham to Leiston branch line, the green or blue options. The blue option is no longer being considered and the green rail route forms part of the rail-led strategy only and is described below.

3.10.2 The proposed green rail route extends in a north-easterly direction from the existing Saxmundham to Leiston branch line, approximately 1.5km west of Leiston, into the main development site (see **Figure 3.35**). If this strategy is adopted, the provision of the green rail route would require:

- part of Buckleswood Road to be stopped up to vehicular traffic and the construction of a new footbridge connecting the intersected parts of Buckleswood Road or a new level crossing on Buckleswood Road;
- the north-south footpath between Saxmundham Road and Abbey Lane (E-363/003/0) to be diverted across the new railway line via the new Buckleswood Road level crossing or footbridge;
- the construction of a new level crossing where the new railway line crosses the B1122 (Abbey Road);
- the north-south footpath linking Abbey Lane and Westward Ho (E-363/006/0) to be diverted across the new railway line via the new level crossing on the B1122 (Abbey Road);
- the north-south footpath linking Abbey Lane to the B1122 (Abbey Road) (E-363/010/0) to be diverted across the new railway line via the new level crossing on the B1122 (Abbey Road); and
- the relocation of the junction of the B1122 (Abbey Road) and Lover's Lane.

3.10.3 The rail line would be designed and constructed to Network Rail's standards. A maximum train speed of 25mph has been assumed along the length of the route, although trains would run at lower speeds on certain sections. Once constructed, this line would be used to support up to five freight deliveries per day (ten movements).

3.10.4 As part of the green rail route a series of upgrades are required to the East Suffolk line and branch line, including works at level crossings.

i. [East Suffolk line and branch line upgrades and level crossing works](#)

[Description of development](#)

3.10.5 The East Suffolk line and branch line upgrades form part of the rail-led strategy and are described below. Whilst these upgrades are required as part of the rail-led strategy, it should be noted that some of the upgrades proposed to the branch line would also be required for the road-led strategy to facilitate access to LEEIE.

- 3.10.6 Permanent infrastructure upgrades and changes to level crossings would be required to the East Suffolk line or the branch line in order to accommodate freight movements during peak construction. It is intended that all of the proposed works on the East Suffolk line would be carried out by Network Rail. These upgrades, shown in **Figure 3.36**, would include:
- a passing loop at a location between Ipswich and Saxmundham (**Figure 3.37**);
 - signalling upgrades;
 - a track crossover at Saxmundham (**Figure 3.38**);
 - up to 45 level crossings to be upgraded or closed, and rights of way to be diverted;
 - strengthening works to six bridges; and
 - some track replacement between Saxmundham and Sizewell Halt (extent to be defined).

- 3.10.7 There are nine operational level crossings on the Saxmundham to Leiston branch line between the Saxmundham junction and Sizewell Halt. Under the both the rail-led and road-led strategies, upgrades would be required to each of these crossings in order to use the line for freight deliveries. No closures or diversions are proposed.

b) **Construction of green rail route**

- 3.10.8 The railway line would be constructed early in the construction phase of the proposed development, and is expected to take place in the first 18 months of the Sizewell C power station construction phase. Preparation works include: vegetation clearance; ecological mitigation; erection of temporary site fencing; establishment of temporary site access, security, office, welfare facilities, compound and utilities; and ancillary works.
- 3.10.9 Construction would start from the eastern end of the route and work west along the route corridor. A main contractor's compound would be located at the eastern end (within the main development site temporary construction area) and a smaller compound would be located at the western end. Utilities would be installed, diverted and connected to facilitate the rail route extension. Other elements of the construction phase include the installation of fencing, access control, external lighting, security and removal of temporary facilities and associated landscaping works.

c) Removal and reinstatement of green rail route

3.10.10 Once construction of the power station is complete, the green rail route would be removed and the land on which it was located would be restored to its previous condition.

3.11 Summary of new and updated proposed development

3.11.1 **Table 3.2** provides a summary of the elements of the proposed development and states if it has been updated since the 2014 EIA Scoping Report or if it has been introduced as part of the proposed development since the 2014 EIA Scoping Report.

Table 3.2: Summary of new and updated proposed development

Proposed development	New / Updated	Updates to proposals
Main development site	Updated	Various changes to proposals (both permanent and temporary) as set out in Sections 3.1 and 3.3 of this EIA Scoping Report.
Northern park and ride	Updated	Various changes, including a new roundabout on the A12 situated to the north of the existing Willow Marsh Lane junction.
Southern park and ride	Updated	Various changes, including location of the site, inclusion of a postal consolidation facility, a Traffic Incident Management Area, and reduction of lanes on the A12.
Two village bypass	New	New bypass proposed, as an alternative to previous options for a bypass to the north of Farnham; road widening; or HGV traffic controls at Farnham Bend.
Yoxford roundabout and other highway improvements	New	
Theberton bypass / Sizewell link road	New	
Freight	Updated	Provision of potential sites and

Proposed development	New / Updated	Updates to proposals
management facility options		description of the potential FMF following the development of freight management strategies.
Green rail route and other rail improvements	Updated	Decision on green rail route option and further development of design details, and upgrade works required on the ESL and branch line.

3.12 Waste Management

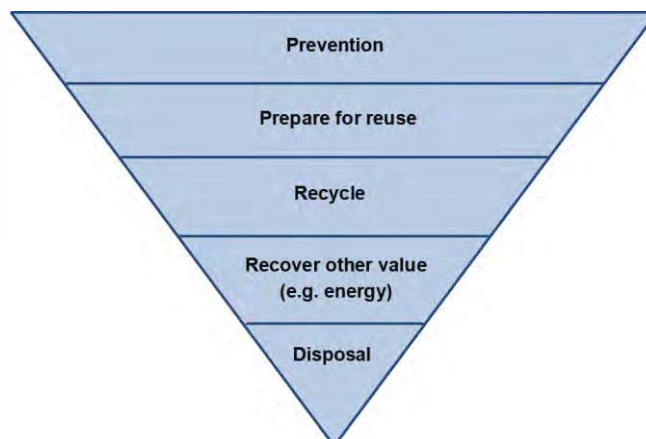
a) Conventional waste management

3.12.1 The development of the conventional waste strategy for the project is ongoing and considers the management of non-radioactive waste streams.

3.12.2 EDF Energy aims to achieve best practice in waste management and performance. Accordingly, the following objectives have been developed for the management of conventional waste (refer to **Plate 3.2**) during both the construction and operational phases of Sizewell C nuclear power station:

- to prevent and reduce the volume of waste produced through the application of the waste hierarchy in both design and construction;
- to maximise re-use and recycling within the project; and
- to minimise the impact upon the existing waste management infrastructure.

Plate 3.2: Waste hierarchy



- 3.12.3 In conjunction with the waste hierarchy, the proximity principle is being considered in the development of the waste strategy. The proximity principle encourages the management of waste close to its place of generation, thus reducing the impacts of transporting waste over long distances and promoting management of waste within its region of origin.
- 3.12.4 The development of the conventional waste management strategy is ongoing but once complete it will provide details of the estimated waste arisings produced through the various activities as the development progresses. It will also identify methods for managing the wastes.
- 3.12.5 The strategy will aim to ensure that all waste management measures employed protect both the environment and people and comply with relevant policies.
- 3.12.6 As a next step, discussions with waste operators will be required to establish whether closure dates on existing facilities and any potential expansions of capacities might affect the provisional conclusions presented above.
- b) Spent fuel and radioactive waste management
- 3.12.7 EDF Energy would ensure that the management of spent fuel and radioactive waste generated at the proposed development protects both people and the environment and is consistent with UK policy and legislation.
- 3.12.8 The UK EPR™ design generates less spent fuel than other nuclear reactors in the UK per unit of electricity generated. It optimises fuel use which, when coupled with fuel design and manufacture, ensures that less spent fuel is created.
- 3.12.9 Spent fuel removed from the reactor would initially be stored underwater in a reactor fuel pool. Following this initial storage period, the spent fuel assemblies would be transferred to the separate on-site ISFS where they would be safely stored until a UK Geological Disposal Facility is available and the spent fuel is removed for final disposal.
- 3.12.10 The Interim Spent Fuel Store (ISFS) would be designed for a life of at least 100 years, which could be extended if necessary. The ISFS would be designed to be capable of operating independently of other parts of the power station in recognition that its lifetime would, under current assumptions, extend beyond the operational life and decommissioning of the other facilities on-site.

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- 3.12.11 The design of the UK EPR™ planned for the proposed development includes a number of measures aimed at limiting the amount of radioactive waste generated. Radioactive waste generated at the proposed development would fall into two categories – Low Level Waste (LLW) or Intermediate Level Waste (ILW).
 - 3.12.12 LLW would be disposed of as soon as reasonably practicable, following treatment to limit its volume and then appropriate conditioning or packaging to allow its safe transport and disposal.
 - 3.12.13 ILW would be conditioned and packaged on-site throughout the operational phase. The packages would be safely stored in the ILW Interim Storage Facility until a UK Geological Disposal Facility is available to accept waste from the proposed development for disposal.
 - 3.12.14 As with the ISFS, it would be possible to extend the life of the ILW Interim Storage Facility.

4 CONSIDERATION OF ALTERNATIVES

4.1 Introduction

4.1.1 Schedule 4 of the EIA Regulations states that an ES should include:

“a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”

4.1.2 As part of the Overarching NPS for Energy (EN-1) and the Nuclear NPS (EN-6) the Government has set out the need for all types of energy NSIPs, including new nuclear power stations. As the Government has established this need, alternative options to nuclear power generation will not be considered as part of this EIA.

4.1.3 The Government has assessed all of the sites listed in the Nuclear NPS EN-6, including the main development site, as part of a strategic siting assessment (SSA). Given that the main development site meets the SSA criteria and is identified in the EN-6 as potentially suitable for new nuclear deployment, no alternative sites for the proposed development will be considered as part of this EIA. The EIA will, however, focus on the principal site-specific and design alternatives.

4.1.4 As described in **Chapter 2**, it is recognised that the Government has started the process of consulting on the preparation of a new NPS for nuclear power stations. Subject to the outcome of the Government’s consultation, the document explains that:

- the Government proposes to carry forward the sites listed in EN-6 as the list of sites potentially suitable for the deployment of nuclear power stations under the new NPS (including Sizewell), except for Hinkley Point C which is already under construction;
- the assessment of need for new electricity generation set out in the existing NPS remains valuable and continues to be relevant, and the need for new nuclear power remains significant;
- new nuclear power is important in making the transition to a low carbon economy; and
- it is important that there is a strong pipeline of new nuclear power projects to contribute to the UK’s energy mix and future security of supply.

- 4.1.5 In addition, the Government’s consultation proposes that a further opportunity is given for additional potentially suitable sites to be nominated for the development of nuclear power, although the consultation explains that the Government’s preliminary view is that the sites already listed in EN-6 are likely to be those which can deploy the soonest and are the only sites capable of deploying new nuclear power stations by 2035.
- 4.1.6 There are legal requirements to consider alternatives in some circumstances, for example under the Habitats Directive. The ES will outline the main alternatives studied by EDF Energy and detail the principal reasons for EDF Energy’s choice, taking into account the environmental, social and economic effects.
- 4.1.7 In addition, it is good practice to consider the ‘no development’ alternative; this refers to the option of leaving the main development site in its current state. The ES will consider and provide a summary of the ‘no development’ alternative in the context of the development need.

4.2 New nuclear power station at Sizewell

- 4.2.1 Sizewell B was designed and developed with an expectation that a further nuclear power station will be constructed adjacent to the site on the northern boundary. This is also reflected in the previous proposals for a power station at the site (prepared in the 1990s). The ES will review the potential alternative layouts of the new nuclear power station, particularly for the land required during construction.
- 4.2.2 The UK EPR™ reactor developed by AREVA and EDF Energy has been selected for the proposed development. This reactor has completed the UK’s GDA process with the award of a Design Acceptance Confirmation (DAC) from the ONR and a Statement of Design Acceptability (SoDA) from the Environment Agency. Therefore, no alternative designs for the nuclear reactor will be considered.

4.3 Main alternative designs

- 4.3.1 The ES will describe the alternatives considered and the evolution of the design of the proposed main development site and the off-site associated development sites.
- 4.3.2 The final siting and design details will include consideration of the feedback from Stage 3 consultation alongside further environmental and technical assessments, as well as informal consultation with stakeholders. Further details of how the consultation process has informed design will be provided in the Consultation Report that will form part of the application for development consent and within the ES where relevant.

a) Main development site

4.3.3 Key alternative design options for the main development site include:

- masterplan design concepts and layout;
- landscaping;
- sea defences along the eastern edge of the site;
- length, location and design of the cooling water intakes and outfall structures;
- transmission infrastructure;
- length, structure and location of a beach landing facility;
- on-site interim storage of spent fuel;
- access road alignment and design of the SSSI crossing;
- drainage strategies;
- the location of temporary construction areas, including the LEEIE and the use of Sizewell Halt; and
- the location and layout of the including accommodation campus.

b) Accommodation strategy

4.3.4 The ES will also provide an overview of the process surrounding the selection of the final accommodation strategy, including discussion on:

- initial accommodation strategies, including the potential to use caravans;
- the three options considered for the accommodation campus;
- the layout of the proposed accommodation campus; and
- the design of the proposed accommodation campus.

c) Off-site associated development sites

4.3.5 The ES will describe the main alternatives considered as part of the design evolution process for off-site associated development including:

- park and ride facilities;
- rail route options;
- road improvements; and
- freight management facilities.

4.3.6 The ES will outline the process undertaken to develop the transport strategies, as detailed in Sections 3.4 to 3.11 of this EIA Scoping Report. It will also include an explanation to justify the strategy that is selected to form part of the final design of the proposed development. This will include a description of the robust process undertaken by EDF Energy to identify potential suitable sites for off-site associated development and then to consider their advantages and disadvantages in terms of their location, size, operational and technical requirements, as well as planning and environmental considerations.

5 APPROACH TO THE EIA

5.1 General assessment approach

- 5.1.1 Establishing the scope of the assessment in a rigorous and transparent manner is a key step in the assessment process; and consultation is an essential element of this process. Therefore, this Environmental Impact Assessment (EIA) Scoping Report has been prepared to provide stakeholders with sufficient information to form an opinion over the adequacy of the proposed scope of assessment and to ensure that issues potentially giving rise to 'likely significant effects' will be addressed by the EIA. The overarching approach set out in this Scoping Report is broadly in line with the approach set out in the 2014 Scoping Report, however it has been updated in accordance with the new EIA Regulations and updated guidance.
- 5.1.2 Schedule 4 of the EIA Regulations requires the ES to include a description of the likely significant effects of the development on the environment. This *'should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development'*, as well as a description of the forecasting methods or evidence used to identify and assess the significant effects on the environment. Schedule 4 also identifies a number of aspects of the environment that should be considered, namely *'population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape'*.
- 5.1.3 This EIA Scoping Report sets out how these aspects will be considered and assessed in the EIA. Issues that are scoped into the EIA are judged likely, without effective mitigation, to have the potential to cause significant environmental effects. Issues that are scoped out of the EIA are those which it is considered are not likely to lead to significant environmental effects. Where insufficient information is available in relation to a particular issue to make a reasonable judgement at this stage, a precautionary approach is adopted and that issue is scoped in. The decision to scope out issues is based upon factors such as a high degree of development-receptor separation, the lack of impact pathways or the known low value or low sensitivity of impacted resources/receptors. The case to scope out topics, or particular aspects of topics, will be clearly made and supported by appropriate evidence.

5.1.4 It is not anticipated that it will be possible to scope out any aspects of the assessment for the main development site, although there is potential to do so for each of the off-site associated development sites. However, as the assessment proceeds, topics will be reviewed, and the potential for significant effects may be re-evaluated in response to additional information or changes to the description of the proposed development.

5.1.5 Consideration has been given to the Planning Inspectorate's Advice Note Seven (Ref 5.1) during the preparation of this Scoping Report.

5.2 Determination of the scope

a) Spatial scope

5.2.1 Clear definition of the study area for the EIA is a key part of the assessment process. The geographical extent of the study area varies depending on the environmental topic and specific receptors under consideration for that topic. For each topic the study area is of sufficient size to encompass the spatial extent over which impacts relevant to that topic and the related receptors might occur.

b) Temporal scope

5.2.2 The assessment will have regard to the project programme and will evaluate the environmental effects of the proposed development at the key stages of construction and operation. These are, where appropriate, then compared to the situation prevailing before the proposed development is commenced (i.e. the current baseline), and to the situation that would prevail in the future without the proposed development (i.e. the projected future baseline).

5.2.3 The future baseline is the theoretical situation that would exist in the absence of the proposed development. It is typically based upon extrapolating the current baseline using technical knowledge of changes to predict this (e.g. habitat change over time, traffic and waste growth over time, etc.). It will likely cover the first year of operation.

5.2.4 Each environmental topic chapter of the ES will define the baseline against which the environmental effects of the proposed development will be assessed. The baseline conditions to be assessed for each topic are outlined in the **Chapter 6** of this EIA Scoping Report (or cross-referenced to the 2014 EIA Scoping Report).

5.2.5 Assessment scenarios that will be considered for the main development site include:

- future baseline in the absence of the proposed development at the main development site;
- construction (including the removal and reinstatement of the temporary construction area);
- operation; and
- decommissioning.

5.2.6 Assessment scenarios that will be considered for the off-site associated development include:

- future baseline in the absence of the off-site associated development;
- construction of the off-site associated development;
- operation of the off-site associated development; and
- removal of the off-site associated development and reinstatement of the existing land use, where relevant.

5.3 Assessment of effects and determining significance

5.3.1 For consistency, and in an attempt to allow comparison between topics, the methodology described in this section will be applied where appropriate when preparing the ES. The methodology followed by most environmental topics is designed to consider whether impacts of the proposed development would have an effect on any resources or receptors. Assessments broadly consider the magnitude of impacts and sensitivity of resources/receptors that could be affected in order to classify effects according to the categories shown in **Table 5.3**.

5.3.2 For each topic area of assessment which fully, or in part, utilises this methodology, the categories of resource/receptor sensitivity and magnitude of impact will be appropriately described and defined. The following sections provide the generic criteria for the definition of resource/receptor sensitivity, impact magnitude and classification of effect. Each environmental topic area will provide greater detail on the approach to the assessment and specific guidelines for the definition of impact magnitude and resource/receptor sensitivity. Technical assessments described in **Chapter 6** of this EIA Scoping Report will broadly follow the approach set out in the following sections and any deviations from this approach are explained and justified where appropriate.

a) Resource and receptor sensitivity

5.3.3 The sensitivity of an environmental receptor is a function of its capacity to accommodate changes in baseline conditions and its capacity to recover if it is affected. Changes in baseline conditions may result from the development and/or as a result of ongoing natural processes.

5.3.4 **Table 5.1** sets out the generic guidelines for the assessment of sensitivity of a resource or receptor. Where appropriate, relevant guidelines are provided for each environmental topic.

Table 5.1: Generic guidelines for the assessment of sensitivity

Value/sensitivity	Guidelines
High	<p><u>Value:</u> Feature/receptor possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site/receptor (e.g. designated features of international/national importance, such as World Heritage Sites, Areas of Outstanding Natural Beauty (AONB), Special Areas of Conservation (SACs), Special Protection Area (SPAs), Ramsar sites, Sites of Special Scientific Interest (SSSIs), Scheduled Ancient Monuments, Air Quality Management Areas, Grade I and Grade II* Listed Buildings).</p> <p><u>Sensitivity:</u> Feature/receptor has a very low capacity to accommodate the proposed form of change.</p>
Medium	<p><u>Value:</u> Feature/receptor possesses key characteristics which contribute significantly to the distinctiveness and character of the site/receptor (e.g. designated features of regional or county importance, such as County Wildlife Sites (CWSs), Local BAP, Conservation Areas, Grade II Listed Buildings, Heritage Coast and Special Landscape Areas etc.)</p> <p><u>Sensitivity:</u> Feature/receptor has a low capacity to accommodate the proposed form of change.</p>
Low	<p><u>Value:</u> Feature/receptor only possesses characteristics which are locally significant. Feature/receptor not designated or only designated at a district or local level (e.g. local nature reserve, locally Listed Buildings).</p> <p><u>Sensitivity:</u> Feature/receptor has some tolerance to accommodate the proposed change.</p>
Very Low	<p><u>Value:</u> Feature/receptor characteristics do not make a significant contribution to local character or distinctiveness. Feature/receptor not designated.</p> <p><u>Sensitivity:</u> Feature/receptor is generally tolerant and can accommodate the proposed change.</p>

b) Impact magnitude

5.3.5 The magnitude of a potential impact refers to the extent of change, which includes consideration of the area over which the impact occurs, the duration (i.e. the time for which the impact is expected to last prior to recovery or replacement of the receptor/feature), the likelihood (i.e. the chance that the impact would occur) and reversibility.

5.3.6 **Table 5.2** sets out the generic guidelines for the assessment of the magnitude of an identified impact. Where appropriate, relevant guidelines are provided for each environmental topic within this EIA Scoping Report and will be outlined in the ES.

Table 5.2: Generic guidelines for the assessment of magnitude

Magnitude	Guidelines
High	Large-scale changes over the whole development area and potentially beyond (i.e. off-site) to key characteristics or features of the particular environmental aspect’s character or distinctiveness.
Medium	Medium-scale changes over the majority of the development area and potentially beyond to key characteristics or features of the particular environmental aspect’s character or distinctiveness.
Low	Noticeable but small-scale changes over part of the development area and potentially beyond, to key characteristics or features of the particular environmental aspect’s character or distinctiveness.
Very low	Noticeable, but very small-scale change, or barely discernible changes over a small part of the development area and potentially beyond, to key characteristics or features of the particular environmental aspect’s character or distinctiveness.

c) Classification of effect and significance

5.3.7 **Table 5.3** details the matrix used for the classification of effects and **Table 5.4** sets out the generic definitions of effect. Where appropriate, relevant guidelines are provided for each environmental topic within this EIA Scoping Report and will be outlined the ES.

Table 5.3: Classification of effects

Impact magnitude	Value and sensitivity of resource or receptor			
	Very Low	Low	Medium	High
Very low	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	Moderate
Medium	Minor	Minor	Moderate	Major

Impact magnitude	Value and sensitivity of resource or receptor			
	Very Low	Low	Medium	High
High	Minor	Moderate	Major	Major

Table 5.4: Generic classification of effect definitions

Effect classification	Description
Major	Effects, both adverse and beneficial, which are likely to be important considerations at a national to regional level because they contribute to achieving national/regional objectives, or, which are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Effects that are likely to be important considerations at a regional and local level.
Minor	Effects that could be important considerations at a local level.
Negligible	An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

5.3.8 Following the classification of an effect using this methodology, a clear statement is then made as to whether that effect would be ‘significant’ or ‘not significant’. As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement will also be applied where necessary, including taking account of whether the effect is permanent or temporary. Furthermore, in some cases the classification of the significance of effects depends on professional standards and guidance within individual technical areas and this will be explained and referenced where necessary.

5.4 Mitigation and residual effects

5.4.1 The ES will include a description of the measures envisaged to prevent, reduce and, where relevant, offset any significant adverse environmental effects. These measures could include opportunities for enhancement or specify that monitoring is required. The approach adopted for the proposed development will take the form of a hierarchy, whereby priority is given to preventing effects, and then (if this was not possible) to reducing or abating them followed, if necessary, through repair (restoring or reinstating) or compensation. Each of these means of reducing potentially significant environmental effects falls under the broad heading of ‘mitigation’.

- 5.4.2 In accordance with guidance published by the Institute of Environmental Management and Assessment (IEMA) (Ref 5.2), the ES will report on three types of environmental mitigation:
- Primary mitigation – *“Modification to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken.”*
 - Secondary mitigation – *“Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the ES.”*
 - Tertiary mitigation – *“Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practice used to manage commonly occurring environmental effects.”*
- 5.4.3 Opportunities for primary mitigation will be identified throughout the evolution of the proposed development and the EIA process, whereby significant adverse environmental effects will be fed back into the design process to verify whether they can be avoided or otherwise mitigated in accordance with the hierarchy. These measures will be included within the proposed development plans and drawings.
- 5.4.4 Tertiary mitigation will be identified with reference to legislative requirement and measures of standard practice to manage commonly occurring effects. These measures will be included in the Outline Construction Environmental Management Plan (OCEMP).
- 5.4.5 Where further mitigation is required to reduce or eliminate a significant environmental effect, this will be referred to as 'additional mitigation' (secondary mitigation). These will generally be measures which have not been incorporated in the design of the proposed development, and will not appear on any application plans (e.g. masterplans).
- 5.4.6 The ES will report on the anticipated effects of the proposed development following the implementation of mitigation measures, which are known as 'residual effects'. A clear statement will be made as to whether the residual effects are significant or not significant. It should be reiterated that not all such effects will be adverse, some will be beneficial.

5.5 Inter-relationships and cumulative effects

- 5.5.1 As required by the EIA Regulations, the assessment will also have regard to cumulative effects. By definition, these are effects that result from

incremental changes caused by other past, present or reasonably foreseeable actions together (i.e. cumulatively) with the proposed development.

5.5.2 For the cumulative assessment, two types of effect will be considered:

- ‘inter-relationship effects’ that occur between the individual environmental effects of the proposed development and have the potential to combine together with one another and lead to significant environmental effects; and
- ‘cumulative effects’ that arise as a result of the proposed development in combination with other large scale developments and/or projects in the vicinity of the site.

5.5.3 In addition, where any other projects are anticipated to be completed before the proposed development begins construction and the effects of those projects are fully determined, affects arising from those projects will be taken into consideration within the construction and operational assessments reported in the environmental topic chapters and considered as part of the potential ‘future baseline’. The ES will clearly distinguish between projects forming part of the baseline and those in the cumulative assessment.

a) **Inter-relationship effects**

5.5.4 A review of potential effects identified within technical assessments on individual sensitive receptors (for example noise, dust and traffic) will be undertaken in order to determine the potential for combined effects. Only residual effects classified as being minor, moderate, or major will be considered in relation to the potential for effect interactions. Negligible residual effects reported in each topic assessment will be excluded from the assessment of inter-relationship effects.

b) **Cumulative effects**

5.5.5 The EIA will follow the methodology for the assessment of cumulative effects defined in the Planning Inspectorate’s Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (December 2015, version 1) (Ref 5.3). This is a four stage approach, as follows:

- Stage 1 - establish the project’s zone of influence (ZOI) and identify a ‘long list’ of ‘other development’;

- Stage 2 - identify a 'shortlist' of 'other development' for the cumulative impact assessment;
- Stage 3 - information gathering; and
- Stage 4 – assessment.

5.5.6 The ZOI of the proposed development, within which any potential effects of the proposed development may combine with the effects arising from other developments, will be defined by the environmental topic specialists and combined into a single area within which other development will be identified.

5.5.7 The assessment of cumulative effects will then consider other relevant major developments and/or projects on the basis of those that are either:

- under construction;
- permitted application(s), not yet implemented;
- submitted application(s), not yet determined;
- projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted;
- projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted;
- schemes being promoted as part of Transport and Works Act Order applications; hybrid bills; and road projects included within Highways England's list of improvements and major road projects;
- identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited; and
- identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.5.8 Certain criteria will be used to screen out development of insufficient scale, or of a type which would not result in cumulative effects with the proposed development, as follows:

- any planning applications older than five years at the commencement date of the study (i.e. only considering applications from 2014 onwards);
- construction of small-scale agricultural buildings (e.g. storage of livestock, machinery or feed);
- house extensions or cosmetic changes to buildings;
- work to trees;
- micro-generation wind turbines;
- roof mounted solar panels (or ground mounted less than 50kW output);
- renewal of planning permission for retention of existing operational use;
- variation to planning permissions and reserved matters applications (where the original application would not have been considered within the assessment); and
- small scale residential uses (specifically, less than two dwellings) or changes of buildings' use (unless it could itself result in a cumulative effect), such as a conversion of several barns into a holiday village.

5.5.9 The 'long list' will be grouped into three tiers, reflecting the likely degree of certainty attached to each development, with Tier 1 being the most certain. This 'long list' will be finalised in discussion with the relevant local planning authorities and statutory consultees.

5.5.10 In order to ensure that the cumulative effects assessment is proportionate, once the 'long list' has been agreed with the local planning authorities and other statutory consultees, the next stage will be to prepare a shortlist of 'other development' to be considered as part of the assessment. Each of the developments and allocations will be considered in terms of whether they would be likely to generate impacts which could combine to result in cumulative effects in combination with the proposed development. Criteria used for this process will be specific to each discipline and will take account of scale, nature and timescales in each case.

5.6 Transboundary effects

5.6.1 Under Regulation 32 of the EIA Regulations, the Espoo Convention and Directive 2014/52/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment (codification) (the 'EIA Directive'), the Planning Inspectorate is obliged to form a view on the potential for

transboundary impacts and consult with relevant European Economic Area (EEA) states.

- 5.6.2 Amendments to the EIA Regulations in 2017 implemented new requirements on transboundary consultation (under regulation 32) and a requirement for all significant transboundary issues set out in the EIA Directive to be assessed through the EIA process. The Planning Inspectorate’s Advice Note twelve: Transboundary Impacts and Process (March 2018, version 5) (Ref 5.4) provides further information on the requirements, and sets out how the Planning Inspectorate will meet its obligations in this regard. A wide range of activities are listed in Appendix 1 of the Espoo Convention, which includes thermal power stations with a heat output of 300MW or more and nuclear power stations and other nuclear reactors. It is, therefore, necessary for the EIA to consider whether the proposed development is likely to have a significant transboundary effect.
- 5.6.3 EDF Energy will consider whether there is any potential for significant effects on the environment in other EEA states by completing the transboundary screening matrix (as detailed in the Planning Inspectorate Advice Note twelve).
- 5.6.4 The assessment of transboundary effects will be included as a standalone chapter within the cumulatives and transboundary effects volume of the ES.

5.7 Proposed structure of the ES and the technical ES chapters

- 5.7.1 It is proposed that the ES will be presented in a number of volumes, as detailed in **Chapter 7** of this EIA Scoping Report, with an introductory volume providing a project overview and consideration of project-wide alternatives and evolution of proposals; the overarching legislation and planning policy context; and the overarching and technical assessment approaches and methodologies. It is proposed the assessments for the main development site and the off-site associated development sites are presented in separate site-specific volumes. Each of the site-specific volumes will include chapters on detailing the proposed development and technical ES chapters detailing the assessments.
- 5.7.2 The technical ES chapters will broadly follow the structure set out in **Table 5.5**.

Table 5.5: Proposed structure of technical ES chapters

Section	Content
Introduction	The introduction contains a brief summary of the scope of the assessment to be presented within the chapter and provides any relevant background information.

Section	Content
Legislative and Planning Policy Context	<p>This section will include a summary legislative and planning policy context that is relevant to the assessment of the proposed development at that location.</p> <p>The detailed project-wide technical Legislation and Policy Context will be presented in the introductory volume.</p>
Assessment Methodology	<p>This section will provide a summary of the methods to determine the significance of any identified environmental effects as well as any site-specific methodologies that are relevant. Any difficulties and/or limitations encountered when undertaking the assessment and compiling the required information will be noted in the relevant chapters.</p> <p>The detailed project-wide technical assessment methodologies will be presented in the introductory volume.</p>
Baseline Conditions	<p>This section will provide a description of the baseline at the location. The baseline conditions present the scenario against which the environmental effects of the proposed development will be assessed.</p>
Environmental Design and Management	<p>This section will identify the primary mitigation measures that form an inherent part of the proposed development at that location and the tertiary mitigation considered as standard practice or a legislative requirement for managing commonly occurring environmental effects.</p> <p>Where applicable, reference is made to the measures which are expected to be contained within the Outline Construction Environmental Management Plan (OCEMP).</p>
Assessment of Impacts and Effects	<p>This section will identify the environmental effects resulting from the proposed development, during construction, operation and removal and restoration (as relevant). The effects of the proposed development will be assessed against the relevant baseline contexts.</p> <p>This section will describe each identified environmental effect with reference to the sensitivity of the resource or receptor and the magnitude of the impact. Quantitative descriptors will be included as appropriate.</p>
Additional Mitigation Measures	<p>This section will describe the secondary (additional) mitigation measures required at the location to avoid or reduce significant adverse environmental effects associated with the proposed development.</p>
Residual Effects	<p>This section will describe the environmental effects arising as a result of the proposed development and which remain following the implementation of all mitigation measures committed to; these are known as 'residual effects'.</p>
Summary	<p>This section will provide a summary of the key findings of the</p>

Section	Content
Table	technical assessments.

5.8 EIA assumptions and limitations

5.8.1 Assumptions specific to each assessment are detailed in the relevant sections of this EIA Scoping Report.

5.8.2 It is anticipated that the EIA will be subject to limitations, including:

- baseline conditions (in relation to the existing site) are specific to each technical aspect of the EIA and are considered to be accurate at the time of the physical surveys but, due to the dynamic nature of the environment, conditions may change during the different stages of the proposed development; and
- the assessment of cumulative impacts will be reliant on the availability of information relating to all of the identified cumulative schemes (whether submitted for planning, consented or under construction).

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6 METHODOLOGIES

6.1 Introduction

6.1.1 This section provides the proposed scope and methodology for each of the technical assessments which will be undertaken as part of the EIA and subsequently presented in the ES. Many of the methodologies remain unchanged from those proposed in 2014 and extensive reference is made to the 2014 EIA Scoping Report and to the subsequent 2014 EIA Scoping Opinion.

6.2 Socio-Economics

a) Introduction

6.2.1 This section sets out the proposed scope and methodology for the socio-economics assessment for the main development site and the off-site associated development sites. This assessment will be presented as a single chapter within the Environmental Statement. This scope has been informed by consideration of the 2014 EIA Scoping Opinion (see paragraphs 3.24 to 3.29 of the Scoping Opinion and Section 2.2 of Suffolk County Council's (SCC) appended response), the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.2.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with comments received in the 2014 EIA Scoping Opinion, further consultation and the changes to the off-site associated development are described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.2.3 The approach to the assessment of likely significant effects on socio-economics is set out in Section 6.2 of the 2014 EIA Scoping Report. The comments raised in the subsequent Scoping Opinion set out the following (summarised) areas of concern:

- approach to assessment of effects on accommodation – specifically the proposed accommodation campus;
- methodology and assumptions regarding the Gravity Model – specifically that the data that underpins it is up-to-date, and the assumptions and sensitivity testing need to be clearly set out;

- consideration of the effects on employment, skills and the local and wider economy and labour market – specifically:
 - effects on agricultural businesses and the agricultural economy;
 - assessment of potential effects on the tourist economy;
 - potential effects on labour supply, ‘displacement’ and unemployment, worklessness and social inequality;
 - opportunities to maximise local recruitment, supply chain, skills and training benefits at all stages of the project; and
 - the type and nature of jobs created by the project.

6.2.4 A summary of the responses to the comments received on the proposed socio-economics assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Survey and assessment

6.2.5 Additional work has been undertaken to update and refine assumptions on a range of technical areas that help inform the baseline and the approach to methodology for assessment of potential significant effects. This is set out in **Table 6.1** which identifies both:

- updates to technical work undertaken prior to the 2014 EIA Scoping Report: paragraphs 6.2.2 to 6.2.3 and Table 6.2.1; and
- any additional technical work undertaken since the 2014 EIA Scoping Report that has informed published consultation materials

Table 6.1: Work undertaken to date

Study	Scope of study and reason for inclusion
Additional Technical work undertaken since the 2014 EIA Scoping Report	
Workforce Profile and off-site associated development Workforce Profile	Work has been undertaken to estimate central and higher scenarios for the overall workforce required to construct the project over the construction period, setting out the indicative skills split, the split between ‘home-based and ‘non-home-based’ workers and the peak of construction activity for the main development site and off-site associated development sites.
Development of Gravity Model	A Gravity Model has been developed to estimate the location of the construction workforce at peak at ward-level, incorporating assumptions about travel patterns and the location of available accommodation (for non-home-based workers) and skilled labour supply (for home-based workers).
UK construction	Research has been undertaken into the demographic,

Study	Scope of study and reason for inclusion
workforce demographic benchmarks	housing and economic characteristics of the UK’s construction workforce and sector-led reviews of potential changes to the workforce in the future.
Demand for sports/leisure facilities	Using the review of demographic characteristics and workforce profile, alongside existing published levels of supply and market segmentation approaches to demand for facilities, EDF Energy has benchmarked the likely demand for sports and leisure facilities from the construction workforce at peak in order to inform the development of mitigation.
Workforce accommodation choices	Technical research has been undertaken to establish the potential for workers to choose to live in different sectors of private accommodation, based on industry-agreed rates for accommodation and subsistence, skill demands for the non-home-based workforce, and a review of the distribution, affordability and availability of accommodation across the study area.
Development of approach to Project-sponsored accommodation	Work has been undertaken to develop and refine EDF Energy’s position about the use, delivery and design of project-sponsored accommodation, including justification for the size, location and operation of an accommodation campus and caravan site.
Baseline - Labour Market	<p>Detailed information has been collected and analysed in order to inform the baseline position across study areas in terms of the labour market, including:</p> <ul style="list-style-type: none"> • jobs, by skill level and output by sector in the study areas; • labour market capacity including unemployment, worklessness, underemployment, turnover and mobility; • a review of the labour market across the economic cycle; • the provision of skills and opportunities for training currently available in the study area; • a review of the supply of local businesses; and • a review of the economic characteristics of the tourist economy in Suffolk and the Suffolk Coast.
Baseline - Housing Market	<p>Detailed information has been collected and analysed in order to inform the baseline position across study areas in terms of housing labour market, including:</p> <ul style="list-style-type: none"> • working collaboratively with East Suffolk Councils to identify local housing need and pressure on homelessness prevention and housing support

Study	Scope of study and reason for inclusion
	<p>services, including reasons for homelessness presentations; and</p> <ul style="list-style-type: none"> • desk-based assessments of stock, capacity, vacancy and churn in the housing market.
<p>Baseline - Public Services/Community Facilities</p>	<p>Detailed information has been collected and analysed in order to inform the baseline position across study areas in terms of community facilities and public services, including:</p> <ul style="list-style-type: none"> • developing an understanding of the pre-existing pressures on social services and education services across the County; and • developing an understanding of existing levels of demand for and provision of emergency services across the County.
<p>Scope of assessment of potential effects on Tourism</p>	<p>A qualitative study was commissioned by EDF Energy following engagement with local tourism stakeholders. This involved a number of focus groups, conducted independently, to identify the sensitivities that current and potential visitors to the Suffolk Coast have and the extent to which these influence their decisions to visit. This introduced Sizewell C as a potential effect. This study was presented to tourism stakeholders locally and used to scope a further quantitative study to inform the assessment of potential significant effects.</p>

6.2.6 Baseline assessment data detailed in paragraphs 6.2.8 to 6.2.13 of the 2014 EIA Scoping Report will be revisited to take account of additional publicly available data from the Office of National Statistics (ONS), Department for Communities and Local Government and other public bodies that has been published since 2014.

c) Proposed approach and methodology

i. Study area

6.2.7 The spatial extent of the study area remains as set out in the 2014 EIA Scoping Report (see paragraphs 6.2.5 to 6.2.7). In addition, based on qualitative work undertaken to understand the potential for sensitivity of the tourist economy, effects on visitors to the Suffolk Coast will also be considered.

6.2.8 Localised effects have the potential to be significant and will, where possible, assess the significance of these effects in the context of the wider assessment, and direct mitigation as deemed appropriate.

ii. Updates to baseline

- 6.2.9 Data on the local socio-economic baseline will be derived mainly from published information from public sources, including the ONS (e.g. Census, Annual Business Inquiry, Annual Population Survey, sub-national population projections), DCLG and other public bodies at the national, regional and local scales. An up-to-date baseline is presented below:

Population/demography

- 6.2.10 The combined working-age (16-64) population of Suffolk Coastal, Waveney and Ipswich and Mid-Suffolk was 288,474 at the time of the 2011 Census, having increased by 10.7% since 2001. Latest sub-national population estimates produced by ONS estimate a slight fall in the working age population since 2011 to 287,173 in 2017 (a fall of -0.5%). ONS population projections forecast the working-age population will remain broadly constant over the 10 years 2017-2027 growing by approximately 470 people (0.2% increase).

Employment and labour market

- 6.2.11 There are approximately 1.05 million working age people living in the indicative CDCZ² (Ref 6.1) (construction daily commuting zone) with an employment rate of 77%.
- 6.2.12 Based on latest economic forecasts, total employment across this area is projected to increase from 866,950 in 2019 to 909,660 (Ref 6.2) in 2029. The size of the labour market is about 200,000 greater than when Sizewell B was built, and is broadly comparable to that at Hinkley Point C.
- 6.2.13 Approximately 4.2% (34,400) of the working age population living in this area is currently unemployed, a further 44,600 working age residents are economically inactive but would like a job.

Accommodation

- 6.2.14 Initial research has started into the availability and affordability of accommodation within 60 minutes driving time of the main development site (incorporating the including park and ride facilities), drawing on a number of sources including publicly available datasets (Ref 6.3), information managed on behalf of the East of England Tourist Board and telephone surveys of accommodation providers.

² Figures show total employment (including employees and self-employed jobs)..

Table 6.2: Housing Market Capacity

Tourist accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
Self-Catering Bed Spaces	2,200	400	1,400	0	4,000
Serviced Bed Spaces	1,300	800	1,200	1,000	4,300
Caravan, Holiday & Touring Park Bed Spaces	5,700	200	7,000	0	12,900
Sub Total	9,200	1,400	9,600	1,000	21,200
Private rented accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
Bedrooms	20,000	13,100	19,200	27,000	79,300
Owner occupied accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
3+ Bedroom Households	30,200	23,500	25,600	25,900	105,200
TOTAL SUPPLY	59,400	38,000	54,000	53,900	205,700

Source: Census ONS 2011, East of England Tourist Accommodation Database 2011 (Rounded)

iii. Further surveys/studies

6.2.15 In order to address statutory consultee comments received via the 2014 EIA Scoping Opinion, and to meet the requirement of EN-1 (paragraph 5.12.3), a quantitative Tourism Survey was conducted to help identify the sensitivities of returning and new visitors to the Suffolk Coast, in order to identify where and how perceived effects of the project may alter the likelihood of visits and in order to develop effective mitigation should significant effects arise.

6.2.16 Assumptions on the workforce profile required for the project, based on new information from comparable projects and the industry in general are continually refined. Studies will continue in order to identify scenarios to inform the assessment.

6.2.17 Studies will be undertaken to inform the socio-economics aspect of the EIA including assessment of the effects on housing, public services, community facilities, the local and wider economy and community cohesion/integration.

iv. Assessment methodology

6.2.18 The assessment methodology remains as set out in the 2014 EIA Scoping Report at paragraphs 6.2.16 to 6.2.28, which includes an overview of the

principles of the adaptive approach to assessment, and over-arching approach to receptor sensitivity and impact magnitude.

6.2.19 The socio-economic assessment considers effects of the project in its entirety rather than scoping in/out specific components of the project. Many effects identified will affect labour and housing markets at the wider scale, and derive from the size, scale and location of the construction workforce which is driven by the project as a whole. Where there are potential local effects arising from individual elements of the project, these will be reported on in this chapter.

6.2.20 The approach to assessing potential significant socio-economic effects and mitigating them relies on an iterative process of engagement and development with relevant stakeholders. A programme of engagement has been regularly undertaken with District and County Councils, Emergency Services and other local stakeholders in order to refine and agree the assumptions that feed into the assessment (including agreement of baseline and technical work set out in **Table 6.2**). A full record of engagement and consultation will be demonstrated within the ES chapter to explain the iterative and collaborative approach to the assessment.

v. Assumptions and limitations

6.2.21 The assumptions and limitations for the assessment remain as set out in the 2014 EIA Scoping Report at paragraphs 6.2.29 to 6.2.34.

d) Potential impacts

i. Construction

6.2.22 The potential impacts of the proposed development during the construction phase were set out in Table 6.2.4 of the 2014 EIA Scoping Report. These assessment areas meet the requirements of EN-1 (paragraph 5.12.3) and EN-6 (paragraph 3.11.4) with regard to effects on socio-economics, as well as relevant considerations of the 2014 EIA Scoping Opinion listed above (at paragraph 6.15.2).

ii. Operation

6.2.23 The potential impacts of the proposed development during the operational phase remain as set out in paragraphs 6.2.36 to 6.2.38 of the 2014 EIA Scoping Report. These assessment areas meet the requirements of EN-1 (paragraph 5.12.3) and EN-6 (paragraph 3.11.4) with regard to effects on socio-economics, as well as relevant considerations of the 2014 EIA Scoping Opinion listed above (at paragraph 6.15.2).

iii. Removal and reinstatement

6.2.24 The assessment approach to restoration and removal of facilities will mirror that for the construction phase as relevant.

iv. Decommissioning

6.2.25 The socio-economics chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

6.2.26 Principles for mitigation of potential significant adverse effects remain as set out in paragraphs 6.2.39 to 6.2.44 of the 2014 EIA Scoping Report. Since then, progress has been made collaboratively with stakeholders to set out more detailed measures and implementation strategies to:

- mitigate potential adverse effects; and
- enhance the beneficial effects of the project.

f) Approach to cumulative assessment

i. Inter-relationships

6.2.27 The construction and operational effects of Sizewell C will be assessed at a local scale across a number of environmental topic areas such as noise, air quality, landscape and visual, traffic, amenity and recreation and heritage, as well as effects on the community and economy as set out in this chapter.

6.2.28 Many potential effects would be avoided, mitigated or managed through design or specific measures. These measures would reduce residual effects to the level at which they are not considered significant. However, EDF Energy recognise that together, relatively insignificant residual impacts may have the potential to lead to in-combination effects on local communities.

6.2.29 EDF Energy will draw together the impacts of each element of the project on individual communities, together with proposed mitigation measures, in a Community Impact Report. This will include, but not be limited to Leiston, Theberton and Eastbridge.

ii. Cumulative effects

- 6.2.30 As set out in paragraph 6.2.46 of the 2014 EIA Scoping Report, the cumulative assessment for socio-economic effects will take a different approach to other topics in that it will utilise broader “macro” projections of cumulative influences relevant to particular potential impacts (e.g. impact on local and regional labour market), rather than focusing on potential cumulative impacts of specific developments on individual receptors. These fall into a number of categories, including:
- labour market; and
 - housing growth, population change and impact on services.
- 6.2.31 The 2014 EIA Scoping Opinion requested that the proposed approach to ‘macro’ projections includes specific developments. Where information is known on these specific developments, and they are significant to influence the potential scale of effects, they will be identified and assessed in addition.
- 6.2.32 Where identifiable, the assessment will consider the potential for cumulative effects related to outage workforce effects at Sizewell B.
- 6.2.33 The approach to cumulative effects is more fully described (for all topics) in Section 5.6 of this EIA Scoping Report.

6.3 Transport

a) Introduction

- 6.3.1 During the construction of the proposed development there would be substantial movement of freight and people to support the construction programme. It is currently estimated that the construction workforce would peak at around 5,600 people and large volumes of bulk and other construction materials would require transportation to and from the construction sites.
- 6.3.2 The construction of the proposed development has the potential to give rise to significant traffic and transport-related environmental effects, both in terms of traffic on the local road network (increased levels of congestion, journey time, accidents) and traffic-related environmental effects, including severance, pedestrian delay and amenity, fear and intimidation, noise and air quality (covered above). While traffic movements during the operation of the proposed development would be substantially lower than during construction, there is potential for traffic effects during the operational phase as well.

- 6.3.3 A Transport Assessment will be prepared as part of the application for development consent, covering both the construction and operational phases. For robustness, the assessment of the peak construction phase will be based on a workforce of 7,900. In addition, the early phase of construction (prior to the implementation of any mitigation) and the operational phase will be assessed and reported in the Transport Assessment. See Section 2.3 of this EIA Scoping Report for details.
- 6.3.4 This section summarises the process and methodology which are being followed to estimate the traffic impacts of the proposed development, as well as setting out in broad terms the proposed assessment methodology and criteria which will be applied in relation to the transport-related impacts of severance, pedestrian delay, pedestrian amenity, fear and intimidation, driver delay, and accidents and safety.
- 6.3.5 Traffic-related noise and air quality impacts are addressed within the Section 6.4 and Section 6.5 of this EIA Scoping Report. Potential environmental impacts associated with transport-related off-site associated development are also considered in Section 6.4 and Section 6.5 of this EIA Scoping Report.
- 6.3.6 Changes to the approach presented within the 2014 EIA Scoping Report are associated with comments received in the 2014 EIA Scoping Opinion, further consultation with stakeholders, and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.
- b) [Work undertaken to date](#)
 - i. [2014 EIA Scoping Opinion](#)
- 6.3.7 The proposed approach to the methodology presented within this section has been updated to reflect the comments received in paragraphs 3.30 to 3.37 of the 2014 EIA Scoping Opinion.
- 6.3.8 A summary of the responses to the comments received on the proposed transport assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.
- ii. [Survey and assessment](#)
- 6.3.9 Comprehensive traffic modelling of the impact of the construction and operation of the proposed development is being developed. This modelling will inform the preparation of the Transport Assessment and will be used to consider the traffic impacts of the proposed development, as well as

providing input traffic data to be used in the assessment of transport-related environmental effects and traffic-related noise and air quality effects.

- 6.3.10 Suffolk County Council (SCC) is the highway authority for the road network in the vicinity of Sizewell and has agreed the modelling approach to be adopted. The traffic model being developed is a VISUM model. VISUM is one of a number of industry standard software packages used for strategic traffic modelling and is widely used for the purposes of transport assessment and for identifying locations of potential impact which may require more detailed scrutiny using other modelling or assessment approaches.
- 6.3.11 The VISUM modelling is compliant with the Department for Transport (DfT)'s web-based Transport Analysis Guidance (WebTAG) and provides outputs that can be used in the Transport Assessment, as well as in the associated air quality and noise assessments as part of the EIA, and to identify locations which may require more detailed assessment. In addition to the VISUM model, a number of junction models and local micro-simulation models have been produced to enable detailed assessment in specific areas.
- 6.3.12 The traffic modelling and associated Transport Assessment of the proposed development is by necessity an iterative process. The modelling is progressively updated to reflect the latest project information as well as additional relevant information or data sources. Further information on the work conducted to date is set out in the following sections.
- c) **Proposed approach and methodology**
- 6.3.13 The overall process of developing a traffic model of a major development begins with the preparation of a “base model” which aims to reflect the existing conditions on the local road network in question. A process of calibration and validation is undertaken so that the model correlates with the observed existing baseline traffic conditions within the study area.
- 6.3.14 In the second stage of the process, estimates of future traffic growth and assumptions on traffic generated by “committed developments” (major developments with planning permission but not yet built) are added to the model, along with any known transport improvements that are anticipated to be in place by the time of the development in question. The purpose of this stage in the process is to estimate the future baseline conditions on the road network that would apply in the absence of the proposed development (in this case the main development site and all off-site associated development). This model of the future baseline conditions is generally known as the “reference case” model.

- 6.3.15 In the third stage of the process, estimates of traffic generated by the proposed development are added to the reference case model. This “with-development” model can then be used to examine the likely future traffic conditions which would apply if the proposed development were to proceed, as well as allowing comparison with the “reference case” model to establish the impacts that arise from the proposed development itself rather than other factors.
- 6.3.16 In the case of the proposed development, in order to ensure that both construction phase and operational phase traffic impacts are considered, reference case and with-development VISUM models will be developed for the early years of construction (prior to the associate development being constructed and operational), the peak construction phase and a post-construction Operational year
- i. Study area
- 6.3.17 The study area and modelled network for the VISUM model extends to Lowestoft to the north, Ipswich to the south and the A140 to the west. The geographic extent of the model has been agreed with SCC.
- ii. Updates to baseline
- 6.3.18 A wide range of manual classified, and automatic traffic counts on the local road network were conducted in May and June 2011. The locations of these traffic counts were published at Stage 1 consultation in the appendix to the ‘Transport Strategy and Supporting Information’ document. These traffic counts were used to help develop an initial VISUM model of the study area, for three hourly periods.
- 6.3.19 Following the Stage 1 consultation a range of further enhancements to the base model were discussed and agreed with SCC. These included:
- the incorporation of further data from additional traffic counts conducted in autumn 2012;
 - the incorporation of additional data from the existing East of England Regional Model (EERM), population data from the 2011 census and from schools information held by SCC; and
 - a range of other detailed adjustments to the network model.
- 6.3.20 Since these changes were incorporated into the initial base model, a more comprehensive update was undertaken including the collection of traffic counts in May 2015 and revalidation of the base model to represent 2015 traffic data for seven hourly periods.

6.3.21 With respect to the seasonality of the local road network, baseline data has been obtained from SCC and Highways England with respect to traffic flows on the A12 and the A14 in August 2011, 2012 and 2015. This was used to understand the extent of any seasonal traffic impacts arising from the proposed development.

6.3.22 The “reference case” assumptions which will be applied to the base modelling to reflect likely future baseline network conditions have been agreed with SCC. Traffic generated by periodical ‘outage’ at Sizewell B will be included in all future year traffic modelling scenarios for robustness. This will remove the need to assess the impacts of seasonality using the VISUM model since the impacts of Sizewell B outage are greater than those of seasonality.

iii. Further surveys/studies

6.3.23 Additional junction surveys, including turning counts and queue data, were collected during April 2019 to enable further junction models to be assessed.

iv. Assessment methodology

6.3.24 A wide range of project-related inputs will be used to generate estimates of proposed development-related traffic during construction and operation. This will include estimates of all workforce and freight-related trips. Workforce trips will include car trips and, during construction, park and ride and direct bus trips, leisure trips relating to the non-home-based workforce and the “weekend effect” i.e. trips by non-home-based workers to their permanent home at weekends in accordance with shift cycles. These trips will be spread across the day in accordance with anticipated shift patterns. Freight-related trips will include all heavy goods vehicle (HGV) and light goods vehicle (LGV) movements. These will be incorporated into the VISUM traffic model and the outputs from the model will be used to both assess the traffic impacts of the proposed development and to provide data to inform assessment of the traffic-related environmental impacts.

6.3.25 With respect to the traffic impacts (i.e. traffic flow and congestion-related impacts) these will be assessed against a range of criteria which will include:

- link flow differences (i.e. the change in the absolute additional number of vehicles and the percentage increase on any given stretch of road);
- impacts on journey times;
- “Ratio of Flow to Capacity” on links; and

- junction “Level of Service”.

6.3.26 Ratio of Flow to Capacity and Junction Level of Service are industry standard means of assessing the impact of additional traffic on the capacity of the road network and the operation of junctions. Assessment criteria in this area would be informed by relevant guidance in WebTAG and wider professional judgement.

6.3.27 With respect to traffic-related environmental impacts, a range of approaches will be adopted. Output from the traffic modelling work, including estimates of 24 hour and 18 hour increases in traffic will be provided to noise and air quality experts for assessment of traffic-related noise and air quality impacts. See **Section 6.4** and **Section 6.5** for details. For transport-related effects of severance, pedestrian delay, pedestrian amenity, fear and intimidation, accidents and safety, reference will be made to the Institute of Environmental Management and Assessment (IEMA) ‘Guidelines for the Environmental Assessment of Road Traffic’ (Ref 6.4) as well as relevant sections of the Design Manual for Roads and Bridges (DMRB) (in particular Volume 11 on Environmental Assessment). These guidelines are widely used in this area and, while they leave room for the professional judgement of the assessor, represent the closest that exists to an industry standard basis for assessment.

6.3.28 The following paragraphs provide further information on how the IEMA and DMRB guidelines will be applied to the assessment in these areas. Within the IEMA guidance, two broad rules are suggested which can be used as a screening process to limit the scale and extent of the assessment:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%).
- Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more (or the number of HGVs will increase be more than 10%).

6.3.29 Where the predicted increase in traffic flows is lower than the above thresholds, the IEMA guidelines suggest the significance of the effects can be stated to be negligible and further detailed assessments are not warranted. Increases in traffic flows below 10% are generally considered to be not significant in environmental terms given that daily variations in background traffic flow may vary by this amount. It should be stressed that these broad rules remain subject to professional judgement and are specifically relevant to the assessment of the traffic-related environmental effects considered in this section. Smaller traffic changes than those set out above may, in some circumstances, be relevant in the consideration of congestion or congestion-related effects.

Sensitivity of receptors

- 6.3.30 The approach to sensitivity of receptors detailed in paragraphs 6.3.28 to 6.3.29 and summarised in Table 6.3.1 of the 2014 EIA Scoping Report remains unchanged. Consideration will also be given to the other vulnerable users such as cyclists and equestrians.

Magnitude of impact

- 6.3.31 To assist with the judgement of magnitude of impact, reference will also be made to the IEMA and DMRB guidelines (Ref 6.5), as well as to professional judgement. These guidelines set out considerations and, in some cases, thresholds, in respect to changes in the volume and composition of traffic to facilitate a subjective judgement of traffic impact and significance. These thresholds are guidance only and provide a starting point via which analysis will inform an overall assessment of the impact magnitude.

Types of impact

- 6.3.32 The types of impact detailed in paragraphs 6.3.31 to 6.3.40 remain unchanged. IEMA guidelines note a further impact traffic may have on pedestrians: fear and intimidation. The impact of this is dependent upon the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. In the absence of commonly agreed thresholds, the IEMA guidelines provide a set of thresholds that could be used as a first approximation of the likelihood of pedestrian fear and intimidation. The thresholds define the degree of hazard to pedestrians by average traffic flow, 18 hour HGV flow and average speed (mph) over an 18 hour day.
- 6.3.33 The impacts to be considered include:
- severance;
 - pedestrian delay;
 - pedestrian amenity;
 - fear and intimidation;
 - driver delay; and
 - accidents and safety.

6.3.34 Table 6.3 summarises the criteria that will be used to determine magnitude of impacts. However, the absolute level of an impact is also important e.g. the total flow of traffic or HGVs on a link. Comments will be made on this in the analysis.

Table 6.3: Magnitude of impact criteria

Impact	Magnitude of Impact			
	Very Low	Low	Medium	High
Severance	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Pedestrian Delay	Two way traffic flow < 1,400 vehicles per hour	A judgement based on the road links with two way traffic flow exceeding 1,400 vehicles per hour in context of the individual characteristics		
Pedestrian Amenity	Change in total traffic or HGV flows < 100%	A judgement based on the routes with >100% change in context of their individual characteristics		
Fear and Intimidation	18hr Ave of <600 veh/hr and <10 mph, <1,000 HGVs in 18 hr	18hr Ave of 600-1,200 veh/hr and 10-15 mph, 1,000-2,000 HGVs in 18 hr	18hr Ave of 1,200-1,800 veh/hr and 15-20 mph, 2,000-3,000 HGVs in 18 hr	18hr Ave of 1,800+ veh/hr and 20+ mph, 3,000+ HGVs in 18 hr
Driver Delay	A professional judgement based on the VISUM journey time assessment			
Accidents and Safety	A professional judgement based on findings of the analysis of the accident and road safety impact of the Sizewell C Project.			

Significance of effects

6.3.35 The significance of the effect is judged on the relationship of the magnitude of impact to the assessed sensitivity and/or importance of the receptor. The approach to assessing the significance of the environmental effects is identified in **Section 5.3**.

Construction

- 6.3.36 The proposed development is unusual in that the greater traffic impact would occur during the construction phase. This is because of the substantial peak workforce required for construction and the large volumes of freight and materials that would need to be moved during the construction phase.
- 6.3.37 The Transport Assessment, as well as the assessment of associated traffic-related environmental effects, will focus particularly on the construction phase. Traffic modelling will consider the peak period of the construction phase both in terms of workforce and freight, taking account of any mitigation measures that are anticipated to be in place by this time. This will ensure that the assessment is robust and considers the period in which construction traffic impacts will be at their highest – at many points in the construction programme traffic will be considerably lower than that which will be assessed.
- 6.3.38 A “gravity model” will be used to estimate the geographic distribution (residential location) of the construction workforce at peak construction and estimates of HGV and LGV movements will be made, taking account of material quantity estimates and assessment of the scope for using non-road-based options for the transport of bulk and other construction materials.
- 6.3.39 The Transport Assessment will also consider the early phase of construction, where traffic generation will be lower than at peak construction but there will be no mitigation in place. The hours of modelling will cover three hours in the morning period (06:00 – 09:00) and four hours in the afternoon/evening period (15:00 – 19:00). These hours have been agreed with SCC based on an assessment of existing network peaks, along with those hours anticipated to contain the largest volumes of development traffic, taking account of the proposed shift patterns.
- 6.3.40 As set out in paragraph 6.3.15, the assessment will compare the traffic impacts of the proposed development with the “reference case” – i.e. those future baseline conditions predicted in the absence of the proposed development. “Reference case” traffic modelling for the peak construction phase will be developed taking account of any major known developments in the pipeline with planning permission (committed development) as well as standard assumptions on underlying traffic growth. In addition, as agreed with SCC, the construction traffic-related to the Scottish Power Renewables development proposals will be included in both the early years and peak construction year reference case models.

6.3.41 The assessment will take account of the temporary nature of the construction phase, albeit recognising that the construction phase is substantially longer than for most construction projects, but that traffic generated will vary through the construction phase.

Operation

6.3.42 The assessment of significance of operation effects detailed in paragraphs 6.3.47 and 6.3.48 of the 2014 EIA Scoping Report remains unchanged.

v. Assumptions and limitations

6.3.43 The assumptions and limitation detailed in paragraphs 6.3.49 and 6.3.51 of the 2014 EIA Scoping Report remain unchanged.

d) Potential Impacts

6.3.44 Potential impacts are described below and summarised in **Table 6.4**.

Table 6.4: Summary of elements of the proposed development scoped in to the EIA for traffic

Element of the Proposed Development	Scoped In or Scoped Out for Traffic	Justification
Main development site	Scoped In	All elements of the proposed development are considered within the traffic modelling figures.
Northern park and ride		
Southern park and ride		
Two village bypass		
Sizewell link road		
Yoxford roundabout and Other highway improvements		
Theberton bypass (A12/B1122)		
Freight management facility options		
Green rail route and East Suffolk line and branch line upgrades and level crossing works (Rail)		

i. **Construction**

- 6.3.45 During the construction phase there will be substantial volumes of additional traffic relating to both the movement of freight and the construction workforce.
- 6.3.46 Estimates of the scale and profile of additional traffic are subject to ongoing traffic modelling work and wider project alterations, and estimates for all materially affected local roads will be refined as appropriate in line with wider project development with the latest estimates included within the Transport Assessment and used to inform supporting assessment of traffic-related air quality and noise and vibration impacts.
- 6.3.47 Based on the work conducted to date, the most significant traffic effect during the construction phase would potentially be predicted to occur on the A12 en-route to Sizewell (between Ipswich to the south and Lowestoft to the north) and on the B1122, which was proposed at Stage 1 and 2 consultation as the main access road to the construction site from the A12. Other local roads in the vicinity of the construction site are also likely to experience some increases in car traffic but would be largely protected from increases in HGV or bus traffic by EDF Energy's transport strategy proposals for the construction phase.

ii. **Operation**

- 6.3.48 During the operational phase increases in traffic associated with the proposed development are anticipated to be substantially lower than those arising from the construction phase, due to the much-reduced operational workforce (900) compared with peak construction (5,600), as well as very substantially lower requirements for goods/freight deliveries. Typical weekday traffic impacts during operation will be assessed and included within the Transport Assessment.
- 6.3.49 Traffic impacts during the operational phase will be somewhat greater during temporary outage periods at Sizewell C. These are used to conduct plant maintenance and reactor refuelling, and will occur approximately every 18 months for each reactor, lasting for between one and three months, with a peak additional workforce for an outage of around 1,000 workers.

iii. **Decommissioning**

- 6.3.50 The transport chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

6.3.51 A range of measures are proposed for reducing and managing the traffic impacts of the construction phase on the local road network. These measures can be considered as embedded mitigation for traffic impacts and form an important part of the proposed development.

6.3.52 With respect to the movement of freight the main measures proposed include:

- A beach landing facility (BLF) to facilitate the sea delivery of bulk materials and Abnormal Indivisible Loads (AILs) and potential export of excavated materials.
- Under a rail-led strategy, investment in rail infrastructure to extend the Saxmundham-Leiston branch line into the construction site.
- A new rail-head north of King George's Avenue in Leiston or improvement of the existing rail halt south of King George's Avenue. These measures would facilitate the delivery by rail of bulk materials and containerised goods by two trains per day if the road-led strategy is pursued.
- Under a rail-led strategy, support to Network Rail to deliver a new passing loop and a track cross-over on the East Suffolk Line – this will facilitate the provision of additional train paths allowing the capacity for up to five freight trains per day to deliver goods to the Sizewell construction site.
- The use of materials sourced within the construction area as engineering fill material within the main development site – reducing the requirement to import bulk materials/aggregates.
- HGV movements to the construction site to be limited to approved routes.

6.3.53 With respect to the movement of the construction workforce the main mitigation measures proposed include:

- An on-site accommodation campus to substantially reduce the volume of construction workers requiring movement to and from the site on a daily basis.
- Two park and ride developments located adjacent to the A12, one near Wickham Market to intercept trips on the A12 from the south, B1078 from the west and B1116 to the north; one near Darsham to intercept

trips on the A12 from the north (described in Section 3.4 of this EIA Scoping Report). These developments have been sized based on outputs from the Gravity Model and would significantly reduce the amount of peak construction worker-related traffic on local roads and through local villages.

- Direct bus services operating on designated routes from Ipswich and Lowestoft – the two largest population centres nearest to the construction site.
- Rail pick-up services from Saxmundham station.

6.3.54 These measures, which are focussed on reducing the additional traffic demand generated by the construction phase, are in line with relevant planning policy guidance and in particular Section 5 of the NPS for Energy (NPS EN-1) which states:

“where mitigation is needed, possible demand management measures must be considered and if feasible and operationally reasonable, required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts” (paragraph 5.13.3).

6.3.55 As work on the Transport Assessment and traffic modelling has progressed, EDF Energy has given further detailed consideration to the residual traffic effects of the construction phase and has brought forward additional mitigation measures considered appropriate in light of the ongoing findings of the assessment work. The requirement for mitigation measures has been linked to the impact assessment findings and will be informed by all relevant factors including the nature, scale and estimated length of the predicted significant effects.

6.3.56 A number of transport management plans will be prepared to outline a range of further practical and working level measures aimed at managing and mitigating the significant traffic effects of the proposed development. These plans will cover issues such as:

- construction traffic management, HGV routing, monitoring of HGV movements and compliance with any project-wide HGV controls;
- traffic management during incidents and accidents affecting access to and from the construction site or the local highway network; and
- workforce travel planning issues during both the construction and operational phases – including measures to facilitate non-car forms of transport and car sharing.

- 6.3.57 Of the mitigation measures set out above, the BLF, rail infrastructure proposals, accommodation campus, park and ride developments and any bypasses are part of the off-site associated development. Consideration will therefore be given to the traffic and transport-related environmental effects of these developments during the construction and operation.
- f) Approach to cumulative assessment
- i. Inter-relationships
- 6.3.58 This section has discussed how traffic impacts will be considered and how estimates of the traffic increases arising from the proposed development will be used to inform certain traffic-related environmental effects. It has also noted how traffic modelling will be used to generate data used to assess traffic-related environmental impacts of noise and air quality – the assessment approach in these areas is discussed in **Section 6.4** and **Section 6.5** respectively.
- 6.3.59 It is recognised that during the construction phase of the proposed development there is the potential for traffic and traffic-related environmental impacts to be combined with wider environmental and community impacts arising from the construction programme. This is particularly the case for those communities living close to the construction site, along key transport routes or adjacent to any proposed associated developments. These in-combination effects will be considered where appropriate within community-wide assessments of the impacts of proposed development. Please see paragraphs 2.3.10 to 2.3.12 of this of EIA Scoping Report for information on how this will be addressed in the ES.
- ii. Project-wide effects
- 6.3.60 The proposed transport model presents a project-wide assessment of traffic-related effects of the proposed development by considering the potential impacts of the main development site and all associated off-site development.
- iii. Cumulative effects
- 6.3.61 There is clearly potential for the traffic impacts of the proposed development to have a cumulative effect alongside wider traffic growth and traffic arising from other large scale developments. This issue is directly addressed within the development of the “reference case” traffic modelling, which takes account of both traffic growth arising from general economic development and specific traffic increases arising from any relevant large scale committed development (projects with planning permission but not yet built) as well as the proposed Scottish Power Renewables development.

- 6.3.62 This approach ensures that the traffic impacts of the proposed development are considered in the context of the potential for wider local and regional traffic growth as well as other known, relevant major developments with planning permission. It should be noted in this context that major developments that are at an earlier stage of development, and do not have planning permission, would not normally be included within the reference case modelling. This is in line with established guidance and reflects the consideration that the sponsors of these developments would be expected to independently assess and mitigate for the traffic impacts of their projects.

6.4 Noise and Vibration

a) Introduction

- 6.4.1 This section sets out the proposed scope and methodology for the noise and vibration assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.66 to 3.72 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.
- 6.4.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with new guidance, comments received in the 2014 EIA Scoping Opinion, further consultation with stakeholders and the changes to the off-site associated development described within **Sections 3.4 to 3.11** of this EIA Scoping Report.
- ### b) Work undertaken to date
- i. 2014 EIA Scoping Opinion
- 6.4.3 The approach to the assessment of likely significant effects on noise and vibration is set out in Section 7.7 of the 2014 EIA Scoping Report. The comments raised in the subsequent 2014 EIA Scoping Opinion, set out recommendations as to what information should be provided within the noise and vibration assessment. All recommendations and points raised will be dealt with in the relevant noise and vibration ES chapters.
- 6.4.4 The 2014 EIA Scoping Opinion requested that consideration of the impact of the proposed development on fish (and other marine species) be included within the noise and vibration assessment. This specific assessment work will be included within the marine ecology assessment, as detailed in Section 6.16 of this EIA Scoping Report, whereas this noise and vibration assessment will focus on impacts on human receptors, predominantly residential receptors.

6.4.5 A summary of the responses to the other comments received on the proposed noise and vibration assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. **Survey and assessment**

6.4.6 In addition to the baseline survey work which had been carried out prior to the 2014 EIA Scoping Report, additional surveys of noise and vibration levels have since been carried out at the 33 locations identified in the 2014 EIA Scoping Report around the main development site and the off-site associated development sites, and at 14 road side and 9 rail side locations in 2014, 2015 and 2016. Further surveys have also been carried out at a small number of additional locations (such as those within the RSPB reserve at Minsmere). Surveys have been conducted over a 24-hour period for the majority of sites and have involved both continuous recording of data and spot checks during critical periods. In some cases, principally relating to locations potentially susceptible to vibration from road and/or railway traffic, baseline vibration surveys have been undertaken simultaneously with the noise surveys. The surveys were manned and unmanned, dependent on the data required.

6.4.7 Survey locations and assessment criteria have been discussed with stakeholders in 2016 and general agreement was reached at that time on the appropriateness of the locations and values used. Further consultation was undertaken in March 2019 with Suffolk Coastal District Council (SCDC) (now part of East Suffolk Council) and Suffolk County Council (SCC), and additional survey locations have been proposed.

6.4.8 The 2014 EIA Scoping Opinion recommended that assessment criteria are framed in relation to the effects levels approach described within the NPPF. In consultation with SCDC (now East Suffolk Council) and SCC, Lowest Observed Adverse Effect Levels (LOAELs) and Significant Observed Adverse Effect Levels (SOAELs) have been defined, with specific levels for each different source type, in line with the descriptions within the NPPF and related guidance.

c) **Proposed approach and methodology**

i. **Study area**

6.4.9 The study area remains consistent with that described in paragraphs 7.7.3 to 7.7.5 in the 2014 EIA Scoping Report, but the assessment will give consideration to all road links identified in the Transport Assessment. In addition to this, noise sensitive dwellings within 1km of and the PRoW adjacent to the proposed new road schemes; dwellings adjacent to the proposed rail crossings, upgrades and other improvements; dwellings

adjacent to the proposed highway improvements; and the dwelling adjacent to the proposed freight management facility at Innocence Farm will be included within the study area.

ii. [Updates to baseline](#)

- 6.4.10 The baseline as reported in paragraph 7.7.6 of the 2014 EIA Scoping Report remains valid but some additional survey work at key locations (to be agreed with stakeholders, including East Suffolk Council and SCC) will be carried out to verify that there have been no substantial variations in levels since the original surveys.

iii. [Further surveys/studies](#)

- 6.4.11 In addition to the verification survey work described in paragraphs 6.4.6 to 6.4.8 of this EIA Scoping Report, some additional noise survey work is planned in the areas around the proposed new road schemes at locations to be agreed with stakeholders, including East Suffolk Council and SCC.

iv. [Assessment methodology](#)

- 6.4.12 The assessment methodology outlined in paragraphs 7.7.9 to 7.7.13 of the 2014 EIA Scoping Report was discussed and agreed with stakeholders in 2016, with recommendations from the 2014 EIA Scoping Opinion incorporated in the approach taken. Refer to **Appendix 1C** for more detail. Further changes have been discussed with stakeholders to take account of recent changes in guidance from IEMA (Ref 6.6); to define appropriate criteria for assessment where there are a number of different source types, each with a different methodology; and to set out proposed criteria for vibration (which was not detailed in 2016). These amendments were discussed with stakeholders in March 2019 and will continue to be discussed. The proposed assessment methodology will be applied to the assessment of the main development site and the off-site associated development sites scoped in the assessment (as detailed in **Table 6.5**).

v. [Assumptions and limitations](#)

- 6.4.13 The assumptions and limitations detailed in paragraphs 7.7.14 to 7.7.16 of the 2014 EIA Scoping Report remain unchanged.

d) [Potential impacts](#)

- 6.4.14 Potential impacts are described below and summarised in **Table 6.5**. The assessment will consider all road links identified in the Transport Assessment, but will only model and assess those links where there is the potential to result in a greater than 1dB increase.

Table 6.5: Summary of elements of the proposed development scoped in to the EIA for noise and vibration

Element of the Proposed Development	Scoped In or Scoped Out for Noise and Vibration	Justification
Main development site	Scoped In	Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of the main development. This includes the potential effects associated with construction and operational traffic.
Northern park and ride		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of these facilities.
Southern park and ride		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of this route.
Two village bypass		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of these routes.
Yoxford roundabout and other highway improvements		Scoped in, due to no potential effects on human receptors during construction and operation phase of this facility.
Sizewell link road		Scoped in due to potential effects on human receptors during operation of this route during the construction of Sizewell C under the rail-led strategy.
Theberton bypass		
Freight management facility - Option 2: Innocence Farm		
Green rail route and East Suffolk line and branch line upgrades and level crossing works		
East Suffolk line between Saxmundham junction and Westerfield junction		

i. Construction

6.4.15 Impacts during construction remain as described in paragraphs 7.7.18 to 7.7.22 of the 2014 EIA Scoping Report. However, there is also potential for impacts during construction and operation of the proposed new road schemes and adjacent to the proposed freight management facility at Innocence Farm.

ii. Operation

6.4.16 The potential impacts due to operation detailed in paragraphs 7.7.23 and 7.7.24 of the 2014 EIA Scoping Report remain unchanged.

iii. Removal and reinstatement

6.4.17 There is a potential for adverse noise and vibration effects during earthworks and removal of hardstanding during the reinstatement phase at some sites including the park and ride facilities. Assessment of effects in all cases will be undertaken using the methodologies, standards and guidance documents as set out in the 2014 EIA Scoping Report and as subsequently agreed with stakeholders.

iv. Decommissioning

6.4.18 The noise and vibration chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

6.4.19 Potential mitigation would remain predominantly as described within 7.7.25 to 7.7.28 of the 2014 EIA Scoping Report, with the exception of the 25m buffer zone, and would be developed through the assessment process.

f) Approach to cumulative assessment

i. Inter-relationships

6.4.20 The inter-relationships detailed in paragraph 7.7.33 of the 2014 EIA Scoping Report remain unchanged.

ii. Project-wide effects

6.4.21 The potential for project-wide noise and vibration effects to be significant to receptors will be considered as part of the assessment.

iii. Cumulative effects

6.4.22 The approach to dealing with cumulative effects detailed in paragraphs 7.7.34 of the 2014 EIA Scoping Report remains unchanged. The approach to cumulative effects is more fully described (for all topics) in **Section 5.5** of this EIA Scoping Report.

6.5 Air Quality

a) Introduction

6.5.1 This section sets out the proposed scope and methodology for the air quality assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of Section 7.8 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.5.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with updated guidance, comments received in the 2014 EIA Scoping Opinion, further consultation with stakeholders, and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.5.3 The approach to the assessment of likely significant effects on air quality is set out in the 2014 EIA Scoping Report. The comments raised in the subsequent 2014 EIA Scoping Opinion, reiterated the need to conduct an air quality assessment.

6.5.4 A summary of the responses to the comments received on the air quality assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Surveys and assessment

6.5.5 Surveys which have been undertaken as defined in the 2014 EIA Scoping Report include:

- continuous monitoring of oxides of nitrogen, nitric oxide, nitrogen dioxide, and particles; and
- passive monitoring of nitrogen dioxide and sulphur dioxide.

- 6.5.6 Further detail on instrumentation, sampling locations and sampling periods are included in paragraphs 7.8.2 to 7.8.9 of the 2014 EIA Scoping Report.
- 6.5.7 An additional survey of the baseline dust climate was carried out between September 2016 and September 2017, as originally proposed in the 2014 EIA Scoping Report. The baseline data generated by that survey provides a point of reference for the air quality assessment studies as it defines the current levels of dust deposition experienced within the study area.
- 6.5.8 Baseline assessment data detailed in the 2014 EIA Scoping Report will be revisited to take account of additional publicly available data, including measurement data and Air Quality Annual Status Reports published by local authorities within the study area since 2014.

c) **Proposed approach and methodology**

i. **Study area**

- 6.5.9 The study area for the air quality assessment remains as defined in paragraphs 7.8.15 to 7.8.20 of the 2014 EIA Scoping Report, which details the different sources of local air quality pollutants and the spatial area to be assessed. In brief, these are:
- road traffic-related pollutants – inclusive of the A12 between Ipswich and Lowestoft, B1122, main access route for construction traffic and other roads that are likely to experience some increase in traffic as a result of Sizewell C;
 - construction dust – inclusive of 200m from the main development site and 500m from public roads from construction sites, and;
 - point source sources – Receptors up to 10km from the main development site.

- 6.5.10 These previously defined areas remain unchanged, with the addition of the ‘new’ off-site associated development sites which have been introduced into the proposed development.

ii. **Updates to baseline**

- 6.5.11 Paragraphs 7.8.21 and 7.8.22 of the 2014 EIA Scoping Report outline two existing Air Quality Management Areas (AQMAs) in Woodbridge and Felixstowe and identifies a potential for a third AQMA in Stratford St. Andrew. At each of these locations, the concern relates to measured concentrations of nitrogen dioxide that were marginally above the annual mean air quality objective value for nitrogen dioxide.

6.5.12 Since the 2014 EIA Scoping Opinion was issued, Suffolk Coastal District Council (SCDC) (now part of East Suffolk Council) declared the AQMA order in Stratford St. Andrew and revoked the AQMA order in Felixstowe. In December 2017, speed limit changes were made in Stratford St. Andrew that moved the location of a 50mph zone on the A12 further from residential properties. SCDC identified the speed signage change within the Air Quality Annual Status Report (Ref 7.7) as being likely to reduce annual mean nitrogen dioxide concentrations. The annual average nitrogen dioxide concentration at the Stratford St. Andrew AQMA was reported to be below $40\mu\text{g}/\text{m}^3$ for 2017.

6.5.13 Since 2014 additional measurement data from the same local authority measurement stations has been published and this confirms that the baseline conditions for the air quality assessment detailed in the 2014 EIA Scoping Report remains otherwise unchanged.

iii. Further surveys/studies

6.5.14 Further surveys outlined within paragraphs 7.8.24 to 7.8.29 of the 2014 EIA Scoping Report included the intention to conduct Baseline Dust Monitoring (paragraph 7.8.25). This was completed between September 2016 and September 2017, as outline in paragraphs 6.5.5 to 6.5.8 of this section. No further baseline air quality surveys are proposed during 2019 and the existing baseline is considered a robust baseline for the purposes of the assessment.

iv. Assessment methodology

6.5.15 The proposed assessment methodology for air quality is largely as detailed in paragraphs 7.8.10 to 7.8.14 of the 2014 EIA Scoping Report. Recent updates to guidance documents will however be used to inform the assessment methods. The changes relate to:

- Defra (2016), Local Air Quality Management Technical Guidance 2016, LAQM TG (16) (Ref 6.8), replaces: Defra (2009), Local Air Quality Management Technical Guidance 2009 LAQM, TG(09) (Ref 6.9).
- The most recent relevant guidance from the Environment Agency at the time of assessment, currently “Air emissions risk assessment for your environmental permit” Guidance, EA, 01 February 2016 (last updated on

02 August 2016)³ will replace: Environment Agency (2010), Horizontal Guidance Note H1 – Annex F – Air Emissions (Ref 6.10).

- Institute of Air Quality Management (IAQM) (2017), Land-use planning & development control: Planning for Air Quality (Ref 6.11), replaces: Environmental Protection UK (EPUK) 2010 Development Control: Planning for Air Quality, 2010 Update and IAQM (2009), Position on the description of air quality impacts and their significance, Institute of Air Quality Management, November 2009 (Ref 6.12).
- IAQM (2016), Guidance on the assessment of dust from demolition and construction, version 1.1 (Ref 6.13), replaces: IAQM (2014), Guidance on the assessment of dust from demolition and construction (Ref 6.14).
- IAQM (2017), Land-use planning & development control: Planning for Air Quality (Ref 6.15), replaces: Environmental Protection UK (EPUK) 2010 Development Control: Planning for Air Quality, 2010 Update and IAQM (2009), Position on the description of air quality impacts and their significance, Institute of Air Quality Management, November 2009.

6.5.16 **Table 6.6** and **6.7** are derived from 2017 IAQM Guidance on Land Use Planning and Air Quality (page 25 of the that document) and set out the proposed assessment criteria to determine impact magnitude and effect classifications respectively. These tables replace Tables 7.8.1 and 7.8.2 in the 2014 EIA Scoping Report as these were based on 2009 IAQM guidance.

Table 6.6: Determination of magnitude of change – Air Quality

Magnitude of change	Annual Mean Concentration NO ₂ , PM ₁₀ (µg/m ³)	Justification
High	Increase/decrease >4	Change in concentration relative to air quality objective value of > 10% (IAQM, 2017).
Medium	Increase/decrease 2 – 4	Change in concentration relative to air quality objective value of between 6% and 10% (IAQM, 2017).
Low	Increase/decrease 0.8 –	Change in concentration

³ Available at: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

Magnitude of change	Annual Mean Concentration NO ₂ , PM ₁₀ (µg/m ³)	Justification
	1.9	relative to air quality objective value of between 2% and 5% (IAQM, 2017).
Very Low	Increase/decrease 0.4 – 0.7	Change in concentration relative to air quality objective value of 1% (IAQM, 2017).
Imperceptible	Increase/decrease <0.4	Change in concentration relative to air quality objective value of < 1% (IAQM, 2017).

Table 6.7: Descriptors for effect of predicted changes in annual mean concentrations of NO₂ and PM₁₀ at individual receptors

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration				
	High	Medium	Low	Very low	Imperceptible
Substantially above Air Quality Standard or Guideline with the proposed development (>44.0 µg/m ³).	Major	Major	Major	Moderate	Negligible
Above Air Quality Standard or Guideline with the proposed development (41.0-43.9 µg/m ³).	Major	Major	Moderate	Moderate	Negligible
Marginally Above or Marginally Below Air Quality Standard or Guideline with the proposed development (38 –	Major	Moderate	Moderate	Minor	Negligible

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration				
	High	Medium	Low	Very low	Imperceptible
40.9 µg/m ³)					
Below Air Quality Standard or Guideline with the proposed development (30.1 – 37.9 µg/m ³)	Moderate	Moderate	Minor	Negligible	Negligible
Well Below Air Quality Standard or Guideline with the proposed development (<30 µg/m ³)	Moderate	Minor	Negligible	Negligible	Negligible

v. Assumptions and limitations

6.5.17 The assumptions and limitations detailed in paragraphs 7.8.47 and 7.8.48 of the 2014 EIA Scoping Report remain unchanged.

d) Potential impacts

6.5.18 Potential impacts are described below and summarised in **Table 6.8**.

Table 6.8: Summary of elements of the proposed development scoped in to the EIA for air quality

Element of the Proposed Development	Scoped In or Scoped Out for Air Quality	Justification
Main development site	Scoped In	Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of the main development.
Northern park and ride		Scoped in, due to potential

Element of the Proposed Development	Scoped In or Scoped Out for Air Quality	Justification
Southern park and ride		effects on human and ecological receptors during construction and operation phase of this facility.
Two village bypass		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of this route.
Yoxford roundabout and other minor highway improvements		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of these routes.
Sizewell link road		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of this route.
Theberton bypass		
Locations where Sizewell C traffic represents a substantive* % increase over the future traffic baseline		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of these routes.
Freight management facility options		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of these options.
Green rail route and East Suffolk line and branch line upgrades and level crossing works		Scoped in, due to potential effects on human and ecological receptors during construction and operation phase of this route.

*The assessment methodology includes a combination of criteria from DMRB HA207/07 and from IAQM 2017

i. Construction

6.5.19 The potential impacts during construction at the main development site and off-site associated development remain unchanged from those detailed in paragraphs 7.8.50 to 7.8.52 of the 2014 EIA Scoping Report

ii. Operation

6.5.20 The potential impacts due to operation of the proposed development detailed in paragraphs 7.8.53 and 7.8.54 of the 2014 EIA Scoping Report remain unchanged.

iii. Removal and reinstatement

6.5.21 Where removal and reinstatement is proposed, the potential impacts are likely to be broadly similar to those that would occur during construction.

iv. Decommissioning

6.5.22 The air quality chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

6.5.23 The potential mitigation measures detailed in paragraph 7.8.55 of the 2014 EIA Scoping Report remain unchanged and will be considered at the main development site and off-site associated development.

f) Approach to Cumulative Assessment

i. Inter-relationships

6.5.24 The approach to inter-relationships, detailed in paragraphs 7.8.56 to 7.8.60 of the 2014 EIA Scoping Report, remains unchanged.

ii. Project-wide effects

6.5.25 The potential for project-wide air quality effects to be significant to receptors will be considered to establish if additional mitigation measures may be required.

iii. Cumulative effects

6.5.26 The approach to cumulative effects detailed in paragraph 7.8.61 of the 2014 EIA Scoping Report remains unchanged although the schedule of relevant developments has changed in that time. The approach to

cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.6 Landscape and Visual

a) Introduction

6.6.1 This section sets out the proposed scope and methodology for the Landscape and Visual Impact Assessment (LVIA) for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.45 to 3.51 the 2014 EIA Scoping Opinion, ongoing review of the environmental baseline conditions and liaison with LVIA consultees along with a preliminary appraisal of the key issues likely to be associated with the proposed development.

6.6.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with the further consultation held with stakeholders and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Proposed approach and methodology

i. Study area

6.6.3 As identified in paragraph 7.3.10 of the 2014 EIA Scoping Report, a study area of 15km (measured from the boundary of the main development site) was proposed. This has subsequently been agreed with LVIA consultees.

6.6.4 Study areas for the off-site associated development sites have also been agreed with LVIA consultees as follows:

- park and ride facilities – 2km;
- two village bypass – 2km;
- Theberton bypass – 2km;
- other minor highway improvements (including Yoxford roundabout, Mill Street/B1122 junction, A12/A144 junction, A1094/B1069 junction and Wickham Market highway improvements) – 500m;
- Sizewell link road – 2km;
- green rail route – 2km;
- freight management facility – 2km; and

- other rail improvements (including Saxmundham Crossover and the passing loop) – 500m.

ii. **Updates to baseline**

- 6.6.5** The landscape and visual baseline relating to the main development site, as described within paragraphs 7.3.11 to 7.3.17 of the 2014 EIA Scoping Report, remains largely unchanged. The National Character Assessment and East of England Landscape Character Typology (Ref 6.16) provides the context for the Suffolk County Landscape Character Assessment (LCA) which has been agreed with LVIA consultees as the basis for the assessment of effects on landscape character, informed by other studies (Suffolk Coastal LCA (Ref 6.17), Waveney District LCA (Ref 6.18), Touching the Tide LCA (Ref 6.19), and Suffolk Historic Landscape Characterisation (Ref 6.20).
- 6.6.6** With reference to seascape character, the strategic overview provided by the Seascape Character Assessment (Ref 6.21) (SCA) of the East Inshore and East Offshore Marine Plan Areas provides the context for a recently published SCA for Suffolk, South Norfolk and North Essex, which has been agreed with LVIA consultees as the basis for the assessment of effects on seascape character, informed by other studies (Newport to Clacton Historic Seascape Characterisation (Ref 6.22) and an unpublished assessment of seascape character undertaken on behalf of EDF Energy).
- 6.6.7** The LVIAs will also consider the effects of the proposed development on the special qualities of the Suffolk Coast and Heaths Area of Natural Beauty (AONB) and locally designated Special Landscape Area (SLA). The agreed basis for the assessment of effects on the AONB is a document, developed by EDF Energy in consultation with the AONB Partnership, Suffolk County Council and Suffolk Coastal District Council (now part of East Suffolk Council), that records the natural beauty and special qualities indicators of the AONB. This includes the contribution made to the AONB by the area of land identified within the Suffolk Heritage Coast and areas further offshore. The agreed basis for the assessment of effects on the SLA will be a paper developed by EDF Energy in consultation with LVIA consultees.
- 6.6.8** Most of the off-site associated development sites fall within the 15km study area for the main development site and so the landscape and visual baseline described in the 2014 EIA Scoping Report is equally relevant to those. However, none of the associated developments are located within the Suffolk Coast and Heaths AONB and several are located partly within or adjacent to SLAs.

6.6.9 Those off-site associated development sites that are located outside the 15km study area for the main development site (Wickham Market Road improvements, the rail passing loop and the freight management facility) are located such that the landscape and visual baseline within the 15km study area is broadly applicable to them, as they occupy areas that display similar characteristics. All are located outside the AONB, although the freight management facility would be located between two separate areas of the AONB, and all are within or close to SLAs.

iii. [Further surveys/studies](#)

6.6.10 Paragraph 7.3.18 of the 2014 EIA Scoping Report references the requirement to review and update the landscape/seascape character and visual baseline. This has been undertaken, in consultation with LVIA consultees, to identify the relevant landscape/seascape character assessments to form the basis of assessment and to agree the location of Representative and Illustrative Viewpoints, the location of baseline photography that should be re-taken and location of viewpoints to be used as the basis for the production of visualisations.

6.6.11 Paragraph 7.3.19 of the 2014 EIA Scoping Report also references the need to develop a landscape strategy for the main development site. This will continue to evolve during the assessment process, to incorporate mitigation measures identified. This will also apply to the off-site associated development sites.

6.6.12 For both the operational main development site and the off-site associated development sites, Zone of Theoretical Vision (ZTV) studies will be prepared to reflect the final proposals for each site.

iv. [Assessment methodology](#)

6.6.13 The methodology for the LVIAs is outlined at paragraphs 7.3.20 to 7.3.39 of the 2014 EIA Scoping Report and remains unchanged.

6.6.14 The detail of the methodology to be used for the LVIA chapters has been agreed with LVIA consultees following a stakeholder workshop held in February 2019.

6.6.15 The agreed LVIA methodology with the addition of the approach to the night-time appraisal and to the production of ZTV's and visualisations will be presented in the landscape and visual ES chapter.

v. [Assumptions and limitations](#)

6.6.16 The assumptions and limitations detailed in paragraph 7.3.40 of the 2014 EIA Scoping Report remain unchanged, with the exemption of the

assumption relating to area and height parameters extended to include off-site associated development sites.

c) Potential impacts

6.6.17 Potential impacts are described below and summarised in **Table 6.9**.

Table 6.9: Summary of elements of the proposed development scoped in to the EIA for LVIA

Element of the Proposed Development	Scoped In or Scoped Out for LVIA	Justification
Main development site	Scoped In	Scoped in due to potential impacts on landscape and visual receptors during construction and operation phases, and the removal and reinstatement phases, where applicable.
Northern park and ride		
Southern park and ride		
Two village bypass		
Yoxford roundabout and other minor highway improvements		
Sizewell link road		
Theberton bypass		
Freight management facility options		
Green rail route and East Suffolk line and branch line upgrades and level crossing works		

i. Construction

6.6.18 The potential impacts during construction in relation to the main development site that are described in paragraphs 7.3.44 to 7.3.45 of the 2014 EIA Scoping Report remain unchanged, with the addition of construction effects extending to include Sizewell Halt.

6.6.19 Landscape and visual impacts during construction may potentially result from the following in relation to the off-site associated development sites:

- movement of machinery and traffic to and around the construction sites;

- felling of trees and removal of hedgerows as part of site clearance and preparation;
- localised changes to topography due to cut and fill, and the stockpiling and storage of excavated materials;
- construction working areas, laydown areas, storage and offices, including stockpiling of ballast in relation to rail proposals;
- construction roads, fencing, lighting and security features;
- restoration of construction areas and establishment of the post construction phase landscape; and
- construction of the permanent off-site associated development structures.

ii. Operation

6.6.20 The potential impacts in relation to the main development site during operation described in paragraphs 7.3.46 to 7.3.48 of the 2014 EIA Scoping Report remain unchanged, with the addition of impacts extending to include Sizewell Halt.

6.6.21 Landscape and visual impacts during operation may potentially result from the following in relation to the off-site associated development sites:

- Park and ride facilities and freight management facility – access roads, parking areas and internal roads, buildings and structures such as the bus terminus and security buildings, security fencing, lighting, topsoil/subsoil bunds, surface water management areas, drainage infrastructure and vehicles both moving around and parked within the facilities.
- Road schemes – new road infrastructure, cut and fill earthworks to even out existing ground levels, reconfiguration of a number of existing road junctions and stretches of existing roads, creation of drainage retention areas and infiltration areas, lighting at specific junctions/roundabouts on to main roads, a new bridge over the River Alde on the two village bypass, and vehicles moving along the routes.
- Other minor highway improvements – changes to signage and road markings, resurfacing works, addition of central reservation island and waiting area at A12/A144 junction, alteration of road alignment at Wickham Market, road widening/addition of passing places at Wickham Market, alterations to grading of existing roadside embankments at Mill

Street, realignment of the A12 and B1122 to introduce a new roundabout at Yoxford roundabout, changes to lighting at Yoxford roundabout, and vehicles moving along the routes.

- Green rail route - new temporary rail infrastructure, provision of a new footbridge or a new automated level crossing on Buckleswood Road, provision of a new automated level crossing on Abbey Road, permanent relocation of the B1122 (Abbey Road) and Lover's Lane junction, lighting of the level crossing(s), topsoil/subsoil bunds, fencing along either side of the route and trains moving along the route.
- Other minor rail improvements – widening of existing embankments, changes to signalling, introduction of permanent compounds and upgrades to access roads.

iii. Removal and reinstatement

- 6.6.22 Potential landscape and visual impacts during the removal and reinstatement of those off-site associated development sites that would not be permanent (park and ride facilities, green rail route and freight management facility) would be similar to those experienced during construction.

iv. Decommissioning

- 6.6.23 The landscape and visual chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

d) Work undertaken to date

i. 2014 EIA Scoping Opinion

- 6.6.24 The approach to the assessment of effects to be used in the LVIA is set out in Section 7.3 of the 2014 EIA Scoping Report. The 2014 EIA Scoping Opinion indicates that a methodology for the ZTV studies should be included and that it should be made clear within the ES and explain where and how professional judgement will be applied within the assessment. Both of these items will be included within the LVIA chapters of the ES (or relevant appendices).

- 6.6.25 In addition, the 2014 EIA Scoping Opinion recommended that an assessment of lighting and night time effects is included within the ES. The LVIA will include an appendix that considers the effects of lighting on landscape and visual receptors at night, when proposed lighting associated

with the construction and operational phases may be visible. It will also consider the night-time effects on the special qualities of the Suffolk Coast and Heaths AONB and the SLA. The methodology used will follow an approach that has been tried and tested on other projects and been favourably received by local planning authorities and other landscape consultees.

ii. Survey and assessment

6.6.26 The locations of Representative and Illustrative Viewpoints for the main development site and off-site associated development sites have been agreed with LVIA consultees at a workshop held in February 2019. Photography for the Representative and Illustrative Viewpoints has been taken during winter 2018/19 at the request of LVIA consultees (unless winter photography undertaken in previous years has been agreed to remain relevant by LVIA consultees). Assessment site visits will be undertaken during 2019 to inform the assessment.

e) Potential mitigation

6.6.27 The potential mitigation measures relating to the main development site described in paragraph 7.3.49 of the 2014 EIA Scoping Report remain unchanged. In addition, further mitigation measures include:

- creating earth bunds and installing acoustic and temporary fencing to provide visual containment of construction areas; and
- limiting the maximum height parameters of material storage and borrow pit areas to the north and east of the accommodation campus to reduce their visual prominence during construction.

6.6.28 Likely mitigation measures in relation to the off-site associated development sites include:

- Park and ride facilities – retention of existing vegetation where possible, utilising topsoil/subsoil bunds to act as visual screening, landscape proposals including tree and shrub planting within the sites and along access roads, and measures to reduce light-spill at night.
- Road schemes – construction compounds to be located in close proximity to existing road or rail infrastructure, in areas already disturbed by traffic or trains where possible; retention of existing vegetation where possible; undertaking landscape proposals for localised screening and areas of new planting early on, allowing such screening and planting to become established throughout construction and for the operational

stage; and diversion of public rights of way to utilise safe crossing points.

- Other minor highway improvements – retention of existing vegetation where possible and replacement planting following construction where this is not possible.
- Freight management facility – retention of existing vegetation where possible, landscape proposals including tree and shrub planting within the sites and along access roads, and measures to reduce light-spill at night.
- Green rail route – retention of existing vegetation where possible, diversion of existing rights of way to utilise safe crossing points and reinstatement of existing routes and land uses once the route is no longer required.
- Other minor rail improvements – retention of existing vegetation where possible and replacement planting following construction where this is not possible.

f) [Approach to cumulative assessment](#)

i. [Inter-relationships](#)

6.6.29 The approach to inter-relationships, detailed in paragraph 7.3.50 of the 2014 EIA Scoping Report remains unchanged.

ii. [Project-wide effects](#)

6.6.30 The potential for project-wide landscape and visual effects to be significant to receptors will be considered to establish if additional mitigation measures may be required. In particular, consideration will be given to the summed effects of the associated developments in the context of the wider proposed development.

iii. [Cumulative effects](#)

6.6.31 The approach to cumulative effects detailed in paragraphs 7.3.51 to 7.3.53 of the 2014 EIA Scoping Report remains unchanged. This approach would also be applicable in relation to the off-site associated development sites. The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.7 Terrestrial Ecology and Ornithology

a) Introduction

6.7.1 This section sets out the proposed scope and methodology for the terrestrial ecology and ornithology assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.38 to 3.44 of the 2014 EIA Scoping Opinion and the environmental baseline conditions, along with a preliminary view of the main issues likely to be associated with the proposed main site and off-site associated development sites.

6.7.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with updated guidance, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.7.3 The approach to the assessment of likely significant effects on terrestrial ecology and ornithology is set out in Section 7.2 of the 2014 EIA Scoping Report. The key comments raised by the Planning Inspectorate and other statutory consultees are outlined in the 2014 EIA Scoping Opinion and a summary of the responses to these are included in within **Appendix 1C**.

ii. Survey and assessment

6.7.4 Environmental baseline information relevant to terrestrial ecology and ornithology has been gathered through a comprehensive suite of desk-based studies and field surveys undertaken between 2007 and 2019 and this is ongoing. Since 2014, survey work has focused on addressing comments raised in the 2014 EIA Scoping Opinion and on ensuring compliance with the requirements of NPS EN-1 and EN-6. There has been ongoing consultation with the relevant statutory consultees in the form of workshops and a number of baseline and other interim technical reports have been issued.

6.7.5 Detailed work undertaken includes surveys of the habitat types present as well as surveys of individual species groups. A detailed review of the baseline data collated to date has been undertaken, to ensure a robust dataset to support the ES.

c) Proposed approach and methodology

i. Study area

6.7.6 The study area for the main development site remains as indicated in paragraphs 7.2.4 to 7.2.5 of the 2014 EIA Scoping Report with 20km as the study area for statutory designated sites and 2km for non-statutory designated sites. The boundary of the proposed development is the study area for species-specific surveys, extended as necessary for mobile species such as bats or great crested newts (*Triturus cristatus*).

6.7.7 For the off-site associated development sites, including the new proposed development, a study area of 5km for statutory designated sites has been adopted, with a 2km study area for non-designated sites. Field surveys to be undertaken in 2019 (see below) will focus on the footprint of the proposed developments but (as for the main site) will be extended where appropriate.

ii. Updates to baseline

6.7.8 The ecological baseline for the main development site remains as described in paragraphs 7.2.6 to 7.2.10 of the 2014 EIA Scoping Report. Barring two exceptions, site visits conducted in 2018 and 2019 confirmed no significant material change has occurred in the extent or distribution of habitat types within the main development site. Key exceptions are:

- new reedbed and ditch habitat created as replacement to proposed habitat loss within Sizewell Marshes Site of Special Scientific Interest (SSSI) which is now well-established at Aldhurst Farm; and
- large areas of reptile receptor habitat (acid grassland) created, including life-cycle features such as south-facing banks and hibernacula created within the EDF Energy estate.

6.7.9 Since 2014, the surveys undertaken have greatly increased the resolution of the ecological baseline, including the following:

- detailed vegetation surveys of Sizewell Marshes SSSI including a detailed review of the distribution of plant species within fen meadow and the underlying eco-hydrological factors that drive this;
- detailed vegetation surveys of the Suffolk Shingle Beaches County Wildlife Site (CWS);

- updated invertebrate surveys covering Sizewell Marshes SSSI, coastal habitat, rides within Goose Hill, and arable margins, enabling an assessment of the entire development footprint;
- assessment of the distribution of reptile species, and mark and recapture studies to estimate population levels of adder (*Vipera berus*) and grass snake (*Natrix helvetica helvetica*);
- establishing a wider context for use of habitat both within Sizewell and Minsmere by bat species, through a repeat of radio-tracking and static detector surveys;
- development of a methodology for the assessment of high-frequency noise on bat species; and
- understanding of foraging activity of marsh harrier (*Circus aeruginosus*) and response to noise and visual disturbance to inform mitigation requirements.

6.7.10 A detailed ecological baseline has also been developed for the Northern and Southern park and ride sites, and the green rail route.

iii. Further surveys/studies

6.7.11 Surveys which will be undertaken in 2019 include the following:

- detailed interior and exterior inspection of Lower and Upper Abbey Farm on the main development site to update information on roosting bat species and inform potential mitigation measures; and
- a full suite of surveys for the two village bypass and Sizewell link road including:
 - Phase 1 habitat survey extended to include legally protected species which will scope the requirement for additional species-specific survey work;
 - detailed botanical assessment of flood plain grassland on the alignment of the two village bypass;
 - great crested newt survey;
 - breeding bird survey; and
 - bat activity survey, with a focus on key flight paths and potential roost features.

6.7.12 An extended Phase 1 habitat survey of other off-site associated development sites with additional surveys for legally protected species will be undertaken as required and informed by the Phase 1 habitat survey.

iv. Assessment methodology

- 6.7.13 The general approach to the ecological assessment remains the same as outlined in **Chapter 5** of this EIA Scoping Report and paragraphs 7.2.17 to 7.2.36 of the 2014 EIA Scoping Report. Whilst the methodology would be largely consistent with the 2014 EIA Scoping Report, it will be modified slightly to conform with the industry standard (Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (Ref 6.23)).
- 6.7.14 In 2014 reference was made to ‘Key Ecological Features’ which will be changed to ‘Important Ecological Features’, in line with CIEEM 2018 Guidelines.
- 6.7.15 The assessment of the two village bypass and Sizewell link road will also consider the assessment methodology outlined in Volume 11 of the DMRB (Ref 6.24).

v. Assumptions and limitations

- 6.7.16 The assumptions and limitations set out in paragraph 7.2.37 of the 2014 EIA Scoping Report remain unchanged.

d) Potential impacts

- 6.7.17 Potential impacts are described below and summarised in **Table 6.10**.

Table 6.10: Summary of elements of the proposed development scoped in to the EIA for terrestrial ecology and ornithology

Element of the Proposed Development	Scoped In or Scoped Out for terrestrial ecology and ornithology	Justification
Main development site	Scoped In	Scoped in, due to potential effects on ecological receptors during construction and operation phase, and the removal and reinstatement phases, where applicable.
Northern park and ride		
Southern park and ride		
Two village bypass		
Yoxford roundabout and other minor highway improvements		
Sizewell link road		
Theberton bypass		

Element of the Proposed Development	Scoped In or Scoped Out for terrestrial ecology and ornithology	Justification
Freight management facility options		
Green rail route and East Suffolk line and branch line upgrades and level crossing works		

i. Construction

6.7.18 The potential impacts of the main development site described in paragraph 7.2.38 of the 2014 EIA Scoping Report remain largely unchanged; however, there are several amendments to this:

- natterjack toads (*Epidalea calamita*) may now potentially be affected by the proposed water management zones; and
- there is now greater clarity on disturbance effects on species and hydrological change affecting designated sites.

6.7.19 No habitat loss from designated sites is likely to arise from the proposed off-site associated development sites and no significant effects on habitat features of interest are envisaged. However, the floodplain grassland adjacent to the River Alde on the alignment of the two village bypass requires detailed assessment to confirm this preliminary assumption.

6.7.20 Impacts on legally protected species resulting from the off-site associated development sites are likely and these species are likely to include great crested newts and foraging and roosting bat species. The crossings of water courses may impact otters (*Lutra lutra*) and water voles (*Arvicola terrestris*).

ii. Operation

6.7.21 The potential impacts of the main development site described in paragraph 7.2.39 of the 2014 EIA Scoping Report remain largely unchanged. However, a control structure on the Sizewell Drain is proposed to maintain the hydrological regime of Sizewell Marshes SSSI. Hydrological modelling is being undertaken during 2019 to assess this.

6.7.22 With suitable mitigation, no significant effects are envisaged during the operation of the off-site associated development sites, but effects could

include fragmentation of bat foraging or commuting habitats or great crested newt terrestrial foraging habitats.

iii. **Removal and reinstatement**

6.7.23 The impacts associated with the removal and reinstatement of temporary elements would be similar to those described for construction in paragraph 7.2.38 of the 2014 EIA Scoping Report and paragraph 6.7.18 to 6.7.20 of this EIA Scoping Report.

6.7.24 The long-term management objectives to return the arable land within the EDF Energy estate to Sandlings dry grasslands is likely to lead to significant beneficial biodiversity effects.

iv. **Decommissioning**

6.7.25 The terrestrial ecology and ornithology chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) **Potential mitigation**

6.7.26 Embedded mitigation measures have been developed since the 2014 EIA Scoping and the most important include the following:

- The Sizewell Marshes SSSI crossing would be suitably sized to retain the bank and channel of the Leiston Drain and facilitate the passage of bats, water voles and otters.
- The establishment of new reedbed and ditches at Aldhurst Farm (completed in 2016) has provided replacement for the loss of these habitats within Sizewell Marshes SSSI and also provides suitable habitat to enable the translocation of water voles from within the main development site. The habitat at Aldhurst Farm has been fenced to minimise the risk of water voles colonising naturally ahead of translocation.
- A fen meadow strategy is in place to restore an offsite area to compensate for the permanent loss of fen meadow habitat from within Sizewell Marshes SSSI.
- A mitigating solution (e.g. sheet piling) would be installed to provide separation from the main development site platform and Sizewell Marshes SSSI to limit the disturbance to the hydrology and geology.

- The realignment of the Sizewell Drain and the construction of associated water control features would enable manipulation of the water levels within Sizewell Marshes SSSI.
- Foraging habitat for marsh harriers would be established across the northern part of the EDF Energy estate, to compensate for any effective loss of foraging over the SSSI during construction.
- Boundary treatments are included within the construction masterplan to minimise noise and visual disturbance to adjacent designated sites or valuable habitats.
- Sand and shingle substrate would be stockpiled to preserve the seedbank of the coastal vegetation and would be incorporated into the final landscaping of the new sea defence.
- The majority of the woodland resource within the EDF Energy estate would be retained as would the line of broadleaved trees on the northern edge of Kenton Hills, known to support features of importance for roosting bats.
- Large areas of acid grassland habitat for reptiles have been established in advance of construction, to enable the translocation of reptiles from the main development site. This has also created areas of sand-dominated habitat likely to be beneficial to invertebrate species such as those identified in the coastal and woodland ride habitats.
- Alternate roost sites (bat boxes) have been erected in advance of construction within woodland least likely to be directly affected by noise and lighting disturbance.
- The measures within the operational lighting strategy would minimise light spill onto surrounding habitats.
- Infrastructure would be in place to ensure all surface run-off and foul water is captured and treated, and does not enter adjacent designated sites.
- A Landscape and Ecology Management Plan (LEMP) for the operational phase would define the approach for establishing acid grassland on the temporary construction area, once construction is complete.

6.7.27 Initial mitigation measures have also been identified for the new off-site associated development sites including the following measures during the construction phase:

- The OCEMP for the off-site associated development sites would define any ecological constraints and specify any measures required during construction in relation to the presence of protected species and any required vegetation clearance works.
- Temporary construction lighting would be designed to minimise use of lighting and light-spill into adjacent habitats.
- Specific mitigation measures for legally protected species likely to be required (determined through survey and could include, for example, passage for otters and water voles to be maintained during construction along the River Alde).

6.7.28 Initial mitigation measures have also been identified for the off-site associated development sites including the following measures during the operational phase:

- Scheme design would incorporate measures to minimise changes in the hydrological regime of flood plain and grazing marsh habitat.
- Well vegetated ‘crossing points’, to facilitate the passage of bats across the road alignments, may be required if key foraging or commuting routes are identified, to reduce the potential for incidental mortality as a result of bats crossing the road and colliding with vehicles.
- The bridge over the River Alde would be of a sufficient size and capacity to allow for crossing of otters including a ledge to allow passage at times of high flows.

f) [Approach to cumulative assessment](#)

i. [Inter-relationships](#)

6.7.29 Of the inter-relationships identified in paragraph 7.2.43 of the 2014 EIA Scoping Report, the inter-relationship between coastal geomorphology and marine ecology is somewhat reduced now that a jetty is no longer proposed, although a beach landing facility is still included in the proposals. These changes to the proposals lessen the potential inter-relationship between disturbance to sea birds and effects on sea bird prey species, as levels of marine vessel movements would be significantly lower than previously anticipated, minimising the potential for disturbance.

ii. Project-wide effects

6.7.30 No new project-wide effects have been identified at this stage, as such the potential inter-relationships detailed in paragraph 7.2.43 of the 2014 EIA Scoping Report remain unchanged.

iii. Cumulative effects

6.7.31 The approach to the assessment of cumulative effects detailed in paragraph 7.2.44 of the 2014 EIA Scoping Report remains unchanged. The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.8 Amenity and Recreation

a) Introduction

6.8.1 This section sets out the proposed scope and methodology for the amenity and recreation impact assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.52 to 3.56 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.8.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with further research, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.8.3 The approach to the assessment of likely significant effects on amenity and recreation receptors is set out in Section 7.4 of the 2014 EIA Scoping Report. The 2014 EIA Scoping Opinion provided comments in relation to the amenity and recreation impact assessment and can be summarised as follows:

- Undertake a review of the extent of the proposed study area for the main development site, consult relevant consultees and provide a robust justification for the selection of the study area in the ES.
- Consult on the methodology for further survey work and undertake surveys in order to address impacts on recreational activity as a consequence of the proposed development, both during and post construction

- Examine the impacts of incoming construction workers, the changing habits of existing recreational users, where people may be deflected to and the sensitivity of those sites to increased recreational pressure, informing both the Health Impact Assessment (HIA) described in **Section 6.22** of this EIA Scoping Report and the Habitats Regulations Assessment (HRA).
- Undertake an assessment of the impacts on access land, public open land, rights of way and coastal access routes.
- Set out opportunities to enhance access and green infrastructure in the locality.
- Recognise and consider “tranquillity” in assessing effects on amenity and recreation.

6.8.4 A summary of the full responses to the comments received on the proposed amenity and recreation assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. **Survey and assessment**

6.8.5 Since the submission of the 2014 EIA Scoping Report, the following public access visitor surveys have been conducted to inform the amenity and recreation impact assessment. The first two surveys were also undertaken to inform the HRA:

- Public access visitor surveys were conducted at seven survey points within proximity of the main development site in August and November 2014. They included a combination of observation and questionnaire-based visitor surveys, following a method prepared in consultation with the Royal Society for the Protection of Birds (RSPB), Suffolk Wildlife Trust, SCC, SCDC (now part of East Suffolk Council), Suffolk Local Access Forum (SLAF), Leiston Town Council, Natural England, Planning Inspectorate, the Environment Agency and the Suffolk Coast and Heaths Area of Natural Beauty (AONB). A total of 4,214 users were observed and 514 questionnaires completed. These surveys are, hereafter, referred to as the ‘2014 survey’.
- Further visitor surveys were undertaken at Minsmere RSPB reserve in 2015 at the request of the RSPB, to collect data at the heart of the reserve. It was agreed with the RSPB that only questionnaire surveys would be undertaken in 2015 at Minsmere following the same method implemented for the 2014 survey, but that an observation survey of visitors within the reserve would not be necessary because the RSPB

already collect data on numbers of visitors and their profiles at Minsmere.

- Further visitor surveys were undertaken in November 2016 and August 2018 on:
 - the Suffolk Cycle Route NCN42 along Eastbridge Road that links Eastbridge village with the B1122 just north of Leiston Abbey, that will be affected by the location of the campus;
 - the three Public Rights of Way (PRoW) that run north south from Abbey Lane to Bucklewood Road and Abbey Road that will be affected by the green rail route; and
 - Bridleway E-288/008/0 between the A12 and B1116 along the west side of the proposed Wickham Market park and ride site.

6.8.6 Observation surveys were also undertaken at these locations, following the same method as the 2014 survey. A shorter questionnaire survey to that carried out in 2014 was also undertaken, as detailed in the 2014 EIA Scoping Report.

c) Proposed approach and methodology

i. Study areas

Main development site

6.8.7 The onshore study area has been defined through the process described below, informed by stakeholder consultation and early stages of the Amenity and Recreation, LVIA, Noise and Vibration, Air Quality and Transport assessments.

6.8.8 A draft study of approximately 2km from the main development site boundary area was proposed in paragraph 7.4.11 of the 2014 EIA Scoping Report. The study area has subsequently been modified and discussed with statutory consultees (SCC, SCDC, Suffolk Coast and Heaths AONB, SLAF and Natural England) at a meeting on 7 February 2019.

6.8.9 Three zones of influence around the main development site were defined in establishing the final study area:

- Zone of Physical Change (defined by a 2km buffer around main development site). Physical changes to recreational resources are likely to occur within this zone. This includes potential PRoW closures and the location of diverted or newly created routes.
- Displacement Zone (defined by 8km buffer around the main development site). Research and field-based questionnaires identified

that the approximate median distance likely to be travelled (onshore) by people to reach a location for recreational activities is 8km. As such, this zone is judged to be the appropriate extent of the catchment area for visitors that have the potential to be displaced by changes to PRow and access within the main development site during construction and operation of Sizewell C. The Displacement Zone captures a number of settlements which have been used to define the Buffer Zone (see below).

Recreational receptors within the Displacement Zone may also experience effects due to changes to views, noise, air quality, traffic and people as a result of the proposed development.

- Buffer Zone (defined by 8km buffer around settlements within the Displacement Zone and representing the extent of the study area). This zone defines the geographic extent around settlements within the Displacement Zone that onshore people may be displaced to as a result of changes to PRow and access or experience within the main development site, based on the 8km median distance discussed above. A recreational user from a settlement who might have travelled up to 8km towards Sizewell C to use an onshore recreational resource may, therefore, potentially be displaced up to 8km away from Sizewell C to use an alternative onshore recreational resource.

- 6.8.10 Offshore an 8km study area from the onshore main development site boundary is proposed (the Displacement Zone) which captures the majority of cruising and recreational vessels that travel off the east coast in the vicinity of the main development site, and it is considered that this area will capture all potentially significant effects. A navigational assessment has been completed and is outlined in **Section 6.17** of this EIA Scoping Report.

Associated off-site development sites

- 6.8.11 The following study areas were agreed with statutory consultees (SCC, SCDC, Suffolk Coast and Heaths AONB, SLAF and Natural England) at a meeting on 7 February 2019. These have been informed by review of the draft proposals and potential effects for the associated development sites presented at Stage 3 consultation, and an initial understanding of potential effects supported by site visits. These areas are likely to capture all potential significant effects on recreational users as a result of construction, operation and decommissioning phase activities.
- 6.8.12 The following elements of the proposed development, as described in **Chapter 3** of this EIA Scoping Report, will be assessed with a 1km study area:

- green rail route;
- Sizewell link road;
- Theberton bypass;
- two village bypass;
- northern park and ride at Darsham;
- southern park and ride at Wickham Market; and
- freight management facility options.

6.8.13 The highway improvements and rail improvements will be assessed with a 0.5km study area.

ii. [Updates to baseline](#)

6.8.14 Paragraphs 7.4.13 to 7.4.17 of the 2014 EIA Scoping Report presented a brief summary of the baseline within the study area that was proposed at that time: 2km from the main development site. Research was subsequently undertaken to define the amenity and recreation baseline within the extended study area, to the outer edge of the Buffer Zone. This was presented in a report (Amenity and Recreation Assessment Draft Baseline for Consultation, Version 1 – November 2015) which was issued to statutory consultees (SCC, SCDC, Natural England, Suffolk Coast and Heaths AONB), and discussed with consultees at a meeting on 7 December 2015. Consultee comments and information received at and following that meeting has been incorporated into the baseline report, which is now being updated through further desk and field based work and will be used to inform the amenity and recreation impact assessment.

6.8.15 The England Coastal Path has been added to the baseline given it is likely to follow parts of the Suffolk Coast Path. Natural England expects to complete work on the England Coast Path in 2020 and this work will be monitored on an ongoing basis. Consultation will continue with Natural England on the England Coast Path.

iii. [Further surveys/studies](#)

6.8.16 As described in paragraph 6.8.5 of this EIA Scoping Report, a series of further desk and field based work has to be undertaken to inform the amenity and recreation impact assessment.

iv. Assessment methodology

- 6.8.17 The assessment methodology has been developed from that presented in paragraphs 7.4.9 to 7.4.30 of the 2014 EIA Scoping Report. Detail has been added following further research, surveys, testing and consultee comments.
- 6.8.18 A detailed method report (Amenity and Recreation Impact Assessment Method) was submitted and presented to statutory consultees in December 2015 and a revised report addressing comments received was issued to SCC, SCDC, Natural England and Suffolk Coast and Heaths AONB in April 2016. The method report was updated in 2019 and re-issued to statutory consultees (SCC, SCDC, Natural England, Suffolk Coast and Heaths AONB and SLAF) and presented to them at a meeting in February 2019. Final comments are being received and a final method will then be agreed.
- 6.8.19 In addition to the changes made to the study area as described above, the main changes to the methodology presented in the paragraphs 7.4.19 to 7.4.30 of the 2014 EIA Scoping Report are summarised as follows:
- 6.8.20 Value (paragraph 7.4.25 of the 2014 EIA Scoping Report). Clarification has been given on how value is defined. It has been made clear that value of a resource (e.g. a public footpath) includes consideration of whether a designated landscape has a defined value for recreation, rather than just the fact that it is in a designated landscape.
- 6.8.21 Sensitivity (paragraphs 7.4.26, 7.4.27 and Table 7.4.1 of the 2014 EIA Scoping Report). The 2014 EIA Scoping Report gave a single assessment of Value/Sensitivity based on separate assessments of Value and Sensitivity. The method now gives a single assessment of Sensitivity based on separate assessments of Value and Susceptibility, following the method recommended in the 'Guidelines for Landscape and Visual Impact Assessment' where visual effects on outdoor recreation receptors are assessed (and are relevant to amenity and recreation impact assessment).
- 6.8.22 Through further testing of the method it has been determined that certain attributes of the recreational resource (e.g. views, tranquillity and opportunities for enjoying wildlife) should be factored into the susceptibility of the receptor to the proposed form of change rather than into value of the resource.
- 6.8.23 Duration of effect (paragraph 7.4.28 of the 2014 EIA Scoping Report). The 2014 EIA Scoping Report gave an example for duration for construction as "short-term for 1-2 years, medium-term for 3-5 years, long-term for 5 years and greater and permanent, dependent upon project timeframes." The

duration of effects agreed with consultees has been updated to the following:

- Permanent – the change is expected to be permanent and there is no intention for it to be reversed. Or occurring for a period longer than 25 years.
- Long-term – the change is expected to be in place for in the order of 10-25 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
- Medium-term – the change is expected to be in place for in the order of 2-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
- Short-term – the change is expected to be in place for in the order of 0-2 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

6.8.24 Magnitude assessment (Table 7.4.2 of the 2014 EIA Scoping Report). Greater detail is provided on the criteria that are used to define impact magnitude by including Scale, Duration and Extent. Scale (the degree of change which would arise from the development), Duration (the time period over which the change to the receptor as a result of the development would arise) and Extent of change (the geographic area of the resource used by the receptors over which the impacts will be felt) are used to inform the assessment of impact magnitude.

d) Assumptions and limitations

6.8.25 The assumptions and limitations detailed in paragraphs 7.4.31 and 7.4.32 of the 2014 EIA Scoping Report remain unchanged.

e) Potential impacts

6.8.26 Potential impacts are described below and summarised in **Table 6.11**.

Table 6.11: Summary of elements of the proposed development scoped in to the EIA for amenity and recreation

Element of the Proposed Development	Scoped In or Scoped Out for Amenity and Recreation	Justification
Main development site	Scoped in	Scoped in due to potential effects on recreational
Northern park and ride		

Element of the Proposed Development	Scoped In or Scoped Out for Amenity and Recreation	Justification
Southern park and ride		receptors during construction and operation phases, and the removal and reinstatement phases, where applicable.
Two village bypass		
Yoxford roundabout and other minor highway improvements		
Sizewell link road		
Theberton bypass		
Freight management facility options		
Green rail route and East Suffolk line and branch line upgrades and level crossing works		

i. Construction

6.8.27 Paragraph 7.4.35 of the 2014 EIA Scoping Report lists potential impacts and effects arising during construction. In addition to this list, the changes to the experience people have when using recreational resources due to increases in the numbers of people using them, from the following three potential sources will be assessed:

- people who wish to avoid effects caused by the construction works and are displaced to other recreation resources, increasing numbers of people at those resources;
- Sizewell C construction workers who may use recreational resources, increasing numbers of people at those resources; and
- people who may be attracted to the area to view construction of Sizewell C.

ii. Operation

6.8.28 Paragraph 7.4.37 of the 2014 EIA Scoping Report lists potential impacts and effects arising during operation. In addition to this list, impacts which may to arise from long term changes to human behaviour in terms of

recreational use i.e. habituation to patterns of use formed during the construction phase will be assessed.

iii. **Removal and reinstatement**

6.8.29 The potential impacts of removal and reinstatement are similar to those discussed for construction in paragraph 6.11.27 of this EIA Scoping Report.

iv. **Decommissioning**

6.8.30 The amenity and recreation chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) **Potential mitigation**

6.8.31 Potential mitigation measures are described in paragraphs 7.4.39 to 7.4.40 of the 2014 EIA Scoping Report; these measures remain unchanged. Since 2014 a Rights of Way and Open Access Strategy has been prepared and consulted on, providing further detail. The latest Rights of Way and Open Access Strategy is presented in Section 17.11 of the Volume 1: Development Proposals of the Stage 3 Consultation documents and its objectives can be summarised as follows:

Construction phase

- to minimise physical disturbance of existing rights of way and open access areas including the beach, open access land, the permissive networks and promoted cycle routes;
- to ensure that any necessary alternative routes meet the best interests of the user in respect of directness, safety and quality;
- to retain connectivity, where possible, especially north-south connectivity;
- to minimise disturbance (physical and amenity) to the Suffolk Coast Path, Sandlings Walk, the future England Coast Path and open access on the coast;
- to provide appropriate temporary diversion routes where disturbance or physical closure of routes cannot be avoided; and
- where possible and/or reasonable, to provide mitigation to rights of way, open access land and promoted cycle routes to minimise effects on their amenity.

Operation phase

- to restore any rights of way within the main development site and open access to the coast that were closed or diverted during construction and seek opportunities for enhancement;
- to seek to improve the amenity and physical condition of the rights of way network and open access on the coast across the EDF Energy estate;
- where possible and/or reasonable, to improve connectivity and linkages through the wider area, especially north south connectivity; and
- where possible and/or reasonable, to improve provision of routes within the EDF Energy estate.

6.8.32 In addition, measures to minimise effects due to changes in traffic, noise and vibrations, air quality and views will be applied as described in Sections 6.3, 6.4, 6.5 and 6.6 of this EIA Scoping Report.

f) Approach to cumulative assessment

i. Inter-relationships

6.8.33 The approach to inter-relationships, detailed in paragraphs 7.4.41 to 7.4.42 of the 2014 EIA Scoping Report, remains unchanged.

ii. Project-wide effects

6.8.34 The potential for project-wide amenity and recreation effects to be significant to receptors will be considered to establish if additional mitigation measures may be required. In particular, consideration will be given to the summed effects of the associated developments and movement of traffic on roads and rail in the scope of the wider proposed development.

iii. Cumulative effects

6.8.35 The approach to cumulative effects detailed in paragraphs 7.4.43 to 7.4.45 of the 2014 EIA Scoping Report remains unchanged although the schedule of relevant developments has changed in that time. The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.9 Historic Environment

a) Introduction

6.9.1 This section sets out the proposed scope and methodology for the historic environment assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.57 to 3.65 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.9.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with new guidance, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.9.3 Comments from English Heritage (now Historic England) related to the need to go beyond assessment matrices in establishing effects, and to ensure Historic England settings guidance was used. In addition, it was recommended that a non-technical narrative argument based on good professional judgement should be used to support the assessment and set out the effect in terms of significance, benefit, harm and loss. As set out in the methodology, assessments will be presented as narrative to provide clarity on how professional judgement has been used to inform the matrix-based assessment of effects. For the Marine Historic Environment, English Heritage (now Historic England) requested explanation of the proposed works within the main development site; these are summarised in Section 3.3 of this EIA Scoping Report.

6.9.4 Comments from SCC set out a number of specific heritage assets to be considered within the assessment. A separate settings scoping document was produced which set out a detailed scope of the assessment relating to changes to setting. Further and ongoing discussions and site visits with consultees during the consultation process, amendments and additions to the proposed development sites during the design evolution and EIA process, means a revised settings scoping has been produced following the Stage 3 consultation, and this will be issued to statutory consultees for agreement.

6.9.5 The scoping opinion from SCC also noted the reliance on the DMRB in establishing criteria and questioned its use. It considered that English Heritage's Conservation Principles should be referenced along with specific

guidance on field archaeology in the east of England, and Suffolk County Council Archaeological Service (SCCAS) documents on Archaeological evaluation and excavation. The method adopted has been developed to better align with the requirements of the NPS, EN-1, EN-6 and to respond to comments made in the 2014 EIA Scoping Opinion.

6.9.6 SCC also noted that terminology used in assessing significance could usefully reflect that used in Section 12 of the NPPF (i.e. ‘substantial’ and ‘less than substantial’). This terminology is consistent with that used in NPS EN-1 (5.8.14 – 5.8.15) and is addressed in the methodology set out below at paragraph 6.9.30.

6.9.7 A summary of the full responses to the comments received on the proposed assessment of effects on the historic environment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Survey and assessment

6.9.8 In addition to the surveys and work undertaken to date as set out in Section 7.5 of the 2014 EIA Scoping Report, further surveys and assessments undertaken in accordance with the 2014 EIA Scoping Report include:

- Desk Based Assessments (DBAs);
- site visits to proposed development sites, and off-site heritage assets, including visits undertaken with Historic England and Local Planning Authority officers from SDCD (now part of East Suffolk Council), Waveney District Council (now part of East Suffolk Council) and SCC;
- a programme of geophysical survey across the main development site and off-site associated development sites (currently in progress);
- a programme of offshore geophysical and geotechnical surveys; and
- a programme of evaluation trenching and geotechnical site across the main development site and off-site associated development sites (currently in progress).

6.9.9 Geophysical surveys and evaluation trenching are being undertaken in accordance with Written Schemes of Investigation (WSIs), trench plans and survey areas agreed with SCCAS and/or HE. Works have been regularly monitored by SCCAS.

6.9.10 Baseline data collected from the Historic Environment Record (HER), Historic England National Record of the Historic Environment (NRHE) and National Heritage List for England (NHLE) for the DBAs and subsequent

assessments was renewed during 2018 as part of the Stage 3 consultation process to ensure the information was up to date and reflected current site boundaries.

c) Proposed approach and methodology

i. Study area

6.9.11 The study area for individual sites includes the site boundary, and a buffer of between 500m and 1km (dependant on the scale of works at the relevant site) from the site boundary to establish the archaeological and historic context, and focus on the potential for undesignated heritage assets. Justification for the study areas will be clearly set out within the ES. For the marine historic environment, the study area for the DBA is set out within paragraph 7.6.5 and 7.6.6 of the 2014 EIA Scoping Report. For the ES, the study area will focus on the area within the site boundary. The study areas have been agreed with consultees for individual sites. The study area for the settings assessment remains as described in paragraph 7.5.8 of the 2014 EIA Scoping Report.

ii. Updates to baseline

6.9.12 The baseline is being updated and refined by the ongoing programme of DBAs, geophysical surveys and evaluation trenching, which will continue throughout 2019. This is allowing the potential for further, as yet unknown archaeological remains to be more fully understood.

6.9.13 The present baseline was discussed in detail in the Stage 3 consultation, to which reference should be made. For the purposes of scoping, the baseline set out in the 2014 EIA Scoping Report remains valid, although subsequent offshore geophysical survey and field survey at the main development site and some off-site associated development sites, comprising the southern park and ride at Wickham Market park and ride facility and the green rail route has allowed for a more refined understanding of the potential presence of archaeological remains.

- Sites not considered in the 2014 EIA Scoping Report comprise the proposed Sizewell link road and Theberton bypass, the two village bypass, the freight management facility and the Yoxford roundabout. These sites form part of this scoping exercise. The Sizewell link road and Theberton bypass pass through an area which has not been subject to any detailed archaeological investigation. While there is limited evidence for which suggest archaeological remains are present in this area, it is not possible to rule out the presence of significant archaeological remains on this basis and further archaeological fieldwork will be undertaken to allow for a more informed assessment.

There are also a number of listed buildings, primarily located along the side of the existing B1122.

- The proposed freight management facility is comprised of two sites. The western option, at Sevenhills, is located in a field which contains at least one ring ditch that was excavated in the 1970s. The alternative, eastern option at Sanctuary Farm is recorded as potentially containing prehistoric material, although this has not been confirmed through field survey.
- There is no evidence that archaeological remains are present at the Yoxford roundabout site, and further archaeological fieldwork will be undertaken to allow for a more informed assessment. There are a large number of listed buildings present within study area, primarily within the Yoxford Conservation Area, but also within the non-designated parkland at Cockfield Hall and The Rookery.

iii. Further surveys/studies

- 6.9.14 Further surveys which will continue throughout 2019 comprise the completion of agreed programmes of geophysical survey and evaluation trenching in accordance with WSIs. The results of these surveys will inform the assessment of effects and the development of mitigation strategies.

iv. Assessment methodology

- 6.9.15 The proposed assessment methodology set out in paragraphs 7.5.29 to 7.5.42 and 7.6.13 to 7.6.22 of the 2014 EIA Scoping Report has been revised in light of the scoping opinion from consultees, particularly in terms of reliance on the DMRB criteria as well as to reflect more current guidance documents.
- 6.9.16 The current methodology takes into account the following updated guidance documents:
- Historic England (2015), Good Practice Advice in Planning Note 2: Managing Significance in decision-taking in the Historic Environment. (Ref 6.25);
 - Historic England (2017), Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Ref 6.26);
 - COWRIE (2006), Historic Environment Guidance Note for the Offshore Renewable Energy Sector. (Ref 6.27);

- COWRIE (2011), Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. (Ref 6.28);
- Historic England (2013), Marine Geophysics Data Acquisition, Processing and Interpretation. (Ref 6.29);
- Ongoing comprehensive review of the 2011 Research and Archaeology Revisited: A Revised Framework for the East of England. Draft documents are currently (March 2019) available for some time periods, with others to follow in due course;
- Ransley *et al.* (2013), People and the Sea: A Maritime Archaeological Research Agenda for England. (Ref 6.30);
- Chartered Institute for Archaeologists (CIfA) (2017), Standards and guidance for archaeological desk-based assessment. (Ref 6.31);
- CIfA (2014), Standards and guidance for archaeological geophysical survey assessment. (Ref 6.32);
- Oxford Archaeology Ltd & George Lambrick (2008), Guidance for the assessment of cumulative impacts on the historic environment from offshore renewable energy. (Ref 6.33); and
- English Heritage (2008), Conservation Principles (Ref 6.34).

v. Assessment criteria

Heritage significance

- 6.9.17 NPS EN-1 requires change to the significance of heritage assets to be considered in developing an understanding of the potential effects of the proposed development.
- 6.9.18 The significance of a heritage asset is a product of the value which it holds to this and future generations as a result of its historic, archaeological, architectural or artistic interests, and these provide the basis for considering the significance of each heritage asset (including the contribution of its setting to those interests). These interests are set out in NPS EN-1 (paragraph 5.8.2) and are discussed in more detail in Conservation Principles and GPA2. A consultation draft of a revised Conservation Principles has also been issued:
- archaeological – the ability of a heritage asset to hold information about the past which can be retrieved through specialist investigation;

- historical – which can be through association with past events or people, or where a heritage asset is illustrative of a particular asset type, theme or period; and
- architectural/artistic – values which derive from a contemporary appreciation of a heritage asset’s aesthetics.

6.9.19 NPS EN-1 notes that setting contributes to an asset’s significance and sets out policies regarding change to the setting of heritage assets, but does not offer an explicit definition. Setting is defined in both the NPPF and by Historic England in GPA 3 as:

“...the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.”

6.9.20 GPA 3 advises that the following aspects of setting should be considered in addition to any identified key attributes:

- the physical surroundings of the asset, including its relationship with other assets;
- the way the asset is appreciated; and
- the asset’s associations and patterns of use.

6.9.21 For the purposes of assessing the significance of effects in EIA terms, heritage significance has also been assigned to one of four classes, with reference to the heritage interests described above and relying on professional judgement as informed by policy and guidance. The hierarchy given in **Table 6.12** replaces Table 7.5.1 of the 2014 EIA Scoping Report and reflects the EN-1 distinction between designated and non-designated heritage assets. EN-1 further distinguishes between designated assets of the highest heritage significance (i.e. Scheduled Monuments, protected wreck sites, battlefields, Grade I and II* listed buildings, Grade I and II* registered parks and gardens, and World Heritage Sites) and other designated heritage assets. This further distinction is relevant to planning policy, but has less influence on the establishment of the significance of an effect in EIA terms.

Table 6.12: Criteria Used to Determine Heritage Significance

Heritage Significance	Summary Rationale	Example Asset Class
High	Asset has significance for an outstanding level of archaeological, architectural, historic and/or artistic interest.	Designated heritage assets.
Medium	Asset has significance for a high level of archaeological, architectural, historic and/or artistic interest.	Locally listed buildings and buildings of merit. Regionally significant non-designated archaeological sites.
Low	Asset has significance for elements of archaeological architectural, historic or artistic interest.	Locally-significant archaeological site.
Negligible	Due to its nature of form/condition/survival, cannot be considered as an asset in its own right.	Non-extant HER Record.

Magnitude of change

6.9.22 Definitions of magnitude of change have been updated from the provided within Table 7.5.2 of the 2014 EIA Scoping Report based on the consequences that the proposed development would have on the significance of the historic environment resource. However, impact magnitude is still considered in terms of High-Medium-Low-Very Low. The magnitude of change of an impact is based on a number of factors:

- the permanence of the impact (temporary, permanent or reversible);
- physical changes caused by the impact (both positive and negative);
- the extent of the heritage asset that would be affected (e.g. the whole or a very small part);
- the nature of the heritage asset that would be affected; and
- the overall impact of changes on the values and significance of the heritage asset (including the contribution of its setting).

6.9.23 In this context, the effects of change in the setting of a heritage asset may depend on individual aspects of that setting, and assessments must be, by their nature, specific to the individual assets being considered.

6.9.24 Impacts on receptors are assigned to one of four classes of magnitude, defined in **Table 6.13**. Impacts can be adverse or beneficial and it is recognised that EN-1 (paragraph 5.8.13) looks to developers to make, where possible, a positive contribution to the historic environment as part of its design response.

Table 6.13: Magnitude of change

Magnitude	Summary Rationale (adverse)	Summary Rationale (beneficial)
High	Loss of significance of an order of magnitude that would result from irreversible total or substantial demolition/disturbance of a heritage asset or from the disassociation of an asset from its setting.	Sympathetic restoration of an at-risk or otherwise degraded heritage asset and/or its setting and bringing into sustainable use with robust long-term management secured.
Medium	Loss of significance arising from partial disturbance or inappropriate alteration of asset which will adversely affect its importance. Change to the key characteristics of an asset's setting, which gives rise to lasting harm to the significance of the asset, but which still allows its archaeological, architectural or historic interest to be appreciated.	Appropriate stabilisation and/or enhancement of a heritage asset and/or its setting that better reveal the significance of the asset or contribute to a long-term sustainable use or management regime.
Low	Minor loss to or alteration of an asset which leave its current significance largely intact. Minor and/or short term changes to setting which do not affect the key characteristics and in which the historical context remains substantially intact.	Minor enhancements to a heritage asset and/or its setting that that better reveal its significance or contribute to sustainable use and management.
Very Low	Minor alteration of an asset which does not affect its significance in any discernible way. Minor and/or short term or	Minor alteration of an asset which does not affect its significance in any discernible way. Minor

Magnitude	Summary Rationale (adverse)	Summary Rationale (beneficial)
	reversible change to setting which does not affect the significance of the asset.	and/or short term or reversible change to setting which does not affect the significance of the asset.

vi. Effect definitions

- 6.9.25 The classification of the effect is judged on the relationship of the magnitude of impact to the assessed heritage significance of the resource.
- 6.9.26 The assessment of the effect is reported following incorporation of environmental measures discussed during the development phase of the proposal, such as ‘embedded design’, as set out within Sections 5.3 and 5.4 of this EIA Scoping Report.
- 6.9.27 In EIA terms, it is only those effects assessed as being worse than minor adverse which require mitigation. Consequently, effects rated as negligible or minor adverse are considered to be generally acceptable without the requirement for further mitigation. It should be noted, however, that NPS EN-1 allows for archaeological mitigation of any loss of significance.
- 6.9.28 Following the classification of an effect as presented in **Table 5.3** of this EIA Scoping Report, a clear statement is made as to whether the effect is ‘significant’ or ‘not significant’. As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant. However, professional judgement is also applied where appropriate.
- 6.9.29 All assessments will be presented as narrative discussions, setting out the significance of the relevant heritage asset(s), and where appropriate contribution of their settings to significance, providing a description of the anticipated change and setting out the magnitude of impact in line with the definitions set out in **Tables 6.12, 6.13** and **5.3**.
- 6.9.30 NPS EN-1 further distinguishes between ‘harm’ and ‘substantial harm’ and sets out how development that gives rise to harm should be considered within the planning process. For the purposes of this assessment, adverse impact of low or medium magnitude to a designated heritage asset or non-designated heritage assets of equivalent heritage significance would normally be considered to comprise harm, while a high magnitude of impact would comprise substantial harm however special consideration needs to be given to the particular context in which the assessment is taking place. Comments on the magnitude of any harm accruing to designated heritage

assets or non-designated heritage assets of equivalent heritage significance will be made in the narrative assessment.

vii. Assumptions and limitations

6.9.31 As set out in at paragraph 7.5.43 and 7.6.23 of the 2014 EIA Scoping Report, there are no known assumptions or limitations to the assessment at this stage.

6.9.32 Where further survey identifies any concerns that would apply to the assessment of specific effects, these will be noted in the relevant narrative assessment.

d) Potential impacts

6.9.33 Potential impacts are described below and summarised in **Table 6.14**.

Table 6.14: Summary of elements of the proposed development scoped in to the EIA for historic environment

Element of the Proposed Development	Scoped In or Scoped Out	Justification
Main development site	Scoped In	Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Northern park and ride	Scoped In	Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Southern park and ride		

Element of the Proposed Development	Scoped In or Scoped Out	Justification
Two village bypass	Scoped In	Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Yoxford roundabout and other minor highway improvements		Scoped in, due to potential direct effects on buried archaeological remains. No potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Sizewell link road		Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Theberton bypass		Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Freight management facility options	Scoped In	Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).
Green rail route and East Suffolk line and branch line upgrades and level crossing works	Scoped In	Scoped in, due to potential direct effects on buried archaeological remains, and potential indirect effects on heritage assets (specific scoped-in assets set out within updated settings scoping report).

i. Construction

- 6.9.34 The potential impacts during construction are set out at paragraph 7.5.44 to 7.5.46 of the 2014 EIA Scoping Report. For the marine historic environment, the potential impacts will include a beach landing facility (BLF) and associated infrastructure, including a cooling water system and combined drainage outfall in the North Sea (see Section 3.2 of this EIA Scoping Report).
- 6.9.35 The potential impacts on buried archaeological remains extends to the off-site associated development sites where there will be ground disturbance.
- 6.9.36 The potential for temporary impacts to the setting of heritage assets extends to the off-site associated development sites.

ii. Operation

- 6.9.37 The potential operation impacts are set out at paragraph 7.5.47 and 7.6.25 of the 2014 EIA Scoping Report and remain unchanged for the main development site. A revised settings scoping document is being produced for issue to statutory consultees which sets out which assets are potentially subject to indirect effects as a result of the operation of the main development site and the off-site associated development sites.

iii. Removal and reinstatement

- 6.9.38 No impacts are anticipated during removal and reinstatement, although some effects, primarily to historic landscape character or to the setting of heritage assets, would be partially or wholly reversed.

iv. Decommissioning

- 6.9.39 The historic environment chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

b) Potential mitigation

- 6.9.40 The potential mitigation measures detailed in paragraphs 7.5.48 to 7.5.49 and 7.6.26 to 7.6.27 of the 2014 EIA Scoping Report remain unchanged, and are applicable to the new road and rail proposals. For the marine area, mitigation will entail geoarchaeological site investigations and, where deemed appropriate, the use of palaeoenvironmental and chronological methods. Such assessments have already been undertaken for geotechnical material recovered in 2014. For site investigations an

archaeological WSI and a Reporting Protocol for Archaeological Discoveries (PAD) will be implemented where necessary.

e) Approach to cumulative assessment

i. Inter-relationships

6.9.41 The approach to inter-relationships, detailed in paragraph 7.5.50 and 7.6.28 of the 2014 EIA Scoping Report, remains unchanged.

ii. Project-wide effects

6.9.42 The potential for project-wide historic environment effects to be significant will be considered to establish if additional mitigation measures may be required. In particular, consideration will be given to the summed effects of the off-site associated development sites in the scope of the wider proposed development.

iii. Cumulative effects

6.9.43 The approach to cumulative effects detailed in paragraphs 7.5.51 to 7.5.53 and 7.6.30 to 7.6.31 of the 2014 EIA Scoping Report remains unchanged although the schedule of relevant developments has changed in that time. The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.10 Soils and Agriculture

a) Introduction

6.10.1 This section sets out the proposed scope and methodology for the soils and agriculture assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.83 to 3.87 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.10.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with updated best practice guidance, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.10.3 The approach to the assessment of likely significant effects on soils and agriculture is set out in Section 7.9 of the 2014 EIA Scoping Report. The subsequent Scoping Opinion welcomed the undertaking of further Agricultural Land Classification (ALC) surveys to include all areas of the main development site and the proposal to produce a Soils Management Plan (SMP). The EIA Scoping Opinion queried how significance would be calculated for this topic; this EIA Scoping Report updates the assessment methodology to reflect current best practice.

6.10.4 A summary of the full responses to the comments received on the proposed soils and agriculture assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Survey and assessment

6.10.5 Surveys previously undertaken as per the 2014 EIA Scoping Report include an ALC survey of land within the main development site boundary, conducted in 2011. The results of this work were shown in Figure 7.9.4 of the 2014 EIA Scoping Report.

6.10.6 The EIA Scoping Opinion requires ALC surveys to be undertaken at a density of one auger boring per hectare. The 2011 ALC data has subsequently been reviewed against this requirement and, as the survey spacing was at a lower density than one auger per hectare Natural England were consulted on the scope of further work required. Agreement was reached that:

- on the basis of an analysis of the available detailed data (soil profile logs) land grade could be confirmed for some areas (where droughtiness was the over-riding constraint);
- where the original soil profile logs were not available additional soil texture analysis undertaken allowed the land grade (predominantly grades 3b and 4) to be confirmed without the need for detailed ALC surveys; and
- where the additional soil texture analysis showed potential areas of grade 3a land detailed ALC surveys would be undertaken to confirm the extent of this grade.

6.10.7 Additional ALC surveys have been undertaken, with further surveys planned, for those areas not covered by the 2011 ALC survey, as committed to in the 2014 EIA Scoping Report.

c) Proposed approach and methodology

i. Study area

6.10.8 The study area for the soils and agriculture assessment is set out in paragraph 7.9.14 of the 2014 EIA Scoping Report and will be extended to include the off-site associated development sites. In addition, the assessment of impacts on farm viability will take into account the full extent of each affected business (i.e. so the impact can be considered in the context of the entire holding).

ii. Updates to baseline

6.10.9 Paragraphs 7.9.21 to 7.9.23 of the 2014 EIA Scoping Report outline that further desk-based and field-based studies will be undertaken, along with consultations with landowners and land managers.

6.10.10 Since the 2014 EIA Scoping Report was issued further studies have been undertaken, including desk-based data analysis, detailed ALC surveys, ground truthing surveys and landowner/land manager interviews. These have been conducted for the following:

- main development site;
- northern park and ride facility;
- southern park and ride facility; and
- green rail route.

iii. Further surveys/studies

6.10.11 Detailed ALC surveys and land owner/land manager interviews are proposed to be undertaken in 2019 for the following:

- the main development site, park and ride facilities and green rail route where the application boundary has changed, or access was not available previously;
- the proposed road schemes and road improvements;
- the freight management facility; and

- the rail line upgrades.

iv. Assessment methodology

6.10.12 The assessment methodology will be as set out in the 2014 EIA Scoping Report (paragraphs 7.9.24 to 7.9.27) with the exception of the assessment of value/sensitivity of the receptors. This has been updated to reflect current best practice (under development by IEMA) as set out in **Table 6.15**. The key change is the inclusion of all best and most versatile land grades (Grades 1, 2 and 3a) as High sensitivity.

Table 6.15: Determination of value/sensitivity of receptors for soils and agriculture

Value/Sensitivity	Description
High	<ul style="list-style-type: none"> • Grade 1, 2 and 3a land (i.e. best and most versatile land); • Irrigated agriculture; • Stock animals; • Higher level agri-environment schemes; • Soils with low or no wetness limitation affecting workability (wetness class I or II), where drought is not also a limitation; and • Soils with a high susceptibility to structural damage and soil erosion throughout the year, including heavily textured, poorly structured soils.
Medium	<ul style="list-style-type: none"> • Grades 3b land; • Non irrigated agriculture; • Entry level agri-environment schemes; • Soils with low wetness limitation affecting workability (wetness class II), where drought is not also a limitation; and • Soils with some seasonal susceptibility to structural damage and soil erosion.
Low	<ul style="list-style-type: none"> • Grade 4 land; • Arable or grassland areas; • Soils with moderate wetness limitation affecting workability (wetness class III or IV); and • Soils with medium to coarse textures and some resistance to structural damage for most of the year.
Very Low	<ul style="list-style-type: none"> • Grades 5 land; • Non-agricultural land; • Soils with high wetness limitation affecting workability (wetness class V or VI); • Soils in which susceptibility to drought is a limitation to

Value/Sensitivity	Description
	<p>crop growth; and</p> <ul style="list-style-type: none"> Course textured and stony soils with little potential for structural damage.

6.10.13 Table 7.9.2 of the 2014 EIA Scoping Report will be used to assess the magnitude of impact on soils and agriculture and **Table 5.3** of this report will be used to classify the effect. A clear statement will be made as to whether the effect would be ‘significant’ or ‘not significant’.

v. Assumptions and limitations

6.10.14 The assumptions and limitations detailed in paragraphs 7.9.28 and 7.9.29 of the 2014 EIA Scoping Report remain unchanged. The physical effects on soils (such as soil compaction and erosion) are dealt with in the Geology and Land Quality **Section 6.11** of this EIA Scoping Report.

d) Potential impacts

6.10.15 Potential impacts are described below and summarised in **Table 6.16**.

Table 6.16: Summary of elements of the proposed development scoped in to the EIA for soils and agriculture

Element of the Proposed Development	Scoped In or Scoped Out for Soils and Agriculture	Justification
Main development site	Scoped In	Scoped in, due to the permanent and temporary loss of land from agricultural production.
Northern park and ride		Scoped in, due to the temporary loss of land from agricultural production.
Southern park and ride		Scoped in, due to the permanent and temporary loss of land from agricultural production.
Two village bypass		
Yoxford roundabout and other minor highway improvements		
Sizewell link road		
Theberton bypass		Scoped in, due to the temporary loss of land from agricultural production.
Freight management facility		

Element of the Proposed Development	Scoped In or Scoped Out for Soils and Agriculture	Justification
Green rail route and East Suffolk line and branch line upgrades and level crossing works		Scoped in, due to the temporary loss of land from agricultural production. Note that once further detail on the extent of impact on agricultural land in relation to the branch line upgrades and Sizewell Halt works these elements may be scoped out.

i. Construction

6.10.16 The potential impacts during construction detailed in paragraph 7.9.31 to 7.9.32 of the 2014 EIA Scoping Report remain unchanged. In addition, the following impacts will also be considered:

- severance/fragmentation of land holdings; and
- disruption to ongoing agricultural activities (such as disturbance to livestock, disruption to drinking water supplies and access restrictions).

ii. Operation

The potential impacts during construction detailed in paragraph 7.9.30 of the 2014 EIA Scoping Report remain unchanged.

iii. Removal and reinstatement

6.10.17 Where land is to be returned to agriculture, for example the park and ride sites, freight management facility and green rail route, the impacts identified above will be reversed.

iv. Decommissioning

6.10.18 The soils and agriculture chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) **Potential mitigation**

6.10.19 The potential mitigation measures detailed in paragraph 7.9.33 to 7.9.34 of the 2014 EIA Scoping Report in relation to reducing the impacts on soil quality, remain unchanged.

6.10.20 In addition, the following measures will be implemented where appropriate:

- A considerate construction approach would be used to minimise potential impacts on any remaining areas of the landholding and on neighbouring landholdings during the construction phase. Toolbox talks would be used to inform all those working on the site of the requirements for soil handling and minimisation of disturbance to agricultural activities.
- All fencing around the proposed development would be sufficient to resist damage by livestock and will be regularly checked and maintained in a suitable condition. Any damage to boundary fencing would be repaired immediately.
- Measures contained in relevant Defra and Environment Agency best practice guidance on the control and removal of invasive weed species would be implemented where appropriate.
- Works would cease, and the Animal Health Regional Office would be advised, should animal bones be discovered which indicate a potential burial site.
- All movement of plant and vehicles between fields would cease in the event of a disease outbreak and official Defra advice would be followed to minimise the biosecurity risk associated with the continuation of works.
- In relation to temporary and permanent land take requirements EDF Energy would liaise with landowners in relation to temporary and permanent land take requirements to understand and where possible address their concerns.

f) **Approach to cumulative assessment**

i. **Inter-relationships**

6.10.21 The approach to inter-relationships, detailed in paragraph 7.9.35 of the 2014 EIA Scoping Report, remains unchanged.

ii. Project-wide effects

6.10.22 The potential for project-wide effects on soils and agriculture to be significant will be considered to establish if additional mitigation measures may be required. In particular, consideration will be given to the total area of best and most versatile land affected.

iii. Cumulative effects

6.10.23 The approach to cumulative effects detailed in paragraph 7.9.36 of the 2014 EIA Scoping Report remains unchanged although the schedule of relevant developments has changed in that time. The approach to cumulative effects is more fully described (for all topics) in **Section 5.5** of this EIA Scoping Report.

6.11 Geology and Land Quality

a) Introduction

6.11.1 This section sets out the proposed scope and methodology for the land quality assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.88 to 3.91 of the 2014 EIA Scoping, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.11.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with the findings of surveys undertaken, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.11.3 Further clarification in relation to comments raised in the 2014 EIA Scoping Opinion are provided below:

- The approach to the assessment of likely significant effects on land quality will be undertaken using the methodology detailed in Table 5.3 and paragraph 5.3.6 of the 2014 EIA Scoping Report. The sensitivity of a receptor and the magnitude of the impact will be used to classify an effect. Once an effect has been classified, a clear statement will be made as to whether the effect is 'significant' or 'not significant'. As a general rule, major and moderate effects would be considered to be significant

and minor and negligible effects would be considered to be not significant.

- No geological statutory designated sites have been identified within the main development site, the off-site associated development sites or the wider study area including the offshore coastal area.
- Contamination testing was carried out as part of previous ground investigations undertaken on the main development site and included testing for a wide range of determinants including metals, hydrocarbons, volatile organic compounds, pesticides and herbicides. Results for pesticides and herbicides were reported below the laboratory limit of detection and it is considered that the assumption in paragraph 7.10.24 of the 2014 EIA Scoping Report has been validated. However, further testing will be also undertaken within the main development site as part of the additional ground investigation works proposed in 2019.
- The radiochemical analysis undertaken as part of the previous ground investigation in 2011 included alpha-emitters, beta-emitters, gamma emitters, radionuclides (actinium, bismuth, thallium, lead, protactinium, polonium, radium, potassium, uranium, zinc and thorium), total tritium and carbon-14. Results were assessed against screening values which were derived using published radionuclide background levels and radionuclide concentration limits from the Environmental Permitting Regulations (2011).

6.11.4 A summary of the responses to other comments received on the proposed assessment of effect on geology and land quality in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. **Survey and assessment**

6.11.5 As outlined in paragraphs 7.10.2 to 7.10.6 of the 2014 EIA Scoping Report, the ground investigations and assessments used to inform the scoping included:

- a Phase 1 desk-based study carried out on part of the main development site centred to the land north of Sizewell B in 2010; and
- a Phase 2 intrusive investigation undertaken within the location of the proposed Sizewell C power station between 2010 and 2011 including geotechnical and geo-environmental testing.

6.11.6 Since the 2014 EIA Scoping Opinion, several additional ground investigations and assessments have been undertaken for the proposed development including:

- Phase 2 intrusive investigations carried out at the main development site in 2014 and 2015 including geotechnical and geo-environmental testing;
- a Phase 2 Ground Investigation Report prepared for the main development site in 2018 which included an updated Phase 1 desk-based assessment to cover the entire area of the main development site, an updated assessment of the ground investigation information and an updated conceptual site model; and
- Phase 1 desk-based studies carried out for the off-site associated development sites in 2018 and 2019 including the ‘new’ off-site associated development sites which have been introduced into the proposed development.

6.11.7 The additional assessments were undertaken in accordance with current legislation and guidance and to address paragraph 3.88 of the 2014 EIA Scoping Opinion and the requirements of the NPS for Energy (EN-1).

6.11.8 Baseline assessment data detailed in the 2014 EIA Scoping Report will be updated to take account of the information provided by the additional ground investigations and assessments.

c) **Proposed approach and methodology**

i. **Study area**

6.11.9 The study area as defined within paragraph 7.10.7 of the 2014 EIA Scoping Report included a 1km radius from the site boundary. However, based on the findings of the additional ground investigations and assessments, the revised development proposals and updated methodology, the study area has been amended as follows:

- to consider the physical effects of the proposed development on geology (e.g. changes in soil erosion, soil compaction and ground stability) and the effects associated with the re-use of soils and generation of waste soils (as part of the proposals for soil re-use within the proposed development), the study area will be the area within the red line boundary (the site); and
- to consider the effects associated with ground contamination on human receptors, controlled waters, ecological receptors and property receptors the study area will include the site area within the red line boundary and land immediately beyond it to a distance of 500m.

ii. Updates to baseline

6.11.10 Paragraphs 7.10.9 to 7.10.15 of the 2014 EIA Scoping Report provided a summary of the baseline conditions for the proposed development.

6.11.11 Since the 2014 EIA Scoping Opinion, several additional ground investigations and assessments have been undertaken and the proposed development has been revised. A summary of the updated baseline is provided below:

- Based on existing ground investigation data, the geology underlying the main development site is indicated to comprise Made Ground overlying superficial deposits of Marine deposits, Alluvium, Peat, Head deposits and the Lowestoft Formation. The underlying bedrock is indicated to comprise the Crag Group.
- Chemical testing data collected during previous ground investigations has not indicated significant sources of contamination within the main development site and no asbestos fibres have been identified within soil samples. The ground gas regime within the main development site has been classified as Characteristic Situation CS2, which implies a low risk but requires gas protection measures. Limited testing data is available for the temporary construction area and the LEEIE.
- Published geological records indicate that the associated development sites are predominantly underlain by the Lowestoft Formation, Alluvium and Head deposits. The Kesgrave Catchment Subgroup is present underlying the freight management facility and rail improvement sites. Made Ground may potentially be present in some areas related to the construction of existing roads and railways. The underlying bedrock is indicated to mainly comprise the Crag Group. The Red Crag Formation and the Chillesford Church Sand Member are present underlying the two village bypass and Yoxford roundabout sites.
- No ground investigation data is available for the off-site associated development sites. However, the majority of the sites comprise agricultural land and the risk of contamination is considered to be low within these areas.

iii. Further surveys/studies

6.11.12 As detailed in paragraphs 7.10.16 to 7.10.18 of the 2014 EIA Scoping Report further planned assessments included:

- an update of the Phase 1 desk-based study to cover the entire main development site;

- a detailed review of existing geo-environmental information to develop a conceptual site model; and
- a desk-top review of sites of geological statutory designated sites within the study area.

6.11.13 These have been completed as part of the additional surveys and assessments undertaken (see paragraph 6.11.6 above).

6.11.14 No further ground investigations or assessments are proposed to be undertaken during 2019 within the associated development sites and the existing baseline is considered a robust baseline for the purposes of the assessment.

6.11.15 However, an additional ground investigation is proposed to be undertaken in 2019 within the main development site and adjacent offshore area to provide further information on the ground conditions underlying the main development site and offshore area to support the design works for the new Sizewell C Power Station. Further chemical testing will be undertaken as part of these works...

iv. Assessment methodology

6.11.16 The proposed assessment methodology for land quality is largely as detailed in paragraphs 7.10.19 to 7.10.23 of the 2014 EIA Scoping Report. However, based on the findings of the additional ground investigation and assessments and the revised development proposals, the following changes to the assessment methodology are proposed:

- Due to the potential physical effects of the proposed development on geology and the proposals for soil re-use on site, physical effects (e.g. changes in soil erosion, soil compaction and ground stability) and the effects associated with the re-use of soils and generation of waste soils (e.g. the re-use of potentially contaminated material and the generation of 'unsuitable' or hazardous soils requiring removal from site), have been scoped into the assessment.
- The scoping out of effects on geology as a valuable resource, as additional assessments have not indicated the presence of statutory designated geological sites within the study area.
- A reduction in the size of the study area to 500m for the assessment of effects associated with contamination, as additional ground investigations and assessments (see paragraph 6.11.3 above) have not indicated the presence of mobile contaminants and pathways within the study area. Chemical testing data collected within the main

development site has not indicated significant sources of contamination and the majority of the off-site associated development sites comprise agricultural land and the risk of contamination is considered to be low within these areas.

6.11.17 The assessment of the potential physical effects of the proposed development on geology will be undertaken using a qualitative approach considering the effects on soil compaction, soil erosion and ground stability from the construction works, operation and decommissioning (where applicable) of the proposed development. The assessment will be informed by the works required and the construction, operation and removal and restoration methods proposed.

6.11.18 The assessment of the significance of effects will be undertaken using the methodology detailed in Table 5.3 and paragraph 5.3.6 of the 2014 EIA Scoping Report. Major and moderate effects would be considered to be significant and minor and negligible effects would be considered to be not significant.

6.11.19 Recent updates to guidance documents will also be used to inform the assessment methods. The changes relate to:

- British Standards (2015) BS 5930 – Code of practice for ground investigations;
- British Standards (2017) BS 10175:2011+A2:2017 – Code of Practice for Investigation of Potentially Contaminated Sites; and
- British Standard (2019) BS 8485:2015+A1:2019 – Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

6.11.20 The methodology for the off-site associated development road schemes and the park and ride sites will also be undertaken in accordance with the DMRB environmental assessment guidance.

v. Assumptions and limitations

6.11.21 The assumptions and limitations detailed in paragraphs 7.10.24 and 7.10.25 of the 2014 EIA Scoping Report have been updated to include the following additional items:

- the baseline understanding of the geology underlying the main development site is based on a combination of existing ground investigation information and published British Geological Survey maps. Limited ground investigation data is available for the temporary

construction area, the land to the east of Eastland industrial estate and the associated development sites and the baseline for these areas has been largely prepared using British Geological Survey mapping;

- stockpiling of materials will be on the land within the red line boundary of the development;
- construction works will include a vegetation/topsoil strip; and
- for temporary developments, post operation the site will be restored back to its original land use and as such all underground services, foundations and other above ground structures will be removed.

d) Potential impacts

6.11.22 Potential impacts are described below and summarised in **Table 6.17**.

Table 6.17: Summary of elements of the proposed development scoped in to the EIA for land quality

Element of the Proposed Development	Scoped In or Scoped Out for Land Quality	Justification
Main development site	Scoped In	Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction, operation and removal and reinstatement phases of the main development.
Northern park and ride	Scoped In	Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction, operation and removal and reinstatement phases of the park and ride facilities.
Southern park and ride		

Element of the Proposed Development	Scoped In or Scoped Out for Land Quality	Justification
Two village bypass	Scoped In	Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction and operation phases of the road improvement schemes.
Yoxford roundabout and Other minor highway improvements		Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction and operation phases of the road improvements
Sizewell link road		Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction and operation phases of the road improvement schemes
Theberton bypass		Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction and operation phases of the road improvements.
Yoxford roundabout and other minor highway improvements	Scoped In	Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction, operation and removal and reinstatement phases of the freight management facility options.
Freight management facility options	Scoped In	

Element of the Proposed Development	Scoped In or Scoped Out for Land Quality	Justification
Green rail route	Scoped In	Scoped in, due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction, operation and removal and reinstatement phases of the railway infrastructure.
East Suffolk line and branch line upgrades and level crossing works	Scoped In (in part)	Minor railway upgrade works and level crossing works are scoped out of the assessment. Other elements of these works are scoped in due to potential effects on ground conditions, human receptors, controlled waters, ecological receptors and property receptors during construction, operation and removal and reinstatement phases.

i. Construction

- 6.11.23 The potential impacts during construction in relation to effects associated with ground contamination are detailed in paragraphs 7.10.26 to 7.10.28 of the 2014 EIA Scoping Report and remain unchanged. Additional effects to be considered in relation to physical effects during construction are outlined in the following sections.
- 6.11.24 Physical effects during construction may include changes in soil erosion associated with stripping of topsoil, vegetation clearance, stockpiling, earthworks and construction of new buildings and infrastructure. Potential impacts therefore relate to these physical changes.
- 6.11.25 Waste soils will be generated during construction through excavations and during installation of services and foundations. There is also the potential that waste soil generated from the earthworks is classified as unsuitable for re-use on site, requiring removal from the site. Therefore, potential impacts may occur due to excavation and management of soil.

ii. Operation

- 6.11.26 The potential impacts due to operation in relation to effects associated with ground contamination are detailed in paragraph 7.10.29 of the 2014 EIA Scoping Report and remain unchanged. Additional effects to be considered are outlined in the following sections.
- 6.11.27 Impacts in relation to physical effects are considered to be mainly related to the construction phase. During operation, there may be limited impacts of soil erosion, ground stability and soil compaction through maintenance operations.
- 6.11.28 The proposed development may also generate limited waste soils during operation due to maintenance requirements and potential impacts may arise.

iii. Removal and reinstatement

- 6.11.29 Potential impacts due to removal and reinstatement of the temporary developments were not included within the 2014 EIA Scoping Report.
- 6.11.30 The proposed temporary development would be restored to the baseline condition. Therefore, the potential impacts due to the removal and reinstatement of the temporary developments as part of the post operational phase will be considered in relation to ground contamination, physical effects, including soil erosion, ground stability and soil compaction, and generation of waste soils. The removal and reinstatement phase may cause contamination, waste and physical effects associated with removal of structures, services and foundations, and earthworks for the restoration of the land.

iv. Decommissioning

- 6.11.31 The geology and land quality chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

- 6.11.32 The potential mitigation measures as detailed in paragraph 7.10.30 of the 2014 EIA Scoping Report are considered likely to be limited to primary (embedded) and tertiary mitigation, and no additional (secondary) mitigation measures are proposed at this stage.

f) Approach to cumulative assessment

i. Inter-relationships

6.11.33 The approach to inter-relationships, detailed in paragraphs 7.10.31 to 7.10.33 of the 2014 EIA Scoping Report, remains largely unchanged. However, as no important geological sites have now been identified through additional assessments and studies, links to coastal geomorphology and hydrodynamics are no longer considered to be relevant.

ii. Project-wide effects

6.11.34 The potential for project-wide land quality effects to be significant to receptors will be considered to determine whether additional mitigation measures may be required. In particular, consideration will be given to the combined effects of the off-site associated development sites in the scope of the wider proposed development.

iii. Cumulative effects

6.11.35 The approach to cumulative effects detailed in paragraph 7.10.34 of the 2014 EIA Scoping Report remains unchanged, although the schedule of relevant developments has changed in that time. In addition, as no important geological sites have been identified, cumulative effects on geological sites on the coast are no longer considered to be relevant.

6.11.36 The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.12 Groundwater and Surface Water

a) Introduction

6.12.1 This section sets out the proposed scope and methodology for the surface water and groundwater assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraph 3.92 to 3.105 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.12.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with updated guidance documents, comments received in the 2014 EIA Scoping Opinion and the changes to the off-site associated development described within Sections 3.4 to 3.11 of this EIA Scoping Report.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.12.3 The approach to the assessment of likely significant effects on groundwater and surface water is set out in Section 7.10 and 7.11 of the 2014 EIA Scoping Report. The comments raised in the subsequent 2014 EIA Scoping Opinion, reiterated the need to conduct a surface water and groundwater assessment.

6.12.4 A summary of the responses to the comments received on the proposed groundwater and surface water assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Survey and assessment

6.12.5 Baseline surface water and groundwater monitoring has continued since the 2014 EIA Scoping Opinion including the incorporation of additional boreholes and surface water locations around the main development site to supplement the original network. The existing baseline is considered a robust baseline for the purposes of the assessment.

6.12.6 The data derived from groundwater and surface water monitoring has been used to refine and calibrate the groundwater model that will be used to form the basis of a predictive impact assessment related to main development site construction.

c) Proposed approach and methodology

i. Study area

6.12.7 The study area for the main development site surface water and groundwater assessment, as defined in paragraphs 7.11.6 and 7.12.5 of the 2014 EIA Scoping Report remains unchanged.

6.12.8 In addition, the study area also includes the extent of the off-site associated development sites.

ii. Updates to baseline

6.12.9 Since 2014 additional surface water and groundwater monitoring data has been completed. This confirms that the baseline conditions for the surface water and groundwater assessment detailed in sections 7.11.7 to 7.11.14 and 7.12.5 to 7.12.15 of the 2014 EIA Scoping Report remain unchanged.

6.12.10 Following publication of the second cycle Anglian River Basin Management Plan in 2016, there has been an update to water body classification. The

updated classifications, however, do not present any meaningful change to the characterisation of the baseline.

iii. **Further surveys/studies**

- 6.12.11 Surface water and groundwater monitoring will continue for the main development site in line with that undertaken since 2014 and described in Sections 7.11.3 and 7.12.2 of the 2014 EIA Scoping Report. This will be expanded to cover the off-site associated development sites.
- 6.12.12 Walkover river corridor surveys have been carried out at the following off-site associated development sites:
- Theberton bypass;
 - Sizewell link road; and
 - two village bypass.
- 6.12.13 The walkover surveys have focused on the footprint of the proposed development, extending upstream and downstream to ensure that it was adequately characterised.
- 6.12.14 For the Theberton bypass/Sizewell link road, walkovers have been completed on the Theberton watercourse, Middleton watercourse (both classed as main rivers) and an unnamed watercourse (ordinary watercourse).
- 6.12.15 For the two village bypass, the walkover included the floodplain ditches and River Alde, from the existing A12 crossing to the downstream extent of the development boundary.
- 6.12.16 A further river corridor survey is proposed for the River Alde and Middleton watercourse.

iv. **Assessment methodology**

- 6.12.17 The proposed assessment methodology for surface water and groundwater is largely as detailed in paragraphs 7.11.19 to 7.11.25 and 7.12.18 to 7.12.25 of the 2014 EIA Scoping Report. Consultation with stakeholders has been continuing since the 2014 EIA Scoping Report to inform and steer the development of the numerical model and the approach to assessing changes in the water environment with respect to sensitive receptors.
- 6.12.18 Changes in groundwater and surface water levels, groundwater flow and quality will be assessed in relation to the baseline conditions. Recent

updates to guidance documents will be used to inform the assessment methods. The changes relate to:

- Environment Agency. Groundwater Protection: Principles and Practice (GP3) February 2018 (Ref 6.35).
- Planning Inspectorate. Advice note eighteen: The Water Framework Directive, June 2017 (Ref 6.36)

v. Assumptions and limitations

6.12.19 The assumptions and limitations detailed in paragraphs 7.11.26 to 7.11.28 and 7.12.26 of the 2014 EIA Scoping Report remain largely unchanged with the exception of:

- additional surface water and groundwater monitoring data collected between 2014 and 2019 has been used to update the conceptual understanding and develop a numerical model for use in assessment; and
- the numerical model that will be used to assess surface water and groundwater changes associated with the development has been further refined.

d) Potential impacts

6.12.20 Potential impacts are described below and summarised in **Table 6.18**.

Table 6.18: Summary of elements of the proposed development scoped in to the EIA for surface water and groundwater

Element of the Proposed Development	Scoped In or Scoped Out for surface and groundwater	Justification
Main development site	Scoped In	Potential to change the surface water and groundwater flow and hydrochemical regimes and dependent ecological receptors during construction and operation.
Northern park and ride		Potential to change the surface water and groundwater flow and
Southern park and ride		

Element of the Proposed Development	Scoped In or Scoped Out for surface and groundwater	Justification
Two village bypass		
Yoxford roundabout and other minor highway improvements		
Sizewell link road		
Theberton bypass		
Freight management facility options		
Green rail route and East Suffolk line and branch line upgrades and level crossing works		

i. Construction

6.12.21 The potential impacts for the main development site during construction detailed in paragraphs 7.11.29 to 7.11.39 and 7.12.28 to 7.12.34 of the 2014 EIA Scoping Report remain unchanged.

6.12.22 The potential impacts at the off-site associated development sites are summarised in **Table 6.18** and principally relate to potential for changes in flow regime due to watercourse crossings and altered distribution of infiltration resulting from lower permeability surfacing, and hydrochemistry.

ii. Operation

6.12.23 The potential impacts for the main development site during construction detailed in paragraphs 7.11.40 to 7.11.41 and 7.12.35 to 7.12.37 of the 2014 EIA Scoping Report remain unchanged.

6.12.24 The potential impacts at the off-site associated development sites are summarised in **Table 6.18** and principally relate to potential for changes in flow regime due to watercourse crossings and altered distribution of infiltration resulting from lower permeability surfacing, and hydrochemistry.

iii. **Removal and reinstatement**

6.12.25 The potential impacts associated with the removal and restoration phase of the proposed development will be similar to those for construction, as detailed in paragraphs 7.11.29 to 7.11.39 and 7.12.28 to 7.12.34 of the 2014 EIA Scoping Report.

iv. **Decommissioning**

6.12.26 The groundwater and surface water chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) **Potential mitigation**

6.12.27 The potential mitigation measures detailed in paragraphs 7.11.42 to 7.11.44 and 7.12.38 of the 2014 EIA Scoping Report remain unchanged.

6.12.28 Additionally, a control structure is proposed in the realigned Sizewell Drain to mitigate changes in surface water and groundwater in the Sizewell Marshes.

f) **Approach to cumulative assessment**

i. **Inter-relationships**

6.12.29 The approach to inter-relationships, detailed in paragraphs 7.11.45 to 7.11.46 and 7.12.39 to 7.12.40 of the 2014 EIA Scoping Report, remains unchanged.

ii. **Project-wide effects**

6.12.30 The potential for project-wide surface water and groundwater effects to be significant to receptors will be considered to establish if additional mitigation measures may be required.

iii. **Cumulative effects**

6.12.31 The main development site in combination with other relevant plans or projects affecting the water environment within the numerical model domain could result in additive risks or impacts on groundwater and surface waters and receptors. Where appropriate the use of the predictive groundwater model would allow any cumulative impacts to be identified and assessed.

6.12.32 For the off-site associated development sites a 1km envelope around the red line boundary will be used to identify the potential for cumulative effects with impacts assessed qualitatively and, if necessarily, quantitatively.

6.12.33 The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.13 Flood Risk

a) Introduction

6.13.1 This section sets out the proposed scope and methodology for the flood risk assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.98 and 3.109 and Section 4.19 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.13.2 Flood risk was not specifically considered as an EIA topic within the 2014 EIA Scoping Report. However, the report did specify that a Flood Risk Assessment (FRA) would be carried out. It is proposed that FRAs will be carried out and reports prepared for all proposed development sites. It is proposed that the ES will contain a summary of the FRA within the groundwater and surface water chapters.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.13.3 The comments raised by the Environment Agency and Lead Local Flood Authority (LLFA) in the 2014 EIA Scoping Opinion confirm the need to conduct FRAs. FRAs are currently being prepared for the main development site and the associated development sites.

6.13.4 A summary of the responses to the comments received on the proposed assessment of flood risk effects in the 2014 EIA Scoping Opinion is included in **Appendix 1C**.

ii. Survey and assessment

6.13.5 FRAs to date have been supported largely through the assessment of publicly available flood data, including Environment Agency Flood Data (known as Product 3, 4 and 8), the latest Flood Map for Surface Water, and Local Authority Strategic FRAs. This has been supplemented by fluvial and coastal modelling for the main development site in particular, in line with the

requirements of the National Planning Policy Framework (NPPF) and EN1/EN6 in addition to engagement with key stakeholders.

- 6.13.6 A number of topographic surveys have been undertaken at the main development site and the adjacent Aldhurst Farm habitat compensation area to improve accuracy of the baseline and provide a comprehensive and up-to-date representation of the existing ground surface, on which the fluvial and coastal modelling is based.

c) Proposed approach and methodology

i. Study area

- 6.13.7 The ES chapter on flood risk will be underpinned by an FRA for each site, which will be appended to the ES. The study areas for all FRAs will be defined by the 2019 redline boundaries for the main development site and each off-site associated development site. Risks will be assessed on site, in addition to assessing potential impacts off site.

- 6.13.8 For modelling of flood risk from all sources, model boundaries usually extend well beyond the redline boundary to ensure key processes and boundary effects are considered.

ii. Updates to baseline

- 6.13.9 The flood risk baseline was not established in detail in the 2014 EIA Scoping Report.
- 6.13.10 The Environment Agency regularly updates their hydraulic modelling, which forms the basis of the Flood Map for Planning and defines the extent of the Flood Zones.
- 6.13.11 Flood Zone 1 is land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding. Flood Zone 2 is land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. Flood Zone 3 is land assessed as having a 1 in 100 or greater annual probability of river flooding or a 1 in 200 or greater annual probability of flooding from the sea.
- 6.13.12 Flood Zone mapping is updated quarterly, with the latest update occurring in January 2019. Since 2014, the national Flood Zone extents have therefore been updated on a number of occasions, resulting in changes to Flood Zone 2 and 3. The latest version available at the time of writing will be referenced in the FRAs. The Flood Zones relevant to the main development site and the off-site associated development sites are detailed in **Table 6.19** below.

Table 6.19: Site location within Flood Zones

Site	Flood Zone 1	Flood Zone 2	Flood Zone 3
Sizewell C main development site	X	X	X
Northern park and ride	X		
Southern park and ride	X		
Two village bypass	X	X	X
Yoxford roundabout	X		
Sizewell link road	X	X	X
Theberton bypass	X	X	X
Freight management facility	X		
Green rail route	X		
Other rail improvements	X		
Other minor highway improvements	X		

6.13.13 In 2018 the Environment Agency updated the coastal modelling adjacent to the main development site, and this will be reflected in the FRA.

6.13.14 The completed Aldhurst Farm scheme will be considered as part of the current flood risk baseline, although the FRA will also examine the minor flood risk benefit that it may offer by storing flood water and potentially helping to offset any impacts resulting from the proposed development.

iii. Further surveys/studies

6.13.15 The 2014 EIA Scoping Report stated that the FRAs for the sites located within, or partly within, Flood Zones 2 and/or 3 will be supported by hydraulic modelling. In accordance with this, hydraulic modelling is ongoing for the main development site, two village bypass, Sizewell link road and Theberton bypass, as these sites contain an element of Flood Zone 2 and/or 3 within them.

6.13.16 Channel surveys will also be undertaken at the two village bypass, Sizewell link road and Theberton bypass main river crossings to support the hydraulic modelling.

6.13.17 The Environment Agency will be consulted in relation to the modelling methodology and model results will be provided for their review ahead of application for development consent.

iv. Assessment methodology

6.13.18 The proposed FRA methodology is as detailed in paragraphs 2.3.4 and 2.3.5 of the 2014 EIA Scoping Report. This proposed assessment methodology in terms of flood risk will be consistent and compliant with the NPPF and National Policy Statement (NPS) for Nuclear Power Generation (EN-1 and EN-6).

6.13.19 Since the 2014 EIA Scoping Report updated guidance has been published on assessing the effects of climate change (including sea-level rise), notably the Environment Agency's online advice note 'Flood Risk Assessments: Climate Change Allowances', first published in February 2016 and amended in 2017 and February 2019 (Ref 6.37), plus UKCP18 (Ref 6.38) allowances for sea level rise that will all be considered in the FRA and evaluated alongside other previous predictions as appropriate.

v. Assumptions and limitations

6.13.20 The proposed development will be assessed using the following assumptions:

- FRAs will be undertaken in accordance with the NPPF and NPS (EN-1 and EN-6), as per the 2014 EIA Scoping Report;
- hydraulic modelling will be undertaken for sites within, or partly within, Flood Zones 2 and/or 3; and
- the 2016 climate change allowance with consideration to CEFAS joint probability scenarios and UKCP18 sea level rise scenarios will be utilised within the hydraulic modelling.

d) Potential impacts

6.13.21 Potential impacts are described below and summarised in **Table 6.20**.

Table 6.20: Summary of elements of the proposed development scoped in to or out of the EIA for flood risk

Element of the Proposed Development	Scoped In or Scoped Out for Flood Risk	Justification
Main development site	Scoped In	Scoped in, due to the potential impact on human and structural receptors during construction and operation phase of the main development.
Northern park and ride		Scoped in, due to the potential impact on human and structural receptors during construction and operation phase of this facility.
Southern park and ride		
Two village bypass		Scoped in, due to potential effects on human and structural receptors during construction and operation phase of these routes.
Yoxford roundabout and other minor highway improvements		
Sizewell link road)		
Theberton bypass		
Freight management facility options		Scoped in, due to the potential impact on human and structural receptors during construction and operation phase of the facility options.
Green rail route and East Suffolk line and branch line upgrades and level crossing works		Scoped in, due to potential effects on human and structural receptors during construction and operation phase of these routes and facilities.

i. Construction

6.13.22 Construction within an area at risk from any source of flooding for both the main development site and the off-site associated development sites has the potential to modify flood risk both on site and to the surrounding area.

6.13.23 Construction activities could potentially affect flood risk through changes in topographic levels, increased impermeable areas on site, changes to potential floodplain storage volumes, changes to flow pathways during breach or overtopping events and effects on surface water flow and drainage across site.

ii. Operation

6.13.24 There are potential flood risk impacts from the proposed development at all sites during operation which will be assessed in accordance with the methodologies set out in paragraphs 6.13.18 and 6.13.19.

6.13.25 The proposed development could potentially affect flood risk through changes in topographic levels, increased impermeable areas on site, changes to potential floodplain storage volumes, changes to flow pathways during breach or overtopping events and effects on surface water flow and drainage across site.

iii. Removal and reinstatement

6.13.26 Due to the nature of the decommissioning phase a separate planning application would be submitted at the appropriate time and does not form part of the application for development consent. As such, the FRAs will not consider the decommissioning and reinstatement aspects of the development.

e) Potential mitigation

6.13.27 The FRAs will identify the need for any additional mitigation measures during the construction and operational phase of the proposed development, beyond the embedded mitigation measures that will be included within the design. These measures could potentially include the following:

- Compensatory flood storage, the requirements for which would be assessed based on the outcomes of the FRAs and hydraulic modelling.
- Raising finished floor levels of structures in line with the guidance set out in the Environment Agency 'Preparing a flood risk assessment: Standing Advice' (Ref 6.39) published in 2012, last updated March 2019. The main development site will also reflect the as low as reasonably possible (ALARP) assessment on platform elevation, and nuclear safety case during exceedance events beyond design basis.

f) Approach to cumulative assessment

i. Inter-relationships

6.13.28 The potential relationships of flood risk within the wider area will be assessed as part of the FRAs. Inter-relationships between different sources of flood risk (e.g. fluvial, coastal, surface water, groundwater) will also be considered.

ii. Project-wide effects

6.13.29 The potential project-wide effects of the proposed development on flood risk within the wider area will be assessed as part of the FRAs.

iii. Cumulative effects

6.13.30 The potential cumulative effects of the proposed development on flood risk offsite, in addition to cumulative effects with other projects, will be assessed as part of the FRAs. This will include consideration of cumulative effects in relation to third party projects, for example maintenance or otherwise of the Minsmere Sluice, Minsmere Levels and shingle sea defence north of the main development site.

6.13.31 The approach to cumulative effects is more fully described (for all topics) in **Section 5.5** of this EIA Scoping Report.

6.14 Coastal Geomorphology and Hydrodynamics

a) Introduction

6.14.1 This section sets out the proposed scope and methodology for the coastal geomorphology and hydrodynamics assessment for the main development site. The off-site associated development sites are scoped out of the assessment as they are remote from the marine environment and even where a theoretical pathway exists (e.g. river to sea), the impacts on the marine environment would be negligible.

6.14.2 This scope has been informed by consideration of the 2014 EIA Scoping Opinion (see Section 7.13), the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.14.3 Changes to the approach presented within the 2014 EIA Scoping Report are associated with the new Suffolk Shoreline Management Plan (SMP7) (Ref 6.40) and results of observation and analyses currently undertaken.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.14.4 There were no comments received on the proposed assessment methodology presented in Section 7.13 of the 2014 EIA Scoping Report.

ii. Survey and assessment

6.14.5 The approach to surveys and assessment described in paragraph 7.13.2 of the 2014 EIA Scoping Report are still relevant, although can be updated with the following additional observations and analyses undertaken in the interim including:

- further measurements of inshore waves, currents and elevations were undertaken in 2016;
- further high-resolution bathymetric surveys, including partial surveys of three shore normal corridors (to determine bank and bar locations) were undertaken in 2014, 2015 and 2016, and a full survey of Sizewell-Dunwich Bank in 2017;
- updated analysis has been undertaken of shoreline change incorporating recent datasets, now spanning historical maps and charts from 1835 to 2012, orthorectified aerial photographs from 1940 to 2018, beach topographic surveys from 1985 - 2017, bathymetric profiling from 1992 to 2007, swath bathymetry data from 2011 - 2017 and LiDAR surveys from 1999 to 2017;
- continued wave measurements have been undertaken seaward of Sizewell-Dunwich Bank (2008 – present);
- the future shoreline baseline and identification of impacts that could occur in the Sizewell region have been derived using an Expert Geomorphological Assessment (EGA). The EGA considers the earlier geoscenario work described in 2014 in its development; and
- thermal plumes were scoped out of the coastal geomorphological assessment as they do not affect coastal geomorphology or hydrodynamics. Thermal plumes were considered relevant for ecological receptors, and therefore results of the modelling are discussed in these sections, as per the approach described in Section 6.16 of this EIA Scoping Report.

c) Proposed approach and methodology

i. Study area

6.14.6 The study area defined in paragraph 7.13.3 of the 2014 EIA Scoping Report has been modified substantially. The revised study area is described below.

6.14.7 Most effects will be localised, often to within a few tens of metres of the construction site and require high-resolution modelling on a small scale. However, longshore sediment transport is a long-term process which acts at larger scales, and therefore modelling boundaries are defined by the local sediment cell, which extends from Thorpeness in the south to Blyth Piers in the north. The maximum possible extent of sediment resuspension resulting from dredging or other construction-related activities was defined as the maximum spring tide excursion centred on the mid-point of the main development site, therefore encompassing a larger area including the sediment cell to the south towards Orford Ness and the designated site at Shingle Street. The landward extent for coastal hydrodynamics assessment is Mean High Water Spring (MHWS).

6.14.8 However, there might be circumstances (e.g. storm impact assessments) where this boundary is extended shoreward to the Highest Astronomical Tide (HAT). The location of the cooling water infrastructure is subject to current engineering studies and the seaward extent of the study area was set at approximately 4km in order to allow flexibility in those studies.

6.14.9 The temporal extent of the study described in paragraph 7.13.4 of the 2014 EIA Scoping Report remains unchanged.

iii. Updates to baseline

6.14.10 The baseline described in paragraphs 7.13.5 to 7.13.10 of the 2014 EIA Scoping Report remains broadly valid although the northernmost extent is now generally defined as the southern side of the Blyth piers. The approach to shoreline change is amended as follows.

6.14.11 A century ago there were wide areas (several kilometres long) experiencing high rates of persistent erosion or accretion, whereas in recent years, shoreline change all around the Sizewell Bay coast has consisted of a fluctuating patchwork of erosion and accretion. In that more recent period, stretches of coastline with common behaviour have been typically only a few hundred metres wide, though some zones have been less than 50m or occasionally greater than 1km. As waves are the only force that can move shingle in the Greater Sizewell Bay, they must be responsible for the patterns observed.

- 6.14.12 However, presently there are no direct links between how a certain part of the beach responds to driving forces. This is likely to be related to a relatively poor understanding of mixed single-sand beaches. Spatial patterns in inshore wave height during very large storms will play a role, however there is no obvious link between the two. The very low rates of shoreline change around the Sizewell power stations match with low longshore transport rates. Supply toward Thorpeness over recent decades is also considered to have been low. Thus, over periods of years to decades post 1925, the net transport can be considered to have been low and, in net terms, to the south.
- 6.14.13 The baseline described for tidal currents remains unchanged (see paragraph 7.13.9 of the 2014 EIA Scoping Report) whilst in respect of tidal elevations (see paragraph 7.13.10 of the 2014 EIA Scoping Report), water levels have also been measured at Sizewell using a downward looking radar tide gauge since 2016.

iv. [Further surveys/studies](#)

- 6.14.14 An X-band radar was installed in 2013 on the roof of the Sizewell A reactor building. The radar scans the nearshore region over a radius of up to 4km and measures waves, currents and meso-scale bathymetry sufficient to resolve the Sizewell Bank. The data collected since 2013 will be used to track the movement of the shoreline and longshore bars in response to storm forcing.
- 6.14.15 Numerical modelling of geoscenarios using coupled tide, sediment transport and wave models will also be undertaken for flood risk assessment (FRA). These scenarios will also be considered for the development of the future shoreline baseline, and any future impacts of the new power station upon it.
- 6.14.16 The Telemac suite of numerical models will be used to test the feasibility of each geoscenario and the effect each would have on nearshore processes for the FRA. This is not needed for assessment of impacts on coastal geomorphology receptors.

v. [Assessment methodology](#)

- 6.14.17 In addition to the legislation and policies concerned with coastal geomorphology and coastal process listed in paragraph 7.13.16 of the 2014 EIA Scoping Report, the latest Suffolk Shoreline Management Plan (SMP7) will also be considered.
- 6.14.18 A number of changes to the assessment methodology outlined in paragraphs 7.13.15 to 7.13.20 of the 2014 EIA Scoping Report are

proposed and these are described in the following paragraphs. Where there are no amendments described, the approach remains as proposed in 2014.

6.14.19 The impact magnitude provided in Table 7.13.1 of the 2014 EIA Scoping Report is amended as follows in **Table 6.21**:

Table 6.21: Impact magnitude

Impact Magnitude	Generic description	Spatial Extent	Amount of Change	Duration
High	Large-scale enduring change which affects most of the defined geomorphic receptor.	Changes occur across much of the area of interest and possibly beyond.	Clear, measurable changes beyond natural variation.	Long-term, more than 12 years.
Medium	Measurable changes affecting much of the receptor, but typically not permanent.	Changes occur across a majority of the receptor area.	Measurable changes, possibly exceeding natural variation.	Medium-term temporary impacts, one to 12 years.
Low	Noticeable short-term change over a part of the receptor area.	Change affects a minority of the receptor area.	Measurable change within range of natural variation.	Short-term temporary, less than a year.
Very Low	Very localised or barely discernible changes of very limited duration.	Change affects only a very small extent.	Change potentially not detectable against natural variation.	Very short term, e.g., spring-neap cycle or less.

6.14.20 The approach to the value of receptors and resources is amended and would be determined on the basis of their conservation, economic or functional value. The sensitivity of the receptors is an indication of their capacity to accommodate the effect (i.e. their capacity for resistance and resilience). The guidelines for assessing value/sensitivity for the features are now given in separate value and sensitivity tables:

Table 6.22: Sensitivity of a receptor

Value	Generic description.
High	<ul style="list-style-type: none"> Strong dependencies with other geomorphic elements; International conservation value; and National/international socio-economic value.
Medium	<ul style="list-style-type: none"> Partial dependencies with other geomorphic features; National conservation value; and National/regional socio-economic value.
Low	<ul style="list-style-type: none"> Limited connection to other geomorphic features; Regional/local conservation value such as local nature reserves; and Local socio-economic value.
Very Low	<ul style="list-style-type: none"> No dependencies with other geomorphic features; No conservation designation; and No socio-economic function.

6.14.21 Note: Sensitivity is a measure of a receptor's resistance and resilience to a given pressure. Resistance, or tolerance, determines the receptor's susceptibility to a pressure, whilst resilience gives an indication of the ability to recover from a perturbation or stress.

Table 6.23: Descriptions of Resistance and Resilience

Resistance	Description	Resilience	Description
High	<p>Pressure could not conceivably result in significant changes to morphology or process.</p> <p>Receptor is stable over a wide range of conditions – historic variability is low or negligible.</p>	High	Full recovery within 1 year (seasonal or less).
Medium	<p>Pressure could change geomorphic features within the range of historical trends.</p> <p>Historic variability is low with defined range, feature is largely</p>	Medium	Full recovery within 1-10 years.

Resistance	Description	Resilience	Description
	unaffected by typical hydrodynamic conditions.		
Low	Pressure could cause geomorphic change which is beyond the measured range (decadal scale 1990-present). Historic variability is high, feature responds quickly to changes in hydrodynamic conditions.	Low	Full recovery 10-25 years.
Very Low	Pressure could result in complete loss of geomorphic function. Historic variability is high; feature is easily altered and not permanent.	Very Low	Negligible recovery (or very prolonged cycles of change).

6.14.22 The Definitions of effects described in Table 7.1.3 of the 2014 EIA Scoping Report is updated to the following in **Table 6.24**:

Table 6.24: Description of effect classification

Effects	Description
Major	<ul style="list-style-type: none"> Very large or large changes to the coastal or sea bed geological features, which may alter the structure of the coastline or the sediment processes within it. Effects, both adverse and beneficial, that are likely to be important considerations at an international or national level because they contribute to achieving international/national objectives or are likely to result in exceedance of statutory objectives and/or breaches in legislation.

Effects	Description
Moderate	<ul style="list-style-type: none"> Intermediate change in the coastal or sea bed geological features, which may alter the structure of the coastline or the sediment processes. Effects that are likely to be important considerations at a regional level, societal or with respect to environmental management processes.
Minor	<ul style="list-style-type: none"> Small change in coastal or sea bed features, with no discernible effects on other features or processes. Effects may be raised as local issues but are unlikely to be instrumental in the decision-making process.
Negligible	<ul style="list-style-type: none"> No discernible change in the coastline or sediment processes. An effect that is likely to have a negligible or no influence, irrespective of other effects.

vi. Assumptions and limitations

6.14.23 These are unchanged from those described in paragraph 7.13.21 and 7.13.22 of the 2014 EIA Scoping Report.

d) Potential impacts

6.14.24 The potential impacts have been adjusted compared to those described in paragraph 7.13.23 of the 2014 EIA Scoping Report and the elements of the main development site that could have impacts on coastal geomorphology and hydrodynamics would be:

- construction and operation of cooling water infrastructure (including cooling water intake and outfall headworks on the seabed, and the outfalls associated with two Fish Recovery and Return (FRR) systems and a Combined Drainage Outfall (CDO); and
- construction and operation of a beach landing facility (BLF) to facilitate the movement of some large and Abnormal Indivisible Loads throughout the power station’s construction and operational life.

6.14.25 The potential receptors have been adjusted compared to those described in paragraph 7.13.24 of the 2014 EIA Scoping Report and the spatial extent refined based on sediment cells and connectivity. The receptors and resources that may be impacted are the:

- shingle beach and its shoreline position;

- two sandy, shore-parallel longshore bars;
- Sizewell–Dunwich Bank; and
- erosion-resistant Coralline Crag ridges that extends to the north-east from Thorpeness.

6.14.26 The timescales are unchanged from those described in paragraph 17.13.25 of the 2014 EIA Scoping Report.

i. Construction

6.14.27 The potential impacts during construction are similar in type to those described in paragraphs 7.13.26 to 7.13.31 of the 2014 EIA Scoping Report with the exception that a jetty is no longer included within the proposals and that greatly reduces the potential for large scale coastal geomorphological effects. The proposals still include the BLF which would have a small number of slender piles (around 20, many of which would be above Mean High Water Springs).

6.14.28 Scour due to the BLF and other elements of the marine and cross-shore infrastructure would be assessed. Dredging activities for the BLF and its navigation approach would lead to localised changes in bathymetry and sediment transport rates. No effect on sediment supply would be expected as a plough dredger or similar would be used to push the sediment to the side. As the longshore transport rates are considered to be very low, alongshore effects would be spatially limited and could be readily monitored and mitigated. The fine material that would be discharged from dredging activity could potentially be relevant to water quality and marine ecology. Some of this material could be transported as far as a single tidal excursion but effects would become indiscernible from the background before that range.

ii. Operation

6.14.29 The potential impacts during operation are similar in type to those described in paragraphs 7.13.32 to 7.13.36 of the 2014 EIA Scoping Report although in addition, localised scour is also likely to occur at the CDO structure. The cooling water outfalls will be located c. 4 km from the shore (not 0.8 - 3km as stated in the 2014 EIA Scoping Report).

6.14.30 Dredging activities to secure the regular access to the BLF during construction and, and occasional access during operation (every 5 - 10 years), would lead to minor changes in bathymetry and may alter sediment transport rates.

6.14.31 Any fine material suspended during plough dredging (or similar; sediment is not extracted and discharged) could potentially be relevant to water quality and marine ecology. Dredging activities may also lead to temporary, very localised, changes in the exposure of the coastline.

6.14.32 The new hard coastal defence features could be exposed to the marine environment some decades into the future following recession of the shoreline and cessation of any mitigation. Exposure would be slower than naturally expected due to additional sediment provided by the naturally eroding soft coastal defence feature. Monitoring and additional mitigation may be considered to avoid the beach splitting in two and subsequent disruption to longshore shingle and sand transport.

e) Potential mitigation

6.14.33 The approach described in paragraph 7.13.37 of the 2014 EIA Scoping Report regarding the engineering design and proposed mitigation has been superseded and should be as follows: Mitigation would comprise, but not necessarily be limited to, the following measures:

- the BLF will be designed using the results of modelling tools to minimise, as far as possible, the impact on coastal processes;
- a soft coastal defence feature made of beach grade sediments would provide extra material to the active beach face during large storms, thereby reducing any future erosion rate (current erosion rates are very low);
- sediment bypassing, beach recycling and, if necessary, beach recharge are possible mitigation measures that might be required to avoid exposure of the hared coastal defence features; and
- scour protection might be employed for the intake and outfall structures as for engineering purposes but not to mitigate against impacts to geomorphology.

f) Approach to cumulative assessment

i. Inter-relationships

6.14.34 The inter-relationship impacts due to activities relating to construction and operation of the BLF, the hard and soft coastal defence features, the cooling water intakes and outfalls and nearshore cooling water infrastructure will be assessed. An assessment of the temporal and spatial intersection of activities will be used to identify potential inter-relationships. All potential inter-relationships will be screened using expert

geomorphological assessment. Where potential significant synergistic effects are identified through this process, and where appropriate data exist, an assessment will be undertaken.

6.14.35 The EIA will consider inter-relationships of all activities and how they could affect the coastal geomorphology receptors. The effects on coastal geomorphology and hydrodynamics will also be considered in the chapters on marine water and sediment quality, marine ecology, terrestrial ecology and ornithology, flood risk, and navigation.

ii. **Project-wide effects**

6.14.36 This assessment is only relevant to the main development site and as such, a separate assessment of project-wide effects is not proposed.

iii. **Cumulative effects**

6.14.37 Cumulative impacts arising from interaction with third-party plans, programmes or projects will be considered as described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.14.38 Paragraph 7.13.39 of the 2014 EIA Scoping Report stated that construction activities for Galloper offshore wind farm would be considered, however this wind farm is now operational and forms part of the current baseline.

6.15 **Marine Water and Sediment Quality**

a) **Introduction**

6.15.1 This section sets out the proposed scope and methodology for the marine water and sediment quality assessment for the main development site. Off-site associated development sites are scoped out of the assessment as they are remote from the marine environment and even where a theoretical pathway exists (e.g. river to sea), the impacts on the marine environment would be negligible.

6.15.2 This scope has been informed by consideration of the 2014 EIA Scoping Opinion (see Section 7.14), the environmental baseline conditions, along with a preliminary view of the main issues likely to be associated with the proposed development.

6.15.3 Changes to the approach presented within the 2014 EIA Scoping Report are associated with changes to legislation.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.15.4 Comments from consultees on the 2014 EIA Scoping Opinion have informed ongoing work. A summary of the responses to the comments is included in **Appendix 1C**.

6.15.5 Since the Scoping Report in 2014 engineering designs and development options have advanced and further water quality assessments and baseline monitoring has been completed. Consultation with the Marine Technical Forum series has enabled dialogue and feedback to further develop assessments.

ii. Survey and assessment

6.15.6 A water quality literature report and marine water quality survey (February 2010 to 2011) were undertaken as described in the 2014 EIA Scoping Report (Section 7.14.2). A survey was conducted from February 2014 to January 2016 with water samples collected each month. Each survey took place during a single day at four different locations in the Sizewell area corresponding to a reference site, the Sizewell B intake, the Sizewell B outfall and the proposed site of the Sizewell C intake and outfall.

6.15.7 Additional data were collected primarily for nutrient chemicals (including ammonia) but also to supplement information on metals concentrations in seawater, water temperature, salinity, dissolved oxygen and levels of chlorine produced oxidants present in cooling water from the existing Sizewell B discharge.

6.15.8 As part of the Sizewell C 2015 geotechnical survey, sediment vibrocores were sampled from a number of locations and a subset of 14 core samples close to areas likely to be dredged were analysed for chemical and heavy metal contaminants (arsenic, cadmium, chromium, copper, lead mercury, nickel, zinc, DDT, dieldrin, organotins, organic and chlorinated compounds). Five of the same cores were also sampled for radionuclide composition.

c) Proposed approach and methodology

i. Study area

6.15.9 The Greater Sizewell Bay forms the initial reference area for marine assessment. The Greater Sizewell Bay extends from Blyth Piers in the north to the Coralline Crag outcrops near Thorpeness in the south. The seaward boundary extends to the eastern flank of the Sizewell-Dunwich Bank, to include the spatial extent of the proposed cooling water infrastructure. The landward limit is delineated by the Mean High Water

Springs (MHWS) tidal mark. Additional study area description is provided in the paragraphs 7.15.3 to 7.15.5 of the 2014 EIA Scoping Report. The differences to the original study area are that the Sizewell C cooling water outfall is now planned offshore of the Sizewell – Dunwich Bank, the extent of potential sediment resuspension is centred on the location for the activity being modelled and any reference to the jetty is now to the beach landing facility (BLF). Other than these points the study area remains unchanged.

ii. Updates to baseline

- 6.15.10 Since the 2014 EIA Scoping Report a water quality survey was conducted from February 2014 to January 2015 with water samples collected each month. These data inform background values for a number of chemicals but in particular nitrogen, ammonia and phosphate.
- 6.15.11 The analyses of the sediment cores for metals, hydrocarbons and other organic chemicals showed that there were elevated levels of arsenic and dimethyl naphthalene in areas likely to be dredged i.e. close to the proposed northern intake and outfall head locations and BLF access channel. As the levels of arsenic and dimethyl naphthalene found across the site are below Cefas Action Level 2, there is a low risk of bioavailable contaminants.
- 6.15.12 Particle size analysis shows sediments to be comprised mainly of sand (65-95%). This fact and low levels of associated contaminants indicate a low risk of bioavailable contaminants at levels of concern.
- 6.15.13 Suspended sediment concentrations (SSC) in seawater measured over a tidal cycle sampled from an inshore location close to the Sizewell B outfall had a mean and range SSC concentration for March (2010) of 234 (108-437) mg l⁻¹; and in 2016 the mean and range in July, August and September were 25.5 (16.07-68.35) mg l⁻¹, 16.6 (7.23-37.01) mg l⁻¹, and 10.6 (5.38-15.38) mg l⁻¹. Suspended particulate matter (SPM) data was also gathered from a satellite database for a project evaluating natural sediment variability in the North Sea and English Channel. Satellite data for suspended particulate matter showed average mean SPM value at Sizewell during April to August of 31mg l⁻¹ (and average monthly maximum 80mg l⁻¹) and during September to March 73mg l⁻¹ (and average monthly maximum 180mg l⁻¹).

iii. Further surveys/studies

- 6.15.14 Laboratory studies have been conducted to inform entrainment effects and impacts of chlorine produced oxidants on relevant species groups. Studies have also been conducted to develop source data for modelling hydrazine discharges.

iv. Assessment methodology: Marine water and sediment quality

- 6.15.15 The main legislation, policy guidance referenced in 2014 will provide the focus for the marine water and sediment quality assessment. However, amendments were made by the Standards Directive (2008/105/EC) as amended by Directive 2013/39/EU (implemented by the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015) which increased the list of priority chemicals to 45. Chemical status is recorded as 'good' or 'fail'. The chemical status classification for the water body is determined by the worst scoring chemical.
- 6.15.16 Also the Bathing Waters Regulations (2013); The Environmental Permitting (England and Wales) 2016 Regulations.
- 6.15.17 Contaminants in discharges from the Sizewell site to the marine environment will be assessed using the Environment Agency/Defra screening assessments for wastewater discharges and those from cooling water systems. Substances failing the screening stage will be assessed using near field mixing models and the validated Sizewell General Estuarine Transport Model (GETM) hydrodynamic model, as appropriate, to determine the extent of area that exceeds a specific substance's quality standard or equivalent reference value.
- 6.15.18 Impact magnitude will consider the duration and extent of exceedance. Additional factors such as frequency, timing and reversibility will be taken into consideration and reported where appropriate.
- 6.15.19 Generic definition of effects are broadly as described in **Table 5.4** of this EIA Scoping Report and are determined based on the matrix set out in **Table 5.3**.

v. Assumptions and limitations

- 6.15.20 The assumptions and limitations detailed in paragraphs 7.14.36 of the 2014 EIA Scoping Report remain unchanged. The water quality baseline data referred to in paragraph 7.14.37 of the 2014 EIA Scoping Report has since been updated as described above.

d) Potential impacts

i. Construction

- 6.15.21 Construction impacts are as described in paragraphs 7.14.39 to 7.14.42 in the 2014 EIA Scoping Report with the exception that any chemical residues related to tunnelling activity would be discharged via the construction site drain and will be assessed as appropriate. Any commissioning discharges will also be accounted for and assessed.

- 6.15.22 Development of a BLF, cooling water system, and associated activities including dredging for their construction and operation will generate elevated suspended sediment levels over periods of days dependent on overlap of activities.
- 6.15.23 In the UK there are no standards for levels of suspended sediment in transitional and coastal waters. But as supporting data for nutrient assessment under the Water Framework Directive (WFD), waterbody types are defined in terms of annual mean concentration of SPM. These type definitions have been recommended as benchmark definitions for assessing change in SPM. The magnitude and duration of changes in suspended sediment levels during construction will be evaluated against their likely influence on the current waterbody type definition for annual suspended sediment levels for Sizewell.
- 6.15.24 Groundwater and treated sewage effluent will be the main discharges to the marine environment during the construction period that will require assessment. Discharges will be via the construction drainage system.
- 6.15.25 Metals, unionised ammonia, dissolved inorganic nitrogen, phosphorus, biochemical oxygen demand and faecal indicator organisms will be assessed.
- 6.15.26 Substance discharge concentrations will be assessed against European and National Environmental Quality Standards (EQS) where these exist. Where there is no standard and enough ecotoxicological data are available a predicted no effect concentration (PNEC) will be derived. If insufficient data are available, then data for similar compounds may be used or reference will be made to marine background values.
- 6.15.27 Where appropriate, Defra and Environment Agency screening assessments for estuaries and coastal waters will be used to determine if any contaminant inputs exceed their respective quality standard or reference value and therefore may require a more detailed modelling assessment.
- 6.15.28 For substances failing the screening tests additional approaches including the use of mixing models and/or hydrodynamic modelling will be used to determine the potential area of the marine environment adjacent to the planned Sizewell C site for which a given substance exceeds its EQS or equivalent reference value.
- 6.15.29 Tunnels for a fish recovery and return system outfall and the intake and outfall tunnels for the cooling water system would be bored from landward. Any wastewater generated by drilling of the horizontal cooling water tunnels will be returned to land for treatment before discharge through the construction drainage system. Any sediment discharged during this

process will be considered relative to sediment disturbance that results from other construction activities.

- 6.15.30 Any residual chemicals likely to be present in the tunnel wastewater will be screened and assessed using appropriate modelling if required.
- 6.15.31 Commissioning of the UK EPR™ reactor is proposed to take place in two stages, namely (i) cold flush testing (CFT) and (ii) hot functional testing (HFT). The commissioning process for each unit would last for about 24 months. Both CFT and HFT processes will produce liquid effluents.
- 6.15.32 Liquid effluents produced during conditioning tests in the early phases of commissioning will be discharged via the construction drain. Any substances present will be screened in a similar way to construction discharges and appropriate modelling will be conducted for any that fail screening.

ii. Operation

- 6.15.33 Operational impacts are as in paragraphs 7.14.43 to 7.14.47 in the 2014 EIA Scoping Report with the exception that any chemical residues related to tunnelling activity would be discharged via the construction site drain and will be assessed as appropriate.
- 6.15.34 During operation there would be some requirement for maintenance dredging to maintain access to the BLF. The magnitude and duration of changes in suspended sediment levels predicted during maintenance dredging will be evaluated against their likely influence on the current waterbody type definition for annual suspended sediment levels for Sizewell.
- 6.15.35 Operational discharges would include thermal elevation of the cooling water discharge. Chlorine would be added to the cooling water as a biocide as operationally required to prevent fouling. This is likely to be during times when water temperature exceeds 10°C. Chlorination of seawater also forms byproducts.
- 6.15.36 As well as the use of biocide operational chemical discharges would also include inputs from treated sewage effluent, and discharge of other process chemicals. Chemical discharges will be screened using the Defra and Environment Agency screening assessment for discharges into cooling water which are then discharged to estuaries or coastal waters. Any chemicals that do not pass the screening assessment will be assessed using modelling to determine areas over which plume concentrations are likely to exceed relevant standard or reference values.

- 6.15.37 The WFD process has developed water quality standards for temperature suitable for application to UK water bodies. Evaluations of thermal effects consider the acceptable maximum temperature and maximum increase/decrease in temperature in relation to the status class of the water body concerned and with respect to specific environmental sensitivities, and the potential for thermal barriers to limit fish movement in an estuary.
- 6.15.38 Hydrodynamic modelling has been undertaken as described in the 2014 EIA Scoping Report (Section 7.14.3) and used two independently applied hydrodynamic models for thermal plume prediction before selection of one model for use in further detailed assessments. This approach was reviewed and accepted by the Environment Agency.
- 6.15.39 Thermal elevation can also affect oxygen concentration– warmer water at standard air pressure will hold less oxygen than it would at lower temperature – and the thermal influence on mean background dissolved oxygen concentrations for Sizewell is assessed against WFD standards for waterbody status.
- 6.15.40 The GETM Sizewell model has also been used to assess that area over which temperature is elevated and the influence this has on the percentage of ionised to unionised ammonia with the latter compared to its EQS and any areas of exceedance determined.
- 6.15.41 The oxidants produced from chlorination of seawater (termed total residual oxidants (TRO)) and the main chlorination byproduct, bromoform (based on laboratory studies in which Sizewell seawater was chlorinated), fail initial screening assessments and will be assessed using the Sizewell GETM model. The area over which TRO and bromoform exceed their respective standard values will be determined.
- 6.15.42 Hydrazine is an ammonia-derived compound that is an oxygen scavenger and is used in power plants to inhibit corrosion in steam generation circuits and also fails initial screening assessment. Therefore, hydrodynamic modelling using GETM will also be used to predict areas of the discharge plume that exceed the PNEC for hydrazine.
- 6.15.43 The fish recovery and return system has a relatively low discharge rate of 0.3ms⁻¹ but may include some residual chlorine produced oxidants and byproducts. Any discharged contaminants from this source will be assessed using the same screening approach as applied to the construction discharge.

e) Potential mitigation

6.15.44 Potential mitigation is unchanged from that detailed in paragraph 7.14.48 of the 2014 EIA Scoping Report.

6.15.45 Potential mitigation solutions will be considered in further detail in the ES. Assessments will consider preliminary effects and residual effects following implementation of mitigation measures allowing a transparent assessment of mitigation options.

f) Approach to cumulative assessment

i. Inter-relationships

6.15.46 The proposed approach to inter-relationships is unchanged from the methodology set out in paragraph 7.14.49 of the 2014 EIA Scoping Report.

ii. Project-wide effects

6.15.47 This assessment is only relevant to the main development site and as such, a separate assessment of project-wide effects is not proposed.

iii. Cumulative effects

6.15.48 The cumulative effects of the proposed development in relation to other plans, projects and permissions will be assessed given the potential for overlapping zones of influence (ZOI). It is assumed that infrastructure and anthropogenic activities currently occurring represent part of the current baseline conditions and they will not be considered as part of the cumulative effects assessment.

6.15.49 The cumulative effects assessment will apply a temporal and spatial screening approach at relevant scales to determine the potential for cumulative effects between the proposed development and other plans, projects and permissions.

6.15.50 The approach to cumulative effects is more fully described (for all topics) in **Section 5.5** of this EIA Scoping Report.

6.16 Marine Ecology

a) Introduction

6.16.1 This section sets out the proposed scope and methodology for the marine ecology assessment for the main development site. Off-site associated development sites are scoped out of the assessment as they are remote from the marine environment and even where a theoretical pathway exists

(e.g. river to sea), the impacts on the marine environment would be negligible.

6.16.2 This scope has been informed by consideration of Section 7.15 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

6.16.3 Changes to the approach presented within the 2014 EIA Scoping Report are associated with the updated good practice guidelines from CIEEM and additional baseline that has been collected.

b) [Work undertaken to date](#)

i. [2014 EIA Scoping Opinion](#)

6.16.4 Comments from consultees on the 2014 EIA Scoping Opinion have informed ongoing work. A summary of the responses to the comments is included in within **Appendix 1C**.

6.16.5 Since the 2014 EIA Scoping Report, engineering designs and development options have advanced and further ecological assessments and baseline monitoring have been completed. Consultation with the Marine Technical Forum series has enabled dialogue and feedback to further develop assessments.

ii. [Survey and assessment](#)

6.16.6 Additional work, accounting for feedback from statutory consultees has included updates to underwater noise assessments, impingement predictions, entrainment predictions and sediment plume modelling for dredging and drilling activities. Updated chemical plume modelling and results from hydrodynamics and coastal geomorphology studies (see **Section 6.14** of this EIA Scoping Report) inform site-specific ecological assessments.

6.16.7 Assessments have been undertaken in accordance with the requirements of NPS EN-1 on biodiversity and geological conservation, and EN-6 paying particular attention to water quality, fish and the effects of cooling water abstraction and discharge.

c) Proposed approach and methodology

i. Study area

- 6.16.8 The geographical extent of the marine ecology study area was determined by the potential zone of impact for the main development site.
- 6.16.9 The Greater Sizewell Bay forms the initial reference area for marine assessment purposes. The Greater Sizewell Bay extends from Blyth Piers in the north to the Coralline Crag outcrops near Thorpeness in the south. The seaward boundary extends to the eastern flank of the Sizewell-Dunwich Bank, to include the spatial extent of the proposed cooling water infrastructure. The landward limit is delineated by the Mean High Water Springs (MHWS) tidal mark.
- 6.16.10 The Greater Sizewell Bay is an open coastal system and water exchanges between the bay and the rest of the southern-North Sea. The spatial extent of potential impacts from the proposed development are dependent on the tidal regime. Zones of influence (ZOIs) have been informed by the largest-scale potential impacts associated with the main development site, and these include:
- results from underwater noise modelling during construction activities (impact pilling, dredging, drilling);
 - results from suspended sediment plume modelling associated with dredging and drilling activities; and
 - thermal plume modelling of the in-combination impacts of Sizewell B and Sizewell C cooling water discharges (applying the 2°C mean excess temperature contour at the seabed).
- 6.16.11 The consultation process identified the need to consider receptor specific effects beyond the ZOI, particularly for highly mobile species. Effects on marine ecological receptors are dependent on the distribution, mobility and ecology of the species being considered relative to the impact. Therefore, assessments will determine the receptor-specific spatial scale.
- 6.16.12 The boundary of the study area for commercial fisheries was determined to be the International Council for the Exploration of the Sea (ICES) rectangles accounting for the local fishery (ICES rectangle 33F1) and the regional context (ICES rectangles 32F1, 32F2, 33F2, 34F1 and 34F2). The boundary of the study area for recreational angling from beaches and boats was ICES rectangle 33F1.

ii. Updates to baseline

6.16.13 Since the 2014 EIA Scoping Report, surveys and desk-based studies have been implemented to further characterise the baseline conditions within the Greater Sizewell Bay and beyond. **Table 6.25** summarises some of the recent updates. Full characterisation reports have been prepared for the following receptors:

- phytoplankton;
- zooplankton;
- fish;
- benthic ecology;
- marine mammals, and;
- commercial and recreational fisheries.

Table 6.25: Summary of baseline work since the 2014 EIA Scoping Report

Update	Description
Harbour porpoise (<i>Phocoena phocoena</i>) Special Area of Conservation (SAC) designated	The southern North Sea SAC (adjacent to the main development site) was designated in February 2019 as it has been recognised as an area of importance for winter and summer habitat for harbour porpoise.
Orford Inshore recommended Marine Conservation Zone (rMCZ)	The Orford Inshore rMCZ is part of the third tranche of MCZs, located approximately 14km offshore from the Alde Ore Estuary. The site is composed of subtidal mixed sediments that form important nursery and spawning grounds for some species of fish. Burrowing anemones, sea cucumbers, urchins, starfish and nationally important shark species are found at the site. The area is an important foraging area for seabirds. Harbour porpoise pass through the site (Ref 6.41). The rMCZ is beyond the zone of influence of the primary impacts associated with the proposed development including the thermal plume, suspended sediment plumes from dredging activities and underwater noise effect zones for fish.

Update	Description
Habitat map	An updated habitat map was produced in 2018 using recent multibeam echo-sounder data (MBES) and automated mapping techniques (object-based image analysis) to allow objective and high-resolution geomorphic classification of seabed features.
Coralline Crag characterisation	Acoustic image surveys were carried out in the highly turbid waters at the Coralline Crag feature to assess whether <i>Sabellaria spinulosa</i> (Ross worm) reef was present in this area. Acoustic imaging survey results represent the best available means for mapping reef habitat when water clarity is low. Evidence collected using this method indicate that examples of Annex I <i>S. spinulosa</i> reef structures are likely to be present upon and around the Coralline Crag outcrops off the coast of Thorpeness, and these formations show a degree of temporal persistence.
Impingement and entrainment	Impingement and entrainment sampling at Sizewell B has continued since the 2014 EIA Scoping Report. Laboratory work investigating entrainment effects on fish eggs/larvae and invertebrate species using Entrainment Mimic Units (EMU) has been completed focussing on the different life stages of locally important or representative species.
Commercial and recreational fisheries	Data on fishing activity, including updated fisheries statistics up to 2017 from the Marine Management Organisation has been used to inform commercial fisheries baselines. Recreational fishing activity has been updated for the period 2015-2017 based on images from fixed camera mounted on the structure at Sizewell since 2015.

iii. Further surveys/studies

- 6.16.14 Through detailed consultation with statutory nature conservation bodies, impingement methodologies have been refined and equivalent adult value (EAVs) statistics reviewed. Work is underway in 2019 to predict impingement effects on fish species.

iv. Assessment methodology: marine ecology

6.16.15 The marine ecology methods used will apply an Ecological Impact Assessment (EclA) based approach to assess the potential effects of the proposed development on marine ecology receptors following CIEEM (2018) good practice guidelines. The term marine ecology receptor primarily applies to species and habitats. Functional traits, diversity indices or species groups may be assessed as receptor proxies, where appropriate.

Receptor value

6.16.16 Baseline characterisations of the study area have identified important receptors for assessment purposes. Receptors have been selected for assessment based on their socio-economic, conservation or ecological value. Common and abundant taxa have also been selected for assessment. Receptor value determines the species that will be assessed and may be applied to determining the significance of an ecological effect on a given receptor. For example, an effect may be considered in relation to the conservation objectives of a designated species.

6.16.17 The value of marine ecological receptors has been uncoupled from sensitivity. This allows sensitivity assessments to be undertaken for a given impact independently of value. The highest scoring value for ecological, socio-economic and/or conservation importance determines the overall value of a receptor (**Table 6.26**). Receptors with *very low* value are unlikely to be included in ES assessments.

Table 6.26: Marine ecology receptor value

Value	General description for assigning value
High	<ul style="list-style-type: none"> • High ecological value (other ecosystem features dependent on it); • international conservation value such as designated feature of a SAC, Special Protection Area (SPA), Ramsar sites, or Site of Special Scientific Interests (SSSIs); • species “of principle importance for the purpose of conserving biodiversity” listed in Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006; and • national/international socio-economic value.
Medium	<ul style="list-style-type: none"> • Moderate ecological value (e.g. abundant/common and/or another feature partially depends on it); • national conservation value such as designated features of

Value	General description for assigning value
	<ul style="list-style-type: none"> regional or county importance, such as CWSs, Conservation Areas; and moderate national/regional socio-economic value (e.g. commercial fishery).
Low	<ul style="list-style-type: none"> Low ecological value (e.g. not selected as an abundant/common taxa and/or limited connection to other ecosystem features); regional/local conservation value such as local nature reserves; and local socio-economic value (e.g. artisanal fishery).
Very Low	<ul style="list-style-type: none"> Receptor neither common or abundant locally and no functional dependencies; receptors with no conservation designation; and no immediate socio-economic value.

Impact Magnitude

- 6.16.18 Impact magnitude primarily considers the spatial extent of the impact, the duration of the impact and the amount of change (positive or negative) relative to baseline conditions. In accordance with CIEEM (2018) EclA guidelines, additional factors such as frequency, timing and reversibility will be taken into consideration and reported where appropriate, as these factors can contribute towards the sensitivity of a species to an impact.
- 6.16.19 The predicted amount of change for a given impact will be assessed in relation to standardised pressure benchmarks applied in sensitivity assessments (Ref 6.42). Pressure benchmarks may include EQS concentrations for chemical discharges or acoustic thresholds for underwater noise assessments. In some instances, pressure benchmarks are derived from alternative sources and are site specific. For example, pressure benchmarks for local temperature changes are applied following the recommendations of an independent Expert Panel that reviewed existing legislation and the key issues relating to thermal tolerances for the New Nuclear Builds programme (Ref 6.43). It should be noted that some benchmark thresholds (e.g. EQS) are applied to trigger further ecological investigation and do not necessarily infer sensitivity of all receptor groups.
- 6.16.20 The duration of the impact will be considered in relation to pressure benchmarks and constructions timelines. The construction phase is anticipated to last between 9 to 12 years, impacts during the construction phase are considered short to medium-term whilst impacts that occur (or persist) for longer durations are considered long-term. Pressure

benchmarks often consider changes over the course of a year, therefore impacts under one year are considered low duration.

- 6.16.21 Impact magnitude will be assessed on a four-point scale; *Very Low, Low, Medium, High* (**Table 6.27**). Generic descriptions help with assigning impact magnitude. However, it should be noted that expert judgement is required when determining the weight of each of the factors involved in the overall assessment of impact magnitude.

Table 6.27: Marine ecology descriptions of impact magnitude

Impact Magnitude	Generic description	Spatial Extent	Amount of Change	Duration
High	Large-scale measurable changes, which are typically permanent or long-duration over most of the study area and potentially beyond.	Changes occur across much of the area of interest and possibly beyond.	Clear, measurable changes beyond natural variation and exceeds site-specific pressure benchmark.	Long-term or even permanent, more than 12 years.
Medium	Medium-scale measurable changes over much of the study area. Impacts are typically medium term but not permanent.	Changes occur across a significant proportion of area of interest.	Measurable changes beyond natural variation.	Medium-term temporary, one to 12 years.
Low	Noticeable but small-scale change over a partial area. Impacts are typically short-term.	A partial spatial area is exposed to changes.	Measurable change within range of natural variation.	Short-term temporary, less than a year.
Very Low	Very small-scale or barely discernible changes, over a small area. Impacts are short-lived.	Very small extent is exposed to changes.	Change possible but intangible from natural variation.	Very short term, e.g. spring-neap cycle or less.

Sensitivity

- 6.16.22 Sensitivity assessments determine the resistance (or tolerance) of a receptor to a pressure and the ability to recover following the cessation of the pressure, termed resilience. Within the context of the ES, sensitivity assessments will be completed relative to the site-specific magnitude of impacts predicted during construction and operational phases of the development.
- 6.16.23 Sensitivity will be assessed on a four-point scale: *Not Sensitive*, *Low*, *Medium*, and *High* (**Table 6.28**).

Table 6.28: Guidance for marine ecology sensitivity criteria

High	Little or no capacity for resistance, limited or prolonged recovery.
Medium	Low capacity for resistance, low capacity for resilience (e.g. after 10 years).
Low	Moderate resistance to the pressure, moderate capability for resilience (e.g. after 5 years).
Not Sensitive	High capacity for resistance, high capacity of resilience (e.g. after 1 year).

- 6.16.24 Resistance and resilience descriptors follow the general approach outlined in paragraph 7.15.17 and Table 7.15.4 of the 2014 EIA Scoping Report but are further informed by the Marine Evidence-based Sensitivity Assessment (MarESA) approach for benthic receptors (Ref 6.42) and highly mobile species (Ref 6.44).
- 6.16.25 The resistance of an ecological receptor will be assessed against the predicted impact magnitude. Resistance is considered using the following criteria:
- **None:** A severe decline in the extent, density or abundance of the habitat or species due to mortality or displacement.
 - **Low:** A significant decline in the extent, density or abundance of the habitat or species due to mortality or displacement.
 - **Medium:** A moderate decline in the extent, density or abundance of the habitat or species due to mortality or displacement.

- **High:** No or very minor changes in the extent, density or abundance of the habitat or species. Physiological and behavioural changes in metabolism, reproductive rates, feeding rates and foraging effort may occur but not at the detriment of the population.
- 6.16.26 The resilience of a receptor will be assessed in terms of its ability to recover once the pressure is removed and the environment returns to pre-impact conditions. A number of receptor specific factors will be considered in the assessment of resilience including:
- the lifespan and age of maturity of the receptor;
 - factors affecting fecundity, reproductive success, and/or larval mortality;
 - dispersal and recruitment patterns; and
 - population dynamics including natural mortality.
- 6.16.27 Recovery implies that a species or habitat has returned to pre-impacted habitat conditions or populations levels with structure and functioning maintained. It does not necessarily mean that all the species within the community have returned to pre-impacted levels.
- 6.16.28 Resilience following pressures causing behavioural avoidance/displacement are based on the evidence for the time it takes a receptor to return to an impacted area once the pressure ceases. However, behavioural responses in highly mobile species (fish and marine mammals) can cause considerable population declines irrespective of the recovery time and should be given greater weight in assessing sensitivity (6.38). The ES will consider the potential indirect food-web effects associated with such responses.

Effects and significance

- 6.16.29 The aim of the assessment process is to determine the occurrence of ecological effects and the potential significance of such effects. A final cross tabulation of the magnitude of impacts and sensitivity of the receptors provides a guideline for the classification of effects (**Table 6.29**). The tabulation is treated as a guideline and expert judgement must be applied once all the factors of the assessment have been considered and reported.

Table 6.29: Classification of effects based on sensitivity of receptors and magnitude of impact.

Impact magnitude	Sensitivity of receptor			
	Not sensitive	Low	Medium	High
Very Low	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	Moderate
Medium	Minor	Minor	Moderate	Major
High	Minor	Moderate	Major	Major

6.16.30 The generic definitions of effect for marine ecology receptors are shown in **Table 6.30**.

Table 6.30: Generic definitions of effects to marine ecology receptors.

Value	General description for assigning value
Major	Very large or large changes in ecological receptors, which may alter the structure or function of the overall marine ecosystem. Effects, both adverse and beneficial, that are likely to be important considerations at an international or national level because they contribute to achieving international/national objectives or are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate changes in ecological receptors that are likely to be important and could cause subtle changes in other ecosystem features.
Minor	Small change in ecological receptors, with limited discernible effects on other ecosystem features. These effects may be raised as local issues but are unlikely to be instrumental in the decision-making process.
Negligible	No discernible change in the ecological features. An effect that is likely to have a negligible or no influence, irrespective of other effects.

6.16.31 Following the classification of an effect as presented in **Table 6.**, a clear statement will be made as to whether the effect is 'significant' or 'not significant'. Identification of significant effects is central to the assessment process and reporting of such effects is required to allow decision makers

to be adequately informed of the positive or negative ecological effects of the proposed development.

- 6.16.32 As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant. Receptor value may influence the judgement of the significance of effect. For example, a minor effect to a designated species which contravenes conservation objectives may be considered significant. In accordance with CIEEM guidance, a significant effect has implications for the biodiversity conservation objectives for important ecological features or for biodiversity in general. Additionally, an effect may be deemed significant if the structure or functioning of a defined site, habitat or ecosystem are adversely affected (CIEEM, 2018).

v. **Assessment methodology: Fisheries**

- 6.16.33 Assessment methods for commercial fisheries follow a structured approach primarily based on the guidance document by Cefas (Ref 6.45), which provides indications of impacts to consider. Examples of assessment frameworks from recent commercial fisheries EIA chapters in the North Sea region are also utilised. Effects will consider the sensitivity of the specific fishery to development impacts during the construction and operational phase of the proposed development. Assessments will be based on the different fishing practices (e.g. potting, driftnetting, trawling) and recreational fishing.
- 6.16.34 The commercial or recreational value of the fishery is determined from the results of the commercial and recreational fisheries baseline characterisation and will be based on the value definitions in paragraph 7.15.17 and Table 7.15.4 of the 2014 EIA Scoping Report.
- 6.16.35 The magnitude of predicted impacts will be considered on an individual fishery basis and will be defined spatially and temporally. Assessments will consider whether an impact is temporary or permanent. Magnitude is largely a function of the fishery dependence on the area under consideration for the proposed development. **Table 6.31** provides the descriptors of impact magnitude for fisheries receptors.
- 6.16.36 The duration of impacts associated with construction are short term to medium term, occurring over the 9 to 12 years estimated for construction. Impacts associated with operation are potentially long term, occurring over the operational lifetime of the proposed development. The timing of specific seasonal fisheries varies considerably; therefore, due to the highly seasonal nature of certain fisheries, it is not possible to standardise the definition of duration of effects across the receptor groups.

Table 6.31: Fisheries descriptions of impact magnitude

Impact Magnitude	Generic description
High	A high proportion of the available fishing area and/or a high proportion of a commercial species (by weight or landing value) from the study area is impacted. Changes to fishing activity are long-term or permanent.
Medium	A moderate proportion of the available fishing area and/or a moderate proportion of a commercial species (by weight or landing value) from the study area is impacted. Changes to fishing activity is temporary but recovery within a reasonable timescale is not possible.
Low	A minor proportion of the available fishing area and/or a minor proportion of a commercial species (by weight or landing value) from the study area is impacted. The change is temporary, and recovery is possible within a reasonable timescale.
Very Low	Little or no history of specific fishing activity in the areas under consideration; and/or the change is temporary, and recovery is rapid.

6.16.37 The sensitivity of each receptor will be scored based on limitations of operating in different fishing grounds and an ability to work more than one gear type. Descriptions of fisheries sensitivity are provided in **Table 6.**

Table 6.32: Fisheries descriptions of sensitivity

Sensitivity	Description
High	Restricted operational range and low ability to exploit other areas and low capability to utilise other gear types. High level of dependence on the fishing area allowing limited spatial tolerance. Limited ability to recovery losses from exploiting alternative fishing grounds.
Medium	Moderate operational range allowing access to other areas and/or moderate capability to utilise other gear types. Fishing in alternative areas may only partially recover losses.
Low	Large operational range allowing access to other areas and/or capability to utilise different gear types. Fishing in alternative areas allows high recoverability of losses.

Sensitivity	Description
Very Low	Extensive operational range and/or fishing method versatility. Able to target a number of fisheries.

6.16.38 The assessment of effects and significance for fisheries will use the same approach as the marine ecology assessments.

vi. Assumptions and limitations

6.16.39 The assumptions and limitations detailed in paragraphs 7.15.19 and 7.15.20 of the 2014 EIA Scoping Report remain unchanged.

d) Potential impacts

6.16.40 A detailed marine ecology scoping exercise has been completed as part of BEEMS Technical Report TR490 and will be submitted as an appendix to the ES. The key elements of the proposed main development site that could have effects on marine ecology and fisheries are summarised for construction and operational phases of the development.

i. Construction

6.16.41 Dredging activities associated with the BLF navigational channel and sediment extractions for the cooling water infrastructure, fish recovery and return systems and combined drainage outfall would result in elevated suspended sediment concentrations (SSC) and sediment deposition rates. Drilling the vertical tunnels to connect the CW infrastructure headworks to the subterranean tunnels would also cause smaller scale increases in SSC and sediment deposition rates. Changes in SSC may have direct fitness consequences for the primary receptor, or indirect food-web effects mediated through behavioural avoidance of prey and/or reductions in foraging efficiency.

6.16.42 Construction of the BLF and cooling water infrastructure would cause localised habitat loss/change.

6.16.43 Construction noise arising from dredging activities and piling for the BLF could affect fish and mammals, particularly if it occurs during sensitive periods (such as reproductive or migration seasons).

6.16.44 Chemical/organic matter discharges from terrestrial groundworks/sewage treatment may have local impacts on receiving waters and organisms with limited movement control such as benthic species and phytoplankton.

6.16.45 Installation of offshore infrastructure would require temporary safety zones to be applied surrounding working construction vessels potentially impacting fishing activity. Safety zones would be implemented through Notice to Mariners (NtM). Tiered safety zones of 250m and 500m would typically be applied, the extent of the safety zones and the nature of any required demarcation would be subject to the navigational hazard assessment. However, infrastructure will be installed in predominantly sedimentary areas and safety zones are not expected to impact on fishing operations at the Coralline Crag.

ii. Operation

6.16.46 The cooling water system of the main development site would impinge fish and invertebrates and impingement assessments form a fundamental part of the assessments which will be presented in the ES.

6.16.47 Biota too small to be impinged on the drum screens would be entrained through the power station condensers. Entrainment on juvenile fish, ichthyoplankton and invertebrate zooplankton will be assessed in detail in the ES.

6.16.48 Discharges of heated cooling water effluent has the potential to effect marine ecological receptors in the receiving waters. The ES will consider thermal discharges in terms of:

- absolute temperatures reaching thermal maxima of sensitive species;
- changes in mean temperature;
- fluctuating temperature interfaces; and
- potential thermal barriers.

6.16.49 Chemical discharges, including seasonal chlorinated discharges and hydrazine, have been modelled and will be assessed in detail relative to potentially sensitive species in the ES.

6.16.50 Operations associated with the occasional use of the BLF would cause noise, sediment resuspension and localised habitat loss/change, potentially leading to smothering and/or behavioural effects in sensitive species.

6.16.51 Underwater infrastructure presents a potential entanglement hazard to fishing gear, e.g. gill nets or drift nets or the same infrastructure can reduce fishing access to a small area to avoid entanglement risks. The spatial extent of the underwater infrastructures is, however, extremely limited.

e) Potential mitigation

6.16.52 Changes to the embedded mitigation since the 2014 EIA Scoping Report include the BLF becoming the primary route for marine deliveries. The BLF would be a transmissive structure with few slender piles and effects on waves, sediment transport and the adjacent beach which are unlikely to be significant. The primary embedded mitigation is the small number of piles compared to alternative and much larger jetty options (Around 20 piles could be required, many of which would be above MHWS).

6.16.53 Potential mitigation solutions will be considered in further detail in the ES. Assessments will consider preliminary effects and residual effects following implementation of mitigation measures allowing a transparent assessment of mitigation options.

f) Approach to cumulative assessment

i. Inter-relationships

6.16.54 Inter-relationships (or in-combination effects) occur when individual pressures co-exist and can influence the overall effect on a receptor. In-combination effects are an important consideration as individually effects may be assessed as insignificant but combine to greater effect.

6.16.55 In-combination effects can act additively, synergistically or antagonistically and can be particularly important in the marine environment. For example, sensitivity to chemical contaminants is often temperature dependent, thus the thermal plume could enhance the toxicity of chemical discharges. In-combination effects during the proposed development that will be considered in the ES include:

- dredging and/or drilling activities co-occurring to increase SSC plumes;
- combined habitat loss/changes as a result of extraction and installation of infrastructure;
- the potential for activities causing underwater noise to occur simultaneously;
- the potentially synergistic effects of temperature and chemical contaminants in the thermal plume; and
- the effects on receptor populations to primary entrainment through the power station and exposure to the thermal/chemical plume (secondary entrainment).

ii. Project-wide effects

- 6.16.56 This assessment is only relevant to the main development site and as such, a separate assessment of project-wide effects is not proposed.

iii. Cumulative effects

- 6.16.57 The cumulative effects of the proposed development in relation to other plans, projects and permissions with the potential for overlapping ZOIs will be assessed, noting that ZOIs will be receptor dependent. It is assumed infrastructure and anthropogenic activities currently occurring (operational) in the ZOI represent part of the pressure landscape during which baseline conditions were collected. As such, they will not be considered as part of the cumulative effects assessment.
- 6.16.58 The cumulative effects assessment will apply a temporal and spatial screening approach at relevant receptor-specific scales in order to determine the potential for cumulative effects between the proposed development and other plans, projects and permissions. For example, the cumulative effects assessment for marine mammals will consider the impacts for harbour porpoise at the scale of the southern North Sea SAC as has been done for projects recently submitted to PINS. In this case a tiered approach to screening of projects into/out of the cumulative effects assessment will also be undertaken as per advice from statutory nature conservation bodies on recent projects. This allows for different levels of uncertainty and the quality of data to be considered within the assessment.

6.17 Marine Navigation

a) Introduction

- 6.17.1 This section sets out the proposed scope and methodology for the marine navigation assessment for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.128 and 3.129 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.
- 6.17.2 Changes to the approach presented within the 2014 EIA Scoping Report are associated with the findings of surveys undertaken in 2014, 2015, 2016 and 2018.

b) Work undertaken to date

i. 2014 EIA Scoping Opinion

6.17.3 The approach to the assessment of likely significant effects on marine navigation is set out in Section 7.15 of the 2014 EIA Scoping Report. The comments raised in the subsequent Scoping Opinion reiterated the need for consultation and an assessment of impact to vessel movements within a Navigational Risk Assessment.

6.17.4 A summary of the responses to the other comments received on the proposed Marine Navigation assessment in the 2014 EIA Scoping Opinion are included in within **Appendix 1C**.

ii. Survey and assessment

6.17.5 Marine traffic surveys collecting Automatic Identification System (AIS) and radar shipping data in the area have been undertaken as identified in the 2014 EIA Scoping Report including:

- Winter surveys – 14 days 2014, 14 days 2015 and 14 days 2018; and
- Summer survey – 14 days 2014, 14 days 2016.

6.17.6 One further survey will be carried out in summer 2019 to ensure up-to-date data is used in preparing the baseline for the ES.

6.17.7 Additional data on navigation, shipping and other vessel movements, as described in paragraphs 7.16.5 to 7.16.10 of the 2014 EIA Scoping Report, will be used to inform the baseline assessment.

c) Proposed approach and methodology

i. Study area

6.17.8 Through further study and consultation following the 2014 EIA Scoping Report, a wider study area has been defined that covers the shoreline and open water within a 12 nautical mile (nm) (22.2km) radius of the main development site. This area encompasses the proposed offshore infrastructure for the main development site as outlined in paragraph 7.16.3 of the 2014 EIA Scoping Report.

ii. Updates to baseline

6.17.9 Commercial navigation activity in the study area comprises various vessel movements and activities at varying distances offshore. Commercial

shipping transiting the study area includes cargo vessels, passenger vessels (e.g. the Harwich–Hoek of Holland/Rotterdam ferry route) and tankers using ports such as Harwich, Immingham, Southwold and Teesport.

6.17.10 Other commercial activity affecting navigation within the study area includes dredging for aggregates in offshore waters, with vessels transiting to and from designated extraction areas situated outside the Sizewell C study area within the East Coast Region off Great Yarmouth/Lowestoft.

6.17.11 An average of six unique fishing vessels per day in summer and three vessels per day in winter were recorded in the study area during the 28 day study period from 2015 and 2016. Four unique fishing vessels were recorded operating regularly within 12nm of the proposed development. One gillnetter was recorded regularly operating inshore of the Sizewell Bank, thus within very close proximity to the proposed development. The other gear types recorded included potters and demersal trawlers.

6.17.12 Offshore wind farm development (e.g. Galloper, Greater Gabbard, and East Anglia One, Three and Four) also generate various changes to navigation (such as in shipping routes) and additional movements (for example, plant and supplies associated with offshore wind farm construction, operation and maintenance activities).

6.17.13 There have been no significant changes to the baseline regarding recreational navigation, detailed in paragraphs 7.16.8 and 7.16.9 of the 2014 EIA Scoping Report.

iii. [Further surveys/studies](#)

6.17.14 A (14 day) marine traffic survey is scheduled for June 2019.

iv. [Assessment methodology](#)

6.17.15 The assessment methodology for navigation is detailed in paragraphs 7.16.14 and 7.16.18 of the 2014 EIA Scoping Report and remains unchanged.

v. [Assumptions and limitations](#)

6.17.16 The assumptions and limitations detailed in paragraphs 7.16.19 and 7.16.20 of the 2014 EIA Scoping Report remain unchanged.

d) [Potential impacts](#)

6.17.17 The proposed development associated with the main development site includes marine elements which could impact marine navigation, and therefore scoped into assessment as described below. The proposed

associated developments, do not have the potential to impact on the marine environment and are therefore scoped out of the assessment.

ii. Construction

6.17.18 The following impacts will be considered during the construction phase, as part of the Formal Safety Assessment process:

- collision risk – passing vessels & vessels actively fishing with installation vessels; and
- disruption to fishing and recreational activities.

iii. Operation

6.17.19 The following impacts will be considered during the operational phase, as part of the Formal Safety Assessment process:

- collision risk with vessels using beach landing facility;
- risk of vessel involved in ALL deliveries grounding/foundering;
- fishing gear snagging on subsea infrastructure (e.g. intake/outfall headworks);
- risk from vessel anchors to subsea infrastructure; and
- third-party vessel foundering onto subsea infrastructure.

e) Potential mitigation

6.17.20 The potential mitigation measures detailed in paragraphs 7.16.24 and 7.16.25 of the 2014 EIA Scoping Report remain unchanged.

f) Approach to cumulative assessment

i. Inter-relationships

6.17.21 The approach to inter-relationships, detailed in paragraphs 7.16.26 to 7.16.28 of the 2014 EIA Scoping Report, remains unchanged.

ii. Project-wide effects

6.17.22 An assessment of project-wide effects is not considered relevant for marine navigation.

iii. Cumulative effects

6.17.23 The approach to cumulative effects detailed in paragraph 7.16.29 of the 2014 EIA Scoping Report remains unchanged although the schedule of relevant developments has changed in that time. The approach to cumulative effects is more fully described (for all topics) in Section 5.5 of this EIA Scoping Report.

6.18 Radiological Assessment

a) Introduction

6.18.1 The approach to radiological assessment remains broadly unchanged from that described in Section 7.17 of the 2014 EIA Scoping Report. The assessment will address the radiological impacts associated with the transport of radioactive waste from the main development site during the operational period, it does not address the management of solid radioactive waste or spent fuel which is described in Section 3.12 of this EIA Scoping Report.

6.18.2 Levels of radioactivity and the concentration of radionuclides measured in soil, freshwater (groundwater and surface water resources) and marine waters around the main development site are comparable to background levels and well below the levels that would present a hazard to human health.

b) Work undertaken to date

6.18.3 A preliminary radiological impact assessment of the proposed development has been completed, although since undertaking this study third parties have issued updated data (such as Habitat Surveys) and EDF Energy is currently reviewing this. The preliminary results show that the expected radiological impacts are well below (more than a factor of ten) the relevant dose constraints specified in Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (Ref 6.46). It is not expected that the revised input parameters will affect the overall conclusions. EDF Energy will report on the final radiological impact assessment, including a breakdown of assessment and results, in the ES.

c) Proposed approach and methodology

6.18.4 The final radiological impact assessment will assess the potential impacts from the proposed development against legally established and recognised radiological protection standards (including relevant dose constraints, limits and screening values) for a specified range of human and non-human receptors.

d) Potential impacts

6.18.5 The scope of the final radiological impact assessment is the same as the preliminary assessment including:

- doses from radiological discharges from routine operations;
- external exposure from the site;
- the impact from short-term planned discharges;
- collective doses;
- radiological doses from transport activities;
- environmental concentrations, including build-up of activity from deposition of radionuclides in the environment over the lifetime of the plant; and
- radiological impacts on non-human biota.

e) Potential mitigation

6.18.6 Protection of the public in accidental conditions is strictly regulated by the Office for Nuclear Regulation (ONR) under the Nuclear Installations Act 1965 (as amended) (Ref 6.47). For EDF Energy to operate Sizewell C it must obtain a Nuclear Site Licence and submit a number of nuclear safety cases to the ONR prior to the construction, commissioning and operation of the station to the ONR. These describe in detail the consequences of any accidental event and the mitigation measures in place to prevent, or where this is not possible, to limit the impacts.

6.18.7 EDF Energy will apply for an environmental permit from the regulator, the Environment Agency, for the disposal of radioactive waste from the site. As part of this process the operator will need to describe in detail the design and management controls that are in place through the application of Best Available Techniques (BAT) to keep the radiological impacts from the disposal and discharge of radioactive wastes as low as reasonably achievable (ALARA) as required in the Environmental Permitting (England and Wales) Regulations 2016 (as amended). The operation of the nuclear power station, regulated by the Environment Agency under an environmental permit, would include limits on the radioactive materials that could be disposed of from the site and the conditions that the operator would need to comply with, including the requirement to undertake monitoring, recording and reporting of discharges and their impacts.

6.18.8 The technology and techniques for minimising the discharge of radionuclides into the environment are embedded in the design and specification of the UK EPR™ nuclear reactor that would be used for Sizewell C. The Environment Agency and the ONR carried out a rigorous and in-depth assessment of the reactor design and expressed satisfaction that that it meets high standards and regulatory expectations on safety, security and environmental impact.

6.18.9 It should be noted that no new radioactive materials would be generated during the construction phase for the proposed development.

6.19 Major Accidents and Disasters

a) Introduction

6.19.1 The Infrastructure Planning (EIA) Regulations 2017, transposing the European Directive 2014/52/EU, have introduced the requirement for “expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development” (Regulation 5(4)) to be assessed within EIAs where the potential for significant effects has been identified.

6.19.2 This section sets out the proposed scope and methodology for the major accidents and disasters (MA&D) assessment for the main development site and the off-site associated development sites to be presented in a single chapter of the ES. This scope has been informed by the requirements of the EIA Regulations.

6.19.3 The underlying objective of the assessment is to ensure that appropriate precautionary actions are taken for those projects which may have a vulnerability to MA&D or those that have the potential to cause them. This includes a description of measures envisaged to avoid, prevent and minimise the risk of a MA&D or to mitigate the significant adverse effects of such events on the environment.

i. Definitions

6.19.4 In the context of this assessment, a major accident is considered to be an uncontrolled event caused by a man-made activity or asset that may result in serious damage to an environmental resource or receptor. A disaster is considered to be a naturally occurring phenomenon such as an extreme weather event (e.g. storm, flood, extreme temperatures) or ground-related hazard event (e.g. subsidence, landslide, earthquake) with the potential to cause serious damage to an environmental resource or receptor. Serious damage includes the potential loss of life or permanent injury and/or permanent or long-lasting damage to an environmental receptor which cannot be restored through minor clean-up and restoration efforts.

6.19.5 When considered together, the term major accident and/or disaster (MA&D), captures events triggered both internally and externally to the proposed development, where the presence of the proposed development could contribute to the environmental effects.

6.19.6 The term vulnerability is used to describe the ability of the proposed development to plan, control, resist and recover from a MA&D in a timely manner.

b) [Work undertaken to date](#)

i. [2014 EIA Scoping Opinion](#)

6.19.7 The requirement to assess the environmental effects associated with MA&D concerning a project was introduced into EIA regulations in 2017 and was therefore not considered in the 2014 EIA Scoping Report.

c) [Proposed approach and methodology](#)

i. [Legislation, policy and guidance](#)

6.19.8 This section sets out the legislation, policy and guidance that have influenced the proposed MA&D scope and method of assessment.

[International](#)

[2014/52/EU Directive on the Assessment of the Effects of Certain Public and Private Projects on the Environment](#)

6.19.9 This Directive provides the framework for the environmental assessment of public and private projects. Paragraph 14 of the Directive includes reference to ‘a community approach on the prevention of natural and man-made disasters’, and a requirement for MA&D to be considered as part of the EIA process.

[Radiological Protection](#)

6.19.10 Recommendations on the approach to be taken to protect people from the effects of radiation exposure are made by the International Commission on Radiological Protection (ICRP) (Ref 6.48) and reviewed periodically. ICRP recommendations form the basis of the worldwide framework for radiation protection standards, provided by the International Atomic Energy Agency (IAEA) Basic Safety Standards. The UK is a signatory to a number of international agreements, including the Euratom Treaty (Ref 6.49), the OSPAR (Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic) (Ref 6.50) and the Espoo (EIA)

Convention (Ref 6.51) which set requirements for the assessment of radiological effects and consultation undertaken.

Maritime Safety

- 6.19.11 The International Maritime Organisation (IMO) is a specialised agency of the United Nations (UN) which is responsible for measures to improve the safety and security of international shipping and to prevent pollution from ships. The UK is a signatory of IMO conventions, the most important of which include the International Convention for the Safety of Life at Sea (SOLAS), 1974 (as amended) (Ref 6.52) and the International Convention for the Prevention of Pollution from Ships, 1973 (as amended) (MARPOL) (Ref 6.53).

National

- 6.19.12 The EIA Regulations establish the requirement to assess MA&D as part of the EIA process in Schedule 4 Paragraph 8:

“description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned... Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.”

- 6.19.13 The design, construction and operation of the proposed development is required to comply with relevant domestic legislation the purpose of which is to reduce the likelihood of a MA&D event occurring. Those of particular importance include:

- Radiological Protection:
 - Nuclear Installations Act 1965 (as amended) provides powers to the Office for Nuclear Regulation (ONR) to govern nuclear installations in the UK by the issue of Nuclear Site Licences. The licence covers a standard set of 36 detailed requirements to be addressed by a site licensee covering, for example, management systems, safety cases, plant safety, construction, plant modifications, accumulation/ disposal of radioactive waste and decommissioning.
 - The Ionising Radiations Regulations 2017 (Ref 6.54) regulates the radiation exposure of workers and the general public. These

regulations were made under the Health and Safety at Work etc. Act 1974 (Ref 6.55), implement the Euratom Basic Safety Directive 2013/59/Euratom, and are consistent with the IAEA Basic Safety Standards.

- Environmental Permitting Regulations (EPR) 2016 (as amended). Under the EPR, the regulator, the Environment Agency, grants an environmental permit to the operator which prescribes conditions and limitations with which the operator must comply. This includes the quantities of radioactive waste in solid, gaseous or liquid forms that can be disposed of and the specified disposal routes that can be used.
- Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (Ref 6.56). This legislation implements the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) and the Regulations concerning the International Carriage of Dangerous Goods by Rail into UK law. It defines the requirements for the safe transportation of radioactive waste materials.
- Other Relevant Legislation:
 - Health and Safety at Work etc. Act 1974 (HSWA). This legislation places general duties on employers, people in control of premises, manufacturers and employees;
 - Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) (Ref 6.57). These Regulations under the HSWA aim to reduce the risk of injury from lifting equipment used at work and outline control measures to minimise the risk;
 - Construction (Design and Management) (CDM) Regulations 2015 (Ref 6.58). These regulations place specific duties on clients, designers and contractors, so that health and safety is taken into account throughout the life of a construction project from its inception to its subsequent final demolition and removal;
 - The Management of Health and Safety at Work Regulations 1999 (Ref 6.59). This legislation places health and safety duties on

employers and employees, which go beyond those included within the CDM Regulations;

- The Workplace (Health, Safety and Welfare) Regulations 1992 (Ref 6.60). This legislation covers a wide range of basic health, safety and welfare issues and applies to most workplaces (except those involving construction work on construction sites);
- Control of Major Accident Hazards (COMAH) Regulations 2015 (Ref 6.61). This legislation aims to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. The COMAH Regulations apply to establishments which have dangerous substance(s) specified in an aggregate quantity at or above a qualifying threshold. For those sites to which the COMAH Regulations apply, specific obligations exist to support the management of MA&D (environmental and safety risk);
- Planning (Hazardous Substances) Regulations 2015 (Ref 6.62). These regulations set out planning procedures in relation to sites where hazardous substances are held and for land near those sites;
- Control of Substances Hazardous to Health Regulations 2002 (COSHH) (Ref 6.63). COSHH Regulations place requirements on employers to assess and manage health risks associated with hazardous substances, maintain and monitor control measures and plan for emergencies;
- The Regulatory Reform (Fire Safety) Order 2005 (FSO) (Ref 6.64). This legislation places duties on employers to reduce the risk from fire and ensure safe escape routes in case of fire;
- The Civil Contingencies Act (CCA) 2004 (Contingency Planning) Regulations 2005 (Ref 6.65). The CCA establishes a statutory framework of roles and responsibilities for those involved in emergency preparation and response at the local level. This includes emergency powers that might be necessary to deal with the effects of serious emergencies; and

- The Building Regulations 2010 (Ref 6.66) set out national building standards and requirements for specific aspects of building design and construction, including to control health and safety risks.

National Planning Policy Framework (NPPF) - February 2019

6.19.14 Paragraph 45 of the NPPF states that:

“Local planning authorities should consult the appropriate bodies when considering applications for the siting of, or changes to, major hazard sites, installations or pipelines, or for development around them”.

6.19.15 Paragraph 95 of the NPPF states that planning decisions “should promote public safety and take into account wider security and defence requirements by”, amongst other things: “anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate...This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security.”

Overarching National Policy Statement for Energy EN-1 and Nuclear Power Generation EN-6 (NPS EN-1 and EN-6)

6.19.16 Section 4.15 of NPS EN-1 states that the Department of Energy and Climate Change (DECC) (now Department for Business, Energy and Industrial Strategy) works closely with Government security agencies to reduce the vulnerability of the most ‘critical’ infrastructure assets in the sector to terrorism and other national security threats. Nuclear security risks would be identified, and measures considered during the design process to manage security risks in consultation with ONR. Section 2.7 of EN-6 explains the relationship between the regulatory framework for nuclear power stations and the planning regime.

6.19.17 No specific guidance relevant to the assessment of MA&D is provided within Part 5 of EN-1 or Part 3 of EN-6 as the policy documents pre-date the introduction of the 2017 EIA Regulations.

Guidance

6.19.18 Whilst there is currently no published UK Government guidance for the assessment of MA&D in EIAs, the following guidance is considered relevant:

- European Commission’s Overview of Natural and Man-made Disaster Risks the European Union may face (Ref 6.67);
- Reducing Risks, Protecting People: HSE’s decision making process (Ref 6.68);
- HSE Major Hazard Regulatory Model: Safety Management in Major Hazard Sectors (Ref 6.69);
- Chemicals and Downstream Oil Industries Forum (CDOIF) Guidelines, Environmental Risk Tolerability for COMAH Establishments (Ref 6.70);
- Defra’s The Green Leaves III Guidelines for Environmental Risk Assessment (Ref 6.71);
- The International Standards Organization’s ISO 31000:2018 Risk Management – Guidelines (Ref 6.72);
- ONR Safety Assessment Principles (Ref 6.73) apply to assessments of safety at proposed nuclear facilities to reduce risks so far as is reasonably practicable;
- ONR Security Assessment Principles (Ref 6.74), whilst not their purpose, provide information to designers on the appropriate content of security plans;
- ONR Technical Assessment Guides (Ref 6.75) which provide guidance on the interpretation and application of ONR’s Safety Assessment Principles and Security Assessment Principles;
- ONR Technical inspection guides (Ref 6.76) which provide information for licencees on the ONR’s expectation of the nature and content and conditions of their arrangement; and
- IAEA Safety Standards which include, but are not limited to:
 - Fundamental Safety Principles;
 - General Safety Requirements;
 - Leadership and Management for Safety;
 - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standard;

- Safety Assessment for Facilities and Activities, Predisposal Management of Radioactive Waste;
- Decommissioning of Facilities;
- Preparedness and Response for a Nuclear or Radiological Emergency;
- Site Evaluation for Nuclear Installations;
- Safety of Nuclear Power Plants: Design; and
- Safety of Nuclear Power Plants: Commissioning and Operation.

i. Stakeholder Engagement

6.19.19 EDF Energy is in the process of engaging with the local authorities and emergency services to understand the potential effects of the proposed development on emergency response in the community. An emergency services working group has been established, which includes fire and rescue, police and ambulance services, to determine the level of additional need and potential mitigation that may arise as a result of the proposed development.

6.19.20 Furthermore, engagement on the assessment and mitigation of MA&D hazards related to nuclear safety and hazardous substances will be continued with the ONR, Environment Agency, HSE and SCDC (now East Suffolk Council).

ii. Study area

6.19.21 Each potential MA&D would have a specific impact area associated with the particular hazard and therefore, the potential maximum impact extent will be determined during the assessment.

6.19.22 The identified impact areas will therefore determine the study area for the purpose of the assessment and will be based on consideration of the nature of the potential MA&D and the application of professional judgement.

iii. Baseline

6.19.23 The baseline presented within the MA&D assessment will utilise baseline information presented within other technical assessments of the EIA. This information will establish the vulnerability of the proposed development to a

specific event and will identify the receptors to be considered within the assessment.

6.19.24 The technical assessments of the EIA to be considered in the preparation of the baseline include, but will not be limited to:

- socio-economics;
- transport
- air quality;
- terrestrial ecology and ornithology;
- historic environment;
- soils and agriculture;
- geology and land quality;
- groundwater and surface water;
- flood risk;
- marine water and sediment quality;
- marine ecology;
- marine navigation;
- radiological assessment;
- climate change; and
- health and wellbeing.

6.19.25 Other information that is relevant to the baseline and which will inform the identification of potential risks includes the identification of locations of the following within the defined study areas:

- sites with a COMAH and/ or a Hazardous Substance Consents;
- sites permitted by the Environment Agency for landfill or mining;
- known hazardous ground conditions;
- utilities; and

- other infrastructure.

6.19.26 The following documents will also be used to inform the assessment:

- project risk registers;
- Outline Construction Environmental Management Plan (OCEMP);
- Flood Risk Assessments;
- Euratom Treaty Article 37 submission;
- Cabinet Office National Risk Register of Civil Emergencies; and
- European Commission’s Major Accident Reporting System (eMARS) (Ref 6.77).

iv. [Further surveys/studies](#)

6.19.27 The MA&D assessment will draw upon surveys undertaken to inform other topic assessments and no surveys specific to MA&D assessment will be undertaken. Further assessment is to be undertaken in accordance with the methodology set out below.

v. [Assessment methodology](#)

6.19.28 The proposed development may result in a significant effect associated with a MA&D due to the following:

- vulnerability of the proposed development to a natural disaster;
- creating a new or altering the source of a major accident;
- creating a new pathway between a source of a MA&D and receptor; and
- impacting on the vulnerability of a receptor to a MA&D.

6.19.29 The methodology adopted to identify MA&D relevant to the proposed development includes four main stages:

- Stage 1: Identification of risks;
- Stage 2: Screening of risks;
- Stage 3: Identification of secondary mitigation; and

- Stage 4: Identification of significant effects.

Stage 1 – Identification of risks

- 6.19.30 During stage 1, a risk register will be developed to identify reasonably foreseeable MA&D to be scoped into the EIA. To avoid duplication of risk assessments, existing and planned risk assessments, impact assessments and other studies will be used to identify risks which may arise due to the proposed development.
- 6.19.31 Risks will be collated into an Environmental Risk Register. This record acts as an evidence base of all the identified risks relevant to the MA&D assessment. Each risk is then reviewed to identify whether there is a linkage pathway to any of the environmental receptors identified.

Stage 2 – Screening of Risks

- 6.19.32 During stage 2, the reasonable worst case environmental impact will be identified for each risk event with a valid receptor. This is an approximation of the most severe possible outcome of a risk event, based on professional experience and in consultation with other environmental disciplines regarding the possible consequences of a risk event.
- 6.19.33 These reasonable worst-case impacts are then screened to remove those which are not relevant to the overall assessment. This stage will consider primary and tertiary mitigation and the source-pathway-receptor model to screen out risks.
- 6.19.34 Where there is no source-pathway-receptor linkage, or if the receptor has previously been scoped out of the assessment, it will be screened out of the assessment.
- 6.19.35 The likelihood of the reasonable worst case environmental impact(s) occurring may be reduced by measures already embedded within the design or management of the proposed development. Therefore, primary and tertiary mitigation, which will include risk mitigation required for compliance with legislation and guidance, will be evaluated to confirm that identified risks will be appropriately managed.
- 6.19.36 Risk events with the potential to cause ‘serious damage’, and therefore the potential to fall within the definition of a MA&D, are considered further at Stage 3.

Stage 3 – Identification of secondary mitigation

- 6.19.37 Risks which have not been addressed fully through primary and tertiary mitigation inherently have the potential to result in a significant effect.

- 6.19.38 For example, if the risk event has been managed appropriately in terms of safety of staff, but the actions taken to manage this risk do not adequately mitigate the potential for long-term or irreversible harm to an environmental resource and/or receptor, such as a watercourse outside of the main development site, further mitigation might be required.
- 6.19.39 Further consultation will be undertaken with relevant stakeholders (such as EA, ONR and HSE) and the internal project team to ensure that all risks are as low as reasonably practicable (ALARP). This may involve the identification of secondary mitigation or changes to the proposed development, to ensure that all risks with the potential to lead to a significant effect are appropriately managed.
- 6.19.40 A record of how each risk is addressed will be maintained in the Environmental Risk Register.

Stage 4 – Identification of significant effects

- 6.19.41 The aim of stage 4 of the assessment is to classify the identified environmental effects. A number of factors are considered in the identification of a potential significant effect, including:
 - the sensitivity of an identified receptor;
 - the duration of the impact;
 - the geographic extent of the impact;
 - the severity of the impact; and
 - the effort required to restore the environment affected by the impact.
- 6.19.42 **Table 6.33** outlines the criteria for notifying the European Commission of the occurrence of a major accident in Annex V of the Seveso III Directive (Ref 6.78). These criteria are not absolute, but offer guidance to what might constitute a significant effect and will be used in within the MA&D assessment.

Table 6.33: Criteria for notification of a major accident to the European Commission

Paragraph	Consequence
1	Injury to persons and damage to property
a	a death;
b	six persons injured within the establishment and hospitalized for

Paragraph	Consequence
	at least 24 hours;
c	one person outside the establishment hospitalised for at least 24 hours;
d	a dwelling outside the establishment damaged and unusable as a result of the accident;
e	the evacuation or confinement of persons for more than 2 hours where the value (persons × hours) is at least 500; or
f	the interruption of drinking water, electricity, gas or telephone services for more than 2 hours where the value (persons × hours) is at least 1,000.
2	Immediate damage to the environment
a	permanent or long-term damage to terrestrial habitats – i. 0.5 hectares or more of a habitat of environmental or conservation importance protected by legislation; or ii. 10 or more hectares of more widespread habitat, including agricultural land;
b	significant or long-term damage to freshwater and marine habitats – i. 10 km or more of river or canal; ii. 1 hectare or more of a lake or pond; iii. 2 hectares or more of delta; or iv. 2 hectares or more of a coastline or open sea; or
c	significant damage to an aquifer or underground water: 1 hectare or more.
3	Damage to property
a	damage to property in the establishment, to the value of at least EUR 2,000,000; or
b	damage to property outside the establishment, to the value of at least EUR 500,000.
4	Cross-border damage: any major accident directly involving a dangerous substance giving rise to consequences outside the territory of the Member State concerned.

- 6.19.43 A significant adverse effect for the proposed development is an event which has the potential to cause permanent injury or loss of human life, and/or permanent or long-lasting damage to an environmental receptor which cannot be restored without clean-up and restoration efforts. The determination of significance takes into account other factors listed above, and will be determined based on professional judgement.
- 6.19.44 Furthermore, reference will be made to the tolerability criteria of MA&D hazards established within existing guidance documents to conclude whether an effect is considered to be significant.
- 6.19.45 For the marine navigation assessment, a summary of the risks identified in the navigational risk assessment will be provided within the MA&D ES chapter.

d) **Potential Impacts**

- 6.19.46 The relevant receptors for the MA&D assessment will be those identified by other disciplines considered in the EIA. However key relevant receptors to the assessment of MA&D will include:
- populations, including members of the public and local communities;
 - the built environment, including infrastructure;
 - the historic environment, including built heritage and archaeology; and
 - the natural environment, including soil, water, land, air and biodiversity.

i. **Construction**

- 6.19.47 The following have been identified as potential risks during construction at the main development site and off-site associated development:
- natural disasters, such as geological, hydrological or meteorological events;
 - accidents during construction works;
 - incidents from surrounding land uses; and
 - impact pathway creation.
- 6.19.48 Consequently, the following potential construction impacts have been identified:

- main development site and off site-associated development:
 - vulnerability of the site to natural disasters;
 - vulnerability of the site to major accidents originating from off-site sources;
 - fire/explosion/structural/excavation collapse at the site;
 - contamination or release of hazardous substances at the site;
 - unearthing a historic site with a specific hazard (e.g. unexploded ordnance, contaminated land, ground gas, asbestos etc.) at the site;
 - impacts on road safety caused by construction traffic of the proposed development;
 - impacts on road safety caused by improvements to the highway network as part of the proposed development;
 - loss of utilities due to the construction of the proposed development;
 - vandalism/crime/terrorism leading to increased risk to personal safety of members of the public;
 - impacts on the ability of emergency response activities to be implemented;
 - creation of a new impact pathway during the construction of the proposed development; and
 - altering the vulnerability of a sensitive receptor to a MA&D event; and
- main development site only:
 - accidents associated with marine navigation; and
 - accidents associated with construction within the marine environment, such as tunnel boring.

ii. Operation

6.19.49 As set out in Section 5.2 of this EIA Scoping Report, the operational assessment will consider the operation of the main development site and the operation of off-site associated development during the construction of the main development site. As such, the following potential risks have been identified:

- natural disasters;
- incidents from surrounding land uses;
- events created by the operation of the proposed development; and
- impact pathway creation.

6.19.50 Consequently, the following potential operational impacts have been identified:

- main development site and off-site associated development:
 - vulnerability of the site during operation to natural disasters;
 - vulnerability of the site during operation to incidents originating from off-site sources;
 - fire/explosion/structural/excavation collapse or subsidence at the site;
 - contamination or release of hazardous substances at the site;
 - loss of utilities due to the operation of the proposed development;
 - vandalism/crime/terrorism leading to increased risk to personal safety of members of public;
 - creation of a new impact pathway during the operation of the proposed development; and
 - altering the vulnerability of a sensitive receptor to a MA&D event;
- main development site only:
 - nuclear incidents; and

- accidents associated with marine navigation.

iii. Removal and reinstatement

6.19.51 The potential risks identified for the removal and reinstatement phases of the main development site and off-site associated development sites (where applicable) are considered to be similar to those outlined for the construction phase.

iv. Decommissioning

6.19.52 The major accidents and events chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential Mitigation

6.19.53 A description of the measures envisaged to prevent or mitigate potential significant adverse effects of MA&D on the environment will be provided as part of the ES, in accordance with Schedule 4 Paragraph 8 of the EIA Regulations. Mitigation for MA&D will include measures to minimise the risk of the occurrence of a MA&D and to mitigate the effects of a MA&D, if it were to occur, including the resilience of the proposed development to such events. This will also include details of preparedness for and proposed response to such emergencies, taking consideration of the existing procedures used to manage risks at Sizewell B.

6.19.54 Zero Harm is one the key objectives set out within EDF Energy's 'Our Better Energy Ambitions' (Ref 6.79) and forms a major part of EDF Energy's organisational culture, with nuclear safety taking overriding priority in all decision making. For new nuclear designs, the safety of a generic reactor design is assessed under the Generic Design Assessment (GDA) process, overseen by the Office for Nuclear Regulation (ONR) and the Environment Agency. A Statement of Design Acceptability for the UK EPR reactor design was granted in December 2012. Further information can be found within Section 2.6 of EN-6.

6.19.55 The safety of a site-specific implementation of that design of nuclear reactor is assessed as part of the review process undertaken prior to granting of the Nuclear Site Licence (NSL) by the ONR. Therefore, the requirement for EDF Energy to apply mitigation measures for potential radiological effects would arise from its regulatory and legal obligations under a NSL and an Environmental Permit for radiological substances. Both the ONR and the EA will hold EDF Energy accountable for ensuring that the operator fulfils its regulatory and legal responsibilities in this regard. Therefore,

compliance with the requirements of the NSL and the Environmental Permit will be considered to form tertiary mitigation for the purposes of the EIA.

6.19.56 Similarly, measures related to the storage and management of hazardous substances are controlled under the COMAH and HSC Regulations and will be subject to COMAH and HSC Consents.

6.19.57 Furthermore, a Community Safety Management Plan is proposed to address issues that may arise and set out mitigation measures for emergency response.

6.19.58 Mitigation measures that could be implemented to minimise risks associated with marine navigation include:

- marking the subsea infrastructure (cooling water outfall/intake heads) on nautical charts in line with UKHO standards, with associated note/warning;
- safety zones may be applied around the outfall/intake headworks; and
- navigation warning installations (e.g. buoys) may also be installed around these headworks.

f) **Approach to cumulative assessment**

6.19.59 The MA&D assessment will inherently consider inter-relationship effects with other topics being assessed as part of the EIA which have the potential to lead to a risk event or to affect identified receptors.

6.19.60 The list of cumulative schemes will be reviewed to identify any developments which may result in cumulative effects related to MA&D with the proposed development, on the basis of the methodology set out above.

6.20 **Waste Management**

a) **Introduction**

6.20.1 This section sets out the proposed scope and methodology for assessment of waste for the main development site and the off-site associated development sites. This scope has been informed by consideration of paragraphs 3.7.3 and 3.7.4 of the 2014 EIA Scoping Opinion, the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

i. Baseline

6.20.2 An analysis of the baseline conditions at local, regional and national levels has been conducted to provide a comparison for assessing any potential impacts. This includes consideration of the following:

- local authority collected waste (i.e. municipal waste), commercial and industrial (C&I) waste and construction and demolition waste;
- current levels of waste generation at the local, regional and national levels;
- current trends in waste management practice at the local, regional and national levels; and
- a review of available waste management facilities likely to be affected by the project.

c) Proposed approach and methodology

i. Legislation policy and guidance

6.20.3 A detailed review of relevant key international, national, regional and local waste policies, strategies, legislation and industry guidance has been undertaken and this has been considered when developing the assessment and strategy for managing conventional waste.

6.20.4 The Waste Framework Directive (European Union, 2008) establishes the wider regulatory context for waste management across Europe. In addition to defining waste, it also introduces the concept of the waste hierarchy and establishes landfill diversion targets for member states. The requirements of the WFD are transposed into applicable national law through the Waste (England and Wales) Regulations 2011 and other national waste legislation and policy.

National Planning Policy

National Planning Policy Framework (NPPF) (2019)

6.20.5 The NPPF does not contain specific waste policies as these are detailed within the Waste Management Plan for England and the National Planning Policy for Waste .

6.20.6 The environmental objective set out at paragraph 8 of the NPPF is “to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land helping to improve

biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

- 6.20.7 The environmental objective set out in paragraph 204 b) of the NPPF is “so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials. Whilst aiming to source minerals supplies indigenously.”

National Planning Policy for Waste (2014)

- 6.20.8 The National Planning Policy for Waste sets out detailed waste planning policies to be applied in conjunction with the NPPF. It states:

“when determining planning applications for non-waste development, local planning authorities should, to the extent appropriate to their responsibilities, ensure that:

the likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;

new, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development; and

the handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal”.

Other relevant policy includes:

- 6.20.9 Waste Management Plan for England (2013), which provides an overview of waste management in England and reiterates the requirement for all waste producers and waste management providers to implement the waste hierarchy (**Plate 3.1**).
- 6.20.10 The UK Government’s Environment Plan: ‘A Green Future: Our 25 Year Plan to Improve the Environment’ published in 2018, establishes goals for improving the environment within a generation and leaving it in a better

state than we found it and details how the government will work with communities and businesses to do this.

6.20.11 The Resources and Waste Strategy for England combines actions to be taken now and commitments for the coming years, by establishing key targets and milestones on recycling and landfill rates, which could be relevant to the proposed development.

ii. **Assessment methodology**

6.20.12 The waste assessment will aim to:

- identify the main waste streams and predicted volumes likely to arise from the construction, operation and removal and reinstatement phases of the proposed development;
- identify any potential impacts upon existing waste infrastructure;
- identify measures that will be implemented to prevent and minimise waste generation; and
- provide the basis upon which to develop a conventional waste strategy for the proposed development.

6.20.13 The assessment methodology is described in the following section on potential impacts.

d) **Potential impacts**

6.20.14 The potential impacts of waste generated as part of the Sizewell C project are currently being assessed. The ongoing assessment considers the local waste management infrastructure and the waste generated over time by the Sizewell C proposals. The potential for any significant effects will be determined at a high level using the information gathered and assessed to date.

6.20.15 The receptors likely to be subject to impacts as a result of waste generation and management are landfills, recycling facilities and other waste management infrastructure.

6.20.16 The potential impacts assessed are:

- utilisation and depletion of the remaining local landfill capacity;
- utilisation of available waste management infrastructure with limited capacities; and

- proximity of waste management facilities to the development sites, in particular, facilities for managing hazardous waste.

6.20.17 The waste assessment will also identify the most likely waste facilities for receipt of different Sizewell C Project waste streams, taking into consideration proximity to the Sizewell C Project site as well as the off-site associated development sites, their capacity, feedstock requirements and other parameters. The assessment will also highlight the preferred options for re-use, recycling, treatment and disposal of the various waste streams, in addition to assessing the waste transportation options.

6.20.18 When the likely waste arisings are compared with both the future baselines and the capacities of available facilities, the Sizewell C proposals are considered unlikely to place undue pressure on these facilities. The preliminary conclusion of the assessment is that there would be no significant effects on waste facilities arising as a result of the proposals.

i. **Estimated conventional waste arisings**

Construction – earthworks

6.20.19 As at Hinkley Point C, excavated materials, created during the construction of Sizewell C, would largely be retained on the main development site for re-use as backfill and landscaping. This would significantly minimise the amount of material classified as waste during the enabling works and earthworks phases of construction.

6.20.20 It is possible that a small fraction of the excavated materials at Sizewell C would be contaminated, particularly in the area of Coronation Wood, due to previous land use. If this is the case, a percentage of this material may become waste and would require appropriate management. Most of the Sizewell C main development site and the off-site associated development sites have limited, if any, history of previous operational development and no significant contamination is expected.

6.20.21 For the new roads, road improvements and rail infrastructure included within the proposals, it is likely that any excavated material would be used in the cut and fill balance required along the road and rail alignments and will need to be managed as waste. The construction of the new roads may encounter localised hot spots of contamination (such as small isolated and unregulated landfills) and so small volumes of hazardous waste are also likely to be encountered.

Construction - Sizewell B relocated facilities

- 6.20.22 Waste from the demolition process will predominantly consist of concrete and metal, with a small quantity of other material types from the internal fittings. It is estimated that these activities will generate approximately 5,000 tonnes of construction and demolition waste. Where this waste cannot be retained for use on-site as part of the construction works, it will require treatment or disposal off-site.

Construction - excluding earthworks

- 6.20.23 Construction waste would be generated through off-cuts from fitting materials, breakages and spent materials and would include, but not be limited to, municipal wastes, concrete, metal, wood and plastic. Reference to the predicted construction waste arisings for Hinkley Point C suggests that a construction waste total of approximately 407,000 tonnes (on average 45,000 tonnes per year), requiring off-site management, would be expected at Sizewell C over the course of the construction period. This total would include arisings from the main development site (242,000 tonnes) as well as the on-site and off-site associated development (165,000 tonnes). This represent approximately 10.9% of the predicted total Suffolk construction waste arisings of 460,000 tonnes in 2022⁴ decreasing to 379,000 tonnes in 2032 (Ref 6.80).
- 6.20.24 The total of hazardous waste arisings from the construction phase is estimated to be 9,500 tonnes (on average 1,100 tonnes per year, with a peak of 4,000 tonnes in year 3). This will typically include chemicals and oils used as part of the construction works. This represents approximately 11% of total Suffolk arisings in year 3 (2024).

Storage provision

- 6.20.25 Waste produced on the main development site and the campus during construction may be best managed with the provision of two waste consolidation centres for the storage, segregation and treatment of construction waste.
- 6.20.26 Storage would allow for the segregation of waste such as metals, wood, soils, inert and residual waste. Processes undertaken at waste facilities in the region would be considered when identifying the level of segregation required at the site.

⁴ These dates have been used as a baseline for the period of construction of Sizewell C. These figures are baseline data taken from the Suffolk Minerals and Waste Plan. They are being used as a comparison for the quantity of waste the project is estimated to generate, against that which is typically managed in Suffolk in any one year.

Main development site associated development

- 6.20.27 The municipal solid waste associated with the fully occupied accommodation campus is estimated to total 7,200 tonnes over a 6-year period when it is operational with an annual average of 1,200 tonnes. This is likely to include general black bag waste, food waste and dry recyclables such as cardboard, paper and plastics. The estimated arisings equate to approximately 0.25% of the predicted total Suffolk arisings of 408,000 tonnes in 2018 increasing to 444,000 tonnes in 2029.
- 6.20.28 The C&I waste associated with the associated developments is likely to include general black bag waste and dry recyclables such as cardboard, paper, green waste and plastics. It is estimated that a total 21,500 tonnes will be produced over a 6 year period with an annual average of 3,600 tonnes. This represents approximately 0.28% of the total Suffolk arisings predicted to be 892,000 tonnes in 2022, increasing to 1,039,000 tonnes in 2032.

Storage provision

- 6.20.29 When the campus is operational, storage will be provided on site to allow for the segregation of dry recyclable waste, organic waste and residual waste, in order to ensure the municipal waste streams can be easily integrated into the region's waste management systems.
- 6.20.30 When the other associated development sites such as the offices, canteen and park and ride facilities are operational, storage would be provided locally to allow for the segregation of dry recyclable waste, organic waste and residual waste, in order to ensure the waste streams can be easily integrated into the region's waste management systems.

Removal and reinstatement of the off-site associated developments

- 6.20.31 As described in **Chapter 3**, a number of the associated developments would be removed at the end of their use, including the accommodation campus, both park and ride facilities and the green rail route.
- 6.20.32 The total waste associated with the removal of these developments is estimated to be 443,000 tonnes over a period of up to two years. This represents approximately 55% of total Suffolk arisings predicted to be 402,000 tonnes in 2029.

Operational waste from Sizewell C

- 6.20.33 Sizewell C would be operational for approximately 60 years. Conventional waste produced would originate from welfare facilities, offices and activities

including the maintenance of plant and equipment. The operational waste arisings for the power station are predicted based upon forecasts undertaken for a single Evolutionary Pressurised Reactor (UK EPR) in EDF Energy and Areva's 'Generic Design Assessment (GDA) UK EPR – Integrated Waste Strategy Document', 2012 (Ref 6.81).

- 6.20.34 In total, the C&I waste associated with the power station during operation is estimated to be 68,400 tonnes with the average annual waste arisings estimated as 1,140 tonnes. Of the average annual arisings, it is expected that around 940 tonnes will be inert/non-hazardous and 200 tonnes will be hazardous waste. During maintenance outages, these periods will generate a higher quantity of wastes than during periods of normal operation. Outage waste quantities have been included in the annual waste arisings.
- 6.20.35 Typical hazardous wastes likely to be generated would include chemicals, solvents and oils, batteries and electrical equipment from the operation and maintenance of the power station and its infrastructure. Typical inert/non-hazardous wastes are likely to include glass and rubble, office waste and general municipal type wastes such as food, paper and plastics.
- 6.20.36 Storage would be provided within the operational power station that allows for the segregation of dry recyclable waste and residual waste.

Decommissioning of Sizewell C

- 6.20.37 The decommissioning of Sizewell C power station would be subject to a separate EIA prior to any decommissioning activities commencing and the development of the conventional waste strategy developed for the construction and operation of the power station summarised here has not considered wastes arising from the decommissioning phase.

e) Potential mitigation

- 6.20.38 The development of the waste strategy is ongoing and, once completed, the likely impacts on waste infrastructure will be further quantified. Should any likely significant effects be predicted, additional mitigation measures, beyond standard good practice, would be identified in accordance with the waste hierarchy.
- 6.20.39 The good practice mitigation measures, which may be implemented, include:
- Inclusion of the requirement to use the waste hierarchy, including elimination through design, in all relevant EDF Energy let contracts. Consideration would be given throughout the design phase to minimise the quantity of waste generated and reduce the material requirements

within the design itself, through utilising new infrastructure that contains a high proportion of recycled content (where design constraints allow), and by designing to re-use and recycle site-won materials, wherever possible.

- The waste hierarchy would be implemented throughout construction to minimise disposal and maximise re-use and recycling of waste arisings and move waste and material management practices as far up the hierarchy as practicable, minimising the need for disposal. Opportunities for re-use and recycling of waste include (but are not limited to):
 - re-using excavated soils on-site in the landscaping features;
 - chipping green waste on-site for use in the landscaping;
 - composting of green waste;
 - recycling of inert material by crushing, blending and subsequent re-use, as an aggregate;
 - re-using waste on other nearby schemes;
 - re-using waste for uses with clear benefits to the environment, for example in the remodelling of agricultural land or in the restoration of quarries or other excavation sites; and
 - facilities would be provided on-site to segregate waste at source, for example, for recycling.

6.20.40 Where waste must be taken to a recycling or disposal site, the contractor would ensure that the sites have the appropriate permits to ensure that environmental risks are reduced, such as damage to hydrological systems. In addition, the suitable facility would be located as close to the works as possible to minimise the impacts of transportation, in particular, the release of carbon emissions. The contractor would identify the closest and most relevant treatment and disposal sites.

6.20.41 The appointed contractor would produce a Construction Environmental Management Plan (CEMP) which would detail all mitigation measures to be adhered to on-site.

6.20.42 A Site Waste Management Plan (SWMP) would be produced by the appointed contractor, prior to the start of construction. The SWMP would ensure that unavoidable waste is managed in accordance with the waste hierarchy and other relevant legislative requirements and would detail

information on the waste carriers and waste management facilities that would be used. The SWMP would be continually reviewed by the appointed contractor and regularly updated with the relevant information as the proposals progress.

- 6.20.43 A Materials Management Plan (MMP) would be produced by the earthworks appointed contractor to enable the use of excavated materials on-site.
- 6.20.44 The preparation and implementation of a CEMP, SWMP and MMP would ensure that any likely significant adverse effects associated with material resource use and waste generation are appropriately managed.

6.21 Climate Change

a) Introduction

- 6.21.1 This section sets out the proposed scope and methodology for the climate change assessment for the main development site and the off-site associated development sites to be presented in a single Environmental Statement (ES) chapter. This scope has been informed by the requirements of the EIA Regulations and NPS EN-1 and to align with Institute of Environmental Management and Assessment (IEMA) Guidance.
- 6.21.2 In accordance with Schedule 4, paragraph 5(f) of the EIA Regulations, which requires a description of *‘the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change’*, consideration will be given within the assessment to two aspects of climate change set out in **Table 6.34**.

Table 6.34: Summary of elements of climate change assessment

Assessment element	Description
Lifecycle greenhouse gas (GHG) impact assessment	Impact of GHG emissions arising from the proposed development on the climate, including how it will affect the ability of UK government to meet its carbon reduction plan targets.
Climate change resilience (CCR) assessment	The resilience of the proposed development to climate change impacts, including how the proposed development design will take account of the projected impacts of climate change.

6.21.3 For purposes of clarity, this section addresses each of the two climate topic assessments separately.

b) *Work undertaken to date*

i. *2014 EIA Scoping Opinion*

6.21.4 The requirement to assess the climate change impacts of a project was introduced into EIA regulations in 2017 and was therefore not explicitly considered in the 2014 EIA Scoping Report.

c) *Proposed approach and methodology*

i. *Legislation, Policy and Guidance*

6.21.5 This section outlines legislation, policy and guidance that will be considered when undertaking the climate change assessment.

Legislation

Climate Change Act 2008

6.21.6 The Climate Change Act 2008 (Ref 6.82) establishes a legally binding target to reduce the UK's GHG emissions by at least 80% by 2050 from 1990 baseline levels. To drive progress and set the UK on a pathway towards this target, the Act introduced a system of 5-year carbon budgets, including a target that the annual equivalent of the carbon budget by 2020 is at least 34% lower than 1990.

6.21.7 Under the Climate Change Act, the Adaptation Reporting Power (ARP) helps organisations with functions of a public nature to produce reports detailing:

- current and future projected effects of climate change on their organisation; and
- proposals for adapting to climate change.

Carbon Budgets Order

6.21.8 Carbon Budget Orders implement the carbon budgets set out in the Climate Change Act 2008. The 2016 Carbon Budget Order (Ref 6.83) is the most recent and sets carbon budgets for the period 2028-2032 as shown in **Table 6.34**. The budgets require the UK to continue to reduce emissions in the most cost-effective way, as we progress towards the 2050 target to reduce domestic emissions by at least 80% on 1990 levels.

- 6.21.9 Progress against the carbon budgets is monitored by the Committee on Climate Change (CCC). Details of the carbon budgets and the respective reduction target below 1990 levels are presented in **Table 6.35**.
- 6.21.10 Carbon budgets set a cap on the maximum level of the net UK carbon account for each five-year budgetary period.

Table 6.35: Summary of elements of climate change assessment

Carbon budget	Carbon budget level	Reduction below 1990 levels
1st carbon budget (2008 to 2012)	3,018 MtCO ₂ e	25%
2nd carbon budget (2013 to 2017)	2,782 MtCO ₂ e	31%
3rd carbon budget (2018 to 2022)	2,544 MtCO ₂ e	37% by 2020
4th carbon budget (2023 to 2027)	1,950 MtCO ₂ e	51% by 2025
5th carbon budget (2028 to 2032)	1,725 MtCO ₂ e	57% by 2030

Planning our Electric Future: A White Paper for Secure, Affordable and Low Carbon Electricity 2011

- 6.21.11 This White Paper (Ref 6.84) identifies several ‘unprecedented’ challenges to power generation in the UK, including a threat to security of supply as existing coal-fired power stations close, decarbonisation of electricity generation, the likely rise in electricity demand, and expected rise in electricity prices. In response, a strategy has been put forward that includes the introduction of an Emissions Performance Standard (EPS) for UK power generation proposed to be set as an annual limit equivalent to 450 grams of carbon dioxide (CO₂) per kilowatt hour at baseload. The contribution of the proposed development towards the UK meeting the EPS for UK power generation will be established.

7th Environment Action Programme (EAP) 2014

- 6.21.12 The 7th EAP (Decision No. 1386/2013/EU) came into force in January 2014, guided by the following long-term vision:

“In 2050, we live well, within the planet’s ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society’s resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society.” (Annex, paragraph 1)

6.21.13 The 7th EAP is based around three priority areas requiring more action, including:

1. Protect nature and strengthen ecological resilience.
2. Boost resource-efficient, low-carbon growth.
3. Reduce threats to human health and wellbeing linked to pollution, chemical substances, and the impacts of climate change.

6.21.14 The potential effects identified within the three priority areas for action will be considered as part of the GHG and CCR assessments and considered as part of the in-combination effects assessment.

National Planning Policy

Overarching National Planning Policy Statement for Energy (EN-1)

6.21.15 EN 1 sets out UK national policy for energy infrastructure. Part 2 highlights the role of energy generation in the transition to a low carbon economy and specifically the need to move away from high carbon fossil fuel use to diverse, low emission energy generation if the UK is to meet its 2050 carbon targets.

6.21.16 Within Part 3, section 3.3.5, recognises the role of nuclear power as a low carbon energy generation technology that will help reduce the UK's dependence on fossil fuels. It highlights that nuclear power provides a continuous and stable source of energy that can respond to the peaks and troughs in supply of renewable energy sources.

6.21.17 Part 4 details how applicants and planning authorities need to take into account the effects of climate change when developing and when developing infrastructure. Section 4.8.1 emphasises the importance of the need for suitably resilient energy infrastructure if it is to meet its future energy generation demands.

6.21.18 Section 4.8.6 requires applicants to account for climate change impacts by using the latest UK Climate Projections while 4.8.7 requires that as a minimum the emissions scenario following the 10%, 50% and 90% estimated ranges should be applied. Furthermore, the applicant must satisfy the planning authorities that there are not features of the design of new energy infrastructure critical to its operation that may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections. Section 4.8.9 states that the applicant should apply the high emissions scenario where energy infrastructure has safety critical elements.

- 6.21.19 Section 4.8.11 requires that identified climate change adaption measures should be based on the latest set of UK Climate Projections and consulted with the Environment Agency while the assessment would also consider any adverse impacts caused by the adaption measures.

National Planning Policy Statement for Nuclear Power Generation (EN-6) 2011

- 6.21.20 The Government believes that energy companies should have the option of investing in new nuclear power stations. Any new nuclear power stations consented under the Planning Act 2008 will play a vitally important role in providing reliable electricity supplies and a secure and diverse energy mix as the UK makes the transition to a low carbon economy.

- 6.21.21 Section 2.10 of EN-6 provides guidance on climate change adaption and states that:

‘Applicants should provide the Infrastructure Planning Commission (IPC) with information as to how the development incorporates adaptation measures to take account of the effects of climate change, including:

- coastal erosion and increased likelihood of storm surge and rising sea levels;
- effects of higher temperatures; and
- increased risk of drought, which could lead to a lack of available process water’

- 6.21.22 The CCR assessment and in-combination effects assessment will consider the requirements for climate change resilience set out in EN-6.

- 6.21.23 Section 2.10.4 states the requirement for the GDA process to look at the capability of the power station’s generic design features to take into account the effects of climate change. It states that site licensing and environmental permitting processes should ensure that new nuclear power stations will be located, constructed, operated and decommissioned with the long-term impacts of climate change in mind.

National Planning Policy Framework (NPPF) 2019

- 6.21.24 Chapter 14 of the NPPF describes the importance of effective planning in ensuring significant reductions in GHG emissions and increasing resilience to adverse effects associated with climate change. Paragraph 148 states that:

“The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change”

6.21.25 In relation to climate change resilience and adaptation, paragraph 150 states that:

“New development should be planned for in ways that:

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure: and

b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards”.

6.21.26 The requirements of the NPPF on GHG reduction and climate change impacts will be considered as part of the GHG and CCR impact assessments that are within the scope of this EIA.

Planning Practice Guidance, Climate Change 2019 (Ref 6.85)

6.21.27 This guidance advises how to identify suitable mitigation and adaptation measures in the planning process and will be considered within the design of the proposed development to address the impacts of climate change.

6.21.28 Necessary mitigation and adaption measures will be identified as part of the CCR process.

The National Adaption Programme and the Third Strategy for Climate Adaption Reporting

6.21.29 This second National Adaptation Programme (NAP) (Ref 6.85) sets out government’s response to the second Climate Change Risk Assessment (CCRA), showing the actions government is, and will be, taking to address the risks and opportunities posed by a changing climate. It forms part of the five-yearly cycle of requirements laid down in the Climate Change Act 2008 to drive a dynamic and adaptive approach to building our resilience to climate change.

6.21.30 The NAP presents key actions that will be taken over the next five years to strengthen the UK’s resilience to climate change. **Section 3.2** specifically

focuses on climate change risk to the energy sector and states in relation to nuclear power:

“For nuclear installations including operating reactors, the Office of Nuclear Regulation’s (ONR) Safety Assessment Principles underpin the regulatory oversight and scrutiny of licensees’ safety submissions throughout the lifecycle of the installation. The submissions must reflect internal and external hazards including the reasonably foreseeable effects of climate change over the lifetime of the facility as well as other factors such as coastal erosion, extreme weather and flooding. This approach is also reflected in joint guidance ONR has produced with the national Environment Agencies for nuclear new build.”

- 6.21.31 The effects identified in the NAP will be considered as part of the CCR assessment and in-combination effects assessment.

Local Planning Policy

Suffolk Climate Action Plan (2017)

- 6.21.32 The Suffolk Climate Change Partnership (SCCP) consisting of Suffolk’s local authorities and the Environment Agency work together with several organisations including Groundwork Suffolk and the University of Suffolk under a shared interest in supporting Suffolk’s communities, businesses and residents to reduce carbon emissions, realise the economic benefits of reducing energy consumption and adapt to the future impacts of climate change. In March 2017, SCCP published Suffolk Climate Action Plan 3, replacing the second plan published in July 2012.

The “Suffolk Climate Action Plan (Ref 6.87)

- 6.21.33 explains that in line with the Climate Change Act 2008, the SCCP has set its own target:

“To facilitate a reduction in absolute carbon emissions in Suffolk of 35% on 2010 levels by 2025 and 75% by 2050, in line with the UK Climate Change Act 2008”.

- 6.21.34 This plan identifies the key challenges for Suffolk, which include:

- increased flood risk;
- water scarcity;

- health during increasingly frequent extreme weather events;
- ability of Suffolk’s infrastructure to cope with changing demand and use;
- organisational resilience to climate change; and
- changes to natural systems.

6.21.35 The potential effects of the proposed development with regard to the key challenges identified in the plan will be considered as part of the in-combination effects assessment.

6.21.36 Suffolk Council is committed to support businesses to improve their profitability through reducing energy use and carbon emissions since 2008.

Guidance

6.21.37 The following guidance has been used in developing the assessment methodology:

- IEMA: The Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref 6.88);
- IEMA: Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (Ref 6.89);
- World Resource Institute (WRI) & World Business Council for Sustainable Development, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Ref 6.90);
- PAS 2080 Carbon Management in Infrastructure (Ref 6.91); and
- BS EN 15978 Sustainability of construction works – assessment of environmental performance of buildings – calculation method (Ref 6.92).

ii. Study area

GHG impact assessment

6.21.38 The study area covers all direct GHG emissions arising from the construction, operation and maintenance of the proposed development and off-site associated development sites. In addition, the study area will include the removal and reinstatement of the park and ride sites once construction of the power station is completed.

- 6.21.39 The study area also includes indirect emissions embedded within the construction materials arising from the energy used in their production, as well as emissions arising from the transportation of materials, waste and construction workers.
- 6.21.40 Decommissioning of the main development site is scoped out of the GHG impact assessment on the basis that it is anticipated that the proposed development will be in use beyond the design life. In addition, given that decommissioning will likely be at least 60 years in the future it is challenging to estimate what emissions would arise from decommissioning activities and the removal of demolition materials. Decommissioning of the main site will be covered by a separate Environmental statement.
- 6.21.41 GHG emissions arising from the removal and reinstatement of the park and rides sites will be included in the scope of the GHG impact assessment as these are due to be removed once construction activity has ceased.
- 6.21.42 The environmental impact associated with GHG emissions is a national and global issue. Consequently, the potential significance of the proposed development's lifecycle GHG emissions will be assessed by comparing the estimated GHG emissions from the proposed development against the reduction targets defined in the Climate Change Act 2008 and associated five-year, legally binding carbon budgets.

Climate change resilience (CCR) assessment

- 6.21.43 The study area for the climate change resilience assessment is the proposed development, including the main development site and all off-site associated development sites.

iii. Establishing the baseline

GHG impact assessment

- 6.21.44 The GHG baseline will be a 'business as usual scenario' under which the proposed development is not consented. The baseline consider GHG emissions from other sources of grid electricity generation including fossil fuels and renewable energy that may be used assuming the proposed development is not consented.

CCR assessment

- 6.21.45 The baseline for the CCR assessment includes the existing and future climate conditions. The following subsections summarise the two components of the baseline conditions.

6.21.46 Historic climate data obtained from the Met Office website (Ref 6.93) recorded by the meteorological station closest to the proposed development (Levington Weather Station) for the period 1981-2010 indicates the following:

- average annual maximum daily temperature was 14.2°C;
- warmest month on average was August (mean maximum daily temperature of 22.4°C);
- coldest month on average was February (mean minimum daily temperature of 1.8°C);
- average total annual rainfall levels were 560.5mm;
- wettest month on average was November (52.7mm of rainfall on average for the month); and
- driest month on average was February (38.7mm of rainfall on average for the month).

6.21.47 Additional data for other climate variables will be collated as part of the assessment. In addition, data from the UKCP18 () gridded observational dataset will be collated to complement the existing baseline.

iv. **Future baseline**

6.21.48 UKCP18 provides probabilistic climate change projections for pre-defined 20-year periods for annual, seasonal and monthly changes to mean climatic conditions over land areas. For the assessment, UKCP18 probabilistic projections for the following average climate variables have been obtained and will be further analysed:

- mean annual temperature;
- mean summer temperature;
- mean winter temperature;
- maximum summer temperature;
- minimum winter temperature;
- mean annual precipitation;
- mean summer precipitation; and

- mean winter precipitation.

6.21.49 Further data will also be obtained, where available, for other climate variables and extreme weather events, namely:

- heavy rainfall events;
- droughts (extended periods of low precipitation);
- heat waves (high temperatures);
- frosts/freezes (low temperatures);
- average and strong winds;
- humidity;
- sea level rise;
- lightning; and
- fog.

6.21.50 Projected temperature and precipitation variables are presented in **Table 6.36** and **Table 6.37** respectively. UKCP18 probabilistic projections have been analysed for the 25km grid square where the proposed development is located. These figures are expressed as anomalies in relation to the 1981-2000 baseline, which allows more specific time periods for the projections used within the assessment opposed to those that would be generated from the 1981-2010 baseline.

6.21.51 The CCR assessment will have a temporal scope of 60 years based on NPS guidance for the estimated operational design life of a nuclear power station. The CCR assessment will consider a high emissions scenario at the 10%, 50% and 90% probability levels to assess the impact of climate change over the lifetime of the proposed development.

6.21.52 The climate projections for the location of the proposed development have been presented in **Table 6.36** and **Table 6.37** below.

Table 6.36: Projected changes to temperature variables (°C) (RCP 8.5)⁵
Projected changes to temperature variables

Climate variable	Time period		
	2020-2039	2040-2059	2060-2079
Mean annual air temperature anomaly at 1.5m (°C)	+1.0 (+0.4 to +1.7)	+1.8 (+0.8 to +2.8)	+2.8 (+1.3 to +4.3)
Mean summer air temperature anomaly at 1.5m (°C)	+1.2 (+0.4 to +2.1)	+2.2 (+0.8 to +3.6)	+3.3 (+1.2 to +5.6)
Mean winter air temperature anomaly at 1.5m (°C)	+0.9 (+0.0 to +2.0)	+1.7 (+0.4 to +3.0)	+2.5 (+0.8 to +4.3)
Maximum summer air temperature anomaly at 1.5m (°C)	+1.3 (+0.3 to +2.5)	+2.4 (+0.7 to +4.3)	+3.7 (+1.1 to 6.5)
Minimum winter air temperature anomaly at 1.5m (°C)	+0.9 (-0.1 to +2.0)	+1.7 (+0.3 to +3.2)	+2.5 (+0.7 to +4.6)

Table 6.837: Projected changes to precipitation variables (%)

Climate variable	Time period		
	2020-2039	2040-2059	2060-2079
Annual precipitation rate anomaly (%)	+0 (-5 to +5)	-2 (-8 to +4)	-2 (-8 to +4)
Summer precipitation rate anomaly (%)	-9 (-33 to +16)	-20 (-45 to +7)	-26 (-57 to +5)
Winter precipitation rate anomaly (%)	+5 (-5 to +15)	+9 (-4 to +24)	+16 (-2 to +35)

6.21.53 As noted by the UK Climate Change Risk Assessment (CCRA 2017) (Ref 6.87), England is already impacted by extreme weather events. The report identifies key risks and implications from a changing climate, which include:

- changes in extreme weather conditions, which will impact on infrastructure, through storm damage, flooding and high temperatures; and

⁵ The main central number for each variable at each time period represents the 50 per cent probability level, indicating that the particular change is ‘as likely as not’ to occur. The figures in brackets show the wider range of probability and potential change (10 per and 90 per cent probability levels).

- flooding of transport, including roads and rail is likely to increase, affecting both urban and rural access routes.

v. Assessment methodology

GHG impact assessment

- 6.21.54 The GHG impact assessment will follow a project lifecycle approach to calculate estimated GHG emissions arising from the construction and operation of the proposed development and off-site associated development sites, and to identify GHG ‘hotspots’ (i.e. emissions sources likely to generate the largest amount of GHG emissions). This correspondingly enables the identification of priority areas for mitigation in line with the principles set out in IEMA guidance.
- 6.21.55 In line with the World Business Council for Sustainable Development (WBCSD) & World Resource Institute (WRI) GHG Protocol, the GHG impact assessment will be reported as tonnes of carbon dioxide equivalent (tCO₂e) and will consider the seven Kyoto Protocol gases:
- carbon dioxide (CO₂);
 - methane (CH₄);
 - nitrous oxide (N₂O);
 - sulphur hexafluoride (SF₆);
 - hydrofluorocarbons (HFCs);
 - perfluorocarbons (PFCs); and
 - nitrogen Trifluoride (NF₃).
- 6.21.56 The expected GHG emissions arising from the construction activities, embedded carbon in materials and operational emissions of the proposed development, as well as baseline emissions, will be quantified using a calculation-based methodology as per the following equation and aligned with the GHG Protocol:
- $$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG emissions}$$
- 6.21.57 Defra 2018 emissions factors (Ref 6.94) and embedded carbon emissions factors from the Inventory of Carbon and Energy (ICE) (Ref 6.95) will be used to calculate GHG emissions.

- 6.21.58 To identify the impact or benefits of the scheme on the climate GHG emissions from the proposed development will be compared against the baseline scenario described above. Emissions from construction activities and embedded carbon in materials used for the proposed development will be considered additional i.e. would not have occurred if the proposed development was not consented. GHG emissions from the operation of the proposed development will be put into the context of grid wide energy production by comparing emissions per kWh of electricity generated by the proposed development against other grid electricity generation sources that may be used if the proposed development is not consented.
- 6.21.59 The proposed development will be able to generate enough electricity to supply approximately 6 million homes (20% of Britain's homes) and is likely to avoid emission of carbon dioxide during each year of operation compared to current average grid electricity generation.
- 6.21.60 Significance of effects will be determined using a matrix comparing sensitivity of the receptor to magnitude of the impact.
- 6.21.61 The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. Also, the extreme importance of limiting global warming to below 2°C this century is broadly asserted by the International Paris Agreement (Ref 6.96) and the climate science community.
- 6.21.62 Due to the absence of any defined industry guidance for assessing the magnitude of GHG impacts for EIA, standard GHG accounting and reporting principles will be followed to assess impact magnitude. In GHG accounting, it is common practice to consider exclusion of emission sources that are <1% of a given emissions inventory on the basis of a de minimis contribution. Both Department of Energy and Climate Change (DECC) (now Department for Business, Energy & Industrial Strategy (BEIS)) and the PAS 2050 (2011) specification (Ref 6.97) allow emissions sources of <1% contribution to be excluded from emission inventories, and these inventories to still be considered complete for verification purposes. This would therefore suggest that a development with emissions of <1% of the UK inventory and relevant carbon budget would be minimal in its contribution to the wider national GHG emissions.
- 6.21.63 A further reference is that the International Finance Corporation (IFC) includes a reporting threshold for projects that it contributes funding to of over 25,000 tCO₂e in any year (Ref 6.98). The magnitude of the impact will therefore be determined by a boundary of less than or more than 1% of

total emissions arising during the 5-year carbon budgets or more than 25,000 tCO₂e in any year.

6.21.64 Magnitude criteria based on standard GHG accounting and reporting principals outlined above and summarised in **Table 6.38**.

Table 6.38: Magnitude criteria for GHG Impact Assessment

Magnitude	Magnitude criteria
High	GHG emissions represent more than 1% of total emissions from the relevant 5-year National Carbon Budget in which they arise or more than 25,000 tCO ₂ e in any single year.
Low	GHG emissions represent less than 1% of total emissions from the relevant 5-year National Carbon Budget in which they arise or less than 25,000 tCO ₂ e in any single year.

6.21.65 The significance of effects of the construction of the proposed development will be determined using the matrix in **Table 6.39**.

Table 6.39: Classification of effect

Magnitude	Significance
Low	Minor
High	Major

CCR assessment

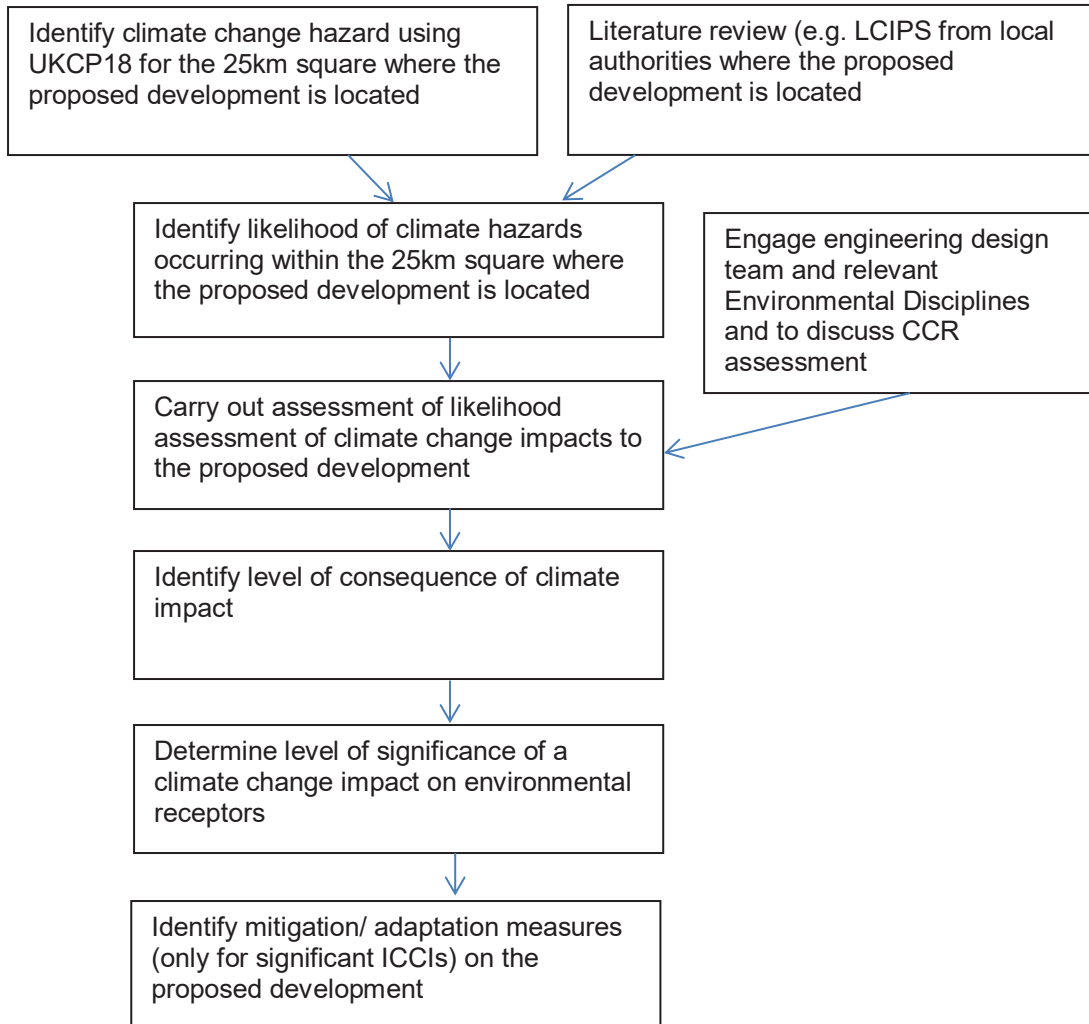
6.21.66 Consideration of climate change impacts within EIAs is an area of emerging practice. The approach outlined below is aligned with existing guidance such as IEMA and good practice from similar studies.

6.21.67 The following key terms and definitions relating to the CCR assessment are used:

- Climate hazard – a weather or climate related event, which has potential to do harm to environmental or community receptors or assets, for example increased winter precipitation.
- Climate change impact – an impact from a climate hazard which affects the ability of the receptor or asset to maintain its function or purpose.
- Consequence – any effect on the receptor or asset as a result of the climate hazard having an impact.

6.21.68 **Plate 6.1** outlines the methodology for the CCR assessment.

Plate 6.1: CCR assessment methodology



Identifying Climate Change Hazards

6.21.69 Existing literature providing observations on climate change such as the UK Climate Change Risk Assessment (Ref 6.99) along with UKCP18 data outputs for the location of the proposed development will be used to identify potential climate hazards that may affect the geographical location of the proposed development.

Likelihood of climate hazard

6.21.70 Once climate change hazards have been identified the likelihood of the climate change hazard occurring will be assessed. The likelihood of a

climate change hazard occurring is defined as the probability of some well-defined outcome occurring in the future. Likelihood is categorised into five levels depending on the probability of the hazard occurring, in line with the definitions of likelihood in the IPCC 5th Assessment Report (**Table 6.40**) (Ref 6.100).

Table 6.40: Level of likelihood of the climate hazard occurring

Level of likelihood	Definition of likelihood ⁶
Very likely	90-100% probability that the hazard will occur.
Likely	66-100% probability that the hazard will occur.
Possible, about as likely as not	33-66% probability that the hazard will occur.
Unlikely	0-33% probability that the hazard will occur.
Very Unlikely	0-10% probability that the hazard will occur.

Likelihood of climate impact occurring

6.21.71 The likelihood of a climate impact occurring will be assessed based on the likelihood of the hazard occurring combined with the vulnerability of the proposed development, using professional judgement and in discussion with the design team. This will be assigned a likelihood rating described in **Table 6.41**.

Table 6.41: Level of Likelihood of the climate impact occurring

Level of likelihood	Definition of likelihood
Very likely	90-100% probability that the impact will occur during the life of the project.
Likely	66-100% probability that the impact will occur during the life of the project.
Possible, about as likely as not	33-66% probability that the impact will occur during the life of the project.
Unlikely	0-33% probability that the impact will occur during the life of the project.
Very Unlikely	0-10% probability that the impact will occur during the life of the project.

Consequence of climate impact

6.21.72 Criteria for assessing consequence for CCR are defined in **Table 6.42**.

⁶ The likelihood levels have been taken from the IPCC Fifth climate report. There is a certain amount of overlap in the criteria provided to allow for uncertainty and the qualitative approach of the assessment.

Table 6.42: CCR - Measure of consequence

Measure of consequence	Description of consequence
Very High	Permanent damage to structures/assets. Complete loss of operation/service. Complete/partial renewal of infrastructure. Serious health effects, possible loss of life. Extreme financial impact. Exceptional environmental damage.
High	Extensive infrastructure damage and complete loss of service. Some infrastructure renewal. Major health impacts. Major financial loss. Considerable environmental impacts.
Medium	Partial infrastructure damage and some loss of service. Moderate financial impact. Adverse effects on health. Adverse impact on the environment.
Low	Localised infrastructure disruption and minor loss of service. No permanent damage, minor restoration work required. Small financial losses and/or slight adverse health or environmental effects.
Very Low	No damage to infrastructure. No impacts on health or the environment. No adverse financial impact.

- 6.21.73 A requirement of the Nuclear Site Licensing (NSL) process is a need to demonstrate that the site can be developed and operated safely, accounting for external hazards for example the risk of flooding due to increases in sea level due to climate change.
- 6.21.74 To address this requirement, engagement will be undertaken with relevant Environmental Disciplines and the engineering design team to discuss the CCR risk assessment and identify mitigation measures for incorporation into the design of the proposed development.
- 6.21.75 While there are no specific significance criteria for the assessment of CCR, a framework has been developed to identify and prioritise risks according to

the perceived level of likelihood and severity of operational/economic disruption.

- 6.21.76 Measures to adapt the proposed development will be identified where climate effects are identified as being significant and reported in the ES.
- 6.21.77 While there are no specific significance criteria for the assessment of CCR, a framework will be developed to identify and prioritise risks according to the perceived level of likelihood and severity of operational/economic disruption.
- 6.21.78 Significance will be derived through combining outcomes from the likelihood impact with the consequence to determine the level of effect, as shown in **Table 6.43**. Where an adverse effect is determined as Major or Moderate this will be deemed significant.

Table 6.43: Significance of CCR impact

		Level of likelihood of impact occurring				
		Very likely	Likely	Possible, about as likely as not	Unlikely	Very unlikely
Consequence	Very High	Major	Major	Moderate	Minor	Negligible
	High	Major	Major	Moderate	Minor	Negligible
	Medium	Moderate	Moderate	Moderate	Minor	Negligible
	Low	Minor	Minor	Minor	Minor	Negligible
	Very Low	Negligible	Negligible	Negligible	Negligible	Negligible

vi. Assumptions and Limitations

- 6.21.79 The GHG impact assessment will be based on information in respect of energy use, types and quantities of materials used and waste generated that is available during the design process. Where information is not available, assumptions based on professional judgement will be made. These assumptions will be consistent with those made by other topics for their assessment presented in the ES.

- 6.21.80 GHG emissions from the decommissioning stage of the proposed development and off-site associated development sites (excluding park and rides) will be scoped out of the assessment due to the anticipated operational length of the proposed development. The replacement of elements of the proposed development will be included as part of the maintenance life cycle stage of the GHG impact assessment.
- 6.21.81 Climate change, by its very nature, is associated with a range of assumptions and limitations. For example, there is uncertainty regarding how global climatic trends will be reflected at the regional scale. To overcome these issues, forecast climate change data will be used from the UK Climate Projections (UKCP18). This has been coupled with the replication of proven effective approaches undertaken for similar project types.
- 6.21.82 Assessments made in relation to ‘consequence’ and ‘likelihood’ will rely on professional judgement and evidence gathered through other environmental topic assessments. All assumptions and limitations, including any exclusions, together with assumptions for choices and criteria leading to exclusion of input and output data will be documented as part of the assessment.

d) Potential impacts

i. GHG impact assessment

Construction and Operation

- 6.21.83 For the purposes of this assessment, it has been considered that any increase in GHG emissions compared to the baseline has the potential to have a significant impact, due to the high sensitivity of the receptor (global climate) to increases in GHG emissions. GHG impacts will be put into context in terms of the UK National GHG emissions inventory and associated 5-year carbon budgets.
- 6.21.84 **Table 6.44** sets out potential sources of GHG emissions from the construction and operation of the proposed development that may impact the climate.

Table 6.44: Potential sources of GHG emissions

Product stage	Raw material extraction and manufacturing of products required to build the proposed development.	Embedded GHG emissions.
	Transport of materials for manufacturing.	GHG emissions from vehicle use.
Construction process stage	On-site construction activity including emissions from construction compounds.	Energy (electricity, fuel, etc.) consumption from plant and vehicles, generators on site, and construction worker commuting.
	Transport of construction materials (where these are not included in embedded GHG emissions).	Fuel consumption from transport of materials to site (where these are not included in embedded GHG emissions).
	Transport of construction workers.	
	Disposal of any waste generated by the construction processes.	GHG emissions from disposal and transportation of waste.
Operation stage	Operation of the proposed development.	GHG emissions from energy, provision of potable water, and treatment of waste water.
	Disposal of waste generated by the proposed development.	GHG emissions from disposal of waste.
	Maintenance/refurbishment of the proposed development over its lifetime.	GHG emissions from fuel consumption of transportation of waste. Embedded emissions in key materials for maintenance and refurbishment.
	Vehicle journeys.	Fuel use from maintenance activities. GHG emissions from the transport of visitors and users of the cultural units and vehicle use by

		residents.

6.21.85 Based on the information presented above, the following specific lifecycle stages and activities have been scoped out of the GHG impact assessment:

- Land use change: Emissions from land use change are not considered to be material. The main development site consists of hard standing and other vegetation with a low carbon stock resulting in a minimal loss of carbon storage capacity. Within the off-site associated development sites; temporary off-site associated development will be returned to their original use following construction of the proposed development.
- GHG emissions associated with the decommissioning phase of the main development site are scoped out on the basis that it is anticipated that the proposed development will be in use beyond the design life. In addition given that decommissioning will likely be at least 60 years in the future it is challenging to estimate what emissions would arise from decommissioning activities and the removal of demolition materials. Any future decommissioning of the main development site would require a separate planning submission and EIA. GHG emissions arising from the removal and reinstatement of temporary sites associated with the construction works e.g. the park and rides will be included in the scope of the GHG impact assessment.

ii. CCR assessment

Construction and operation

6.21.86 The proposed development may be vulnerable to a range of climate change risks. These include, but are not limited to:

- risks to assets due to high temperatures and periods of heavy rainfall leading to material deterioration;
- increased risk of flooding due to increasing incidence of heavy precipitation events;
- risk of storm damage to structures and other assets due to an increase in high winds, lightening, and higher waves;
- risk of a disruption to the construction programme due to an increase in extreme weather events; and

- risk of damage to infrastructure and accessibility to the site due to sea level rise.

iii. Removal and reinstatement

GHG impact assessment

- 6.21.87 Activities to remove temporary sites such as the park and rides and restore them to their previous use will result in GHG emissions. GHG emissions will arise from fuel use for any decommissioning activities and from the removal and treatment of any demolition materials. The impact of any GHG emissions arising during this activity will be assessed as part of the GHG impact assessment.

CCR assessment

- 6.21.88 As this phase will reinstate parts of the associated development to their existing land use, a CCR assessment of this phase is not proposed.

iv. Decommissioning

- 6.21.89 The climate change chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

i. GHG impact assessment

- 6.21.90 Mitigation measures will be identified to reduce GHG emissions across the lifecycle of the proposed development. Mitigating measures to be considered will include:

- specification of alternative materials with lower embedded GHG emissions;
- low carbon design specifications such as energy-efficient lighting and durable construction materials to reduce maintenance and replacement cycles; and
- preparation and implementation of a Construction Environmental Management Plan (CEMP) by the selected construction contractor to include a range of best practice construction measures.

- 6.21.91 Temporary structures will be designed to facilitate ease of deconstruction at the end of their life.

ii. CCR assessment

6.21.92 Mitigation and adaptation measures will be considered to address climate change risks. These are likely to be identified by other parts of the EIA and during the design of the proposed development. The assessment will assume that the proposed development will be designed to be resilient to impacts arising from current weather events and climatic conditions, and designed in accordance with current planning, design and engineering practice and codes. The assessment will also identify and consider the existing resilience measures for each risk either already in place or being considered.

f) Approach to cumulative assessment

i. Inter-relationships

6.21.93 An in-combination effects assessment will consider the inter-relationships between climate change and the impacts identified by the environmental disciplines as a result of the proposed development. This assessment will be presented within each of the relevant technical chapters of the ES.

ii. Project-wide effects

6.21.94 The potential for project-wide climate change effects to be significant will be considered to establish if additional mitigation measures are required. Consideration will be given to the summed effects of the off-site associated development sites in the scope of the wider proposed development.

iii. Cumulative effects

6.21.95 It is not relevant to assess the cumulative nature of GHG emissions as by their nature they are already cumulative, and the receptor is the global climate.

6.21.96 It is not relevant to assess the cumulative effects relating to CCR as the focus of the assessment is only the development itself.

6.21.97 The approach to cumulative effects is more fully described (for all topics) in **Section 5.6** of this EIA Scoping Report.

6.22 Health and Wellbeing

a) Introduction

6.22.1 This section sets out the proposed scope and methodology for the Health and Wellbeing assessment, relating to the main development site and off-

site associated development sites, to be presented in a single chapter within the Environmental Statement. This section makes reference to the 2014 Scoping Opinion and consultee responses while further accounting for the amended EIA Regulations that reinforces the coverage of health in EIA.

i. **Assessment objective**

- 6.22.2 The underlying objective of the assessment is to facilitate more health-conscious planning and decision making, by investigating how the proposed development may influence health and wellbeing through a range of key determinants.
- 6.22.3 More specifically, the objective of the health and wellbeing chapter will be to:
- present the existing Health and Wellbeing baseline established from desk-based studies, surveys and consultation;
 - present the potential environmental effects on health and wellbeing arising from the proposed development, based on the information gathered and the analysis of outputs provided by inter-related technical disciplines; and
 - highlight any necessary monitoring and/or mitigation measures that could prevent, minimise, reduce or offset the possible effects on health and wellbeing, identified in the EIA process.

b) **Work undertaken to date**

i. **2014 EIA Scoping Opinion**

- 6.22.4 Following receipt of the 2014 Scoping Opinion, the EIA Regulations have been updated and now identify the need to consider potential implications of a proposed development on human health (refer to Section 6.22 c) for more detail on relevant Legislation, policy and guidance).
- 6.22.5 The change in this instance is minimal, in that a voluntary Health Impact Assessment (HIA) had been originally intended as part of the EIA process to follow best practice, addressing all requirements outlined in the 2014 EIA Scoping Opinion, and meeting all requirements of the EIA Regulations. It is now proposed that the originally intended HIA will form a dedicated health and wellbeing chapter within the Environmental Statement, affording greater weight within the planning and decision-making process.
- 6.22.6 The 2014 EIA Scoping Opinion set out how the health assessment methodology should be agreed with relevant statutory consultees, and

relayed relevant consultee responses to be addressed; key extracts are summarised in **Table 6.45**.

Table 6.45: 2014 Scoping Opinion Relevant Consultee Comment Extracts

Comment Raised
Public Health England
“The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health.”
“[...] in some circumstances particular assessments may not be relevant to an application, or that an assessment may be adequately completed using a qualitative rather than quantitative methodology.”
“[...] would expect the human health impacts associated with electromagnetic fields exposure to be fully considered in the final documentation.”
“When assessing the impacts on ground and surface waters the reports should fully consider any source / pathway / receptor linkages that may have an impact on human health. This would include recreational use of the coastal and surface waters.”
“The report does not consider any community anxiety or stress that may arise from the development. These impacts should be addressed in the next stage of documental submission.”
“[...] the radiological impacts of the decommissioning are bounded by the routine operational activities and therefore not detailed further. Further explanation in in support of this statement could be usefully provided”
Suffolk County Council
“The production of an HIA is welcome, however it should aim to maximise the potential positive health and wellbeing impacts of the proposed development’, rather than solely reduce or remove potential adverse impacts on health and wellbeing (2.3.10). It will also need to identify all significant impacts on health (2.3.12).”
“The HIA should follow a similar format to that set out in Section 5.3. In terms of mitigating the adverse effects of development, the hierarchy set out in Section 5.4, namely: 1. Prevention; 2. Reduce or abate effects, is appropriate for HIA, though repair and compensation are less relevant. The plan to seek identification of 6 mitigation opportunities throughout the

Comment Raised
evolution of the proposed development is also applicable to health impacts. Prevention of course remains the priority for significant health impacts.”
“Monitoring and evaluation of possible health impacts should be conducted to inform ongoing assessment of the health impact.”
“[...] regard should be had to the health impacts on reducing pedestrian amenity or increasing delays in travel.”
“[...] the TA should include an assessment of the impact of different transport options on the incidence of transport related injury and death. This should inform the Health Impact Assessment.”
Swefling Parish Council
“Nowhere in the main text of the scoping report can we see any reference to increased health services for the 3,600 non home-based workers. Swefling Parish Council is concerned that local doctor's surgeries, ambulance services, hospitals, dentists; indeed any related branch of the already pressurised health service will be compromised for the permanent population of this area.”
Theberton and Eastbridge Parish Council
“Ever since the Stage 1 Consultation, EDFE’s proposals have had an adverse impact on local people - including the many older and retired people - through mental stress. The prospect of living next door to 3000 workers for years, instead of (for Eastbridge) barely 100 neighbours – this alone has already caused untold stress. Add to this the physical harm that can be caused by noise, air and light pollution, and fears about crime and anti-social behaviour, and security. It is vital that the Scoping Report recognises the adverse effects that have been felt for nearly two years already, and will continue. There will be a cumulative effect of course if the build goes ahead.”

ii. **Survey and assessment**

- 6.22.7 An initial health baseline was provided within the 2014 HIA Scoping Report (Ref 6.93), providing the means to gauge and discuss local community circumstance with key health stakeholders, thereby aiding identification of appropriate assessment protocols and informing development features and/or initiatives relevant to supporting local health needs, objectives and priorities.
- 6.22.8 The health baseline has been iteratively maintained to facilitate more health-conscious planning (establishing relative sensitivity to potential

issues and opportunities), and will continue to be updated pending completion of the health and wellbeing assessment.

iii. Sizewell C Health Working Group

6.22.9 As detailed in the 2014 EIA Scoping Opinion, the methodology for assessing health and wellbeing “should be agreed with the relevant statutory consultees”. To facilitate this, and further address potential public health concerns (including and extending beyond those raised in the 2014 Scoping Opinion), the Sizewell C Health Working Group was established.

6.22.10 Membership currently includes Public Health Suffolk; Suffolk NHS; Suffolk, Ipswich, East Suffolk and Great Yarmouth and Waveney Clinical Commissioning Group’s (CCGs)), and provides a collaborative platform to explore, discuss, and iteratively inform the health and wellbeing assessment to be undertaken, and development features and/or initiatives relevant to supporting local health needs, objectives and priorities.

6.22.11 Subject to consent, the Terms of Reference for the group will be modified, and the group maintained as a means to share environmental and staff monitoring information, and continue to explore ways in which to align occupational healthcare programmes that complement public health.

c) Proposed approach and methodology

i. Legislation, policy and guidance

International

2014/52/EU Directive on the Assessment of the Effects on Certain Public and Private Projects on the Environment (the ‘EIA Directive’)

6.22.12 Article 3 of the EIA Directive reinforces the consideration of human health within the EIA process, requiring the assessment to identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on population and human health.

6.22.13 When outlining the scope of environmental factors covered by the EIA Directive within the European Commission’s guidance on the preparation of the EIA Report **Invalid source specified.**, human health is defined as:

“a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks

arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population”.

National

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the ‘EIA Regulations’)

6.22.14 Following the transposition of the amended EIA Directive, Regulation 5(2)(a) and paragraph 4 of Schedule 4 to the EIA Regulations require that:

“the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors— (a) population and human health”.

Overarching National Policy Statement for Energy (EN-1) and National Policy Statement for Nuclear Power Generation (EN-6)

6.22.15 Human health is an embedded theme within the Overarching National Policy Statement for Energy (EN1) **Invalid source specified.** and the National Policy Statement for Nuclear Power Generation (EN-6) **Invalid source specified..** Key requirements are outlined in **Table 6.6**.

Table 6.46: Requirements of the National Policy Statements

Ref.	NPS topic requirement
EN-1	
Paragraph 4.13.2	<i>“[...] where the proposed project has an effect on human beings, the ES should assess these effects for each element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.”</i>
	<i>“The impacts of more than one development may affect people simultaneously, so the applicant and the IPC should consider the cumulative impact on health”</i>
Paragraph 4.13.3	<i>“The direct impacts on health may include increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation, and increases in pests”</i>

Ref.	NPS topic requirement
Paragraph 4.13.4	<i>“New energy infrastructure may also affect the composition, size and proximity of the local population, and in doing so have indirect health impacts, for example if it in some way affects access to key public services, transport or the use of open space for recreation and physical activity”</i>
Paragraph 4.13.5	<i>“those aspects of energy infrastructure which are most likely to have a significantly detrimental impact on health are subject to separate regulation (for example for air pollution) which will constitute effective mitigation of them, so that it is unlikely that health concerns will either constitute a reason to refuse consents or require specific mitigation under the Planning Act 2008. However, the IPC will want to take account of health concerns when setting requirements relating to a range of impacts such as noise”</i>
EN-6	
Paragraph 3.12.5	<i>“In common with other major industrial processes, the construction, operation and decommissioning of new nuclear power stations could affect health care provision. For example, the facility could increase demand on health monitoring services.”</i>
Paragraph 3.12.6	<i>“The Nuclear AoS also identified that there could be positive effects for health and well being resulting from the positive socio-economic benefits of new nuclear power stations”</i>
Paragraph 3.12.7	<i>“The applicant should work with the local authority and the local primary care trust (in England) or the Health Board (in Wales) to identify any potentially significant health impacts and appropriate mitigation measures. Where such measures relate to better public information on the extent of risk in relation to radiological hazard, the applicant should consult the Health Protection Agency on the appropriate standards for radiological protection”</i>
Paragraph 3.12.10	<i>“The IPC should consider the positive effect of employment and other socioeconomic impacts [...] on human health and well being”</i>

National Planning Policy Framework

6.22.16 Promoting healthy and safe communities is a central theme of the National Planning Policy Framework (NPPF), which states that “Planning policies

and decisions should aim to achieve healthy, inclusive and safe places which:

- *promote social interaction;*
- *are safe and accessible; and*
- *enable and support healthy lifestyles.”*

ii. Study area

6.22.17 The study area for the health and wellbeing baseline data collection comprises the local authority districts of Suffolk Coastal and Waveney (now known collectively as East Suffolk) which immediately surround the proposed development. This geographic scope is considered appropriate on the basis that local authority districts are the smallest geographic level for which up-to-date publicly available baseline health statistics are available. Some of the baseline data will be used within calculations where quantitative assessment methods are to be applied.

6.22.18 The study area for each of the health determinants (i.e. aspects with the potential to influence health, both adversely and beneficially) to be assessed will vary, as they will remain consistent with the relevant study areas used within the technical disciplines to which they relate. As an example, the receptors which make up the study area for assessing the potential effects on health from noise will not necessarily be the same receptors which make up the study area for assessing the potential effects on health from air quality or socio-economic changes (as the distribution and exposure may vary).

iii. Updates to baseline

6.22.19 The geographic scope of the baseline data collection study area includes the Main Development Site, all offsite associated development sites and the surrounding area as well as administrative geography defined by each health determinant (i.e. building on the relevant study area of each EIA technical discipline relevant to health, including air quality, noise, transport, socio-economic etc.) as described in the 2014 Scoping Report.

6.22.20 Since the 2014 EIA and HIA Scoping Reports were completed, the health baseline has been collated and iteratively updated to account for new publicly available data that has been published by third-party sources (e.g. PHE and NHS) in order to gain an accurate and up-to-date profile of local health and socio-economic circumstance.

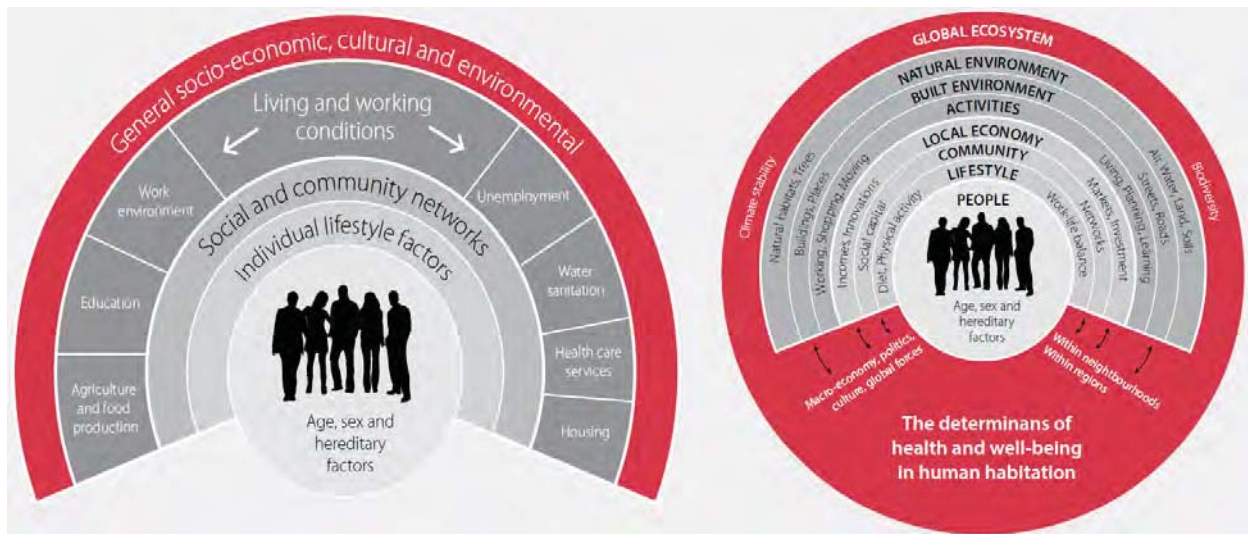
iv. Further surveys/studies

6.22.21 No primary surveys or studies are required as part of the health and wellbeing assessment, as the topic draws from and build upon the survey and modelling completed by the supporting technical disciplines (such as air quality, noise and transport), and publicly accessible demographic, health and hospital admission statistics.

v. Assessment

6.22.22 The basis of this assessment will be set on a broad socio-economic model of health that encompasses conventional health impacts such as communicable disease, accidents and risk, along with wider health determinants vital to achieving good health and wellbeing such as employment and local amenity. The assessment will consider both physical and mental health, and address equality and social impacts of the proposed development. The assessment is therefore based on both ‘social’ and ‘environmental’ determinants of health, illustrated in **Plate 6.2**.

Plate 6.2: Social and ecological determinants of health



Source: Reproduced from Chadderton et al *Invalid source specified.*, citing Dahlgren & Whitehead *Invalid source specified.* and Barton & Grant *Invalid source specified.* (Ref 6.101)

6.22.23 The assessment follows a source-pathway-receptor concept to identify and assess health and wellbeing impacts that are plausible and attributable to the proposed development. As shown in **Table 6.47**, a hazard in itself does not constitute a health risk, it is only when there is a hazard source, a sensitive receptor and a pathway of exposure between the two where there is any potential for risk to health. Where a source-pathway-receptor linkage exists, it is then the nature of the specific hazard source, the magnitude of

impact via the pathway and the sensitivity of the receptor that will determine what level of health risk is predicted.

Table 6.47: Example of Source-Pathway-Receptor Model for Health Effects

Source	Pathway	Receptor	Plausible Health Impact	Explanation
x	✓	✓	No	There is not a clear source from where a potential health impact could originate
✓	x	✓	No	The source of a potential health impact lacks a means of transmission to a population
✓	✓	x	No	Receptors that would be sensitive or vulnerable to the health impact are not present
✓	✓	✓	Yes	Identifying a source, pathway and receptor does not mean a health impact is a likely significant effect; health impacts should be assessed (describing what effect will occur and its likelihood) and likely health effects are then evaluated for significance

6.22.24 The assessment approach will be quantitative where the evidence base allows, and the relative change is sufficient. With regard to the more subjective and intangible aspects of health and wellbeing, a qualitative approach supported by an appropriate evidence base will be applied. In both cases, the assessment of significance will be consistent with that of the overarching EIA methodology described in Section 5.3 of this EIA Scoping Report, considering the sensitivity of receptors (**Table 5.1**) and

magnitude of impact (**Table 5.2**) in assigning significance conclusions (**Table 5.3**) to each of the health determinants to be assessed.

Construction

- 6.22.25 Construction activities associated with the proposed development have the potential to influence a range of environmental, socio-economic and social health determinants (both adversely and beneficially).
- 6.22.26 Environmental health determinants largely include temporary and changes in local level air quality and noise exposure as a consequence of construction activities and changes to existing transport nature and flow rates. The health and wellbeing assessment will draw from and build upon air quality and noise modelling outputs to investigate and quantitatively assess potential changes to local population health outcomes where possible (i.e. where the evidence base permits, and the concentration and exposure is sufficient).
- 6.22.27 The potential health consequence from changes in local transport nature and flow rate from construction-related traffic and construction workers (potentially impacting upon capacity, safety and connectivity), will be assessed as part of the Transport Assessment. Where any significant effects are identified, these will be summarised within the health and wellbeing ES chapter.
- 6.22.28 The potential impact upon local community facilities and areas of open space, important to supporting good health and wellbeing, will be addressed within amenity and recreation assessment (Section 6.8). Where any significant effects are identified, these will be summarised within the health and wellbeing ES chapter.
- 6.22.29 Socio-economic status is a key determinant of health, often influencing a broader range of health determinants. The health and wellbeing assessment will draw from and build upon the outputs of the socio-economic assessment to explore any potential change in income and employment, and the overall consequence to health (be it adverse and/or beneficial).
- 6.22.30 Social determinants of health are primarily associated with the introduction of a large construction workforce to deliver the proposed development, and the temporary impact this can have on local communities and healthcare capacity. The Health and Wellbeing assessment will provide input to and assess the residual impact on local communities and healthcare capacity from the proposed accommodation strategy and occupational healthcare provision. Where appropriate, additional mitigation measures and/or health initiatives will be developed to align with local health campaigns and further

manage communicable disease risk between the construction workforce and local population.

Operation

- 6.22.31 Once operational, the proposed development has the potential to influence a range of environmental and socio-economic health determinants (both adversely and beneficially).
- 6.22.32 The primary environmental health determinant to be assessed is the potential change in ionising radiation. The health and wellbeing assessment will draw from the regulatory radiological assessment set in the context of recognised constraints, targets and limits, and naturally occurring environmental exposure (defined in the Section 6.18 of this EIA Scoping Report).
- 6.22.33 The potential health consequence from changes in non-ionising radiation exposure (i.e. electro magnetic field (EMF)) within the red line boundary of the proposed development will be assessed following the DECC Voluntary Code of Practice **Invalid source specified.** to the International Commission on Non-Ionising Radiation Protection (ICNIRP) guideline exposure levels.
- 6.22.34 The potential health consequence from changes in emissions to air and noise (from site plant, the testing of emergency back-up generators and staff transport movements) will, where possible, be assessed quantitatively (i.e. where the change in concentration and exposure is sufficient).
- 6.22.35 The potential health consequence from changes in local transport nature and flow rates during maintenance periods (potentially impacting upon capacity, safety and connectivity), will be assessed as part of the Transport Assessment. Where any significant effects are identified, these will be summarised within the health and wellbeing ES chapter.
- 6.22.36 Socio-economic health determinants include direct, indirect and induced employment opportunities, and associated income generation. The health and wellbeing assessment will draw from and build upon the outputs of the socio-economic assessment to explore any potential change in income and employment, and the overall consequence to health (be it adverse and/or beneficial).
- 6.22.37 Social determinants of health are again primarily associated with the introduction of a maintenance workforce periodically, and the temporary impact this can have on local communities and healthcare capacity. The health and wellbeing assessment will provide input to and assess the residual effect on local communities and healthcare capacity from the proposed accommodation strategy and occupational healthcare provision. Where appropriate, secondary mitigation measures and/or health initiatives

will be developed to align with local health campaigns and further manage communicable disease risk between the maintenance workforce and local population.

Removal and reinstatement

- 6.22.38 The Health and Wellbeing assessment relating to the removal and reinstatement of the proposed development is likely to follow the same methods outlined for the construction phase.

vi. Assumptions and limitations

- 6.22.39 The health and wellbeing assessment draws from and builds upon the outputs of the supporting technical disciplines, and is therefore subject to the same limitations and assumptions affecting those assessments. The supportive technical disciplines include:

- air quality;
- noise and vibration;
- transport;
- socio-economics;
- amenity and recreation;
- geology and land quality;
- groundwater and surface water; and
- radiological assessment.

d) Potential impacts

i. Construction and operation

- 6.22.40 Construction and operational activities, and the associated health determinants to be assessed and addressed have not materially changed since the original health assessment scoping exercise conducted with Public Health Suffolk in 2014, and have been reaffirmed through a similar exercise with the Sizewell C Health Working Group in 2018. The exercise outputs are catalogued within two Health Scoping Statements (2014 and 2018), and will form technical appendices to the final health and wellbeing assessment.

ii. Removal and reinstatement

6.22.41 The 2014 HIA Scoping Report did not include any details on the removal and reinstatement of the proposed development. However, it is anticipated that the relevant health determinants would remain the same as for the construction phase.

iii. Decommissioning

6.22.42 The health and wellbeing ES chapter will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.

e) Potential mitigation

6.22.43 The overarching priority of the proposed development is to design out hazards with the potential to adversely influence health, and enhance any opportunities which have the potential to support local health needs, objectives and priorities.

6.22.44 Where it is not possible to fully remove environmental, socio-economic or social hazards with the potential to adversely influence health and wellbeing, mitigation measures will be proposed within each of the inter-related technical disciplines (including, but not limited to; air quality, noise and vibration and transport) set to protect health.

6.22.45 The health and wellbeing assessment will consider any residual effect and where appropriate, will offer additional recommendations to protect health and address impacts on healthcare capacity. Furthermore, the health and wellbeing assessment will aim to establish initiatives intended to address barriers to health benefit uptake.

6.22.46 The approach to monitoring will focus on environmental precursors to health (i.e. the determinants assessed), as this removes much of the confounding factors associated with multicausal health endpoints, genetic predisposition and lifestyle choices; provides a means to intervene before a manifest health outcome; and can be a more effective measure of change directly attributable to the proposed development (i.e. monitoring air quality and not respiratory disease prevalence).

f) Approach to cumulative assessment

i. Inter-relationships

6.22.47 Health and wellbeing are complex multidisciplinary concepts with a variety of inter-relating risk factors. Where multi-causal risk factors exist (i.e. where

a health outcome may be as a consequence of multiple environmental or socio-economic factors), these will be stated, investigated and addressed within the ES chapter accordingly.

ii. **Project-wide effects**

- 6.22.48 The health and wellbeing assessment will primarily investigate the distribution, magnitude and likelihood of impacts for each individual health determinant as the geographic extent, sensitivity, inter-relationships and significance will vary for each. A professional judgment will be provided on project-wide health effects, supported by the findings of the health and wellbeing assessment and any mitigation proposed therein.

iii. **Cumulative effects**

- 6.22.49 The health and wellbeing ES chapter will draw from and build upon the cumulative assessment outputs from supporting technical disciplines (air quality noise, transport etc.), to assess the combined potential impact from third party projects upon local community health.

7 SUMMARY

7.1 EIA Scoping Report summary

7.1.1 This EIA Scoping Report accompanies a written request to the Secretary of State (SoS) for a Scoping Opinion, in accordance with the EIA Regulations. The report sets out the proposed scope, approach and methodologies to be adopted and key matters to be considered in the EIA.

7.1.2 The Scoping Opinion will set out what information the SoS considers should be included in the ES for Sizewell C. EDF Energy will consider the Scoping Opinion in its preparation of the ES to be submitted to support the application for development consent. The ES will include all required information as defined by Schedule 4 of the EIA Regulations.

7.1.3 EDF Energy is continuing to consult and engage on its emerging proposals for Sizewell C and environmental impact assessments. Feedback received will help inform further consultation and engagement on EDF Energy's preferred proposals. This will provide more detailed information in relation to the technical and environmental considerations of the proposed development.

7.2 Indicative proposed ES structure

7.2.1 At this stage, an indicative outline structure for the proposed ES is set out below:

- **Volume 1:** Introduction
- **Volume 2:** Sizewell C main development site
- **Volumes 3:** Northern park and ride at Darsham
- **Volume 4:** Southern park and ride at Wickham Market
- **Volume 5:** Two village bypass
- **Volume 6:** Yoxford roundabout and other highways improvements;
- **Volume 7:** Sizewell link road or Theberton bypass
- **Volume 8:** Freight management facility
- **Volume 8:** Green rail route
- **Volume 9:** Rail improvements

- **Volume 10:** Cumulative and transboundary assessment.

7.2.2 Volume 2 will include assessments associated main development sites, but also the ‘project-wide’ assessments, for example the Socio-economic and Transport assessments.

7.2.3 In addition, a non-technical summary of the ES will be provided in support of the application for development consent.

7.3 Indicative proposed location of information within the ES

7.3.1 Schedule 4 of the EIA Regulations identifies information that is to be included within the ES. **Table 7.1** provides a summary of this information and its location within the ES.

Table 7.1 Indicative proposed location of information within the ES

Ref	Information to be included in the ES	Indicative proposed location within the ES
1	A description of the development, including in particular -	A description of the development will be included in Chapter 2, Volume 1 of the ES, but will also be described in further detail within Chapters 3 and 4 of Volumes 2 of the ES and Chapter 2 of Volumes 3-9 of the ES.
a	a description of the location of the development;	A description of the location of the development will be included in Chapter 2, Volume 1 of the ES, but will also be described in further detail within Chapter 2 of Volumes 2-9 of the ES.
b	a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	A description of the physical characteristics of the development will be provided within Chapters 3 and 4 of Volume 2 of the ES and Chapter 2 of Volumes 3-9 of the ES.
c	a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	A description of the operational phase of the main development site will be included within Chapter 4, Volume 2, and the operational phase of the associated development sites will be described in Chapter 2 of Volumes 3-9 of the ES.

Ref	Information to be included in the ES	Indicative proposed location within the ES
d	<p>an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.</p>	<p>An estimate of the emissions and types of waste produced by the development will be provided within each of the following technical chapters within Volumes 2-9 of the ES:</p> <ul style="list-style-type: none"> - Noise and Vibration; - Air Quality; - Landscape and Visual; - Soils and Agriculture; - Geology and Land Quality; - Groundwater and Surface water; - Marine Water and Sediment Quality (Volume 2 only); - Radiological Assessment (Volume 2 only); - Waste Management (Volume 2 only); and - Climate Change (Volume 2 only).
2	<p>A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed</p>	<p>A description of reasonable alternatives will be included in Chapter 6, Volume 2 of the ES and Chapters 3 of Volumes 3-9 of the ES.</p>

Ref	Information to be included in the ES	Indicative proposed location within the ES
3	<p>A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.</p>	<p>A description of the baseline scenario relevant to each of the components of the development will be provided in each of the technical chapters of Volumes 2-9 of the ES.</p>
4	<p>A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.</p>	<p>A description of factors specified in regulation 5(2) likely to be significantly affected by the proposed development will be provided within the following technical chapters of Volumes 2-9 of the ES:</p> <ul style="list-style-type: none"> - Landscape and Visual; - Terrestrial Ecology; - Historic Environment; - Soils and Agriculture; - Geology and Land Quality; - Groundwater and Surface water; - Coastal Geomorphology and

Ref	Information to be included in the ES	Indicative proposed location within the ES
5	A description of the likely significant effects of the development on the environment resulting from, inter alia -	Hydrodynamics (Volume 2 only); - Marine Water and Sediment Quality (Volume 2 only); - Marine Ecology (Volume 2 only); - Climate Change (Volume 2 only); and - Health and Wellbeing (Volume 2 only).
a	the construction and existence of the development, including, where relevant, demolition works;	A description of the likely significant effects on the environment will be provided within each of the technical chapters within each volume of the ES.
b	the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	A description of the likely significant effects on the environment will be provided within the following technical chapters of Volumes 2-9 of the ES: - Terrestrial Ecology;

Ref	Information to be included in the ES	Indicative proposed location within the ES
c	the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	<ul style="list-style-type: none"> - Soils and Agriculture; - Geology and Land Quality; - Groundwater and Surface water; - Coastal Geomorphology and Hydrodynamics (Volume 2 only); - Marine Water and Sediment Quality (Volume 2 only); - Marine Ecology (Volume 2 only); and - Climate Change (Volume 2 only). <p>A description of the likely significant effects on the environment will be provided within the following technical chapters of Volumes 2-9 of the ES:</p> <ul style="list-style-type: none"> - Noise and Vibration; - Air Quality, - Landscape and Visual; - Radiological; and - Waste Management.
d	the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	A description of the likely significant effects on the environment will be provided within the

Ref	Information to be included in the ES	Indicative proposed location within the ES
e	the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Health and Wellbeing and Major Accidents and Disasters chapter within Volume 2 and the Historic Environment chapters of Volumes 2-9 of the ES.
f	the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	A description of the likely significant effects on the environment will be provided within Volume 10 of the ES.
g	the technologies and the substances used.	A description of the likely significant effects on the environment will be provided within each of the climate change chapters within Volumes 2-9 of the ES.
5	The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term,	A description of the likely significant effects on the environment will be provided within each of the technical chapters within each volume of the ES. A description of the likely significant cumulative effects of the development will be provided in

Ref	Information to be included in the ES	Indicative proposed location within the ES
	medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC.	Chapter 5 and 6 of Volume 10 of the ES. A description of the likely significant transboundary effects of the development will be provided within Chapter 7, Volume 10 of the ES.
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment will be provided within each of the technical chapters within each volume of the ES.
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	A description of measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment will be provided within each of the technical chapters within each volume of the ES.
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of	A description of the expected significant adverse effects of the development on the environment

Ref	Information to be included in the ES	Indicative proposed location within the ES
	<p>the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council(3) or Council Directive 2009/71/Euratom(4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.</p>	<p>deriving from the vulnerability of the proposed development to risks of major accidents and/or disasters will be provided within Volume 2 of the ES.</p>
9	<p>A non-technical summary of the information provided under paragraphs 1 to 8.</p>	<p>A non-technical summary is to be prepared and submitted alongside the ES.</p>
10	<p>A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.</p>	<p>References will be provided throughout each volume of the ES.</p>

8 NEXT STEPS

- 8.1.1 The EIA for the Sizewell C proposals is ongoing. Once the new Scoping Opinion is received, EDF Energy will review the content and consider whether amendments to the EIA approach are required. The ES technical chapters will include a short narrative on the extent to which the points made in the new opinion have been addressed and provide a description of any additional stakeholder engagement that influences the scope of the assessment.

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ABBREVIATIONS

Acronym	Description
ADR	The European Agreement concerning the International Carriage of Dangerous Goods by Road
AILs	Abnormal Indivisible Loads
AIS	Automatic Identification System
ALARP	As low as reasonably possible
ALC	Agricultural Land Classification
AOD	Above ordnance datum
AONB	Area of Natural Beauty
AoS	Appraisal of Sustainability
AQMA	Air Quality Management Area
ARP	Adaptation Reporting Power
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BEIS	Department for Business, Energy & Industrial Strategy
BLF	Beach landing facility
C&I	Commercial and industrial
CA	Combustion Activity
CCA	The Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005
CCC	Committee on Climate Change
CCR	Climate change resilience
CCRA	Climate Change Risk Assessment
CDM	Construction Design Management
CDO	Combined Drainage Outfall
CDOIF	Chemicals and Downstream Oil Industries Forum Guidelines, Environmental Risk Tolerability for COMAH Establishments
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CFT	Cold flush testing
CH ₄	Methane
CHP	Combined Heat and Power
CIEEM	Chartered Institute of Ecology and Management
CifA	Chartered Institute for Archaeologists
CNSS	Civil Nuclear Security and Safeguards
CO	carbon monoxide
CO ₂	Carbon dioxide
COMAH	Control of Major Accidents Hazard
COSHH	Control of Substances Hazardous to Health Regulations 2002
CWS	County Wildlife Site

Acronym	Description
C&I	Commercial and Industrial
DAC	Design Acceptance Confirmation
DBA	Desk Based Assessment
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DfT	Department for Transport
DMBR	Design Manual for Roads and Bridges
DPH	Director of Public Health
EAP	Environment Action Plan
EAV	Equivalent adult value
EclA	Ecological Impact Assessment
EEA	European Economic Area
EERM	East of England Regional Model
EGA	Expert Geomorphological Assessment
EIA	Environmental Impact Assessment
eMARS	European Commission's Major Accident Reporting System
EMU	Entrainment Mimic Units
EPR	Environmental Permitting Regulations 2006
EPS	Emissions Performance Standard
EPUK	Environmental Protection UK
EQS	Environmental Quality Standards
ES	Environmental Statement
ESC	East Suffolk Council
FMF	Freight management facility
FRA	Flood Risk Assessment
FRR	Fish Recovery and Return
FSO	The Regulatory Reform (Fire Safety) Order 2005
GETA	General Estuarine Transport Model
GDA	Generic Design Assessment
GHG	Greenhouse gas
H ₂ CO	Formaldehyde
ha	hectare
HAT	Highest Astronomical Tide
HER	Historic Environment Record
HFCs	Hydrofluorocarbons
HFT	Hot flush testing
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HRA	Habitats Regulations Assessment

Acronym	Description
HSWA	Health and Safety at Work etc. Act 1974
IAEA	International Atomic Energy Agency
IAQM	Institute of Air Quality Management
ICE	Inventory of Carbon and Energy
ICRP	International Commission on Radiological Protection
ICES	International Council for the Exploration of the Sea
IEMA	Institute of Environmental Management and Assessment
IFC	International Finance Corporation
ILW	Intermediate Level Waste
IMO	International Maritime Organisation
IPC	Infrastructure Planning Commission
ISFS	Interim Spent Fuel Store
km	Kilometres
kV	Kilovolts
LCA	Landscape Character Assessment
LEEIE	Land east of Eastlands Industrial Estate
LEMP	Landscape and Ecology Management Plan
LEP	Local Enterprise Partnership
LGV	Light Goods Vehicle
LLFA	Lead Local Flood Authority
LLW	Low Level Waste
LOAEL	Lowest Observed Adverse Effect Level
LOLER	Lifting Operations and Lifting Equipment Regulations 1998
LVIA	Landscape and Visual Impact Assessment
m	Meters
MA&D	Major accidents and disasters
MarESA	Marine Evidence-based Sensitivity Assessment
MARPOL	The International Convention for the Prevention of Pollution from Ships, 1973 (as amended)
MBES	Multibeam echo-sounder
MHWS	Mean High Water Springs
MMP	Materials Management Plan
mph	Miles per hour
MW	megawatts
M&E	Mechanical and Electrical
N ₂ O	Nitrous oxide
NAP	National Adaptation Programme
NERC	Natural Environment and Rural Communities
NF ₃	Nitrogen Trifluoride
NH ₃	Ammonia
NHLE	National Heritage List for England

Acronym	Description
NISR	Nuclear Industries Security Regulations
Nm	Nautical mile
NO _x	Nitrogen oxides
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRHE	National Record of the Historic Environment
NSIP	Nationally Significant Infrastructure Project
NSL	Nuclear Site Licence
NtM	Notice to Mariners
oCEMP	Outline Construction Environmental Management Plan
ONR	Office for Nuclear Regulation
ONS	Office of National Statistics
OSPAR	Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
PAD	Protocol for Archaeological Discoveries
PEI	Preliminary Environmental Information
PFCs	Perfluorocarbons
PINS	Planning Inspectorate
PM	Particulate matter
PNEC	Predicted no effect concentration
PRoW	Public Rights of Way
rMCZ	Recommended Marine Conservation Zone
RSPB	Royal Society for the Protection of Birds
RSR	Radioactive Substances Regulation
SAC	Special Area of Conservation
SCA	Seascape Character Assessment
SCC	Suffolk County Council
SCCAS	Suffolk County Council Archaeological Service
SCCP	Suffolk Climate Change Partnership
SCDC	Suffolk Coastal District Council
SF ₆	Sulphur hexafluoride
SLA	Special Landscape Area
SLAF	Suffolk Local Access Forum
SMP	Soils Management Plan
SO ₂	Sulphur dioxide
SOAEL	Significant Observed Adverse Effect Level
SoDA	Statement of Design Acceptability
SoS	Secretary of State
SPM	Suspended particulate matter
SSA	Strategic Siting Assessment
SSC	Suspended sediment concentrations
SSSI	Site of Special Scientific Interest

Acronym	Description
SPA	Special Protection Area
SWMP	Site Waste Management Plan
TRO	Total residual oxidants
tCO ₂ e	tonnes of carbon dioxide equivalent
TIMA	Traffic Incident Management Area
TRO	Total residual oxidants
UK	United Kingdom
UKCP	UK Climate Projections
UK EPR TM	United Kingdom European Pressure Reactors TM
WBCSD	World Business Council for Sustainable Development
WDA	Water Discharge Activity
WDC	Waveney District Council
WebTAG	Web-based Transport Analysis Guidance
WFD	Water Framework Directive
WRI	World Resource Institute
WSI	Written Scheme of Investigation
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility

FIGURES

NOTES

KEY

- SIZEWELL C AND ASSOCIATED DEVELOPMENT SITE BOUNDARIES
- DEMARCATION LINE



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<p>LOGO: </p>	<p>DATE: MAY 2019</p>	<p>SCALE: 1:150,000 @A3</p>	<p>DRAWN: J.W.</p>
<p>SCALE BAR 0 1 2 3 4 5 KM</p>		<p>© Copyright 2019 NNB Generation Company (SZC) Limited. No part of this drawing is to be reproduced without prior permission of NNB Generation Company (SZC) Limited.</p>	

NOTES

KEY

- SIZEWELL C AND ASSOCIATED DEVELOPMENT SITE BOUNDARIES
- DEMARCATION LINE
- MAIN DEVELOPMENT SITE AREAS
 - 1. SIZEWELL C POWER STATION PLATFORM
 - 2. SIZEWELL B RELOCATED FACILITIES LAND
 - 3. TEMPORARY CONSTRUCTION AREA (LAND WEST OF B1122 (ABBEY ROAD) IS USED ONLY FOR GREEN RAIL ROUTE UNDER RAIL-LED STRATEGY)
 - 4. LAND EAST OF EASTLANDS INDUSTRIAL ESTATE - LEEIE

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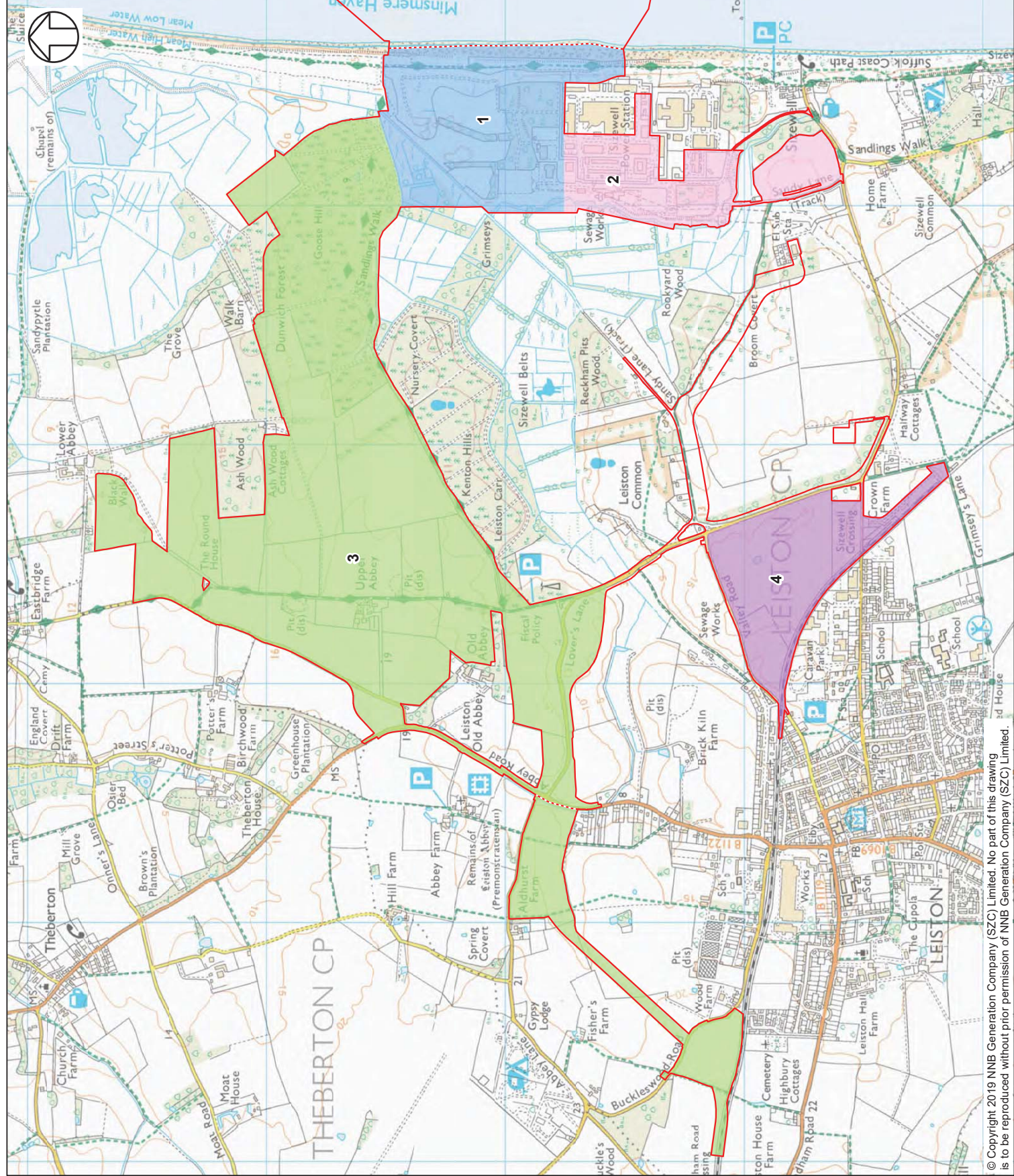
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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 MAIN DEVELOPMENT SITE: SITE AND SUBAREAS




DRAWING NO.: FIGURE 3.1
DATE: MAY 2019
SCALE: 1:15,000 @A3
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NOTES:

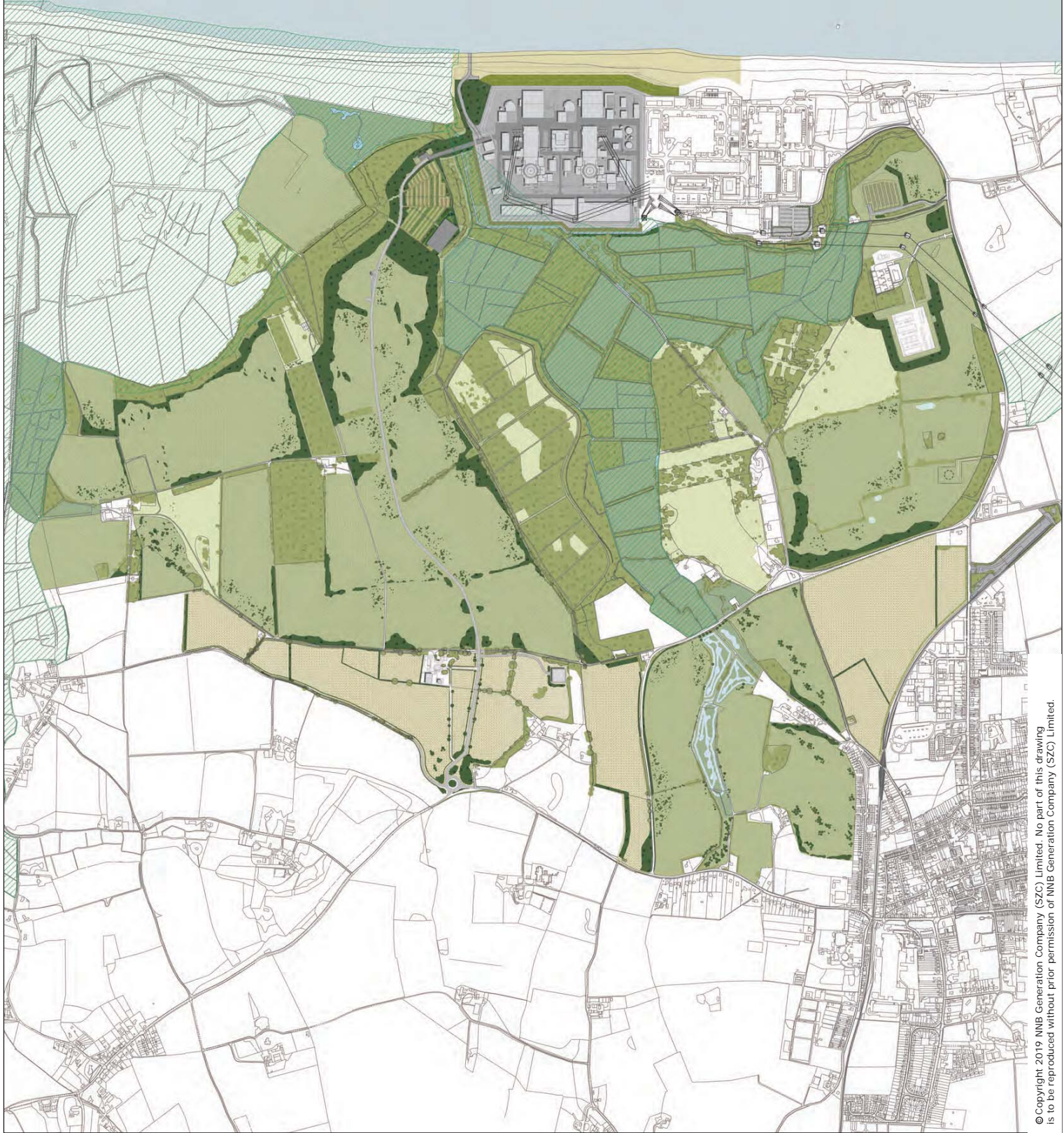
KEY:

EXISTING:

-  Site of Special Scientific Interest (SSSI)
-  Vegetation / Woodland
-  Wet Grassland / Reedbed
-  Lowland Heath Mosaic
-  Ponds, Scrapes, Drainage Channels
-  Shingle Beach and Vegetated Dune

PROPOSED:

-  Vegetation / Woodland
-  Lowland Heath Mosaic
-  Improved Pasture
-  Vegetated Embankment
-  Ponds, Scrapes, Drainage Channels
-  Vegetated Sea Defence Structure



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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 MAIN DEVELOPMENT SITE:
 OPERATIONAL MASTERPLAN

DRAWING NO:
 FIGURE 3.2

DATE: MAY 2019
DRAWN: SMC
SCALE: NTS

NOTES:

KEY:

- Main Development Site Boundary
- Main Land Uses
- Main Power Station Platform
- Contractor Compounds
- National Grid Construction Working Area
- Materials Storage Areas
- Borrow Pit Areas
- Accommodation Campus
- Site Entrance Hub
- Water Management Zone
- Site Infrastructure
- Access Road
- Haul Road
- Existing / Alternative Rail Head
- Rail Route and Corridor
- Other Land Uses
- Existing vegetation to be retained (woodland/hegrows/riests)
- Existing principal woodland areas outside redline boundary
- Proposed construction phase planting
- Buffer zone

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
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 MAIN DEVELOPMENT SITE:
 CONSTRUCTION MASTERPLAN
 RAIL-LED STRATEGY

DRAWING NO:
FIGURE 3.3
 DATE:
 MAY 2019
 DRAWN:
 SMC
 SCALE:
 NTS
 SCALE BAR:



NOTES:

KEY:

-  Main Development Site Boundary
-  Main Land Uses
-  Main Power Station Platform
-  Contractor Compounds
-  National Grid Construction Working Area
-  Materials Storage Areas
-  Borrow Pit Areas
-  Accommodation Campus
-  Site Entrance Hub
-  Water Management Zone
-  Site Infrastructure
-  Access Road
-  Haul Road
-  Existing / Alternative Rail Head
-  Rail Route and Corridor
-  Other Land Uses
-  Existing vegetation to be retained (woodland/hedgerows)
-  Existing principal woodland areas outside redline boundary
-  Proposed construction phase planting
-  Buffer zone

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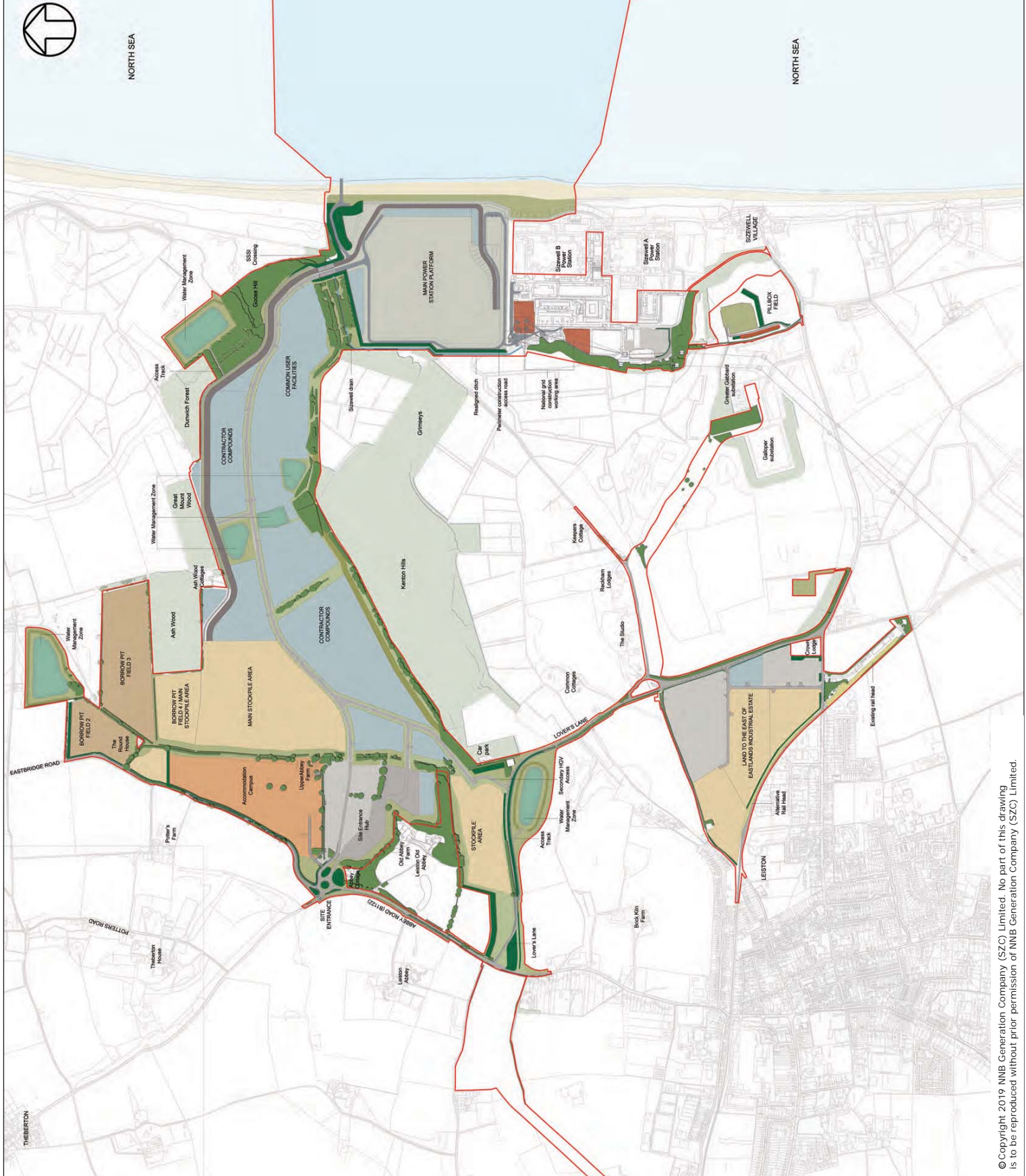


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 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 MAIN DEVELOPMENT SITE:
 CONSTRUCTION MASTERPLAN
 ROAD-LED STRATEGY

DRAWING NO:
 FIGURE 3.4

DATE: MAY 2019
 DRAWN: SMC
 SCALE: NTS
 SCALE BAR:



NOTES:

KEY:

- Stage 3 Consultation Boundary
- Access Road
- Buffer Zone (faded aerial)
- Existing Public Right of Way
- Off-Road Cycle/Bridleway
- Logistics Compound
- Topsoil Stockpile
- Materials Storage Areas
- Reconfigured rail head
- Aggregate Conveyors



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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 LAND EAST OF EASTLANDS INDUSTRIAL ESTATE
 OPTION 1: SIZEWELL HALT

DRAWING NO:
 FIGURE 3.5
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS

NOTES:

KEY:

- Stage 3 Consultation Boundary
- Access Road
- Buffer Zone (to be aerial)
- Existing Public Right of Way
- Off-Road Cycle/Bridleway
- Logistics Compound
- Topsoil Stockpile
- Materials Storage Areas
- Reconfigured rail head
- Aggregate Conveyors



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 CHAPTER 3
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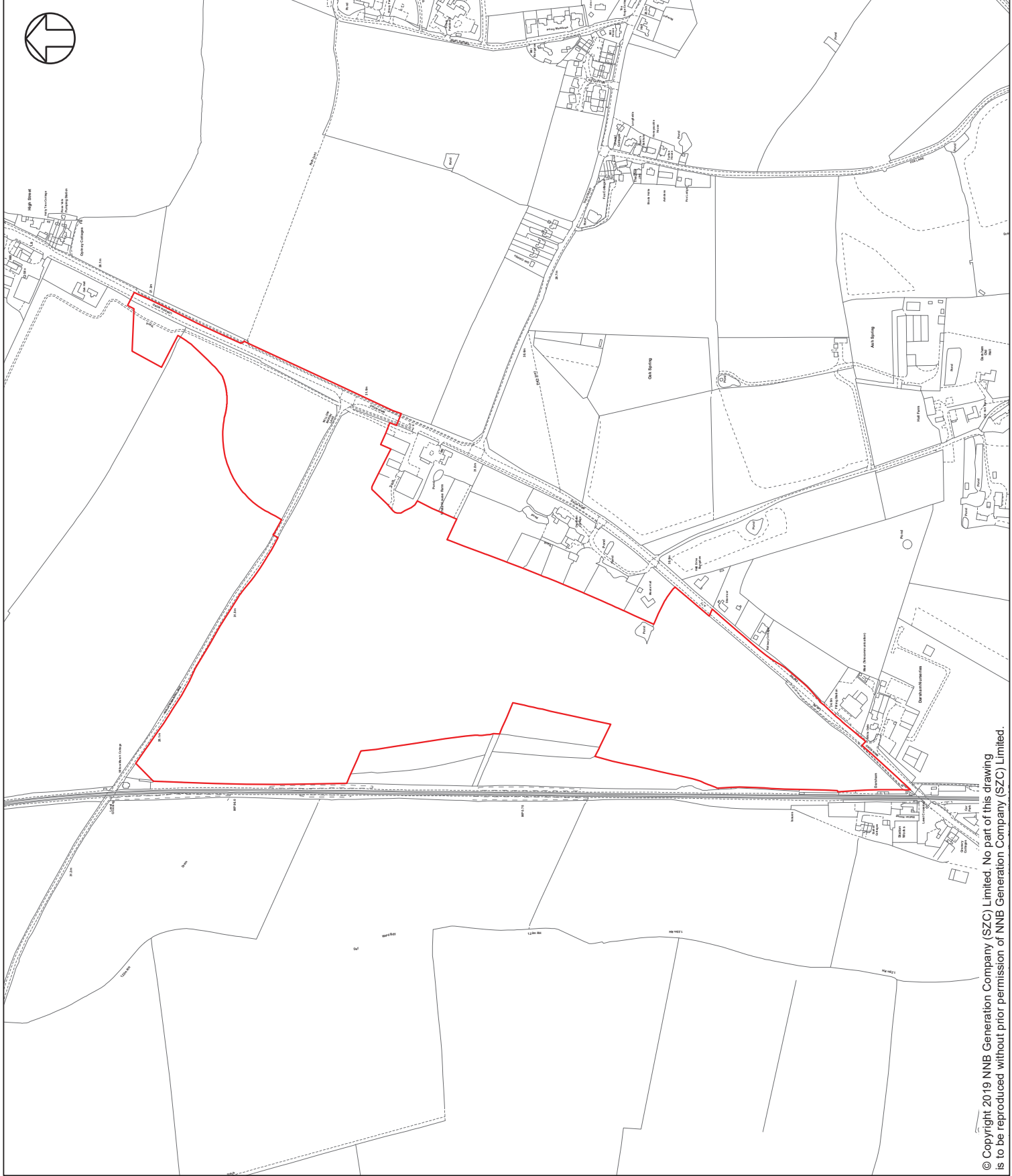
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 OPTION 2: RAIL SIDING

DRAWING NO:
 FIGURE 3.6
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS

NOTES

KEY

- DARSHAM PARK AND RIDE DEVELOPMENT
- SITE BOUNDARY



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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 DARSHAM PARK AND RIDE: SITE BOUNDARY

DRAWING NO.:
 FIGURE 3.7

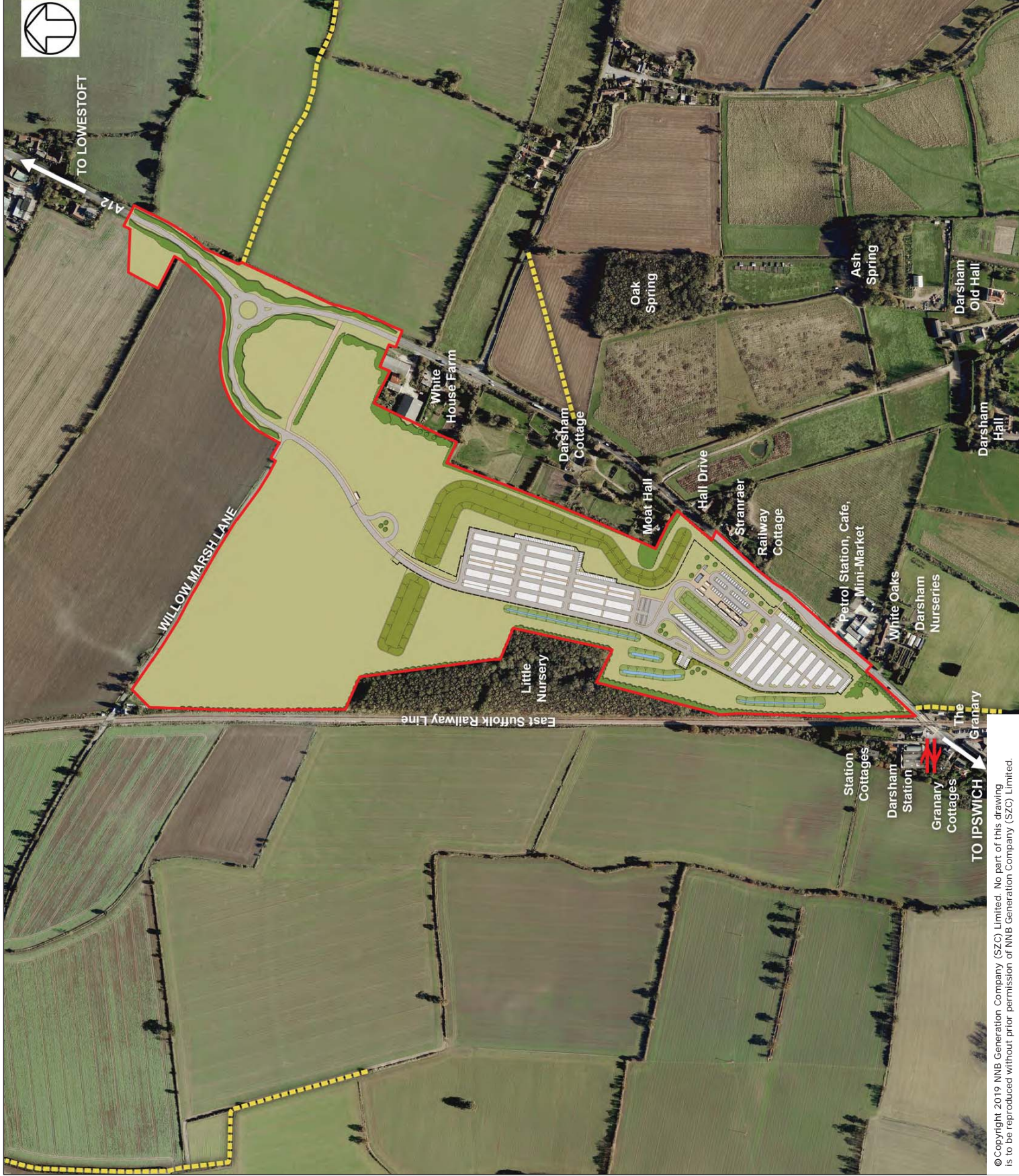
DATE: MAY 2019
DRAWN: J.W.
SCALE: 1:5,000 @A3



NOTES:

KEY:

-  Stage 3 Consultation Boundary
-  Security Fence
-  Access Road
-  Pedestrian Walkway/Zone
-  Parking (bus/car/vans/motorcycle)
-  Welfare Buildings
-  Shelters (bus/cycle)
-  Surface Water Attenuation
-  Grassed Spot Bunds
-  Proposed / Existing Planting
-  Grassed Areas
-  Existing Public Right of Way



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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 DARSHAM PARK AND RIDE: MASTERPLAN

DRAWING NO:
 FIGURE 3.8

DATE:
 MAY 2019

DRAWN:
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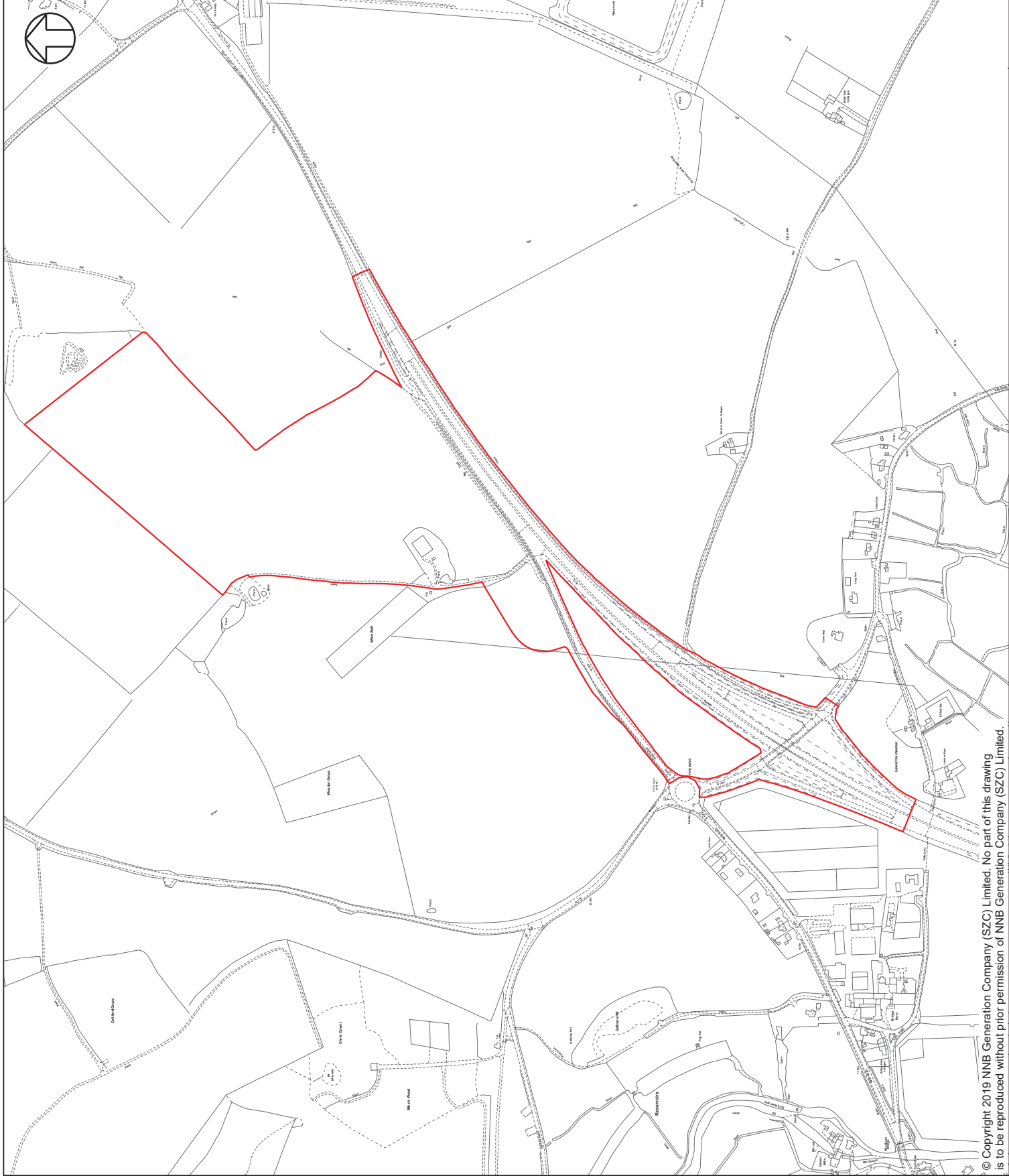
SCALE:
 NTS

SCALE BAR:

NOTES

KEY

WICKHAM MARKET PARK AND RIDE
DEVELOPMENT SITE BOUNDARY



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CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:

WICKHAM MARKET PARK AND RIDE:
SITE BOUNDARY

DRAWING NO:
FIGURE 3.9

DATE: MAY 2019
DRAWN: J.W.

SCALE: 1:5,600 @A3

SCALE BAR
0 50 100 150 200 250
M



NOTES:

KEY:

- Stage 3 Consultation Boundary
- Buffer Zone (faded aerial)
- Security Fence
- Access Road
- Pedestrian Walkway/Zone
- Parking (bus/car/vans/motorcycle)
- Welfare Buildings
- Shelters (bus/bicycle)
- Surface Water Attenuation
- Grassed Spoil Bunds
- Proposed / Existing Planting
- Grassed Areas
- Existing Public Right of Way
- Traffic Incident Management Area

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 WICKHAM MARKET PARK AND RIDE:
 MASTERPLAN

DRAWING NO:
 FIGURE 3.10
DATE: MAY 2019
DRAWN: SMC
SCALE: NTS
SCALE BAR:



NOTES

KEY

-  RED LINE BOUNDARY
-  FLOOD COMPENSATION
-  PROPOSED CONSTRUCTION COMPOUND
-  PROPOSED DETENTION POND
-  PROPOSED ROAD LAYOUT

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DOCUMENT:
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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 TWO VILLAGE BYPASS: SITE BOUNDARY

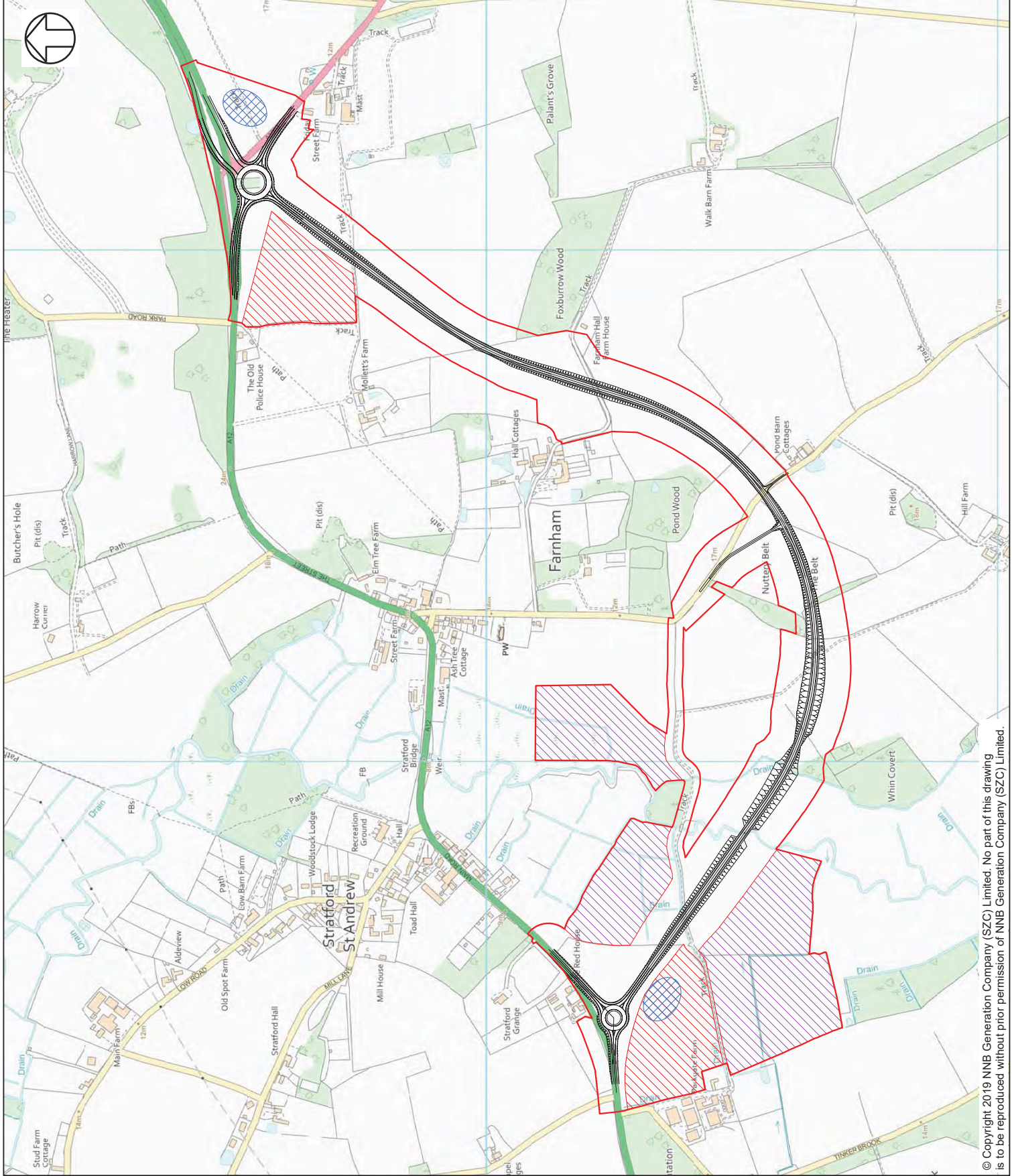
DRAWING NO:
 FIGURE 3.11

DATE:
 MAY 2019

DRAWN:
 J.W.

SCALE:
 1:7,000 @A3

SCALE BAR
 0 50 100 150 200 250 M





NOTES:

KEY:

- Stage 3 Consultation Boundary
- Bypass
- Buffer Zone (faded aerial)
- Temporary Contractor Compound
- Grassed Embankments/Cuttings
- Proposed Hedgerow
- Grassed Areas
- Attenuation Basins
- Approximate Flood Compensation Areas
- Existing Public Right of Way

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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 TWO VILLAGE BYPASS: MASTERPLAN

DRAWING NO:
 FIGURE 3.12
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS
SCALE BAR:



NOTES:

KEY:

- Stage 3 Consultation Boundary
- Access Road
- Pedestrian Walkway
- Temporary Contractor Compound
- Grassed Embankments/Cuttings
- Proposed / Existing Planting
- Attenuation Basins
- Grassed Areas
- Existing Public Right of Way

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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 YOXFORD ROUNDABOUT: MASTERPLAN

DRAWING NO:
 FIGURE 3.14
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS
SCALE BAR:



NOTES:

KEY:

- Stage 3 Consultation Boundary
- Access Road
- Pedestrian Walkway
- Temporary Contractor Compound
- Grassed Embankments/Cuttings
- Proposed / Existing Planting
- Attenuation Basins
- Grassed Areas
- Existing Public Right of Way



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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 YOXFORD ROUNDABOUT: MASTERPLAN

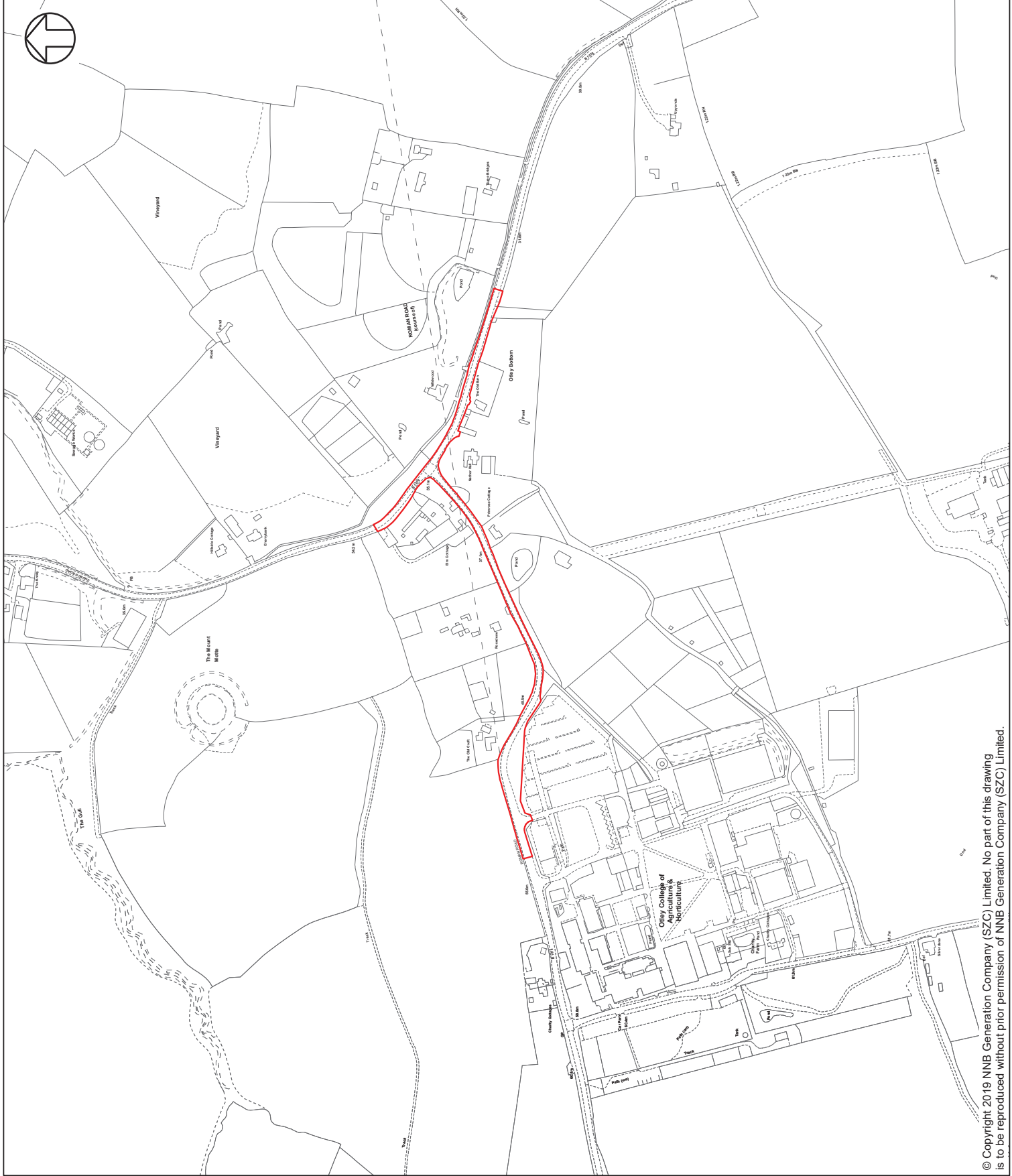
DRAWING NO:
 FIGURE 3.14

DATE: MAY 2019
DRAWN: SMC
SCALE: NTS
SCALE BAR:

NOTES

KEY

RED LINE BOUNDARY



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CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:
B1078/B1079 EAST OF EASTON &
OTLEY COLLEGE: SITE BOUNDARY

DRAWING NO:
FIGURE 3.15

DATE: MAY 2019
DRAWN: J.W.

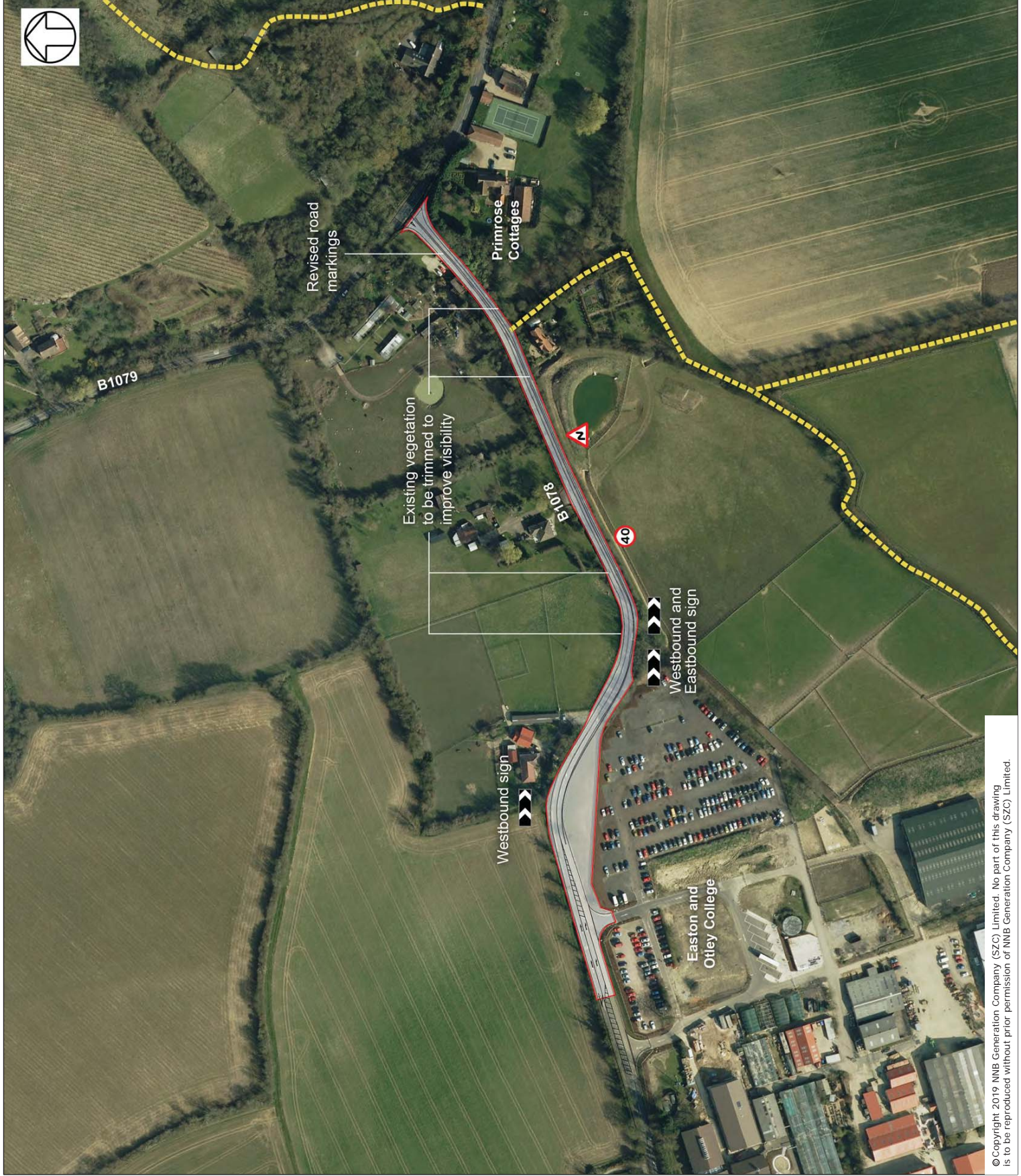
SCALE: 1:4,000 @A3



NOTES:

KEY:

- Stage 3 Consultation Boundary
- Existing Public Right of Way



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DOCUMENT:
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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 B1078/B1079 EAST OF EASTON & OTLEY
 COLLEGE: MASTERPLAN

DRAWING NO:
 FIGURE 3.16
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS
SCALE BAR:

NOTES

KEY

RED LINE BOUNDARY

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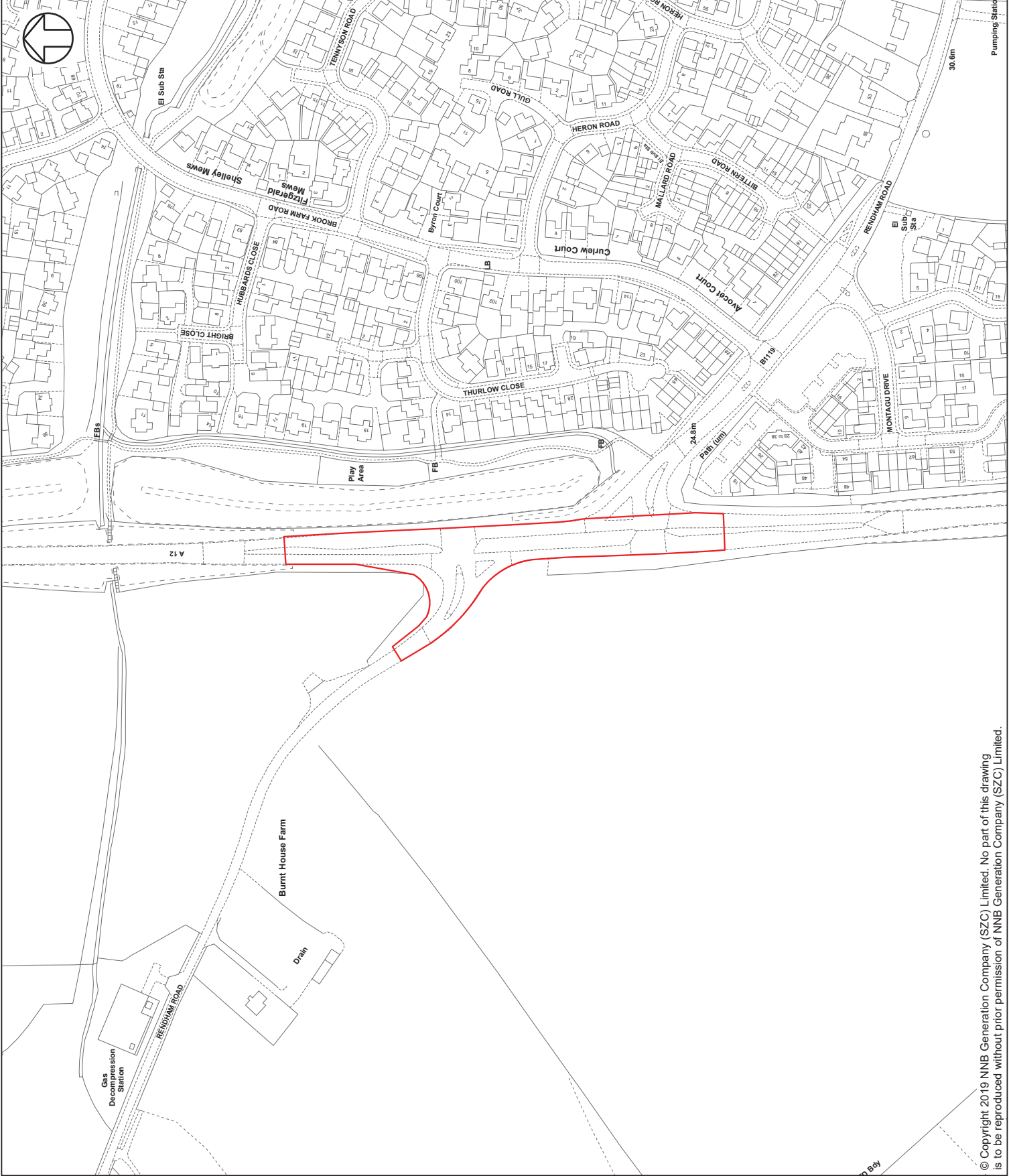
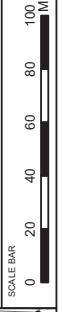


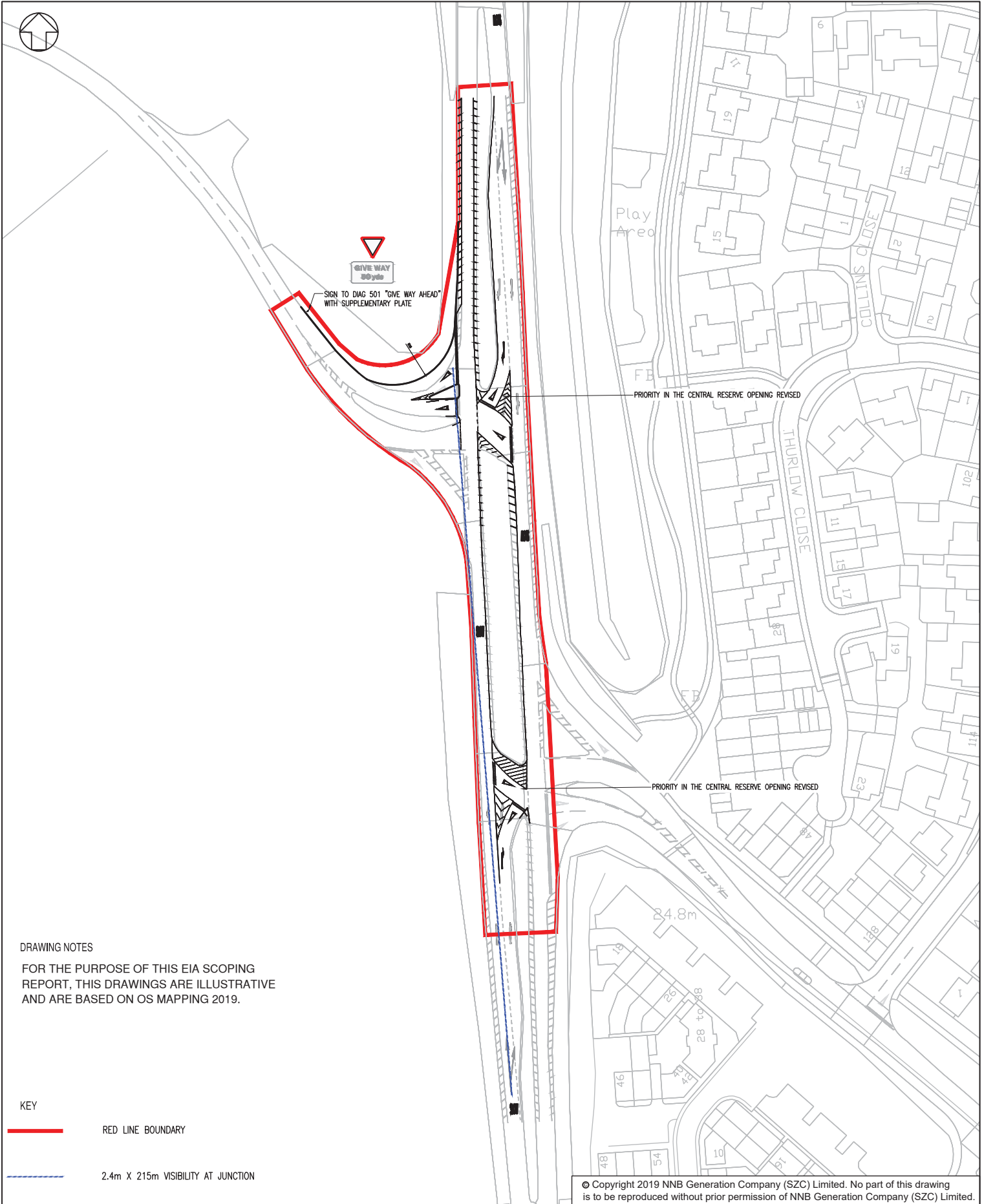
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SIZEWELL C
EIA SCOPING REPORT
CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:
A12/B1119 AT SAXMUNDHAM, SITE BOUNDARY

DRAWING NO:
FIGURE 3.17

DATE: MAY 2019
DRAWN: J.W.
SCALE: 1:2,000 @A3





DRAWING NOTES

FOR THE PURPOSE OF THIS EIA SCOPING REPORT, THIS DRAWINGS ARE ILLUSTRATIVE AND ARE BASED ON OS MAPPING 2019.

KEY

- RED LINE BOUNDARY
- - - 2.4m X 215m VISIBILITY AT JUNCTION

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<p>DOCUMENT: A12/B1119 AT SAXMUND: MASTERPLAN</p>		
<p>DRAWING NO.: FIGURE 3.18</p>		
<p>DATE: MAY 2019</p>	<p>DRAWN: LMM</p>	<p>SCALE: 1:1000</p>

<p>DOCUMENT: SIZEWELL C EIA SCOPING REPORT CHAPTER 3 THE PROPOSED DEVELOPMENT</p>		
<p>SCALE BAR: 0 50 metres</p>		

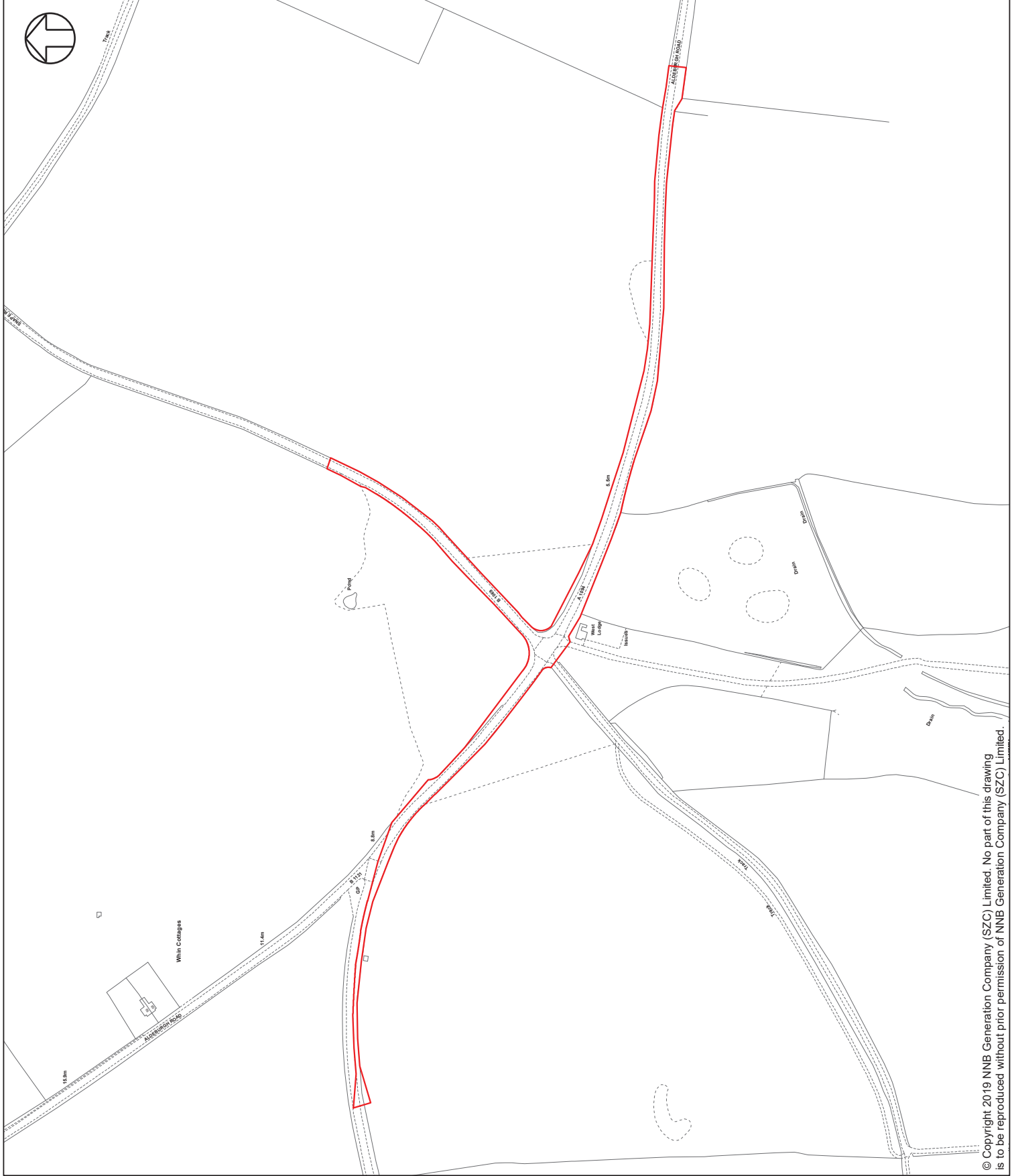
<p>DOCUMENT: SIZEWELL C EIA SCOPING REPORT CHAPTER 3 THE PROPOSED DEVELOPMENT</p>		
<p>SCALE BAR: 0 50 metres</p>		

The logo for SZC (Sizewell C) is prominently displayed in blue. Below it are the logos for EDF Energy (in orange and blue) and CGN (in orange and white).

NOTES

KEY

RED LINE BOUNDARY



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CHAPTER 3
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DRAWING TITLE:
A1094/B1069 SOUTH OF KNODISHALL:
SITE BOUNDARY

DRAWING NO:
FIGURE 3.19

DATE:
MAY 2019

DRAWN:
J.W.



SCALE:
1:3,000 @A3

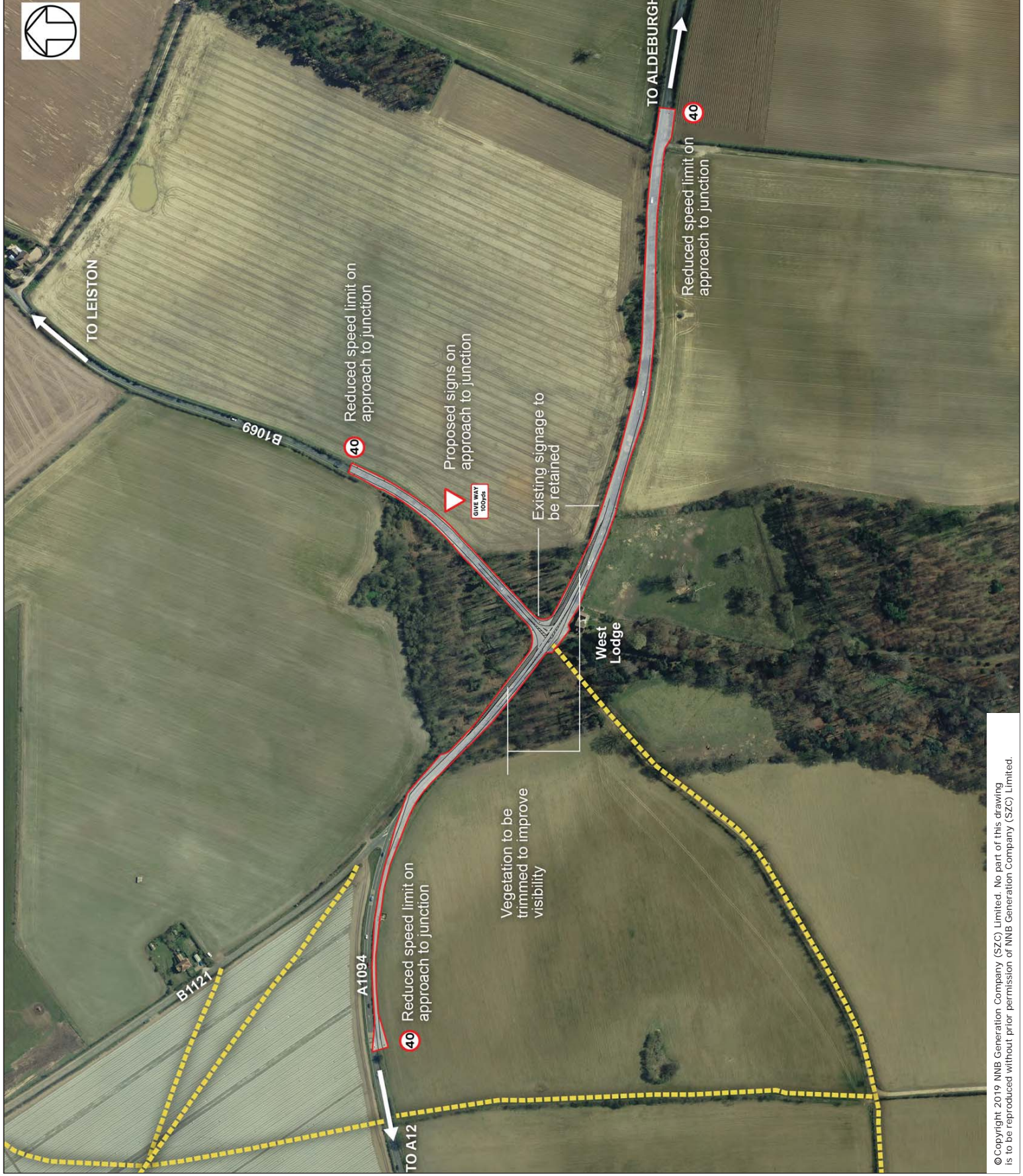
SCALE BAR



NOTES:

KEY:

-  Stage 3 Consultation Boundary
-  Existing Public Right of Way



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DRAWING TITLE:

A1094/B1069 SOUTH OF KNODISHALL:
 MASTERPLAN

DRAWING NO:

FIGURE 3.20

DATE:

MAY 2019

DRAWN:

SMC

SCALE:

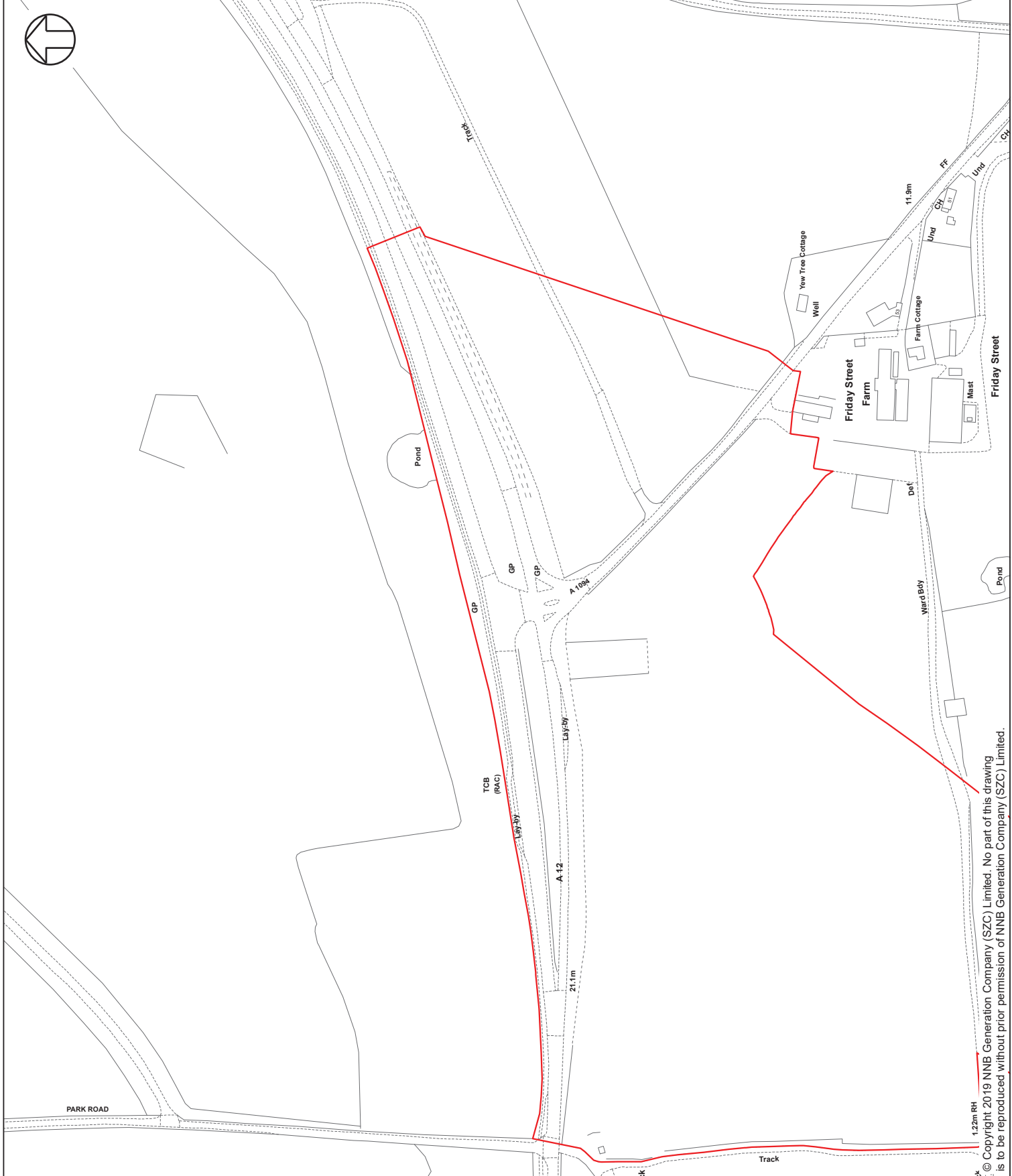
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SCALE BAR:

NOTES

KEY

RED LINE BOUNDARY



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CHAPTER 3
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DRAWING TITLE:
A12/A1094 FRIDAY STREET
NORTH OF FARNHAM

DRAWING NO:
FIGURE 3.21

DATE: MAY 2019
DRAWN: J.W.

SCALE: 1:2,000 @A3



1.22m RH
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NOTES:

KEY:

-  Stage 3 Consultation Boundary
-  Bypass
-  Buffer Zone (faded aerial)
-  Temporary Contractor Compound
-  Grassed Embankments/Cuttings
-  Proposed Hedgerow
-  Grassed Areas
-  Attenuation Basins
-  Existing Public Right of Way

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 CHAPTER 3
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DRAWING TITLE:
 A12/A1054 FRIDAY STREET, NORTH OF FARNHAM:
 MASTERPLAN

DRAWING NO:
 FIGURE 3.22
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS



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CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:

A12/A144 SOUTH OF BRAMFIELD:
SITE BOUNDARY

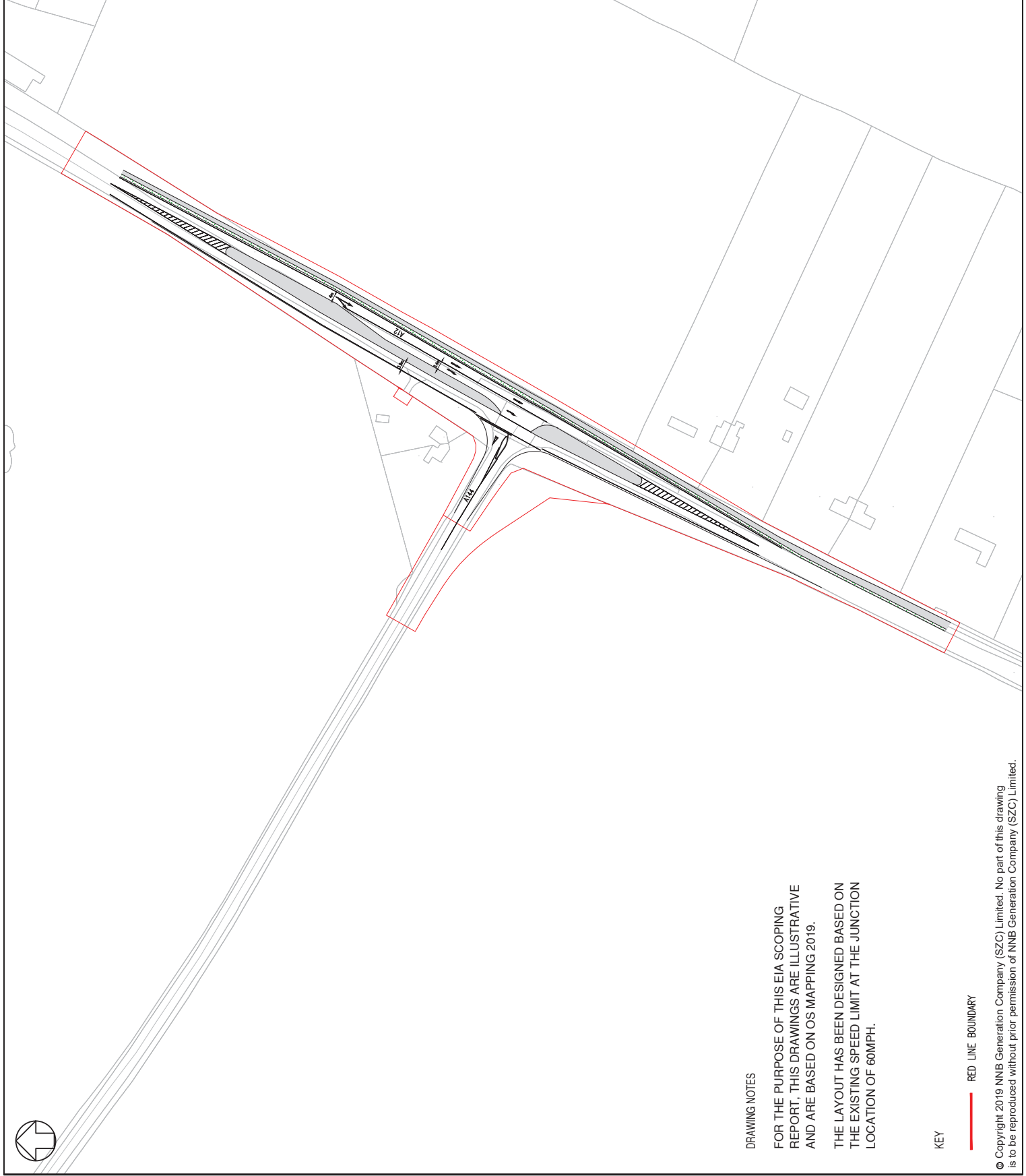
DRAWING NO:
FIGURE 3.23

DATE: MAY 2019
DRAWN: J.W.

SCALE: 1:2,000 @A3

SCALE BAR

0 20 40 60 80 100
M



DRAWING NOTES

FOR THE PURPOSE OF THIS EIA SCOPING REPORT, THIS DRAWINGS ARE ILLUSTRATIVE AND ARE BASED ON OS MAPPING 2019.

THE LAYOUT HAS BEEN DESIGNED BASED ON THE EXISTING SPEED LIMIT AT THE JUNCTION LOCATION OF 60MPH.

KEY

— RED LINE BOUNDARY

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 A127/A144 SOUTH OF BRAMFIELD:
 MASTERPLAN

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 DEVELOPMENT

DRAWING NO:
 FIGURE 3.24

DATE: MAY 2019
DRAWN: LMM
SCALE: 1:1500

SCALE BAR:
 0 1:1500 50 metres

NOTES

KEY

WICKHAM MARKET ROAD IMPROVEMENTS

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DRAWING TITLE:
 WICKHAM MARKET DIVERSION ROUTE
 VIA VALLEY ROAD & EASTON ROAD
 SITE BOUNDARY

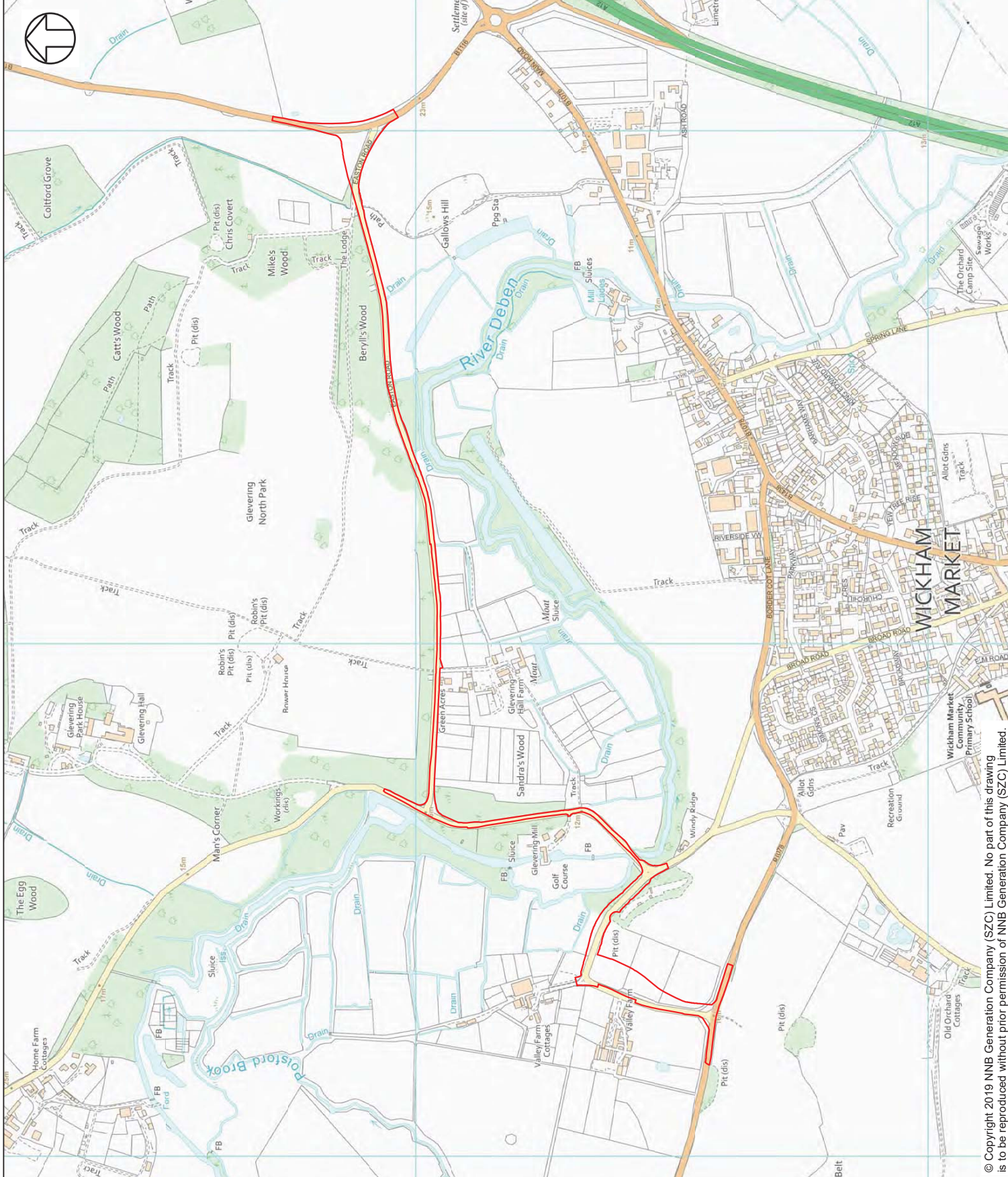
DRAWING NO:
 FIGURE 3.25

DATE:
 MAY 2019

DRAWN:
 J.W.

SCALE:
 1:7,000 @A3

SCALE BAR
 0 50 100 150 200 250
 M





NOTES:

KEY:

Stage 3 Consultation Boundary



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THE PROPOSED DEVELOPMENT

DRAWING TITLE:
WICKHAM MARKET DIVERSION ROUTE VIA
VALLEY ROAD & EASTON ROAD - MASTERPLAN

DRAWING NO:
FIGURE 3.26

DATE:
MAY 2019

DRAWN:
SMC

SCALE:
NTS

SCALE BAR:

NOTES

KEY

IMPROVEMENT OF MILL STREET / B1122 JUNCTION



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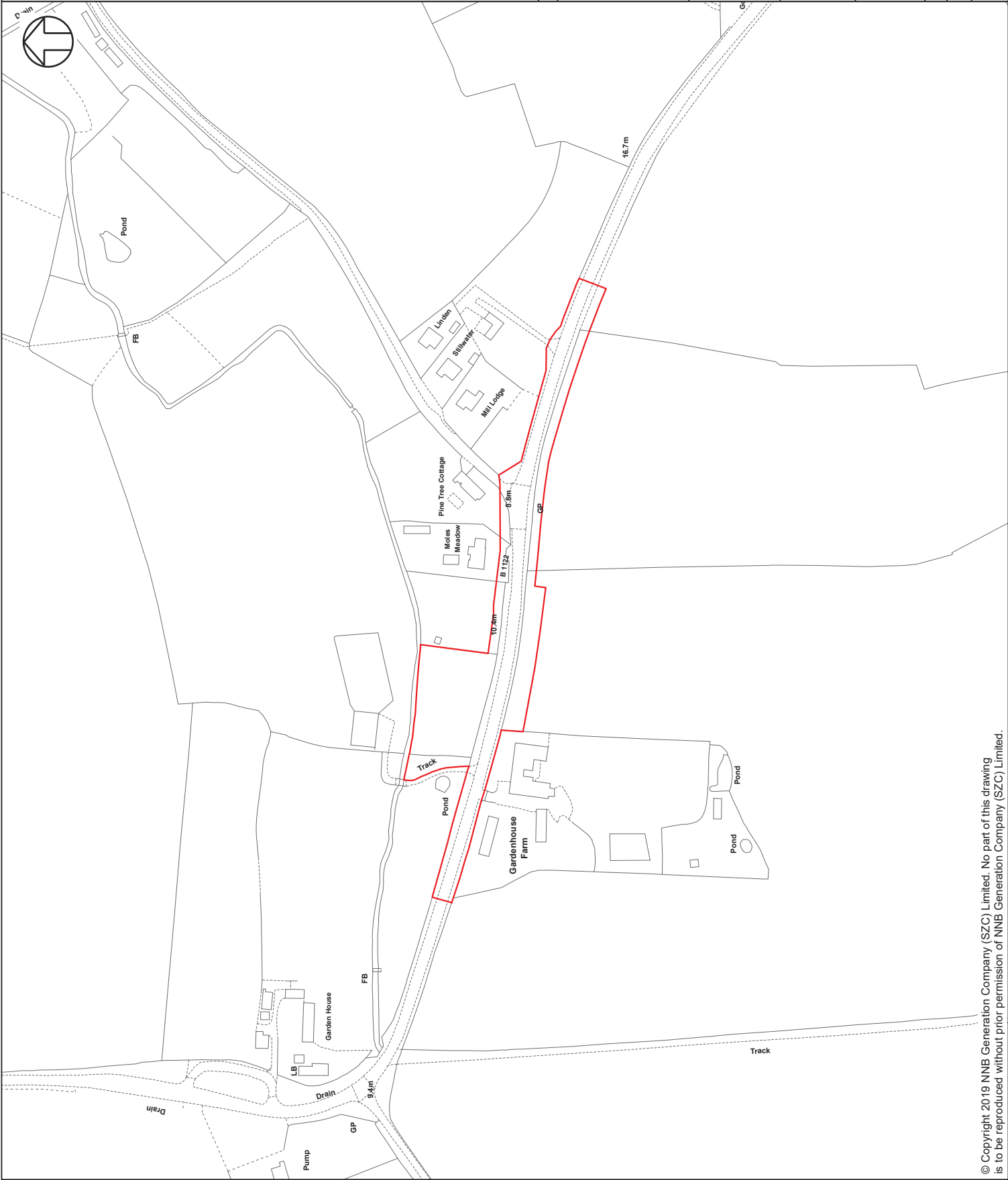
DRAWING TITLE:

MILL STREET (B1122): SITE BOUNDARY

DRAWING NO:
 FIGURE 3.27

DATE: MAY 2019
 DRAWN: J.W.
 SCALE: 1:2,000 @A3

SCALE BAR



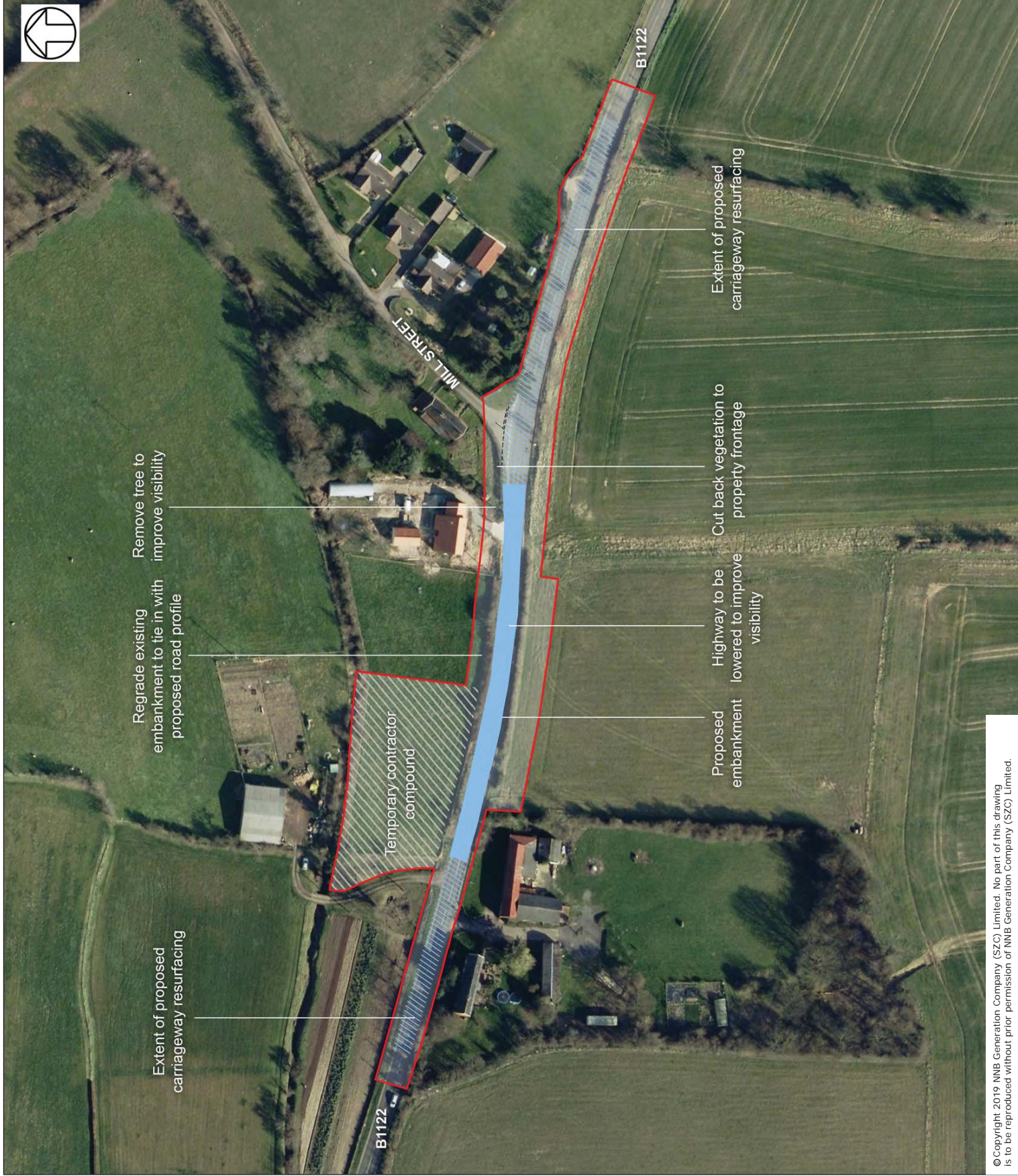


NOTES:

KEY:

Stage 3 Consultation Boundary

Temporary Contractor Compound



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DRAWING TITLE:

MILL STREET (B1122); MASTERPLAN

DRAWING NO:

FIGURE 3.28

DATE:

MAY 2019

DRAWN:

SMC

SCALE:

NTS

SCALE BAR:

NOTES

KEY

- RED LINE BOUNDARY
- PROPOSED CONSTRUCTION COMPOUND
- PROPOSED DETENTION POND
- PROPOSED ROAD LAYOUT

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DRAWING TITLE:
 SIZEWELL LINK ROAD: SITE BOUNDARY

DRAWING NO.
 FIGURE 3.29

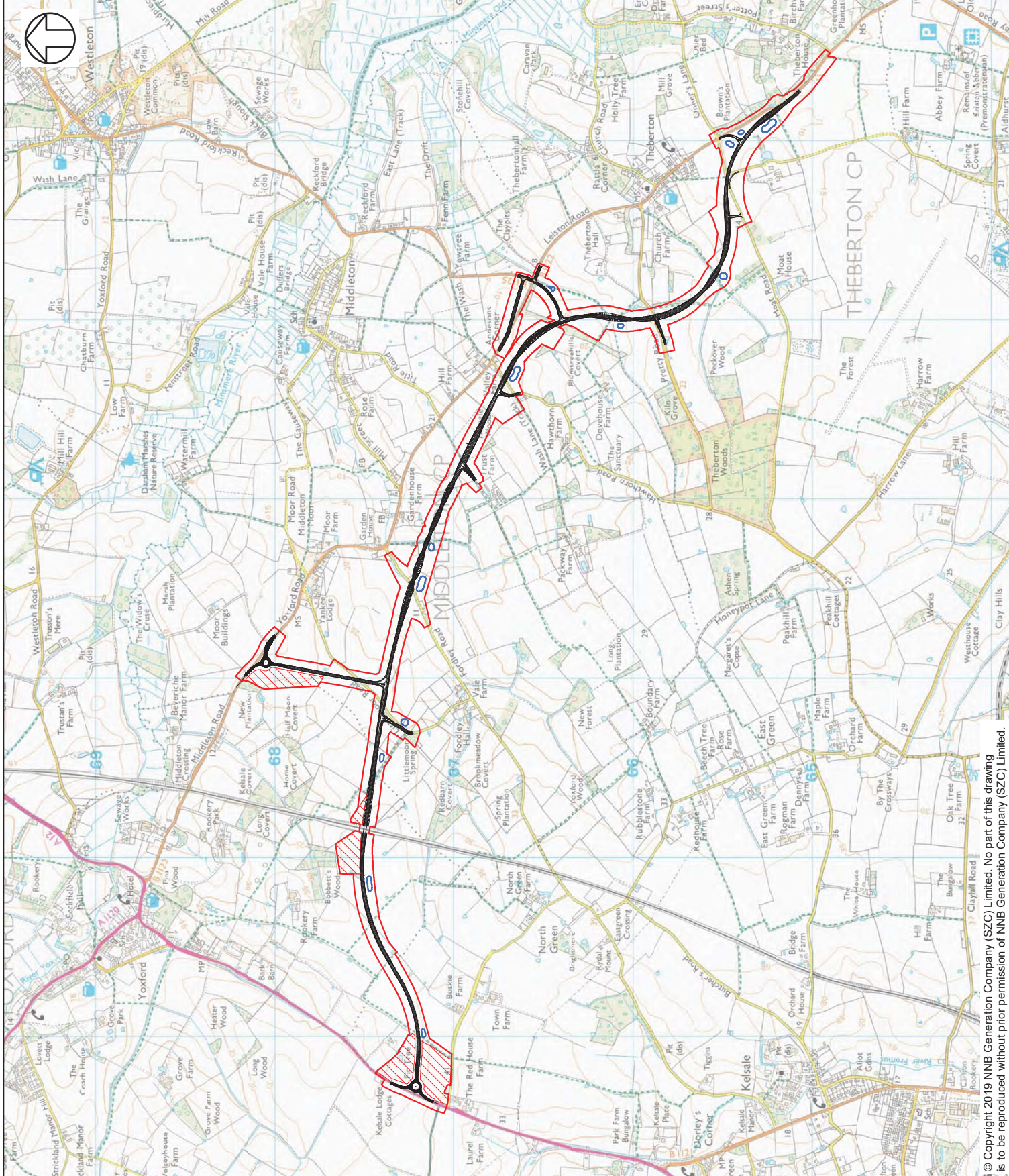
DATE:
 MAY 2019

DRAWN:
 J.W.

SCALE:
 1:20,000 @A3

SCALE BAR

0 200 400 600 800 1,000
 M



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NOTES:



KEY:

-  Stage 3 Consultation Boundary
-  Buffer Zone (faded aerial)
-  Temporary Contractor Compound
-  Attenuation Basins



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DRAWING TITLE:
 SIZEWELL LINK ROAD - MASTERPLAN

DRAWING NO:
 FIGURE 3.30
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS
SCALE BAR:

NOTES

KEY

- RED LINE BOUNDARY
- PROPOSED CONSTRUCTION COMPOUND
- PROPOSED DRAINAGE BOUNDARY
- PROPOSED ROAD LAYOUT

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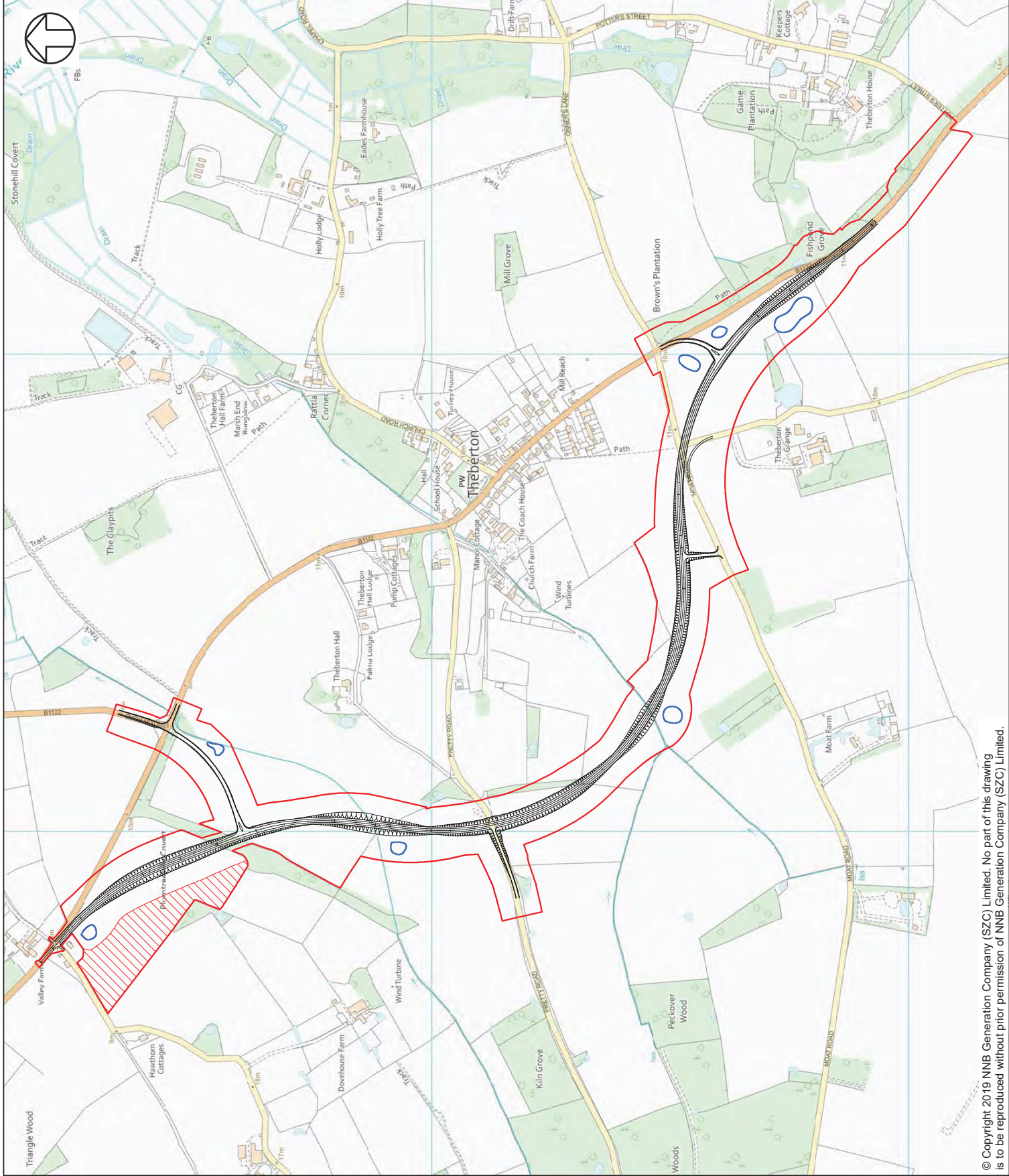
DRAWING TITLE:
 THEBERTON BYPASS (B1122); SITE BOUNDARY

DRAWING NO.:
 FIGURE 3.31

DATE: MAY 2019
DRAWN: J.W.

SCALE: 1:7,500 @A3

SCALE BAR
 0 50 100 150 200 250
 METRES





NOTES:

KEY:

-  Stage 3 Consultation Boundary
-  Buffer Zone (faded aerial)
-  Temporary Contractor Compound
-  Attenuation Basins

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 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:
 THEBERTON BYPASS (B1122): MASTERPLAN

DRAWING NO:
 FIGURE 3.32
DATE:
 MAY 2019
DRAWN:
 SMC
SCALE:
 NTS
SCALE BAR:

NOTES

KEY

RED LINE BOUNDARY



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CHAPTER 3
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DRAWING TITLE:
SEVEN HILL FREIGHT MANAGEMENT FACILITY

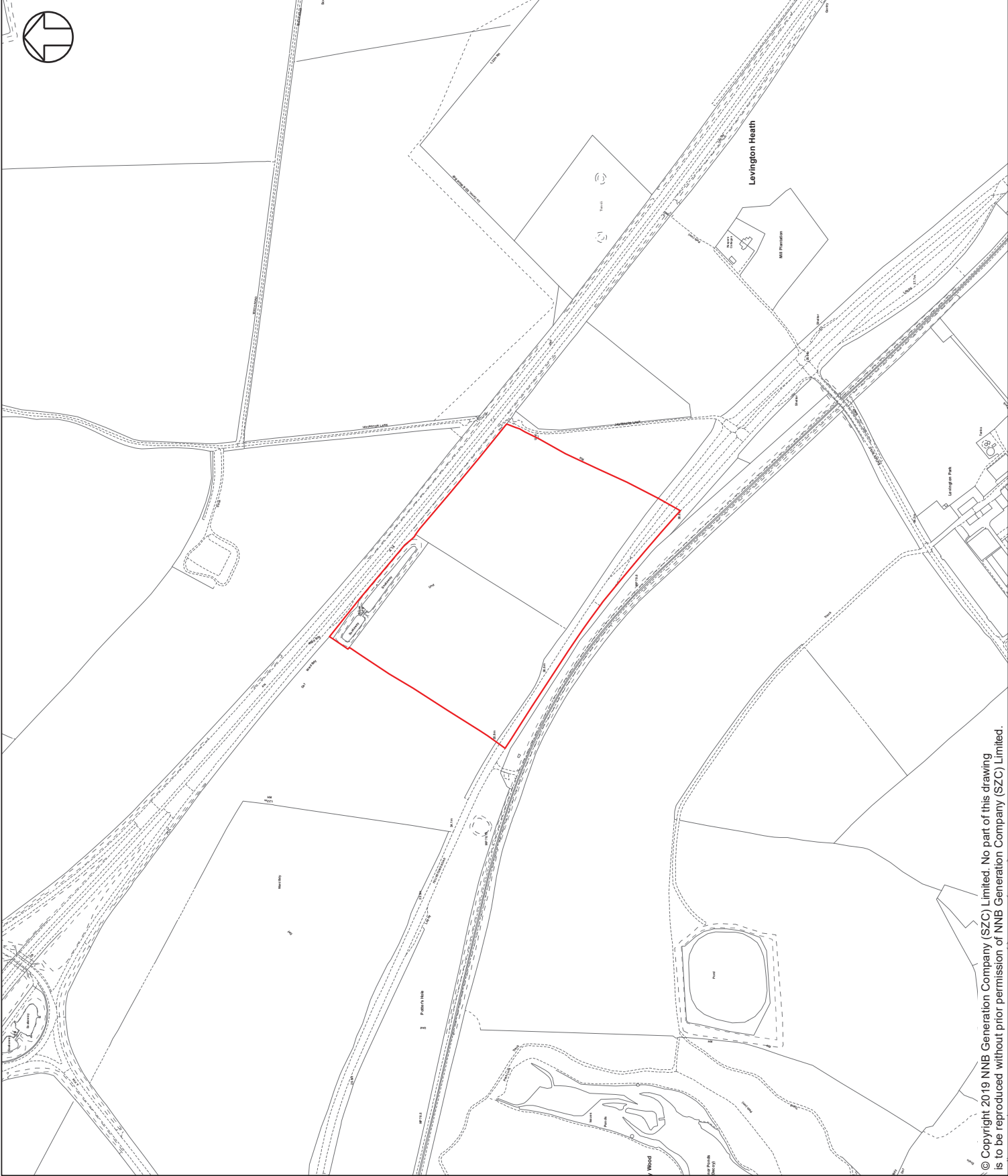
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FIGURE 3.33

DATE:
MAY 2019

DRAWN:
J.W.

SCALE:
1:5,000 @A3

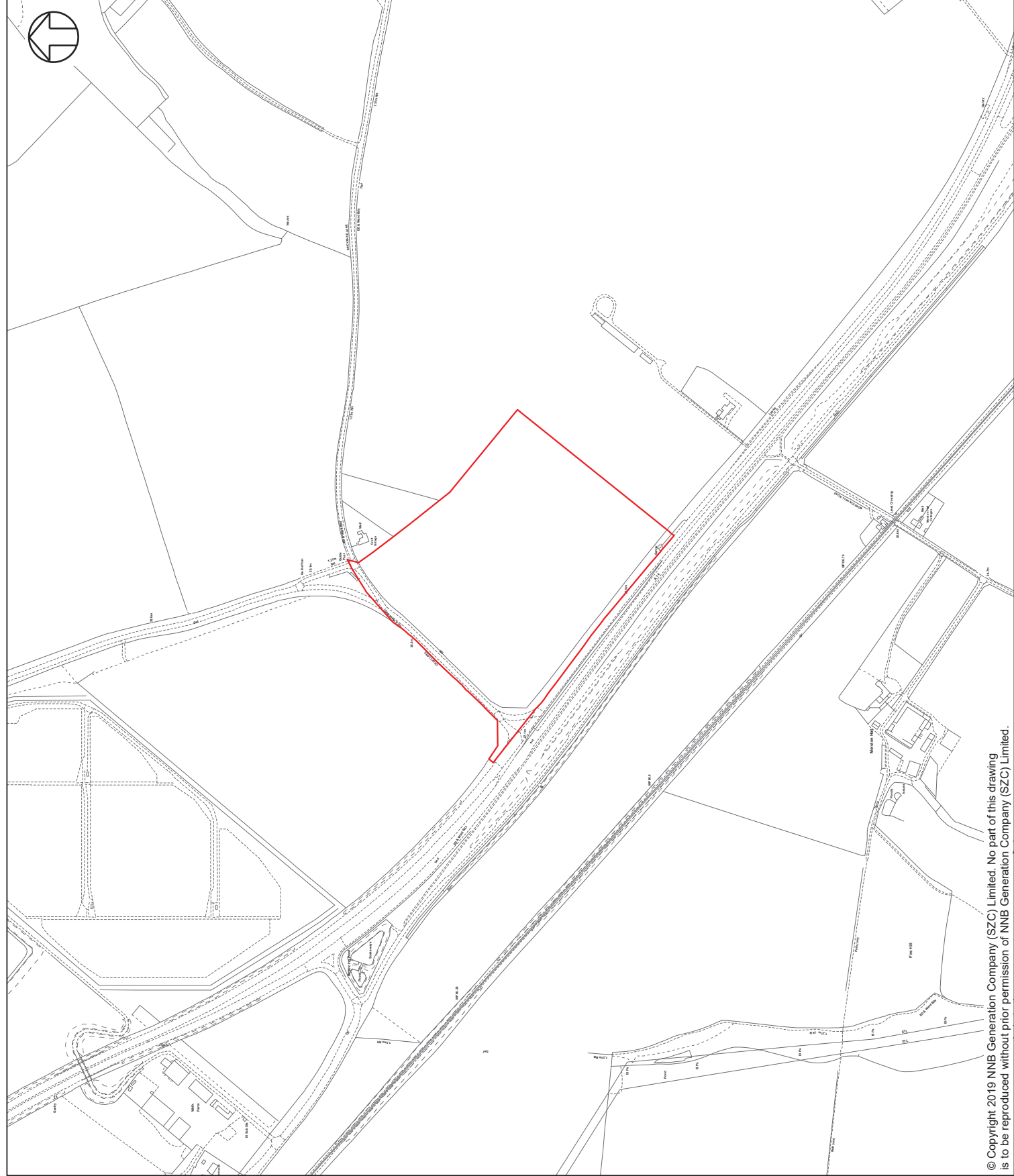
SCALE BAR
0 50 100 150 200
M



NOTES

KEY

RED LINE BOUNDARY



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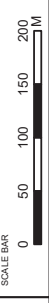
DRAWING TITLE:
INNOCENCE FARM FREIGHT MANAGEMENT
FACILITY

DRAWING NO:
FIGURE 3.34

DATE:
MAY 2019

DRAWN:
J.W.

SCALE:
1:5,000 @A3



NOTES

KEY

- GREEN RAIL ROUTE SITE BOUNDARY
- DEMARCATION LINE

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DRAWING TITLE:
 GREEN RAIL ROUTE: SITE BOUNDARY

DRAWING NO:
 FIGURE 3.35

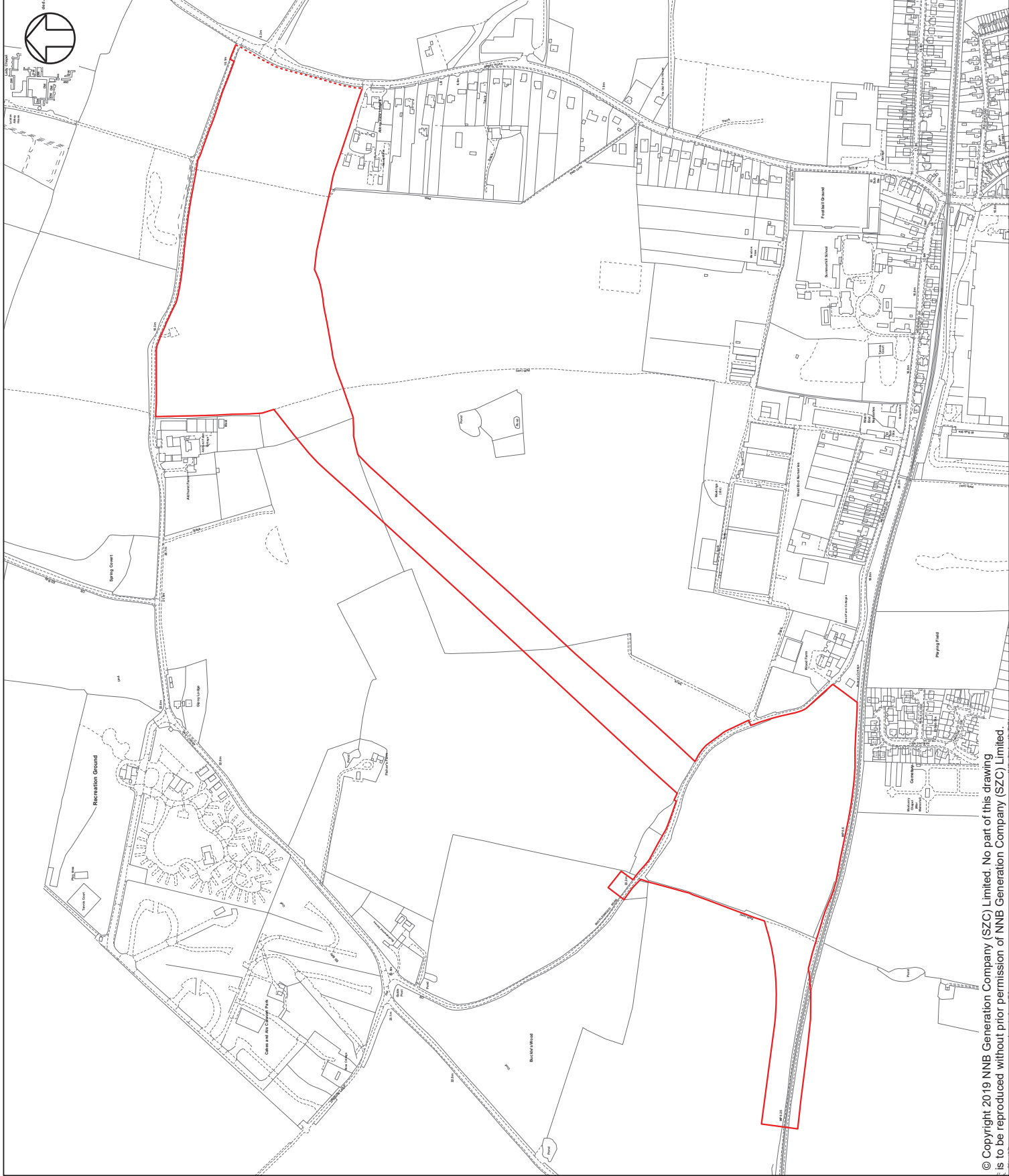
DATE:
 MAY 2019

DRAWN:
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SCALE:
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SCALE BAR

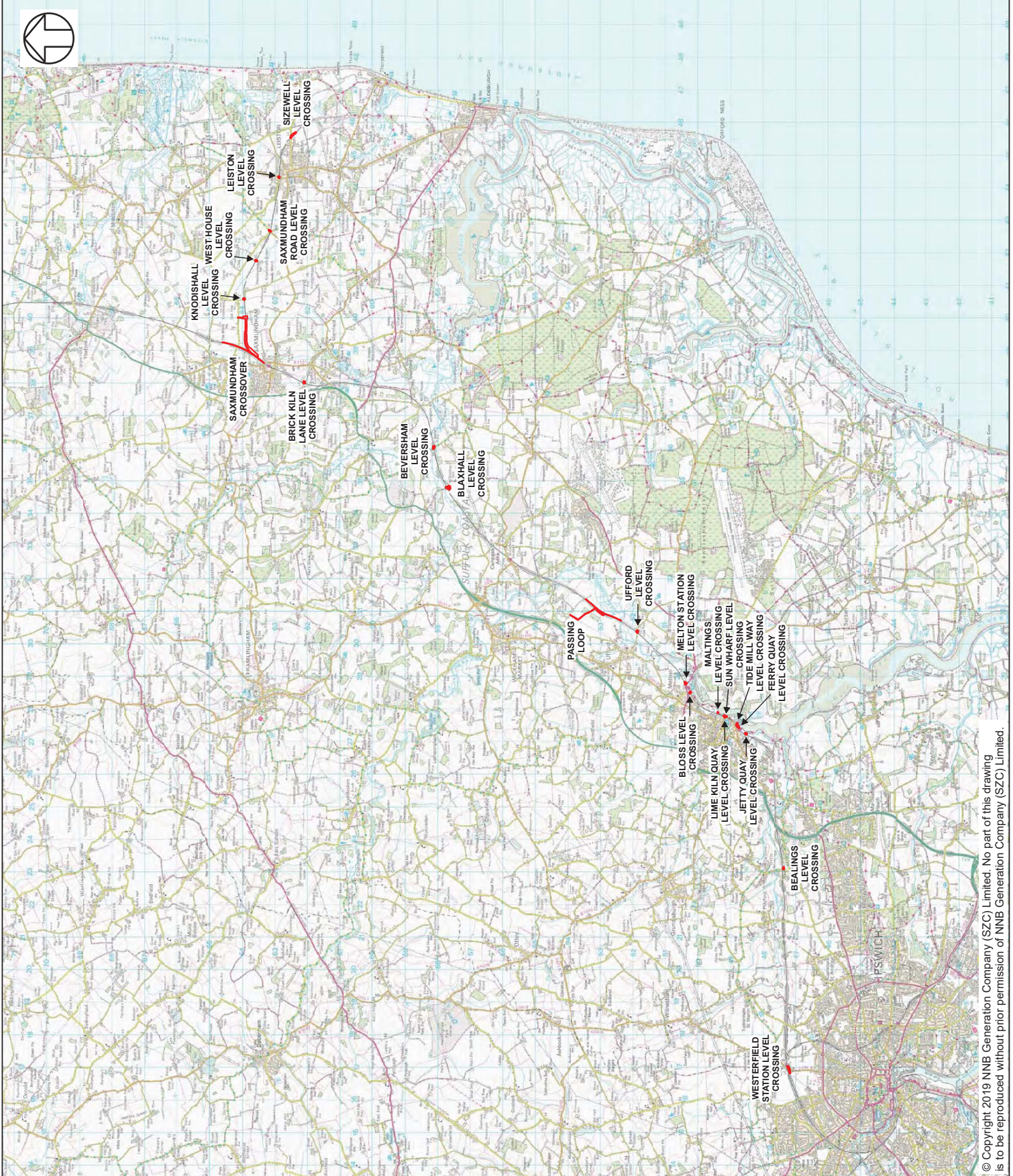
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NOTES

KEY

RED LINE BOUNDARY



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DOCUMENT
SIZEWELL C
EIA SCOPING REPORT
CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:
EAST SUFFOLK LINE AND BRANCH LINE
UPGRADES AND LEVEL CROSSING WORKS:
SITE BOUNDARY

DRAWING NO:
FIGURE 3.36

DATE: MAY 2019
DRAWN: J.W.
SCALE: 1:110,000 @A3

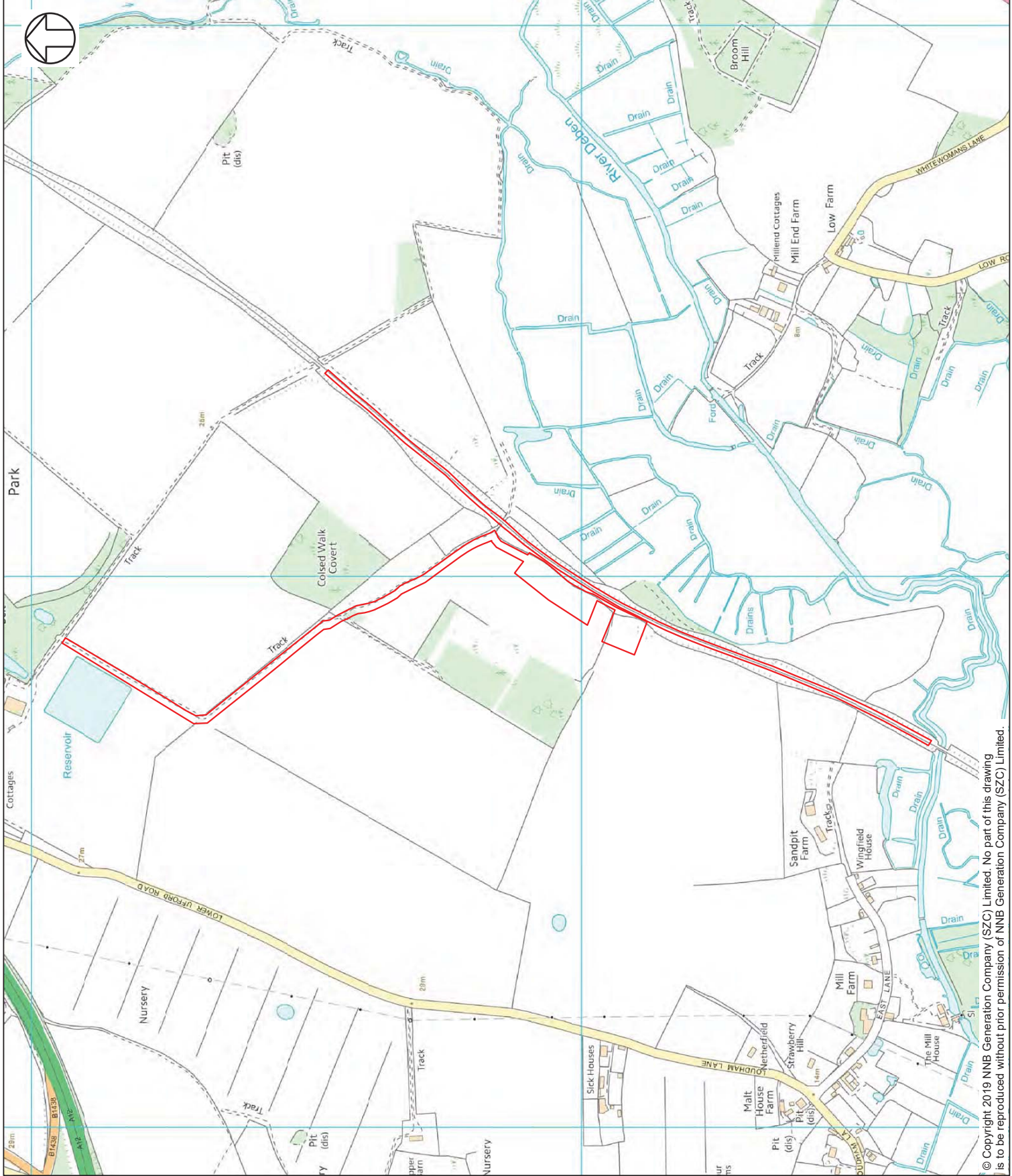
SCALE BAR



NOTES

KEY

□ PASSING LOOP SITE BOUNDARY



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DOCUMENT:
SIZEWELL C
EIA SCOPING REPORT
CHAPTER 3
THE PROPOSED DEVELOPMENT

DRAWING TITLE:
PASSING LOOP AT A LOCATION
BETWEEN IPSWICH AND SAXMUNDHAM

DRAWING NO:
FIGURE 3.37

DATE:
MAY 2019

DRAWN:
J.W.

SCALE:
1:6,500 @A3

SCALE BAR
0 50 100 150 200 250
M

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NOTES

KEY

□ SAXMUNDHAM CROSSOVER

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DOCUMENT:

SIZEWELL C
 EIA SCOPING REPORT
 CHAPTER 3
 THE PROPOSED DEVELOPMENT

DRAWING TITLE:

TRACK CROSSOVER AT SAXMUNDHAM

DRAWING NO:
FIGURE 3.38

DATE:
 MAY 2019

SCALE:
 1:5,000 @A3

DRAWN:
 J.W.

SCALE BAR
 0 50 100 150 200
 M



SAXMUNDHAM

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APPENDIX 1A: 2014 EIA SCOPING REPORT



Sizewell C

Proposed Nuclear Development

Sizewell C EIA Scoping Report

April 2014

Planning Inspectorate Ref: EN010012

Request for a formal scoping opinion in accordance with Regulation 8 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (EIA Regulations 2009) (as amended)

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1. INTRODUCTION

1.1 The Sizewell C Project

1.1.1 EDF Energy¹ is proposing to build a new nuclear power station comprising two UK EPRs at Sizewell in Suffolk, known as Sizewell C. Located to the north of the existing Sizewell B power station, Sizewell C would have an expected electrical capacity of approximately 3,260 megawatts (MW). This would meet approximately 7% of the UK's electricity needs, the equivalent of supplying approximately 5 million homes.

1.2 Intention to apply for a Development Consent Order at Sizewell

1.2.1 EDF Energy intends to submit an application to the Planning Inspectorate for a Development Consent Order (DCO) to develop Sizewell C. In addition to the nuclear power station, the application will seek consent for on-site and off-site associated developments that are considered necessary for the construction and operation of the plant. The application will comprise details of all development proposals and will be accompanied by an Environmental Statement (ES) conforming to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2263) (as amended) (the EIA Regulations) and other relevant documents.

1.3 Purpose of this Scoping Report

1.3.1 The scoping process forms an important early stage of the Environmental Impact Assessment (EIA) process. This report sets out the proposed content, methodologies to be adopted and the key matters to be considered in the EIA.

1.3.2 A Scoping Opinion is requested from the Secretary of State to inform the ES which will be submitted as part of the application for development consent. Through the scoping process the views of statutory consultees and other relevant organisations on the proposed scope of the assessment will be sought.

1.4 Request for a Scoping Opinion

1.4.1 This report accompanies a written request to the Planning Inspectorate for a Scoping Opinion in accordance with Regulation 8(1) of the EIA Regulations.

1.4.2 As detailed in Regulation 8(3) of the EIA Regulations, this request for a Scoping Opinion includes:

- a plan sufficient to identify the proposed development sites (i.e. the Sizewell C site and the off-site associated developments) (see **Figure 1.1.1**); and
- a brief description of the nature and purpose of the proposed development (see **Section 3**), an outline description of the environmental baseline, the work that has

¹ NNB Generation Company Limited, whose registered office is at 40 Grosvenor Place, London, SW1X 7EN (referred to in this document as 'EDF Energy').

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been undertaken or that is planned to further inform this baseline, and a preliminary view of the potential effects of the proposed development on the environment (see **Sections 6 to 8**).

1.5 Consultation

a) The consultation process

- 1.5.1 EDF Energy is undertaking pre-application consultation in accordance with the Planning Act 2008 (as amended), having regard to the Department for Communities and Local Government's Guidance on the Pre-application Process (2013) and other relevant guidance, including the Planning Inspectorate's Advice Note 16 (2012) which provides advice on the applicant's pre-application duties.
- 1.5.2 EDF Energy is undertaking pre-application consultation in formal stages with the local community, statutory consultees and other interested parties. Stage 1 consultation on EDF Energy's initial proposals and options took place between November 2012 and February 2013. A second stage of consultation is proposed in 2014 and will focus on EDF Energy's emerging proposals. Feedback from these stages will help inform development of the proposals and further consultation due to take place subsequently on EDF Energy's preferred proposals. This will provide more detailed information in relation to the technical and environmental considerations. EDF Energy will consult the Suffolk local authorities on a revised Statement of Community Consultation for the Sizewell C Project this year.
- 1.5.3 In addition to the formal stages of pre-application consultation, EDF Energy will continue to hold informal discussions with the key statutory consultees and other interested parties, as appropriate. This ongoing consultation continues to inform and refine the development proposals.

b) Consultation to date

i. Scoping Report 2008

- 1.5.4 British Energy (a predecessor of EDF Energy) submitted a Report to inform a Scoping Opinion to BERR in November 2008. A subsequent Scoping Opinion was received from DECC (which was formed to take responsibility for the UK's energy supply) in February 2009. The Scoping Opinion has helped to inform the EIA process for the Sizewell C Project.

ii. Draft Scoping Report 2010

- 1.5.5 EDF Energy consulted upon a draft Scoping Report for Sizewell C with a limited number of statutory stakeholders in November 2010. Stakeholder responses have been considered in the development of this formal EIA Scoping Report.

iii. Stage 1 consultation

- 1.5.6 Stage 1 consultation set out EDF Energy's broad plans for the Sizewell C Project. It presented both the elements of the proposals that are unlikely to change (e.g. location of the power station and the design of the reactors) and options for the associated developments. Responses to Stage 1 consultation continue to inform the ongoing development of EDF Energy's proposals for Sizewell C.

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1.5.7 A number of responses to the Stage 1 consultation informed the proposed scope of the EIA. EDF Energy continues to hold regular meetings with stakeholders.

1.6 Structure of the EIA Scoping Report

1.6.1 The structure of this report is as follows:

- **Section 2** describes the legislative and regulatory regime for the proposed development and other assessments that will be undertaken in support of the application for development consent;
- **Section 3** sets out a description of the proposed development;
- **Section 4** summarises the alternatives considered;
- **Section 5** details the proposed approach to the EIA, including potential inter-relationships and cumulative effects, for the Sizewell C Project;
- **Sections 6** details the baseline, approach to the assessment and potential environmental issues for those environmental topics that will be considered on a Project-wide basis (socio-economics and transport);
- **Section 7** presents the baseline, approach to the assessment and potential environmental issues for all environmental topics that will be considered for the Sizewell C Main Development Site;
- **Section 8** presents the baseline, approach to the assessment and potential environmental issues for the off-site associated developments. Each off-site associated development site is considered in turn, addressing environmental topics as appropriate; and
- **Section 9** presents the proposed next steps.

2. CONSENTING REGIMES AND ENVIRONMENTAL ASSESSMENT

2.1 Nationally Significant Infrastructure Projects

a) Development Consent Order

2.1.1 Nationally Significant Infrastructure Projects (NSIPs) require a Development Consent Order (DCO) under the Planning Act 2008. Applications for a DCO are determined by the Secretary of State following a detailed examination of the proposed development by the Planning Inspectorate (acting on behalf of the Secretary of State).

b) Environmental Impact Assessment

2.1.2 EIAs for NSIPs are governed by the EIA Regulations, which divide development into two classes: Schedule 1 projects where EIA is always required; and Schedule 2 projects requiring EIA only if the particular project in question is judged likely to give rise to significant environmental effects.

2.1.3 The proposed development is classified as a Schedule 1 development, as identified in the EIA Regulations Part 1(b). Therefore, an EIA will be undertaken and an ES will be submitted in support of the application for development consent.

c) The need for new nuclear development

2.1.4 In the 2008 White Paper on Nuclear Power (BERR, 2008) the Government made clear that new nuclear power stations should have a role to play in the UK's energy mix, alongside other low-carbon sources. Nuclear power can contribute to meeting the UK's binding targets for emissions reductions, and at the same time contribute to diversity and security of supply.

2.1.5 Nuclear power is a technology that the UK has exploited for more than 50 years for electricity generation which, at its peak in 1998, accounted for 26% of UK generation. However, as the older nuclear power stations reach the end of their lives, this share will continue to decline. In 2012, nuclear power provided 18% of UK electricity. On current plans, only one of the existing fleet of nine nuclear power stations will be operational beyond 2023.

2.1.6 The Government's Overarching National Policy Statement (NPS) for Energy (EN-1) states that for the Government to meet its energy and climate change objectives, there is an urgent need for new electricity generating stations. It is Government policy that new nuclear power should be able to contribute as much as possible to the UK's need for new capacity. New nuclear power stations will help to ensure a diverse mix of technology and fuel sources, which will increase the resilience of the UK's energy system. It will reduce exposure to the risks of supply interruptions and of sudden and large spikes in electricity prices that can arise when a single technology or fuel dominates electricity generation.

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2.1.7 The NPS for Nuclear Power Generation (EN-6) (referred to as the Nuclear NPS) identifies eight potentially suitable sites for deployment of new nuclear power stations by 2025. These sites were identified on the basis of a strategic siting assessment (SSA) carried out by Government. The Sizewell C site was nominated by EDF Energy and is included as one of the eight potentially suitable sites.

2.1.8 EDF Energy's proposed nuclear power development at Sizewell C would provide approximately 7% of the UK's electricity requirements, would avoid the emission of around 10 million tonnes of carbon dioxide during each year of operation and would thus represent a significant contribution towards the Government's energy policy and climate change goals.

d) Suitability of the Sizewell C site

2.1.9 EDF Energy nominated the Sizewell C site and the Government's SSA process concluded that the site is suitable at a strategic level. Key attributes of the site include:

- its siting adjacent to an existing nuclear operation;
- there is sufficient land area within the nominated boundary to provide essential infrastructure;
- Sizewell is connected to the National Grid's high voltage transmission network, although local modifications and wider network reinforcement are likely to be required;
- the site is coastal and seawater is available for direct cooling;
- there is scope for transporting materials and equipment needed for the construction of a new nuclear power station by sea and rail;
- the site does not occupy any Ministry of Defence (MoD) areas and is not in proximity to any MoD assets or activities;
- a power station development within the development site boundary can be protected against the risk of external hazards throughout its lifetime;
- a new nuclear power station at the site can be protected against flood risk throughout its operational lifetime;
- the development site can be protected against the potential effects of climate change, storm surge and tsunami;
- a nuclear power station at the site can be protected against coastal erosion, including the potential effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences or the positioning of elements of the infrastructure on the site;
- the proposed development site is not in the vicinity of any upper tier Control of Major Accident Hazards (COMAH) establishments, based on Health and Safety Executive records; and
- a nuclear power station development within the nominated development site boundary can be protected against risks from civil aircraft movement, and that the effects of air traffic and aerodromes can potentially be mitigated.

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- 2.1.10 The SSA concluded that the nominated Sizewell site is suitable for the deployment of new nuclear power stations by the end of 2025. This assessment, in conjunction with the Nuclear NPS, avoids a requirement for the Secretary of State to consider alternative sites in his or her determination of the DCO application (see **Section 4**). The Nuclear NPS also provides guidance at a generic and site-specific level on nuclear-specific impacts, potential impacts and siting issues intended to aid the Planning Inspectorate's assessment of new nuclear power stations.
- 2.1.11 Guidance set out within the Overarching Energy NPS and Nuclear NPS has been considered in this Scoping Report. These NPSs have provided important context and have helped inform the topic coverage and scope of the EIA.
- 2.1.12 The Nuclear NPS was also subject to a Government Habitats Regulations Assessment (HRA) as it is considered a "plan" under the Habitats Directive (European Commission, 1992). The HRA concluded that there is potential for adverse effects on the integrity of European Sites adjacent to or with the proximity of the potential sites identified in the NPS. In line with the requirements set out in Article 6(4) of the Habitats Directive the Government considered potential alternatives to the plan and identified sites, and concluded that there were no alternatives that would better respect the integrity of European Sites and deliver the objectives of the NPS.
- 2.1.13 The Government has confirmed that it is satisfied that there are Imperative Reasons of Overriding Public Interest (IROPI) in making these identified sites available as potential sites for development and listing them in the Nuclear NPS, even though at this stage potential adverse impacts on European Sites cannot be ruled out. This IROPI case is based on fulfilling the Government's energy policy objectives whilst contributing to wider European Union (EU) goals for sustainable low-carbon sources of energy as a means of reducing the damaging effects of climate change and ensuring security of energy supplies.

2.2 Other relevant consents

a) Licensing

i. Purpose of the Licence

- 2.2.1 The Nuclear Installations Act 1965 (as amended) requires that Licensees are regulated by the Office for Nuclear Regulation (ONR). The ONR regulate Licensees via the Nuclear Site Licence (NSL).
- 2.2.2 The NSL sets out 36 standard licence conditions for which the Licensee develops and implements arrangements. These conditions are available on the ONR website. Prior to being granted an NSL, the Licensee must demonstrate that it complies with its arrangements to meet the licence conditions and have appropriate organisational capabilities and governance in place to ensure nuclear safety. Licensees must also be able to demonstrate they have control over the site in terms of security of tenure. The arrangements are proportionate to the activities being carried out by the Licensee.

ii. Obtaining the Licence

- 2.2.3 The ONR provides guidance on its website to assist potential applicants. The NSL must be in place prior to any construction activity that may impact on nuclear safety, since this requires ONR permission in the form of consents. An NSL can be sought at the earliest possible opportunity to allow the ONR to advise the Licensee, including development of its arrangements. Once granted, the NSL is an obligation until the site is de-licensed.

iii. Transport

- 2.2.4 The ONR is responsible for regulating safety with regards to Nuclear Transport and Security arrangements.

iv. Security

- 2.2.5 The ONR includes a specialist Civil Nuclear Security (CNS) organisation. The CNS is the security regulator for the UK's civil nuclear industry, ensuring that the requirements of the Nuclear Industries Security Regulations (NISR) 2003 (as amended) are met by operators. The ONR (CNS) approves Construction Site Security Plans, Nuclear Site Security Plans, Transport Security Plans and Temporary Security Plans.

b) Permitting

- 2.2.6 Under the Environmental Permitting (England and Wales) Regulations 2010 (as amended), EDF Energy requires a number of operational permits, granted by the Environment Agency, to operate Sizewell C. These will be subject to public consultation. The three key permits are to:

- dispose of radioactive waste, known as the Radioactive Substances Regulation (RSR) permit;
- discharge cooling water effluents, known as the operational Water Discharge Activity (WDA) permit; and
- the operation of the emergency diesel generators, known as the Combustion Activity (CA) permit.

- 2.2.7 Additional permits will be required to support the construction and commissioning activities.

i. Generic Design Assessment

- 2.2.8 The Generic Design Assessment (GDA) process is carried out jointly by the ONR and the Environment Agency separate to the licensing process. Under the GDA process, the ONR and Environment Agency engage with nuclear reactor vendors on the generic aspect of their design, perform technical assessment work on their submissions, consult with overseas regulators, implement a comments process and consult. This is done in order to assess the environmental, safety and security aspects of reactor designs before construction of the reactor starts.

- 2.2.9 In December 2012 the ONR issued a Design Acceptance Confirmation (DAC) and the Environment Agency issued a Statement of Design Acceptability (SoDA) for the UK EPR Reactor Design, concluding the corresponding GDA process.

2.3 Related assessments

2.3.1 In addition to the EIA, the proposed development will be subject to assessment pursuant to other regulatory regimes, including the Habitats Regulations and Water Framework Directive (European Commission, 2000). Further information on these regimes is provided below.

a) Habitat Regulations Assessment

2.3.2 The European 'Habitats Directive' on the Conservation of Natural Habitats and Wild Flora and Fauna (92/43/EEC) and the European 'Birds Directive' on the conservation of wild birds (79/409/EEC – as amended by Directive 2009/147/EC) aim to put in place a network of habitats and species of European importance and to require the competent authorities of Member States to undertake 'Appropriate Assessment (AA)' of any plan or project not directly connected with or necessary to the management of a European site but likely to have a significant effect thereon, either individually or in combination with other plans or projects. This requirement has been transposed into UK law through 'The Conservation of Habitats and Species Regulations 2010' (as amended), referred to in this Scoping Report as the 'Habitats Regulations'.

2.3.3 An AA carried out by the Secretary of State for inclusion of Sizewell C in the NPS found that potential significant adverse effects on certain European sites could not, at that stage, be ruled out. It was noted that a project-specific AA would need to be carried out. This NPS AA will be used by EDF Energy as a basis to agree an 'Evidence Plan' for Sizewell C with Natural England and other relevant stakeholders. This new voluntary process is designed to agree upfront the evidence needed for project-specific AA that will need to be undertaken in the context of the DCO application and applications for environmental permits.

b) Flood Risk Assessment

2.3.4 A Flood Risk Assessment (FRA) will be undertaken and will form part of the application for development consent. In accordance with the National Planning Policy Framework (NPPF), the FRA will assess the flood risk both to and from the proposed development and demonstrate how that flood risk, from all sources, will be managed over the lifetime of the site, taking into account the effects of climate change, including sea-level rise. Decommissioning would be the subject of a separate FRA.

2.3.5 In accordance with the NPPF, the FRA will consider potential sources of flooding from: fluvial; coastal; groundwater; surface water resulting from intense rainfall (pluvial) events; sewers (also resulting from intense pluvial events); and non-natural water bodies (i.e. canals and reservoirs), either from individual or multiple sources. The FRA will also take account of any future geomorphological change, including the potential for increased flooding risk due to coastal erosion.

c) Water Framework Directive

2.3.6 The EU Water Framework Directive (WFD) (2000) was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. Two 'daughter' directives, one aimed at protecting groundwater, the second aimed at reducing pollution of surface water (rivers, lakes, estuaries and coastal waters) by pollutants on a list of priority substances, have been adopted at European level. The requirements of the WFD

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will be taken into account in the planning of all new activities that may impact on the water environment.

- 2.3.7 To meet the requirements of the WFD, the competent authority (the Environment Agency) has set Environmental Objectives for each water body. A default objective in all water bodies will be to prevent deterioration in either the 'Ecological Status' (for natural water bodies) or the 'Ecological Potential' (for heavily modified or artificial water bodies). A WFD Compliance Assessment for the proposed development will be prepared in consultation with the Environment Agency and appended to the ES in order to ensure that it meets the requirements of this directive.

d) Transport Assessment

- 2.3.8 The DCO application for Sizewell C will be accompanied by a Transport Assessment (TA). This will include assessments of the construction and operational phases, with particular focus on the construction phase as this would have a greater traffic impact than the operational phase.
- 2.3.9 The TA will assess the impact of the Sizewell C Project on road and network capacity, the operation of junctions and journey times both locally, and where necessary, in the wider context, taking account of the transport strategy adopted for the Sizewell C Project and the proposed mitigation. The TA and the associated traffic modelling which supports the assessment will form the basis of the transport chapter included within the ES, as well as supporting other chapters such as noise and air quality, which are dependent on information such as traffic figures. The transport section of this EIA Scoping Report summarises the approach to the TA and traffic modelling being adopted and the status of discussions with the local highway authority (Suffolk County Council).

e) Health Impact Assessment

- 2.3.10 Health Impact Assessment (HIA) is a multidisciplinary process which considers air quality, noise, transport and socio-economics, as well as more intangible elements important to good health and well-being. It is designed to identify and assess the potential health outcomes (both adverse and beneficial) of a project and to deliver evidence-based recommendations that reduce or remove potential adverse impacts on health and well-being.
- 2.3.11 The NPS for Nuclear Power Generation (EN-6) identifies Human Health as a potential 'Nuclear Impact' which decision-makers must consider (paragraph 3.12.7).
- 2.3.12 Although not a formal regulatory requirement of the UK planning process for NSIPs, EDF Energy has voluntarily commissioned an HIA which will be undertaken in consultation with the relevant bodies to demonstrate how the requirement to consult and assess impacts has been addressed. The HIA that will be submitted in support of the application for development consent will identify any significant impacts on health.

f) Community and Equalities

- 2.3.13 The socio-economic assessment in the ES will cover community impacts and equalities impacts, as required by Section 5.12 of EN1 and Section 3.11 of the Nuclear NPS. This will include a description of the spatial impact of the Sizewell C

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Project on communities within the area, as well as other environmental impacts on human receptors, as relevant.

g) Sustainability Strategy and Appraisal

- 2.3.14 EDF Energy believes that the sustainability of nuclear new build is founded on its attributes of low carbon emissions, secure electricity supply, and stable, affordable prices once nuclear stations are constructed. Building on these inherent benefits, EDF Energy will apply a strategy to enhance the sustainable delivery of Sizewell C, as appropriate, exploiting opportunities available in design, procurement and construction.
- 2.3.15 An appraisal will form part of the application for development consent, which will have regard to:
- the Government's Appraisal of Sustainability (AoS) of the NPS for Nuclear Power Generation (EN-6) and the AoS Site Report for Sizewell;
 - relevant legislation and planning policy;
 - EDF Energy's own corporate sustainability policy;
 - best practices set by other major infrastructure projects in the UK; and
 - the views and interests of stakeholders.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Introduction

- 3.1.1 This section of the Scoping Report describes the Sizewell C proposed development. The Main Development Site is located mainly to the north of the existing Sizewell B power station and comprises the nuclear power station, access road and temporary development required for construction. An area of land to the west/south-west of Sizewell B and east of Leiston will also be required during the construction phase. In addition, land may be required permanently or temporarily for associated development, such as a Visitor Centre, accommodation campus, and park and ride facilities.
- 3.1.2 The overall development proposals are summarised in the following two sections:
- Main Development Site; and
 - off-site associated development.
- 3.1.3 Large scale projects are complex and it is not possible to define all aspects of the final project design at the time an application for development consent is made. There is always the necessity for some flexibility and, as a result, a number of options within the project design will remain under consideration until after a decision is made by the Secretary of State on the application for development consent and following further geotechnical investigations, detailed engineering design and procurement processes have taken place.
- 3.1.4 To accommodate this, the EIA is based on the established principle of the 'Design Envelope'. This approach is set out in the cases of *R v Rochdale Metropolitan Borough Council ex p Milne* (2000) and *R v Rochdale Metropolitan Borough Council ex p Tew* (1999).
- 3.1.5 PINS Advice Note Nine (2012) sets out a number of key principles that describe the level of detail that a project must provide to enable a proper assessment of potential impacts and the subsequent development of mitigation, where necessary.
- 3.1.6 The Design Envelope is determined based on project design parameters, which in turn are used to assess the maximum adverse scenarios for each receptor (the 'worst case scenario'). The worst case scenario differs from topic to topic and is based on the full range of design options which will be set out in the project description chapter of the ES.
- 3.1.7 The approach to be adopted within the assessment will be to identify the realistic worst case scenario, using the design parameters for the Project.
- 3.1.8 This approach will ensure that the EIA is based on clearly defined parameters that govern the full range of development possibilities. Therefore, the Secretary of State can be assured that the environmental impacts of the project would be no greater than those identified in the ES. This approach is consistent with the objectives of the

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EIA Directive and EIA Regulations, as well as following the guidance provided by Advice Note Nine.

3.2 Main Development Site

a) Permanent development

3.2.1 The permanent development within the Sizewell C Main Development Site would include the following key operational elements:

- two UK EPRs comprising reactor buildings and associated buildings (the 'Nuclear Island');
- turbine halls and electrical buildings (the 'Conventional Island');
- cooling water pumphouses and associated buildings;
- Operational Service Centre; and
- fuel and waste storage facilities, including interim storage for radioactive waste and spent fuel.

3.2.2 Together with:

- external plant, including storage tanks;
- internal roads;
- ancillary, office and storage facilities;
- drainage and sewerage infrastructure; and
- National Grid 400kV Substation, plus the addition of one National Grid pylon, removal of an existing pylon and associated realignment of overhead lines.

3.2.3 In addition, the permanent development would include the following elements, which would be sited away from the main station platform:

- cooling water infrastructure (including cooling water tunnels extending out to sea, intake and outfall headworks on the sea bed, and the outfall associated with a fish recovery and return system);
- access road to join the B1122 and related junction arrangements;
- a bridge connecting the power station to the new access road to the north;
- car parking, some ancillary buildings and a helipad;
- flood defence and coastal protection measures;
- a beach landing facility to receive deliveries of Abnormal Indivisible Loads (AILs) by sea throughout the power station's operational life;
- Simulator Building/Training Centre;
- options for a Visitor Centre; and
- landscaping of the areas to be restored following their use during construction.

3.2.4 The proposed operational layout has been developed to make the most efficient use of land within the constraints presented by the site itself and by those associated with

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the design of the UK EPR. The permanent development would be built at a platform height of approximately 6.4 metres (m) Above Ordnance Datum (AOD).

b) Temporary development

3.2.5 During the construction of Sizewell C, areas of land would be required temporarily in order to facilitate the construction process. The temporary land uses would include:

- construction working areas: laydown areas, workshops, storage and offices;
- temporary structures, including concrete batching plant;
- management of spoil/stockpile arrangements, including potential sourcing on-site of construction fill materials;
- temporary bridge between the power station and adjacent construction areas;
- a temporary jetty for the transport of bulk construction materials, equipment and ALLs by sea;
- options for a temporary rail route extending into the construction site (see off-site associated development in **Section 8.4**);
- works areas on the foreshore for the installation of flood defence and coastal protection measures;
- construction roads, fencing, lighting and security features;
- site access arrangements and coach, lorry and car parking; and
- a development site accommodation campus.

3.2.6 Upon completion of construction, land used temporarily would be restored once the Sizewell C power station is operational in line with a Landscape Strategy, which will be submitted as part of the application for development consent. This strategy would also cover the wider EDF Energy Estate. The landscape strategy is likely to include the creation of a mosaic of grassland, heathland, scrub and woodland involving the reinstatement, where appropriate, of existing fields.

3.2.7 **Figure 3.2.1** illustrates the areas for construction and operation on the Main Development Site, including the accommodation campus site.

3.3 Off-site associated development

3.3.1 To support the construction and/or operation of Sizewell C, EDF Energy would also need to use additional land for associated development. Since Stage 1 consultation EDF Energy has progressed in its consideration of the potential off-site associated development sites and, where a lead option has been identified, these are considered in **Section 8**. The lead sites are the likely, but not definite, associated development sites that EDF Energy has identified for further consultation and which are being taken forward for further assessment. For off-site associated development where a lead site has not been identified, all options have been considered and will be taken forward for further assessment.

3.3.2 The off-site associated development currently proposed includes:

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- two temporary park and ride sites; one to the north of Sizewell C and one to the south. EDF Energy's lead options are a site at Darsham for the northern park and ride (see **Figure 8.2.1**) and a site at Wickham Market for the southern park and ride (additional land has been identified at Wickham Market since Stage 1 consultation, pending the outcome of archaeological assessments to confirm the site can be taken forward – see **Figure 8.3.1**). In addition, a postal consolidation facility and construction induction centre may be located at one of the park and ride sites; and
- a temporary extension of the existing Saxmundham to Leiston railway line into the construction site (two potential routes are being considered; green or blue) or a new rail terminal and freight laydown area north of King George's Avenue, Leiston (see **Figure 8.4.1**).

3.3.3 EDF Energy is progressing design work on the rail route options both within and outside the construction area of the Main Development Site. This includes consideration of how any affected areas of the highway network would be crossed, which in turn has implications for the precise horizontal and vertical alignment adopted and the associated land take. In addition to the land required for the rail route itself there is likely to be some requirement for storage of surplus earthworks adjacent to the routes in some locations – again the precise extent and location of these is subject to further work. EDF Energy will publish more detailed rail proposals as part of the Stage 2 consultation.

3.3.4 EDF Energy has also considered the need for permanent improvements to the A12 as a result of the Sizewell C-generated traffic. Preliminary findings are that traffic associated with Sizewell C could increase the potential for congestion and exacerbate safety concerns associated with the narrow bend at Farnham and that mitigation measures may be justified in this area. The Stage 1 consultation identified three possible solutions:

- a Farnham bypass;
- road widening at Farnham Bend; and
- HGV traffic controls at Farnham Bend.

3.3.5 These options, shown on **Figure 8.5.1**, are subject to ongoing assessment which will inform EDF Energy's position on road improvements at Stage 2 consultation. Further work is being undertaken on these options, including establishing a precise alignment for the bypass option in more detail along with any associated junction arrangements for connecting the bypass to the A12. Such work will establish more precisely the permanent land take and the land required during construction. EIA work will reflect any evolution in the design and alignment going forward.

3.3.6 The final potential off-site associated development is the proposed Visitor Centre. It is envisaged that the Visitor Centre would be a joint facility with Sizewell B, replacing the current Visitor Centre associated with the existing station. EDF Energy has developed its siting options for the Visitor Centre since Stage 1 and potential options being considered are:

- a site at Coronation Wood which could be used to serve both construction and operational phases of the proposed development; and

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- a two-phased siting approach involving the temporary use of land either east of Leiston or within Leiston town (for the construction phase only) and a site at Goose Hill (within the Main Development Site construction area for the operational phase) which would be constructed after completion of construction of the power station (see **Figure 8.6.1**).

3.3.7 It is likely that the construction of the off-site associated development will be undertaken as part of the early works of the construction phase. Following cessation of use, these facilities would be removed (with the exception of the highway improvements).

3.4 Construction phase

3.4.1 In order to prepare the Sizewell C site for development, some works would need to take place before construction of the power station commences. These works would include relocation of some buildings and activities north of the Sizewell B power station to make space for the new power station. Areas being considered for relocation of these buildings and activities include the Sizewell B power station site and part of Coronation Wood.

3.4.2 Construction work would commence with site clearance and preparation. The works would include: construction of a new access road into the site from the B1122; establishment of temporary construction areas; permanent and temporary bridges linking these to the main platform on which the power station would be built; construction of a jetty; and commencement of earthworks including platform development, construction of a cut-off wall, deep excavations, stockpiling and grading of materials prior to re-use and backfilling.

3.4.3 Prior to the jetty becoming operational and the construction of any temporary extension of the Saxmundham-Leiston branch line into the construction site (or new railhead north of King George's Avenue in Leiston), construction materials could be delivered and exported either by rail via the existing railhead in Leiston or by road.

3.4.4 Small-scale refurbishment of the existing railhead is likely to be required to facilitate rail deliveries prior to the completion of any additional rail development.

3.4.5 The construction of the power station would involve the excavation of large amounts of spoil comprising soil, made ground, peat, alluvium and Crag sand to reach the foundation depths for the buildings and structures within the Main Development Site. EDF Energy will develop a Materials Management Plan (MMP) to re-use as much of this spoil as possible on-site, subject to the material being suitable for the intended use and the activity not causing harm to the environment or human health. An additional source of engineering fill would be required to raise the level of the Main Development Site platform to 6.4m AOD. This extra material would either be won from within the temporary construction area, or sourced from off-site. The excavated peat and alluvium may either be retained on-site to help balance the earthworks, or could be used within a new nature reserve currently being created at Wallasea Island in Essex, in which case it would be transported there by barge via the jetty.

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- 3.4.6 The main construction phase would include the erection of the key buildings and ancillary facilities and the installation of the mechanical and electrical plant.
- 3.4.7 Following site preparation, it is anticipated that main construction of the proposed development would take seven to nine years. At peak, EDF Energy would expect the construction workforce to comprise about 5,600 people. Following construction the land used temporarily would be landscaped in line with the wider landscape strategy.

3.5 Operational phase

- 3.5.1 The Sizewell C power station would have a design life of 60 years. The electrical capacity of the nuclear power station would be approximately 1,630 megawatts (MW) per unit, giving a total site capacity of 3,260MW. During operation, it is expected that approximately 900 staff would be employed. Approximately 1,000 additional staff would be employed during planned refuelling and maintenance outages which take place approximately every 18 months for each UK EPR reactor unit and last typically between one and three months.

3.6 Decommissioning

a) Sizewell C site

- 3.6.1 At the end of electricity generation at Sizewell C the site would be decommissioned. The process of decommissioning would be divided into a number of activities leading to the clearance and de-licensing of the site and ultimately its release for re-use.
- 3.6.2 The UK EPR has been designed with decommissioning in mind, enabling radioactive waste quantities to be limited when decommissioning takes place.
- 3.6.3 The decommissioning strategy to be employed for Sizewell C would be “early site clearance”. Decommissioning would begin as soon as practicable after the end of electricity generation at the site. The decommissioning of Sizewell C, with the exception of the Interim Spent Fuel Store (ISFS), could be achieved within approximately 20 years of the end of generation.
- 3.6.4 The ISFS would continue to operate until a UK Geological Disposal Facility is available and the spent fuel is ready for disposal.
- 3.6.5 The decommissioning chapter of the Sizewell C ES would include a high level environmental assessment of decommissioning, which would identify and summarise the types of environmental impacts anticipated to occur during decommissioning. Before decommissioning could take place, EDF Energy would need to obtain separate consent from the ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended). This requires the submission of an ES following an EIA and a period of public consultation.

3.7 Conventional waste management

- 3.7.1 The following objectives have been developed for the management of conventional waste at Sizewell C, during both the construction and operational phases:

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- prevent and reduce the volumes of waste produced through the application of the waste hierarchy;
- maximise re-use and recycling within the wider development; and
- minimise the impact upon the existing waste management infrastructure.

3.7.2 All waste arisings would be managed in a responsible manner throughout all phases of the development, with a clear intention to prevent and reduce waste streams in accordance with applicable legislation, policy and guidance.

3.7.3 EDF Energy will undertake an assessment to determine the potential impact of conventional waste arisings associated with the construction and operation of Sizewell C. This will include the construction and operation of the Sizewell C Main Development Site, as well as the construction, operation and, as far as reasonably practicable, the post-operation phase of the off-site associated development sites.

3.7.4 The waste assessment will aim to:

- identify the main waste streams and predicted volumes likely to arise from the construction, operation and post-operation phases of the Sizewell C Project;
- identify any potential impacts upon existing waste infrastructure;
- identify measures that would be implemented to prevent and minimise waste generation; and
- provide the basis upon which to develop a conventional waste strategy for the Sizewell C Project.

3.8 Spent fuel and radioactive waste management

3.8.1 EDF Energy would ensure that the management of spent fuel and radioactive waste generated at Sizewell C protects both people and the environment and is consistent with UK policy and legislation.

3.8.2 The UK EPR design generates less spent fuel than other nuclear reactors in the UK per unit of electricity generated. It optimises fuel use which, when coupled with fuel design and manufacture, ensures that less spent fuel is created.

3.8.3 Spent fuel removed from the reactor would initially be stored underwater in a reactor fuel pool. Following this initial storage period, the spent fuel assemblies would be transferred to the separate on-site ISFS where they would be safely stored until a UK Geological Disposal Facility is available and the spent fuel is removed for final disposal.

3.8.4 The ISFS would be designed for a life of at least 100 years, which could be extended if necessary. The ISFS would be designed to be capable of operating independently of other parts of the power station in recognition that its lifetime would, under current assumptions, extend beyond the operational life and decommissioning of the other facilities on-site.

3.8.5 The design of the UK EPR planned for Sizewell C includes a number of measures aimed at limiting the amount of radioactive waste generated. Radioactive waste

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generated at Sizewell C would fall into two categories – Low Level Waste (LLW) or Intermediate Level Waste (ILW).

- 3.8.6 LLW would be disposed of as soon as reasonably practicable, following treatment to limit its volume and then appropriate conditioning or packaging to allow its safe transport and disposal.
- 3.8.7 ILW would be conditioned and packaged on-site throughout the operational phase. The packages would be safely stored in the ILW Interim Storage Facility until a UK Geological Disposal Facility is available to accept waste from Sizewell C for disposal.
- 3.8.8 As with the ISFS, it would be possible to extend the life of the ILW Interim Storage Facility.

4. CONSIDERATION OF ALTERNATIVES

4.1 Introduction

- 4.1.1 Schedule 4 of the EIA Regulations states that an ES should include *'an outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.'*
- 4.1.2 As part of the Overarching NPS for Energy (EN-1) and the NPS for Nuclear Power Generation (EN-6) the Government has set out the need for all types of energy NSIPs, including new nuclear power stations. As the Government has established this need, alternative options to nuclear power generation will not be considered as part of this EIA.
- 4.1.3 The Government has assessed all of the sites listed in the NPS EN-6, including the Sizewell C site, as part of a SSA. All of the sites listed are considered to be suitable for the deployment of a new nuclear power station by the end of 2025. Given that the Sizewell C proposed development site meets the SSA criteria and is identified in NPS EN-6 as potentially suitable for new nuclear development, no alternative sites for the proposed Sizewell C nuclear power station will be considered as part of this EIA. However, it will focus on the principal site-specific and design alternatives.
- 4.1.4 There are legal requirements to consider alternatives in some circumstances, for example under the Habitats Directive. The ES will outline the main alternatives studied by EDF Energy and detail the principal reasons for the applicant's choice, taking into account the environmental, social and economic effects.
- 4.1.5 In addition, it is good practice to consider the 'no development' alternative; this refers to the option of leaving the proposed development site in its current state. The ES will consider and provide a summary of the 'no development' alternative in the context of the development need.

4.2 New nuclear power station at Sizewell

- 4.2.1 Sizewell B was designed and developed with an expectation that a further nuclear power station would be constructed adjacent to the site on the northern boundary. This is also reflected in the previous proposals for a power station at the site (prepared in the 1990s). The ES will review the potential alternative layouts of the new nuclear power station, particularly for the land required during construction.
- 4.2.2 The UK EPR reactor developed by AREVA and EDF Energy is proposed for Sizewell C. This reactor has completed the UK's GDA process with the award of a Design Acceptance Confirmation (DAC) from the ONR and a Statement of Design Acceptability (SoDA) from the Environment Agency. Therefore, no alternative designs for the nuclear reactor will be considered.

4.3 On-site associated infrastructure

- 4.3.1 The design of the on-site associated infrastructure is developing and a number of options are being explored in order to reach the best design solution. The ES will

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describe this process and refer to the options considered for associated infrastructure and why they were discounted.

4.3.2 Key alternative design options for the on-site associated infrastructure include consideration of:

- masterplan design concepts and layout of the Main Development Site;
- landscaping;
- sea defences along the eastern edge of the site;
- length, location and design of the cooling water intakes and outfall structures;
- transmission infrastructure;
- length, structure and location of a beach landing facility;
- length, structure and location of a temporary jetty;
- on-site interim storage of spent fuel;
- access road alignment and design of the bridges;
- drainage strategies; and
- the location of temporary construction areas.

4.4 Off-site associated development

4.4.1 As detailed in **Section 3.3**, off-site associated development would be required to support the construction and/or operation of the Sizewell C nuclear power station development.

4.4.2 EDF Energy is undertaking a robust process to identify potential suitable sites for associated development and then to consider their advantages and disadvantages in terms of their location, size, operational and technical requirements, as well as planning and environmental considerations. EDF Energy's initial proposals on the options for each type of associated development were presented at Stage 1 consultation.

4.4.3 Since Stage 1, EDF Energy has progressed in its consideration of the potential off-site associated development sites. The feedback from Stage 1 consultation has been considered alongside further environmental assessment of the site options and informal consultation with stakeholders. For a number of the off-site associated development categories, EDF Energy has now selected the 'lead' site and 'reserve' site(s). Lead sites are the likely, but not definite, associated development sites that EDF Energy has identified for further consultation and which are being taken forward for further assessment. The lead sites are presented in **Section 8**.

4.4.4 The reserve site(s) would only be progressed should the relevant lead site be unable to progress and is discontinued. Currently EDF Energy does not anticipate the need to further consider the reserve site(s) further.

4.4.5 Where EDF Energy has not yet decided upon a lead site all options continue to be considered. These sites are therefore presented in **Section 8**. Fixed options and

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locations will be determined following further environmental assessment and consultation on each site.

- 4.4.6 A possible need for a temporary freight management facility was identified at Stage 1 consultation, in order help control traffic flows in and out of the Main Development Site and provide somewhere to hold vehicles temporarily, for example, if there is an incident on the highway network. However, EDF Energy anticipates that HGV movements to site could potentially be managed through the use of electronic and camera based systems to manage, monitor and control movements to approved routes and within agreed limits. This could reduce the requirement for additional associated development sites and, therefore, the sites identified have not been considered further.
- 4.4.7 EDF Energy will report on its consideration of the off-site associated development site options in the ES.

5. APPROACH TO THE EIA

5.1 General assessment approach

- 5.1.1 Establishing the scope of the assessment in a rigorous and transparent manner is a key step in the assessment process; and consultation is an essential element of this process. Therefore, this EIA scoping report has been prepared to provide stakeholders with sufficient information to form an opinion over the adequacy of the proposed scope of assessment and to ensure that issues potentially giving rise to 'likely significant effects' will be addressed by the EIA.
- 5.1.2 Schedule 4 of the EIA Regulations requires the ES to include a description of the '*likely significant effects of the development on the environment. This should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development*', as well as a description of the forecasting methods used to assess the effects on the environment. Schedule 4 also identifies a number of aspects of the environment that should be considered, namely '*population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors*'. A proposal of how these aspects will be considered and assessed in the EIA is included in the following sections.
- 5.1.3 Issues that are scoped into the EIA are judged likely, without effective mitigation, to have the potential to cause significant effects. Issues that are scoped out of the EIA are those which it is considered are not likely to lead to significant effects, regardless of mitigation. Where insufficient information is available in relation to a particular issue to make a reasonable judgement at this stage, a precautionary approach is adopted and that issue is scoped in. The decision to scope out issues is based upon factors such as a high degree of development-receptor separation, the lack of impact pathways or the known low value or low sensitivity of impacted resources/receptors. The case to scope out topics, or particular aspects of topics, will be clearly made and supported by appropriate evidence.
- 5.1.4 It is not anticipated that it will be possible to scope out any aspects of the assessment for the Main Development Site, although there is potential to do so for each of the off-site associated developments. However, as the assessment proceeds, topics will be reviewed and their potential significance may be re-evaluated in response to additional information or changes to the project definition.

5.2 Determination of the scope

a) Spatial scope

- 5.2.1 Clear definition of the study area for the EIA is a key part of the process. The geographical extent of the study area varies depending on the environmental topic and specific receptors under consideration for that topic. For each topic the study area is of sufficient size to encompass the spatial extent over which impacts relevant to that topic and the related receptors might operate.

b) Temporal scope

- 5.2.2 The assessment will have regard to the project programme and will evaluate the environmental effects of the proposed development at the key stages of construction and operation. These are, where appropriate, then compared to the situation prevailing before the Project is commenced (i.e. the current baseline), and to the situation that would prevail in the future without the proposed development (i.e. the projected future baseline).
- 5.2.3 Each environmental topic chapter of the ES will define the baseline against which the environmental effects of the proposed development will be assessed. The baseline conditions to be assessed for each topic are outlined in the relevant section of this report.
- 5.2.4 Future assessment years that will be considered for the Main Site (i.e. Sizewell C) include:
- future baseline in the absence of development;
 - construction; and
 - operation.
- 5.2.5 The future baseline is the theoretical situation that would exist in the absence of the development. It is typically based upon extrapolating the current baseline using technical knowledge of changes to predict this (e.g. habitat change over time, traffic and waste growth over time, etc). It will likely cover the first year of operation.
- 5.2.6 The decommissioning chapter of the ES would include a high level environmental assessment of decommissioning. Regardless of this, the decommissioning of Sizewell C would be subject to an EIA under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) at the point of end of generation.
- 5.2.7 Future assessment years that will be considered for the off-site associated development include:
- future baseline in the absence of development;
 - construction of the off-site associated development;
 - operation of the off-site associated development; and
 - post-operation of the off-site associated development.

5.3 Assessment of effects and determining significance

- 5.3.1 It should be noted that in the context of this assessment and the general methodology utilised, the terms *'impact'* and *'effect'* are distinctly different. The EIA Regulations state that an assessment of project environmental impacts is required; however, the impacts of the proposed development may or may not result in significant effects on the environment. It is an assessment of effects that is required by Schedule 4 of the EIA Regulations.
- 5.3.2 For consistency, and in an attempt to allow comparison between topics, the methodology described in this section will be applied where appropriate. The

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methodology followed by most environmental topics is designed to consider whether impacts of the proposed development would have an effect on any resources or receptors. Assessments broadly consider the magnitude of impacts and sensitivity of resources/receptors that could be affected in order to classify effects according to the categories shown in **Table 5.3** and **Table 5.4**.

5.3.3 For each topic area of assessment which fully or in part utilises the methodology, the categories of resource/receptor sensitivity and magnitude of impact will be appropriately described and defined. The following sections provide the generic criteria for the definition of resource/receptor sensitivity, impact magnitude and scale of effect. Each environmental topic area will provide greater detail on the approach to the assessment and specific guidelines for the definition of impact magnitude and resource/receptor sensitivity. Environmental topics will broadly follow the approach set out in the following sections and any deviations from this approach are explained and justified where appropriate.

a) Receptor sensitivity

5.3.4 **Table 5.1** sets out the generic guidelines for the assessment of sensitivity. Where appropriate, relevant guidelines are provided for each environmental topic.

Table 5.1: Generic guidelines for the assessment of sensitivity

Value/ sensitivity	Guidelines
High	<p>Value: Feature/receptor possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site/receptor (e.g. designated features of international/national importance, such as World Heritage Sites, Areas of Outstanding Natural Beauty (AONB), Special Areas of Conservation (SACs), Special Protection Area (SPAs), Ramsar sites, Sites of Special Scientific Interest (SSSIs), Scheduled Ancient Monuments, Air Quality Management Areas, Grade I and Grade II* Listed Buildings.</p> <p>Sensitivity: Feature/receptor has a very low capacity to accommodate the proposed form of change.</p>
Medium	<p>Value: Feature/receptor possesses key characteristics which contribute significantly to the distinctiveness and character of the site/receptor (e.g. designated features of regional or county importance, such as County Wildlife Sites (CWSs), Local BAP, Conservation Areas, Grade II Listed Buildings, Heritage Coast and Special Landscape Areas etc.)</p> <p>Sensitivity: Feature/receptor has a low capacity to accommodate the proposed form of change.</p>
Low	<p>Value: Feature/receptor only possesses characteristics which are locally significant. Feature/receptor not designated or only designated at a district or local level (e.g. local nature reserve, locally Listed Buildings).</p> <p>Sensitivity: Feature/receptor has some tolerance to accommodate the proposed change.</p>
Very Low	<p>Value: Feature/receptor characteristics do not make a significant contribution to local character or distinctiveness. Feature/receptor not designated.</p> <p>Sensitivity: Feature/receptor is generally tolerant and can accommodate the proposed change.</p>

b) Magnitude

5.3.5 **Table 5.2** sets out the generic guidelines for the assessment of magnitude. Where appropriate, relevant guidelines are provided for each environmental topic.

Table 5.2: Generic guidelines for the assessment of magnitude

Magnitude	Guidelines
High	Large-scale, permanent/irreversible changes, over the whole development area and potentially beyond (i.e. off-site), to key characteristics or features of the particular environmental aspect's character or distinctiveness. Impact certain or likely to occur.
Medium	Medium-scale, permanent/irreversible changes, over the majority of the development area and potentially beyond, to key characteristics or features of the particular environmental aspect's character or distinctiveness. Impact certain or likely to occur.
Low	Noticeable but small-scale change, permanent or temporary changes over a partial area, to key characteristics or features of the particular environmental aspect's character or distinctiveness. Impact would possibly occur.
Very Low	Noticeable, but very small-scale change, or barely discernible changes for any length of time, over a small area, to key characteristics or features of the particular environmental aspect's character or distinctiveness. Impact unlikely or rarely to occur.

c) Significance

5.3.6 **Table 5.3** details the matrix used for the classification of effects and **Table 5.4** sets out the generic definitions of effect. Where appropriate, relevant guidelines are provided for each environmental topic.

Table 5.3: Classification of effects

Magnitude	Value and sensitivity of receptor			
	Very Low	Low	Medium	High
Very low	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	Moderate
Medium	Minor	Minor	Moderate	Major
High	Minor	Moderate	Major	Major

Table 5.4: Generic effect definitions

Effect	Description
Major	Very large or large change in environmental or socio-economic conditions. Effects, both adverse and beneficial, which are likely to be important considerations at a national to regional level because they contribute to achieving national/regional objectives, or, which are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in environmental or socio-economic conditions. Effects that are likely to be important considerations at a regional and local level.
Minor	Small change in environmental or socio-economic conditions. These effects may be raised as local issues but are unlikely to be of importance in the decision making process.
Negligible	No discernible change in environmental or socio-economic conditions. An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

5.3.7 Following the classification of an effect using this methodology, a clear statement is then made as to whether that effect would be 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant (as detailed by the colour coding in **Table 5.3**). However, professional judgement can also be applied where necessary, including taking account of whether the effect is permanent or temporary.

5.4 Mitigation and residual effects

5.4.1 The ES will include a description of the measures envisaged to prevent, reduce and, where relevant, offset any significant adverse effects. The approach adopted for the proposed development will take the form of a hierarchy, whereby priority is given to preventing effects, and then (if this was not possible) to reducing or abating them followed, if necessary, through repair (restoring or reinstating) or compensation. Each of these means of reducing potentially significant effects falls under the broad heading of 'mitigation'.

5.4.2 Mitigation opportunities will be identified throughout the evolution of the proposed development and the EIA process, whereby significant adverse effects will be fed back into the design process to verify whether they can be avoided or otherwise mitigated in accordance with the hierarchy.

5.4.3 It would be possible to incorporate some mitigation measures into the scheme design, and the proposed development would respond to key environmental considerations. These measures will be included within the proposed development plans and drawings and are therefore referred to as 'embedded' or 'incorporated' mitigation. In addition to the mitigation that will be developed to address specific local issues, mitigation will be applied to the proposed development as a whole to avoid impacts at source wherever practicable.

5.4.4 Where other mitigation is required to reduce or eliminate a significant effect, this will be referred to as 'additional mitigation'. These will generally be measures which have not been incorporated in the design of the proposed development, and will not appear on any development plans.

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5.4.5 The ES will report on the anticipated effects of the proposed development following the implementation of mitigation measures, which are known as ‘residual effects’. A clear statement will be made as to whether the residual effects are significant or not significant. It should be reiterated that not all such effects will be adverse and some will be beneficial.

5.5 Inter-relationships and cumulative effects

5.5.1 As required by the EIA Regulations, the assessment will also have regard to cumulative effects. Whilst the technical chapters will address the environmental effects for each environmental discipline, the ES will also consider:

- ‘inter-relationships’ that occur between the individual environmental effects of the proposed development and have the potential to combine together with one another on resources/receptors and lead to significant effects; and
- ‘cumulative effects’ that arise as a result of the proposed development in combination with other large scale developments and/or projects in the vicinity of the site.

5.5.2 Inter-relationships will be considered within the environmental topic chapters of the ES or will be summarised in the inter-relationships and cumulative effects volume of the ES.

5.5.3 The assessment of cumulative effects will consider other relevant major developments and/or projects on the basis of those that are either:

- under construction;
- permitted application(s), but not yet implemented;
- submitted application(s), not yet determined;
- identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited; and
- identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.5.4 The assessment will include consideration of developments and projects in the surrounding area with the potential to result in cumulative effects (e.g. the Galloper Wind Farm project, a proposed offshore wind generating station and its associated electrical connection).

5.5.5 To inform the assessment of cumulative effects, the maximum geographical area around the Main Development Site and the off-site associated development sites where there is potential for impacts to occur will be identified through the derivation of a Zone of Influence (ZOI) for each environmental topic area.

5.6 Transboundary effects

5.6.1 Under Regulation 24 of the EIA Regulations and the Espoo Convention and EU Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private

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Projects on the Environment (codification) (the EIA Directive), the Planning Inspectorate is obliged to form a view on the potential for transboundary impacts and consult with relevant European Member States.

5.6.2 The EIA Directive implemented new requirements on transboundary consultation and requires that all significant transboundary issues set out in the EIA Directive be assessed through the EIA process. The Planning Inspectorate's Advice Note 12 (April 2012) provides further information on the requirements, and sets out how the Planning Inspectorate will meet its obligations in this regard. A wide range of activities are listed in Annexe 1 of the Espoo Convention, which includes thermal power stations with a heat output of 300MW and all nuclear power stations. As such, it is necessary to consider whether the proposed development is likely to have a significant transboundary effect.

5.6.3 EDF Energy will consider whether there is any potential for significant effects on the environment in other European Economic Area (EEA) states by completion of a transboundary screening matrix (as detailed in the Planning Inspectorate Advice Note 12).

5.7 EIA assumptions and limitations

5.7.1 Assumptions specific to each topic specific assessment are detailed in the relevant sections of this report.

5.7.2 It is anticipated that the EIA would be subject to limitations, including:

- baseline conditions (in relation to the existing site) are specific to each technical aspect of the EIA and are considered to be accurate at the time of the physical surveys but, due to the dynamic nature of the environment, conditions may change during the different stages of the Sizewell C Project; and
- the assessment of cumulative impacts would be reliant on the availability of information relating to all of the identified cumulative schemes (whether submitted for planning, consented or under construction).

6. EIA – PROJECT-WIDE CONSIDERATIONS

6.1 Introduction

6.1.1 EDF Energy has undertaken a range of socio-economic and transport studies which have informed, and continue to inform, the development proposals and transport strategy. Given the way in which these studies have influenced the proposed development, and the strategic nature of these topics, it has been decided to address socio-economics and transport on a project-wide basis for the purposes of EIA Scoping.

6.2 Socio-economics

a) Introduction

6.2.1 This section details the approach to assessing socio-economic effects of the proposed development. The assessment will consider the potential employment, economic, population, accommodation and demographic effects at a project-wide scale, as the nature of both effects (for example, employment growth) and receptors (for example, the economy/labour market) for socio-economics are not limited to site-specific features.

b) Work undertaken to date

6.2.2 Work has been undertaken in developing an initial Gravity Model, workforce profile and worker distribution assumptions. Additionally, baseline studies have been undertaken which draw on extensive work on the socio-economic impacts of many of the UK’s nuclear power stations, including an eight-year longitudinal study monitoring the socio-economic impacts of building Sizewell B, socio-economic studies for the proposed Hinkley Point C nuclear power station in the late 1980s, and studies on the decommissioning of Hinkley Point A. Studies of the local socio-economic impacts of the early years of the construction stage of the EDF EPR project at Flamanville 3 provide some current comparative experience (Impact Assessment Unit, Oxford Institute for Sustainable Development, Oxford Brookes University, 2011).

6.2.3 **Table 6.2.1** outlines the socio-economic technical work undertaken so far.

Table 6.2.1: Work undertaken to date

Study	Scope of Study
Research – construction and energy sectors in East of England	Research into average commuting profile and demographic factors of construction workforce in the UK, including major project effects and subsequent socio-economic effects encountered.
Study of labour market within Construction Daily Commuting Zone	Baseline studies into current economic activity, size and profile of existing labour market.
Stage 1 baseline and definition of approach / spatial effects in respect of:	Work to feed in to the establishment of datasets and assumptions to model the expected spatial distribution of the construction workforce.

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Study	Scope of Study
a) Workforce Profile; b) Gravity Model; c) Accommodation.	Includes: a) Baseline study of accommodation supply and availability; b) Development of skills profile and workforce temporal requirements; c) Development of distribution assumptions and constraints.

c) Approach and methodology

i. Legislation, policy and guidance

6.2.4 There is no UK legislation that specifies the detailed content required for socio-economic assessments or provides appropriate standards and thresholds for significance of effects. However, there are a number of guidelines of relevance to socio-economic assessment in the context of an EIA. Additionally, the National Planning Policy Framework (NPPF), the Overarching NPS for Energy (EN-1) and Nuclear Power Generation (EN-6) include policy in relation to consideration of socio-economic effects.

ii. Study areas

6.2.5 The spatial extent of the study area will include the Main Development Site, all off-site associated development sites and the surrounding area as well as administrative geography defined by each socio-economic topic. The precise areas used will be partly influenced by data availability and in some cases also reflect the boundaries of relevant service planning areas, e.g. for school or health facilities. The spatial/geographic scope of the socio-economic baseline studies varies by impact category:

Administrative areas

6.2.6 In terms of socio-economic baseline data, the study area is based on areas of administrative geography including national (England and Wales), regional (East), County (Suffolk, Norfolk and Essex) and local authority/district (Suffolk Coastal, Waveney, Mid Suffolk, Ipswich). These will form the basis of the assessment of impacts on the local labour market (wider economic impacts), housing market and public services.

Construction workforce spatial distribution areas

6.2.7 Some analysis will be conducted on a ward-based approach, based on areas derived from the initial Gravity Model. This broadly includes inputs from the socio-economic assessments on the workforce profile, skills profile of the resident workforce, and accommodation location and availability. It then, based on travel times, allocates the workforce across the area.

- **60-minute travel time:** representing the estimated extent of daily travel to the construction site by non-home-based workers, by ward. A sub-set of ward clusters will likely be defined to identify impacts of non-home-based construction workers

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on local population, employment dynamics and public services at a local scale (e.g. Leiston). This area will cover Suffolk Coastal and parts of Mid Suffolk, Waveney and Ipswich.

- **Construction Daily Commuting Zone (CDCZ):** Primarily used to define the home-based labour market, based on research into the mobility of UK construction workers. This will be, for the majority of home-based workers, up to 90 minutes (with an allowance for a very small proportion of workers travelling longer distances). The CDCZ will therefore cover all of Suffolk, much of Norfolk and north Essex.

iii. Baseline information

- 6.2.8 Data on the local socio-economic baseline is derived mainly from published information from public sources, including the Office of National Statistics (ONS) (e.g. Census, Annual Business Inquiry, Annual Population Survey, sub-national population projections), Department for Communities and Local Government (DCLG) and other public bodies at the national, regional and local scales.

Population/Demography

- 6.2.9 The combined working-age (16-64) population of Suffolk Coastal, Waveney and Ipswich and Mid-Suffolk is 288,474 (Census, 2011), having increased by 10.7% since 2001. Latest sub-national population projections produced by ONS forecast a growth of around 16,300 working age people in this area from 2011-2021 (4.8% increase).

Employment and Labour Market

- 6.2.10 There are approximately 1.22 million working age people living in the indicative CDCZ², with an employment rate of 62%.
- 6.2.11 Based on latest economic forecasts, total employment across this area is projected to increase from 806,300 in 2011 to 878,100³ in 2021. The size of the labour market is about 200,000 greater than when Sizewell B was built, and is broadly comparable to that at Hinkley Point C.
- 6.2.12 Approximately 2.6% (36,000) of the working age population living in this area is currently seeking work (job-seekers allowance (JSA) claimant count Jan 2014), of which more than a quarter (around 9,765) is looking for work in occupations relevant to the proposed development.

Accommodation

- 6.2.13 Initial research has started into the availability and affordability of accommodation within 60 minutes of the Main Development Site, drawing on a number of sources including publicly available datasets (Census 2011), information managed on behalf

² Based on a selection of Local Authorities (Babergh, Breckland, Broadland, Colchester, Great Yarmouth, Ipswich, Mid Suffolk, North Norfolk, Norwich, South Norfolk, St Edmundsbury, Suffolk Coastal, Tendring, Waveney) as indicated by Stage 1 Gravity Model outputs (to be refined).

³ Figures show total employment (including employees and self-employed jobs). *2012 Economic Forecasts*, Oxford Economics, East of England Forecasting Model (EEFM)

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of the East of England Tourist Board and telephone surveys of accommodation providers.

Table 6.2.2: Accommodation supply within Suffolk Coastal, Mid Suffolk, Waveney and Ipswich

Tourist accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
Self-Catering Bed Spaces	2,200	400	1,400	0	4,000
Serviced Bed Spaces	1,300	800	1,200	1,000	4,300
Caravan, Holiday & Touring Park Bed Spaces	5,700	200	7,000	0	12,900
Sub Total	9,200	1,400	9,600	1,000	21,200
Private rented accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
Bedrooms	20,000	13,100	19,200	27,000	79,300
Owner occupied accommodation	Suffolk Coastal	Mid Suffolk	Waveney	Ipswich	Total
3+ Bedroom Households	30,200	23,500	25,600	25,900	105,200
TOTAL SUPPLY	59,400	38,000	54,000	53,900	205,700

Source: Census ONS 2011, East of England Tourist Accommodation Database 2011 (Rounded)

iv. Planned further survey/studies

- 6.2.14 Baseline information for the socio-economic assessment will be updated as new public datasets from the 2011 Census and other sources are released, including travel-to-work data and 'moving groups' data, which will inform the mobility of the labour force and level of underlying year-on-year change in the population respectively. These will in turn help to define sensitivity thresholds for the various assessments of impact.
- 6.2.15 A number of studies/surveys and research streams are planned, or underway, which will define the central socio-economic case to be assessed, the existing baseline conditions of socio-economic receptors, and the spatial extent of impacts, which all form part of the socio-economic assessment of the proposed development. Work will be ongoing throughout the EIA process to identify potential impacts that arise as a result of this process and to develop a suite of implementation/management/enhancement strategies.

Table 6.2.3: Planned further work

Study	Scope of study
Further accommodation studies (private-rented, tourist and latent)	This includes a survey of tourist accommodation providers to understand the extent of un-rated tourist accommodation and other price, occupancy and location factors.
Gravity Model development	Refine Gravity Model based on feedback from Gravity Model Technical Group and new datasets.
Workforce profile development	Continue to develop our understanding of the workforce profile and skills requirements, in order to build a central case for the characteristics of the construction workforce at peak.

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Study	Scope of study
Production of Technical Notes to outline the methodology, approach and in some cases set the baseline on a number of socio-economic work areas, as detailed below (to be appended to the socio-economic assessment):	
Accommodation datasets and assumptions	Defining and explaining the approach to data for accommodation sectors likely to be utilised by construction workers, feeding into the Gravity Model.
Workforce profile (project-wide and associated developments)	Description of the approach taken to estimating the skills profile, quantum and other factors of the construction workforce throughout the construction phase of the proposed development.
Spatial distribution of the workforce	Summarising the outputs of the Gravity Model; identifying the predicted temporary residential location of non-home-based workers by ward, in order to assess socio-economic impacts.
Demographic benchmarks	Identifying localised construction workforce effects on existing population, bringing together policy, research and data analysis for demographic change.
Sport and leisure audit and estimated demand	Identifying, by sub-area, the current provision of sport and leisure facilities and estimating the potential effect of the distributed construction workforce on their capacity/operation.
Work to identify an approach to address social and community issues through a number of socio-economic strategies. These strategies may be appended to the socio-economic assessment or be 'stand-alone' documents, outlining how elements of the proposed development will be implemented, managed and/or enhanced, as detailed below:	
Accommodation Strategy	Including an Accommodation Management Strategy, to identify the overall approach to managing the effects on accommodation and EDF Energy's approach.
Economic Strategy	Including an assessment of wider economic impacts, supply chain and local procurement strategies in consultation with the District and County Councils to identify and enhance the economic legacy. These will be led through consultation as suggested by the Joint Councils in their response to Stage 1 consultation.
Leisure and Tourism Strategy	In consultation with relevant authorities, identifying the approach to managing the effects of the proposed development on leisure and tourism.
Skills and Training Strategy	Including consultation with relevant stakeholders including the District and County Councils, and specifically the development of education and workforce strategies and interventions to maximise the opportunities for local residents and mitigate any disbenefits.

v. Assessment methodology

- 6.2.16 The assessment of socio-economic impacts and effects are determined by the nature of the development, the locality (baseline), and national and local policy. The socio-economic impact assessment will include a full assessment of policy including NPS (for example, EN-1 outlines details of the assessment process for socio-economic

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impacts) and other relevant national policy, and local policy as identified when undertaking the assessment, including local authority planning and regeneration strategies, housing and development policies and community strategies.

- 6.2.17 Potential socio-economic effects will be assessed for both the construction and operational phase. Effects during the construction phase are temporary, but likely to be greater due to the workforce requirements. Therefore the assessment will primarily focus on the impacts at peak construction (the phase of the workforce profile when approximately 5,600 construction workers will be employed at the proposed development, for a period of approximately two years). The assessment of effects at peak construction will be based on a 'central case' of assumptions, such as the assumed project timescale, peak workforce, skill profile, construction workforce demography, commuting patterns, and accommodation sector and spatial distribution breakdown of works, which will be informed by further engagement with public authorities. Operational phase effects will be smaller, but longer term.
- 6.2.18 A key tool for assessing the spatial scale of impacts is the development of a Gravity Model. This is being developed in consultation with Suffolk County Council (SCC), Suffolk Coastal District Council (SCDC) and Waveney District Council (WDC) to estimate the likely distribution of home-based and non-home-based construction workers at the peak of the construction phase. This is based on a number of factors, drawing on the workforce profile and including accommodation supply and availability, assumptions on travel time, split of home-based/non-home-based workforce, accommodation campus for non-home-based workers and likely split between accommodation sectors.
- 6.2.19 The Gravity Model will help to estimate the residential location of construction workers and, therefore, the level of impact on receptors such as accommodation markets, demography and public services.
- 6.2.20 Overall, an adaptive assessment process is required, using a 'plan-monitor-management' approach to reflect the dynamic nature of this environment and effects on socio-economic receptors.

Sensitivity

- 6.2.21 The main sensitive receptors for the socio-economic assessment are the housing and labour markets, public services and communities at a number of spatial levels. It is not possible to ascribe a relative 'value' to each of these receptors as impacts could be felt at all spatial scales and are as important to individuals and communities in a local area as they are at the regional scale.
- 6.2.22 There will therefore be a focus on the "sensitivity" of each receptor and, in particular, on their ability to respond to change based on recent rates of change and turnover. The socio-economic environment is a dynamic and adaptive one with constant background change and turnover, for example people moving into and out of the area and changing jobs. This is a particular feature of the construction sector.
- 6.2.23 The baseline assessment will identify the extent of this background change and then, where possible, the scale of likely impacts will be benchmarked against this change.

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- 6.2.24 The quantitative significance criteria will be dependent on the receptor and the baseline conditions. For example, the impact of a percentage change in population will be dependent on the current capacity of the housing market, or of local schools/other community provision to respond to these. This capacity is dependent on wider economic and demographic trends which can vary between location and over time. The socio-economic work stream – which will include public service providers and other partners – will consider such information as it is produced and the final significance criteria will be informed by this.
- 6.2.25 Labour market and housing receptors are dynamic, and sensitivity is based on ability to respond to change (based on recent average change/turnover). The baseline will reflect the ‘background change’ and benchmark the scale of likely impacts against this.

Magnitude and Significance

- 6.2.26 For the socio-economic assessment, the significance will be a product of the magnitude of change caused by the project impact (for example, the peak construction workforce) and the ability of the receptor to withstand/respond to change (for example, set against the level of pre-existing construction employment and turnover in the sector). These will be considered in terms of whether they are permanent or temporary, adverse or beneficial, and cumulative.
- 6.2.27 Following the classification of an effect using this methodology, a clear statement will then be made as to whether that effect would be ‘significant’ or ‘not significant’. As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement can also be applied where necessary, including taking account of whether the effect is permanent or temporary. For example, a significant (major or moderate) effect would be likely to be: of major or moderate magnitude, affect a wide area, be permanent or irreversible, and difficult to absorb in the relevant area.
- 6.2.28 Some impacts cannot be quantitatively assessed; in such cases a qualitative assessment will be used. In addition, the magnitude of the impact will not necessarily correlate with the scale of effect, with other key influences taken into account such as the geographical extent, duration and reversibility, capacity of receptor to absorb change, and recent rates of change.

vi. Assumptions and limitations

- 6.2.29 The proposed development is likely to have complex impacts; therefore, a detailed set of assumptions will be produced to support the ‘central case’ of this assessment.
- 6.2.30 The ‘central case’ approach is based on the effects at peak construction. This will enable it to demonstrate the maximum scale of beneficial impacts and ensure mitigation measures meet the worst case for adverse impacts.
- 6.2.31 As with any data, the data used in this assessment represent a single point in time and can change due to wider changes in economic conditions and demographic trends. As far as possible the assessment will aim to reflect the dynamic nature of this environment by using future projections and identifying sensitivities to change.

Workforce Profile, skills and accommodation

- 6.2.32 EDF Energy is developing an indicative workforce profile to outline the number of construction workers expected to be working on the Sizewell C Project, by skill set, over the construction phase. This will then be used to inform the anticipated numbers of home-based and non-home-based workers. At peak construction, the total number of workers required on-site is estimated to be around 5,600, with a total of 5,000 required for almost two years.
- 6.2.33 This model is based on EDF Energy’s experience of building new nuclear reactors elsewhere, including Flamanville, and some initial knowledge of construction activities at Hinkley Point C.
- 6.2.34 Assumptions on the split of home-based and non-home-based construction workers throughout the construction phase will be based on the workforce profile and Census 2011 data on skill sets of the population of the CDCZ.

d) Potential impacts and effects

i. Construction

- 6.2.35 The assessment of likely significant effects during the construction phase will refer to likely changes from the baseline conditions and the effects of those changes as a result of the proposed development. Many of the potential effects will be positive, such as the creation of direct and indirect employment, spending and wider economic effects. The assessment will consider the potential impacts identified in **Table 6.2.4**.

Table 6.2.4: Potential socio-economic impacts

Population/Demography	Impact
Demographic change	Change in size and structure of the local population throughout the construction phase.
Economy	Impact
Employment	Direct and indirect job creation.
Regional and local economy and labour markets	Increased expenditure, income and demand for labour, including changing levels of labour market capacity and skill levels.
Businesses and supply chains	Increased demand for and transportation of goods and services, such as increased business growth, competition for workers, road congestion during the construction phase and potential changes in the perception of Suffolk.
Tourist economy	Changing levels of access to tourist destinations, workers accessing tourist accommodation and issues related to changes in the perception of Suffolk.
Wider economic effect	Potential effects on key economic sectors (construction, tourism and agriculture), and on the development potential and image of the area.
Accommodation	Impact
Tourist sector	Increased demand for tourist accommodation, not only during peak

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Population/Demography	Impact
	tourist season but also through full year.
Private rented sector	Workers accessing private rented accommodation, and subsequent potential issues related to local housing provision, homelessness and affordability.
Owner occupied sector	Workers accessing owner occupied accommodation.
Latent accommodation	Uptake of currently un-rated tourist or other accommodation (e.g. rooms in private homes).
Public Services and Community Resources	Impact
Education and training	School capacity and integration arising from workers' children requiring places; and investment in skills and training.
Leisure	Workers using existing leisure facilities and demand for facilities.
Emergency services/planning	Capacity and operation of emergency services including the police, fire and NHS during the construction phase, on-site and in areas where construction workers live.
Health and wellbeing	Workers accessing healthcare services and any issues relating to the physical and mental wellbeing of workers and residents.
Community cohesion	Community integration and equity of access to information and services, housing issues and cultural issues.

ii. Operation

- 6.2.36 The assessment of operational impacts and effects will be predominantly based on assumptions of permanent operational employees and temporary staff during outages.
- 6.2.37 Impacts on the labour market will relate to the extent of local recruitment and the type of jobs (higher value added) created within the study area. Wider labour market effects will also be assessed, including local indirect employment (through earnings), re-structuring of the labour profile and skills base, and business development and supply chain effects.
- 6.2.38 Impacts on accommodation provision will relate to the extent to which permanent staff use accommodation in the local area, where and in what sector.

e) Potential mitigation

- 6.2.39 In parallel with the socio-economic assessment, EDF Energy will work with local authorities and other public agencies to identify and plan for activities to mitigate any significant adverse effects and enhance beneficial effects.
- 6.2.40 Some of these actions are regarded as basic good management practice and, as such, will be included as part of the “central case” against which impacts will be assessed (for example employment and training activities to secure local recruitment, and a worker code of conduct to help govern worker behaviour).
- 6.2.41 If, after undertaking these activities, significant adverse effects are still assessed as likely, further mitigation measures will be identified.

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- 6.2.42 Establishing a monitoring system to enable effects to be managed to avoid exceeding acceptable limits, or setting in place thresholds after which additional mitigation measures would be triggered, will be an important element in the adaptive and precautionary approach to assessment for the Sizewell C Project, where there are uncertainties.
- 6.2.43 It is anticipated that a suite of additional documents will be produced and appended to the socio-economic assessment, which will include implementation of strategies related to accommodation, community safety and economic, education, skills and supply chain management. These will provide details of the approach to managing effects on specific sub-topics.
- 6.2.44 Where likely significant effects are identified but specific strategies not required, EDF Energy will identify additional required mitigation measures, likely to be controlled through the use of Requirements or development consent obligations (pursuant to a legal agreement).

f) Approach to cumulative assessment

i. Inter-relationships

- 6.2.45 Impacts are likely to arise from a number of other environmental topics, which will potentially have significant socio-economic effects. Such topics include noise and vibration, transport, amenity and recreation, air quality and landscape and visual.

ii. Cumulative effects

- 6.2.46 The cumulative assessment for socio-economic effects will take a different approach to other topics in that it will utilise broader “macro” projections of cumulative influences relevant to particular potential impacts (e.g. impact on local and regional labour market), rather than focusing on potential cumulative impacts of specific developments on individual receptors. These fall into a number of categories, including:
- labour market; and
 - housing growth, population change and impact on services.

6.3 Transport

a) Introduction

- 6.3.1 During the construction of the proposed development there would be significant movement of freight and people to support the construction programme. It is currently estimated that the construction workforce would peak at around 5,600 people and very large volumes of bulk and other construction materials would require transportation to and from the construction sites.
- 6.3.2 The construction of the proposed development therefore has the potential to give rise to significant transport and transport-related effects, both in terms of traffic on the local road network (increased levels of congestion, journey time, accidents etc) and traffic-related environmental effects, including severance, pedestrian delay and amenity, noise and air quality. While traffic movements during the operation of the proposed development would be substantially lower than during construction, there is potential for transport effects during the operational phase as well.
- 6.3.3 EDF Energy will therefore prepare a Transport Assessment (TA) as part of the application for development consent, covering both the construction and operational phases. See **Section 2.3** for details.
- 6.3.4 This section summarises the process and methodology which are being followed to make detailed estimates of the traffic impacts of the Sizewell C Project, as well as setting out in broad terms the proposed assessment methodology and criteria which will be applied in relation to the traffic-related impacts of severance, pedestrian delay, pedestrian amenity, driver delay, and accidents and safety.
- 6.3.5 Traffic-related impacts in terms of noise and air quality are addressed within the noise and vibration and air quality sections of this Scoping Report. Potential environmental impacts associated with transport-related off-site associated development (e.g. park and ride and rail developments) are also considered in relevant sections of this Scoping Report.

b) Work undertaken to date

- 6.3.6 EDF Energy is in the process of developing comprehensive traffic modelling of the impact of the construction and operation of Sizewell C. This will support the preparation of the TA and will be used to consider the traffic impacts of Sizewell C, as well as providing input traffic data to be used in the assessment of transport-related environmental effects.
- 6.3.7 SCC is the highway authority for the road network in the vicinity of Sizewell and discussions with SCC around the modelling approach to be adopted have been ongoing since 2012. The traffic model being developed is a VISUM model. VISUM is one of a number of industry standard software packages used for strategic traffic modelling and is widely used for the purposes of transport assessment and for identifying locations of potential impact which may require more detailed scrutiny using other modelling or assessment approaches.
- 6.3.8 The VISUM modelling will be compliant with WebTAG and the Design Manual for Roads and Bridges (DMRB) and will provide outputs that can be used in the TA, as well as in the associated air quality and noise assessments as part of the EIA, and to

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identify locations which may require more detailed assessment. VISUM also provides a direct means of easily developing a more detailed micro-simulation model of particular areas of the highway network should this prove to be necessary.

- 6.3.9 The traffic modelling and associated TA of a project of the scale of Sizewell C is by necessity an iterative process. The modelling is progressively updated to reflect the latest project information and proposals as well as additional relevant information or data sources. Further information on the work conducted to date is set out in the following sections.

c) Approach and methodology

- 6.3.10 The overall process of developing a traffic model of a major development begins with the preparation of a “base model” which aims to reflect the existing conditions on the local road network in question. A process of calibration and validation is undertaken so that the model correlates with the observed existing baseline traffic conditions within the study area.
- 6.3.11 In the second stage of the process estimates of future traffic growth and assumptions on traffic generated by “committed developments” (major developments with planning permission but not yet built) are added to the model, along with any known transport improvements that are anticipated to be in place by the time of the development in question. The purpose of this stage in the process is to estimate the future baseline conditions on the road network that would apply in the absence of the development (in this case Sizewell C). This model of the future baseline conditions is generally known as the “reference case” model.
- 6.3.12 In the third stage of the process estimates of traffic generated by the development are added to the reference case model. This “with-development” model can then be used to examine the likely future traffic conditions which would apply if the proposed development were to proceed, as well as allowing comparison with the “reference case” model to establish the impacts that arise from the development itself rather than other factors.
- 6.3.13 In the case of Sizewell C, in order to ensure that both construction phase and operational phase traffic impacts are considered, reference case and with-development models will be developed both for the peak period of the construction phase of Sizewell C and for a post-construction operational year.

i. Study area

- 6.3.14 The study area and modelled network for the VISUM model extends to Lowestoft to the north, Ipswich to the south and the A140 to the west. The geographic extent of the model has been agreed with SCC and is shown in **Figure 6.3.1**.

ii. Baseline information

- 6.3.15 The existing road network in Suffolk is shown in **Figure 6.3.2**.
- 6.3.16 A wide range of manual classified and automatic traffic counts on the local road network were commissioned by EDF Energy and conducted in May and June 2011. The locations of these traffic counts were published at Stage 1 consultation in the

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appendix to the 'Transport Strategy and Supporting Information' document. These traffic counts were used to help develop an initial VISUM model of the study area.

- 6.3.17 Since Stage 1 consultation a range of further enhancements to the base model have been discussed and agreed with SCC. These include:
- the incorporation of further data from additional traffic counts conducted in autumn 2012;
 - the incorporation of additional data from the existing East of England Regional Model (EERM), population data from the 2011 census and from schools information held by SCC; and
 - a range of other detailed adjustments to the network model.
- 6.3.18 The process of updating the base model to incorporate these changes for a wide set of modelled hours is currently ongoing.
- 6.3.19 With respect to the seasonality of the local road network, EDF Energy has obtained baseline data from SCC and the Highways Agency (HA) with respect to traffic flows on the A12 and the A14 in August 2011 and 2012. This will be used to consider, outside of the VISUM model, the extent of any seasonal traffic impacts arising from the proposed development.
- 6.3.20 EDF Energy is also working with SCC to establish the "reference case" assumptions which will be applied to the base modelling to reflect likely future baseline network conditions.

iii. Planned further survey/studies

- 6.3.21 It is anticipated that the current programme of work will entirely, or very largely complete the steps necessary to develop a robust and comprehensive modelling position in terms of the base and reference case models. A limited number of further traffic count surveys are planned for later in 2014 to establish whether there has been any material change in network conditions since the surveys conducted in 2011 and 2012, and this may lead to some amendment to the base models in due course.

iv. Assessment methodology

- 6.3.22 A wide range of project-related inputs will be used to generate estimates of Sizewell C-related traffic during construction and operation. This will include estimates of all workforce- and freight-related trips. Workforce trips will include car trips and, during construction, park and ride and direct bus trips and leisure trips relating to the non-home-based workforce. These trips will be spread across the day in accordance with anticipated shift patterns. Freight-related trips will include all heavy goods vehicle (HGV) and other goods vehicle (OGV) movements. These will be incorporated into the Sizewell C VISUM traffic model and the outputs from the model will be used to both assess the traffic impacts of Sizewell C and to provide data to inform assessment of the traffic-related environmental impacts of the project.
- 6.3.23 With respect to the traffic impacts (i.e. traffic flow and congestion-related impacts) these will be assessed against a range of criteria which will include:

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- link flow differences (i.e. the change in the absolute additional number of vehicles and the percentage increase on any given stretch of road);
- impacts on journey times;
- “Ratio of Flow to Capacity” on links; and
- junction “Level of Service”.

- 6.3.24 Ratio of Flow to Capacity and Junction Level of Service are industry standard means of assessing the impact of additional traffic on the capacity of the road network and the operation of junctions. Assessment criteria in this area would be informed by relevant guidance in the Design Manual for Roads and Bridges (DMRB) and wider professional judgement.
- 6.3.25 With respect to traffic-related environmental impacts a range of approaches will be adopted. Output from the traffic modelling work, including estimates of 24 hour and 18 hour increases in traffic will be provided to noise and air quality experts for assessment of traffic related noise and air quality impacts. See **Section 7.7** and **Section 7.8** for details. With respect to the assessment of transport-related effects of severance, pedestrian amenity, accidents and safety, reference will be had to the Institute of Environmental Management and Assessment (IEMA) ‘*Guidelines for the Environmental Assessment of Road Traffic*’ (1993) as well as relevant sections of DMRB (in particular Volume 11 on Environmental Assessment). These guidelines are widely used in this area and, while they leave room for the professional judgement of the assessor, represent the closest that exists to an industry standard basis for assessment.
- 6.3.26 The following paragraphs provide further information on how the IEMA and DMRB guidelines will be applied to the assessment in these areas. Within the IEMA guidance, two broad rules are suggested which can be used as a screening process to limit the scale and extent of the assessment:
- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%).
 - Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 6.3.27 Where the predicted increase in traffic flows is lower than the above thresholds, the IEMA guidelines suggest the significance of the effects can be stated to be negligible and further detailed assessments are not warranted. Increases in traffic flows below 10% are generally considered to be not significant in environmental terms given that daily variations in background traffic flow may vary by this amount. It should be stressed that these broad rules remain subject to professional judgement and are specifically relevant to the assessment of the traffic-related environmental effects considered in this section. Smaller traffic changes than those set out above may, in some circumstances, be relevant in the consideration of congestion or congestion-related effects.

Sensitivity of receptors

- 6.3.28 The sensitivity of a road can be defined by the vulnerability of the user groups who may use it, e.g. elderly people or children. A sensitive area may be where pedestrian activity may be high, for example in the vicinity of a school or where there is already

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an existing accident issue. It should be noted that the sensitivity of the receptor is judged on the sensitivity of road users (primarily pedestrians). It also takes account of the existing nature of the road, e.g. an existing “A” road is likely to have a lower sensitivity than a minor residential road. **Table 6.3.1** provides a summary of the types of receptors and the sensitivity of each, defined as major, moderate, minor or negligible.

Table 6.3.1: Sensitivity of receptors

Receptor type	Receptor sensitivity
Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident clusters, retirement homes, roads without footways that are used by pedestrians.	Major
Traffic flow sensitive receptors: congested junctions, doctors’ surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, recreation facilities.	Moderate
Receptors with some sensitivity to traffic flow: places of worship, public open space, tourist attractions and residential areas with adequate footway provision.	Minor
Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	Negligible

- 6.3.29 A desktop exercise augmented by a number of site visits will be undertaken to identify the sensitive receptors in the study area. All significant or relevant road links within the study area will be assessed and assigned sensitivity. Recognising the quantity of road links within the study area, for ease of review the assessment narratives will focus on the road links that will lead to highest impact.

Magnitude of impact

- 6.3.30 To assist with the judgement of magnitude of impact, reference will also be made to the IEMA and DMRB guidelines, as well as to professional judgement. These guidelines set out considerations and, in some cases, thresholds, in respect to changes in the volume and composition of traffic to facilitate a subjective judgement of traffic impact and significance. These thresholds are guidance only and provide a starting point via which analysis will inform an overall assessment of the impact magnitude.

Types of impact

- 6.3.31 The following paragraphs cover each of the impacts that are considered in this section.

Severance

- 6.3.32 The measurement and prediction of severance is difficult, but relevant factors include road width, traffic flow, speed, the presence of crossing facilities and the number of movements across the affected route.
- 6.3.33 IEMA guidelines suggests that changes in traffic flow of 30%, 60% and 90% would be likely to produce ‘slight’, ‘moderate’ and ‘substantial’ changes in severance,

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respectively. It is advised that these broad indicators should be used with care and regard paid to specific local conditions. DMRB guidance suggests that in reaching a judgement on severance effects reference should also be paid to the number of affected people; the presence of particularly vulnerable groups, such as children, the aged or the disabled; any peak hour impacts; the type of road involved and the provision or otherwise of mitigation.

Pedestrian delay

- 6.3.34 The guidelines do not set any thresholds, recommending instead that assessors use their judgement to determine the significance of the effect.
- 6.3.35 The IEMA guidelines refer to a report published by the Transport Research Laboratory (TRL SR356, Goldschmidt, 1976) as providing a useful approximation for determining pedestrian delay. The TRL research concluded that mean pedestrian delay was found to be eight seconds at flows of 1,000 vehicles per hour, and below 20 seconds at 2,000 vehicles per hour, for various types of crossing condition. This research has been reproduced in DMRB Volume 11, Section 3, Part 8. Figure 1 of Part 8 provides predictive mean pedestrian delay based on empirical data taking into account traffic flow and a range of parameters such as crossing width and vehicle speeds.
- 6.3.36 A two-way flow of 1,400 vehicles per hour will be adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities in the TRL report). Below this flow pedestrian delay is unlikely to be a significant factor. This is deemed a robust starting point for narrowing down the modelled routes within the study area which may be subject to pedestrian delay so that the routes selected exceed the suggested threshold of analysis in DMRB Volume 11. It should be noted that for controlled forms of pedestrian crossing the pedestrian delays are less.

Pedestrian amenity

- 6.3.37 The IEMA guidelines suggest tentative thresholds of significance would be where the traffic flow is halved or doubled.

Driver delay

- 6.3.38 A comparison of journey times on key routes in the VISUM model will be undertaken to establish the increase in driver delay as a result of the Sizewell C Project. These will be reported in the Transport Assessment, which is submitted as part of the DCO application for Sizewell C, and professional judgement will be used to assess the significance of these changes.

Accidents and safety

- 6.3.39 An assessment of the impact of Sizewell C on accidents and safety will form part of the Transport Assessment for the Sizewell C Project. This will take account of a number of considerations, including existing accident and safety conditions and trends, the extent to which the proposed development will exacerbate or mitigate existing issues or create new issues, and any other relevant specific local circumstances and characteristics of the affected area of the road network.

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- 6.3.40 **Table 6.3.2** summarises the criteria that will be used to determine magnitude of impacts- these are based on the guidelines described above. However, the absolute level of an impact is also important, e.g. the total flow of traffic or HGVs on a link. Comment will be made on this in the analysis.

Table 6.3.2: Magnitude of impact criteria

Impact	Magnitude of impact			
	Negligible	Minor	Moderate	Substantial
Severance	Change in total traffic or HGV flows of less than 30%.	Change in total traffic or HGV flows of 30-60%.	Change in total traffic or HGV flows of 60-90%.	Change in total traffic or HGV flows over 90%.
Pedestrian delay	Two way traffic flow < 1,400 vehicles per hour.	A professional judgement based on the road links with two way traffic flow exceeding 1,400 vehicles per hour in context of the individual characteristics.		
Pedestrian amenity	Change in total traffic or HGV flows < 100%.	A professional judgement based on the routes with >100% change in context of their individual characteristics.		
Driver delay	A professional judgement based on the VISUM journey time assessment.			
Accidents and safety	A professional judgement based on the findings of the analysis of the accident and road safety impact of the Sizewell C Project.			

Significance of effects

- 6.3.41 The significance of the effect is judged on the relationship of the magnitude of impact to the assessed sensitivity and/or importance of the receptor. The approach to the predicted significance of the environmental effects is identified in **Section 5**.

Construction

- 6.3.42 Sizewell C is unusual in that the greater traffic impact would occur during the construction phase. This is because of the substantial peak workforce required for construction and the large volumes of freight and materials that would require movement during the construction phase.
- 6.3.43 The TA, as well as the assessment of associated traffic-related environmental effects, will focus particularly on the construction phase. Traffic modelling will consider the peak period of the construction phase both in terms of workforce and freight, taking account of any mitigation measures that are anticipated to be in place by this time. This will ensure that the assessment is robust and considers the period in which construction traffic impacts will be at their highest – at many points in the construction programme traffic will be considerably lower than that which will be assessed. A “gravity model” will be used to estimate the geographic distribution (residential location) of the construction workforce at peak construction and estimates of HGV and OGV movements will be made, taking account of material quantity estimates and assessment of the scope for using non-road-based options for the transport of bulk and other construction materials.

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- 6.3.44 EDF Energy has been discussing the hours on the local road network that will be modelled with SCC and it is currently anticipated that these will cover three hours in the morning period (6am – 9am) and four hours in the afternoon/evening period (3pm – 7pm). These hours have been agreed with SCC based on an assessment of existing network peaks, along with those hours anticipated to contain the largest volumes of development traffic, taking account of the proposed shift patterns.
- 6.3.45 As set out in earlier sections, the assessment will compare the traffic impacts of Sizewell C with the reference case – i.e. those future baseline conditions predicted in the absence of the development. Reference case traffic modelling for the peak construction phase will be developed taking account of any major known developments in the pipeline with planning permission (committed development) as well as standard assumptions on underlying traffic growth.
- 6.3.46 The assessment will also consider the seasonality of the local road network and the potential impact of seasonal effects alongside the construction of Sizewell C. Additionally, it will take account of the temporary nature of the construction phase, albeit recognising that the construction phase is substantially longer than for most construction projects, but that traffic generated will vary through the construction phase. If it proves necessary to inform the assessment, other periods of the construction phase could be examined.

Operation

- 6.3.47 An assessment of the long-term traffic impacts of Sizewell C during the operational phase will also be undertaken. This is anticipated to show substantially reduced impacts due to the much-reduced workforce compared to the peak period of the construction phase (900 operational workers compared to 5,600 peak workforce) and the greatly reduced requirement for materials movements to and from the site.
- 6.3.48 As with the construction phase this assessment will be made against a reference case assessment of predicted traffic conditions without Sizewell C. Estimates of the residential location of the operational workforce will be made based on existing location patterns for the currently operational Sizewell B power station. The hours to be modelled for the operational phase assessment will be subject to further discussion with SCC, linked to consideration of the likely shift patterns for operational workers and any existing network peaks. At this stage it is envisaged that the modelled hours will be more limited and may be restricted to a single hour in the am and pm peak.

v. Assumptions and limitations

- 6.3.49 As with any traffic modelling exercise of this kind, the analysis and assessment process relies on a very wide range of input data, including those relating to the existing condition of the road network, the extent of future traffic growth and the scale of traffic generated by the proposed development.
- 6.3.50 Inevitably these input assumptions and data sources are subject to a range of uncertainties which cannot be entirely eliminated. The overall approach, therefore, will be to utilise a range of robust assumptions. These include the following:

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- selection of the busiest existing times of day/week on the road network for use within the base modelling;
- reference case assumptions which use Department for Transport WebTAG guidelines on traffic growth (these assumptions assume steady continued growth in road traffic-related to population and economic growth (recent history has indicated relatively stable trends in traffic volumes in the Suffolk area) as well as assuming that major developments with planning permission in the area are built out); and
- robust estimates of construction-related traffic, considering the peak period of construction both in terms of workforce and freight.

6.3.51 The combined effect of the use of a wide range of robust inputs means that the assessment of traffic impacts, and in particular construction phase impacts, should be robust. In all likelihood, many periods of the construction phase would experience significantly lower traffic impacts than those which have been assessed.

d) Potential impacts and effects

i. Construction

6.3.52 During the construction phase there will be substantial volumes of additional traffic relating to both the movement of freight and the construction workforce.

6.3.53 Detailed estimates of the scale of additional traffic are subject to ongoing traffic modelling work and wider project development, and initial estimates for all materially affected local roads are expected to be published alongside the next stage of public consultation. These estimates will be further refined as appropriate in line with wider project development with the latest estimates included within the Transport Assessment and used to inform supporting assessment of traffic-related environmental effects as set out in this and related sections of this Scoping Report.

6.3.54 Based on the work conducted to date and the proposals published at Stage 1 consultation, the potentially most significant traffic impacts during the construction phase would be predicted to occur on the A12 en route to Sizewell (between Ipswich to the south and Lowestoft to the north) and on the B1122, which was proposed at Stage 1 consultation as the main access road to the construction site from the A12. Other local roads in the vicinity of the construction site are also likely to experience some increases in car traffic but should be very largely protected from increases in HGV or bus traffic by EDF Energy's transport strategy proposals for the construction phase.

ii. Operation

6.3.55 During the operational phase increases in traffic associated with Sizewell C are anticipated to be substantially lower than those arising from the construction phase, due to the much-reduced operational workforce (900) compared with peak construction (5,600), as well as very substantially lower requirements for goods/freight deliveries. Typical weekday traffic impacts during operation will be assessed and included within the TA.

6.3.56 Traffic impacts during the operational phase will be somewhat greater during temporary outage periods. These are used to conduct plant maintenance and reactor

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refuelling, and will occur approximately every 18 months for each reactor, lasting for between one and three months, with a peak additional workforce for an outage of around 1,000 workers.

e) Potential mitigation

- 6.3.57 EDF Energy's Stage 1 consultation proposed a range of measures for reducing and managing the traffic impacts of the construction phase on the local road network. These measures can be considered as embedded mitigation for traffic impacts and form an important part of the overall Sizewell C Project proposals.
- 6.3.58 With respect to the movement of freight the main measures proposed include:
- a temporary jetty to facilitate the sea delivery of bulk materials and AILs and potential export of excavated materials;
 - investment in rail infrastructure to extend the Saxmundham-Leiston branch line into the construction site on a temporary basis, or to provide a new enlarged rail-head north of King George's Avenue in Leiston. These measures would facilitate the delivery by rail of bulk materials and containerised goods;
 - support to Network Rail to deliver a new passing loop on the East Suffolk Line near Wickham Market station – this will facilitate the provision of additional train paths allowing the capacity for up to around five freight trains per day to deliver goods to the Sizewell construction site;
 - ongoing consideration of the scope to use materials sourced within the construction area as engineering fill material within the Main Development Site – reducing the requirement to import bulk materials/aggregates; and
 - HGV movements to the construction site to be limited to approved routes.
- 6.3.59 With respect to the movement of the construction workforce the main mitigation measures proposed include:
- an on-site accommodation campus to substantially reduce the volume of construction workers requiring movement to and from the site on a daily basis;
 - two park and ride developments located adjacent to the A12, one to intercept trips on the A12 from the south and one to intercept trips on the A12 from the north. These developments, the size of which would be informed by the output from the Gravity Model, would significantly reduce the amount of peak construction worker-related traffic on local roads and through local villages;
 - direct bus services operating on designated routes from Ipswich and Lowestoft – the two largest population centres nearest to the construction site; and
 - rail pick-up services from Darsham and Saxmundham stations.
- 6.3.60 These measures, which are focussed on reducing the additional traffic demand generated by the construction phase, are in line with relevant planning policy guidance and in particular Section 5 of the NPS for Energy (NPS EN-1) which states:

“where mitigation is needed, possible demand management measures must be considered and if feasible and operationally reasonable, required,

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before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts” (paragraph 5.1.38).

- 6.3.61 EDF Energy has also given preliminary consideration to the residual traffic effects of the construction phase of Sizewell C, taking account of the proposed embedded mitigation measures. Stage 1 consultation contained a number of proposals in this area, including potential improvements to the junction of the A12 with the B1122 and a number of options for addressing the narrow bend at the village of Farnham on the A12, including a bypass of Farnham and the option of property demolition to widen the bend.
- 6.3.62 As work on the TA and traffic modelling progresses, EDF Energy will continue to give further detailed consideration to the residual traffic effects of the construction phase and may bring forward additional or different mitigation measures as is considered appropriate in light of the ongoing findings of the assessment work. The requirement for mitigation measures will be linked to the impact assessment findings and will be informed by all relevant factors including the nature, scale and estimated length of the predicted significant effects.
- 6.3.63 EDF Energy will also prepare a number of transport management plans which will set out a range of further practical and working level measures aimed at managing and mitigating the significant traffic effects of the proposed development. These plans will cover issues such as:
- construction traffic management, HGV routing, monitoring of HGV movements and compliance with any project-wide HGV controls;
 - traffic management during incidents and accidents affecting access to and from the construction site or the local highway network; and
 - workforce travel planning issues during both the construction and operational phases – including measures to facilitate non-car forms of transport and car sharing.
- 6.3.64 Of the mitigation measures set out above, the jetty, rail infrastructure proposals, accommodation campus, park and ride developments and any bypass of Farnham would all represent developments in their own right. The environmental effects of these developments will also be considered.

f) Approach to cumulative assessment

i. Inter-relationships

- 6.3.65 This section has discussed how traffic impacts will be considered and how estimates of the traffic increases arising from Sizewell C will be used to inform certain traffic-related environmental effects. It has also noted how traffic modelling will be used to generate data used to assess traffic-related environmental impacts of noise and air quality – the assessment approach in these areas is discussed in **Section 7.7** and **Section 7.8** respectively.
- 6.3.66 It is recognised that during the construction phase of Sizewell C there is the potential for traffic and traffic-related environmental impacts to be combined with wider environmental and community impacts arising from the construction programme. This is particularly the case for those communities living close to the construction site

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or adjacent to any proposed associated developments. These in-combination effects will be considered where appropriate within community-wide assessments of the impacts of Sizewell C – see **Section 2.3** for how this will be addressed in the EIA.

ii. Cumulative effects

- 6.3.67 There is clearly potential for the traffic impacts of Sizewell C to have a cumulative effect alongside wider traffic growth and traffic arising from other large scale developments. This issue is directly addressed within the development of the reference case traffic modelling, which takes account of both traffic growth arising from general economic development and specific traffic increases arising from any relevant large scale committed development (projects with planning permission but not yet built).
- 6.3.68 This approach ensures that the traffic impacts of Sizewell C are considered in the context of the potential for wider local and regional traffic growth as well as other known, relevant major developments with planning permission. It should be noted in this context that major developments that are at an earlier stage of development, and do not have planning permission, would not normally be included within the reference case modelling. This is in line with established guidance and reflects the consideration that the sponsors of these developments would be expected to independently assess and mitigate for the traffic impacts of their projects.

7. EIA – MAIN DEVELOPMENT SITE

7.1 Introduction

7.1.1 This section presents the baseline, approach to the assessment and potential environmental issues for all environmental topics that will be considered for the Sizewell C Main Development Site. The off-site associated developments are considered in **Section 8**.

7.2 Terrestrial ecology and ornithology

a) Introduction

7.2.1 This section sets out the proposed scope and methodology for the terrestrial ecology and ornithology assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.2.2 Environmental baseline information relevant to terrestrial ecology and ornithology has been gathered through a comprehensive suite of desk-based studies and field surveys beginning in 2007. This has included surveys of the habitat types present as well as surveys of individual species groups. **Table 7.2.4** details the field surveys that have been carried out to date. **Figure 7.2.1** shows the habitats present within the Main Development Site.

7.2.3 Owing to the age of some of the data collected, it will be necessary to repeat some of this survey work. This is discussed further in this section..

c) Approach and methodology

i. Study area

7.2.4 The study area for this assessment will vary for different ecological and ornithological resources, as it will be dependent upon the sensitivity of the resource in question and the potential impacts associated with the Main Development Site.

7.2.5 The study areas are thus considered in terms of the geographic extent of the scheme’s potential influence (from the immediate scheme footprint, for direct impacts, to up to 20km away, for more mobile species, for example bats and distant/indirect impacts such as impacts on designated sites). **Table 7.2.1** describes the study areas for potential ecological resources (see also ‘Zone of Influence (Zol)’, below).

Table 7.2.1: Proposed study areas for potential ecological resources

Ecological resource	Study area
Statutory and non-statutory	In general, all statutory designated sites within 20km of the application boundary will be considered within the assessment, though clearly the ecology

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Ecological resource	Study area
designated sites	of the qualifying features will be important in determining whether or not impacts are likely. This is especially relevant for sites that are designated for their bat or bird interests (i.e. SPAs or SACs for which Annex 2 bat and bird species are a qualifying feature), as the potential exists for individuals associated with these sites to use the habitats within the application boundary for at least part of their life cycle (e.g. for foraging at certain times of year).
Habitats and plant communities	The direct footprint of the habitat likely to be affected, plus a buffer zone of at least 200m around them; this is especially important with regard to wetland habitats, for which hydrological impacts on neighbouring land could be a key issue, and coastal habitats (shingle and dune communities) where movement of shingle and sand substrate will also be a key issue.
Invertebrates	The direct footprint of the habitat likely to be affected.
Reptiles	The direct footprint of the habitat likely to be affected.
Amphibians	The direct footprint of the habitat likely to be affected with a buffer of up to 500m if breeding great crested newts are suspected.
Bats	For bat populations not associated with designated sites the study area will be 5km from the application boundary, as the potential exists for individuals associated with roosting sites away from the development area to use the habitats within the application boundary for at least part of their life cycle (e.g. for foraging at certain times of year).
Otters and water voles	The direct footprint of any wetland habitat likely to be affected, plus a buffer zone of at least 200m around them; this is especially important with regard to breeding otters which would be vulnerable to disturbance from construction noise.
Badgers	The area within the Main Development Site boundary and within 100m of it.
Breeding birds	The direct footprint of the habitat likely to be affected and a buffer zone which would be determined by the species concerned.
Wintering birds	The direct footprint of the habitat likely to be affected and a buffer zone which would be determined by the species concerned.
Seabirds	The direct footprint of the marine elements of the project and a buffer extending approximately 20km along the coast from Dunwich to Orfordness for wider indirect effects on seabird species.

ii. Baseline information

- 7.2.6 The part of the Suffolk coastline within which the Main Development Site is situated is ecologically diverse and, as a result, is subject to a range of nature conservation designations. The location of statutory internationally-designated sites (i.e. SAC, SPA, Ramsar Sites) within 20km of the Main Development Site, are shown in **Figure 7.2.2**. The location of statutory nationally-designated sites (i.e. SSSIs and National Nature Reserves (NNR)), also within 20km of the Main Development Site, are shown in **Figure 7.2.3**.
- 7.2.7 **Figure 7.2.4** shows the locations of non-statutory designated sites in close proximity to the Main Development Site. As these sites are considered to be important in a county (Suffolk) context, a 3km buffer from the Main Development Site was considered an appropriate distance to consider potential effects upon these sites. **Table 7.2.2** and **Table 7.2.3**, respectively, describe the statutory and non-statutory designations that have been identified and are considered most relevant to terrestrial ecology and ornithology, along with the main ecological features associated with each site. It should be noted that not all the sites shown on the figures are likely to be

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affected by the Main Development Site, and only those considered most relevant to terrestrial ecology and ornithology are discussed in this section and **Tables 7.2.2** and **7.2.3**.

Table 7.2.2: Key statutory designated sites

Statutory designated Site	Description
Minsmere to Walberswick SPA and Ramsar site, and Minsmere to Walberswick Heaths and Marshes SAC (located adjacent to the north-east boundary of the Main Development Site)	This area has been identified as a Ramsar site as it supports a diverse range of wetland bird species in nationally important numbers. The SPA supports breeding, wintering and passage bird populations of European importance, including breeding populations of marsh harrier (<i>Circus aeruginosus</i>), bittern (<i>Botaurus stellaris</i>) avocet (<i>Recurvirostra avosetta</i>) and little tern (<i>Sterna albifrons</i>). The habitats that are a primary reason for selection of the SAC are 'annual vegetation of drift lines' and 'European dry heaths', whilst 'perennial vegetation of stony banks' are a qualifying feature of the site.
Sandlings SPA (located approximately 0.7km south of the Main Development Site)	The Sandlings SPA supports breeding populations of European importance of both nightjar (<i>Caprimulgus europaeus</i>) and woodlark (<i>Lullula arborea</i>).
Alde-Ore Estuary SPA and Ramsar and Alde-Ore & Butley Estuaries SAC (located approximately 5.5km south of the Main Development Site)	The Alde-Ore Estuary has been identified as a Ramsar site for its diverse and nationally important wetland bird species, and as an SPA because it supports bird populations of European importance, including breeding populations of avocet, little tern and sandwich tern (<i>Sterna sandvicensis</i>), and over-wintering ruff (<i>Philomachus pugnax</i>). The site also supports important migratory populations of lesser black-backed gull (<i>Larus fuscus</i>) during the breeding season and redshank (<i>Tringa tetanus</i>) during the winter. The primary reason for the SAC designation is the estuary habitat; intertidal mudflats and sandflats and Atlantic salt meadow habitats are also qualifying features.
Outer Thames Estuary SPA (includes the area of open sea adjacent to the eastern boundary of the Main Development Site)	The Outer Thames Estuary SPA qualifies by supporting populations of European importance of wintering red-throated diver (<i>Gavia stellata</i>).
Staverton Park and the Thick SAC (located 16km south of the Main Development Site)	This site is representative of old acidophilus oak woods in the eastern part of its range and its ancient oaks (<i>Quercus</i> spp.) have rich invertebrate and epiphytic lichen assemblages.
Benacre to Easton Bavents Lagoons SAC (located 14.5km north of the Main Development Site)	Benacre to Easton Bavents Lagoons is designated as an SAC as it supports a series of percolation lagoons on the east coast of England. The lagoons (the Denes, Benacre Broad, Covehithe Broad and Easton Broad) have formed behind shingle barriers and are a feature of a geomorphologically dynamic system. This range of salinity has resulted in a series of lagoonal vegetation types, and associated specialist lagoonal species.
Benacre to Easton Bavents Lagoons SPA (located 14.5km north of the Main Development Site)	Benacre to Easton Bavents is designated as an SPA because they support bird populations of European importance including important numbers of bittern in winter, and breeding little terns which feed substantially outside the SPA in adjacent marine waters.

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Statutory designated Site	Description
Stour and Orwell Estuaries SPA and Ramsar Site (located more than 20km south of the Main Development Site)	The Stour and Orwell estuaries have been designated as a Ramsar site for its diverse and nationally important wetland bird species; and as an SPA because they support bird populations of European importance. This includes numbers of breeding avocet. In winter, they hold major concentrations of water birds, especially geese, ducks and waders. The geese also feed, and waders roost, in surrounding areas of agricultural land outside the SPA.
Orfordness to Shingle Street SAC (located approximately 8km south of the Main Development Site)	The habitats that are a primary reason for selection of this site are 'coastal lagoons', 'annual vegetation of drift lines' and 'perennial vegetation of stony banks'.
Minsmere to Walberswick Heaths and Marshes SSSI (adjacent to the north of the Main Development Site)	This SSSI contains a complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh. These combine to create an area of exceptional scientific interest that supports a diverse breeding and wintering bird assemblage and a diverse range of invertebrates.
Sizewell Marshes SSSI (located within and immediately west of the Main Development Site)	This SSSI is of national importance for the considerable area of lowland unimproved wet meadow it contains. Associated with the wet meadows are outstanding assemblages of invertebrates and breeding birds, along with several nationally scarce plant species. The marshes also support a diverse invertebrate assemblage. Water voles (<i>Arvicola amphibious</i>) are present within the SSSI and the SSSI is also used regularly by otters (<i>Lutra lutra</i>).
Leiston to Aldeburgh SSSI (located approximately 1km south of the Main Development Site)	This SSSI contains a rich mosaic of habitats, including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle.

Table 7.2.3: Non-statutory designated sites

Non-statutory designated Site	Description
Southern Minsmere Levels CWS	Supports coniferous woodland and a diverse assemblage of breeding birds, roosting and foraging bats, invertebrates (including the white admiral butterfly (<i>Limenitis camilla</i>) and Norfolk hawk dragonfly (<i>Aeshna isoceles</i>)) and reptiles.
Sizewell Levels and associated areas CWS	A large area of land, consisting of woodland, plantation, wet meadow, osier beds and scrub. The ground remains waterlogged throughout the winter and numerous dykes provide good cover for high numbers of waterfowl.
Leiston Common CWS	Supports lowland heath, breeding birds and a diverse assemblage of reptiles and invertebrates.
Suffolk Shingle Beaches CWS	Supports coastal sand and shingle habitats, a diverse assemblage of invertebrates, a population of reptiles, and foraging black redstarts.
Dower House CWS	Valuable cliff-top unimproved dry acid/dry maritime grassland. The sward composition includes species typically associated with acid grasslands and heaths such as heath dog violet (<i>Viola canina</i>).
Aldringham to Aldeburgh Disused Railway CWS	A section of disused railway line which serves as a public footpath and supports a species diverse flora both on the line of the old track and on the gently sloping embankments.
Sizewell Rigs CWS	Supports a breeding colony of kittiwake (<i>Rissa tridactyla</i>).

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Non-statutory designated Site	Description
Suffolk Wildlife Trust Reserve	This reserve occupies the same area as the more highly designated Sizewell Belts SSSI and parts of some of the County Wildlife Sites described above.

7.2.8 Although the baseline ecological information pertaining to these sites is already extensive, more detailed information is required about the constituent habitats and species populations, especially where the potential exists for them to be directly or indirectly affected by the proposed development. Further surveys are therefore discussed later in this section. This will include studies to inform both the permanent and temporary aspects of the construction phase of the development.

7.2.9 In addition to gaining further information about these designated sites, the survey work already carried out (described in **Section 7.2(b)**) has also resulted in the development of a comprehensive ecological baseline for non-designated land, which has informed, and will continue to inform, the development and layout of the Main Development Site. **Table 7.2.4** summarises the key findings from the survey work carried out to date, which will inform the scope of further surveys as well as any subsequent assessment. **Figure 7.2.5** identifies the locations within the Main Development Site that are mentioned in **Table 7.2.4**.

Table 7.2.4: Summary of the ecological studies undertaken to date

Ecological studies	Key findings
Habitats and plant communities	<p>The majority of non-designated land within and adjacent to the Main Development Site comprises agricultural farmland with smaller areas of deciduous woodland (such as Ash Wood and Fiscal Policy), coniferous plantation (including Kenton Hills and Goose Hills), acid grassland/lowland heath and neutral grassland and dune and shingle habitats on the coastal frontage.</p> <p>The woodland within Kenton and Goose Hills is dominated by Corsican pine (<i>Pinus nigra</i>) with a ground layer of dense brambles (<i>Rubus fruticosus</i> agg.) and bracken (<i>Pteridium aquilinum</i>).</p> <p>The studies of Sizewell Marshes have recorded in detail the plant composition of the area of the SSSI. This comprises a mosaic of open water, reed bed and wet woodland. The open water and ditches are flower-rich, supporting aquatic plants, including the nationally scarce Soft Hornwort (<i>Ceratophyllum submersum</i>), Fen Pondweed (<i>Potamogeton coloratus</i>) and Whorled Water-milfoil (<i>Myriophyllum verticillatum</i>), with emergent plants such as common reed (<i>Phragmites australis</i>), hemp-agrimony (<i>Eupatorium cannabinum</i>) and bulrush (<i>Typha latifolia</i>). The reedbed areas are relatively species-poor and are dominated by common reed and nettle (<i>Urtica dioica</i>). The wet woodland is dominated by alder (<i>Alnus glutinosa</i>) with smaller areas of grey willow (<i>Salix cinerea</i>) and downy birch (<i>Betula pubescens</i>).</p> <p>The coast comprises valuable sand and shingle plant communities. Studies have recorded in detail the plant composition of the coastal habitats. These include areas of shingle-supporting species, such as the nationally scarce Sea pea (<i>Lathyrus japonicus</i>), Sea-kale (<i>Crambe maritima</i>) and Sea campion (<i>Silene uniflora</i>). Beyond the shingle are areas of dune ridge supporting a different suite of species, including Marram (<i>Ammophila arenaria</i>), Sand sedge (<i>Carex arenaria</i>) and Sand Couch (<i>Elytrigia juncea</i>).</p>
Invertebrates	Studies have shown that habitats adjacent to and within the Main Development

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Ecological studies	Key findings
	<p>Site support a range of invertebrate species, with Sizewell Marshes SSSI and coastal vegetation being especially species-rich.</p> <p>Species of particular note include Norfolk hawk dragonfly (<i>Aeshna isosceles</i>), a white admiral butterfly (<i>Limenitis camilla</i>), a soldier fly (<i>Odontomyia ornata</i>) and a tachinid fly (<i>Subclytia rotundiventris</i>).</p> <p>The coastal habitats supported eight nationally scarce fly species and two species listed in the red data book, together with three nationally scarce beetles and two listed in the red data book.</p>
Reptiles	<p>The habitats adjacent to and within the Main Development Site and, in particular, the woodland rides within Kenton Hills and Goose Hill, support important populations of reptiles comprising four species: adder (<i>Viper berus</i>), slow worm (<i>Anguilla fragilis</i>), common lizard (<i>Zootoca vivipara</i>) and grass snake (<i>Natrix natrix</i>). Detailed information on the status and distribution of these species has been collected and has been used to inform the development of a comprehensive mitigation strategy for reptiles as discussed and agreed with stakeholders in 2013.</p>
Amphibians	<p>No evidence for the presence of great crested newts (<i>Triturus cristatus</i>) has been identified within the habitats adjacent to and/or within the Main Development Site.</p> <p>An introduced population of natterjack toads (<i>Epidalea calamita</i>) is present within the EDF Energy Estate but it is not expected to be affected by the proposed development.</p>
Bats	<p>Survey work has investigated the assemblage of bat species present within habitats adjacent to and within the Main Development Site, including the scarce barbastelle and roosts of Natterer's (<i>Myotis nattereri</i>), soprano pipistrelles (<i>Pipistrellus pygmaeus</i>) and brown long-eared bats (<i>Plecotus auritus</i>).</p> <p>In addition, the work has identified the key features of importance, such as roost sites, feeding areas and foraging and commuting routes. As such, a detailed picture of how bats are using the wider landscape is being built up.</p>
Other mammals	<p>The ditches within Sizewell Marshes support a large population of water voles. Survey work (2013) has established that otters use the marshes but no holts or lying up sites were identified within 200m of the Main Development Site.</p> <p>Five badger (<i>Meles meles</i>) social groups have been identified within habitats adjacent to and within the Main Development Site.</p>
Breeding birds	<p>Studies have identified that the mosaic of habitats in close proximity to the Main Development Site supports a diverse assemblage of breeding birds typical of the mosaic of habitats present, including protected species such as Cetti's warbler (<i>Cettia cetti</i>) within wet woodland in Sizewell Marshes, hobby (<i>Falco subbuteo</i>) using mature trees for nesting, black redstart (<i>Phoenicurus ochruros</i>) within the existing Sizewell A and B power stations complex, barn owl (<i>Tyto alba</i>) foraging widely and crossbill (<i>Loxia curvirostra</i>) within coniferous woodland.</p> <p>A total of 13 UK Biodiversity Action Plan (UKBAP) priority species were also recorded holding territory.</p> <p>Marsh harriers have been found to forage over the Sizewell Marshes SSSI. Bitterns are occasional visitors, but there is no evidence that they breed close to the Main Development Site.</p>
Wintering birds	<p>The studies indicate that the habitats present in close proximity to the Main Development Site supports a range of wintering birds.</p> <p>Sizewell Marshes support an important wintering population of gadwall, whilst bearded tit (<i>Panurus biarmicus</i>) and kingfisher (<i>Alcedo atthis</i>) are also present.</p>
Seabirds	<p>Ongoing seabird surveys are focusing on the behaviour, distribution and abundance of red-throated diver, little tern and Sandwich tern. In addition, survey information concerning the distribution and abundance of other seabirds (including gull species) using the coast adjacent to Sizewell is also been collected</p>

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7.2.10 Whilst it is clear that a large amount of data collection has already been carried out, a gap analysis and consultation exercise has identified where further work is needed, either because of the age of the data or due to the change in the geographic scope of the assessment as the scheme has developed.

iii. Planned further survey/studies

7.2.11 It is proposed to carry out the following ecological work and surveys in order to help inform the ongoing design work for the Main Development Site, and to inform the EIA:

- extended phase 1 habitat surveys of areas of the Main Development Site not surveyed to date;
- detailed surveys and invertebrate habitat assessment in the south-west corner of the Sizewell Marshes SSSI, identifying key micro-habitats to inform habitat creation (plus which features to translocate, if any);
- update the breeding bird and wintering surveys of the Main Development Site. It is envisaged that consultation will take place with both the RSPB and Suffolk Wildlife Trust to update and share information;
- consultation with marine specialists to ensure sufficient survey data has been collected for seabird species;
- establish a wider context for the potential effects on the barbastelle bat population by repeating static detector surveys across the proposed development area (to include for additional locations requested by stakeholders), and carrying out a detailed radio-tracking study which will be used to feed into the overall scheme design;
- review and update the National Vegetation Classification (NVC) of the proposed SSSI land take (i.e. south-west corner of the Sizewell Marshes SSSI) and coastal habitats to provide an up-to-date baseline and inform habitat mitigation and restoration proposals;
- review existing survey information concerning the extent and distribution of nationally scarce or rare plant species within and adjacent to the Main Development Site. This information will be used to produce a mitigation strategy to safeguard rare and scarce plant species; and
- update the badger bait-marking studies to include for areas of the Main Development Site not surveyed to date.

7.2.12 Subsequently, there will be a requirement to carry out pre-construction surveys (post-consent) for various legally protected species to inform any licensing requirements and ensure legislative compliance.

iv. Assessment methodology

General assessment approach for ecology

7.2.13 Whilst the ecological impact assessment (EclIA) methodology would be largely consistent with the general approach set out in **Sections 5.1 to 5.3**, it will need to be modified slightly to conform with the industry standard (the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines (CIEEM, 2006).

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- 7.2.14 In accordance with the CIEEM Guidelines, a comprehensive assessment will be carried out which collates all of the existing baseline information and aims to predict confidently all of the significant effects of the construction, operational and decommissioning phases of the proposed development on Key Ecological Resources (KERs), both with and without mitigation.
- 7.2.15 Where significant adverse effects are predicted, the assessment will present measures to mitigate these effects and/or compensate for them as necessary. In addition, measures will also be developed to address the legislative requirements associated with protected species for which significant effects are not expected, and which are therefore not classified as KERs but which nevertheless warrant mitigation.
- 7.2.16 A KER can be defined as an ecological resource that is sufficiently important to be material in the decision-making process, and where impacts on that resource that could result from the proposed development, in isolation or in combination with other developments, could generate a significant effect (that is, an effect that could have substantive implications for the integrity or conservation status of the habitat or population involved).

Determination of the scope of the assessment

Spatial scope

- 7.2.17 The Zol describes the area over which the activities associated with the proposed development could influence ecological and ornithological resources. This will be established on the basis of a high-level desk-based review of ecological resources in the general vicinity of the Main Development Site, together with the results of field surveys, a review of the likely impact parameters associated with the proposed development, and the outcomes of the consultation exercise.
- 7.2.18 As with the study area, the Zol varies with each habitat, species or assemblage identified as a potential KER, and will thus be presented in the ES once these are confirmed.

Temporal scope

- 7.2.19 To assess the likely impacts of the proposed development, it is necessary to predict how those conditions observed and recorded at the time of the ecological and ornithological surveys (referred to within the assessment as 'existing conditions') would have changed come the time of the commencement of the construction phase of the proposed development. This is referred to as the 'baseline conditions', and is influenced by a number of factors, including future land management and cumulative impacts from other projects.
- 7.2.20 To assess the impacts of the operational phase, it is necessary to predict how the ecological resources in the local area would be expected to develop over a 25-year period in the absence of the proposed development. This is referred to as the 'future baseline', and is also influenced by the factors described above, as well as climate change.

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Assessment of effects and determining significance

7.2.21 This ecological assessment considers the *sensitivity* of resources that could be affected, and the *magnitude* of impacts to which they are likely to be subject, in order to classify *effects* and their *significance*. These issues are addressed in turn in the following paragraphs.

Resource sensitivity ('Determining Value of Ecological Resources' in the CIEEM Guidelines)

7.2.22 In order to determine the likelihood of a significant effect, it is first necessary to identify whether an ecological resource is sufficiently valuable for any impact upon it to be able to generate a significant effect. To achieve this, habitats and species populations will be valued on the basis of a combination of their rarity, status and distribution, using contextual information where it exists. The following frame of reference for the valuation of ecological resources will be used:

- international;
- UK;
- national (England);
- regional (East Anglia);
- county (Suffolk);
- district/borough (Suffolk Coastal);
- local (Sizewell area); and
- within the Main Development Site.

7.2.23 This frame of reference is in accordance with the CIEEM Guidelines. However, it differs slightly from the approach used for other environmental disciplines in this EIA Scoping Report, where a sensitivity level (from 'high' to 'very low') is allocated to each receptor or resource. The value of the resources derived from the CIEEM Guidelines, and the equivalent sensitivity levels used for the other topics in the proposed assessment, have therefore been set out in **Table 7.2.5** to allow for a consistent approach across disciplines.

Table 7.2.5: Guidelines for the assessment of ecological sensitivity

Value/ sensitivity	Equivalent CIEEM value	Description
High	International; UK; National (England)	Value: Very high importance and rarity. Feature/resource possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site (e.g. designated features of international/national importance, such as SACs, SPAs, Ramsar sites and SSSIs). Sensitivity: Feature/resource has a very low capacity to accommodate the proposed form of change, and very limited potential for substitution.
Medium	Regional (East Anglia); County (Suffolk)	Value: Medium importance and rarity, regional scale. Feature/resource possesses key characteristics which contribute significantly to the distinctiveness and character of the site/receptor (e.g. designated features of regional or county importance, such as CWSs, County BAP habitats, etc.).

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Value/ sensitivity	Equivalent CIEEM value	Description
		Sensitivity: Feature/resource has a low capacity to accommodate the proposed form of change, and limited potential for substitution.
Low	District/borough (Suffolk Coastal); Local (Sizewell area)	Value: Low or medium importance and rarity, local scale. Feature/resource only possesses characteristics which are locally significant. Feature/resource not designated or only designated at a district or local level (e.g. local nature reserve). Sensitivity: Feature/resource has some tolerance to accommodate the proposed change.
Very low	Within the application site	Value: Feature/resource characteristics do not make a significant contribution to local character or distinctiveness. Feature/resource not designated. Sensitivity: Feature/ resource is generally tolerant, can accommodate the proposed change.

7.2.24 In accordance with the CIEEM Guidelines, the assessment will focus on those activities that could potentially generate significant effects on KERs. Within this assessment, those resources considered to be of 'Medium' value or greater will be identified as potential KERs.

7.2.25 Impacts upon resources of lower value will not be assessed in detail. However, consideration will be given separately to 'other ecological resources requiring mitigation'. These will include species within the Main Development Site which do not constitute KERs based upon their nature conservation value, but which will still warrant consideration during the design and mitigation of the proposed development on the basis of their legal protection or other issues such as animal welfare.

Magnitude ('Impact characterisation' in CIEEM Guidelines)

7.2.26 Once the ecological resources within the Zol have been identified and valued (in order to determine which could possibly be material to decision-making), it will then be necessary to investigate potential effects on those resources in order to understand how they might be affected by the Main Development Site.

7.2.27 The impact assessment will therefore need to be based upon an understanding of the likely activities associated with the Main Development Site, the biophysical changes that could be predicted as a result of these activities, and the area over which such effects might be experienced by different resources. These effects will be considered for the construction and operational phases. They will be characterised and described in detail using the following parameters, as prescribed in the CIEEM Guidelines:

- positive or negative;
- magnitude (the 'size' or 'amount' of an impact);
- extent (the area over which the impact occurs);
- duration (the time for which the impact is expected to last prior to recovery or replacement of the resource or feature); and
- reversibility (permanent or temporary).

Timing and frequency

- 7.2.28 The likelihood of each impact occurring as predicted will also be considered within the assessment, expressed as a measure of confidence, using the following scale:
- certain/near-certain (probability estimated at 95% or higher);
 - probable (probability estimated above 50% but below 95%);
 - unlikely (probability estimated above 5% but less than 50%); and
 - extremely unlikely (probability estimated at less than 5%).
- 7.2.29 Furthermore, given the relatively long construction phase associated with the proposed development, it is considered appropriate to provide a project-specific definition of what is meant by ‘short’, ‘medium’ and ‘long’-term temporary impacts. These would therefore be defined as follows:
- temporary (short-term): those construction-phase impacts that would be experienced over a period of no more than 1-2 years;
 - temporary (medium-term): those construction-phase impacts that would be experienced over a period of no more than 3-5 years; and
 - temporary (long-term): those construction-phase impacts that would be experienced over a period of more than 5 years.
- 7.2.30 To ensure consistency with other environmental disciplines in the EIA, the above ecological impact characterisation will be summarised using the same scale (i.e. from ‘high’ to ‘very low’) and will be carried out according to the guidelines set out in **Table 7.2.6**.

Table 7.2.6: Guidelines for the assessment of ecological impact magnitude

Magnitude	Guidelines
High	Large-scale, permanent/irreversible changes over a large area affecting key characteristics or features of the particular resource’s character or distinctiveness. Relative to the wider habitat resource/species population, a large proportion would be affected. For designated sites, integrity is compromised.
Medium	Medium-scale, permanent/irreversible changes, affecting key characteristics or features of the particular resource’s character or distinctiveness. Relative to the wider habitat resource/species population, a small-medium area of habitat, or small-medium proportion of the wider species population, would be affected.
Low	Noticeable but small-scale change, over a partial area, to key characteristics or features of the particular resource’s character or distinctiveness. The quality or extent of sites or habitats, or the size of species’ populations, experience some small-scale reduction.
Very low	Noticeable, but very small-scale change, or barely discernible changes for any length of time, over a small area, to key characteristics or features of the particular resource’s character or distinctiveness. Although there may be some impacts on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, would experience little or no reduction.

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- 7.2.31 Similarly, the ecological *effects* associated with the above impact magnitude (that is, the implications of these impacts with regard to the nature conservation status of the habitats and/or species affected) will also be couched in the same terms as used elsewhere in this Scoping Report, using the following **Table 7.2.7**.

Table 7.2.7: Ecological effect definitions

Effect	Description
Major	The change permanently (or over the long-term) adversely or beneficially affects the integrity or conservation status of the habitat/species, reducing the ability to sustain the habitat, or the population level of the species, within a given geographic area. Effects, both adverse and beneficial, which are likely to be important considerations at a national to regional level because they contribute to achieving national/regional objectives, or, which are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	The change permanently (or over the long-term) adversely or beneficially affects the conservation status of the habitat/species, reducing the ability to sustain the habitat, or the population level of the species, within a given geographic area. Effects that are likely to be important considerations at a regional and local level.
Minor	The effects are likely to be within the range of natural variability, and there is not expected to be any permanent change in the conservation status of the species/habitat or the integrity of the designated site. The change is unlikely to affect the nature conservation evaluation of the resource. These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.
Negligible	Any effects are likely to be within the range of natural variability, and there would be no short-term or long-term effects on the conservation status of the species/habitat resources or the integrity of the designated site. The change would not affect the nature conservation evaluation of the resource. An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

- 7.2.32 Following the classification of an effect using the above table, a clear statement can then be made as to whether that effect is significant or not significant, and at what geographical scale.
- 7.2.33 In order to determine which ecological resources could be sufficiently affected by the Main Development Site so that a significant effect could be generated, a preliminary assessment of the likely impacts of the proposed development will be undertaken. Where it is determined that a resource could be sufficiently impacted for a significant effect to be possible, that resource will be 'scoped in' to the detailed impact assessment (as a KER). Those that are not considered to be sufficiently valuable, or where the potential impacts upon them are considered unlikely to generate a significant effect, will be 'scoped out' of the detailed assessment.

Significance

- 7.2.34 A significant effect is defined as one that is considered likely to affect the integrity or conservation status of a KER. Significance will be determined on the basis of an analysis of the factors that characterise the effect, irrespective of the value of the resource. Where a significant effect is identified, the value of the resource (e.g. local, regional or national importance) will then be used to help determine the geographical scale at which the effect is significant. Thus, any negative effect which significantly

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affects the integrity of a resource of, for example, 'national' value will be identified as being a nationally significant effect.

7.2.35 The significance of the likely effects upon the KERs will be assessed both before and after consideration of the mitigation measures. The latter will represent the assessment of the residual effects of the Main Development Site. The approach to determining significance described above is in accordance with the CIEEM Guidelines. However, it differs from the approach used for other environmental disciplines in this Scoping Report, where the significance of an effect is based on a combination of the magnitude of the change and the sensitivity of the receptor or resource.

7.2.36 Again in order to allow a consistent approach across disciplines, the levels of significance derived from the CIEEM Guidelines, and the equivalent significance using the definitions elsewhere in this Scoping Report, are set-out in **Table 7.2.8**.

Table 7.2.8: Significance of ecological effects

Significance following the CIEEM guidelines	Equivalent significance definitions used elsewhere in this Scoping Report
Significant at the international level	Major (= Significant)
Significant at the national level	Major (= Significant)
Significant at the regional level	Moderate (= Significant)
Significant at the county level	Moderate (= Significant)
Significant at the district/borough level	Minor (= Not Significant)
Significant at the local level	Minor (= Not Significant)
Not significant	Negligible (= Not Significant)

v. Assumptions and limitations

7.2.37 In addition to the general assumptions and limitations discussed within **Section 5.7**, the following ecological considerations have been identified:

- the ecological desk study and survey data collected will be sufficiently robust for informing the impact assessment;
- in the unlikely event that construction activities would result in significant airborne emissions (dust, vehicle fumes, etc.), it is assumed that the effects on habitats in the vicinity would be experienced no more than 200m from the source;
- in the unlikely event that pollution events were to occur within a watercourse, it is assumed that the effects on associated fauna and flora could take place up to 5km downstream from the source; and
- the ecological surveys are considered representative and robust, and will be based on the industry-standard best practice survey guidance relevant at the time the surveys are undertaken.

d) Potential impacts and effects

i. Construction

7.2.38 The key construction phase impacts could potentially be as follows:

- Statutory and non-statutory designated sites: The construction phase has the potential to affect these sites causing changes to the associated flora and fauna species that these sites support.
- Habitat loss: This will be especially important with regard to the SSSI but there will also be extensive areas of woodland (largely coniferous plantation) within Goose Hill that will need to be felled, as well as lines of trees and sections of hedgerows (largely those separating the arable fields) that may also need to be removed. Some elements of the coastal habitats may also be affected.
- Habitat fragmentation: The Main Development Site may represent a barrier to the movement of some species, fragmenting habitats either side. This is most likely to be important for those species that require contiguous habitat features or need to access different habitat features in alternative locations at different times (for example, bats roosting in woodland and foraging over wetland habitats).
- Noise, lighting and visual disturbance: This is likely to be relevant to those species that are vulnerable to disturbance or those species that require specific access to the habitat features in close proximity to the Main Development Site.
- Impacts due to the construction of the marine elements: This may include all of the marine construction elements, including pile-driving, tunnelling and increased shipping traffic. These impacts may be particularly pertinent with regard to those species of seabirds that forage off-shore.
- Hydrological impacts: This could potentially be especially important with regard to Sizewell Marshes SSSI and other neighbouring areas of wetland habitat. Changes in the hydrological regime (including the quality and quantity of both ground water and surface water) could alter the plant communities present, affecting associated species such as invertebrates and aquatic mammals.
- Emissions and pollution: Construction activities could result in a variety of emissions, including dust, surface water discharge and accidental spillages from plant. These emissions could affect adjacent species and habitats, for example, dust smothering vegetation or spillages from plant polluting adjacent watercourses. This is particularly important given the ecological value of adjacent habitats.

ii. Operation

7.2.39 The key operational phase impacts are likely to be as follows:

- Changes to the natural environment caused by cooling water discharge: The cooling water discharge will cause some changes to the seawater environment into which it is discharged. This could potentially affect the availability of prey species for seabirds such as red-throated diver and little tern.
- Potential changes to the natural environment caused by noise, lighting and air quality: Noise and lighting may disturb species associated with adjacent

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designated sites, and air emissions could potentially affect habitat quality of adjacent designated sites.

e) Potential mitigation

7.2.40 As discussed in **Section 5.4** the ecological impact assessment will follow the principles outlined in relation to mitigation.

7.2.41 The results of the extensive ecological survey work already carried out (as set out in **Table 7.2.4**) have already influenced the evolution of embedded mitigation within the design of the Main Development Site, notably:

- proposals to restore and create habitat following the cessation of construction works; this may include dune and shingle habitat and creation of habitat type's characteristic of the Suffolk Sandlings, thus ensuring habitat connectivity with designated sites and the wider landscape in the long-term;
- the identification of significant bat populations on the EDF Energy Estate, which has resulted in EDF Energy taking decisions to relocate the proposed northern access road out of Kenton Hills, and to incorporate appropriate buffer zones into the landscape strategy to provide further protection for bats;
- the better understanding of the habitats within the Sizewell Marshes SSSI has reaffirmed the need for EDF Energy to seek to limit land take within the SSSI, and the requirement to create appropriate habitat elsewhere in replacement; and
- the enhanced understanding of reptile species distribution has helped to identify the quantity and quality of replacement habitat required, and thus to plan a comprehensive Reptile Mitigation Strategy.

7.2.42 Additional mitigation measures are likely to be required and these will be detailed in the final ecological assessment. At this stage measures being considered include:

- measures to safeguard legally protected species such as bats, reptiles and water voles;
- measures to reduce noise and other disturbance on sensitive species; and
- measures to manage recreational pressure and disturbance.

f) Approach to cumulative assessment

i. Inter-relationships

7.2.43 At this stage the following inter-relationships are being considered:

- inter-relationship with coastal geomorphology and marine ecology;
- direct habitat loss combined with air and water-borne emissions and changes in the hydrological regime causing changes in the wetland communities present in Sizewell Marshes SSSI;
- displacement of foraging seabirds during construction, combined with potential effects on seabird prey species; and
- recreation and landscape - increased recreation pressure could potentially affect some sites and management of recreation and a long-term landscape strategy will be key to minimising impacts.

ii. Cumulative effects

- 7.2.44 The assessment of cumulative ecological impacts can be defined as an assessment of the predicted changes in the baseline condition of a particular resource, which results from incremental changes caused by other relevant present or reasonably foreseeable actions together with the project under assessment. This is likely to encompass relevant existing developments and those relevant developments that are consented or in planning (i.e. where a planning interest has recently been registered with the relevant local planning authority (LPA) and/or is identified in the relevant development plan or other plans and programmes) within a radius of up to 20km⁴ from the DCO application boundary. A detailed cumulative assessment would only be possible for those other developments where a comprehensive ecological assessment has been carried out, for example the Galloper Wind Farm and its potential effects on seabird populations. Where detailed information is not available, a high level assessment of potential cumulative impacts will be carried out.

⁴ Given the nature of the development and the statutory sites, 20km is considered an appropriate distance over which effects could potentially occur.

7.3 Landscape and visual

a) Introduction

7.3.1 This section sets out the proposed scope and methodology for the Landscape and Visual Impact Assessment (LVIA) of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.3.2 Draft AONB Review and Analysis Report: EDF Energy, in consultation with the Suffolk Coast and Heaths AONB Partnership, has undertaken a review and analysis of the special qualities and natural beauty of the AONB. These findings will help to inform the landscape and visual impact assessment. The draft report is currently being refreshed to incorporate references to the new AONB Management Plan 2013-2018 and other recently published baseline material including the Touching the Tide Landscape Character Assessment (Alison Farmer Associates, 2012).

7.3.3 Design Principles: EDF Energy has identified Relevant Buildings and established a suite of architecture and landscape design principles for the Main Development Site. The design principles have been subject to consultation with SCC, SCDC and Natural England. The Joint Local Authority Group (JLAG), in association with the National Trust, RSPB, Suffolk Wildlife Trust and the Suffolk Coast and Heaths AONB, has also produced and published a suite of landscape, ecological and management design principles (Suffolk County Council, 2014abc).

7.3.4 Landscape and Visual Baseline: EDF Energy has undertaken a desk- and site-based review of landscape character and views in and around the EDF Energy Estate. Studies undertaken to date have been summarised in the Sizewell C Stage 1 Environmental Report and will be updated and extended to form the Stage 2 submission with reference to the proposed LVIA study area and viewpoints which are both subject to review and agreement by the relevant consultees.

7.3.5 LVIA Consultation: EDF Energy has prepared an initial Zone of Theoretical Visibility (ZTV) model of the Main Development Site structures to understand the potential visual effects of the proposed development. This has been used to inform the extent of the proposed LVIA study area and location of LVIA viewpoints. The proposed LVIA methodology, study area and viewpoints were issued to SCC, SCDC, WDC, Natural England and the Suffolk Coast and Heaths AONB in February 2014 for comment. Landscape Strategy: Initial work leading to Stage 1 consultation has been undertaken to develop a landscape strategy for the EDF Energy Estate, illustrating the proposed character of the landscape during the operational phase of the Main Development Site. The landscape strategy is subject to ongoing design development and work to-date will inform a construction phase masterplan and operation phase landscape strategy for the EDF Energy Estate.

c) Approach and methodology

7.3.6 Section 5.9 of EN-1 refers to landscape and visual impacts of energy projects. It records that a number of guides have been produced to assist in addressing landscape issues and that the landscape and visual assessment should include

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reference to any landscape character assessment, associated studies and relevant policies based on these assessments. It adds that the assessment should include the effects during construction of the project and the effects of the completed development and its operation. It also states that the assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity including light pollution effects. It also records that in the context of landscape and visual effects, “*references to landscape should be taken as covering seascape and townscape where appropriate*”.

- 7.3.7 Section 5.9 of EN-1 also records that areas designated as an AONB have specific statutory purposes which help ensure their continued protection. It adds that the conservation of the natural beauty of the landscape and countryside should be given substantial weight in deciding applications for development consent in these designated areas and that the duty to have regard to the purposes of nationally designated areas applies when considering applications for projects outside the boundaries of these areas which may have impacts within them.
- 7.3.8 EN-6 presents details of the Appraisal of Sustainability of the nominated Sizewell site. It records that there is the potential for some long lasting adverse direct and indirect effects on landscape character and visual impacts on the Suffolk Coast and Heaths AONB, with limited potential for mitigation. It adds that this could have an effect on the purpose of the designation and that to further understand these effects, and the effectiveness of the mitigating actions proposed by the nominator of the site, further detailed assessment at the project level is required.
- 7.3.9 The third edition of the Guidelines for Landscape and Visual Impact Assessment, produced jointly by the Landscape Institute and Institute of Environmental Management and Assessment (IEMA) provides guidance on the scope of a LVIA, which it states is “*a tool used to identify and assess the significance of an the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people’s views and visual amenity*” (Swanwick et al, 2013). It also provides references to well-established and recently prepared guidance for assessing the landscape.

i. Study area

- 7.3.10 Site analysis and initial Zone of Theoretical Visibility (ZTV) modelling (of the Stage 1 Main Development Site proposals) has identified the areas where views to the proposed development may be possible. A study area of 15km (measured from the boundary of the Main Development Site) has been proposed to assess likely landscape and visual effects arising from the development in the LVIA. **Figure 7.3.1** illustrates the landscape and context of the indicative Main Development Site and **Figure 7.3.2** shows the extent of the LVIA study area. The study area may need to be extended in consultation as more detail (of construction phase activity in particular), becomes available.

ii. Baseline information

- 7.3.11 As illustrated on **Figure 7.3.2** the Main Development Site boundary is located almost entirely within the Suffolk Coast and Heaths AONB and partially within areas defined as the Suffolk Heritage Coast. AONBs are one of several designated landscapes in

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England and Wales that the Government has confirmed as having the highest status of protection in relation to landscape and natural beauty. There are no statutory requirements or powers associated with the Heritage Coast definition. A small area of the Main Development Site boundary is located within an area designated as a Special Landscape Area (SLA) (within SCDC's administrative area), which is a saved policy (Suffolk Coastal District Local Plan, 2013).

- 7.3.12 Landform within the LVIA study area is shown on **Figure 7.3.3**. Within the 15km LVIA study area land generally slopes eastwards towards the coast. Rivers draining eastwards towards the sea create a relatively regular pattern of higher plateau areas and lower lying valleys that open out to form expansive estuaries and low lying landscapes along the coastal strip in places.
- 7.3.13 The LVIA study area is characterised by a diverse range of land cover and land use types, reflecting human interventions over the years, and the underlying variations in geology, soils and topography. Land use and land cover is dominated by arable farmland, with more localised areas of permanent and improved pasture, typically around villages and farms and along valleys. Areas of heathland/acid grassland are sporadic with larger and more continuous areas of heath notable in some areas. Low lying areas are characterised by open water, drainage ditches, grazing marsh and reed beds, interspersed with wet woodland. Woodland cover varies with large coniferous plantations evident along with more widely distributed deciduous/mixed woodlands and scrub areas, often closely associated with areas of parkland or permanent pasture and close to farms and settlements. Along the coast, low cliffs, vegetated dunes and shingle beaches mark the boundary between land and sea.
- 7.3.14 In the vicinity of the Main Development Site boundary buildings associated with the existing Sizewell A and B power stations complex form prominent features in the local landscape. The main reactor structures are surrounded by ancillary buildings, car parks and areas of hard standing, which are largely screened from views from the surrounding landscape. The EDF Energy Estate also includes a number of farms, farm buildings and dwellings including, Upper Abbey, Lower Abbey and Ash Wood Cottages. Leiston is the principal settlement in the immediate vicinity of the EDF Energy Estate, with Saxmundham located further inland. A number of villages, hamlets and more isolated dwellings are distributed throughout the wider landscape. There is limited settlement along the coast, with the exception of the small hamlet of Sizewell, south of Sizewell A, and the coastal towns of Thorpness, Aldeburgh, Dunwich and Southwold. Other notable built development in the LVIA study area is the 20th century military research establishments at Orford Ness.
- 7.3.15 The LVIA study area is located entirely within the Suffolk Coast and Heaths National Character Area (NCA), which extends along the Suffolk coast. Further inland to the west extends the South Norfolk and High Suffolk Claylands NCA. NCAs are illustrated on **Figure 7.3.4**. At the regional scale of assessment the East of England Landscape Typology (Landscape East, 2011) presents an overview of the region's diverse landscape character within the broad framework of the NCAs. At the more local scale several published studies have been undertaken by the local authorities to map and describe the character of the landscape of the County and SCDC administrative areas and the Suffolk Coast and Heaths AONB. The key reference is the Suffolk County Landscape Character Assessment (illustrated on **Figure 7.3.5**) which identifies 30 landscape types (excluding urban). Other landscape character

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assessments relevant to the study area include the simplified assessment presented in the Suffolk Coast and Heaths AONB Management Plan 2013-2018, the Touching the Tide Landscape Character Assessment (2012), Landscape Character Guidelines for the Suffolk Coast and Heaths AONB, Suffolk Coast and Heaths Landscape Assessment and Waveney District Landscape Character Assessment.

- 7.3.16 The Seascape Character Assessment of the East Inshore and East Offshore Marine Plan Areas (URS Scott Wilson, 2012) presents a strategic overview of coastal and marine character. The LVIA study area includes the Suffolk Coastal Waters character area and East Anglian Shipping Waters character area (see **Figure 7.3.4**). No county or district scale seascape character assessment has been prepared for the LVIA study area. However, the Touching the Tide Landscape Character Assessment maps and describes ten Coastal Character Areas.
- 7.3.17 There are variations in the visual character of the LVIA study area due to the nature of topography, built form, vegetation and land use patterns. For example, from locations on the coast, views out to sea and along the coast are characteristically expansive, whereas those inland are restricted by cliffs, shingle banks and vegetated dunes. These variations in visual character influence the nature and extent of views to the existing Sizewell power stations, and by extension to any proposed development in the vicinity. Field surveys indicate that a variety of visual receptors are located in the study area. Visual receptor types include residents; those visiting the area for recreational and amenity purposes; those travelling through the area; and those engaged in work. The majority of the visual receptors are located onshore, but there is also potential for receptors engaged in activities offshore, such as those working on boats and those engaged in recreational boating and yachting. The location of LVIA viewpoints is to be agreed with SCC, SCDC, Suffolk Coast and Heaths AONB and Natural England in due course.

iii. Planned further survey/studies

- 7.3.18 Baseline Landscape Character: Review and update landscape/seascape and visual baseline covering planning policy context, landscape/seascape character and visual environment with reference to ZTV modelling and LVIA viewpoints agreed with relevant consultees (spring 2014).
- 7.3.19 Landscape Strategy: Develop a landscape strategy for the Main Development Site and wider EDF Energy Estate for the operational phase and Landscape Strategy for construction phase – both incorporating proposed mitigation measures (ongoing).

iv. Assessment methodology

- 7.3.20 The LVIA method draws upon the established Institute of Environmental Management and Assessment and the (third edition) Landscape Institute's Guidelines for Landscape and Visual Impact Assessment (GLVIA3) and Countryside Agency landscape character assessment methodology, and other recognised guidelines, in particular Natural England's 'Approach to Seascape Character Assessment', Scottish Natural Heritage's 'Visual Representation of Wind Farms Good Practice Guidance' and the Landscape Institute Advice Note 'Photography and photomontage in landscape and visual impact assessment'.

- 7.3.21 The LVIA methodology has been developed to conform with GLVIA3, which describes the LVIA process as having four key (overlapping) stages:
- baseline studies;
 - identifying and describing effects;
 - assessing the significance of effects; and
 - mitigation.

Baseline studies

7.3.22 The existing nature of the landscape and visual environment in the study area is established, including any relevant changes likely to occur independently of the proposed development. It includes information on the value attached to the different environmental resources. The key terms used in the baseline include susceptibility, value and sensitivity.

7.3.23 **Susceptibility** is assessed for both landscape receptors such as designated areas and landscape character areas, and for visual receptors (people). It indicates the ability of a defined landscape or visual receptor to accommodate the proposed development “*without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.*”

7.3.24 Susceptibility of landscape character areas/types is influenced by their characteristics and is frequently considered (though often recorded as ‘sensitivity’ rather than susceptibility) within documented landscape character assessments and capacity studies. Susceptibility of designated landscapes is influenced by the nature of the special qualities and purposes of designation and/or the valued elements, qualities or characteristics, indicating the degree to which these may be unduly affected by the development proposed. Susceptibility of accessible or recreational landscapes is influenced by the nature of the landscape involved; the likely activities and expectations of people within that landscape and the degree to which those activities and expectations may be unduly affected by the development proposed. Susceptibility of visual receptors is primarily a function of the expectations and occupation or activity of the receptors. Susceptibility is rated on the following scale:

Table 7.3.1: Susceptibility

Susceptibility	Definition
High	Undue consequences are likely to arise from the proposed development.
Medium	Undue consequences may arise from the proposed development.
Low	Undue consequences are unlikely to arise from the proposed development.

7.3.25 **Landscape value** is “*the relative value that is attached to different landscapes by society...*”. Landscape value is rated in **Table 7.3.2**.

Table 7.3.2: Landscape value

Landscape value	Definition
National/international	Landscapes which are nationally or internationally designated for their landscape value – including National Parks, Areas of Outstanding Natural Beauty, World Heritage sites, Heritage Coast and National Scenic Areas.
Local	Locally or regionally designated landscapes (e.g. Area of High Landscape Value, Regional Scenic Areas); also areas which local evidence indicates as being more valued than the surrounding area.
Community	'Everyday' landscape which is appreciated by the local community but has little or no wider recognition of its value.
Limited	Despoiled or degraded landscape with little or no evidence of being valued by the community.

7.3.26 **Landscape sensitivity** is rated within the range of high, medium, low, very low and is assessed by combining the considerations of susceptibility and value described above. **Table 7.3.3** illustrates the judgement process for landscape receptors.

Table 7.3.3: Landscape sensitivity

		Susceptibility		
		High	Medium	Low
Value	National/international	High	High-Medium	Medium
	Local/district	High-Medium	Medium	Medium-low
	Community	Medium	Medium-low	Low
	Limited	Low	Low-Very low	Very low

7.3.27 For **visual receptors**, judgements of susceptibility and value are closely interlinked considerations; for example, the most valued views are likely to be those which people go and visit because of the available view and it is at those viewpoints that their expectations will be highest. For this reason, the sensitivity of visual receptors is rated in a single step process which combines both factors as follows:

Table 7.3.4: Sensitivity of visual receptors

Sensitivity of visual receptors	Definition
High	Visitors to valued viewpoints which people might visit purely to experience the view, e.g. promoted or well-known viewpoints, key designed views, panoramic viewpoints marked on maps.
High-Medium	People in locations where they are likely to pause to appreciate the view, such as at home, along public rights of way, from local waypoints such as benches, or at key views to/from local landmarks. Visitors to attractions or heritage assets where views are an important contributor to the experience would also fall into this category.
Medium	Travellers using cycle routes or identified scenic road routes. Visitors staying within an area such as at caravan or camping sites.
Medium-Low	Users of most road and rail routes and rural, outdoor workers.

Sensitivity of visual receptors	Definition
Low	Those with limited opportunity to enjoy the view due either to the speed of travel (on motorways and trunk roads); or because their attention is elsewhere e.g. those engaged in work or sporting activities.
Very low	Receptor is generally tolerant and can accommodate the proposed change.

Identification and description of effects

- 7.3.28 The effects that are likely to occur from the construction and operational phases are systematically identified and described, including whether they are adverse or beneficial. The key terms used in the identification and description of effects are scale, duration, extent and magnitude.
- 7.3.29 **Scale** of effects is assessed for all landscape and visual receptors and identifies the degree of change which would arise from the proposed development. It is rated on the scale detailed in **Table 7.3.5**.

Table 7.3.5: Scale of effect

Scale of effect	Definition
Large	Total or major alteration to key elements, features, qualities or characteristics, such that post-development the baseline situation will be fundamentally changed.
Medium	Partial alteration to key elements, features, qualities or characteristics, such that post-development the baseline situation will be noticeably changed.
Small	Minor alteration to key elements, features, qualities or characteristics, such that post-development the baseline situation will be largely unchanged despite discernible differences.
Negligible	Very minor alteration to key elements, features, qualities or characteristics, such that post-development the baseline situation will be fundamentally unchanged with barely perceptible differences.

- 7.3.30 **Duration** of effect is assessed for all landscape and visual receptors and identifies the time period over which the change to the receptor as a result of the development would arise. It is rated on the scale detailed in **Table 7.3.6**.

Table 7.3.6: Duration of effect

Duration of effect	Definition
Permanent	The change is expected to be permanent and there is no intention for it to be reversed.
Long-term	Effects that would be experienced over a period of more than 10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
Medium-term	Effects that would be experienced over a period of 2-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

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Duration of effect	Definition
Short-term	Effects that would be experienced over a period of 0-2 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

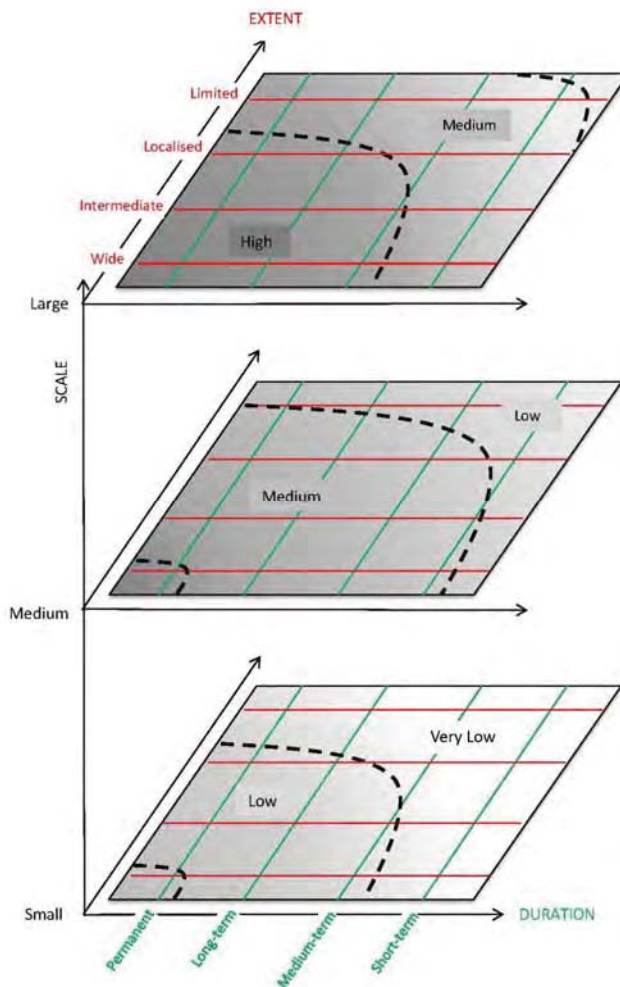
- 7.3.31 The **extent** of effects is assessed for all receptors and indicates the geographic area over which the effects will be felt. It is rated on the scale detailed in **Table 7.3.7**.

Table 7.3.7: Extent of effect

Extent of effect	Definition
Limited	Site, or part of site, or small part of a receptor area (< approx. 10%).
Localised	Site and surroundings up to 2km, or part of receptor area (up to approx. 25%).
Intermediate	Up to approx. 2-4km, or around half of receptor area.
Wide	Beyond 4km, or more than half of receptor.

- 7.3.32 Representative viewpoints are used as ‘samples’ on which to base judgements of the scale of effects on visual receptors. As these viewpoints represent a range of different types of visual receptors, duration and extent are not judged at representative viewpoint locations. Thus, the scale of effect is assessed at representative viewpoints, but duration and extent are judged only when assessing impacts on the visual receptors. For specific viewpoints, duration and extent are assessed, with extent reflecting the extent to which the development affects the valued qualities of the view from the specific viewpoint. For example a very distant development would typically be judged to have a limited extent of effect on a 360 degree panoramic view; but might be judged to have a greater extent if it appeared within the focal area of a channelled or designed view.
- 7.3.33 The **Magnitude** of effect is rated within the range of high, medium, low, very low and is informed by combining the scale, duration and extent of effect. **Table 7.3.8** illustrates the judgement process.

Table 7.3.8: Magnitude of effect



- 7.3.34 Where the scale of effect is judged to be negligible the magnitude is assumed to be very low and no further judgement is required.
- 7.3.35 **Significance** indicates the importance or gravity of the effect. The process of forming a judgement of significance of effect is based upon the assessments of magnitude of effect and sensitivity of the receptor to come to a professional judgement of how important this effect is. This judgement is illustrated by the table in **Table 5.3**.
- 7.3.36 Effects that are major-moderate or major are considered to be significant. Effects of Moderate significance or less are “*of lesser concern*” (Swanick et al, 2012). It should also be noted that whilst an effect may be significant, that does not necessarily mean that such an effect would be unacceptable, or should necessarily be regarded as an ‘undue consequence’. Where intermediate ratings are given, e.g. moderate-minor, this indicates an effect that is both less than moderate and more than minor, rather than one which varies across the range. In such cases, the higher rating will always be given first; this does not mean that the effect is closer to that higher rating, but is done to facilitate the identification of the more significant effects within tables.

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7.3.37 **Positive/adverse/neutral:** Effects are defined as adverse, neutral or positive. Neutral effects are those which overall are neither adverse nor positive, but may incorporate a combination of both.

7.3.38 **Landscape designations:** In considering the effects on designated areas, a number of factors need to be considered. The effects on the component landscape character types/areas and the effects on views from within and towards the designated area need to be understood. These effects are then considered in light of the documented special qualities, valued elements or characteristics, and the purposes of the designation in order to arrive at a judgement of the effects on the designated landscape or landscape element.

7.3.39 **Site:** The effects of physical changes to the site are assessed in terms of the effects on the physical fabric.

v. Assumptions and limitations

7.3.40 In addition to the general assumptions and limitations discussed within **Section 5.7**, the following considerations have been identified:

- Professional judgement will be used at all times, including during the interpretation of desk study and field survey, assessment of potential impacts, the significance of effects, and the likely mitigation measures.
- The assessment of construction phase activities will be based on area and height parameters with descriptions of activities likely to take place within the parameters to enable a robust assessment to be undertaken.

d) Potential impacts and effects

7.3.41 The proposed development will have effects on the landscape as a resource and on views and visual amenity of receptors. The significance of effects will vary as a result of numerous interrelated factors including the sensitivity of the landscape or visual receptors and the magnitude of change resulting from the development (which will vary dependent on issues such as scale, duration and extent).

7.3.42 The effects of construction and the permanent development during operation on tranquillity will be considered in the LVIA where tranquillity is a characteristic of the landscape or is identified as one of the special qualities of an area. Tranquillity will be assessed in the amenity and recreation chapter of the ES.

7.3.43 The main effects arising from the development are likely to result from the loss of landscape features/elements and the introduction of new features/elements either temporarily or in the long-term.

i. Construction

7.3.44 Landscape and visual effects during construction may potentially result from the following:

- movement of machinery and traffic to and around the construction site;
- felling of trees and removal of hedgerows as part of site clearance and preparation;

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- localised changes to topography due to excavation and the stockpiling and storage of excavated materials;
- construction working areas, laydown areas, workshops, storage and offices;
- temporary structures, including concrete batching plant;
- new infrastructure including access roads, bridges, jetty and rail extension;
- works area on the foreshore;
- construction roads, fencing, lighting and security features;
- site access facilities and coach, lorry and car parking;
- site accommodation campus;
- restoration of construction areas and establishment of the post construction phase landscape (in line with the EDF Energy landscape strategy); and
- construction of the permanent Main Development Site structures.

7.3.45 Effects at night may also be experienced as a result of security and other lighting to structures, access and perimeter fencing.

ii. Operation

7.3.46 Landscape and visual effects during operation will result from the elements of permanent development within the Main Development Site which includes the two UK EPR, turbine halls and electrical buildings, cooling water pumphouses and associated buildings, Operational Service Centre and fuel and waste storage facilities together with external plant, internal roads, ancillary, office and storage facilities, National Grid Substation, National Grid Pylon, flood defences and coastal protection measures.

7.3.47 Landscape and visual effects during operation will also result from elements sited away from the main station platform, comprising bridge, car parking, ancillary buildings and helipad, as well as the access road, including related improvements at the B1122 junction.

7.3.48 Effects at night may also be experienced as a result of security and other lighting to buildings, structures, access and perimeter fencing.

e) Potential mitigation

7.3.49 Where possible, proposals to mitigate the effects of development on landscape and visual receptors will be embedded within the design. These measures are likely to include:

- planning the construction and operational phases of the development to optimise land use to reduce/mitigate landscape and visual effects where reasonably practicable;
- architectural design and treatment of structures (that have the ability to be changed), including lighting, access and fencing, to minimise landscape and visual effects including at night;

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- retaining existing screening landscape features where reasonably practical and promote appropriate new landscape design (planting and landform) to mitigate landscape and visual effects of the development;
- establishment of new planting at the earliest reasonable opportunity;
- maintaining and strengthening landscape character and coherent ecological networks through the design and implementation of operation phase landscape strategy and construction phase masterplans; and
- utilising the proposed sea defences and northern mound to screen views of the Main Development Site from the coast.

f) Approach to cumulative assessment

i. Inter-relationships

7.3.50 Potential effects from inter-relationships, as considered at this stage, include:

- effects of noise, light fugitive dust and vibration on landscape character, and visual receptors. Tranquillity is discussed within **Section 7.4** – amenity and recreation;
- effects on heritage assets resulting from changes to views/landscape character; and
- effects on biodiversity resulting from the retention/loss of vegetation and proposals for mitigation as part of the operation phase landscape strategy/ construction phase Landscape Strategy.

ii. Cumulative effects

7.3.51 Cumulative landscape and visual effects arise as a result of the proposed development in combination with other relevant large scale developments in the vicinity of the Main Development Site. Potential cumulative effects arising from the Main Development Site and other major developments may include Galloper Wind Farm sub-station.

7.3.52 Relevant minor applications within 1km of the Main Development Site will also be considered as part of a cumulative LVIA.

7.3.53 The scope of the cumulative assessment will be agreed with relevant consultees in due course.

7.4 Amenity and recreation

a) Introduction

7.4.1 This section sets out the proposed scope and methodology for the amenity and recreation assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.4.2 AONB review and analysis report: EDF Energy has undertaken a review of published documents and consulted the AONB Partnership to identify and document the natural beauty criteria and special qualities of the Suffolk Coast and Heaths AONB. The draft report is currently being refreshed (March 2014) to incorporate references to the new AONB Management Plan 2013-2018 and other recently published baseline material including the Touching the Tide Landscape Character Assessment.

7.4.3 Amenity and recreation baseline: EDF Energy has undertaken an initial desk and site based review of amenity and recreation assets and activities in the proposed study area including Permissive paths and Public Rights of Way (PRoW) within the EDF Energy Estate and study area. Studies undertaken to date were summarised in the Sizewell C Stage 1 Environmental Report; these will be updated and extended to form the Stage 2 submission and will be informed by the proposed amenity and recreation study area (see below).

7.4.4 Amenity and recreation consultation: EDF Energy has defined an initial amenity and recreation study area boundary which has been informed by initial ZTV modelling of the Main Development Site structures and extended noise survey locations. The Amenity and Recreation study area has also informed the suggested Rights of Way survey area locations. The proposed amenity and recreation assessment methodology, study area, nature of stakeholder consultation meetings to support the establishment of baseline information, suggested Rights of Way survey locations and the content of the survey questionnaire will be consulted upon in due course with relevant consultees, to include SCC, SCDC, Ramblers Association, SUSTRANS, Natural England and the Suffolk Coast and Heaths AONB.

7.4.5 Landscape Strategy: Initial work leading to Stage 1 consultation has been undertaken to develop a Landscape Strategy for the EDF Energy Estate, illustrating the proposed character of the landscape following the construction phase. The Landscape Strategy will evolve and inform both a construction phase masterplan, which will include proposed PRoW and Permissive path diversions, and an operational phase Landscape Strategy for the EDF Energy Estate, which will include consideration of PRoW and Permissive paths and provision for recreation.

c) Approach and methodology

i. UK Legislation and Policy

7.4.6 UK legislation of relevance includes:

- The Marine and Coastal Access Act 2009;

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- The Countryside and Rights of Way (CRoW) Act 2000;
- The Highways Act 1980;
- The Wildlife and Countryside Act 1981; and
- Equality Act 2010.

7.4.7 The Overarching NPS for Energy (EN-1) (DECC, July 2011) and the NPS for Nuclear Power Generation (EN-6) (DECC, July 2011) provide the primary basis for decisions taken by the Planning Inspectorate on applications for nuclear power stations.

7.4.8 Section 5.10 of EN-1 identifies that the Government's policy is to ensure there is

“adequate provision of high quality open space (including green infrastructure) and sports and recreation facilities to meet the needs of local communities.”

7.4.9 It further sets out that rights of way, National Trails and areas of access land are important recreational facilities and that mitigation measures should be considered as necessary. It also sets out the importance for consideration of coastal recreation and access to the coast. Furthermore, it identifies that consideration will be given to the implications for development of the creation of a continuous signed and managed route around the coast, as set out in the Marine and Coastal Access Act 2009.

7.4.10 NPS EN-6 sets out that in assessing the site, that there were some concerns in relation to coastal access and whether access to the heritage coastal path would be lost and the effect on local tourism, in particular during the construction phase. It adds that mitigation measures may take the form of siting certain elements of the station away from public footpaths and/or the provision of realignments to existing or planned rights of way.

ii. Study area

7.4.11 Initial site analysis and desk top studies have identified a study area of approximately 2km, measured from the boundary of the Main Development Site. The extent of the amenity and recreation study area is presented on **Figure 7.4.1**.

7.4.12 The study area captures PRow and Permissive paths, local roads and open air recreation assets. It is anticipated that consideration of local roads where footpaths adjoin or where these roads are used for recreational cycling or walking will also be included and agreed during consultation. Routes and recreational assets identified during consultation that lie outside the proposed 2km study area may also be included in the assessment.

iii. Baseline information

7.4.13 The existing amenity and recreation resources within the study area will be mapped and subject to further desk based analysis will include: Public Rights of Way (PRow, including footpaths, bridleways, byways and or numbered National Cycle Routes) for walking, with some having extra rights such as horse riding, cycling or vehicular use, Permissive paths, local lanes, accessible land, including Open Access Land, Permissive Access Land and registered Common Land. Two long distance paths, the Suffolk Coastal Path and Sandlings Walk, extend through the study area, the former located to the east along the coastal edge, the latter through Goose Hill and

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Kenton Hills before travelling north. Permissive routes include those around Goose Hill and Kenton Hills. A number of areas of Open Access Land occur beyond the Main Development Site boundary and within the study area, including land near Leiston Common, Sizewell Common land to the north-west of Dower House, much of the Walks and Aldringham Common, with scattered areas, notably to the south of Leiston. Scattered areas of Registered Common Land are also evident, mainly to the south and east of Leiston. PRow, Open Access Land and Common Land are illustrated on **Figure 7.4.1**.

- 7.4.14 Other existing recreation and amenity resources within the study area include areas of nature interest including designated Sites of Special Scientific Interest (SSSIs) and nature reserves. The key assets in terms of visitors and recreation are the Minsmere RSPB Reserve and North Warren RSPB Reserve which are managed for their nature conservation value, and to provide recreational and educational opportunities. The baseline appraisal will also include, subject to the outcome of ongoing research, consideration of sports and recreation clubs and facilities. Beach and waterborne recreation includes fishing, swimming, sailing and water-sports, such as windsurfing and kayaking.
- 7.4.15 Recreational users include local residents and tourists (day visitors and holiday makers). The amenity and recreation study area include areas of the Suffolk Coast and Heaths AONB, and areas defined as Heritage Coast. AONBs are one of several designated landscapes in England and Wales that the Government has confirmed as having the highest status of protection in relation to landscape and natural beauty. The Suffolk Heritage Coast is largely contained within the AONB, but extends some distance offshore. There are no statutory requirements or powers associated with the Heritage Coast definition: the purpose of the definition is similar to that of an AONB. However, the definition also includes objectives for conserving environmental health and biodiversity of inshore waters and beaches and to extend opportunities for recreational, sporting and tourist activities. The Suffolk Coast and Heaths AONB designation is considered to be an important asset for tourism.
- 7.4.16 A survey of Rights of Way is proposed, subject to consultation with SCC, SCDC and other relevant consultees.
- 7.4.17 The extent of the Suffolk Coast and Heaths AONB, Suffolk Heritage Coast and SLA are illustrated on **Figure 7.3.2**.

iv. Planned further survey/studies

- 7.4.18 Baseline recreation and amenity research including field survey and desk top analysis will be undertaken during early summer 2014 following the Easter holiday break, and autumn/winter 2014 and will include the identification of:
- cycle routes and their use;
 - the extent and use of PRow and Permissive paths;
 - the extent and use of Common Land;
 - user surveys for PRow, Permissive paths and recreational assets (to be agreed in consultation) – surveys will be qualitative, rather than quantitative;

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- preparation of principles for construction phase based on those developed for Main Development Site;
- preparation of initial diversion strategy related to temporary works (construction phase) masterplan; and
- amenity strategy within the Landscape Strategy for permanent works masterplan for the EDF Energy Estate.

v. Assessment methodology

- 7.4.19 The assessment will be undertaken in accordance with the relevant EIA Directive, regulations and guidance documents (as referred to in **Sections 2 and 5**).
- 7.4.20 The assessment will consider, as a minimum, impacts and effects during the construction and operational phases on:
- Rights of Way, which will include consideration of temporary and permanent obstruction and the potential need for diversions and potential disturbance to recreation receptors (both temporary or permanent). The assessment will also include consideration of the likely alteration in amenity experience with reference to the landscape and visual (see **Section 7.3**) and noise environment (see **Section 7.7**); and
 - outdoor passive and active recreation assets, including beaches, nature reserves, sports clubs/facilities, and water bodies and water-based recreation facilities.
- 7.4.21 The assessment of effects will also consider the duration of the impact, for example, some impacts may not be present for the full duration of the various project phases.
- 7.4.22 The chapter will also assess the likelihood of deflection of recreation uses and in particular pedestrian and cycle activity, into the surrounding area during the construction phase and the interaction with ecological receptors, where necessary.
- 7.4.23 The amenity and recreation chapter will also address and assess effects on tranquillity as an amenity matter and draw on technical chapters including noise and LVIA to inform the assessment.
- 7.4.24 The key terms used within the amenity and recreation chapter relating to value/sensitivity, magnitude, effects and significance are described and defined below.
- 7.4.25 Value: the value or potential value of a resource is a function of a number of factors, for example, something may be of community value, or may be designated and therefore be of regional importance.
- 7.4.26 Sensitivity: the sensitivity of an amenity or recreation receptor is defined by its ability to continue to function and or maintain its intrinsic value subject to any changes caused by the proposed development and related activities.
- 7.4.27 Value/sensitivity are rated within the range high, medium, low, very low with reference to the definitions in **Table 7.4.1**.

Table 7.4.1: Value/sensitivity assessment

Receptor Value/Sensitivity	Receptor type
High	<p>Value: Resource possesses key characteristics which contribute significantly to the distinctiveness and character of the locality, e.g. footpath of national significance, and possesses significant social/community value. Resource is extremely rare.</p> <p>Sensitivity: Receptor has a very low capacity to accommodate the proposed form of change.</p>
Medium	<p>Value: Resource possesses key characteristics which contribute significantly to the distinctiveness and character of the locality, e.g. footpath of regional significance, and possesses significant social/community value. Resource is rare.</p> <p>Sensitivity: Receptor has a low capacity to accommodate the proposed form of change.</p>
Low	<p>Value: Resource possesses characteristics which are locally significant e.g. local PRoW network and possesses moderate social/community value. Resource is relatively common.</p> <p>Sensitivity: Receptor has some tolerance of the proposed change subject to design and mitigation.</p>
Very low	<p>Value: Resource does not make a significant contribution to local character or distinctiveness and not designated. Resource is common.</p> <p>Sensitivity: Receptor identified as being generally tolerant of proposed change.</p>

7.4.28 The magnitude of effect based on the effects that the proposed development would have upon the amenity and recreation resource/receptor, is considered within the range of high, medium, low, very low. Consideration is given to scale, duration of impact/effect (e.g. for construction, short-term for 1-2 years, medium-term for 3-5 years, long-term for 5 years and greater and permanent, dependent upon project timeframes) and extent of proposed development with reference to the definitions in **Table 7.4.2**.

Table 7.4.2: Magnitude assessment

Magnitude	Description
High	Large-scale, permanent/irreversible changes, over the whole development area and potentially beyond (i.e. off-site), to key characteristics, features or distinctiveness of amenity and recreation assets/receptors.
Medium	Medium-scale, permanent/irreversible changes, over the majority of the development area and potentially beyond, to key characteristics, features or distinctiveness of amenity and recreation assets/receptors.
Low	Noticeable but small-scale change, over a partial area, to key characteristics, features or distinctiveness of amenity and recreation assets/receptors.
Very low	Noticeable, but very small-scale change, or barely discernible changes for any length of time, over a small area, to key characteristics, features or distinctiveness of amenity and recreation assets/receptors.

- 7.4.29 The assessment of effects is based upon the assessments of magnitude of effects and sensitivity of the resource/receptor to come to a professional judgement of how important this effect is, as set out in **Section 5** of this Scoping Report. The definition of effects in relation to amenity and recreation is provided in **Table 7.4.3**.

Table 7.4.3: Definition of effects

Effect	Description
Major	Very large or large change in the amenity or recreation resource/receptor. Effects both adverse and beneficial, which are likely to be important consideration at the national to regional level as they contribute to achieving national/regional objectives, or, which are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in the amenity or recreation resource/receptor. Effects that are likely to be important consideration at a regional and local level.
Minor	Small change in in the amenity or recreation resource/receptor. These effects may be raised as local issues but are likely to be of importance in the decision making process.
Negligible	No discernible change in the amenity or recreation resource/receptor. An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

- 7.4.30 Significance: generally, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement can also be applied where necessary and justified.

vi. Assumptions and limitations

- 7.4.31 Professional judgement will be used at all times, including during the interpretation of desk study and field surveys, assessment of potential impacts, determining effects and whether they are significant or otherwise, and the likely effects of mitigation measures.
- 7.4.32 The assessment of construction phase activities will be parameters-based with sufficient detail to undertake a robust assessment.

d) Potential impacts and effects

- 7.4.33 The proposed development has the potential to affect the recreational and amenity assets and receptors as detailed below.
- 7.4.34 The effects of construction phase works and the permanent development during operation on tranquillity will also be considered in the Amenity and Recreation assessment with reference to other technical chapters, notably LVIA (see **Section 7.3**) and noise and vibration (see **Section 7.7**).

i. Construction

- 7.4.35 Potential impacts during construction may result from the following:

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- closure or diversion of PRow and Permissive paths;
- disturbance of nearby PRow resulting from construction activities including increased traffic along the road network, construction noise, dust and other emissions, and visual disturbance resulting from changes to baseline views and visible construction plant/activity;
- impact on water-based recreational resources and restricted access to the foreshore and open water immediately surrounding the Main Development Site;
- disturbance to sports and recreational facilities, open access land, public open space from a range of activities, including construction noise, traffic noise, dust and other emissions and visual disturbance; and
- diminished sense of tranquillity.

7.4.36 Effects at night would also be experienced as a result of security and other lighting to structures, access and perimeter fencing.

ii. Operation

7.4.37 Potential impacts during operation may result from the following:

- diminished amenity of PRow in the vicinity of the development resulting from noise emissions and views to the development; and
- diminished sense of tranquillity.

7.4.38 Effects at night would also be experienced as a result of security and other lighting to structures, access and perimeter fencing.

e) Potential mitigation

7.4.39 Where possible, proposals to mitigate the effects of development on amenity and recreation resources and receptors will be embedded within the design, for example where the Landscape Strategy makes provision for footpath proposals. Measures to prevent/avoid, reduce and offset, remedy or compensate effects will be achieved through primary measures, developed through the iterative design process and integrated into the project design; standard construction and operational management practices; and secondary measures intended to address significant residual adverse effects but not built into the final development proposals. The iterative design process, informed by ongoing analysis and testing of proposals, will be documented in the design information accompanying the ES.

7.4.40 In relation to amenity and recreation, mitigation measures are likely to include the following:

- orchestration of Rights of Way closures and diversions and provision of a comprehensive construction phase masterplan to reduce effects where practicable during the construction phase;
- re-establishment of former PRow and realignment of Permissive paths where practicable and establishment of recreation areas as part of the EDF Energy Estate Landscape Strategy;

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- plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable;
- architectural design and treatment of temporary structures, such as the site accommodation campus, including amenity and office building and accommodation blocks, and permanent structures (that have the ability to be changed) and associated infrastructure, including lighting, access and fencing, to minimise recreation and amenity effects including at night;
- retain existing screening landscape features where reasonably practical and promote appropriate new landscape design (planting and landform) to mitigate landscape and visual effects of the development therefore ensuring visual amenity of footpaths and recreation assets is addressed;
- establish new planting and landform at the earliest reasonable opportunity;
- maintain and strengthen landscape character and coherent ecological networks through the design and implementation of operation phase Landscape Strategy and construction phase masterplans, ensuring the visual amenity of footpaths and recreation assets is addressed and maintained where appropriate; and
- utilise the proposed sea defences and northern mound to screen views of the Main Development Site from the coast.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.4.41 The assessment of amenity impacts relating to other technical disciplines/EIA topic chapters will be addressed in the relevant chapter and sign posted in the amenity and recreation chapter. The amenity and recreation chapter will not repeat the amenity assessment for each topic but, where appropriate, will draw together technical topic findings in assessing overall amenity and effects on recreation.
- 7.4.42 Potential inter-relationships are predicted to occur with noise and vibration, air quality, landscape and visual, ecology, transport, historic environment and socio-economics.

ii. Cumulative effects

- 7.4.43 Cumulative effects arise as a result of the proposed development in combination with other relevant large scale developments in the vicinity of the Main Development Site. Potential cumulative effects arising from Sizewell C and other major developments may include the Galloper Wind Farm sub-station.
- 7.4.44 Relevant minor applications within 1km of the Main Development Site will also be considered as part of a cumulative assessment.
- 7.4.45 The scope of the cumulative assessment will be agreed with relevant consultees in due course.

7.5 Terrestrial historic environment

a) Introduction

7.5.1 This section sets out the proposed scope and methodology for the terrestrial historic environment assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.5.2 A review and gap analysis of the available baseline data (AMEC 2010a) was undertaken to identify any significant gaps, allow effective engagement with statutory consultees and inform the assessment methodology.

7.5.3 A desk-based assessment (DBA) was initially undertaken in 2010 to establish the historic environment baseline for the Main Development Site (AMEC 2010b). The study area for the DBA extended 2-3km from the boundaries used as part of the Government's SSA.

7.5.4 Detailed documentary research was undertaken to establish the extent of coastal erosion and land loss, in particular relating to the Sizewell settlement (AMEC 2011a). Desk studies have also been undertaken to establish the baseline for the settings of designated heritage assets (AMEC 2012a) within an extended study area agreed in consultation with Suffolk County Council Archaeological Service (SCCAS) and English Heritage.

7.5.5 Geophysical survey, comprising detailed magnetometer survey, was carried out on agricultural fields within the Main Development Site (Stratascan 2011). A LiDAR survey was undertaken on the wooded areas to identify potential archaeological remains, and across agricultural fields to augment data from the geophysical survey (AMEC 2012b). A detailed resistivity tomography survey, supported by investigatory geoarchaeological boreholes, was undertaken on the Main Development Site to develop an initial deposit model (AMEC 2013a).

7.5.6 An archaeological trial trench evaluation in advance of construction of wildlife ponds at Upper Abbey Farm revealed evidence for post-medieval quarrying but no archaeological features (Heard 2010).

7.5.7 Geoarchaeological monitoring of 29 peat trial auger holes did not recover any artefactual remains (AMEC 2012c). However, the recorded peat and fine-grained mineral-rich deposits have the potential to provide a detailed reconstruction of the environmental history of the Main Development Site and its environs, supporting the results of previous geoarchaeological investigations in 2008 and 2009.

c) Approach and methodology

i. Study area

7.5.8 The study area for the terrestrial historic environment assessment will be based upon that for the 2010 DBA, and extended to include the redline boundaries for the Main Development Site and off-site associated development. The study area will extend a

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minimum of 1km beyond the proposed redline boundaries to establish archaeological and historical context and assess the potential for undesignated buried archaeological remains. The study area for the Main Development Site is shown in **Figure 7.5.1**.

- 7.5.9 The study area for the settings assessment includes Covehithe, to the north of the River Blythe, and Southwold to the north of the Main Development Site, and extends south beyond Aldeburgh and the River Alde to include Orford and Orford Ness. The A12 trunk road forms the western boundary of the study area and the current coast line was used as the eastern boundary. Coastal views towards the existing power station complex extend beyond the study area identified above. The study area for the settings assessment is shown in **Figure 7.5.2**.

ii. Baseline information

- 7.5.10 There is evidence for human occupation and utilisation of the landscape surrounding Sizewell from the Prehistoric through to the Second World War (WWII), including a number of heritage assets identified from cropmarks on aerial photographs, as well as findspots and built heritage assets.
- 7.5.11 The resistivity tomography geophysical survey and associated geoarchaeological ground investigation identified the presence of a wide channel, floodplain and rising topography to the south. This represents a former buried landscape, with the potential for both prehistoric and historic activity and therefore the potential for survival of associated archaeological remains beneath the Main Development Site.
- 7.5.12 A detailed magnetometer survey recorded potential buried archaeological remains and former landscape features extending across the Main Development Site.
- 7.5.13 There are no Scheduled Monuments within the redline boundary of the Main Development Site.
- 7.5.14 Leiston Abbey and moated site is a Scheduled Monument located approximately 600m to the west of the Main Development Site boundary. The Abbey was relocated from its original site due to coastal erosion in the 14th century AD. The remains of St Mary's Abbey, which forms part of the Scheduled Monument, is a Grade I Listed Building. Within the abbey complex the Retreat House, Barn and Guesten Hall are all Grade II Listed Buildings.
- 7.5.15 Three Grade II Listed Buildings (Upper Abbey Farmhouse, Barn at Upper Abbey Farm and Abbey Cottage) are located close to or within the boundary of the Main Development Site.
- 7.5.16 The designated heritage assets baseline study identified over 300 designated assets within the study area.
- 7.5.17 To the north and east of the Main Development Site are the Grade I Listed Church of St. Peter, Grade II* Theberton House and numerous Grade II Listed Buildings within Theberton and Eastbridge.
- 7.5.18 Old Leiston Abbey, the original 12th century site of St Mary's Abbey, is located on Minsmere approximately 1.5km to the north. The standing remains of the chapel, and an integrated WWII pillbox, is a Scheduled Monument.

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- 7.5.19 Further to the north, Southwold Conservation Area, particularly the Marine Villas Character Area, has views to the south down the coast from Gun Hill towards the existing power station complex. The Grade I Listed Church of St. Andrew, Covehithe, is located approximately 6km to the north of Southwold.
- 7.5.20 There are a number of designated and undesignated heritage assets within Leiston and Sizewell. These include the Grade II* Listed Leiston House, the Grade II Listed Long Shop and Church of St. Margaret.
- 7.5.21 There are long distance views from the south, across Thorpeness Conservation Area towards the existing power station complex. Designated assets of particular note in Thorpeness include The House in the Clouds, a Grade II Listed former water tower, which is now a holiday home, The Westbar, Westgate and Thorpeness Mill, which are Grade II Listed.
- 7.5.22 Further south, views can be afforded from Aldeburgh Conservation Area to the north along the coast from the seafront promenade and the Grade I Listed Moot Hall. Orford Castle is a Scheduled Monument and Grade I Listed Building, while the Parish Church of St Bartholomew is Grade I Listed. The military installation at Orford Ness is undesignated. Orford Ness Lighthouse dates from the 18th century and is Grade II Listed.

iii. Planned further survey/studies

- 7.5.23 Further desk studies will be carried out to update and expand the existing baseline to include construction site boundaries, highways improvements and rail routes will be completed in 2014.
- 7.5.24 Where geophysical surveys have been undertaken, a programme of trial trenching for these areas has been agreed with SCCAS to confirm the presence/absence of archaeological remains, establish the nature, date and extent of any archaeological remains within the site boundaries and inform proposals for mitigation to be agreed with SCCAS and English Heritage and included in the ES.
- 7.5.25 An additional geophysical survey will be carried out on areas not previously surveyed. Once the additional geophysical work is completed, an additional programme of trial trenching will be agreed as above. Trial trenching will be carried out ahead of the DCO submission.
- 7.5.26 Site visits to identify offsite heritage assets for which settings assessments will be required will be carried out in conjunction with English Heritage and Conservation Officers.
- 7.5.27 The representative viewpoints for the LVIA assessment will be used to inform the settings assessment where appropriate. The need for site specific heritage viewpoints for certain heritage assets (e.g. Leiston Abbey) will be discussed and agreed with English Heritage and Conservation Officers and added to the assessment where required.
- 7.5.28 The ES chapter will cross-reference the LVIA ES chapter and other workstreams (including noise) where appropriate to ensure an integrated approach to assessment.

iv. Assessment methodology

- 7.5.29 The assessment, and all supporting surveys, would be conducted in accordance with standards and guidance issued by the Institute for Archaeologists (IfA), English Heritage and other relevant documents, which set standards for all phases of archaeological assessment. Key guidance will include, but not be limited to:
- Standard and Guidance for Historic Environment Desk-Based Assessment (IfA 2012);
 - Standard and Guidance for Archaeological Geophysical Survey (IfA 2012);
 - Standard and Guidance for An Archaeological Watching Brief (IfA 2008); and
 - Standard and Guidance for Archaeological Field Evaluation (IfA 2008).
- 7.5.30 There is, as yet, no standard or guidance published by the IfA or English Heritage specifically relating to EIAs for archaeology and cultural heritage.
- 7.5.31 The Design Manual for Roads and Bridges (DMRB), Volume 11: Environmental Assessment, Section 3, Part 2, Cultural Heritage (Highways Agency June 1993, amended 2007) contains guidance for assessing the effects of road schemes on cultural heritage.
- 7.5.32 DMRB 11.3.2 includes criteria for determining the value of heritage assets and assessing the magnitude of impacts on the heritage resource.
- 7.5.33 Heritage assets will be assigned a level of importance (value) in accordance with the historic environment definitions given in **Table 7.5.1**. The criteria described in **Table 7.5.1**, are adapted from DMRB.
- 7.5.34 As there are no internationally important sites within the study area (e.g. World Heritage sites), the DMRB category of “Very High Importance” has not been applied.

Table 7.5.1: Criteria used to determine importance (value)

Importance	Description
High	<p>Ancient monuments scheduled under the Ancient Monuments and Archaeological Areas Act 1979, or archaeological sites and remains of comparable quality, assessed with reference to the Secretary of State’s non-statutory criteria, as set out in DCMS Guidance on Scheduled Monuments, Annex 1 (Ref. 23.1).</p> <p>Historic buildings that can be shown to have exceptional qualities in their fabric or historical association (for example Grade I or II* Listed Buildings).</p> <p>Well preserved historic landscapes preserving visible elements from medieval or earlier patterns.</p>
Medium	<p>Archaeological sites and remains which, while not of national importance, fulfil several of the Secretary of State’s criteria and are important remains in their regional context.</p> <p>Historic buildings that can be shown to have important qualities in their fabric or historical association (for example many Grade II Listed Buildings).</p> <p>Averagely well-preserved historic landscapes.</p>
Low	<p>Archaeological sites and remains that are of low potential or minor importance.</p> <p>Historic buildings of modest quality in their fabric or historical association.</p> <p>Historic landscapes with specific and substantial importance to local interest groups, but with limited wider importance.</p>

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Importance	Description
Very low	Buildings of no architectural or historical merit. Areas in which investigative techniques have produced negative or minimal evidence for archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated. Almost wholly modern landscapes created through the removal of historic boundaries.

7.5.35 Magnitude of impacts will assess the consequence that the proposed development would have on the historic environment resource. Magnitude will be considered in terms of high, medium, low and very low (see **Table 7.5.2**).

7.5.36 Potential impacts will also be considered in terms of permanent or temporary, adverse (negative) or beneficial (positive) and cumulative.

Table 7.5.2: Guidelines for the assessment of magnitude

Magnitude	Description of change
High	Complete removal of an archaeological site. Severe transformation of the setting or context of a designated heritage asset or serious loss of key components in a monument group.
Medium	Removal of a major part of an archaeological site's area and loss of research potential. Partial transformation of the setting or context of a designated heritage asset or partial loss of key components in a monument group. Introduction of considerable noise or vibration levels to a designated site, increased traffic, and/or reduction in air quality leading to changes to amenity use, economic viability, accessibility or appreciation of an archaeological site. Diminished capacity for understanding or appreciation (context) of a designated heritage asset site.
Low	Removal of an archaeological site where a minor part of its total area is removed, but that the site retains a meaningful future research potential. Minor change to the setting of a designated heritage asset.
Very Low	No notable physical impact or change. No notable change in setting or context. No impact from changes in use, amenity or access.

7.5.37 The magnitude of impact will be assessed against the value of the asset using a matrix to determine the resulting effect on the heritage resource, without mitigation.

7.5.38 Following the classification of an effect using this methodology, a clear statement will then be made as to whether that effect would be 'significant' or 'not significant'.

7.5.39 As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement can also be applied where necessary, including taking account of whether the effect is permanent or temporary.

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- 7.5.40 Mitigation will be proposed, which would enable the residual effect (whether adverse or beneficial) to be determined.
- 7.5.41 For the assessment of potential impacts to the settings of designated and, where appropriate, undesignated heritage assets, reference will be made to *The Setting of Heritage Assets* (English Heritage, 2011).
- 7.5.42 The assessment of impacts to settings would also take account of the National Planning Policy Framework (NPPF), which sets out that development may give rise to harm to heritage assets through change to the setting of that asset, even where no physical damage or disturbance occurs. The NPPF further distinguishes between 'harm' and 'substantial harm', and sets out how development that gives rise to harm should be considered within the planning process.

v. Assumptions and limitations

- 7.5.43 There are no known assumptions and limitations at this stage.

d) Potential impacts and effects

i. Construction

- 7.5.44 The nature and extent of buried archaeological remains across the construction site has not yet been determined. However, there is the potential for the permanent loss of buried archaeological remains and palaeoenvironmental deposits during construction.
- 7.5.45 There is the potential for temporary impacts to the settings of designated heritage assets, both in the vicinity of the Main Development Site and further along the coast to the north and south.
- 7.5.46 These works are anticipated to last for the duration of the construction programme. Although the length of the construction phase of the proposed development would not allow results to be categorised as 'short-term', effects arising from the perceptual presence of the proposed development will be reversible on completion of construction.

ii. Operation

- 7.5.47 There is the potential for impacts to the settings of designated heritage assets, both in the vicinity of the Main Development Site and further along the coast to the north and south.

e) Potential mitigation

- 7.5.48 For buried archaeological remains and palaeoenvironmental deposits mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects during construction. This would usually reduce the nature of the adverse residual effect but would not result in a beneficial effect.
- 7.5.49 Any significant effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be

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feasible, enhancements to the asset or its immediate setting may be considered to offset the overall effect.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.5.50 The inter-relationships between increased traffic, noise, vibration and dust from construction would be considered during the assessment of impacts on the settings of heritage assets.

ii. Cumulative effects

- 7.5.51 The scope of the cumulative assessment will be agreed with English Heritage, SCCAS and relevant consultees (e.g. local authority Conservation Officers). The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.
- 7.5.52 It is anticipated that the cumulative assessment will focus on impacts to the settings of designated heritage assets, where it has been identified that the main development is likely to result in a change to the asset's setting.
- 7.5.53 The cumulative assessment will cross-reference to the LVIA where appropriate. The cumulative assessment will also consider effects on settings where developments may be viewed sequentially in relation to or from designated heritage assets.

7.6 Marine historic environment

a) Introduction

7.6.1 This section sets out the proposed scope and methodology for the marine historic environment assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.6.2 A marine historic environment desk-based assessment has been prepared for the proposed development (AMEC 2014). The study area encompasses an area of approximately 400km² (20km x 20km), with the Main Development Site at its central point, in order to gain a broad understanding of the context of the available data.

7.6.3 The study comprises a review of available literature (including previous DBAs; environmental assessments; regional syntheses; published and unpublished academic material), supplemented by the archaeological assessment of new geophysical (swath bathymetry and backscatter data), and geomorphological (LiDAR, georectified historic maps) data of the offshore region and the adjacent coastline.

7.6.4 Coastal and Offshore Archaeological Research Services (COARS), University of Southampton, was commissioned on behalf of EDF Energy to undertake an archaeological assessment of the impact of investigatory work associated with the proposed locations of the cooling water infrastructure for the proposed development. COARS assessed existing geophysical data to identify features or zones of high archaeological potential and determine potential impacts associated with offshore borehole drilling and recovery at two areas licensed by the Marine Management Organisation. No direct conflicts with known archaeological targets, or features/zones of high archaeological potential, were identified at either of the two licensed areas (AMEC 2013c).

c) Approach and methodology

i. Study area

7.6.5 The study area for the marine historic environment DBA encompasses an area of approximately 400km² (20km x 20km) with the Main Development Site at its centre.

7.6.6 The study area provides the marine and terrestrial archaeological context for evidence situated below the mean high water mark (MHWM). The study area for the assessment of the marine historic environment is shown in **Figure 7.6.1**.

ii. Baseline information

7.6.7 The Marine Historic Environment DBA (AMEC 2014) concluded that the potential for archaeological remains below MHWM is medium-high.

7.6.8 A total of 162 wrecks were identified within the marine study area, although the proposed development is not expected to directly impact any of these.

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7.6.9 Of particular significance is the presence of the Dunwich Bank wreck, a designated wreck site situated approximately 4.5km to the north of the Main Development Site.

iii. Planned further survey/studies

7.6.10 Surviving archaeological remains and palaeo-environmental deposits of archaeological interest (if present) are likely to be submerged beneath a considerable sedimentary overburden. Consequently, COARS will complete an assessment of the recovered core material from the 2013 offshore geotechnical borehole campaign, in order to produce an initial deposit model in 2014.

7.6.11 Where additional sub-bottom profile and core data is acquired for geotechnical purposes, this will be analysed by COARS to enable a more accurate assessment of the potential presence or absence of archaeological remains/deposits in the offshore and intertidal zone.

7.6.12 The scope of the marine historic environment assessment will be discussed and agreed with the English Heritage Marine Consents Officer and the Regional Scientific Advisor.

iv. Assessment methodology

7.6.13 For the offshore and intertidal historic environment assessment key guidance will include, but not be limited to:

- Standard and Guidance for Historic Environment Desk-Based Assessment (IfA 2012);
- Historic Environment Guidance Note for the Offshore Renewable Energy Sector (COWRIE 2006);
- Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (COWRIE 2011)); and
- Marine Geophysics Data Acquisition, Processing and Interpretation (Plets et al, 2013).

7.6.14 There is, as yet, no standard or guidance published by the IfA or English Heritage specifically relating to EIAs for archaeology and cultural heritage.

7.6.15 Assessment of the importance, or value, of heritage assets is based upon existing designations, the potential to contribute to the aims of the Marine and Maritime Historic Environment Research Framework (Dix and Sturt, 2013) and the criteria described in **Table 7.6.1**, which is based on the DMRB.

7.6.16 As there are no internationally important sites within the study area (e.g. World Heritage sites) the DMRB category of “Very High Importance” has not been applied.

Table 7.6.1: Criteria used to determine importance (value)

Importance	Description
High	Ancient monuments scheduled under the Ancient Monuments and Archaeological Areas Act 1979, or archaeological sites and remains of comparable quality, assessed with reference to the Secretary of State’s non-statutory criteria, as set out in DCMS Guidance on Scheduled Monuments, Annex 1.

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Importance	Description
	Sites protected under the Protection of Wrecks Act 1973. Wreckage covered by the Protection of Military Remains Act 1986. Well preserved sites/features not previously detected but considered to be of high importance based upon arguments made in relevant research frameworks.
Medium	Archaeological sites and remains which, while not of national importance, fulfil several of the Secretary of State's criteria and are important remains in their regional context.
Low	Archaeological sites and remains that are of low potential or minor importance.
Very low	Areas in which investigative techniques have produced negative or minimal evidence for archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.
Unknown	Areas that may contain potential for significant archaeological remains

- 7.6.17 Magnitude of impacts will assess the consequence that the proposed development would have on the historic environment resource. Magnitude will be considered in terms of high, medium, low and very low (see **Table 7.6.2**).
- 7.6.18 Potential impacts will also be considered in terms of permanent or temporary, adverse (negative) or beneficial (positive) and cumulative.

Table 7.6.2: Guidelines for the assessment of magnitude

Magnitude	Description of change
High	Complete removal of an archaeological site.
Medium	Removal of a major part of an archaeological site's area and loss of research potential.
Low	Removal of an archaeological site where a minor part of its total area is removed, but that the site retains a significant future research potential.
Very low	No notable physical impact or change.

- 7.6.19 The magnitude of impact will be assessed against the value of the asset using a matrix to determine the resulting effect on the heritage resource, without mitigation.
- 7.6.20 Following the classification of an effect using this methodology, a clear statement will then be made as to whether that effect would be 'significant' or 'not significant'.
- 7.6.21 As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, professional judgement can also be applied where necessary, including taking account of whether the effect is permanent or temporary.
- 7.6.22 Mitigation will be proposed, which would enable the residual effect (whether adverse or beneficial) to be determined.

v. Assumptions and limitations

- 7.6.23 There are no known assumptions and limitations at this stage.

d) Potential impacts and effects

i. Construction

7.6.24 The nature and extent of submerged remains / deposits offshore has not yet been determined. However, there is the potential for the permanent loss of buried archaeological remains and palaeoenvironmental deposits during construction.

ii. Operation

7.6.25 There is the potential for impacts to submerged deposits as a result of scour associated with offshore installations.

e) Potential mitigation

7.6.26 Suitable protocols for appropriate mitigation of potential significant adverse effects to the marine archaeology resource will be discussed and agreed with the English Heritage Marine Consents Officer and the Regional Scientific Advisor.

7.6.27 For buried archaeological remains and palaeoenvironmental deposits, mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects from construction. This would usually reduce the nature of the adverse residual effect but would not result in a beneficial effect.

f) Approach to cumulative assessment

i. Inter-relationships

7.6.28 The marine historic environment chapter will cross reference the coastal geomorphology and hydrodynamics chapter in order to assess possible impacts, such as scour, on submerged heritage assets.

7.6.29 Assessment of impacts on Historic Seascape Character will cross reference to other chapters, including LVIA, where relevant.

ii. Cumulative effects

7.6.30 The scope of the cumulative assessment will be agreed with English Heritage, Marine Consents Officer and the Regional Scientific Advisor.

7.6.31 The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.

7.7 Noise and vibration

a) Introduction

- 7.7.1 This section sets out the proposed scope and methodology for the noise and vibration assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

- 7.7.2 The initial baseline survey was carried out at eight locations around the Main Development Site in 2010 (see survey locations shown on **Figure 7.7.1**). A number of these monitoring locations were also surveyed during the Sizewell B outage in June 2013 (these locations are marked on **Figure 7.7.2**). Both surveys were carried out to the requirements of BS 7445-1:2003.

c) Approach and methodology

i. Study area

- 7.7.3 The study area is defined in **Figure 7.7.3**. This includes all human receptors identified around the Main Development Site which have the potential to be affected by noise on account of their proximity to the proposed development. It also includes areas potentially important for their quiet character, for example Leiston Abbey, public rights of way (PRoW), and sites of importance for nature conservation (e.g. Sizewell Marshes SSSI).
- 7.7.4 The study area will also include the A12 en route to Sizewell (between Ipswich to the south and Lowestoft to the north) and on the B1122, which was proposed at Stage 1 consultation as the main access road to the construction site from the A12. Other roads in the vicinity of the construction site that are likely to experience some increases in car traffic will also be considered as appropriate.
- 7.7.5 Potential noise and vibration impacts arising from Sizewell C-related rail freight movements on the Saxmundham-Leiston branch line and the East Suffolk Line will also be considered.

ii. Baseline information

- 7.7.6 Initial baseline survey work took place between 29 March and 14 April 2010 for durations ranging between less than 24 hours to a week. The locations were agreed with SCDC. This was followed up with a further baseline noise survey during the Sizewell B outage in June 2013. The purpose of this survey was to determine potential future baseline conditions without the Sizewell B station operating. The monitoring locations are detailed on **Figure 7.7.1** and **Figure 7.7.2**. The influence of Sizewell B on the baseline noise environment will be further examined following the planned further studies.

iii. Planned further survey/studies

- 7.7.7 Work carried out to date provides an initial indication of the existing noise climate in the vicinity of the Main Development Site. Further comprehensive surveys of noise

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sensitive locations around the site are to be undertaken in 2014. Proposed monitoring locations for the Main Development Site are shown in **Figure 7.7.4** and **Figure 7.7.5** shows road traffic monitoring locations (subject to confirmation and landowner consent). **Tables 7.7.1** and **7.7.2** show a list of planned monitoring locations around the Main Development Site and on the surrounding road network along with a brief explanation of the rationale behind their selection. Vibration impacts are generally dictated by absolute values as opposed to any level of change from an existing baseline. Baseline vibration surveys may, however, be undertaken in certain critical locations, as set out below.

Table 7.7.1 List of monitoring locations around the Main Development Site

Location code	Site name	Future use of baseline data
MS1	Eastbridge South	To assess impact from construction at the Main Development Site at the closest residential location in Eastbridge
MS2	Close to Lower Abbey Farm	To assess local impact from construction at the Main Development Site
MS3	Close to Leiston Old Abbey	To consider impact on quiet character of area (which is a heritage asset and within a SSSI) from construction at the Main Development Site and from operational phase
MS4	Potters Street	To assess local impact from construction at the Main Development Site
MS5	Close to Potters Farm	To assess local impact from construction at the Main Development Site
MS6	Close to The Round House	To assess local impact from construction at the Main Development Site
MS7	Close to Ash Wood Cottages	To assess local impact from construction at the Main Development Site
MS8	Abbeymarshes	To consider impact on quiet character of area (which is within a SSSI) from construction at the Main Development Site and from operational phase
MS9	Coast path north	To consider impact on quiet character of area on a recreational route within an SPA from construction at the Main Development Site and from operational phase
MS10	Bridleway centre	To assess impact of operational site
MS11	Close to Hill Farm	To consider local impact from possible new rail route
MS12	Close to Leiston Abbey/Pro Corda music school	To consider local impact from possible new rail route and construction site entrance on B1122 on the heritage asset and associated music school
MS13	Close to Old Abbey Farm Lodge	To assess impact from construction at the Main Development Site
MS14	Close to Abbey Cottage	To assess impact from construction at the Main Development Site

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Location code	Site name	Future use of baseline data
MS15	Close to Old Abbey Care Home	To assess impact from construction at the Main Development Site
MS16	Sizewell Marshes west	To consider impact on quiet character of the SSSI from construction at the Main Development Site and from operational phase
MS17	Sizewell Marshes east	To consider impact on quiet character of the SSSI from construction at the Main Development Site and from operational phase
MS18	Close to Cakes and Ale	To consider local impact from possible new rail route
MS19	Leiston North	To assess rail noise from proposed new rail route
MS20	Coast path at site	To consider impact on quiet character of area from construction at the Main Development Site and from operational phase
MS21	Close to Gate House, Saxmundham Road	To assess local impact from road traffic and rail traffic noise
MS22	Close to Leiston Station	To assess local impact from road traffic and rail traffic noise
MS23	Leiston centre	To assess rail noise impact in Leiston, away from road traffic
MS24	Leiston Valley Rd	To assess rail noise impact local to rail bridge and from possible rail head operations
MS25	Sandy Lane west	To assess impact from possible rail head and from road traffic associated from rail head use at that rail head
MS26	Close to Keepers Cottage	To consider local impact on quiet character of area from construction at the Main Development Site and from operational phase
MS27	Close to Rosery Cottage	To assess impact from construction at the Main Development Site and operational site
MS28	Sizewell Village	To assess impact from construction at the Main Development Site and operational site
MS29	Leiston Rail crossing	To assess impact from possible rail head
MS30	Close to Crown Lodge	To assess impact from possible rail head
MS31	Sandlings	To consider impact on quiet character of area (which is within the AONB and an SPA) from construction at the Main Development Site and from operational phase
MS32	Close to Sizewell campsite	To assess impact from construction at the Main Development Site and construction site at campsite and other locations south of Sizewell
MS33	Leiston West	To assess local rail noise impact

Table 7.7.2 List of monitoring locations for road traffic on the surrounding network

Location code	Site name	Future use of baseline data
RT1	A1120	To assess road traffic noise impact on the A1120
RT2	Yoxford junction	To assess road traffic noise at the junction between A12 and B1122
RT3	B1122 Middleton Moor	To assess road traffic noise impact at Middleton Moor level crossing
RT4	B1122 Middleton	To assess road traffic noise impact on the B1122 in Middleton
RT5	Westleton	To assess road traffic noise impact in Westleton
RT6	B1122 Theberton	To assess road traffic noise impact on the B1122 at Theberton
RT7	Close to Gate House, Saxmundham Road	To assess road and rail traffic noise impact on Saxmundham Road (also shown on Main Development Site monitoring location plan)
RT8	Close to Leiston Station	To assess road and rail traffic noise impact at Leiston station
RT9	Knodishall	To assess road traffic noise impact on Snape Road at Knodishall
RT10	Snape junction	To assess road traffic noise impact on the A1094
RT11	Farnham east	To assess road traffic noise impact on the A12 at Farnham
RT12	Farnham west	To assess road traffic noise impact on the A12 at Farnham
RT13	Glemham	To assess road traffic noise impact on the A12 at Glemham
RT14	Marlesford	To assess road traffic noise impact on the A12 at Marlesford

7.7.8 Monitoring will comprise surveys of noise levels conducted over a 24-hour period, involving both continuous recording of data and spot checks at critical periods. In some cases, principally relating to locations potentially susceptible to vibration from road and/or railway traffic, baseline vibration surveys will be undertaken simultaneously with the noise surveys. The surveys will be manned and unmanned, dependent on the data to be gathered. The potential need for further survey locations beyond those points will be considered, taking account of the results of the VISUM traffic modelling studies.

iv. Assessment methodology

7.7.9 The general approach to assessment for noise and vibration will be to assess impact magnitude and receptor sensitivity and thereby to consider effects. The numerical values determining the impact magnitude will depend upon the activity under consideration and its likely duration. **Table 7.7.3** contains criteria for considering

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magnitude of noise impact and **Table 7.7.4** contains criteria for considering vibration impacts. In both cases, these criteria apply across all aspects of the proposed development including the construction and operational phases. **Table 7.7.5** contains criteria for assessing sensitivity to noise and vibration. Where noise or vibration impacts fall outside of the range in **Tables 7.7.3 and 7.7.4**, professional judgement will be used (with fully justified reasoning) to describe the impact. When considering “long-term” impacts for construction noise and vibration, the relevant standard (BS5228-1:2009, referred to below) defines the time period as more than six months. It is intended to adopt this timeframe in the assessment of long-term exposure during construction.

Table 7.7.3: Assessment of magnitude of impact for noise

Magnitude	Criteria
High	Large-scale, permanent / irreversible or medium/long-term changes, to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a greater than 10 dBA change in sound level or sound produced in excess of 10 dBA above baseline or recommended noise guideline values.
Medium	Medium-scale, permanent/irreversible or medium-term changes to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a greater than 5 and less than 10 dBA change in sound level or sound produced in between 5 dB and 10 dBA above baseline or recommended noise guideline values.
Low	Noticeable but small-scale change, over a partial area, to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a greater than 3 and less than 5 dBA change in sound level or sound produced in between 3 and 5 dBA above baseline or recommended noise guideline values.
Very low	Noticeable, but very small-scale change, or barely discernible changes for any length of time, over a small area, to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a less between 1 dBA and 3 dBA change in sound level or sound produced between 1 dBA and 3 dBA above baseline or recommended noise guideline values.

Table 7.7.4: Assessment of magnitude of impact for vibration

Magnitude	Criteria
High	Large-scale, permanent/irreversible or medium/long-term changes, to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a vibration dose value where adverse comment is very likely and/or where peak levels of vibration could lead to a likelihood of major building damage.
Medium	Medium-scale, permanent/irreversible or medium-term changes to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a vibration dose value where adverse comment is probable and/or where peak levels of vibration could lead to a likelihood of minor building damage.
Low	Noticeable but small-scale change, over a partial area, to key characteristics or features of the particular environmental aspect’s character or distinctiveness. In general, this will equate to a vibration dose value where adverse comment is possible and/or where peak levels of vibration could lead to a likelihood of cosmetic building damage.
Very low	Noticeable, but very small-scale change, or barely discernible changes for any length of time, over a small area, to key characteristics or features of the particular environmental

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Magnitude	Criteria
	aspect's character or distinctiveness. In general, this will equate to a vibration dose value where there is a low probability of adverse comment and/or where cosmetic building damage is unlikely to occur.

Table 7.7.5: Assessment of sensitivity of receptor for noise and vibration

Value/ sensitivity	Description
High	Receptors of greatest sensitivity to noise such as Scheduled Monuments and habitats supporting nationally or internationally important wildlife communities that are highly sensitive to noise disturbance and highly vibration sensitive structures or uses such as certain laboratories medical facilities or industrial processes.
Medium	Noise and vibration sensitive receptors such as dwellings, hospitals, schools, places of quiet recreation. Habitats supporting nationally or internationally important wildlife communities that are somewhat sensitive to noise disturbance, but may habituate.
Low	Receptors with limited sensitivity to noise and vibration such as offices, other workplaces and play areas. Habitats supporting nationally or internationally important wildlife communities that are of low sensitivity to noise.
Very low	Receptors of very low sensitivity to noise and vibration such as industrial or commercial buildings, transient or mobile receptors, open agricultural land and the open sea.

- 7.7.10 The noise assessment will take place for a number of different phases of the Sizewell C Project and will use a number of 'reasonable worst case scenarios' in each case. These will look at the impact at different times (day and night), as appropriate. Examples of scenarios to be considered include (but are not restricted to) the following: site preparation when the site entrance, northern access road, bridges and jetty are being constructed and site compounds are being prepared; around the main construction site during the Main Development Site excavation and subsequent backfilling stages; loading and unloading at the existing Leiston railhead at the start of construction followed by at the new off-site or on-site railhead during the peak period of the construction phase; and operation of the proposed development once construction is complete. Circumstances will be modelled for each scenario to allow a comparison of predicted levels with target values and mitigation will be designed based on the output from this, as appropriate.
- 7.7.11 Traffic-related noise impacts will be assessed in relation to the construction peak period with embedded mitigation such as the development site campus, proposed new rail infrastructure, jetty and park and ride sites in place. The need for any further mitigation will be considered based on the outcome of this noise assessment.
- 7.7.12 The noise environment within the proposed campus accommodation will be designed to ensure reasonable resting and sleeping conditions (with reference to BS8233).
- 7.7.13 Guideline values and standards that will be taken account of in the noise and vibration assessment include (but may not be limited to):
- For all construction work: BS 5228:2009. Part 1- Noise and Part 2 – Vibration;

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- For road traffic: Design Manual for Roads and Bridges 2011 (known as DMRB), World Health Organisation (WHO) Guidelines for Community Noise 1999 and WHO Guidelines for Night Time Noise 2009, as applicable;
- Rail traffic impact: Noise Insulation Regulations Statutory Instrument 1996. No 428 (NIR) and WHO guidelines;
- Operational noise from site: BS4142;
- Vibration: BS6472 (human receptors) and BS7385 (building damage);
- Other impacts (such as noise from the jetty would be considered against WHO Guidelines; and
- Approaches to the assessment of the impact on wildlife and on tranquillity are not standardised in any way and are yet to be finalised as they will depend on the particular sensitivities of a specific location or species.

v. Assumptions and limitations

- 7.7.14 The standards available are designed for the assessment, in general, of permanent or new impacts and do not always provide guidance for the consideration of short-term impacts (such as any impact occurring over a period of less than a whole day or a whole night); or for a change in an existing situation. In such circumstances, the use of these standards may need to be adapted and this will entail making some assumptions about their applicability.
- 7.7.15 There is limited information available within the scientific community on the effects of noise and vibration on wildlife. Best available information and professional judgment will be used in the impact assessment.
- 7.7.16 The assessment of underwater noise will be considered in **Section 7.15**.

d) Potential impacts and effects

- 7.7.17 The proposed development has the potential to adversely impact upon the noise and vibration climate during the construction and operational phases due to the following activities:
- additional vehicle trips (HGVs, LGVs, buses, cars) and associated vibration and increases in road traffic noise both during construction and operation;
 - on-site construction activities resulting in vibration and increased noise levels (for example earthworks, piling, mobile plant, bus transfers, prefabrication etc);
 - noise and vibration from additional rail vehicles and noise from marine vessels serving the construction site, including loading and unloading; and
 - noise emissions from the operational phase, including power station plant and machinery, as well as vehicular access.

i. Construction

- 7.7.18 Construction activities have the potential to adversely affect occupiers of dwellings in the immediate vicinity of the Main Development Site (these receptors being primarily located to the north and west of the Main Development Site).

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- 7.7.19 Additional traffic on the surrounding highway network has the potential to adversely affect receptors in proximity to roads, especially in relation to those roads which currently have low traffic flows.
- 7.7.20 Construction and operation of rail routes and rail heads during the construction phase has the potential to cause adverse impacts on the occupiers of dwellings and other sensitive receptors in close proximity, although only for relatively short durations.
- 7.7.21 Vibration impacts may be noticeable in close proximity to the construction works, but would be unlikely to pose a risk of damage to structures, even at the closest receptors.
- 7.7.22 Assessment of effects in all cases will be undertaken using the methodologies, standards and guidance documents as set out above.

ii. Operation

- 7.7.23 There are potential noise and vibration impacts from operational traffic (staff, delivery traffic, maintenance vehicles etc.) which will be assessed in accordance with the methodologies set out above.
- 7.7.24 Noise from the operation of the power station itself (machinery noise, transformer etc.) has the potential to cause adverse impacts on nearby receptors, although it is expected that this would be reduced to a minimum by embedded mitigation.

e) Potential mitigation

- 7.7.25 During the construction phase a 25m environmental buffer zone would be retained along sensitive boundaries of the Main Development Site and the distance attenuation from this would reduce noise levels around the site. Where necessary, acoustic screening (soil bunds or fencing) may also be provided to mitigate noise.
- 7.7.26 Other potential noise mitigation measures may include:
- a) Orientation of noise sources: for example, pointing any particular directional machinery away from noise-sensitive receptors;
 - b) Phasing of works: for example, creating noise bunds / erecting acoustic fencing or other structures/buildings on the outer fringe of the works area first so that they shield future phases of work;
 - c) Direction of working: particularly helpful when excavations are performed. Working in a direction towards the receptor maximises the potential for the working face of the excavation to act as a local noise barrier;
 - d) Working method: employing low noise processes, where feasible;
 - e) Selection of equipment: use low noise or specifically attenuated plant where feasible. (Compliant with EU Directives on noise emissions), such as silenced compressor units, diesel generators attenuated piling rigs;
 - f) Use of non-tonal reversing alarms where appropriate; and

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- g) Siting transportation sources within cuttings, providing timber or similar screens and providing smooth surfaces (road surfaces and rail track continuously welded) to minimise the generation of noise.

7.7.27 In terms of ground-borne vibration associated with ground works, the selection of working methods and plant should take account of ground conditions, proximity of vibration-sensitive receptors, the sensitivity of receptors (including that of buildings), the duration of the works and the period in the day. Vibration can be reduced by adopting non-displacement piling methods if the ground conditions permit. Vibration energy that propagates at or very close to the ground surface can be reduced by trenches set perpendicular to the direction of propagation.

7.7.28 An operational power station would feature a considerable complement of power process and services equipment. Much of the equipment would be within buildings, the fabric of which may be acoustically appropriate for the containment of sound. Ventilation paths and pipes may be fitted with silencing devices to reduce sound before its emergence to atmosphere. Acoustic enclosures may be fitted to external plant. Cooling fans may be selected with noise emissions in mind with larger diameter, slower-running fans selected in preference to smaller high-speed units, where possible.

f) Approach to cumulative assessment

7.7.29 The traffic data that will be used in the assessment of additional vehicle trips will include relevant committed developments. These trips will be included in the 'with and without' construction scenarios and the 'with and without' operation of the proposed development scenarios. Therefore, the effects of the proposed development will be considered in combination with relevant committed developments and thus the noise and vibration assessment can be considered to be inherently cumulative.

7.7.30 Additionally, if a relevant committed development introduces a sensitive receptor (e.g. residential development) into the study area being considered, then predictions would be undertaken for the location.

7.7.31 The potential for cumulative effects to be associated with other construction effects will also be considered to establish whether additional mitigation measures may be required.

7.7.32 In the operational phase the potential for combined effects from noise emissions from Sizewell B and the proposed development will be considered.

i. Inter-relationships

7.7.33 There is recognised to be an interaction between the assessment and mitigation of noise effects and that of transportation, terrestrial ecology and ornithology, air quality, landscape and visual impact assessment, historic environment and recreation and amenity in particular. These interactions will be considered further in the ES.

ii. Cumulative effects

- 7.7.34 The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.

7.8 Air quality

a) Introduction

7.8.1 This section sets out the proposed scope and methodology for the air quality assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.8.2 Air quality monitoring has been undertaken to support the proposed development using continuous monitors for oxides of nitrogen (NO_x), nitric oxide (NO), nitrogen dioxide (NO₂) and particulates (PM₁₀) and also passive diffusion tubes for NO₂ and Sulphur dioxide (SO₂). **Figure 7.8.1** shows the monitoring locations. Overall this monitoring has shown generally good air quality throughout the study area.

7.8.3 Continuous monitoring has also been undertaken for PM₁₀ and NO_x at a background site on the Sizewell B power station site (Training Centre), National Grid Reference: 647160, 263850.

7.8.4 The continuous monitoring was undertaken as part of an initial air quality monitoring programme for approximately six months between 4 March and 23 September 2010.

7.8.5 Measurements of hourly mean PM₁₀ concentrations were collected using a Beta Attenuation Monitor analyser (BAM). Measurements of hourly mean concentrations of NO_x, NO and NO₂ were made using a Chemiluminescent Analyser. During this period, NO₂ and SO₂ diffusion tubes were also deployed at nine locations.

7.8.6 Following the initial phase of air quality monitoring, two further years of NO₂ and SO₂ monitoring was undertaken between January 2011 and January 2013 using diffusion tubes. Monitoring was undertaken at up to fourteen roadside locations for NO₂ and for NO₂ and SO₂ at the existing Leiston railhead (a potential source of pollutant emissions from rail traffic).

7.8.7 The results of the background continuous monitoring identified that concentrations of NO₂ and PM₁₀ were generally well below relevant air quality objectives (i.e. less than 75% of the air quality objective).

7.8.8 The results of the NO₂ diffusion tube monitoring identified that at most locations concentrations of NO₂ were below (i.e. less than 90% of the air quality objective) or well below the annual average air quality objective. At one residential location in Stratford St Andrew concentrations of NO₂ were marginally above relevant air quality objectives.

7.8.9 The SO₂ diffusion tube monitoring recorded concentrations were also well below relevant objectives at all locations.

c) Approach and methodology

7.8.10 The approach to the assessment of construction and operational air quality effects will vary between qualitative screening approaches and full quantitative dispersion modelling, depending on the potential significance of air quality effects expected to

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arise from different activities associated with the proposed development. Air quality effects will be considered for the Main Development Site and associated traffic (including roads, rail and marine vessels).

- 7.8.11 This assessment methodology excludes radiological discharges to air during the operational phase of Sizewell C which is covered in **Section 7.17**.
- 7.8.12 It is currently anticipated that the following levels of assessment will be undertaken (the pollutants that are anticipated to be considered are also listed):
- screening assessment with targeted quantitative assessment of road traffic emissions using ADMS-Roads (for NO₂ and particulates) at locations such as Stratford St. Andrews;
 - quantitative assessment of operational point source emissions using ADMS5 (for NO₂, SO₂, particulates, carbon monoxide (CO), ammonia (NH₃) and volatile organic compounds (VOCs));
 - qualitative assessment of construction effects and non-road plant equipment (for dust deposition and airborne particulates);
 - qualitative assessment of potential marine emissions (for NO₂, SO₂ and particulates); and
 - qualitative assessment of potential rail traffic emissions (for NO₂, SO₂ and particulates).
- 7.8.13 Calculations will not be undertaken to quantify carbon dioxide or other greenhouse gas emissions for the proposed development. This is because carbon emissions are assessed against national targets, rather than against targets for individual developments, and also because carbon dioxide is not a key pollutant of concern for local air quality. However, it is noted that Sizewell C will make a major contribution towards reducing carbon dioxide emissions from electricity generation in England and Wales as outlined in the National Policy Statement.
- 7.8.14 The assessment of the above sources and their significance will be undertaken with reference to best practice guidance including:
- Defra (2009), Local Air Quality Management Technical Guidance 2009 LAQM, TG(09);
 - Environment Agency (2010), Horizontal Guidance Note H1 – Annex F – Air Emissions;
 - Environmental Protection UK (EPUK) 2010 Development Control: Planning for Air Quality, 2010 Update;
 - Highways Agency (2007) Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1, HA207/07 Air Quality, dated May 2007;
 - Institute of Air Quality Management (IAQM) (2009), Position on the description of air quality impacts and their significance, Institute of Air Quality Management, November 2009; and
 - IAQM (2014), Guidance on the assessment of dust from demolition and construction.

i. Study area

- 7.8.15 The air quality study area will differ for the different types of sources of local air quality pollutants:
- road traffic-related pollutants (construction and operational phases);
 - construction dust; and
 - point sources (e.g. diesel generator emissions).
- 7.8.16 The maximum study area around the Main Development Site for construction dust and point sources is shown on **Figure 7.8.2**. The anticipated study area for road traffic air quality effects is described below.
- 7.8.17 The study area will include the A12 en route to Sizewell (between Ipswich to the south and Lowestoft to the north) and the B1122, which was proposed at Stage 1 consultation as the main access route for HGVs to the construction site from the A12. Other roads in the vicinity of the construction site that are likely to experience some increases in car traffic will also be considered as appropriate.
- 7.8.18 The locations where targeted ADMS-Roads modelling will be undertaken for the above routes and sensitive receptors will be determined using the screening criteria developed by the Highways Agency and EPUK, together with professional judgement. Locations along the above routes that are considered likely to be subject to ADMS-Roads modelling include the A12 between the proposed southern park and ride at Wickham Market and the proposed northern park and ride at Darsham, as well as the B1122 from Yoxford to the proposed entrance to the Main Development Site.
- 7.8.19 The study area for potential construction dust emissions will extend up to 200m from the boundary of the Main Development Site and up to 500m along public roads from construction sites, due to the potential for dust-blow and trackout of materials, respectively. Beyond these distances, based on published guidance, dust effects from construction activities can be expected to be negligible.
- 7.8.20 The study area for point sources will be based upon Environment Agency Guidance (H1, Annex F) and this will include key sensitive locations (e.g. Minsmere – Walberswick SPA and Ramsar site, and Minsmere to Walberswick Heaths and Marshes SAC and Sizewell Marshes SSSI) up to 10km from the Main Development Site. Human health impacts will be assessed up to 3km from the point sources; based on published guidance and the size of the proposed point source emissions, beyond these distances air quality effects can be expected to be negligible.

ii. Baseline information

- 7.8.21 SCDC has declared two Air Quality Management Areas (AQMAs) due to elevated concentrations of NO₂ but the nearest is approximately 20km from the Main Development Site. This AQMA is located in Woodbridge (including properties near the junction of Lime Kiln Quay Road, Thoroughfare and St John's Street). The second AQMA is located near to the Port of Felixstowe.
- 7.8.22 SCDC is also in the process of consulting with the Department of Environment, Food and Rural Affairs (Defra) on the need to declare a third AQMA. It is understood that the AQMA would be located on the A12 at the outskirts of Stratford St Andrew as

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NO₂ concentrations marginally exceed the annual average air quality objective in this location.

7.8.23 Baseline air quality information will be taken from the following sources:

- Sizewell C Air Quality Monitoring Results obtained between 2011 and 2013;
- SCDC Local air Quality Management Reports;
- Department for Environment, Food and Rural Affairs (DEFRA) Background Pollutant Maps;
- DEFRA Air Quality Management Areas (AQMAs);
- The Automatic Urban and Rural Network (AURN); and
- Air Pollution Information System (APIS).

iii. Planned further survey/studies

7.8.24 The need for further air quality monitoring data and the details of any monitoring (e.g. monitoring locations, techniques and durations) will be agreed in consultation with relevant stakeholders through the preparation of an air quality monitoring strategy.

7.8.25 It is anticipated that data concerning existing dust deposition rates in the vicinity of the Main Development Site may be collected using dust deposition gauges (e.g. Frisbee gauges) to provide a baseline against which the performance of any dust mitigation measures could be evaluated during the course of the construction phase of the development. It is envisaged that dust monitoring sites would include selected locations in proximity to residential dwellings and designated ecological sites (e.g. Minsmere – Walberswick SPA and Ramsar site, and Minsmere to Walberswick Heaths and Marshes SAC and Sizewell Marshes SSSI) subject to confirmation and agreement with landowners.

7.8.26 It is not anticipated that further continuous monitoring for NO_x or PM₁₀ monitoring will be required. This is because a review of SCDC local air quality monitoring between the 2009 and 2012 does not suggest a significant change in background conditions since continuous monitoring was undertaken previously for the proposed development.

7.8.27 Monitoring for smaller particulate matter size fractions is also not proposed, due to the low monitored PM₁₀ concentrations in the area, as PM_{2.5} is contained within the larger PM₁₀ size fraction that has already been measured.

7.8.28 Additional passive NO₂ diffusion tube sampling is not proposed as the combination of NO₂ diffusion tube sampling undertaken previously for the proposed development combined with SCDC's passive diffusion tube sampling data are considered to be sufficient to characterise baseline conditions for road traffic effects.

7.8.29 No additional SO₂ diffusion tube sampling is warranted as monitored values have previously been below relevant air quality objectives and limited emissions of SO₂ are envisaged from the pollutant sources associated with the construction or operation of the proposed development. Additionally, there is no evidence to suggest that baseline conditions will have changed since the time of that survey.

iv. Assessment methodology

7.8.30 This sub-section describes the approach proposed to be utilised to describe air quality effects and the details of the assessment methodology for construction and air quality effects.

Evaluation of Magnitude and Significance

7.8.31 The evaluation of the significance of air quality effects will be based on professional judgement and the criteria outlined in the IAQM publication. There are a number of aspects that must be taken into account when assessing the significance of an effect. These are:

- the magnitude of the change caused by the proposed development;
- the absolute predicted environmental concentration in relation to the air quality objectives;
- the number of people and/or extent of designated ecosystems exposed;
- the likely duration of effects; and
- the level of uncertainty associated with effects (i.e. the extent to which worst case assumptions have been utilised).

7.8.32 **Table 7.8.1** presents the IAQM criteria for the determination of the “magnitude of change”, based on the percentage increase in pollutant concentrations due to the proposed development. **Table 7.8.2** presents the significance of potential effects, taking into account the magnitude of change over baseline conditions and the absolute concentration in relation to air quality objectives. The latter has been modified slightly to accommodate the terms high to very low for magnitude of change (where high = large; low = small; and very low = imperceptible compared to the IAQM terminology) and the terms ‘Major’, ‘Moderate’ and ‘Minor’ in relation to significance of effect, to ensure consistency with other disciplines.

Table 7.8.1: Determination of magnitude of change – air quality

Magnitude of change	Annual mean concentration NO ₂ , PM ₁₀ (µg/m ³)	Days PM ₁₀ >50µg/m ³
High	Increase/decrease >4	Increase/decrease > 4
Medium	Increase/decrease 2 - 4	Increase/decrease 2 – 4
Low	Increase/decrease 0.4 - 2	Increase/decrease 1 – 2
Very low	Increase/decrease < 0.4	Increase/decrease < 1

Table 7.8.2: Descriptors for effect of predicted changes in annual mean concentrations of NO₂ and PM₁₀ at individual receptors

Absolute concentration in relation to objective/limit value	Change in concentration			
	High	Medium	Low	Very low
Increase with proposed development				
Above Air Quality Standard or	Major Adverse	Moderate	Minor	Negligible

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Absolute concentration in relation to objective/limit value	Change in concentration			
	High	Medium	Low	Very low
Guideline with the proposed development (>40 µg/m ³)		Adverse	Adverse	
Just Below Air Quality Standard or Guideline with the proposed development (36 - 40 µg/m ³)	Moderate Adverse	Moderate Adverse	Minor Adverse	Negligible
Below Air Quality Standard or Guideline with the proposed development (30 - 36 µg/m ³)	Minor Adverse	Minor Adverse	Negligible	Negligible
Well Below Air Quality Standard or Guideline with the proposed development (<30 µg/m ³)	Minor Adverse	Negligible	Negligible	Negligible
Decrease with proposed development				
Above Air Quality Standard or Guideline with the proposed development (>40 µg/m ³)	Major Beneficial	Moderate Beneficial	Minor Beneficial	Negligible
Just Below Air Quality Standard or Guideline with the proposed development (36 - 40 µg/m ³)	Moderate Beneficial	Moderate Beneficial	Minor Beneficial	Negligible
Below Air Quality Standard or Guideline with the proposed development (30 - 36 µg/m ³)	Minor Beneficial	Minor Beneficial	Negligible	Negligible
Well Below Air Quality Standard or Guideline with the proposed development (<30 µg/m ³)	Minor Beneficial	Negligible	Negligible	Negligible

- 7.8.33 The values in **Tables 7.8.1** and **7.8.2** describe the effect and this terminology will be used when referring to effects at individual receptors. The overall effect on air quality sensitive receptors will be determined by professional judgement and the basis of such assessment will be justified fully. Overall effects that are described as major or moderate effects (adverse or beneficial) will be considered as being significant effects. Minor effects and negligible effects will be considered to be not significant.
- 7.8.34 The National Air Quality Strategy Objectives (AQS) have been set by Government at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. As such, the sensitivity of receptors has been considered in the definition of the air quality objective values and therefore no additional subdivision of human health receptors on the basis of the building or location type is required.
- 7.8.35 Particular significance will be given to a change that takes the concentration from below to above the AQS objective or vice versa because of the importance ascribed to the objectives in assessing local air quality.
- 7.8.36 Environment Agency guidance (H1: Environmental risk assessment for permits, 2011) indicates that for the assessment of point source emissions, long-term ground level concentrations arising from point sources which are less than 1% of an air quality objective or EAL can be treated as insignificant (or negligible). Similarly, short-term ground level concentrations arising from point sources which are less than

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10% of an air quality objective or EAL can also be treated as insignificant (or negligible). Where emissions are not screened as negligible, the descriptive terms for the significance of the effect, outlined in **Table 7.8.2**, will be applied.

- 7.8.37 The significance of effects of point source emissions on ecological receptors (e.g. Sizewell Marshes SSSI and Sandlings SPA), through deposition of nutrient nitrogen or acidity will be evaluated using the Environment Agency insignificance criterion of 1% of the long-term National Objective for the Protection of Vegetation and Ecosystems, as above. In the event that insignificance cannot be demonstrated using this method, additional assessment of deposition effects will be undertaken, with reference to the Critical Loads of the ecological receptors concerned.

Construction methodology

- 7.8.38 Additional road traffic on the local and strategic road network around the Main Development Site and off-site associated temporary development during the construction phase have the potential to adversely affect air quality at nearby sensitive receptors (within 200m of the road network). Initially, the level of change in vehicle trips will be evaluated against the Highways Agency and EPUK traffic screening criteria to identify routes where further quantitative air quality assessment may be required or where routes can be screened from further assessment.
- 7.8.39 Where further quantitative work is required this would be undertaken using the ADMS-Roads model. Modelling will identify the total concentration of key road traffic pollutants at sensitive receptors and also the change in pollutant concentrations. Such studies will only focus on emissions of NO_x and PM₁₀. The ADMS-Roads model outputs will use Defra local air quality management tools and APIS information as appropriate.
- 7.8.40 Modelling will be undertaken for long-term averages; the potential for short-term air quality objectives to be exceeded will be assessed using empirical relationships outlined in Defra local air quality management guidance for NO₂ and PM₁₀.
- 7.8.41 The roads modelling predictions will be verified against air quality monitoring data collected for the proposed development and local authority monitoring data as appropriate. Modelling will be undertaken with one year of hourly sequential meteorological data, consistent with the baseline year of the traffic model.
- 7.8.42 Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk including, but not limited to, residential dwellings, ecological sites and heritage and amenity assets, following the IAQM Guidance for assessing impacts from construction activities. The evaluation of significance resulting from this assessment will use the same terms and definitions as the Sizewell C General Assessment Approach Generic Effect Definitions.
- 7.8.43 The potential effects of any rail traffic emissions or marine based emissions during the construction phase will be considered utilising the screening criteria outlined in Defra Local Air Quality Technical Guidance. If, following review against the Defra criteria, further quantitative works are required, these would be undertaken using ADMS5, although at this stage it is not envisaged that detailed modelling would be required for these emissions sources.

Operational methodology

- 7.8.44 In the operational phase the same approach will be utilised to the assessment of air road traffic effects as described for the construction phase, with screening of traffic data followed by quantitative modelling where appropriate.
- 7.8.45 The assessment of operational point sources associated with the Main Development Site will be based on relevant Environment Agency Guidance (e.g. H1, Annex F) and modelling will be undertaken using the latest version of ADMS.
- 7.8.46 Point source modelling will be undertaken with the inclusion of representations of buildings as appropriate to capture potential downwash effects and five years of meteorological data will be utilised in accordance with best practice. It is envisaged that modelling will only be undertaken for short-term averaging periods for operational combustion emissions sources as they are expected to only be used as back-up to the main plant on a short-term basis.

v. Assumptions and limitations

- 7.8.47 The proposed development will be assessed using the following assumptions:
- road traffic air quality modelling (where undertaken) will use traffic datasets derived from the Transport Assessment;
 - operational point source modelling will use design information available at that time;
 - the latest Defra NO_x to NO₂ conversion factors available at the time of assessment will be used; and
 - road traffic air quality model outputs will be adjusted against monitoring data.
- 7.8.48 Only standard operation scenarios for point source emissions will be assessed as part of the EIA, but additional operation scenarios will be considered in support of the Environmental Permit application process as appropriate.

d) Potential impacts

- 7.8.49 The proposed development has the potential to adversely affect air quality during the construction and operational phases, as outlined above. Further details are provided in the following two sub-sections.

i. Construction

- 7.8.50 Additional traffic on the local and strategic road network around the Main Development Site and off-site associated development during the construction phase has the potential to adversely affect air quality at nearby sensitive receptors (within 200m of the road network). For example at locations along the A12 including: Stratford St Andrew, Farnham, Little Glemham and Marlesford and along the B1122.
- 7.8.51 Dust impacts during the construction stage also have the potential to adversely affect ambient air quality and dust deposition at sensitive receptors locations within 200m of works (e.g. residential dwellings and designated ecological sites).

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7.8.52 Additional emissions of particulates, NO_x and SO₂ may also be associated with diesel locomotive and marine vessels during the construction phase. These emissions have the potential to affect receptors in close proximity to these sources.

ii. Operation

7.8.53 There are potential air quality impacts from operational traffic (staff, delivery traffic, maintenance vehicles) which will be assessed in accordance with the methodologies set out above.

7.8.54 Point source emissions, including diesel generators, could include particulates, CO and NO_x. These have the potential to affect sensitive receptors around the Main Development Site. Receptors include residential dwellings, amenity locations and designated ecosystem sites (e.g. Sizewell Marshes SSSI for NO_x emissions).

e) Potential mitigation

7.8.55 The air quality assessment will identify the need for any additional mitigation measures during the construction and operational phase of the proposed development beyond the embedded mitigation measures that will be included within the design of the proposed development that will be assessed as part of the initial assessment. This may include the identification of the following measures:

- a dust management plan would be prepared based on the outcomes of the dust impact assessment. It is envisaged that this would incorporate dust management measures to minimise emissions at source and protect sensitive receptors. It would also consider the need for dust monitoring to confirm the effectiveness of the management approach;
- road transport mitigation measures e.g. HGV controls or road improvements; and
- the use of additional control measures that may represent Best Available Techniques (BAT) for the control of point source emissions at the Main Development Site.

f) Approach to cumulative assessment

7.8.56 The traffic data that will be used in the assessment of additional vehicle trips will include relevant committed developments. These trips will be included in the 'with and without' construction scenarios and the 'with and without' operation of the proposed development scenarios. Therefore, the effects of the proposed development will be considered in combination with relevant committed developments and the air quality assessment can be considered to be inherently cumulative.

7.8.57 Additionally, if a relevant committed development introduces a sensitive receptor (e.g. residential development) into the roads study area being modelled using ADMS-Roads then predictions would be undertaken for that location.

7.8.58 The potential for cumulative effects to be associated with other relevant construction works in the area will also be considered to establish if additional mitigation measures may be required. In particular, consideration will be given to the timing of any outage works associated with Sizewell B.

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7.8.59 In the operational phase, the potential for combined effects from point source emissions from Sizewell B and the proposed development will be considered using ADMS.

i. Inter-relationships

7.8.60 There is recognised to be an interaction between the assessment and mitigation of air quality effects and that of transportation, ecology, noise, and recreation and amenity in particular. These interactions will be considered further in the assessment.

ii. Cumulative effects

7.8.61 The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.

7.9 Soils and agriculture

a) Introduction

7.9.1 This section sets out the proposed scope and methodology for the soils and agriculture assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.9.2 Published, broad scale mapping of soil types (Soil Survey of England and Wales, 1984) and ALC status (MAGIC website) have been consulted for the study area.

7.9.3 In addition, an agricultural land survey was undertaken in February 2011, covering the majority of the Main Development Site as well as surrounding areas within EDF Energy's Estate.

7.9.4 Not all land within the Main Development Site was surveyed because the full extent of the land required for construction and operation of the proposed development was not appreciated when the survey was undertaken. Nonetheless, the results provide a very good indication of soil conditions and agricultural land quality within the Main Development Site.

7.9.5 Soil sampling was undertaken at a rate of one sample per two hectares of land, on average, with over 100 samples collected in total. **Figure 7.9.1** shows the soil sampling locations. At each sample location, the following site characteristics were recorded:

- vegetation type;
- gradient;
- aspect;
- any indication of surface ponding/wetness; and
- any indication of soil erosion.

7.9.6 Soil sampling was carried out using a hand-held auger up to a depth of 1.1m and the following soil characteristics were recorded at each location, using standard field survey methodologies (Hodgson, 1976):

- soil texture;
- stoniness;
- colour (including local mottle colours);
- consistency;
- structural condition; and
- depth.

7.9.7 Soil Wetness Class was inferred in-situ from the matrix colour.

7.9.8 No soil samples were collected and no laboratory analysis carried out.

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- 7.9.9 To establish the ALC grade, field survey results were combined with data on the topography and climate of the region to provide an assessment according to the standard ALC methodology (MAFF, 1988).
- 7.9.10 Soil droughtiness was calculated from moisture balance equations using crop-adjusted available profile water (AP) and calculated moisture deficit (MD) for the standard crops: wheat and potatoes.
- 7.9.11 AP was estimated from soil texture, stoniness, soil structure condition and depth, and then compared to the calculated crop-adjusted MD taken from the tables prepared by The Meteorological Office (The Meteorological Office, 1989).

c) Approach and methodology

- 7.9.12 The assessment of effects on soils and agriculture would relate to the following key factors:
- the soil types, their quality and, in particular, the ALC likely to be affected by the proposed development;
 - the type of farm enterprises and farming/land management practices present, including any agri-environment schemes; and
 - the possible presence of crop/soil/animal diseases or noxious weeds, and the risk of spreading such disease/weeds.
- 7.9.13 The objectives of the assessment would be to:
- characterise the baseline environmental conditions for soils, land-use and agriculture within the study area;
 - identify all soils, land-use and agricultural receptors within and adjacent to the Main Development Site that may be affected by the construction and operation of the proposed development;
 - assess the likely significant effects of the proposed development on soil, land-use and agriculture, taking account of temporary and permanent land-use requirements and site restoration;
 - recommend measures, if appropriate, to mitigate potential significant adverse effects on soil, land-use and agriculture.

i. Study area

- 7.9.14 The geographical extent of the soils and agriculture study area will include all land within the Main Development Site. The study area will extend to cover land within 200m of the Main Development Site boundary, which could potentially be affected by airborne dust emissions arising from construction activities. **Figure 7.9.2** shows the extent of the proposed study area.

ii. Baseline information

- 7.9.15 Arable land within the Main Development Site is mainly farmed by contractors who lease the land off EDF Energy. The arable land in the north-west of the Main Development Site and next to Eastlands industrial estate is privately owned. All non-agricultural land within the Main Development Site (including the north-eastern corner

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of Sizewell Marshes SSSI) is managed by Suffolk Wildlife Trust on behalf of the landowner EDF Energy.

- 7.9.16 Field surveys indicate that there are several main soil types within the study area. The main soil type of agricultural land is a sandy loam derived from glacio-fluvial sands. Along the coast, raw, coarse textured sandy soils derived from beach deposits predominate. In the area of the Sizewell Marshes SSSI soils consist of alluvium (interbedded sand, silt and clay) with lenses of humified peat. **Figure 7.9.3** shows the indicative soil types in the vicinity of the Main Development Site.
- 7.9.17 The 2011 ALC survey concluded that all of the existing agricultural land surveyed within the Main Development Site comprises Subgrade 3b (moderate quality) soils or lower. Therefore, none of the agricultural land that was surveyed is classified as 'best and most versatile', although further surveys are to be carried out to provide a robust baseline for assessment purposes in the EIA.
- 7.9.18 Use of this land would be consistent with Para 5.10.8 of the National Policy Statement for Energy that states: "*applicants should seek to minimise impacts on best and most versatile agricultural land and preferably use land in areas of poorer quality...*" (DECC, 2011).
- 7.9.19 In addition, made ground predominates on land north of Sizewell B power station, including the northern landscape mound. This comprises a mixture of Crag sand and inert arisings from the construction of Sizewell B (stones, brick and concrete rubble).
- 7.9.20 **Figure 7.9.4** shows the ALC grades and non-agricultural land-uses in the area, based on the findings of EDF Energy's 2011 ALC survey.

iii. Planned further survey/studies

- 7.9.21 A thorough review will be undertaken of published literature and web-based information to help characterise baseline conditions. In addition to the information sources already consulted, this will include agri-environment schemes and other relevant records held by Defra, for example animal burial pits, records of noxious weeds and the most recent national census of agriculture and horticulture.
- 7.9.22 In addition, the 2011 ALC survey will be updated to cover the entire Main Development Site area and also to investigate further areas of potential higher and lower quality land based on the 1993 survey.
- 7.9.23 Consultations will also be held with landowners and land managers within the Main Development Site and in the surrounding area in order to understand farming and land-management practices and issues material to the EIA.

iv. Assessment methodology

- 7.9.24 There are no established or published methods for assessing the impacts of development upon agricultural receptors.
- 7.9.25 The soil and agricultural receptors that have the potential to be impacted by the proposed development will be assigned a level of importance in accordance with the quality of the soil and the ALC grade of the land. These are described in **Table 7.9.1**. Where a receptor can reasonably be placed within more than one category,

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professional judgment will be used to determine which rating would be most appropriate.

Table 7.9.1: Assessment of the value/sensitivity of receptors for soils and agriculture

Value / sensitivity	Description
High	ALC Grade 1 land. Irrigated agriculture. Stock animals. Higher level agri-environment schemes. Soils with low or no wetness limitation affecting workability (wetness class I or II), where drought is not also a limitation. Soils with a high susceptibility to structural damage and soil erosion throughout the year, including heavily textured, poorly structured soils.
Medium	ALC Grades 2 and 3a land. Non irrigated agriculture. Entry level agri-environment schemes. Soils with low wetness limitation affecting workability (wetness class II), where drought is not also a limitation. Soils with some seasonal susceptibility to structural damage and soil erosion.
Low	ALC Grade 3b. Arable or grassland areas. Soils with moderate wetness limitation affecting workability (wetness class III or IV). Soils with medium to coarse textures and some resistance to structural damage for most of the year.
Very Low	ALC Grades 4 and 5 land. Non-agricultural land. Soils with high wetness limitation affecting workability (wetness class V or VI). Soils in which droughtiness is a limitation to crop growth. Coarse textured and stony soils with little potential for structural damage.

7.9.26 The magnitude of impact is based on the consequences the proposed development would have upon soils and agricultural receptors. There is no published guidance on thresholds for assessing what scale of loss should be regarded as significant, but the presence of best and most versatile land is a key factor in the consideration of the sustainability of development proposals as set out in paragraph 112 of the NPPF. **Table 7.9.2** is based on a combination of the generic guidelines proposed for use in the assessment, access timescales of temporary loss and land area loss thresholds previously adopted by MAFF (MAFF, 1988).

Table 7.9.2: Assessment of magnitude of impact on soils and agriculture

Magnitude	Criteria
High	Permanent loss or degradation of over 50ha of best and most versatile land (BMVL), or entire regional resource of BMVL (ALC Grades 1, 2, 3a). Existing land-use would not be able to continue.
Medium	Permanent loss or degradation of 20-50ha of BMVL, or large proportion of regional resource of BMVL.

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Magnitude	Criteria
	Existing land-use would be able to continue but with major changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.
Low	Permanent loss or degradation of 10-20ha of BMVL, or small proportion of regional resource of BMVL. Existing land-use would be able to continue but with some changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.
Very Low	Permanent loss or degradation of <10ha of BMVL. Short-term impacts to receptors with no impact on integrity. No material change to existing land-use.

7.9.27 Following the classification of an effect using this methodology, a clear statement will be made as to whether the effect would be 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. Professional judgement will be applied where appropriate, taking account of all relevant factors including whether the effect is permanent or temporary and the context of the effect e.g. a land management strategy designed to enhance biodiversity and landscape character.

v. Assumptions and limitations

7.9.28 It is noted that land-use within and around the Main Development Site is not static so the baseline will change. For example, 50 ha of former arable land north and south of the Main Development Site has recently been converted into grassland/scrub, or is due to be taken out of arable use in 2014.

7.9.29 Socio-economic effects on agricultural businesses are to be assessed in the socio-economic workstream (see **Section 6**).

d) Potential impacts and effects

i. Construction

7.9.30 Potential impacts and effects during construction include:

- permanent loss of agricultural land through landtake;
- degradation of agricultural land used temporarily for construction, for example due to soil handling and storage arrangements;
- impairment of crops/land close to the construction site, for example due to airborne dust emissions, or shading effects;
- indirect effects on surrounding agricultural land caused by changes in site hydrology or hydrogeology, for example leading to a potential increase in poaching of the land by grazing livestock;
- spreading of noxious weeds caused by soil/land management arrangements within the Main Development Site and on other related land, for example that used for ecological mitigation; and
- risk of spreading disease through uncontrolled disturbance of any potential animal burial pits, in the course of the development.

ii. Operation

- 7.9.31 At the end of the construction phase, the agricultural land will be restored in accordance with the Landscape Strategy. Certain elements of the Landscape Strategy, for example habitat creation for reptiles, are already in the process of being implemented. Whilst some of the land needed temporarily for construction may be restored for agricultural use (either as arable or grassland), the Landscape Strategy proposes further enhancements to biodiversity and landscape character through the creation of a mosaic of permanent grassland, heathland and scrub on existing arable land. Whilst this would represent a loss to agriculture, it represents an overall gain in terms of landscape and biodiversity.
- 7.9.32 The Landscape Strategy will be developed taking account of all relevant factors, including soil type and ALC grading of the land.

e) Potential mitigation

- 7.9.33 For areas of land that will be restored to agricultural use, appropriate measures will be taken to reduce impacts on soil quality. This will be enabled through appropriate soil handling (for example in relation to soil stripping, stockpiling and tracking by vehicles). Detailed arrangements will be developed in consultation with relevant stakeholders and in line with established soil management principles such as the Defra code of practice "Protecting Our Water, Soil and Air (Defra, 2013) and set out in a Soil Management Plan.
- 7.9.34 The Soil Management Plan will also address soils to be used for non-agricultural purposes for example habitat creation.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.9.35 The key inter-relationships are with landscape and terrestrial ecology and ornithology and relate to the post construction use of former agricultural land in habitat creation for biodiversity and landscape purposes. These proposals will be set out in the Landscape Strategy. In addition there are potential inter-relationships with air quality, in relation to airborne dust emissions that could affect nearby crops, and hydrology and hydrogeology, that could affect the drainage of adjacent land.

ii. Cumulative effects

- 7.9.36 The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.

7.10 Geology and land quality

a) Introduction

7.10.1 This section sets out the proposed scope and methodology for the geology and land quality assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.10.2 A Phase 1 desk-based study was carried out on part of the Main Development Site, centred on the land north of Sizewell B, in 2010. This provided an initial view of the Conceptual Site Model (CSM) and potential contamination sources using publicly available information such as Envirocheck, published geological and hydrogeological maps and previous site investigation reports.

7.10.3 This was followed by a Phase 2 intrusive investigation focusing on the land to the north of Sizewell B power station where Sizewell C would be developed. In addition the investigation included land further north and to the west in order to help develop the CSM and target other potential areas of contamination identified in the Phase 1 desk-based study, e.g. a former sand pit. A programme of exploratory holes (including trial pits and cable percussive boreholes) was undertaken between 15 July 2010 and 16 March 2011.

7.10.4 The aims of the Phase 2 intrusive investigation were to:

- characterise the ground and groundwater conditions within the study site (inclusive of soil type, composition, depth, thickness and groundwater flow direction);
- characterise the contamination status of the soils and groundwater and the ground gas regime;
- assess the risks posed by identified contamination through a Tier 1 risk assessment with respect to soil, water and gas;
- assess the suitability of the soils for re-use within the proposed development with respect to contamination status; and
- revise and refine the preliminary CSM derived from the Phase 1 desk-based assessment.

7.10.5 Samples were taken from over 150 exploratory holes and scheduled for non-radiochemical and radiochemical laboratory analysis. Non-radiochemical data were compared to relevant Tier 1 soil screening values (SSVs). Activity levels were compared against 'out of scope' limits as defines in the Environmental Permitting (England and Wales) (Amendment) Regulations 2011. Ground gas levels were screened against Construction Industry Research and Information Association (CIRIA) C665 (UK Technical Guidance).

7.10.6 The monitoring locations of the Phase 2 intrusive investigation are shown in **Figure 7.10.1**.

c) Approach and methodology

i. Study area

7.10.7 The study area will comprise the following elements:

- Main Development Site: to take account of potential sources of contamination arising on-site that could pose a risk to on-site or off-site receptors;
- surrounding land within a radius of 1km from the Main Development Site boundary: in order to include all potential contamination source-pathway-receptor linkages; and
- the coastline between Southwold, to the north of the Main Development Site, and Orford Ness to the south, which is susceptible to erosion due to coastal change, and which could potentially be exacerbated by the proposed development.

7.10.8 The proposed study area is shown in **Figure 7.10.2**.

ii. Baseline information

7.10.9 Published geological records show that the solid geology beneath the Main Development Site comprises Red Crag; part of a sequence of Crag deposits present along the Norfolk and Suffolk coastline. This is separated from the underlying Chalk by Palaeogene deposits, including London Clay (part of the Harwich Formation) and the Lambeth Group. Bedrock geology in the area dips towards the south-east. The Palaeogene deposits become thinner in a westerly direction from the Main Development Site, becoming absent at a distance of approximately 8-10km.

7.10.10 The land north of Sizewell B power station sits in a former river basin where the Crag sand bedrock has been eroded and infilled with superficial deposits (alluvium and peat). Diamicton (Glacial deposits – boulder clay overlying glacial sands and gravels) overlies the Crag sand in the west of the site; as ground levels decrease to the east, the sands and gravels become exposed.

7.10.11 **Table 7.10.1** summarises the published geological records for the Main Development Site.

Table 7.10.1: Summary of geological conditions at the Main Development Site

	Name	Description	Location
Superficial deposits	Alluvium	Highly organic soil, with variable clay, silt and sand content. Contains significant amounts of humified peat.	North-eastern part of the Main Development Site branching towards the central northern part of the Main Development Site, coincident with areas of marsh, including Sizewell Marsh and the Sizewell Belts.
	Lowestoft formation	Diamicton (boulder clay), overlying sands and gravels.	Present mainly on higher ground in an arc from the north-west through to the south-west and south of the existing Sizewell A and Sizewell B power stations. The Lowestoft Formation is absent in lower-lying areas immediately to the west of the existing power station site.
	Beach deposits	Sands and gravels.	Narrow strip (approximately 100m) along the eastern (coastal) side of the Main Development Site.

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	Name	Description	Location
	Tidal flat deposits	Silt and clay.	Eastern part of the Sizewell C Main Development Site, extending approximately 500m inland (west) of the beach deposits.
Bedrock	Crag Group (Red Crag Formation)	Sand, with minor gravel, silt and clay layers.	Present along the eastern coast of Norfolk and Suffolk and as such, underlies the entire Main Development Site. Overlain in western areas of the Main Development Site by the Lowestoft Formation, Peat or other superficial deposits. In parts of the eastern and northern sections of the Main Development Site, no superficial deposits overlie the Red Crag. The Red Crag is not homogeneous and contains two low permeability layers within the Main Development Site, one of which is known as Chillesford Clay, the other is unnamed.
	Palaeogene Deposits (Harwich and Lambeth Group)	Layered deposits comprising sands, silts, clays, volcanic ash and pebble beds.	The Palaeogene Deposits underlie the Main Development Site and are present throughout the region, thinning to the west and become absent at a distance of approximately 8-10km west of the Main Development Site.
	Chalk	Soft, white porous limestone with extensive fissuring, flint beds, marl layers and hard ground ("Chalk Rock").	Chalk is present throughout the region and as such, underlies the entire Sizewell C Main Development Site. The Chalk is overlain by the Palaeogene Deposits at the Main Development Site, however to the west, where the Palaeogene Deposits are absent, Chalk is overlain by the Red Crag.

- 7.10.12 Made ground is present to the north of the existing Sizewell B power station overlying the alluvium. This area was used as a contractor's compound during the construction of Sizewell B and comprises re-worked Crag sand and beach deposits, and inert construction materials, such as bricks, stone and concrete.
- 7.10.13 Phase 2 investigations showed no evidence of significant sources of non-radiological contamination. No asbestos fibres were recorded in any exploratory hole. Occasional localised sources of contaminants such as heavy metals and hydrocarbons were identified mainly within areas of Made Ground. The radiochemical analyses demonstrated that activity levels were consistent with background and below adopted screening values. Risks to humans from current use, during construction and operation were assessed as negligible.
- 7.10.14 The peat is a potential source of ground gas (methane and carbon dioxide).
- 7.10.15 Much of the Main Development Site is green field and agricultural and the risk of anthropogenic contamination is therefore expected to be low. **Table 7.10.2** summarises the main potential sources of contamination within the Main Development Site.

Table 7.10.2: Potential sources of anthropogenic contamination

Potential source of contamination	Associated contaminants
Agricultural land including widespread application of fertilisers, pesticides etc.,	Pesticides and fertilisers.

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Potential source of contamination	Associated contaminants
localised spills of fuel from machinery.	Oils and diesels.
Infilled former small scale aggregate workings.	Various contaminants from filling materials, depending on material used/deposited. Ground gas (methane/carbon dioxide).
Spoil/construction materials from construction of the Sizewell B power station.	Various contaminants from spoil, depending on what the spoil contained. Potential for ground gas generation if organic/biodegradable materials present.
Rifle range.	Potential for small-scale lead depositions from shot.
Contractors' storage/works area, including machinery storage, concrete batching.	Diesel/oils. Various contaminants from storage areas, depending on what was used/stored.

iii. Planned further survey/studies

- 7.10.16 The Phase 1 desk based study will be updated to cover the entire Main Development Site and local surrounding area within a radius of 1km of the Main Development Site boundary.
- 7.10.17 The land north of Sizewell B power station has already been subject to a comprehensive Phase 2 (intrusive) ground investigation as outlined above. Subject to a detailed review of the existing geo-environmental information, development of the CSM, and consultations with the Environment Agency, the need for further intrusive investigations will be determined, focussing on areas of identified or suspected anthropogenic contamination.
- 7.10.18 In addition, a desk-top review will be undertaken of all statutory and non-statutory sites of geological interest within the study area, along the coastline, in order to evaluate baseline conditions and assess their potential to be affected by the proposed development. Sites to be considered include:
- Alde-Ore Estuary SSSI;
 - Pakefield to Eastern Bavants SSSI;
 - Regionally Important Geodiversity Sites (RIGS); and
 - County Geodiversity Sites (CGS).

iv. Assessment methodology

Contaminated Land Assessment

- 7.10.19 It is intended to assess impacts from potential contaminated land using a risk-based approach outlined above rather than to assess against receptor value/sensitivity and impact magnitude matrices as befitting other aspects.
- 7.10.20 The approach and methodologies to be used within the assessment would be in accordance with the phasing and guidance contained within CLR 11: Model Procedures for the Management of Land Contamination (Defra and the Environment

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Agency, 2004). Intrusive ground investigations will be carried out in accordance with BS10175:2011 Investigation of Contaminated Sites – Code of Practice, as amended.

7.10.21 The assessment would include the following aspects:

- Review and update of the existing Phase 1 desk based study;
- Development of CSM: recognising that this will be an iterative process taking account available intrusive site information;
- Review of available Phase 2 (intrusive) site information;
- Gap analysis with further intrusive investigation if appropriate;
- Human Health Risk Assessment based on the Contaminated Land Exposure Assessment (CLEA) Model (Environment Agency, 2009);
- Controlled Water Risk Assessment: with reference to relevant Environmental Quality Standards, i.e. Drinking Water Standards (DWS) for groundwater and Environmental Quality Standards (EQS) for surface water;
- Ground Gas Risk Assessment: in accordance with the guidance document 'Assessing the Risk Posed by Hazardous Ground Gases to Buildings' (CIRIA, 2004); and
- Phytotoxic Risk Assessment in the context of the re-use of soil/materials to restore the construction area under the Landscape Strategy: focussing on the potentially phytotoxic contaminants boron, copper, nickel and zinc in accordance with thresholds given in the Sludge (Use in Agriculture) Regulations 1989 and ICRCCL Guidance Note 59/83 (ICRCCL, 1987).

7.10.22 The potential use of peat and alluvium excavated from the land north of Sizewell B to backfill any excavations required to win construction materials from elsewhere within the construction area will be assessed using a proprietary contaminant fate and transfer model such as Landsim.

Designated Geological Sites

7.10.23 The consideration of impacts on statutory and non-statutory designated geological sites will be based on results of the sedimentology/coastal change assessment carried out in **Section 7.13** Coastal Geomorphology and Hydrodynamics which will identify areas of coastline naturally at risk of erosion and consider the likelihood and magnitude of any development-induced effects **Table 7.10.3** sets out the proposed criteria for assessing receptor value/sensitivity and **Table 7.10.4** sets out the proposed criteria for assessing impact magnitude.

Table 7.10.3: Assessment of value and sensitivity of designated geological sites/features

Value / Sensitivity	Criteria
High	Geology has a national designation and is highly sensitive to damage caused by coastal change.
Medium	Geology has a national designation but is not highly sensitive to damage caused by coastal change. Non-statutory designated sites of regional importance that are highly sensitive to damage caused by coastal change.

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Value / Sensitivity	Criteria
Low	Non-statutory designated sites of regional importance that are not highly sensitive to damage caused by coastal change. Non-statutory designated sites of local importance that are highly sensitive to damage caused by coastal change.
Very Low	Non-statutory designated sites of local importance that are not highly sensitive to damage from coastal change. Undesignated geological features/sites.

Table 7.10.4: Assessment of impact magnitude on designated geological sites/features

Value / Sensitivity	Criteria
High	Large-scale permanent change to geological site/feature.
Medium	Modest permanent change to geological site/feature.
Low	Limited permanent change to geological site/feature. Temporary increase in erosion/degradation of the site/feature that is unlikely to affect the integrity of the geological site/feature in the long-term.
Very Low	Low risk of any temporary or permanent change to geological site/feature.

v. Assumptions and limitations

- 7.10.24 The baseline understanding of the geology underlying the Main Development Site is based on a combination of limited borehole sampling and published British Geological Society maps. Additional borehole sampling may therefore provide results which alter current assumptions on the superficial geology.
- 7.10.25 Agricultural land is assumed to have no anthropogenic contamination beyond the normal application of fertilisers and pesticides.

d) Potential impacts and effects

i. Construction

- 7.10.26 Potential risks from ground contamination within the land north of Sizewell B are considered to be low, assuming that appropriate personal protective equipment is worn by construction workers and that ground gas protection measures are incorporated into the proposed development, where appropriate.
- 7.10.27 The contamination risk associated with other land within the Main Development Site is considered to be very low as it has not previously been developed.
- 7.10.28 There are potential risks to controlled waters, construction workers and vegetation associated with soil/spoil handling procedures, re-use of spoil to balance the earthworks, create construction platforms and bunds, and ultimately to restore the site in accordance with the proposed Landscape Strategy.

ii. Operation

- 7.10.29 The development will incorporate features to prevent ground contamination during the operational phase and the facility will be audited regularly in order to ensure that all pollution control measures are working effectively.

e) Potential mitigation

- 7.10.30 At this stage, no mitigation features are proposed beyond those embedded in the design of the proposed development. For example, the re-use of construction materials where they are suitable for use without pre-treatment and where they wouldn't cause harm to the environment.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.10.31 Inter-relationships exist between this issue and groundwater, surface water, terrestrial ecology and ornithology, and landscape which all provide receptors which could potentially be impacted by ground contamination.
- 7.10.32 In addition there are links to coastal geomorphology and hydrodynamics as regards potential effects of the proposed development on geological sites/features.
- 7.10.33 These potential inter-relationships will be considered in the ES.

ii. Cumulative effects

- 7.10.34 There is potential for cumulative effects on geological sites/features located on the coast. The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and relevant submitted applications not yet determined.

7.11 Groundwater

a) Introduction

7.11.1 This section sets out the proposed scope and methodology for the groundwater assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.11.2 Work has been undertaken to establish groundwater conditions at the Main Development Site and to support the development of a conceptual model which describes the relationship between groundwater and the Sizewell Marshes SSSI and the Minsmere-Walberswick Heaths and Marshes SSSI.

7.11.3 Over 60 groundwater monitoring boreholes have been constructed to determine the baseline variation in groundwater levels. Non-radiochemical and radiochemical groundwater quality monitoring has been undertaken to define baseline conditions within the Main Development Site footprint. The information derived from monitoring undertaken to date has also been used to develop a predictive groundwater impact assessment model to provide a tool to assess the impacts of the proposed development on the groundwater environment, and closely related surface water environment within the Sizewell Marshes SSSI. The architecture and capability of the groundwater model have been subject to discussion with the Environment Agency and the modelling approach will be developed further to ensure a suitable basis for predictive assessment is available. The model will be informed by ongoing monitoring.

7.11.4 The groundwater studies which have been undertaken to date are summarised in **Table 7.11.1**.

Table 7.11.1: Summary of groundwater studies undertaken

Study	Scope of Study
Site investigations	Site investigation has been undertaken at the proposed Main Development site. These investigations have included construction of groundwater monitoring boreholes and soil and groundwater quality analysis of samples recovered from monitoring boreholes. Additional site investigations have also been initiated at locations with potential for winning material from within the temporary construction area and at proposed site options for a replacement wetland habitat.
Pumping tests	A pumping test was undertaken in the Red Crag Aquifer at the proposed Main Development Site during 2010 and 2011.
Groundwater quality monitoring	Groundwater quality monitoring comprised monthly sampling of 31 boreholes over the period December 2010 to October 2011.
Groundwater level monitoring	Groundwater level monitoring at 60 borehole locations was initiated in April 2011. Monitoring comprises monthly manual dips with continuous water level monitoring (data loggers) in selected boreholes.
Ground and surface water modelling	Development of a multi-layered ground and surface water model.

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7.11.5 The locations of the groundwater monitoring points are shown on **Figure 7.11.1**.

c) Approach and methodology

i. Study area

7.11.6 The study area with respect to the Main Development Site is shown on **Figure 7.11.1** and includes the Minsmere-Walberswick Heaths and Marshes SSSI and the Sizewell Marshes SSSI. The study area also includes the outcrop (recharge area) of the Superficial Sands and Gravels and the Red Crag Formation (referred to as Crag).

ii. Baseline information

7.11.7 Baseline conditions have been determined through a programme of site investigation, ongoing groundwater level and quality monitoring and conceptual model development.

7.11.8 The geology beneath the Main Development Site is described in **Section 7.10** and summarised in **Table 7.10.1**. This knowledge is critical in supporting the baseline understanding for groundwater.

7.11.9 The Crag and the Chalk aquifers are classified as Principal Aquifers by the Environment Agency. The Lowestoft Sand Gravels and Beach deposits are classified as Secondary A aquifers. The deeper Chalk aquifer is separated from the Crag by the London Clay (see **Figure 7.11.2**) which provides a physical separation and aquiclude.

7.11.10 The Main Development Site is located on the Waveney and East Suffolk Chalk and Crag groundwater body. This groundwater body has been classified by the Environment Agency as being of Good Quantitative status but Poor Chemical status. The Poor Chemical status is attributed to impacts from agriculture as evidenced by elevated nitrates concentrations in groundwater.

7.11.11 The Crag and superficial aquifers support a number of licensed and private water supplies. The locations of these abstractions are shown on **Figure 7.11.3**. Environment Agency mapping (<http://www.environment-agency.gov.uk/homeandleisure/37793.aspx>) shows that there are no groundwater Source Protection Zones (SPZs) within the Main Development Site boundary. SPZs for two sources are located approximately 3km south-west from the Main Development Site. An inner SPZ (SPZ1) is located just outside of the Main Development Site boundary.

7.11.12 The Environment Agency East Suffolk Catchment Abstraction Management Strategy (Environment Agency, 2013) indicates that, in this area, the Environment Agency may consider applications for groundwater abstractions on a case-by-case basis dependent upon the scale of abstraction and the potential impact on surface water resources.

7.11.13 Groundwater level and quality monitoring has been undertaken for the Crag and overlying superficial deposits and has been focussed on understanding the groundwater conditions which influence the sustainability of the SSSIs (see **Figure 7.11.1**) in the near field of the Main Development Site area. Groundwater flow in the Crag is to the east and towards the coast with a component of groundwater

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discharge to the Sizewell Marshes SSSI and the Minsmere-Walberswick Heaths and Marshes SSSI.

- 7.11.14 Groundwater quality monitoring indicates a transition from fresh calcium carbonate water to the west of the Main Development Site towards more saline waters at the coast and beneath the proposed development site. Groundwater below the Main Development Site cannot be used for potable supply due its high salinity. Nitrate concentrations in groundwater to the west of the Main Development Site exceed Drinking Water Standards and the area falls within a Nitrate Vulnerable Zone.
- 7.11.15 A west to east section through the Main Development Site is shown on **Figure 7.11.2** and this illustrates the relationship between the main groundwater aquifer units.

iii. Planned further survey/studies

- 7.11.16 Groundwater level monitoring will continue through 2014 to further define baseline conditions.
- 7.11.17 The data derived from groundwater monitoring (existing and ongoing) will be used to refine and calibrate the groundwater model that will be used to form the basis of a predictive impact assessment related to Main Development Site construction.
- 7.11.18 A study is also being undertaken to assess the feasibility of backfilling potential sites that could be used to win material from within the temporary construction area, with peat and alluvium arising from the construction excavations from the proposed development. This study will be informed by additional ground investigations (as detailed in **Table 7.11.1**) that have been undertaken in the first quarter of 2014.

iv. Assessment methodology

- 7.11.19 There is a wide range of legislation, policy and guidance which relates to the protection of groundwater resources. This is summarised in the Environment Agency's Groundwater Protection: Principles and Practice document (GP3). The main documents that will be referred to for the assessment are:
- Groundwater Protection: Principles and Practice (GP3) August 2013;
 - Water Environment (Water Framework Directive) (England and Wales) Regulations 2003;
 - Environmental Permitting Regulations (England and Wales) 2010 (as amended);
 - Environment Agency Pollution Prevention Guidelines;
 - Environment Agency Anglian River Basin Management Plan (2010);
 - The East Suffolk Catchment Abstraction Management Strategy (2013);
 - Water Act 2003; and
 - Water Resources Act 1991 as modified.

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7.11.20 The assessment will consider the impacts and effects of the proposed Main Development Site construction and operational phases on the following resources and receptors:

- Resources:
 - Secondary A Superficial Aquifers (Sand and Gravels and Beach deposits);
 - Principal Crag Aquifer. The Chalk aquifer is considered not to be a risk due to the protection provided by the overlying London Clay; and
 - surface water bodies fed, in part, by groundwater.
- Receptors:
 - private and Environment Agency licensed groundwater abstractions; and
 - Minsmere-Walberswick Heaths and Marshes SSSI and Sizewell Marshes SSSI.

7.11.21 The Crag Principal Aquifer and Secondary A aquifers will be assessed according to the criteria given in **Table 7.11.2**.

Table 7.11.2: Guidelines for the assessment of groundwater receptor value and sensitivity

Value and sensitivity	Guideline
High	Principal Aquifer with public water supply abstractions. Site is within Inner or Outer Source Protection Zones.
Medium	Principal Aquifer with public water supply abstractions. Site is within a Catchment Source Protection Zone; or Secondary Aquifer with water supply abstractions. Site is within Inner or Outer Source Protection Zones.
Low	Secondary A Aquifer with water supply abstractions. Site is within a Catchment Source Protection Zone.
Very low	Secondary A/B Aquifer without abstractions in area of activity; or Unproductive strata.

7.11.22 The overall methodology for the assessment of impacts of the development on groundwater resources is set out in **Section 5** and **Tables 7.11.2** and **7.11.3**. The assessment will aim to establish:

- no deterioration in the status of groundwater and dependent water bodies (including SSSIs); and
- no exceedance of environmental water quality standards (e.g. Drinking Water Standards, Environmental Quality Standards (EQSs)) at relevant receptor locations.

Table 7.11.3: Guidelines used in the determination of magnitude of change for groundwater resources

Magnitude	Guideline
High	Major change to key groundwater regime characteristics to the extent that UK and European legislation is contravened. Deterioration in status of groundwater and/or

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Magnitude	Guideline
	<p>groundwater dependent water bodies (including SSSIs).</p> <p>Change in groundwater level, quality or available resource usefulness is chronic, permanent or prolonged beyond the activity causing the change, and irreversible. Permanent loss of aquifer as useful groundwater resource.</p> <p>Changes are spatially extensive beyond the area in which the effect may occur (e.g. drawdown into adjoining areas or contamination down gradient of site into adjoining areas).</p>
Medium	<p>Substantial change to key groundwater regime characteristics to the extent that UK and European legislation may be contravened. Groundwater quality may be affected permanently or at least for 10 years.</p> <p>Change in groundwater level, quality or available resource usefulness is prolonged more than two years beyond the activity causing the change, and only reversible after remediation activity. Permanent or long-term loss of aquifer as useful groundwater resource.</p> <p>Changes are spatially extensive beyond the area in which the effect may occur (e.g. drawdown into adjoining areas or contamination down gradient of site into adjoining areas).</p>
Low	<p>Noticeable but small changes in groundwater levels or quality for more than two years, or noticeable changes for more than six months but less than two years, or barely discernible changes for more than two years.</p> <p>Reversible without external action required. Changes confined largely to the area of effect only.</p> <p>No contravention of UK or European legislation.</p>
Very low	<p>Barely discernible changes in groundwater levels or quality for more than two years, or noticeable but small changes for more than six months but less than two years.</p> <p>Changes confined largely to the area of effect only and reversible without external action. Changes of lower magnitude than baseline seasonal changes.</p> <p>No contravention of UK or European legislation.</p>

- 7.11.23 Changes in groundwater levels, groundwater flow and quality will be assessed in relation to the baseline conditions.
- 7.11.24 The assessment will be supported by the application of a groundwater model which will be used to assess the influence of site activities (e.g. construction of the cut-off wall) on groundwater levels, groundwater flow and groundwater discharges to surface water. Contaminant transport models (e.g. the Environment Agency ConSim model) will also be used to assess the impact on groundwater as a result of the mobilisation and/or leaching of contaminants during construction.
- 7.11.25 Groundwater contribution to potential flood risk issues is considered as part of the Flood Risk Assessment, however, the groundwater model will be used to assess whether below ground structures associated with the Main Development Site would result in a significant change to groundwater levels which might indicate an impact in terms of flood risk.

v. Assumptions and limitations

- 7.11.26 Groundwater monitoring data are available for the period 2011 to 2014. This comprehensive dataset will provide adequate baseline characterisation but will be

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supplemented by reference to long-term monitoring undertaken by the Environment Agency and through application of the groundwater assessment model.

- 7.11.27 A regional scale groundwater model has been developed to undertake predictive assessment. The model will be refined to incorporate additional data sources including site investigation and ongoing monitoring data. This model will form the basis for assessment, and will be supplemented where necessary by appropriate, simpler models to resolve key questions.
- 7.11.28 The construction of the proposed development will require the construction of a cut-off wall in advance of bulk excavations and within which dewatering will take place. The models will be used to assess the effectiveness of this wall in restricting the influence of pumping on surrounding groundwater levels.

d) Potential impacts and effects

- 7.11.29 The development activities that would potentially impact groundwater are:
- construction dewatering;
 - construction of a cut-off wall around the proposed power station footprint. This wall is currently proposed to extend down to the London Clay;
 - building foundations and structures constructed below the water table;
 - bridge construction across the Sizewell Marshes SSSI;
 - changes in infiltration to groundwater resulting from changes to surface land use;
 - excavation of soils from within the Main Development Site with the potential for mobilisation of contaminants;
 - stockpiling of soils with the potential for leaching of contaminants; and
 - potential for the leaching of contaminants from the backfilling of the proposed locations used to win fill material with peat and alluvium from the power station excavations.
- 7.11.30 The potential effects associated with these activities include changes in groundwater levels and flows, groundwater discharges to surface water, surface water flows to groundwater, infiltration to groundwater, and variation to groundwater and surface water quality relative to baseline conditions.
- 7.11.31 The proposed development activities will impact groundwater in differing ways. The construction of the cut-off wall is likely to raise groundwater levels upgradient of the wall. Areas of temporary and permanent hardstanding and buildings will reduce infiltration of precipitation to the ground with the potential to lower groundwater levels, but levels may be increased where surface water is routed to sustainable drainage systems. The application of the groundwater models will allow the combined effects on groundwater to be assessed.
- 7.11.32 The assessment would also address whether changes in groundwater infiltration and flow would influence the dilution and movement of any contaminants released as a result of site activities (e.g. leaching of contaminants from stockpiled material).

i. Construction

- 7.11.33 Dewatering for the construction of the proposed development has the potential for lowering groundwater levels with the risk of impacting the Sizewell Marshes SSSI and causing saline intrusion. A cut-off wall will be constructed around the excavation area which will limit the drawdown in groundwater levels. The wall may act as barrier to groundwater flow resulting in a rise in groundwater levels upgradient of the wall and a change in flow direction. Predictive groundwater flow models will be used to assess the influence of the cut-off wall on groundwater and to identify whether any changes in baseline groundwater conditions are likely to be significant.
- 7.11.34 Site investigations have shown that groundwater within the excavation area for the proposed power station is characterised by high salinity and the assessment will consider the volumes of water that will need to be managed and discharged.
- 7.11.35 The impact of surface water management, via SuDS, on the groundwater resource would need to be assessed.
- 7.11.36 The development of Main Development Site would create areas of hard standing (e.g. car parks) that will reduce infiltration to the ground and increase surface water run-off. The change in infiltration will be assessed and the influence on groundwater levels and flow will be assessed using the groundwater models.
- 7.11.37 Construction activities (principally excavation of soils) may result in mobilisation of contaminants and a risk to groundwater. Investigations have been undertaken to characterise the materials to be excavated and therefore allow the risk to be assessed. The movement of any contaminants mobilised in the main excavation area will be limited by the cut-off wall and by dewatering.
- 7.11.38 The stockpiling of excavated materials may result in leaching of contaminants and a potential impact on groundwater. The potential impact on groundwater will be assessed based on information from soil testing undertaken as part of the investigations for the development (see **Table 7.11.1**).
- 7.11.39 An option that is currently being evaluated is to use peat and alluvium excavated from the proposed power station footprint as backfill to a potential site which will be excavated to source engineering fill. Leaching of this material may impact groundwater. A groundwater risk assessment has been initiated to assess any potential impacts and whether this option is environmentally acceptable.

ii. Operation

- 7.11.40 The main potential impacts associated with the operation of the proposed development relate to the influence of the cut-off wall installed during the construction phase on groundwater flow and the potential need to control (dewatering) groundwater levels within the wall. The impacts will be assessed using the groundwater models together with an assessment of management arrangements for the pumped water.
- 7.11.41 Infiltration to the ground will be reduced by buildings and areas of hardstanding and the change in infiltration rates and impact on groundwater will be assessed using the groundwater models.

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e) Potential mitigation

- 7.11.42 The impact of dewatering operations for the proposed construction excavations will be largely mitigated by the construction of a cut-off wall. This wall will have an influence on groundwater flow and levels and this, along with any associated mitigation to address this change, will be assessed using the groundwater models.
- 7.11.43 The excavation of Made Ground, peat and alluvium from the proposed power station construction area may result in the mobilisation of contaminants. This will be mitigated by containing the area within a cut-off wall and by controlled dewatering.
- 7.11.44 Buildings and areas of hard standing will reduce infiltration to the ground. The assessment will consider how this can be mitigated through the use of sustainable drainage systems where possible.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.11.45 Groundwater impacts could have indirect effects on a number of environmental parameters. The key inter-relationships occur where changes to groundwater flows impact on ecologically sensitive receptors and designated sites (e.g. Sizewell Marshes SSSI and the Minsmere-Walberswick Heaths and Marshes SSSI).
- 7.11.46 For the Main Development Site, the following inter-relationships will be considered with surface water, terrestrial ecology and ornithology and flood risk (groundwater flooding).

ii. Cumulative effects

- 7.11.47 The Main Development Site in cumulation with other relevant plans or projects affecting the groundwater environment within a 5km radius could result in additive risks or impacts on groundwater and surface waters and receptors. Where appropriate the use of predictive groundwater models would allow any cumulative impacts to be identified and assessed.

7.12 Surface water

a) Introduction

7.12.1 This section sets out the proposed scope and methodology for the surface water assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development. This section does not give any consideration to flood risk, which is covered in **Section 2** and will be considered in a separate Flood Risk Assessment (FRA) which will cover both the Main Development Site and the off-site associated development sites.

b) Work undertaken to date

7.12.2 Initial studies have been undertaken to inform the consideration of surface water issues relevant to the Main Development Site and these will be further developed during the next phases of work. These are summarised in **Table 7.12.1**.

Table 7.12.1: Summary of work undertaken to date

Study	Scope of Study
Hydrogeological and hydrological study (2010)	Initial studies into the hydrogeological and hydrological behaviour of the area around the Main Development Site have been undertaken in order to provide information on likely long-term flows for rivers and marsh drains (see also Section 7.11 (Groundwater)). Further development of these studies is underway and is being undertaken in consultation with the Environment Agency and other relevant stakeholders.
Water quality sampling (2010-2013)	Monthly water quality sampling was undertaken from January 2010 to January 2013 (total of 37 visits) for the purposes of establishing surface water quality conditions. The scope of the monitoring (spatial extent, frequency, testing suite etc.) was informed by relevant legislative drivers that include the Water Framework Directive (WFD) and through consultations with the Environment Agency, Natural England and the Suffolk Wildlife Trust. General physico-chemical parameters, such as dissolved oxygen, ammonia, pH and salinity were subject to field measurement or laboratory analysis as appropriate, together with laboratory analysis of microbiological and radiochemical parameters. Specific testing for Priority Substances as defined by the WFD was undertaken on six occasions to complete comprehensive baseline characterisation.
Production of Flood Risk Assessment Scoping Report (2014)	A Flood Risk Assessment Scoping Report is currently in production in order to provide technical details on the scope of the FRA.

7.12.3 The Environment Agency has funded work to model flows within the River Minsmere and Leiston Beck. Other models have been constructed to simulate the flow of groundwater and surface water into and through the Sizewell Marshes which will be used to inform the surface water chapter of the ES.

c) Approach and methodology

i. Study area

7.12.4 The geographical extent of the study area for surface water is shown in **Figure 7.12.1** and comprises the area within the Main Development Site, together with the

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catchments of the watercourses draining into the area considered relevant to the Main Development Site.

ii. Baseline information

- 7.12.5 A number of watercourses are present within the study area but relatively few are located within the Main Development Site. Of particular importance is the area which falls within the Sizewell Marshes Site of Special Scientific Interest (SSSI). This area contains a series of interconnected drainage ditch systems, which can be generally grouped into two systems situated to the north-west and south-east of Sandy Lane. In addition, there are two small lakes within the Sizewell Marshes SSSI. Both support a dense coverage of reeds
- 7.12.6 The main input to the north-western ditch system is the consented discharge from Leiston sewage treatment works (both continuous and storm discharges). Surface runoff from Leiston produces a peak in discharge during rainfall. An additional input rises on Brick Kiln Farm and joins Leiston Beck immediately downstream of the sewage treatment works. Leiston Beck then crosses the north of the Sizewell Belts. Other, much smaller, ditches are maintained close to the level of the surrounding fields by sluices and pipe overflows.
- 7.12.7 The south-eastern ditch system rises to the south of the existing power station complex, near Sizewell village. The majority of flow follows a split channel that runs along the western boundary of the existing power stations.
- 7.12.8 The two systems join a few hundred metres north of the Sizewell B power station, and flow towards the coast around the foot of Goose Hill to the Minsmere Sluice, where they discharge to the sea. The network of ditches and watercourses draining the Minsmere to Walberswick Heaths and Marshes SSSI and SAC, and Minsmere-Walberswick SPA and Ramsar site join the Leiston Beck just upstream of the Minsmere Sluice.
- 7.12.9 **Figure 7.12.2** shows the inter-connected nature of the surface waters described above and illustrates important features, such as the ditch systems and Leiston Beck, and the assumed main drains in the context of the surface water catchment areas.
- 7.12.10 Of the surface waters in the study area, Water Framework Directive (WFD) water body descriptions are available from the Environment Agency for 'Sizewell Marshes' and for 'Leiston Beck and Minsmere Old River'. 'Leiston Beck and Minsmere Old River' is a 'heavily modified' water body and is assessed as being at 'high' status for all supporting water quality parameters, with the exception of phosphorous which is at 'good' and dissolved oxygen at 'moderate'. Supporting elements relating to hydromorphology are also classified as supporting 'good ecological potential'.
- 7.12.11 The small lake within the Sizewell Marshes SSSI is an artificial water body which is assessed as achieving 'good ecological potential'. There is, however, no water quality or hydromorphological information available within the description for Sizewell Marshes.
- 7.12.12 To supplement the Environment Agency's water quality information, a programme of water quality monitoring has been undertaken to better define baseline conditions. As set out in **Table 7.12.1**, the monitoring took place from 2010 to 2013 and covered

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all watercourses within the Main Development Site. The water quality sampling sites are shown in **Figure 7.12.3**.

- 7.12.13 The monitoring results indicate moderate to poor water quality typical of lowland, coastal drainage ditches. Water quality at a number of monitoring sites exceeded relevant environmental standards (i.e. WFD Environmental Quality Standards) for a range of parameters, including ammonia, phosphorous, biochemical oxygen demand, dissolved iron, sulphate and suspended solids.
- 7.12.14 Low dissolved oxygen levels are noted as a particular feature across the entire study area, with all monitoring sites failing to achieve the Freshwater Fish Directive (Cyprinid Fish Category) Imperative Standard and falling below the WFD 'Poor' Status classification criteria. Consultation with the Environment Agency confirmed that low dissolved oxygen concentrations are a typical feature of surface water courses in the vicinity of the Suffolk Coastline. Radiochemical analysis has not shown elevated levels of radiochemical contamination beyond expected background levels (see **Section 7.17** which details the radiological assessment).
- 7.12.15 Additional water quality monitoring was undertaken to determine the baseline conditions for priority substances defined under the WFD. Results indicate that occurrences of priority substances are influenced by discharges from Leiston Sewage Treatment Works and road runoff. Specifically, the presence of tributyl tin and polyaromatic hydrocarbons are noted at the monitoring site to the south of existing power station complex, and are attributed to the fishing fleet located on the beach east of the monitoring site and vehicle exhaust particulates respectively (AMEC, 2013d).

iii. Planned further survey/studies

- 7.12.16 Initial studies into the hydrogeological and hydrological behaviour around the Main Development Site have been undertaken in order to provide information on likely long-term flows for rivers and marsh drains (see also **Section 7.11**). This has included conceptualisation of the processes operating in the area and their inclusion in numerical models, the updating of existing models in the light of new data and the recalibration of updated models (Vatnaskil, 2010). Further development of these studies is underway and is being undertaken in consultation with the Environment Agency and other relevant stakeholders.
- 7.12.17 A site drainage strategy for each phase of the Main Development Site is under development and this will inform the surface water and Flood Risk Assessments (see **Section 2.3**). A summary of planned studies is provided in **Table 7.12.2**.

Table 7.12.2: Summary of studies that will contribute to the development of the surface water impact assessment

Study	Scope of Study
Verification and validation of surface and ground water model	Collection of further information in order to validate the surface and ground water model as agreed with the Environment Agency.
Updates to the current surface water hydraulic model	The Flood Risk Assessment Scoping Report recommends that two models are combined in order to represent the complex drainage pathways of the Sizewell Belts and Minsmere Nature Reserve.

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Study	Scope of Study
Surface water drainage strategy	A surface water drainage strategy is in preparation to inform both the surface water and flood risk elements of the proposals.
Flood Risk Assessment	Key information from the modelling described above will be used to develop a Flood Risk Assessment. This Flood Risk Assessment will be used to inform the surface water chapter.
Collection of flow and level data	Six temporary flow and level gauges were installed in December 2013. These will be in place for 12 months.

iv. Assessment methodology

7.12.18 The key legislation, policy and guidance documents in respect of hydrology and fresh water quality are set out below:

- Water Framework Directive 2000 (as amended) seeks to improve and integrate the management of water bodies in the UK and implements environmental standards for a number of substances;
- Environment Act 1995 (as amended) places a duty on the Environment Agency with respect to the conservation of natural beauty and sustainable development;
- The Environmental Permitting (England and Wales) Regulations, 2010 (as amended) has produced a single regulatory framework by streamlining and integrating waste management licensing, pollution prevention and control, water discharge consenting, groundwater authorisations, and radioactive substances regulation;
- National Planning Policy Framework 2012 on Water Supply, Wastewater and Water Quality;
- Planning Policy Statement PPS 25 (although PPS 25 has now been superseded, it is still considered useful and will therefore be considered)/National Planning Policy Framework; Development and Flood Risk (various years) which set out planning requirements that aim to ensure development would not result in increased flood risk including the use of Sustainable Drainage Systems (SuDS);
- Anglian River Basin Management Plan (Environment Agency, last modified January 2011) assigns ecological classifications and sets water quality targets to each water body within East Anglia to ensure that the environment is maintained and, if possible, improved; and
- The Suffolk Coastal District Local Plan (Suffolk Coastal District, 2013) sets out the emerging local planning policies for the Suffolk Coastal District.

7.12.19 There are also numerous best practice documents that provide guidance on ensuring that developments do not result in adverse hydrological, drainage and water quality impacts such as the Sustainable Drainage Systems Manual (CIRIA, 2007) and the Environment Agency Pollution Prevention Guidance (PPG) notes.

7.12.20 The methodology to be adopted for assessing the potential environmental impacts to surface waters is outlined in **Section 5**. In addition, specific information is provided below on the determination of resource value and sensitivity and impact magnitudes

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for surface waters in particular. A separate WFD Compliance Assessment will be provided to support the ES (see **Section 2.3**).

Value and sensitivity

7.12.21 All of the surface water resources that have the potential to be impacted by the proposed development will be assigned a level of importance in accordance with the definitions set out in **Section 5** and with the surface water specific definitions given in **Table 7.12.3**. Conservative expert judgement will be used where a resource could be allocated to more than one value and sensitivity rating

Table 7.12.3: Proposed criteria to be used to determine the value and sensitivity of surface water resource

Value and sensitivity	Description
High	<p><i>Hydrology and drainage:</i> Controlled watercourses located in area of high social/community and economic value and considered of high amenity. Controlled watercourse identified is of UK or European value in terms of its hydrological status such as designated habitats and/or species are sensitive to change in hydrological regime. Watercourse identified as having no capacity to adapt to or recover from proposed form of change.</p> <p><i>Water quality:</i> Water quality supports or contributes towards the designation of a feature of national or international importance. Very low capacity to accommodate change compared to baseline conditions. The water environment contributes to good salmonid and cyprinid fisheries. The watercourse may be used for any type of water abstraction including potable supply.</p>
Medium	<p><i>Hydrology and drainage:</i> Controlled waters located in area of moderate social/community and economic value. Considered to be of medium amenity value. Controlled waters identified of moderate UK regional or local value in terms of hydrological status such that habitats/species are sensitive to change. Watercourse identified as having low capacity to accommodate proposed change.</p> <p><i>Water quality:</i> Water quality supports high biodiversity but isn't designated. Watercourse has low capacity to accommodate change to water quality status. Environment considered to support coarse fisheries.</p>
Low	<p><i>Hydrology and drainage:</i> Controlled waters located in area of no social/community and economic value. Considered to be of low amenity value. Controlled water is of moderate local value in terms of hydrological status. Watercourse identified as having moderate capacity to accommodate proposed form of change.</p> <p><i>Water quality:</i> Watercourse has high capacity to accommodate change to water quality status for</p>

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Value and sensitivity	Description
	<p>example as a result of its size, dilution availability. Baseline water quality status poor. Watercourse unlikely to support fisheries/fish populations.</p>
Very low	<p><i>Hydrology and drainage:</i> Controlled waters located in area of no social/community and economic value. Considered to be of low amenity value. Controlled water is of low local value in terms of hydrological status. Watercourse identified is tolerant to proposed form of change.</p> <p><i>Water quality:</i> Watercourse has high capacity to accommodate change to water quality status for example as a result of its size, dilution availability. Baseline water quality status poor/very polluted.</p>

Magnitude

- 7.12.22 It is proposed that the assessment of the magnitude of impacts is based on the influence the proposed development would have on local surface water features and is considered in terms of high, medium, low and very low magnitude ratings.
- 7.12.23 All surface water impacts will be assigned a level of magnitude in accordance with the definitions provided in **Section 5** and with the surface water specific definitions given in **Table 7.12.4**.
- 7.12.24 Given the relatively long construction phase associated with the Main Development Site, it is considered appropriate to provide a project specific definition of what is meant by short-, medium- and long-term temporary impacts. These are defined as follows:
- temporary (short-term) are those construction phase impacts that would be experienced over a period of no more than 1-2 years;
 - temporary (medium-term) are those construction phase impacts that would be experienced over a period of no more than 3-5 years; and
 - temporary (long-term) are those construction phase impacts that would be experienced over a period of no more than 5 years.

Table 7.12.4: Proposed criteria to be used to determine the magnitude of the impact on surface waters

Magnitude	Description
High	<p><i>Hydrology and drainage:</i> Large change to key hydrological/hydraulic characteristics of the receiving water features to the extent that UK and European Legislation is contravened. Occurrence of change(s) is prolonged longer than would be expected over the baseline. Large spatial impact.</p>

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Magnitude	Description
	<p>Leads to a permanent change in hydrological/hydraulic characteristics of the water body</p> <p><i>Water quality:</i> Change to water quality of receiving water such as water quality change leads to permanent change and inability to meet Environmental Quality Standards.</p>
Medium	<p><i>Hydrology and drainage:</i> Change to key hydrological/hydraulic characteristics of the receiving water features to the extent that UK and European Legislation may be contravened. Changes are limited in time to the duration over which they occur compared to the baseline. Large spatial impact.</p> <p>Leads to a long-term change in hydrological/hydraulic characteristics of the water body.</p> <p><i>Water quality:</i> Change to water quality of receiving water such as water quality change leads to long term inability to meet Environmental Quality Standards.</p>
Low	<p><i>Hydrology and drainage:</i> Noticeable but not necessarily large changes to hydrological/hydraulic characteristics of the receiving water.</p> <p><i>Water quality:</i> Noticeable but not necessarily large changes to water quality. Activity unlikely to lead to long-term or permanent change to the receptor such that EQS' are compromised. Overall, baseline conditions are maintained.</p>
Very Low	<p><i>Hydrology and drainage:</i> Occasional and small changes to hydrological/hydraulic characteristics of the receiving water. Impact occurs over very short timescales and spatial scales.</p> <p><i>Water quality:</i> Although there may be a small impact, occurs over short timescales and unlikely to lead to long-term compromised of EQS.</p>

7.12.25 The matrix for the assessment of effects, as outlined in **Section 5**, will be adopted and following the classification of an effect, a statement will then be made regarding whether the effect is significant or not significant. Major and moderate effects will be considered to be significant and minor and negligible effects will be considered to be not significant. If additional mitigation is proposed then the residual effect following additional mitigation will be assessed using the same methodology.

v. Assumptions and limitations

7.12.26 The following assumptions and limitations have been identified at this stage with respect to surface water:

- calculations to determine baseline water quality conditions will be derived from a limited number of sampling campaigns;
- the impact assessment will take into account those elements of the development site design relevant to surface water (e.g. provision of Water Management Zones

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(WMZs)) before the determination of effect significance is made (as project design is not considered to be a form of additional mitigation for the purposes of this assessment);

- surface water discharge will be managed so it does not exceed the predetermined greenfield runoff rates in accordance with relevant guidance;
- suspended solid concentrations in water discharged to streams will be controlled as prescribed in a Site Preparation Drainage Design Discharge Conditionality Report; and
- Environmental Quality Standards prescribed for downstream designated WFD water bodies will be adopted for upstream watercourses for the purpose of the assessment.

d) Potential impacts and effects

7.12.27 This section outlines the potential impacts on surface hydrology and water quality within the Main Development Site and for any associated resources that may be indirectly impacted by changes to local watercourses (i.e. watercourses downstream of the site). However, it should be noted that these impacts have been identified using high level key design features for the management of runoff and foul water which have yet to be fully developed. Detailed surface water and foul water strategies will be available at later stages of the Project.

i. Construction

Hydrology

7.12.28 The following key elements of the construction works could impact on watercourse hydrology:

- creation of bare earth surfaces due to the stripping of topsoil and vegetation;
- realignment of existing ditches;
- changes to topography associated with site levelling, stock piling, deep excavations for example;
- construction of new access roads and temporary bridges;
- construction of semi-permeable and impermeable surfaces such as roads, site compounds areas, accommodation campus for example; and
- collection and discharge of foul water from construction compounds.

7.12.29 These activities could lead to an increase in surface water flows both through runoff volume and rate changes and any continuous discharges (such as those associated with treated effluent). An additional impact could be soil erosion associated with surface water runoff, which could lead to both blockages of existing water courses and a reduction of channel capacity if flows reduce enough to allow settlement of soil onto the channel bed.

7.12.30 In order to control surface water runoff at source, good practice measures will be adopted, where possible, to reduce the volume of surface water that will require collection. For the remaining flows, a temporary drainage system will be constructed to drain surface water runoff that does not impact on the wider hydrology of the area

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(including downstream designated sites). A key design feature to control flows will be the use of WMZs to collect and attenuate the surface water runoff. These zones will also offer the potential for the settlement of any soil material. Foul water from offices and welfare facilities will be drained via a foul water drainage system and treated at temporary sewage treatment plants.

- 7.12.31 The temporary drainage system would remain operational until the land is restored to its current green-field state or until permanent site drainage and associated outfalls are commissioned. Provision will also be made for rainfall events that could exceed the normal design criteria for drainage systems, in order to reduce risks associated with inundation and potential failure of the water storage infrastructure.

Water Quality

- 7.12.32 During the construction phase, there is the potential for the generation of runoff from surfaces which have been exposed to hydrocarbon contamination from vehicle and equipment use. Additionally, a number of construction works will require the use of concrete pouring in situ, which could lead to concrete leachate in surface waters both from pours and during washout/delivery and cleaning of equipment. Accidental release of contaminants from the various construction activities is also a potential risk should watercourses be located nearby or surface water runoff washes contaminants into the watercourses. An additional impact is the potential for foul discharges to pollute watercourses either in an emergency or through poor levels of treatment.
- 7.12.33 As detailed for hydrology, the control measures to be put in place for the drainage system (SuDS and WMZs) will all be designed in order to provide attenuation and treatment. Oil interceptors will also be installed at sites where the risk of hydrocarbon contamination is high. For foul water, temporary treatment plants will be provided where required, to levels suitable for the receiving environment as determined by Environment Agency policy. In order to control and reduce the impact of accidental pollution spills as far as possible, Incident Control Plans will be developed in consultation with the regulators.
- 7.12.34 Overall, the control measures to be designed into the drainage system and for treatment of foul water will reduce risks to surface waters as far as possible. Further work will be undertaken to ensure all requirements and standards are met within the proposed drainage strategy and foul water management system, and hydraulic modelling will be undertaken to inform both the FRA and this topic.

ii. Operation

- 7.12.35 The Sizewell drain flows through an area of the Sizewell Belts which will be raised to create the development platform for the power station. It is intended that it will be realigned around the edge of the development platform which is likely to create a narrowing or pinch point through which both this and the existing Leiston Drain will need to flow. The use of hydraulic models will determine whether flows will be altered.
- 7.12.36 Additionally, new bridges to the development may create potential restrictions to flow in Leiston Drain and Sizewell Drain although the design would seek to avoid and reduce such effects. The use of hydraulic models will determine if the introduction of bridges and roads will alter flows in the area.

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7.12.37 In terms of the management of surface water discharges from the Main Development Site, a drainage strategy is being developed in line with appropriate guidance.

e) Potential mitigation

7.12.38 A number of control measures will be included within the proposed design for the Main Development Site as detailed above. As a result, additional mitigation is not proposed at present, but the outcomes of the hydraulic modelling will confirm whether additional mitigation is required.

f) Approach to cumulative assessment

i. Inter-relationships

7.12.39 Surface water impacts could have indirect effects on a number of environmental and social parameters. The key inter-relationships occur where changes to surface water flows impact on ecologically sensitive parameters and designated sites.

7.12.40 For the Main Development Site, the following inter-relationships will be considered with groundwater, terrestrial ecology and ornithology, marine water quality (should surface water discharges to marine waters be required) and flood risk.

ii. Cumulative effects

7.12.41 The Main Development Site in cumulation with other relevant plans or projects affecting the surface water environment could pose additive risks or impacts on watercourses within the study area.

7.12.42 The cumulative assessment will include consideration of relevant major developments that are permitted but not yet implemented and submitted applications not yet determined.

7.13 Coastal geomorphology and hydrodynamics

a) Introduction

7.13.1 This section sets out the proposed scope and methodology for the coastal geomorphology and hydrodynamics assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.13.2 Extensive new observations and analyses have been undertaken to increase the understanding of the Sizewell coastal system:

- measurements of waves, currents and elevations in 2008, 2009 and 2013;
- high resolution bathymetric surveys of Sizewell-Dunwich Bank (2008/9) with further surveys in 2010, 2011 and 2012 to provide additional coverage, particularly in the nearshore zone;
- extensive sediment sampling and analyses for sediment transport trends;
- a comprehensive analysis of all available modern and historical datasets in order to examine the behaviour of shoreline change at Sizewell, including historical maps and charts (1837-present), orthorectified aerial photographs (1940-2012), beach topographic surveys (1985-2012), bathymetric profiling (1992-2007), swath bathymetry data (2007-2011) and LIDAR surveys (2008-2010);
- wave measurements over four years seaward of Sizewell-Dunwich Bank and access to 30 years of model hind cast data from a large area model;
- setup, calibration and validation of a high resolution unstructured grid (Telemac) tidal model (25m highest resolution) together with a coupled wave model (Tomawac) and sediment transport model (Sisyphe);
- production of scenarios for future potential geomorphologies (geoscenarios) of the Sizewell region using a facilitated expert panel approach. These geoscenarios will be used in future coastal process modelling work in which the consequences of each geo-scenario will be examined (see **iii. Planned further survey/studies**); and
- numerical modelling of the Sizewell B and C thermal plumes, including the effect of the different geoscenarios.

c) Approach and methodology

i. Study area

7.13.3 The spatial extent of the study area is shown in **Figure 7.13.1**. Most effects, such as changed wave climate due to the jetty, will be localised often to within a few tens of metres of the construction site and require high resolution modelling on a small scale. However, longshore sediment transport is a long-term process and acts over larger scales, typically the sediment cell. The modelling area covers the local sediment cell relevant to Sizewell and the cell to the south which is relevant to the observed net sediment transport southwards towards Orford Ness and the designated site at Shingle Street. The maximum possible extent of sediment resuspension resulting

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from dredging or other construction-related activities was defined as the maximum spring tide excursion centred on the mid-point of the Main Development Site. The landward extent for coastal hydrodynamics assessment is Highest Astronomical Tide (HAT). The location of the cooling water infrastructure is subject to current engineering studies and the seaward extent of the study area was set at approximately 4km in order to allow flexibility in those studies.

- 7.13.4 The temporal extent of the surveys and for reuse of existing data is specific for each physical process. Most tidal variability is covered within one month; wave effects occur over many storms, whilst assessment of shore line variability and offshore sand banks requires much longer term scales of years to decades.

ii. Baseline information

- 7.13.5 The shoreline at Sizewell forms part of a longer 16km coastal bay defined by hard points at Southwold in the north and Thorpeness in the south. This bay has a classic coastal curvature, with a long southern arm, extending between Thorpeness and Dunwich aligned approximately north/south, and a shorter northern arm aligned approximately north-east/south-west. The concrete outfall to Minsmere Sluice (built in 1830) also acts as a groyne, resulting in shallow bays between the Sluice and the Blyth piers to the north, and between the Sluice and Thorpeness to the south. Hence the coast comprises two 'nested' very shallow bays within a larger bay, of which two erosion resistant points are man-made and one is natural.

Shoreline change

- 7.13.6 A century ago there were wide areas (several kilometres long) experiencing high rates of consistent erosion or accretion, whereas in recent years, shoreline change all around the Sizewell Bay coast has consisted of a fluctuating patchwork of erosion and accretion. In that more recent period, stretches of coastline with common behaviour have been typically only a few hundred metres wide, though some zones have been less than 50m or occasionally greater than 1km. The general patterns of shoreline change also appear to have been linked to variability in the inshore wave climate, longshore transport and offshore bathymetry (the morphology of the Sizewell-Dunwich Bank and bars). In particular, the very low rates of shoreline change around the Sizewell power stations have coincided with low wave energy and low longshore transport. Supply toward Thorpeness over recent decades is also considered to have been low. Thus, over periods of years to decades post 1925, the net transport can be considered to have been low and, in net terms, to the south.
- 7.13.7 Approximately 1.5km offshore from the coast is the Sizewell-Dunwich Bank. The bank represents a natural wave break preventing larger waves from propagating inshore and thus reducing erosion rates along this shoreline. As a result, the Bank forms an integral component of the shore defence and provides stability for the Sizewell coastal system. From the available bathymetric evidence the height and position of Sizewell-Dunwich Bank has varied over time, with the northern part migrating landwards and the southern end more anchored to the seabed at the Thorpeness headland outcrops of Coralline Crag. The northern (Dunwich) end of the bank system has been more variable in its position, height and width.
- 7.13.8 Whilst there has been significant short-term (storm driven) transport of sediment both to the north and south along the Southwold to Thorpeness shoreline since 1925, the

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net volume of sediment moving to the south on a decadal scale has been relatively small. The wave field is considered to be a major driver of near shore sediment transport.

Tidal currents

- 7.13.9 The typical maximum flood tidal current speeds offshore of the Sizewell-Dunwich Bank were 1.1m/s on spring tides and 0.7m/s on neaps. However, inshore of the bank the speeds were slightly reduced with typical maximum spring tidal current speeds of 1.0m/s on spring tides and 0.6m/s on neaps. Slack water off Sizewell occurs approximately one hour after high water. There is a marked asymmetry in tidal current velocities over a tidal cycle, with stronger peak flood currents (southward) than ebb currents (northward). Tidal currents were measured in three observation campaigns, each of four weeks or longer, in 2008, 2009 and 2013 at the positions marked on **Figure 7.13.1**.

Tidal elevations

- 7.13.10 Class A tide gauges have been recording water level at Lowestoft since 1964 and Harwich since 1954.

iii. Planned further survey/studies

- 7.13.11 An X-band radar was installed in 2013 on the roof of the Sizewell A reactor building. The radar scans the nearshore region over a radius of up to 4km and measures waves, currents and meso-scale bathymetry sufficient to resolve the Sizewell Bank. The data will be used to track the movement of the shoreline and longshore bars in response to storm forcing.
- 7.13.12 Numerical modelling of shoreline change due to natural variability and the effect of structures such as the proposed jetty, beach landing facility and the existing Minsmere Sluice will be undertaken.
- 7.13.13 Numerical modelling of geoscenarios using coupled tide, sediment transport and wave models will also be undertaken. The nature and role of the Sizewell-Dunwich bank will be considered through a combined expert judgement and numerical modelling approach.
- 7.13.14 The Telemac suite of numerical models will be used to test the feasibility of each geoscenario and the effect each would have on nearshore processes. These scenarios include plausible worst cases for degree of effect on the coastline and upon the heat sink capacity for the Sizewell power stations.

iv. Assessment methodology

- 7.13.15 The assessment will consider impacts during the construction and operation of the Main Development Site, and potential effects on coastal geomorphology and hydrodynamics receptors and resources, as discussed in **Section d)**.
- 7.13.16 Particular regard will be given during the assessment and design development to relevant legislation and policies concerned with coastal geomorphology and coastal process, including:

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European legislation

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC); and
- Marine Strategy Framework Directive (2008/56/EC).

National policy and legislation

- National Planning Policy Framework 2012;
- Marine and Coastal Access Act 2009; Coastal Protection Act 1949;
- Conservation of Habitats and Species Regulations 2010;
- Suffolk Shoreline Management Plan, SMP2 sub cell 3c. Zone 4 Dunwich Cliffs to Thorpeness; and
- Water Resources Act 1991 (Flood Defence Consent).

7.13.17 The magnitude of impacts would be determined on the basis of the spatial extent, reversibility, duration and likelihood of the impact, as well as the amount of change that would occur. The guidelines for assessing magnitude are shown in **Table 7.13.1**.

Table 7.13.1: Guidelines for the assessment of impact magnitude

Magnitude	Description
High	Entire study area affected (and potentially beyond), irreversible (e.g. outlasts operation), impact of long duration (e.g. 100+ years), certain to occur, change significantly above natural background including variability.
Medium	Majority of study area affected, reversible in the long-term (during operation), moderate-long duration (e.g. 10-100 years), likely to occur, change slightly above natural background including variability.
Low	Partial area affected (e.g. >20-50%), reversible in the medium-term (e.g. during construction phase), moderate duration (e.g. 6 months-10 years), will possibly occur, change discernable but similar to natural background including variability
Very low	Small area affected (e.g. 0-20%), reversible in the short-term (e.g. limited to the construction phase), very short duration (<6 months), unlikely to occur, change barely discernable.

7.13.18 The value/sensitivity of the receptors and resources would be determined on the basis of their conservation, economic or functional value and their capacity to accommodate the effect (i.e. their capacity for resistance and resilience). The guidelines for assessing value/sensitivity for the features are given in **Table 7.13.2**.

Table 7.13.2: Guidelines for the assessment of value/sensitivity

Value/sensitivity	Description
High	<u>Value</u> : high functional value (e.g. ecosystem feature dependent upon it), international conservation value, national/international socio-economic value. <u>Sensitivity</u> : no capacity for resistance, no capacity for resilience.
Medium	<u>Value</u> : moderate functional value (e.g. another feature partially dependent on it), national conservation value, national/regional socio-economic value. <u>Sensitivity</u> : low capacity for resistance, low capacity for resilience (e.g.

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Value/sensitivity	Description
	recovery after 10yrs).
Low	<u>Value</u> : low functional value (e.g. limited connection to other ecosystem features), regional/local conservation value, local socio-economic value. <u>Sensitivity</u> : moderate capacity for resistance, moderate capacity for resilience (e.g. recovery after 5 years).
Very low	<u>Value</u> : very low functional value (e.g. no dependencies), no conservation value, no socio-economic value. <u>Sensitivity</u> : high capacity for resistance, high capacity for resilience (e.g. recovery after 1 year).

- 7.13.19 A combination of high resolution modelling and observations will be used to make the assessment of quantified change (e.g. changed wave stress resulting from the jetty) and whether it is within natural variability. Each modelling tool will be specific to the physical process of concern.
- 7.13.20 Effects would be determined based on impact magnitude (as per **Table 7.13.1**) and receptor/resource value/sensitivity (as per **Table 7.13.2**), using the matrix shown in **Table 5.3**. The definitions of major, moderate, minor and negligible effects for the coastal geomorphology and hydrodynamics assessment are provided in **Table 7.13.3**. Major and moderate effects would be considered to be significant, and minor and negligible effects would not considered to be significant.

Table 7.13.3: Definitions of effects

Effect	Description
Major	Very large or large changes to the coastal or sea bed geological features, which may alter the structure of the coastline or the sediment processes within it. Effects, both adverse and beneficial, that are likely to be important considerations at an international or national level because they contribute to achieving international/national objectives or are likely to result in exceedance of statutory objectives and/or breaches in legislation.
Moderate	Intermediate change in the coastal or sea bed geological features, which may alter the structure of the coastline or the sediment processes. Effects that are likely to be important considerations at a regional level, societal or with respect to environmental management processes.
Minor	Small change in coastal or sea bed features, with no discernible effects on other features or processes. These effects may be raised as local issues but are unlikely to be instrumental in the decision making process.
Negligible	No discernible change in the coastline or sediment processes. An effect that is likely to have a negligible or no influence, irrespective of other effects.

v. Assumptions and limitations

- 7.13.21 The assessment approach assumes that natural variability in the system and the future baseline in the absence of development can be adequately characterised.
- 7.13.22 No limitations that could affect the robustness of the assessment have been identified to date.

d) Potential impacts and effects

7.13.23 Elements of the Main Development Site that could have impacts on coastal geomorphology and hydrodynamics would be:

- construction and operation of cooling water infrastructure (including cooling water intake and outfall headworks on the seabed, and the outfall associated with a Fish Recovery and Return system);
- construction and operation of a beach landing facility to receive deliveries of ALLs by sea throughout the power station's operational life;
- construction and operation of flood defence and coastal protection measures; and
- construction and operation of a jetty for the import/export of construction materials and ALLs.

7.13.24 The receptors and resources that are of potential concern are:

- the Sizewell Bay shoreline (position, shape, beach profile and whether erosion or accretion is occurring);
- longshore sediment transport, primarily along the nearshore bars – the jetty and beach landing facility may affect sediment transport in the vicinity of the station and potentially further south on the Thorpeness frontage and ultimately to Orford Ness (although based upon the historic evidence from the Sizewell B beach landing facility operation, impacts at such spatial ranges are considered highly unlikely); and
- the geomorphology of the greater Sizewell Bay.

7.13.25 Timescales for effects on these receptors and resources might extend several years beyond the impacts occurring and monitoring and mitigation may be applied to address these effects.

i. Construction

7.13.26 The EIA would cover, but not necessarily be limited to, the following risks and effects upon coastal geomorphology and hydrodynamics associated with the construction stage of the Main Development Site.

7.13.27 Tidal climate, large scale hydrodynamics, and residual flow. None of the proposed developments during construction or operation will have a quantifiable effect on the tidal elevation or tidal current magnitudes at the site or effect the residual current circulation over the study area.

7.13.28 To enable the construction of the Main Development Site, a jetty would be required. This structure could potentially change the local onshore wave climate and hence change coastal erosion. This may also affect long shore sediment transport.

7.13.29 Scour due to the jetty and other elements of the marine and cross-shore infrastructure would be assessed. Dredging activities for the jetty and its navigation approach, should this prove necessary, would lead to changes in bathymetry and may alter sediment transport rates: e.g. nearshore infilling of dredged navigation channels would reduce downdrift sediment supply. Evidence from the construction of Sizewell B indicates that such effects were limited to within around 200m of the

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Sizewell B site but may take several years to recover if there is no intervention (e.g. by beach recharge and/or use of dredged material to ensure supply is maintained). As the longshore transport rates are considered to be very low, alongshore effects would be spatially limited and could be readily monitored and mitigated. The fine material that would be discharged from dredging activity could potentially be relevant to water quality and marine ecology. Some of this material could be transported as far as a single tidal excursion but effects would become indiscernible from the background before that range.

- 7.13.30 The cooling water outfall and intake structures would be connected to the station by horizontal tunnels below the sea bed constructed with tunnel boring machines starting from a land based location within the Main Development Site. This is in contrast to the construction of Sizewell B where a cut and fill construction methodology, involving extensive dredging and backfilling operations on the seabed, was used for the construction of the cooling water culverts.
- 7.13.31 Vertical shafts would be drilled through the seabed to connect to the cooling water tunnels prior to the placement of the intake and outfall headworks. The fine material that might be mobilised through this activity would not affect the coastal geomorphology but could potentially be relevant to the local marine water quality and ecology. Some of this material could be transported as far as a single tidal excursion but effects would be expected to become indiscernible from the background level before that range.

ii. Operation

- 7.13.32 The EIA would cover, but not necessarily be limited to, the following risks and effects upon coastal geomorphology and hydrodynamics associated with the Sizewell C power station's operational stage.
- 7.13.33 There is the potential for localised scour associated with the intake and outfall structures and to a much lesser extent the smaller fish return and recovery system outfall.
- 7.13.34 In contrast to the situation at Sizewell B, the Main Development Site cooling water outfall (approximately 0.8 – 3km offshore, dependent upon the results of current engineering studies).
- 7.13.35 Dredging activities to secure the occasional access required during the operational life of the site to a beach landing facility would lead to changes in bathymetry and may alter sediment transport rates: e.g. nearshore infilling of dredged navigation channels would reduce downdrift sediment supply. Evidence from the construction of Sizewell B indicates that such effects were limited to within around 200m of the site but may take several years to recover if there is no intervention (e.g. by beach recharge and/or use of dredged material to ensure supply is maintained). As the longshore transport rates are considered to be very low, alongshore effects would be spatially limited and could be readily monitored and mitigated. The fine material that would be discharged from dredging activity could potentially be relevant to water quality, coastal geomorphology and marine ecology. Dredging activities may also lead to temporary changes in the exposure of the coastline.

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7.13.36 A beach landing facility could over time be exposed and act as control point for sediment transport in a similar manner to the Minsmere Sluice.

e) Potential mitigation

7.13.37 Mitigation would comprise, but not necessarily be limited to, the following measures:

- the jetty and beach landing facility will be designed using the results of modelling tools to minimise, as far as possible, their impact on coastal processes;
- sediment bypassing, beach recycling and, if necessary, beach recharge are possible mitigation measures that might be required in association with the operations of a jetty and a beach landing facility; and
- scour protection would probably be employed for the intake and outfall structures.

f) Approach to cumulative assessment

i. Inter-relationships

7.13.38 With the exception of the receptors and resources described in **Section 7.13.d)**, most coastal processes are not receptors or resources in their own right and changes to coastal processes may have potential impacts on other receptors and resources, e.g. changes in suspended sediment level due to dredging may affect local water quality and marine ecology. The EIA will consider inter-relationships with marine water quality, marine ecology, terrestrial ecology and ornithology, flood risk and navigation.

ii. Cumulative effects

7.13.39 The other known relevant developments in the vicinity of the Main Development Site include the construction of the offshore Galloper Wind Farm.

7.13.40 Trenching activity associated with offshore Wind Farm export cables making landfall in the vicinity of Sizewell could cause disturbance to the longshore sediment transport processes, including increased turbidity. The effects would be localised and short lived.

7.14 Marine water quality and sediments

a) Introduction

- 7.14.1 This section sets out the proposed scope and methodology for the marine water quality and sediments assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

- 7.14.2 A water quality literature report was prepared for the Suffolk Coast and adjacent waterbody areas relevant to the site. A marine water quality monitoring programme was established off the Suffolk coast in the vicinity of Sizewell B power station from February 2010 to February 2011. Water samples were analysed for an extensive range of determinands. The detailed sampling plan has been discussed with the Environment Agency. The programme collected a few surface sediment samples from the area but a comprehensive chemical characterisation of the seabed sediments, including of core samples at sites that could be subject to construction disturbance, awaits a planned geotechnical survey in 2014.
- 7.14.3 In accordance with Environment Agency New Nuclear Build modelling guidelines, two different 3D hydrodynamic models of the Sizewell B discharge have been setup, calibrated and validated by independent contractors. The models were built using the GETM and Delft3D systems which have previously been successfully used for modelling of the proposed Hinkley Point C power station. The performance of the two Sizewell models has been independently assessed by Cefas. The models were then used to predict the thermal plumes from different cooling water configurations for Sizewell C (the Main Development Site) in combination with Sizewell B under different meteorological conditions. Annual runs with real meteorology have been undertaken. The impacts of the different geomorphological change scenarios on the predicted thermal plumes have been evaluated.
- 7.14.4 In support of future modelling of the planned cooling water chemical discharges at the Main Development Site, laboratory studies have been conducted to evaluate the degradation of chlorine-produced oxidants and the formation of chlorination byproducts in seawater collected from the vicinity of the Main Development Site. The Main Development Site has been designed to incorporate water treatment plant such that hydrazine would not be discharged from the cooling water outfall and it is not, therefore, necessary to undertake any studies on the effects of this chemical.

c) Approach and methodology

i. Study area

- 7.14.5 The Main Development Site is located immediately adjacent to the North Sea. The coastline near Sizewell B consists of a coarse beach of sand and gravel. The shore slopes down to a depth of 7 to 11m below chart datum. Approximately 1.5km offshore a bank exists. This feature is charted as two separate entities, Sizewell Bank and Dunwich Bank, although in reality it is a single, continuous feature aligned parallel to the shore and with minimum depths of less than 3m at its southern end. The Bank extends for approximately 8km from north to south and isolates the shallow

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coastal channel from deeper water offshore of the bank where depths fall to below 15m. Analysis of historic bathymetric data from 1868 to present has indicated that the Bank is migrating shorewards, pivoting in a counter clockwise manner around the coralline crag outcrop at Thorpeness which appears to anchor the southern end of the Bank.

- 7.14.6 EDF Energy, on operational risk management grounds, has decided that the cooling water intakes of the Main Development Site should be located offshore of the Sizewell - Dunwich Bank at approximately 3km from the Main Development Site. Different locations for the Main Development Site cooling water outfalls are being modelled in order to predict:
- the extent of thermal plumes from Sizewell C only, and the plumes from Sizewell B and C together, compared to a modelled baseline without Sizewell B;
 - the impact of the Sizewell C thermal plume on the operation of Sizewell B; and
 - ecological impact from Sizewell C only, and Sizewell C together with Sizewell B, compared to a modelled baseline without Sizewell B.
- 7.14.7 Impacts from Sizewell C would be assessed compared to a baseline without Sizewell B in order to enable consideration of a future scenario when Sizewell B ceases to operate.
- 7.14.8 The north-south scope for the water quality baseline study was set to include the full tidal ellipse centred on the mid point of the Main Development Site i.e. approximately 9km north and 10km south. The location of the cooling water infrastructure is subject to current engineering studies and the seaward extent of the study area was set at approximately 4km offshore of the Main Development Site in order allow flexibility in those studies.
- 7.14.9 The boundary of the hydrodynamic models was set at a greater range of 20km north and south of the Main Development Site and 20km east. At this range the rate of change of bathymetry was sufficiently small to avoid numerical instabilities during model setup. The models used a curvilinear grid of variable resolution: 25m at the cooling water intake and outfall locations and 500m at the boundary.

ii. Baseline information

- 7.14.10 To assess the potential for impacts from future discharges from Sizewell C, water quality baseline information has been gathered through a desk study to identify the main literature on water quality in the vicinity of Sizewell B nuclear power station.
- 7.14.11 A spatial survey was conducted at 12 sampling stations in Sizewell Bay (see **Figure 7.14.1**). Sampling locations were centred on the cooling water outfall of Sizewell B (station 5). A tidal-cycle survey was carried out by sampling at hourly intervals at station 5 over an ebb/flood tidal cycle during spring tide conditions. A seasonal survey was also carried out with samples taken at stations 5 and 11 (near the centre of the study area approximately 4km offshore, i.e. offshore of the Sizewell – Dunwich Bank) to assess differences between onshore and offshore conditions on 21 occasions throughout the 12-month monitoring programme.
- 7.14.12 Sample locations were selected further north and south of the Sizewell B cooling water outfall along the tidal axis to examine changes in concentration as cooling

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water dispersed from the outfall (stations 2 to 8). Two stations to the far north and two stations to the far south were also selected (stations 1, 9, 10 and 12) approximately 12km from the outfall to measure far-field concentrations outside of the tidal extent. Stations 1 and 9 were close to the coast and stations 10 and 12 were further offshore (2-4km).

- 7.14.13 Conductivity, temperature and depth sensor (CTD) profiles showed that the waters sampled were well mixed with regard to salinity. The temperature profiles indicated the presence of a thermally buoyant plume of water at the sea surface centred along the tidal stream from the Sizewell B outfall.
- 7.14.14 The water samples were analysed for a wide range of determinands but many chemical analyses gave negative results, indicating that the analytes were either absent or present at concentrations below the limits of detection. Few differences between results from inshore of Sizewell Bank (stations 1 to 9) and offshore (stations 10 to 12) were noted, with the exceptions of suspended solids and turbidity. The higher measurements of suspended solids and turbidity inshore of Sizewell Bank are likely to be related to the shallower water depth and local sediment resuspension.
- 7.14.15 Concentrations of dissolved copper, arsenic, zinc, mercury and cadmium exceeded environmental quality standard (EQS) levels on occasions. Some exceedance of the EQS concentrations for these metal and metalloid substances was detected at all stations except for stations 2 and 6. A small number of samples with concentrations in excess of their EQSs were recorded for some polycyclic aromatic hydrocarbons (PAHs), biphenyl and bis (2-ethylhexyl) phthalate (DEHP), though the majority of analyses for these compounds were negative. Exceedances of EQS concentrations for these organic compounds were detected at stations 1, 5, 9 and 12.
- 7.14.16 During the monitoring programme chlorine produced oxidants (expressed as total residual oxidant, TRO) were elevated at station 5 (the Sizewell B outfall) and the levels decreased further north and south from the outfall (stations 2 to 8). TRO levels were also elevated at the extreme north and south of the survey area (stations 1, 9 and 12) and further offshore at similar latitude to the outfall (station 11). The elevated TRO to the south (stations 9 and 12) was unexplained and may indicate a TRO source to the south or more likely limitations in the available analytical techniques in the presence of interfering substances. The data did not indicate that this elevation was associated with the Sizewell B discharge because of the lower levels observed between the outfall and the stations 9 and 12.
- 7.14.17 All measured radionuclide concentrations in seawater were very low and consistent with previous measurements by the Environment Agency.
- 7.14.18 The data from successive Environment Agency surveys of waterbodies of the East Suffolk Zone (ESZ) of the Anglian River Basin District (RBD) focus on metals in seawater and most observed concentrations of these have been low. Only in the case of cadmium was the EQS exceeded, for one location, but concentrations for both copper and zinc remained very close to their respective EQS. In the case of the latter two metals their use in boat antifouling paints may have been a contributory factor.

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- 7.14.19 Nutrient concentrations for Suffolk rivers are known to be elevated in a number of cases but high turbidity is thought to prevent excess growth of phytoplankton and macroalgae in the case of the River Deben.
- 7.14.20 Baseline water temperature data are available for the Suffolk waterbody region. High frequency water temperature data are available from the Sizewell B cooling water inlet temperature sensors and these data have been used in the validation of the thermal performance of the hydrodynamic models.
- 7.14.21 Month long oceanographic measurement campaigns were established in 2008 and 2009 in the vicinity of the Sizewell B intakes and outfalls to provide independent calibration and validation data for the hydrodynamic models. This work included temperature measurements in the Sizewell B cooling water effluent surface plume.
- 7.14.22 Any development at the Main Development Site that may affect freshwater and/or estuarine and coastal water quality must be considered in relation to the WFD designations associated with the site which is located in East Suffolk Zone of the Anglian River Basin District. In this RBD, only 5% of rivers (by length) have met the requirements for good ecological status (GES) or good ecological potential (GEP). In total, 15% of all surface waters have been designated as artificial and 56% of all surface waters have been designated as heavily modified. None of the estuaries and transitional and coastal waters currently meet the requirements for GES or GEP. The Suffolk Coastal waterbody is designated as heavily modified due to coastal protection works and its current overall status is moderate; this waterbody is required to meet good ecological potential by 2015.
- 7.14.23 There are no identified Bathing Waters or Shellfish Waters in close proximity to the site. Sizewell is situated on an area of Suffolk coast covered by the Shoreline Management Plan 2 (SMP2) area which includes 10 transitional and coastal waterbodies.

iii. Planned further survey/studies

- 7.14.24 A literature report on water quality for Sizewell and adjacent waterbodies will be updated to include more recent studies and for comparison with the nearest available sediment contaminant data from the area around Sizewell. Additional monitoring data for water quality will also be acquired in 2014 to supplement the existing water quality data for the site. Sediment core samples will be obtained at the proposed locations of the jetty, beach landing facility, the cooling water intake and outfall headworks and in likely navigation channels. These samples will be analysed for a comprehensive range of determinands, including heavy metals, organics and radionuclides.

iv. Assessment methodology

- 7.14.25 The main legislation, policy and guidance that will provide the focus for the marine water quality assessment are:

European legislation

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC);

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- EC Directive on the Conservation of Wild Birds (2009/147/EC);
- Water Framework Directive (2000/60/EC);
- Marine Strategy Framework Directive (2008/56/EC);
- Priority Substances Directive (2008/105/EC);
- Dangerous Substance Directive (76/464/EEC);
- Urban Waste Water Treatment Directive (91/271/EEC); and
- Revised Bathing Waters Directive (2006/113/EC).

National legislation and policy

- Environmental Permitting (England and Wales) Regulations 2010; and
- Pollution Prevention and Control Act 1999.

Environment Agency guidance

- Cooling Water Options for the New Generation of Nuclear Power Stations in the UK (2010);
- Pollution Prevention Guidance Notes;
- Nuclear New Build – Guidance on Hydrodynamic Modelling Requirements (for cooling water discharges) (2011);
- Nuclear New Build – Guidance on Temperature Standards and Environmental permit Requirements (2011);
- Nuclear New Build – Guidance on Permitting Construction Phase Discharges (2011); and
- Nuclear New Build – Guidance on Permitting Non-nuclear Discharges (2011).

7.14.26 The proposed contaminant discharges from the Main Development Site during construction and operation will be assessed against the water quality baseline using the Environment Agency's H1 screening assessment methodology⁵. Any discharges of concern arising from screening will be assessed in detail against the relevant EQS where available (using the GETM hydrodynamic model of Sizewell where appropriate). The impact of the thermal plume on dissolved oxygen and unionised ammonia concentrations will also be assessed using the GETM model.

7.14.27 The GETM model will be used to identify the extent of potential areas of exceedance of thermal and chemical standards in areas designated under the Habitats Regulations and WFD.

⁵ The H1 Assessment is a risk assessment screening methodology developed by the Environment Agency to be used by developers to identify discharges that are above natural background levels and that require more detailed impact assessment studies (e.g. involving the use of chemical discharge plume modelling).

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- 7.14.28 The different scenarios to be modelled will be agreed in advance with the Environment Agency in order to ensure that they encompass the full range of the Environment Agency's concerns.
- 7.14.29 The magnitude of each impact would be determined on the basis of the spatial extent, reversibility, duration and likelihood of the impact, as well as the amount of change that would occur. The guidelines for assessing magnitude are shown in **Table 7.14.1**.

Table 7.14.1: Guidelines for the assessment of impact magnitude

Magnitude	Description
High	Entire study area affected (and potentially beyond), irreversible (e.g. outlasts operation), impact of long duration (e.g. 100+ years), impact certain or very likely to occur, change significantly above background levels.
Medium	Majority of study area affected, reversible in the long-term (during operation), moderate-long duration (e.g. 10-100 years), impact likely to occur, change slightly above background levels.
Low	Partial area affected (e.g. >20-50%), reversible in the medium-term (e.g. during construction phase), moderate duration (e.g. 6 months-10 years), impact would possibly occur, change discernable but equal to or below background levels.
Very low	Small area affected (e.g. 0-20%), reversible in the short-term (e.g. limited to site preparation), very short duration (<6 months), impact unlikely to occur, change barely discernable.

- 7.14.30 The assessment would consider impacts in terms of 'sensitivity' (in this context this will depend on whether formal quality standards exist or whether there are guidance values only) and magnitude (taking account of the extent of the area of exceedance and regulatory decisions on the area of acceptable mixing zones).
- 7.14.31 A hierarchical approach would be adopted to the criteria used as follows:
- where a substance has an EQS defined under the WFD, the EQS would be the standard against which the assessment is made;
 - where there is no WFD EQS, the pre-WFD EQS is the standard against which the assessment will be made;
 - where there is no EQS available then a probable no effect concentration (PNEC) would be used as the assessment criterion; and
 - where there is neither an EQS nor PNEC available, comparison would be made to the baseline concentrations determined from the 2010/11 sampling programme.
- 7.14.32 The majority of environmental standards for marine water quality are those provided within the Directions for Transitional and Coastal (TRaC) Waters as determined for the WFD.
- 7.14.33 The value/sensitivity of the receptors and resources would be determined on the basis of their conservation, economic or functional value and their capacity to accommodate the impact (i.e. their capacity for resistance and resilience). The guidelines for assessing value/sensitivity for the features are given in **Table 7.14.2**.

Table 7.14.2: Guidelines for the assessment of value/sensitivity

Value/sensitivity	Description
High	<p><u>Value</u>: high functional value (e.g. contributes towards the designation of an internationally or nationally important feature, another ecosystem feature dependent on it), international/national conservation value.</p> <p><u>Sensitivity</u>: The water quality of the resource has a very low capacity to accommodate any change to current water quality status, compared to baseline conditions, no capacity for resilience.</p>
Medium	<p><u>Value</u>: moderate functional value (e.g. another feature partially dependent on it), regional conservation value.</p> <p><u>Sensitivity</u>: The water quality of the resource supports high biodiversity and has low capacity to accommodate change to water quality status, low capacity for resilience (e.g. recovery after 10 years).</p>
Low	<p><u>Value</u>: low functional value (e.g. limited connection to other ecosystem features), local conservation value.</p> <p><u>Sensitivity</u>: The water quality of the resource has a high capacity to accommodate change to water quality status due, for example, to large relative size of the receiving water and capacity for dilution and flushing. Background concentrations of certain parameters already exist. Moderate capacity for resilience (e.g. recovery after 5 years).</p>
Very low	<p><u>Value</u>: very low functional value (e.g. no dependencies), no conservation value.</p> <p><u>Sensitivity</u>: Specific water quality conditions of the resource are likely to be able to tolerate proposed change with very little or no impact upon the baseline conditions detectable High capacity for resilience (e.g. recovery after 1 year).</p>

7.14.34 No specific sediment receptors or resources have been identified as a part of this assessment because changes or disturbances to marine sediments may affect marine water quality status and potentially marine ecology. It is the consequential impacts on those receptors/resources that would be assessed in the EIA. For example, disturbance of bed sediments as a result of construction activities may cause the mobilisation of potential pollutants into the water column and an increase in suspended solid concentrations, with associated effects upon water quality status or marine ecology.

7.14.35 Effects will be determined based on the magnitude of impact (see **Table 7.14.1**) and sensitivity/value or resources and receptors (see **Table 7.14.2**) using the matrix set out in **Table 5.3**. Definition of major, moderate, minor and negligible effects for the purposes of the marine water quality and sediments assessment are provided in **Table 7.14.3**. Major and moderate effects would be considered to be significant, whereas minor and negligible effects would not.

Table 7.14.3: Definitions of effects

Effect	Description
Major	Very large or large changes to key characteristics of the water quality status of the receiving water feature, e.g. modelled as significant under the Environment Agency H1 assessment. Water quality status degraded to the extent that permanent

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Effect	Description
	change and inability to meet (for example) EQS is likely.
Moderate	Intermediate changes to key characteristics of the water quality status taking account of the resource volume, mixing capacity, flow rate, etc. Water quality status likely to take considerable time to recover to baseline conditions.
Minor	Small changes to the water quality status of the receiving water feature. Activity not likely to alter local status to the extent that water quality characteristics change considerably or EQS are compromised.
Negligible	No discernible change in the water quality features above natural variability. An effect that is likely to have a negligible or no influence, irrespective of other effects.

v. Assumptions and limitations

7.14.36 There are no quantitative EU or UK EQS values for sediments. The only pertinent guidance for sediment quality is given for most of the EC Dangerous Substances Directive List 1 substances and is defined as 'standstill (no deterioration)'. In the absence of any quantified UK standards, common practice is to compare against two separate criteria sets:

- Cefas Guideline Action Levels for the disposal of dredged materials; and
- Canadian Sediment Quality Guidelines for the Protection of Aquatic Life.

7.14.37 The marine water quality baseline survey of Sizewell Bay was completed in 2010. It is considered that the results of this survey are representative of current conditions because there have been no significant alterations in anthropogenic inputs to the area since that date.

7.14.38 No limitations that could affect the robustness of the assessment have been identified to date.

d) Potential impacts

i. Construction

7.14.39 The EIA would include, but not necessarily be limited to, the following risks and impacts to marine water quality associated with the Main Development Site construction stage.

7.14.40 Impacts may include changes in water turbidity (cloudiness) and quality (contaminant mobilisation) and may occur due to the re-suspension of marine sediments into the water column during the construction of the cooling water intake and outfall vertical shafts and head structures, the fish recovery and return system and the temporary jetty.

7.14.41 Discharges to surface waters that enter the marine environment may include surface water drainage containing suspended sediment and contaminants and treated sewage effluent. All such discharges would have an appropriate level of treatment before discharge to the marine environment.

7.14.42 Potential changes may also occur to marine water quality as a result of chemicals that are used in the commissioning of the Main Development Site.

ii. Operation

- 7.14.43 The EIA would include, but not necessarily be limited to, the following risks and impacts to marine water quality associated with the Main Development Site's operation stage.
- 7.14.44 Discharge of treated sewage effluent to sea would occur via the Main Development Site cooling water system.
- 7.14.45 The elevated temperature of the cooling water effluent would alter the thermal regime in the vicinity of the discharge point.
- 7.14.46 Potential changes may occur to marine water quality as a result of process chemicals that will be used in the operation of the Main Development Site and that are discharged in the cooling water effluent.
- 7.14.47 The occasional need to access the beach landing facility during the operational life of the power station may result in localised changes in water turbidity (cloudiness) and quality (contaminant mobilisation) due to the re-suspension of marine sediments into the water column from dredging operations and vessel movements.

e) Potential mitigation

- 7.14.48 Mitigation would comprise, but not necessarily be limited to, the following measures:
- A combination of 'embedded' environmentally sensitive design and best practice construction management measures would be implemented to avoid or minimise significant adverse effects during construction.
 - Where potential exceedances of water quality parameters are identified, mitigation would primarily be achieved through the selection of appropriate embedded engineering design and construction methodologies and the application of best practice.
 - Although there may be potential operational impacts as a result of the discharge of cooling water and possible use of various process chemicals, all discharges to the marine environment would be controlled through conditions of the environmental permits agreed with the Environment Agency.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.14.49 Impacts relating to the discharge of thermal effluents and process chemicals are the subject of numerical hydrodynamic modelling studies. The models will permit a consideration of potential exceedances of existing water quality standards and the extent of relevant designated areas that might be affected. The EIA will consider inter-relationships with marine ecology and terrestrial ecology.

ii. Cumulative effects

- 7.14.50 Construction of the Galloper sub-station will necessitate the laying or trenching of two or more export cables on the seabed. In both instances, impacts may include changes in water turbidity (cloudiness) and quality (contaminant mobilisation) due to the re-suspension of marine sediments into the water column.

7.15 Marine ecology

a) Introduction

7.15.1 This section sets out the proposed scope and methodology for the marine ecology assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

7.15.2 A series of surveys was undertaken between 2008 and 2013, to characterise the baseline marine environment in the vicinity of the Main Development Site and within the wider zone of potential impact. A summary of the surveys completed to date is provided in **Table 7.15.1** and their spatial extents are shown in **Figure 7.15.1**.

Table 7.15.1: Characterisation studies completed to date

Study	Scope of study
Habitat mapping	Mapping of seabed morphology and associated marine biotopes based on sonar survey data, 2008 – 2012.
Intertidal	Survey of marine sediment-dwelling meio- and macroinvertebrates (endofauna) and surface sediments by core in 2011. Survey of salinity in saline lagoon at Minsmere in 2013.
Subtidal	Fish and surface invertebrates (epifauna) surveyed by beam and otter trawls and camera (for <i>Sabellaria</i> worms), 2008 – 2012; endofauna and surface sediments surveyed by grab, 2008 – 2012; phytoplankton (including nuisance algae) and zooplankton (including fish eggs and larvae) surveyed by Lund tube and Gulf IV/Pup sampler, variously 2008 – 2012; cetacean detection by acoustic C-POD device, 2011 – 2013.
Impingement and entrainment	Impingement sampling for fish and large invertebrates in Sizewell B, 2008 – 2013; entrainment sampling for zooplankton and postlarval fish in Sizewell B, 2011. Studies of entrainment effects (pressure, temperature and chlorination) on fish eggs/larvae and invertebrate species in the Entrainment Mimic Unit (EMU), 2012 - 2013. Species tested were: cod (<i>Gadhus morhua</i>), European plaice (<i>Pleuronectes platessa</i>), European seabass (<i>Dicentrarchus labrax</i>), European eel (<i>Anguilla anguilla</i>), lobster (<i>Homarus gammarus</i>), a copepod crustacean (<i>Acartia tonsa</i>), a mysid crustacean (<i>Neomysis integer</i>).
Fishing activity	Information gathered on gear types, vessel sizes, ports used and species caught, up to 2010.

c) Approach and methodology

i. Study area

7.15.3 The geographical extent of the marine ecology study area was determined by the potential zone of effect for the Main Development Site, by consideration of the physical processes that determine the ecology of the Greater Sizewell Bay area and by consideration of the regional context for commercial fisheries operating in the area.

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- 7.15.4 The potential zone of effect was based on consideration of the two largest-scale potential impacts associated with the Main Development Site: sediment resuspension and transport resulting from construction of the jetty and cooling water infrastructure, and discharge of heated cooling water effluent during the Main Development Site operation. A worst-case plume extent was estimated using the annual 2°C mean excess temperature contour at the seabed using a validated General Estuarine Turbulence Model (GETM) of the in combination operation of Sizewell B and Sizewell C (assuming a Sizewell C cooling water outfall inshore of the Sizewell - Dunwich Bank). The extent of potential sediment resuspension was defined as a tidal ellipse centred on the mid-point of the Main Development Site. The zone of effect was bound by Dunwich to the north and Orfordness to the south, seaward of the Sizewell-Dunwich Bank to the east and mean high water springs to the west – the area known as the Greater Sizewell Bay.
- 7.15.5 The boundary of the study area for commercial fisheries was determined to be the International Council for the Exploration of the Sea (ICES) rectangles accounting for the local fishery (ICES rectangle 33F1) and the regional context (ICES rectangles 32F1, 32F2, 33F2, 34F1 and 34F2). The spatial extent of the study area (zone of effect and wider fisheries context, including spawning and nursery grounds) and biological sampling is shown in **Figure 7.15.1**.

ii. Baseline information

- 7.15.6 Greater Sizewell Bay contains moderate energy beaches, comprising a matrix of gravel and sand populated by patchy, low abundance invertebrate assemblages tolerant of the dynamic physical environment. The subtidal seabed is predominantly sand, with clay, mud, coarse sediment and bedrock. The epifauna that have been observed included free living and colonial taxa, with brittlestars (*Ophiura ophiura*) and crustaceans well represented. The endofauna was dominated by polychaetes and bivalves, with the catworm (*Nephtys* spp.) and the bivalves *Nucula nucleus* and *Nucula nitidosa* consistently present. Epifauna varied seasonally, but there were no clear patterns in the endofauna. Rossworm (*Sabellaria spinulosa*) occurred in the study area, though not consistently or in sufficient density to be classified as reefs.
- 7.15.7 Up to 62 phytoplankton taxa have been recorded in the area, including diatoms, dinoflagellates, microflagellates and, on occasion, cyanobacteria. The assemblages were dominated by diatoms and exhibited a characteristic spring bloom, with diversity increasing as the season progressed. Nuisance or harmful algal bloom species were present, though neither widely nor consistently. The invertebrate zooplankton was dominated by crustaceans, foraminiferans, bivalve and polychaete larvae and invertebrate eggs.
- 7.15.8 The fish assemblage surveyed around Sizewell was diverse. Dover sole (*Solea solea*) dominated the adult assemblage, with gobies (Gobiidae spp.), whiting (*Merlangius merlangus*), European plaice, thornback ray (*Raja clavata*), Atlantic herring (*Clupea harengus*) and dab (*Limanda limanda*) also common. Herrings (Clupeidae), dab, Dover sole and gobies were also found locally as eggs and/or larvae, as were the pelagic species sprat (*Sprattus sprattus*) and anchovy (*Engraulis encrasicolus*). Sprat, herring and whiting were impinged in Sizewell B in large numbers/biomass. European seabass was commonly impinged and its eggs also occurred locally, though adults were not particularly common in the wider waters.

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- 7.15.9 Species of conservation priority occurring in the area included the European eel, cucumber smelt (*Osmerus eperlanus*), river lamprey (*Lampetra fluviatilis*), Allis and Twaite shad (*Alosa alosa* and *A. fallax*), cod, herring, whiting, plaice, Dover sole and tope (*Galeorhinus galeus*).
- 7.15.10 Fish and shellfish fisheries operate in the area. There are several fishing ports and beach launching is practiced in some areas. Most inshore boats are <10m long and tend to use passive gear, such as fixed and drift nets, long-lines and pots. The number of boats fishing in the region has varied over the years, depending on environmental and economic factors.
- 7.15.11 One boat operates from Sizewell, mainly potting for European lobster and crabs (*Cancer pagurus*, *Carcinus maenas* and *Necora puber*), as well as whelk (*Buccinum undatum*). Sizewell is also within the principal drift net grounds for herring, sprat, bass, sole, mackerel (*Scomber scombrus*) and thornback ray. Other commercial fisheries along the Suffolk coast include bottom trawling for sole, brill (*Scophthalmus rhombus*), plaice, rays (Rajidae spp.), dab and flounder (*Pleuronectes flesus*), and for brown shrimp (*Crangon crangon*) in beam trawls, rod and line fishing for bass, mussel (*Mytilus edulis*) and Pacific oyster (*Crassostrea gigas*) harvesting and fyke netting for eels (*Anguilla anguilla*) in the estuaries.
- 7.15.12 Marine mammals have been found to be present in the study area. Dolphins do not regularly utilise the waters around Sizewell, though the presence of harbour porpoise (*Phocoena phocoena*) has occurred both inshore of the Sizewell-Dunwich Bank and further offshore.

iii. Planned further survey/studies

- 7.15.13 Further and ongoing studies will continue to examine rates of impingement of fish and invertebrates in the Sizewell B station, as well as phytoplankton, zooplankton, benthic invertebrate and fish populations in the vicinity of the Main Development Site. Supporting environmental variables will also be collected to furnish the required Water Framework Directive assessments, including chlorophyll a, salinity and temperature. Studies will characterise the marine food web links in the study area, including protected bird species (especially red throated diver (*Gavia stellata*), sandwich tern (*Sterna sandvicensis*) and little tern (*Sterna albifrons*)) and their marine prey. Studies to further characterise the area of coralline crag around Thorpeness will be undertaken using diver and, subject to technical feasibility which is currently being assessed, by high resolution acoustic surveys. The planned studies are summarised in **Table 7.15.2**.

Table 7.15.2: Planned marine ecology studies

Study	Scope of study
Intertidal	Further survey of salinity in the saline lagoon at Minsmere.
Subtidal	Fish and invertebrates in the vicinity of the Main Development Site by beam and otter trawls and grab; targeted survey of an area of coralline crag around Thorpeness, by either acoustics or diver survey; phytoplankton (including nuisance algae) and zooplankton (including fish eggs and larvae and gelatinous plankton) monthly. Desk/data study of seal distribution.
Impingement and	Impingement sampling for fish and invertebrates in Sizewell B. Studies of entrainment effects (pressure, temperature, chlorination)

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Study	Scope of study
entrainment	on fish eggs/larvae and invertebrate species in the EMU, focussed on the different life stages of locally important or representative species.
Fishing activity	Further data on fishing activity, including updated fisheries statistics from the Marine Management Organisation.

iv. Assessment methodology

7.15.14 The main legislation, policy and guidance to be considered during the impact assessments would include:

International agreements/conventions

- the Ramsar Convention on Wetlands of International Importance 1975;
- the Convention on Biological Diversity 1992; and
- the Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR) 1992.

European legislation

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC);
- EC Directive on the Conservation of Wild Birds (2009/147/EC);
- the Water Framework Directive (2000/60/EC); and
- the Marine Strategy Framework Directive (2008/56/EC).

National legislation and policy

- Salmon and Freshwater Fisheries Act 1975;
- the Wildlife and Countryside Act 1981;
- UK Biodiversity Action Plan 1994;
- National Planning Policy Framework 2012;
- Marine and Coastal Access Act 2009;
- East Inshore and Offshore Marine Plans 2014; and
- Eel Management Plans 2010.

7.15.15 The EIA would consider ecological features of conservation, socio-economic and functional importance, including features linked to terrestrial or freshwater resources (e.g. marine prey of protected bird species). A criteria-based matrix approach would be utilised, whereby the magnitude of impact for each construction and operational element would be set against the value/sensitivity of a feature in order to estimate the overall effect on the feature. Effect is defined here as the consequence of an impact on the ecological feature (with impact defined as changes resulting from an action). The basic premise that would be adopted is to compare impacts against natural variability in the ecological features including, where appropriate, predicted future

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baselines in the absence of development but incorporating geomorphological change scenarios for the area.

- 7.15.16 The magnitude of the impact would be determined on the basis of the spatial extent, reversibility, duration and likelihood of the impact, as well as the amount of change that would occur. The guidelines for assessing magnitude are shown in **Table 7.15.3**.

Table 7.15.3: Guidelines for the assessment of impact magnitude

Magnitude	Description
High	Entire study area affected (and potentially beyond), irreversible (e.g. outlasts operation), impact of long duration (e.g. 100+ years), certain to occur, change significantly above background levels.
Medium	Majority of study area affected, reversible in the long-term (during operation), moderate-long duration (e.g. 10-100 years), likely to occur, change slightly above background levels.
Low	Partial area affected (e.g. >20-50%), reversible in the medium-term (e.g. during construction phase), moderate duration (e.g. 6 months-10 years), will possibly occur, change discernable but equal to or below background levels.
Very low	Small area affected (e.g. 0-20%), reversible in the short-term (e.g. limited to site preparation), very short duration (<6 months), unlikely to occur, change barely discernable.

- 7.15.17 The value/sensitivity of the receptors and resources would be determined on the basis of their conservation, economic or functional value and their capacity to accommodate the impact (i.e. their capacity for resistance and resilience). The guidelines for assessing value/sensitivity for the marine ecological features are given in **Table 7.15.4**.

Table 7.15.4: Guidelines for the assessment of value/sensitivity

Value/sensitivity	Description
High	<u>Value</u> : high functional value (e.g. another ecosystem feature dependent on it), international conservation value, national/international socio-economic value. <u>Sensitivity</u> : no capacity for resistance, no capacity for resilience.
Medium	<u>Value</u> : moderate functional value (e.g. another feature partially dependent on it), national conservation value, national/regional socio-economic value (e.g. commercial fishery). <u>Sensitivity</u> : low capacity for resistance, low capacity for resilience (e.g. recovery after 10 years).
Low	<u>Value</u> : low functional value (e.g. limited connection to other ecosystem features), regional/local conservation value, local socio-economic value (e.g. artisanal fishery). <u>Sensitivity</u> : moderate capacity for resistance, moderate capacity for resilience (e.g. recovery after 5 years).
Very low	<u>Value</u> : very low functional value (e.g. no dependencies), no conservation value, no socio-economic value. <u>Sensitivity</u> : high capacity for resistance, high capacity for resilience (e.g. recovery after 1 year).

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- 7.15.18 Effects will be determined based on impact magnitude (see **Table 7.15.3**) and sensitivity/value of receptors and resources (see **Table 7.15.4**), using the matrix shown in **Table 5.3**. Explanations of the effect categories for the marine ecology assessment are provided in **Table 7.15.5**. Major and moderate effects would be considered to be significant; minor and negligible effects would not.

Table 7.15.5: Definitions of effects

Effect	Description
Major	Very large or large changes in individual ecological features, which may alter the structure or function of the overall marine ecosystem. Changes in highly protected or very valuable species or habitats. Effects, both adverse and beneficial, that are likely to be important considerations at an international or national level because they contribute to achieving international/national objectives or are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in individual ecological features that may or may not cause subtle changes in other ecosystem features. Changes in species or habitats of regional importance. Effects that are likely to be important considerations at a regional level, societally or with respect to environmental management processes.
Minor	Small change in ecological features, with no discernable effects on other ecosystem features. These effects may be raised as local issues but are unlikely to be instrumental in the decision making process.
Negligible	No discernable change in the ecological features. An effect that is likely to have a negligible or no influence, irrespective of other effects.

v. Assumptions and limitations

- 7.15.19 The assessment approach would assume that natural variability exists in the biological resources and, where appropriate, the future baseline in the absence of development can be adequately characterised.
- 7.15.20 No limitations that could affect the robustness of the assessment have been identified to date.

d) Potential impacts and effects

- 7.15.21 Elements of the proposed Main Development Site that could have effects on marine ecology resources would be:
- construction and operation of cooling water infrastructure (including cooling water tunnels extending out to sea, intake and outfall headworks on the seabed and the outfall associated with a fish recovery and return system);
 - operation of the beach landing facility in order to receive deliveries of AILs by sea throughout the power station's operational life;
 - construction and subsequent management of flood defence and coastal protection measures;
 - construction and operation of a jetty for the import/export of construction materials and AILs (including vessel movements and any accidental chemical or fuel discharge);

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- maintenance of any maritime exclusion zones around beach landing and offshore structures, during construction or operation; and
- land-based discharges such as surface water runoff from terrestrial groundworks and treated sewage discharges from the site.

7.15.22 Some effects may be short-term and others may be long-lasting, and this will be identified as part of the assessment.

i. Construction

7.15.23 The EIA would include, but not necessarily be limited to, the following potential impacts to marine ecology associated with the Main Development Site's construction stage.

7.15.24 Construction of the beach landing facility and cooling water infrastructure would cause sediment resuspension and localised habitat loss, potentially leading to smothering and/or behavioural effects in sensitive species. However, the species present would be expected to be adapted to the naturally turbid waters of Greater Sizewell Bay, although there may be some localised impacts close to the construction locations. Habitat loss would affect benthic species, although this would also be localised.

7.15.25 Construction noise could impact on invertebrates, fish and mammals, particularly if it occurs during sensitive periods (such as reproductive or migration seasons). Underwater noise impacts will be assessed in the marine ecology chapter of the ES as the marine environment is the location for the potentially affected species.

7.15.26 Chemical/organic matter discharges from terrestrial groundworks/sewage treatment and vessels (accidental spills) may have local impacts on receiving waters and organisms with limited movement control such as benthic species and phytoplankton.

7.15.27 The establishment of exclusion zones around the jetty and during construction of the seabed cooling water intake and outfall headworks and the Fish Recovery and Return outfall would limit inshore commercial fishery activities in these areas.

ii. Operation

7.15.28 The EIA would include, but not necessarily be limited to, the following potential impacts to marine ecology associated with the Main Development Site's operation stage.

7.15.29 The cooling water system of the Main Development Site would impinge and entrain fish and invertebrates. This could affect protected bird species such as the little tern and red throated diver that prey on pelagic fish.

7.15.30 Increases in mean water temperatures in Sizewell Bay could cause increases in nuisance phytoplankton (nuisance blooms), though the prevailing environmental conditions (e.g. high turbidity) may limit this to localised short-term effects or prevent bloom formation.

7.15.31 The thermo-chemical plume may have effects on sensitive species with limited movement control, although mobile species such as fish and cetaceans would be expected to avoid it unless it intersects with key migratory routes or nursery areas.

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- 7.15.32 Dependent upon their location, the cooling water outfall structures may affect sediment transport in the area if they were to act as a hydraulic groyne. This could have consequent localised effects on sediment-dwelling organisms.
- 7.15.33 Any terrestrial discharges of organic matter/chemicals during operation can be expected to have similar effects to those occurring during construction.
- 7.15.34 Operations associated with the occasional use of the beach landing facility would cause sediment resuspension and localised habitat loss, potentially leading to smothering and/or behavioural effects in sensitive species. However, the species present are expected to be adapted to the naturally turbid inshore waters of Sizewell Bay.
- 7.15.35 Dependent upon their location, the seabed cooling water intake and outfall headworks, and Fish Recovery and Return outfall, could reduce areas of seabed available for inshore commercial fishery activities.

e) Potential mitigation

- 7.15.36 Mitigation would comprise, but not necessarily be limited to, the following measures:
- In accordance with Environment Agency guidance, the cooling water infrastructure design would incorporate low velocity side entry (LVSE) intakes and both acoustic fish deterrent (AFD) and fish recovery and return (FRR) systems. Through reducing the numbers of organisms entering the cooling water tunnels and returning to sea those that do enter the tunnels, these embedded systems can be expected to reduce mortality and thus mitigate effects on the wider populations.
 - Any residual effects would be assessed on a species-specific basis with respect to the value of the feature (e.g. protected or commercially valuable fish species would be afforded greater consideration).
 - Piling strategies, such as the choice of methodology, soft-start technology and, if necessary, seasonally-restricted activity could be adopted in order to limit underwater noise impacts on mammals and fish.

f) Approach to cumulative assessment

i. Inter-relationships

- 7.15.37 Noise effects could combine with sediment resuspension effects (e.g. smothering) in sensitive fish or invertebrate species exposed to the construction activities for the jetty or cooling water infrastructure. The cooling water discharge contains thermally and chemically modified water, so receiving waters would be subject to both impacts. Temperature effects may combine with chemical effects in sensitive marine species exposed to the plume. Any combined effects are more likely to be restricted to sensitive pelagic species in the immediate vicinity of the cooling water outfall, as the concentration of any discharged chemicals with distance from the outfall will reduce rapidly.

ii. Cumulative effects

- 7.15.38 Construction of the Galloper Wind Farm sub-station will necessitate a transport corridor across the foreshore and the laying or trenching of two or more export cables

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on the seabed, potentially causing localised disturbance in terms of increased turbidity and localised habitat loss.

7.16 Navigation

a) Introduction

- 7.16.1 This section sets out the proposed scope and methodology for the navigation assessment of the Main Development Site. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with the proposed development.

b) Work undertaken to date

- 7.16.2 Work undertaken to date has entailed desk-based baseline data investigation to identify the principal shipping and navigational features in the study area, defined below. Data was collated from a variety of sources including vessel tracking Automatic Identification System (AIS) data, the Royal Yachting Association's (RYA) UK Coastal Atlas, the Marine Management Organisation's (MMO) UK fishing vessel lists, and other publicly available documents (for example, aggregate dredging statistical reports and offshore wind farm development application documents).

c) Approach and methodology

i. Study area

- 7.16.3 The study area covers the shoreline and open water within a 10 nautical mile (nm) (18.5km) radius of the Main Development Site (see **Figure 7.16.1**). This area encompasses the proposed offshore infrastructure for the Main Development Site (e.g. the jetty and the cooling water intake and outfall head structures) and will capture the relevant inshore and offshore routes used by commercial vessels and recreational craft.
- 7.16.4 A wider study area, to be defined through consultation and further study, extends further offshore to capture navigation and shipping activities associated with the plans and projects that may be relevant to the cumulative assessment (see **Section f)ii**) of this section), including offshore wind farm development and other commercial activity within the 12nm territorial sea limit.

ii. Baseline information

- 7.16.5 Navigation receptors include a range of commercial and recreational activities (and associated participants and economies) requiring the safe passage and access of vessels and craft within the study area.
- 7.16.6 Commercial navigation activity in the study area comprises various vessel movements and activities at varying distances offshore. Commercial shipping transiting the study area includes cargo vessels, passenger vessels (e.g. the Harwich–Esbjerg ferry route) and tankers using the principal east coast ports include the Medway ports (e.g. Sheerness and Chatham), London ports (e.g. Tilbury), Harwich Haven ports (e.g. Felixstowe, Harwich and Ipswich), and the Humber ports (e.g. Immingham) and Teesport. Vessels passing southwards through the study area also head for the Dover Strait and ports beyond.
- 7.16.7 Other commercial activity affecting navigation within the study area includes:

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- dredging for aggregates in offshore waters, with vessels sailing to and from designated extraction areas situated inside and just beyond the 12nm territorial sea limit within the East Coast Region off Great Yarmouth/Lowestoft, the Thames Estuary Region off Orford and as far south as the Thames Estuary;
- fishing involving 41 vessels of over 10m in length generally fishing further offshore (e.g. beam trawling) and 247 vessels of less than 10m length generally fishing inshore (e.g. netting, potting, demersal trawling and long-lining) (based on the MMO's UK vessel lists for Lowestoft as the administrative port for vessels working between the River Thames Estuary and The Wash, dated 1 December 2013); and
- offshore wind farm development (e.g. Galloper, Greater Gabbard, and East Anglia One, Three and Four) generating various changes to navigation (such as in shipping routes) and additional movements (for example, plant and supplies associated with offshore wind farm construction, operation and maintenance activities).

7.16.8 Recreational navigation tends to be highly seasonal and generally restricted to daylight hours. It involves various activities and forms of watercraft, including:

- sea kayaking and canoeing and sailboarding in the creeks and minor rivers;
- dinghy and other small boat sailing (and training) in rivers and offshore up to about 15nm;
- cruising (both passage making and day sailing) under motor and sail between shore facilities; and
- personal watercraft use in inshore waters.

7.16.9 Recreation activity is based at a number of coastal locations to the north and south of the Main Development Site (i.e. marinas, clubs and training centres), and is particularly popular at locations south of the River Deben and on the River Blythe around Southwold and Walberswick.

7.16.10 The RYA's Coastal Atlas identifies two medium-use recreational sailing routes passing the Main Development Site: the Coastal Route North and the Long Distance Route North. The inshore route – the Coastal Route North – passes between Sizewell B's cooling water intake and outfall head structures and Sizewell Bank. The RYA has classed the coastal waters extending northwards from Aldeburgh and well beyond Sizewell and Southwold as a racing area.

iii. Planned further survey/studies

7.16.11 Additional baseline data on navigation, shipping and other vessel movements is being collected from existing available sources, including AIS data, RYA UK Coastal Atlas data, MMO fisheries sightings and satellite data, Crown Estate aggregate dredging data, Admiralty Charts and Sailing Directions data, Marine and Coastguard Agency (MCA) Search and Rescue (SAR) data, the Department for Transport (DfT) Marine Accident Investigation Branch (MAIB) and Royal National Lifeboat Institution (RNLI) maritime incident records, and meteorological and hydrodynamic data (wind, wave, tide, visibility data).

7.16.12 Subject to further consultation, including that undertaken to inform the scoping opinion, it is possible that surveys will be undertaken to record seasonal vessel

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movements (summer and winter) in the local study area around the Main Development Site. These surveys will entail either AIS surveys or combined AIS and radar surveys, subject to consultation and agreement with the MCA.

- 7.16.13 The EIA process will be informed by a staged approach to studying navigation, as identified in **Table 7.16.1**.

Table 7.16.1: Staged approach to addressing navigation during the EIA process

Stage	Study	Description
1	Preliminary Hazard Assessment (PHA)	Desk-based study to review baseline navigation and vessel data availability (including AIS data) and to clarify the scope of work for surveys and Navigation Risk Assessment (NRA), informed by consultation with principal national and local consultees (e.g. MCA, Trinity House, RYA)..
2	Hazard Identification (HAZID) workshop	Structured round-table consultation with principal consultees to identify and agree risk scenarios and qualitatively assess hazards through expert opinion and local knowledge. The workshop's findings will be recorded and used to inform the NRA.
3	Navigation Risk Assessment (NRA)	Detailed assessment of agreed risk scenarios, including vessel-to-vessel collision risks and other collision risks (i.e. with seabed features or human infrastructure). Risks are quantified using dedicated software and assessed by combining a risk's consequence and frequency to determine whether it is unacceptable, As Low As Reasonably Practicable (ALARP) or unacceptable.

iv. Assessment methodology

- 7.16.14 The EIA will use an assessment methodology for navigation dependant on the risk or impact being considered. Both short-term and long-term effects on navigation receptors will be assessed.
- 7.16.15 Navigation impacts associated with collision risk will be assessed in line with the International Maritime Organisation's (IMO's) Formal Safety Assessment (FSA) process. This risk based approach entails expert judgement about the tolerability of risks that is typically agreed by a range of experts (e.g. during a HAZID workshop). The tolerability of collision risks will be assessed using matrices to plot a risk's consequence (i.e. scale of personal injury, equipment damage, environmental damage) (see **Table 7.16.3**) against its frequency (i.e. likelihood of occurrence) (see **Table 7.16.2**), taking into account the principle of As Low As Reasonably Practicable (ALARP). A risk that is neither negligibly low nor intolerably high will be reduced to a level that is ALARP using reasonable measures that are technically practicable and incurring costs that are not disproportionate to the benefits gained. Either side of ALARP, risks are intolerable or negligible (see **Table 7.16.4**).
- 7.16.16 Risks are assessed and put into one of the following categories:
- low risk – acceptable/tolerable (risk score of 1 to 6) and no risk control measures are required;
 - moderate risk – tolerable (risk score of 7 to 15) and risk is ALARP; or

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- high risk – unacceptable/intolerable (risk score of 16 to 25) and further risk reduction measures are required.

Table 7.16.2: Navigation risk frequency categories

Category	Likelihood Ranking Number (LRN)	Frequency Definition	Frequency Band
High	5	Very likely to occur during activity	<u>Yearly occurrence</u>
Medium	4	Likely to occur during activity	<u>1 occurrence per 1 to 10 years</u>
Low	3	May occur during activity	<u>1 occurrence per 10 to 100 years</u>
Very low	2	Unlikely to occur during activity	<u>1 occurrence per 100 to 10,000 years</u>
Remote	1	Not expected to occur during activity	<u><1 occurrence per 10,000 years</u>

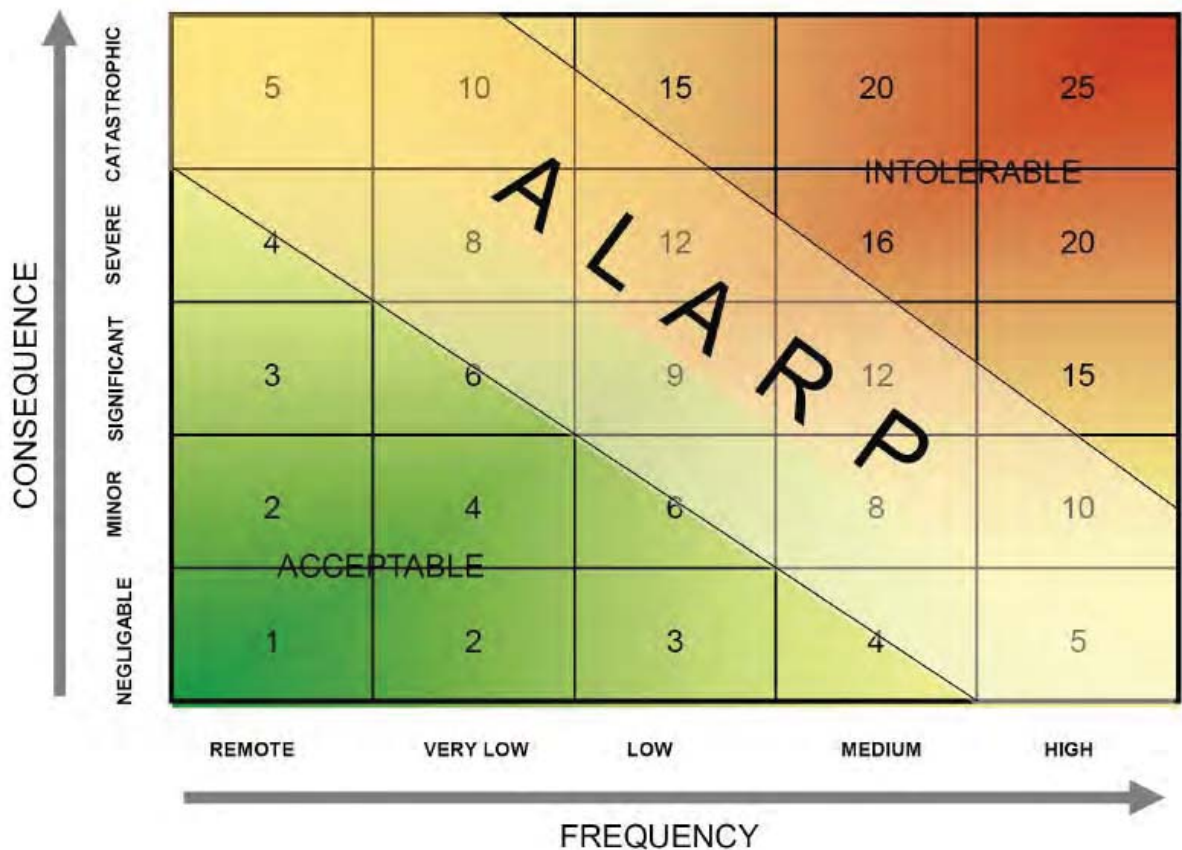
Table 7.16.3: Navigation risk consequence categories

Category	Consequence Ranking Number (CRN)	Consequence Definition	Consequence Band
Catastrophic	5	Fatality, or severe personal injury, total plant loss, irreversible environmental damage.	People: More than one fatality. Property: >£10M. Environment: Tier 3 National assistance required. Business: >£10M International publicity.
Severe	4	Serious/moderate personal injury. Major/long-term equipment damage. Long-term environmental damage.	People: Serious injury or single fatality. Property: >£1M. Environment: Tier 2 Regional assistance required. Business: £1-£10M National publicity.
Significant	3	Minor/serious injury. Medium-term equipment and environmental damage.	People: Multiple moderate or single serious injury. Property: £100k-£1M. Environment: Tier 2 Limited external assistance required. Business: £100k-£1M Local publicity.
Minor	2	Minor personal injury. Minor/short-term equipment damage. Short-term environmental damage.	People: Slight injury(s). Property: £10k-£100k. Environment: Tier 1 Local assistance required. Business: £10k-£100k.
Negligible	1	Negligible personal injury/plant or equipment failure/environmental damage.	People: No injury. Property: <£10k.

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Category	Consequence Ranking Number (CRN)	Consequence Definition	Consequence Band
			Environment: <£10k. Business: <£10k.

Table 7.16.4: Navigation risk assessment matrix



7.16.17 Effects will be determined based on impact consequence (see **Table 7.16.3**) and likelihood (susceptibility) of receptors (see **Table 7.16.2**), using the matrix shown in **Table 7.16.4**. Explanations of the effect categories are provided in **Table 7.16.5**. Major and moderate effects would be considered to be significant; minor and negligible effects would not.

Table 7.16.5: Definitions and descriptions of effects

Effect	Definition	Description
Major	Intolerable	Generally regarded as unacceptable whatever the level of benefit associated with the activity.
Moderate	Intolerable	Generally regarded as unacceptable whatever the level of benefit associated with the activity.
Minor	ALARP	Typical of the risks from activities which people are prepared to tolerate. There is however an expectation that these hazards are properly assessed, appropriate control measures are in place and that the residual risks / effects

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Effect	Definition	Description
		are ALARP. (ALARP). These risks / effects require periodic review to investigate whether further controls are appropriate.
Negligible	Acceptable	Generally regarded as insignificant and adequately controlled. Nonetheless, the law still requires further risk / effect reductions if it is reasonably practicable. However, at these levels the opportunity for further risk/effect reduction is more limited.

7.16.18 The terminology used for the collision risk part of the navigation assessment can be aligned to the standard EIA terminology as shown in **Table 7.16.6**.

Table 7.16.6: Comparison of terminology for navigation collision risk assessment

Equivalent EIA effect and significance terminology	Collision risk assessment terminology
Major = significant	Intolerable = significant
Moderate = significant	Intolerable = significant
Minor = not significant	ALARP = not significant
Negligible = not significant	Acceptable = not significant

v. Assumptions and limitations

7.16.19 The assessment methodology inherently assumes that:

- awareness of navigation hazards can and will be raised, as appropriate, through standard measures such as Notices to Mariners, aids to navigation, etc.; and
- all marine activities will be undertaken in a competent manner, and all appropriate navigation information (e.g. Admiralty Charts) will be updated.

7.16.20 No limitations have been identified to date.

d) Potential impacts and effects

7.16.21 The assessment methodology will include a PHA, HAZID workshop and detailed NRA to inform the EIA process regarding a range of potential risks and impacts on the safe navigation and activity of commercial shipping and recreational craft during the Main Development Site's construction and operational phases.

ii. Construction

7.16.22 The EIA would cover, but not necessarily be limited to, the following risks and impacts to navigation associated with the Main Development Site construction stage:

- collision risk – commercial shipping and works vessels (e.g. jack-up platforms and vessels delivering construction materials);
- collision risk – recreational craft and works vessels;
- collision risk - commercial shipping and works structures (e.g. the jetty, cooling water intake and outfall head structures);

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- collision risk – recreational craft and works structures;
- re-routing impact - commercial shipping (e.g. inshore vessel movements around temporary exclusion zones); and
- re-routing impact – recreational craft (e.g. inshore cruising routes around temporary exclusion zones).

iii. Operation

7.16.23 The EIA would cover, but not necessarily be limited to, the following risks and impacts to navigation associated with the operational stage of the proposed development:

- collision risk – commercial shipping and operational vessels (e.g. vessels using the beach landing facility);
- collision risk – recreational craft and operational vessels;
- collision risk - commercial shipping and operational structures;
- collision risk – recreational craft and operational structures;
- re-routing impact - commercial shipping (e.g. inshore vessel movements around operational structures, such as the cooling water intake and outfall head structures); and
- re-routing impact – recreational craft (e.g. inshore cruising routes around operational structures, such as the cooling water intake and outfall head structures).

e) Potential mitigation

7.16.24 Mitigation would comprise, but not necessarily be limited to, the following measures:

- a range of embedded mitigation measures (e.g. marks, lights and other aids to navigation);
- consent conditions (e.g. avoid works encroaching on any anchorages); and
- management measures during construction (e.g. Notice to Mariners, exclusion zones) and during operation (e.g. updating of nautical charts via the UK Hydrographic Office).

7.16.25 These measures would take into account the general navigation management measures identified by the MCA and RYA, specific lighting and marking measures to be specified by Trinity House, and additional measures identified through the navigation risk and impact assessment process.

f) Approach to cumulative assessment

i. Inter-relationships

7.16.26 Collision risks and re-routing impacts could have indirect effects on a number of environmental and social parameters. The key inter-relationships occur where the jetty and/or cooling water intake and outfall head structures' construction works and operations interfere with the navigation of vessels and, therefore, interfere with activities associated with the navigation of vessels.

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- 7.16.27 For the Main Development Site, the following inter-relationships will be considered:
- the inter-relationship with commercial fishing and associated earnings from this activity if, for example, fishing activities become suspended and/or displaced to accommodate navigation requirements (e.g. exclusion zones) (see **Section 7.15**); and
 - inter-relationships with recreation (particularly inshore cruising) if, for example, sailing routes become diverted to accommodate navigation requirements (see **Section 7.4**).
- 7.16.28 The scoping process has not identified any impacts on other receptors that could have indirect risks and impacts on navigation.

ii. Cumulative effects

- 7.16.29 The Sizewell C Project, in cumulation with other relevant plans or projects in the wider study area affecting the marine environment, could pose additive risks or impacts on navigation (e.g. increasing collision risks due to additional traffic movements and/or compressed sailing routes). A key project in this respect is anticipated to be the construction and operation of the offshore Galloper Wind Farm, including the laying of the seabed export cables that will come ashore at Sizewell, to the south of the Main Development Site. Due to the cumulative presence of works and vessel movements, it is anticipated that cumulative collision risks and re-routing impacts will be assessed where marine activities for the Sizewell C Project and Galloper Wind Farm development overlap in space and/or time. Other relevant permitted and/or implemented plans, programmes and projects will also be considered where scoped into the assessment.

7.17 Radiological

a) Introduction

- 7.17.1 The Sizewell C nuclear power station and associated radioactive waste management facilities will need to be permitted by the Environment Agency under Schedule 23 of the Environmental Permitting (England and Wales) Regulations, 2010 (as amended). This will authorise the operator to dispose of radioactive waste under specific limitations and conditions as specified in the environmental permit.
- 7.17.2 This section outlines the baseline conditions, proposed approach, methodology and assessment for the radiological impacts associated with potential radioactive discharges arising from the construction and operational phases of the Main Development Site. This includes radiological impacts from discharges of gaseous and liquid effluents to atmosphere and the marine environment respectively resulting from routine operations. There will not be any disposal of radioactive effluents to groundwater during construction or operation, therefore no radiological impact assessment on groundwater will be undertaken.
- 7.17.3 Whilst it addresses the radiological impacts associated with the transport of radioactive waste from the Main Development Site during the operational period, it does not address the management of solid radioactive waste or spent fuel which is described in **Section 3.8**.
- 7.17.4 In addition, the radiological impacts of decommissioning are assumed to be bounded by the routine operational activities and therefore not detailed further.
- 7.17.5 There are no radiological impacts expected with any of the off-site associated development sites. No radioactive disposals will take place from these locations during the construction or operation of either the Main Development Site or any of the off-site associated development sites.
- 7.17.6 Further information on the health implications associated with radiological impact of such permitted disposals will be addressed in the Health Impact Assessment.

b) Work undertaken to date

- 7.17.7 EDF Energy has undertaken surveys and monitoring programmes in order to obtain a more detailed understanding of the background radioactivity levels around the Sizewell C Main Development Site and of the potential implications of any planned radiological discharges. A summary of surveys and studies completed to date with respect to human and non-human radiological impacts is provided below:
- Desk study of data sources for background radioactivity levels: Background radioactivity data has been gathered. These data include a review of the most recent Environment Agency and the Foods Standards Agency 'Radioactivity In Food and the Environment' (RIFE) annual reports. These reports contain the results of radiological sampling and monitoring programmes of food and the environment in the UK.
 - Radiological walkover survey: A survey, using instruments that can measure levels of radioactivity at and near the ground surface, was undertaken across the Sizewell C Main Development Site in 2010.

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- Phase 2 intrusive radiological investigation: Radionuclide concentrations in shallow and deeper soils within the Sizewell C Main Development Site have been determined from soil sampling surveys which were completed in March 2011.
- Groundwater monitoring programme: Radionuclide concentrations in groundwater have been assessed. Six groundwater monitoring rounds were completed in October 2011.
- Surface water monitoring: Radionuclide concentrations in the surface freshwater features (ditches and streams) within the study area have been determined from 17 rounds of radiological sampling and in-situ radiological screening undertaken between January 2010 and May 2011, allowing potential seasonal variations to be assessed. Two further sampling campaigns took place in 2012.
- Marine water monitoring: Radionuclide concentrations in marine waters, in the North Sea in the vicinity of the Sizewell C Main Development Site, have been analysed from three sets of surveys of two locations between May 2010 and February 2011. These results have been compared to routine local Environment Agency monitoring.

7.17.8 In addition there has been preparatory work to support the radiological impact assessment from discharges on humans and non-human populations which will support both the environmental permitting and DCO process. This work included the following:

- Stack height sensitivity study, using the Atmospheric Dispersion Modelling System (ADMS), was performed to model the atmospheric dispersion of aerial discharges from Sizewell C UK EPR reactors.
- Evaluation of methodology and parameters for determining the effect of permitted radioactive discharges on the surrounding human population, including calculating realistic Candidates for the representative person doses to adult, child (10-year-old) and infant (one-year-old).
- Evaluation of methodology and parameters for determining the effect of permitted radioactive discharges from the proposed Sizewell C development, including assessment of impacts on habitats that are representative of the range of habitats in the locality of Sizewell (i.e. marine, freshwater, terrestrial, coastal and marshland).

c) Approach and methodology

i. Study area

7.17.9 The radiological assessment is limited to the construction and operation of the Sizewell C Main Development Site. This assessment does not address radiological impacts during decommissioning of Sizewell C. These impacts will be addressed under a separate EIA carried out under the specific legislative framework of the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999.

7.17.10 The study area includes the area around the Sizewell C Main Development Site where the impacts from the radiological discharges will be greatest. The internationally recognised basis for radiological assessment is built around the identification of “representative persons” who, by virtue of their location and habits

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(such as dietary intake, occupation and activities), through environmental modelling are subject to the highest impacts. Therefore, by ensuring the protection of these “representative persons”, protection of the public can be demonstrated. In addition, relevant sensitive habitats close to the Sizewell C Main Development Site are considered for the assessment of non-human biota to demonstrate the protection of the environment.

- 7.17.11 The assessment will include the calculation of radiological impacts associated with the transport of radioactive waste from the nuclear power station during the operational period.

ii. Baseline information

- 7.17.12 The historical and current permitted discharges from the Sizewell A and Sizewell B power stations as well as the historic impacts of atmospheric weapons testing, the Chernobyl accident and naturally occurring radioactivity all contribute to the background radioactivity levels around the Sizewell C Main Development Site.
- 7.17.13 EDF Energy has undertaken surveys and monitoring programmes in order to obtain a more detailed understanding of the background radioactivity levels around the Sizewell C Main Development Site and of the potential implications of any planned radiological discharges.
- 7.17.14 Baseline information is available from the Radioactivity in Food and the Environment (RIFE) reports which gather data across all nuclear sites and is administered by the relevant regulatory bodies including the Environment Agency and Foods Standards Agency.

Land quality results

- 7.17.15 The levels of radionuclides present in samples, collected by walkover surveys were generally consistent with background levels.
- 7.17.16 During 2010, soil samples were taken for radiochemical analysis. The comparison of radiochemical analysis results with adopted background activity and screening values indicated that the soil collected from the study area is consistent with background activity levels and that there is no evidence to indicate the presence of elevated levels of either anthropogenic or naturally occurring radionuclides.

Water quality results

- 7.17.17 The groundwater has been screened against drinking water standards. The radiochemical analysis results from the groundwater monitoring programme indicate that the groundwater is not contaminated with anthropogenic radionuclides and that the groundwater does not present a hazard to human health.
- 7.17.18 The radiochemical analysis results indicate that surface waters do not present a hazard to human health. The only anthropogenic radionuclide detected in any of the samples was caesium-137. This radionuclide was detected in a single sample at a level close to the limit of detection and significantly below its associated WHO guideline value.

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- 7.17.19 The radionuclide results from analysis of marine waters indicate that radionuclide concentrations are very low, often below the limit of detection, and consistent with routine local Environment Agency radionuclide monitoring and considered to be at background levels.
- 7.17.20 The potential impact of mobilisation of any contaminated material into the water and air will be considered during the assessment. The potential impact of re-use, remediation or disposal of the material will also be examined.

iii. Planned further survey/studies

- 7.17.21 Further environmental monitoring surveys, including geotechnical surveys, are planned which will include reporting on relevant radiological parameters where appropriate. These are summarised below.

Land quality

- 7.17.22 A further site investigation on land quality and contamination is proposed to provide more data on targeted areas of interest (based on the 2010 – 2012 investigations), including parts of the Main Development Site that were not previously surveyed.

Marine water and sediment quality

- 7.17.23 Additional monitoring data for water quality will also be acquired in 2014 to supplement the existing water quality data for the site. Sediment core samples will be obtained at the proposed locations of the jetty, beach landing facility, the cooling water intake and outfall headworks and in likely navigation channels. These samples will be analysed for a comprehensive range of determinands including radionuclides.

Impact assessment studies

- 7.17.24 Studies confirming the stack height are expected to be completed in late 2014 to inform the radiological impact assessment.
- 7.17.25 The potential impact of mobilisation of the contaminated material into the water and air environments will be considered, therefore an assessment of the potential radiological impact on members of the public, including construction workers, will be undertaken based on site survey data as a result of activities during construction.
- 7.17.26 A radiological impact on the local population from the operation of Sizewell C will be evaluated by assessing the dose to a number of indicative representative persons. These representative persons comprise groups exposed to:
- atmospheric discharges and the impact on terrestrial pathways;
 - aqueous discharges and the impact on marine pathways; and
 - in-combination effects atmospheric and aqueous discharges.
- 7.17.27 In addition, radiological impact assessments using site-specific data will be undertaken to determine the following radiological impacts:
- annual doses to the most exposed members of the public from direct radiation exposure to the proposed radioactive waste stores;

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- collective doses to the UK, European and world populations from routine releases of liquid and atmospheric discharges and representative 'per caput' doses (the latter refers essentially to the average dose to individuals within each of these large populations);
- potential doses to the representative person as a result of short-term operational atmospheric discharges; and
- doses due to potential build-up of radionuclides in the environment as a result of discharges during the whole of the proposed period of operation of Sizewell C.

7.17.28 An assessment of the radiological impact of gaseous and liquid effluent discharges on the environment and non-human biota will be undertaken.

iv. Assessment methodology

7.17.29 There is currently no statutory defined method for carrying out an assessment of radiological impacts for EIA. General guidelines are available in, for example, the Department of the Communities and Local Government, IEMA (2006) and from the Environment Agency. Using these guidelines, the approach adopted in the relevant chapter of the ES will be based on the following steps:

- Definition of the current baseline within and around the site.
- Undertake the radiological impact assessment – this covers the radiological impacts from the proposed development and assessment of these against recognised radiological protection standards for a specified range of human and non-human receptors. This process follows the regulatory guidance on the assessment of prospective public doses arising from authorised discharges of radioactive waste to the environment (Environment Agency, 2012) and includes the following steps:
 - identify/quantify source term;
 - model radionuclide transfer in the environment;
 - determine exposure pathways;
 - identify habits and data for exposure pathways;
 - determine candidates for the representative person from realistic combinations of habits;
 - estimate doses to the candidates for the representative person; and
 - determine the representative person.
 - Undertake Non-human species assessment covering a range of generic species plus some site-specific species selected on the basis of ecological surveys of the site for site specific representative habitats.
- Identify mitigation measures - this includes design and management controls which reduce the potential impact, and are consistent with the legal requirement to use Best Available Techniques (BAT) to ensure the radiological impact of radioactive effluent discharges and waste disposals are minimised and to reduce radiation doses to members of the public and workers to As Low As Reasonably Achievable (ALARA).

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- Assess any residual impacts - undertaken following the implementation of any proposed mitigation measures.
- 7.17.30 The assessment of the representative person will be based on site specific factors and local habits data (where available) to determine representative persons on which the assessment will be completed. The assessment will use the maximum estimated discharges from two UK EPR reactors and associated facilities on the Sizewell C site informed by operating feedback from existing pressurised water reactors (PWR) of similar design and information provided in the Radioactive Substances Regulations (RSR) environmental permit application for Hinkley Point C and the Generic Design Assessment (GDA) for the UK EPR. The assessment of gaseous and liquid discharges includes the specific range of radionuclides, the subsequent movement of which through the environment (air, water, soil) and into the food chain is predicted using a range of industry-standard computer models.
- 7.17.31 The assessment of radiological impacts from construction activities will follow the methodology described in Methodology for Estimating the Doses to Members of the Public from the Future Use of Land Previously Contaminated with Radioactivity (Oatway and Mobbs, 2003), developed by the National Radiological Protection Board (now known as Public Health England).
- 7.17.32 The assessment of the radiological impact from discharge of gaseous and liquid effluents from operational activities will follow the guidance prepared by the UK environmental regulatory bodies (Environment Agency, 2012). The European Commission's PC-CREAM model will be used in the assessment of routine discharges to the environment and to calculate the impacts to members of the public using the methodology described in Methodology for Assessing the Radiological Consequences of Routine Releases of Radionuclides to the Environment (European Commission, 1995) and HPA-RPD-058 (Smith and Simmonds, 2009). Local site-specific parameters will be used where available. In the absence of site-specific data, data from nationally and internationally recognised sources will be applied.
- 7.17.33 EDF Energy proposes to use risk factors published by the International Commission of Radiological Protection (ICRP), which are the basis of those used by the UN International Atomic Energy Agency, the European Commission and regulatory bodies across the world, including those in the UK.
- 7.17.34 The habits of the representative persons that affect the radiological impact will be identified from published surveys of the local population and potential transport routes. In keeping with regulatory guidance (Environment Agency, 2012), three age groups will also be considered for each representative person. They are:
- infant;
 - 10-year-old child; and
 - adult.
- 7.17.35 If determined to be appropriate, an assessment of dose to the embryo and foetus will be undertaken.
- 7.17.36 The proposed criteria against which individual dose will be compared are presented in **Table 7.17.1**.

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Table 7.17.1: Proposed dose assessment criteria

Dose	Source of the Dose Criterion used in the Assessment
1.0 mSv y ⁻¹	1.0 mSv y ⁻¹ is the UK public dose limit as defined in the Ionising Radiations Regulations 1999. It includes all contributions from man-made sources but excludes medical or occupational exposure.
0.5 mSv y ⁻¹	0.5 mSv y ⁻¹ is the site dose constraint to a member of the public from discharges from Sizewell A, Sizewell B and the proposed impacts from Sizewell C. The site constraint is defined in the Environmental Permitting Regulations (England and Wales) 2010 (as amended).
0.3 mSv y ⁻¹	0.3 mSv y ⁻¹ is the source dose constraint for members of the public for a single power station and includes the contribution from discharges and direct radiation. The site constraint is defined in the Environmental Permitting Regulations (England and Wales) 2010 (as amended).
0.02 mSv y ⁻¹	0.02 mSv y ⁻¹ is the screening value defined by the Environment Agency used in radiological assessments below which further detailed studies are not considered to be warranted.
0.01 mSv y ⁻¹	0.01 mSv y ⁻¹ follows statutory guidance issued to the Environment Agency for England & Wales, below which regulators should not seek further reductions in public dose, provided the operator is using best available techniques to limit discharges.

- 7.17.37 There is no legal dose limit on collective doses. However, the International Atomic Energy Agency (IAEA) has presented a dose criterion of less than 1 man Sievert (mSv) per year of operation, below which doses are considered sufficiently low that doses arising from sources or practices may be exempted from regulatory control. This criterion is included in UK regulatory guidance.
- 7.17.38 Radiological impacts on non-human species, unlike those on humans, have no absolute regulatory or universal 'value'. This is because different non-human species or their habitats have different perceived values depending on, for example, their rarity, sensitivity or location. After estimating the level of significance from the doses there is therefore a need to consider these aspects of the species or habitat affected and draw a final conclusion on the magnitude of the radiological impact and its significance.
- 7.17.39 The International Commission for Radiological Protection (ICRP) Publication 91 describes a framework for assessing the impact of ionising radiation on non-human species. It sets out a systematic, risk-based approach, reiterated in the ICRP Publication 103 recommendations.
- 7.17.40 There are no specific UK regulations for the protection of non-human species from radiation sources. However, UK regulations are in place to enforce relevant European Directives in the UK, the principal UK regulations being The Conservation of Habitats and Species Regulations 2010. These implement the European Union (EU) Habitats Directive (1992) in the UK and require steps to maintain and restore to favourable conservation status the habitats and species of EU Community level interest.
- 7.17.41 Site-specific data from the ecological surveys carried out will be used as the basis for selecting the habitats and species of interest with respect to radiological impacts on

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non-human species. This is to determine whether any adverse effects on radio-sensitive species are present.

7.17.42 The Environment Agency has concluded that it is unlikely there will be any significant effects in populations from ionising radiation at the chronic dose rates listed below:

- 40 $\mu\text{Gray h}^{-1}$ for terrestrial animal populations;
- 400 $\mu\text{Gray h}^{-1}$ for terrestrial plant populations;
- 400 $\mu\text{Gray h}^{-1}$ for populations of freshwater and coastal organisms; and
- 1,000 $\mu\text{Gray h}^{-1}$ for populations of organisms in the deep ocean.

7.17.43 EDF Energy recognises the regulatory screening level of 40 $\mu\text{Gray h}^{-1}$ for all non-human species as specified by the Environment Agency in its related guidance. The computer modelling code ERICA and associated radiological effects database FREDERICA are assessment tools for predicting the dose and effects on non-human species from radioactivity in the environment. Therefore, assessments falling below this screening level are assumed to cause no measurable harm to non-human species.

v. Assumptions and limitations

7.17.44 The UK has a strict regulatory framework to control routine discharges from nuclear power stations and direct radiation exposures to workers and the general public (radioactive waste is addressed in **Section 3.8**). The aim is to minimise potential health impacts and to ensure that radiation doses are well within internationally agreed limits, following the principles of ALARP through the application BAT.

7.17.45 Any new nuclear power station needs permission, under Schedule 23 of the Environmental Permitting (England and Wales) Regulations, 2010 (as amended), from the Environment Agency before making any discharges of radioactivity into the environment or disposals of radioactive waste. The site-specific radiological impact assessment is a key element underpinning the Radioactive Substances Regulation (RSR) permit.

7.17.46 The Environment Agency may only grant an RSR environmental permit for the disposal of radioactive wastes (including discharge of gaseous and liquid effluents) once an opinion has been provided by the European Commission under Article 37 of the EURATOM treaty.

7.17.47 It is expected that the radioactive discharges from commissioning of Sizewell C will be no greater than those during operation, therefore, for the purposes of this assessment it is assumed that the impacts from commissioning will be bounded by those for the operation of Sizewell C.

7.17.48 Furthermore, there are also supplementary provisions regulated by the Office for Nuclear Regulation, in particular the Nuclear Installations Act, 1965 (as amended), and the associated Nuclear Site Licence to control the accumulation of radioactive waste on a licensed site.

7.17.49 The Government and nuclear industry have an emergency preparedness framework in place to mitigate health effects in the unlikely event of major accidental releases of

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radiation into the environment. This framework includes detailed site-specific emergency response and crisis management plans for each nuclear facility. The plans are tested regularly through site based emergency response exercises, some of which involve the Government and simulated media involvement, where the scope also extends to crisis management. The impacts associated with accidents are assessed as part of the site safety case and regulated by ONR under the Nuclear Site Licence.

d) Potential impacts and effects

i. Construction

- 7.17.50 While there will be no new radioactive materials generated during the construction phase for Sizewell C, there is the potential for contaminated soil to be discovered during ground preparation works. The results of the assessment are expected to indicate that any exposure would be very low. It is not expected that any specific measure would be needed during construction.

ii. Operation

- 7.17.51 The Environment Agency concluded its Generic Design Assessment (GDA) of the UK EPR in December 2012 and issued a Statement of Design Acceptability (SoDA) for the reactor design. This included an assessment of the radiological discharges and associated impacts for a generic site. This assessment confirmed that the impacts were well within the relevant regulatory limits and constraints.
- 7.17.52 Any site specific assessment, such as that required for Sizewell C is expected to be within the envelope established in the GDA. Site-specific assessments will be carried out for the Sizewell C Main Development Site, as it was during the planning and permitting process at Hinkley Point C, and this showed the site-specific assessment was well within the GDA envelope.

e) Potential mitigation

- 7.17.53 The Environment Agency is responsible for ensuring that new nuclear power station designs can meet high environmental standards and use the BAT to achieve this, as required by the OSPAR Convention. Through the GDA process, the Environment Agency ensured that designers consider this requirement at an early stage. This ensures that the most modern techniques to minimise radioactive waste discharges can be incorporated into the designs proposed. The application of BAT also ensures that discharges from new nuclear power stations constructed in the UK will not exceed the discharge levels from comparable nuclear power stations across the world.
- 7.17.54 The operations of the nuclear power station and associated facilities at Sizewell C will be regulated by the Environment Agency. The operator will need to be able to demonstrate the application of BAT to minimise the radioactive waste generated and the gaseous and liquid effluents discharged are kept As Low As Reasonably Achievable (ALARA). The impacts arising from the radioactive discharges must also be kept ALARA.
- 7.17.55 The environmental permit granted by the Environment Agency under Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2010 (as amended),

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will specify a number of conditions, as well as numerical discharge limits, with which the operator must comply. This includes requirements to ensure the monitoring of discharges applies BAT as well as the need to undertake monitoring of the environment. The results of the monitoring will be recorded and reported to the regulator in compliance with the conditions of the RSR environmental permit.

7.17.56 The radiological impacts from the construction and operation of Sizewell C are expected to be very low and well within the regulatory constraints and limits enforced by the Environment Agency. This is supported by the GDA assessment for a generic site which demonstrated that the radiological impacts were low. This is reinforced by the Hinkley Point C radiological impact assessment, which showed that the impacts were less than that presented in the GDA.

f) Approach to cumulative assessment

i. Inter-relationships

7.17.57 Potential effects from inter-relationships, as considered at this stage, include:

- effects on visual impact of stack height and dispersion of gaseous effluents; and
- results from additional environmental monitoring and surveillance programmes that could update the baseline information and inform the assessment of radiological impacts during construction.

ii. Cumulative effects

7.17.58 The assessment of impacts from radiological discharges to the atmosphere and the marine environment will be considered in-combination with operations at Sizewell A and Sizewell B and the cumulative effects presented. The assessment:

- is based on discharges at current permitted limits for Sizewell A and Sizewell B and will use the limits that will be proposed by EDF Energy for Sizewell C;
- assumes that discharges from Sizewell A and Sizewell B continue throughout the operation of Sizewell C and in parallel with the limits that will be proposed for the Sizewell C site. This is a conservative assumption, as Sizewell A is planned to be decommissioned over this time period. Sizewell A will be decommissioned into a quiescent state known as 'care and maintenance' and Sizewell B is planned to be shut down, defuelled and decommissioned; and
- assumes that the discharges from Sizewell B during decommissioning will not increase above their current permitted limits. Any increases that could arise are likely to be limited in time to address specific activities during the decommissioning programme to reduce the hazard on site to assist in achieving the site's restoration. Any changes to the proposed limits at Sizewell B would be subject to regulatory review and approval.

7.17.59 The Environmental Permitting (England and Wales) Regulations 2010 (as amended), include dose constraints to ensure the impacts of neighbouring sites are considered in the radiological assessment. Therefore, the Sizewell A and B power stations will also be taken into account for site dose calculations and to inform an assessment of in-combination effects.

8. EIA – OFF-SITE ASSOCIATED DEVELOPMENT

8.1 Introduction

8.1.1 To support the construction and/or operation of Sizewell C, EDF Energy would also need to use additional land for associated development. Since Stage 1 consultation EDF Energy has progressed in its consideration of the potential off-site associated development sites and, where a lead option has been identified, these are considered in this section. The lead sites are the likely, but not definite, associated development sites that EDF Energy has identified for further consultation and which are being taken forward for further assessment. For off-site associated development where a lead site has not been identified, all options have been considered in this section and will be taken forward for further assessment.

8.1.2 The EIA for the off-site associated development will consider:

- future baseline in the absence of development;
- construction of the off-site associated development;
- operation of the off-site associated development; and
- post-operation of the off-site associated development.

8.1.3 This section sets out the proposed scope and methodology for the assessment of the off-site associated development sites. This has been informed by an outline description of the environmental baseline conditions, along with a preliminary view of the key issues likely to be associated with each development.

8.1.4 The following environmental topics have not been discussed within this section for the following reasons:

- socio-economics and transport – have been dealt with as project-wide topics for the purposes of EIA Scoping;
- marine historic environment, coastal geomorphology and hydrodynamics, marine water quality and sediments, marine ecology and navigation – as these are marine-based topics it is unlikely that there will be any impact from the terrestrial based developments. For this reason they have been scoped out of the off-site associated development section. Flooding has been addressed within the surface water sections; and
- radiological – any potential impacts relate to the proposed Sizewell C nuclear power station and are therefore centralised around the Main Development Site. Given that radiological impacts will not be associated with off-site associated development sites, this topic has been scoped out of the off-site associated development section.

8.2 Northern park and ride

a) Description of the off-site associated development site

8.2.1 The park and ride site located at Darsham (see **Figure 8.2.1**) is approximately 28ha in area and is a triangular-shaped site located to the north of Darsham Station, with the A12 to the east and the railway line to the west. The site entrance is located approximately 1.3km north of the A12/B1122 junction and is well positioned for the A144 further to the north. As detailed within the Stage 1 consultation, land requirements for park and ride facilities have been estimated based on the following:

- car parking areas with up to approximately 1,000 spaces per site;
- bus terminus and parking, including shelters;
- perimeter security fencing and lighting;
- welfare building including toilets, drivers rest room, and security and administration offices;
- on-site soil storage pending site restoration once Sizewell C is built; and
- external areas including roadways, footways, landscaping and drainage.

8.2.2 Additionally, the possibility of co-locating an induction centre for construction workers and a postal consolidation facility, either within the northern or southern park and ride, is being considered.

b) Site and surrounding environmental conditions

8.2.3 The site is located to the west of the village of Darsham. Its western boundary is defined by the main line railway between Saxmundham and Halesworth (Darsham Station is located immediately to the south of the site). The eastern boundary is defined in part by the A12 and the boundary vegetation/fencing around properties/farm buildings along the A12. The northern boundary is defined by Willow Marsh Lane.

8.2.4 Ordnance Survey maps indicate that there may be up to 15 ponds present within 500m of the site. Nine statutory designated sites are located within 5km of the proposed location of the northern park and ride, these are: Minsmere-Walberswick (SPA and Ramsar, 3.4km east); Minsmere to Walberswick Heaths and Marshes (SAC and SSSI, 3.4km east), and Dew's Pond (SAC and SSSI, 1.7km north-west). A third SSSI, Potton Hall Fields is located 4.2km to the east and two NNR are located 4.8km (Westleton Heath) and 4.5km (Suffolk Coast) north-east. Darsham Marshes, a Suffolk Wildlife Trust reserve, is also located approximately 1km south.

8.2.5 The site is located outside the area designated as the Suffolk Coast and Heaths AONB, which is approximately 3.5km to the east. The site is also outside the designated SLA, which is a retained SCDC policy. The SLA occupies the valley of the Minsmere River approximately 1km to the south of the site.

8.2.6 The site is located in the Ancient estate claylands landscape character type which is described in the Suffolk County Landscape Character Assessment. The Ancient estate claylands landscape is characterised by arable land use, with fields interspersed with deciduous copses. A more organic pattern of hedged pastoral

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fields and tree belts is generally associated with the Rolling estate claylands landscape character type which occupies the rolling valley sides of the Minsmere river to the south of the site. Settlement across the claylands consists of occasional villages and dispersed hamlets and farmsteads. Larger settlements, such as Yoxford and Darsham occupy valley locations within the Rolling estate claylands landscape.

- 8.2.7 An initial desk-based study has identified that there are a number of PRoW, including a north-south aligned footpath to the west linking Willow Marsh Lane to Yoxford; to the south of the site linking Darsham Station with Westleton Road; to the east a number of footpaths around Priory Farm and around the village of Darsham; and to the north a number of footpaths between Willow Marsh Lane and the A144. There are no PRoW within the proposed site boundary. Located on the southern edge of the south-western edge of the study area is the A1120, which is designated as a tourist route.
- 8.2.8 There are no Scheduled Monuments or Listed Buildings within the red line boundary. There are a number of Grade II Listed Buildings within the Darsham Conservation Area, as well as the Grade I Listed Darsham Church and Grade II* Listed Darsham House.
- 8.2.9 There is currently no baseline noise data available for this site although it is apparent that noise levels within the study area are generally high along the road corridor due to existing road traffic on the A12. Monitoring data for NO₂ has been collected in background locations and along key nearby transport routes (e.g. A12) to support the proposed development and data has also been collected by SCDC.
- 8.2.10 The soils are slowly permeable, seasonally waterlogged fine loams and clays over clayey sub-soil (ALC grade 3 undifferentiated and 4). There are no statutory or non-statutory geological sites within 500m of the site. There is no known on-site contamination risk, although a nearby petrol filling station is a potential source of off-site contamination. The area is underlain by the Lowerstof Diamicton (boulder clay) which overlies the Lowestoft sand and gravels (Secondary Superficial aquifer) and the Crag (Principal Aquifer). The park and ride site does not lie within a Source Protection Zone. A licensed groundwater abstraction is located on the southern edge of the site.
- 8.2.11 There are no statutory designations within the site but there is a small watercourse located approximately 250m to the south-west, which flows into the Minsmere Old River, 1,250m downstream. The Minsmere Old River forms part of the WFD water body 'Leiston Beck and Minsmere Old River', which is heavily modified. The River Yox is also located 160m to the south-east of the site.
- 8.2.12 **Figure 8.2.1** illustrates the key environmental constraints for the northern park and ride.

c) Planned further studies/surveys

- 8.2.13 **Table 8.1** summarises the potential studies/surveys that are proposed for the northern park and ride site.

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Table 8.1: Northern park and ride – planned further studies/surveys

Environmental topic	Planned further studies/surveys
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • An extended Phase 1 habitat and protected species survey. • Surveys to determine presence or absence of great crested newts. • Survey to assess the potential for bats to roost in the adjacent woodland.
Landscape and visual	<ul style="list-style-type: none"> • Views and visibility: ZTV modelling for northern park and ride. • Carry out assessment based on agreed methodology, study area and viewpoints. • Baseline landscape/character: review and update landscape baseline for the park and ride site for agreed study area. • Develop design principles for the northern park and ride site and develop masterplan and mitigation strategy to assist in the integration of the development and reduction of significant adverse effects.
Amenity and recreation	<ul style="list-style-type: none"> • Baseline recreation and amenity research will be undertaken including field survey and desk top analysis including the identification of: <ul style="list-style-type: none"> ○ cycle routes and their use; ○ the extent and use of PRow and Permissive paths; and ○ preparation of principles for construction phase based on those developed for the northern park and ride.
Terrestrial historic environment	<ul style="list-style-type: none"> • Following completion of the desk study it is anticipated that staged archaeological investigation will be carried out across the site. This would comprise geophysical survey followed by a programme of trial trenching to confirm the presence/absence of archaeological remains, establish the nature, date and extent of any archaeological remains within the site boundary and inform proposals for mitigation to be agreed with SCCAS and English Heritage for inclusion in the ES. • Site visits to identify offsite heritage assets where settings assessment will be required will be carried out in conjunction with English Heritage and local authority Conservation Officers, if required.
Noise and vibration	<ul style="list-style-type: none"> • A baseline survey is planned for this site to be carried out in Q2 of 2014. Monitoring locations are as identified in Figure 8.2.2. Below shows a list of planned monitoring locations in the vicinity of this site: <ul style="list-style-type: none"> ○ PRN1 – Close to Willow Marsh Cottage (north of the site). To assess local noise impact from northern park and ride; ○ PRN2 – A location to the east of the site. To assess local noise impact from northern park and ride on dwellings on the A12; and ○ PRN3 – Darsham (south of the site). To assess local noise impact from northern park and ride on dwelling to the south of the site on east of the A12.
Air quality	<ul style="list-style-type: none"> • No further surveys (as part of either the construction or operation phase assessment) are planned for the northern park and ride, due to the availability of existing data.
Soils and agriculture	<ul style="list-style-type: none"> • Soil survey in accordance with standard ALC methodology.
Geology and land quality	<ul style="list-style-type: none"> • Phase 1 ground contamination desk study and potential intrusive investigation subject to the findings of the desk study.
Groundwater	<ul style="list-style-type: none"> • No further specific groundwater work is planned, however the geological and hydrogeological understanding will be updated based on any geotechnical investigations for the site including information on depth to

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Environmental topic	Planned further studies/surveys
	groundwater.
Surface water	<ul style="list-style-type: none"> No further surface water survey is proposed.

d) Assessment methodology

8.2.14 The approach to assessment and methodology to be undertaken in relation to the northern park and ride site is the same as that for the Main Development Site. See **Section 7** for details.

e) Potential impacts and effects

8.2.15 **Table 8.2** details the potential impacts that may give rise to environmental effects. These are based on the current known baseline conditions, which are subject to further studies/surveys outlined in **Table 8.1**. Where it is considered that effects are unlikely, prior to applying mitigation, these have been identified and scoped out, where applicable.

8.2.16 An assessment of the potential impacts and effects during the post-operational phase of the park and ride facility will be assessed within the ES.

Table 8.2: Northern park and ride – potential impacts and effects

Environmental topic	Potential impacts and effects
Terrestrial ecology and ornithology	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Potential loss of habitat features suitable for use by great crested newts, such as hedgerows and other field boundaries. Potential disturbance from noise and lighting to birds, bats roosts in trees and woodland area; and potential minor loss of foraging habitat. Potential diffuse pollution from surface water runoff affecting the Minsmere River and Darsham Marshes. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Noise and lighting disturbance to roosting and foraging bat species. Water quantity and quality issues from the site affecting Minsmere River and Darsham Marshes.
Landscape and visual	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance from construction activities and the movement of vehicles and plant. Changes to the existing environment due to removal of vegetation and introduction of new features including soil storage areas, vegetation, infrastructure and buildings. Visual impact arising from construction lighting at night, causing potential disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Changes to the landscape and views due to transport infrastructure and introduction of new landscape features, structures and ancillary features. Change in traffic movement along the road network during operation. Visual impact arising from operational lighting at night, causing potential disturbance.

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Environmental topic	Potential impacts and effects
Amenity and recreation	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Changes to baseline views and disturbance of nearby PRow resulting from construction activities, increased traffic movement, construction noise, dust and other emissions. • Disturbance to amenity and recreation assets and public open space within the study area from a range of activities, including construction noise, traffic noise, dust and other emissions and visual disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • Diminished enjoyment of PRow in the vicinity of the development resulting from general site activity, traffic, noise, dust and other emissions and views to the development.
Terrestrial historic environment	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • The nature and extent of buried archaeological remains across the construction site has not yet been determined, although there is the potential for the permanent loss of buried archaeological remains during construction. • There is the potential for temporary impacts to the settings of designated heritage assets in the vicinity of the construction site. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • There is the potential for impacts to the settings of designated heritage assets in the vicinity of the site during operation.
Noise and vibration	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Occupiers of nearby dwellings and other sensitive receptors may experience noise impacts during construction of the park and ride sites. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • There is generally likely to be minimal noise and vibration impact at this site during the operational phase due to the anticipated relatively high noise levels from the existing A12 and the propagation distances between noise sources and most receptors. However, some impacts are possible at the closest receptors (i.e. nearby residential receptors) and these may need some mitigation, such as screening.
Air quality	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • There may be adverse effects for transport routes to and from the northern park and ride site. These effects will be considered further as part of the assessment.
Soils and agriculture	<ul style="list-style-type: none"> • Development of this site may result in soil damage/loss of fertility but with appropriate soil handling procedures significant impacts are unlikely.
Geology and land quality	<ul style="list-style-type: none"> • Potential contamination from the nearby petrol filling station, and any other potential sources of contamination, will be identified in the risk assessment
Groundwater	<ul style="list-style-type: none"> • Development of this site may result in some disturbance of soils, but as this is a greenfield site the risk of any impacts to groundwater quality are low. Construction of areas of hardstanding (car parking) have the potential to reduce infiltration to groundwater, but as the area is underlain by boulder clay, the magnitude of any change in infiltration is likely to be very low. Therefore it is proposed that a detailed assessment is not necessary.

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Environmental topic	Potential impacts and effects
Surface water	<ul style="list-style-type: none"> Given the control measures that will be in place and that watercourses are not located in close proximity the site, it is proposed that the northern park and ride site is scoped out of requiring any further assessment in relation to surface water impacts.

f) Potential mitigation measures

8.2.17 The majority of the potential mitigation measures, detailed in **Table 8.3**, comprise embedded mitigation, which could be incorporated into the design of the northern park and ride site to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation. Additional mitigation measures will also form part of the ongoing assessment and will be described within the ES.

Table 8.3: Northern park and ride – potential mitigation measures

Environmental topic	Potential mitigation measures
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> Retain existing woodland and protection of any bat roost trees. Minimise light spill into woodland. Landscape Strategy to consider incorporating suitable habitats for any impacted species, as appropriate.
Landscape and visual	<ul style="list-style-type: none"> Optimise land use to reduce/mitigate significant adverse landscape and visual effects where reasonably practicable. Design and treatment of structures and associated infrastructure, including lighting, access and fencing, to minimise significant adverse landscape and visual effects including at night. Retain existing screening landscape features where reasonably practicable and promote appropriate new landscape design (planting and landform) to mitigate significant adverse landscape and visual effects of the proposed development.
Amenity and recreation	<ul style="list-style-type: none"> Orchestration of Rights of Way closures and diversions, where practicable, and provision of a comprehensive construction phase masterplan. Re-establishment of former PRow and realignment of Permissive paths where practicable and establish recreation areas as part of the EDF Energy Estate Landscape Strategy. Plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable.
Terrestrial historic environment	<ul style="list-style-type: none"> For buried archaeological remains and palaeoenvironmental deposits mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects from construction. Any significant effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be feasible, enhancements to the asset or its immediate setting may be considered.
Noise and vibration	<ul style="list-style-type: none"> Some local acoustic screening or planting could be introduced where necessary in line with the Landscape Strategy.

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Environmental topic	Potential mitigation measures
Air quality	<ul style="list-style-type: none">• Construction dust would be controlled through the implementation of standard dust management techniques.• The need for road traffic air quality mitigation would be considered for the Main Development Site and off-site associated development as a whole.
Soils and agriculture	<ul style="list-style-type: none">• Use of appropriate soil handling procedures.
Geology and land quality	<ul style="list-style-type: none">• To be considered subject to the proposed risk assessment.
Groundwater	<ul style="list-style-type: none">• Mitigation of any spills or leaks will be in accordance with the Environment Agency Pollution Prevention Guidelines.
Surface water	<ul style="list-style-type: none">• Since the site has been scoped out from requiring further assessment, mitigation is not required.

g) Approach to inter-relationships and cumulative assessment

8.2.18 Each environmental topic has outlined the approach to inter-relationships and cumulative assessment within the Main Development Site in respect of the relevant topic (see **Section 7**). The same process will apply to the northern park and ride site.

8.3 Southern park and ride

a) Description of the off-site associated development site

- 8.3.1 The park and ride site at Wickham Market (see **Figure 8.3.1**) is located north-east of Wickham Market between the A12 and B1078/B1116. The site comprises three areas: an indicative Wickham Market site (approximately 20.47ha) and additional land identified for potential development (approximately 22.84ha). The indicative Wickham Market site has the B1078/B1116 to the west and the A12 carriageway to the south. The site also includes the land between the A12 slip road and the A12 dual carriageway. The additional land for potential development is located immediately adjacent and to the east of the Wickham Market site. This site would occupy a smaller area than is currently identified. Both distinct areas are defined by field boundaries and two wooded copses to their eastern and northern boundaries.
- 8.3.2 Similar to the northern park and ride site, land requirements for facilities have been estimated based on the following:
- car parking areas with up to approximately 1,000 spaces per site;
 - bus terminus and parking, including shelters;
 - perimeter security fencing and lighting;
 - welfare building including toilets, drivers rest room, and security and administration offices;
 - on-site soil storage pending site restoration once Sizewell C is built; and
 - external areas including roadways, footways, landscaping and drainage.
- 8.3.3 Additionally, the possibility of co-locating an induction centre for construction workers and a postal consolidation facility – either within the northern or southern park and ride - is being considered.

b) Site and surrounding environmental conditions

- 8.3.4 The closest private residential properties are located to the west of the site at Ash View, some 100m away on the main road and Glevering Lodge, approximately 180m to the west. These dwellings benefit from existing tree screening.
- 8.3.5 The River Deben is located approximately 400m to the west. No statutory designated sites were found to be located within 5km of the proposed location. The site is located outside the area designated as the Suffolk Coast and Heaths AONB which is approximately 5km to the south-east. The site is also outside the designated SLA. The SLA occupies land immediately to the south and west of the site and to the north and east, at a distance of approximately 1.5km. There is a pond within the site boundary which could support ecologically sensitive species.
- 8.3.6 The site is located in the Plateau estate farmlands landscape character type which is described in the Suffolk County Landscape Character Assessment. The westernmost portion of the site lies partially within the adjacent Rolling estate claylands landscape character type. The Plateau estate farmlands landscape character type is described as gently rolling or flat plateau formed from a mixture of glacial deposits. Arable farmland predominates with grassland confined to parklands

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and occasional paddocks. Woodland cover is scattered, mostly in the form of rectangular plantations and coverts. Settlement across the Plateau estate farmland consists of dispersed hamlets and farmsteads and the town of Wickham Market.

- 8.3.7 An initial desk based study has identified there are a number of PRow, including footpaths and bridleways to the north, south, east and west of the site, with a number in close proximity to the southern site boundary and within the River Deben floodplain, and between the indicative Wickham Market site and additional land identified for potential development. There is a bridleway crossing the northern fields which passes a disused pit before heading north-west towards the B1116. There are no areas of Open Access Land within the study area.
- 8.3.8 The Roman settlement of Hacheston was the subject of geophysical survey and large area excavations in 1973-4 prior to construction of the A12 Wickham Market bypass (Blagg et. al, 2004). It appears to consist of a road and circular buildings, enclosed by ditches and a palisade. During the latter first century AD, a gravel road line was laid out and insubstantial rectangular buildings were constructed alongside it. This basic layout continues throughout the Roman period, with a driveway and partial field enclosures recorded to the south. Pottery kilns dating from the latter first and mid-third centuries AD were uncovered on the site in the 1960s and 1970s (Blagg et. al, 2004). The 2013 geophysical survey recorded a series of linear anomalies, presumably representing fields and enclosures, sub-circular anomalies possibly representing structures and two sides of a sub-rectangular enclosure which could be the remains of a Roman marching camp.
- 8.3.9 There is currently no baseline noise data available for this site but it is evident that noise from the A12 is high in the vicinity of the site. Monitoring data for NO₂ has been collected in background locations and along key nearby transport routes (e.g. A12) and data has also been collected by SCDC.
- 8.3.10 The soils are deep, well drained loams over slowly permeable sub-soils and are classified as ALC grade 3 (undifferentiated). There are no designated geological sites within 500m of the site or any known sources of ground contamination.
- 8.3.11 The indicative Wickham Market site is underlain by the Lowestoft sand and gravels (Secondary Superficial aquifer) and the additional land for potential development is underlain by the Lowerstoft Diamicton (boulder clay). These superficial deposits overlie the Crag (Principal Aquifer). The park and ride site lies within an outer Source Protection Zone (SPZ2), although the abstraction is located approximately 2km to the south-south-east. The nearest licensed groundwater abstraction is located on the eastern edge of the park and ride area.
- 8.3.12 **Figure 8.3.1** illustrates the key environmental constraints for the southern park and ride site.

c) Planned further studies/surveys

- 8.3.13 **Table 8.4** summarises the potential studies/surveys that are still required for the southern park and ride site.

Table 8.4: Southern park and ride – planned further studies/surveys

Environmental topic	Planned further studies/surveys
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • An extended Phase 1 habitat and protected species survey. • Surveys to determine presence or absence of great crested newts. • Survey to assess the potential for bats to roost in the shelterbelt woodland present.
Landscape and visual	<ul style="list-style-type: none"> • Views and visibility: ZTV modelling for the southern park and ride site development proposals. • Carry out assessment based on agreed methodology, study area and viewpoints. • Baseline landscape/ character: Review and update landscape baseline for the southern park and ride site for agreed study area. • Develop design principles for southern park and ride site and develop masterplan and mitigation strategy to assist in the integration of the development and reduction of significant adverse effects.
Amenity and recreation	<ul style="list-style-type: none"> • Baseline recreation and amenity research will be undertaken including field survey and desk top analysis including the identification of: <ul style="list-style-type: none"> ○ cycle routes and their use; ○ the extent and use of PRow and Permissive paths; ○ preparation of principles for construction phase based on those developed for Main Development Site; and ○ preparation of initial diversion strategy related to temporary works (construction phase) masterplanning.
Terrestrial historic environment	<ul style="list-style-type: none"> • Further desk studies and additional geophysical survey to update and expand the existing baseline are currently being undertaken; and • A programme of trial trenching will be agreed with SCCAS to confirm the presence/absence of archaeological remains, establish the nature, date and extent of archaeological remains within the site boundaries and inform proposals for mitigation to be agreed with SCCAS and English Heritage for inclusion in the ES.
Noise and vibration	<ul style="list-style-type: none"> • A baseline survey is planned for this site to be carried out in Q2 of 2014. Monitoring sites are as identified by Figure 8.3.2. Below shows a list of planned monitoring locations: <ul style="list-style-type: none"> ○ PRS1 – To assess local noise impact from the southern park and ride at dwellings to the south of Hasketon. ○ PRS2 – Close to The Lodge. To assess local noise impact from the southern park and ride site. ○ PRS3 – Close to Ash View. To assess local noise impact from the southern park and ride site.
Air quality	<ul style="list-style-type: none"> • No further surveys (as part of either the construction or operation phase assessment) are planned for the southern park and ride site, due to the availability of existing data.
Soils and agriculture	<ul style="list-style-type: none"> • Soil survey in accordance with standard ALC methodology.
Geology and land quality	<ul style="list-style-type: none"> • Phase 1 ground contamination desk study and potential intrusive investigation subject to the findings of the desk study.
Groundwater	<ul style="list-style-type: none"> • No further specific groundwater work is planned. However the geological and hydrogeological understanding will be updated based on any

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Environmental topic	Planned further studies/surveys
	geotechnical investigations for the site including information on depth to groundwater.
Surface water	<ul style="list-style-type: none"> No further surface water survey is proposed.

d) Assessment methodology

8.3.14 The approach to assessment and methodology to be undertaken in relation to the southern park and ride site is the same as that for the Main Development Site. (See **Section 7** for details).

e) Potential impacts and effects

8.3.15 **Table 8.5** details the potential impacts that may give rise to environmental effects. These are based on the current known baseline conditions, which are subject to further studies/surveys outlined in **Table 8.4**. Where it is considered that effects are unlikely, prior to applying mitigation, these have been identified and scoped out, where applicable.

8.3.16 An assessment of the potential impacts and effects during the post-operation phase of the southern park and ride site will be assessed within the ES.

Table 8.5: Southern park and ride – potential impacts and effects

Environmental topic	Potential impacts and effects
Terrestrial ecology and ornithology	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Potential loss of habitat features (such as hedgerows) suitable for use by great crested newts and habitat features for ground-nesting birds. Potential disturbance to roosting bats from noise and lighting. Diffuse pollution from surface water runoff affecting the River Deben. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Noise and lighting disturbance to roosting and foraging bat species; and Increased surface water discharge to the River Deben.
Landscape and visual	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance from construction activities and the movement of vehicles and plant. Changes to the existing environment due to removal of vegetation and introduction of new features including soil storage areas, vegetation, infrastructure and buildings. Visual impact arising from construction lighting at night, causing potential disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Changes to the landscape and views due to transport infrastructure and introduction of new landscape features, structures and ancillary features. Change in traffic movement along the road network during operation. Visual impact arising from operational lighting at night, causing potential disturbance.
Amenity and	Construction of the off-site associated development

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Environmental topic	Potential impacts and effects
recreation	<ul style="list-style-type: none"> Changes to baseline views and disturbance of nearby PRow resulting from construction activities, increased traffic movement, construction noise, dust and other emissions. Disturbance to amenity and recreation assets and public open space within the study area from a range of activities, including construction noise, traffic noise, dust and other emissions and visual disturbance. Possible closure or diversion of PRow. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Diminished enjoyment of PRow in the vicinity of the development resulting from general site activity, traffic, noise, dust and other emissions and views to the development.
Terrestrial historic environment	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> The nature and extent of buried archaeological remains across the construction site has not yet been determined, although there is the potential for the permanent loss of buried archaeological remains during construction. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Owing to the site location, topography and proposed layout there are unlikely to be any adverse impacts to the settings of designated heritage assets in the vicinity of the southern park and ride site.
Noise and vibration	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Occupiers of nearby dwellings and other sensitive receptors may experience noise impacts during construction of the park and rides. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> There is likely to be minimal noise and vibration impact at this site during the operation phase due to the relatively high noise levels from the existing road; the distance of nearby dwellings to the site and local topography which will attenuate noise significantly.
Air quality	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> There may be adverse effects for transport routes to and from the park and ride site. These effects will be considered further as part of the assessment.
Soils and agriculture	<ul style="list-style-type: none"> Development of this site may result in soil damage/loss of fertility but with appropriate soil handling procedures significant impacts are unlikely.
Geology and land quality	<ul style="list-style-type: none"> There are no known contamination risks, however, any other potential sources of contamination will be identified in the risk assessment.
Groundwater	<ul style="list-style-type: none"> Development of the site would result in some disturbance of soils and the construction of areas of hardstanding (car parking) with the potential to reduce infiltration to groundwater. The assessment will consider whether any changes in infiltration are significant and whether surface water drainage from hardstanding areas could represent a risk to groundwater resources.
Surface water	<ul style="list-style-type: none"> Given the controls that will be in place and that, for the southern park and ride site, watercourses are not located in close proximity, it is proposed that this site is scoped out of requiring any further assessment in relation to surface water impacts.

f) Potential mitigation measures

8.3.17 The majority of the potential mitigation measures, detailed in **Table 8.6**, comprise embedded mitigation, which could be incorporated into the design of the southern park and ride site to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation. Additional mitigation measures will also form part of the ongoing assessment and will be described in the ES.

Table 8.6: Southern park and ride – potential mitigation measures

Environmental topic	Potential mitigation measures
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • Minimisation of light spill into shelterbelt woodland. • Pollution prevention and control measures during construction and attenuation of surface water during operation. • Additional landscape planting providing suitable foraging habitat for great crested newts and bats.
Landscape and visual	<ul style="list-style-type: none"> • Mitigation proposals are likely to include the following measures: <ul style="list-style-type: none"> ○ plan the construction and operational phases of the proposed southern park and ride site development to optimise land use to reduce/mitigate significant adverse landscape and visual effects where reasonably practicable; ○ design and treatment of structures and associated infrastructure, including lighting, access and fencing, to minimise landscape and visual effects including at night; and ○ retain existing screening landscape features where reasonably practicable and promote appropriate new landscape design (planting and landform) to mitigate significant adverse landscape and visual effects of the proposed development.
Amenity and recreation	<ul style="list-style-type: none"> • Orchestration of Rights of Way closures and diversions, where practicable, and provision of a comprehensive construction phase masterplan. • Re-establishment of former PRoW and realignment of Permissive paths where practicable and establish recreation areas as part of the EDF Energy Estate Landscape Strategy. • Plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable.
Terrestrial historic environment	<ul style="list-style-type: none"> • For buried archaeological remains and palaeoenvironmental deposits mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any adverse effects from construction. • Any significant effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be feasible, enhancements to the asset or its immediate setting may be considered.
Noise and vibration	<ul style="list-style-type: none"> • Some local acoustic screening or planting could be introduced where necessary in line with the Landscape Strategy.
Air quality	<ul style="list-style-type: none"> • Construction dust would be controlled through the implementation of standard dust management techniques; and • The need for road traffic air quality mitigation would be considered as for the

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Environmental topic	Potential mitigation measures
	Main Development Site and off-site associated development as a whole.
Soils and agriculture	<ul style="list-style-type: none">• Use of appropriate soil handling procedures.
Geology and land quality	<ul style="list-style-type: none">• To be considered subject to the proposed risk assessment.
Groundwater	<ul style="list-style-type: none">• The assessment will consider the decrease in recharge and mitigation through the management of surface water runoff including the use of sustainable drainage systems. The risk to groundwater quality from any surface water drainage will also be assessed.• Mitigation of any spills or leaks will be in accordance with the Environment Agency Pollution Prevention Guidelines.
Surface water	<ul style="list-style-type: none">• Since the site has been scoped out from requiring further assessment, mitigation is not required.

g) Approach to inter-relationships and cumulative assessment

- 8.3.18 Each environmental topic has outlined the approach to inter-relationships and cumulative assessment within the Main Development Site in respect of the relevant topic (see **Section 7**). This same process will apply to the southern park and ride site.

8.4 Rail line extension

a) Description of the off-site associated development site

i. Blue and green route options

- 8.4.1 Either the blue or green route options (see **Figure 8.4.1**) would provide a temporary extension of the Saxmundham to Leiston branch rail line into the construction area.
- 8.4.2 The blue route spurs off the existing Saxmundham-Leiston branch line shortly after the Westhouse level crossing. Travelling north it crosses Abbey Lane and then Harrow Lane, running along open countryside in the area of the former airfield. The route then turns east running to the north of Hill Farm, the remains of Leiston Abbey and the Pro Corda music school. After crossing the B1122 the route runs to the south of EDF Energy's lead site for the campus accommodation, to the north of Upper Abbey farm buildings and into the proposed construction area.
- 8.4.3 The green route spurs off the existing Saxmundham-Leiston branch line shortly after the Saxmundham Road level crossing. Travelling north it crosses Buckleswood Road and then traverses open countryside to the north of Leiston and to the south of Abbey Lane and the remains of Leiston Abbey. After crossing Abbey Road the route enters the proposed construction area to the north of Lovers Lane and in the vicinity of the Fiscal Policy woodland.
- 8.4.4 For both the blue and green route, there would be around five freight trains per day delivering materials during the peak phase of the construction phase of the Main Development Site, which is equivalent to ten train movements per day.

ii. New freight terminal and freight laydown area option

- 8.4.5 A new rail terminal north of King George's Avenue (see **Figure 8.4.1**) is being considered. This would be located on land to the north east of Leiston industrial estate, which is included within the Main Development Site construction area. It would be used for unloading and storing rail freight for onward delivery to the Main Development Site. This location would avoid the use of the level crossing on King George's Avenue and the land may be used as a temporary area for freight storage, pre-fabrication and laydown during the construction phase, irrespective of whether it becomes the location for a new rail head.

b) Site and surrounding environmental conditions

- 8.4.6 The rail options pass in close proximity to Sizewell Marshes SSSI. Eight statutory designated sites are located within 5km of the proposed rail routes, these are as follows: Minsmere-Walberswick (SPA, SAC and SSSI located 1.3km north east), the Sandlings (SPA and SSSI located 2.1km to the south). Two further SSSIs are located within 5km of the, Sizewell Marshes SSSI, (415m to the east) and Leiston-Aldeburgh SSSI (2km to the south). A single NNR, Westleton Heath is located 4.9km to the north.
- 8.4.7 The blue and green route options lie partially within the Suffolk Coast and Heaths AONB. The blue route also extends into an area defined as the Suffolk Heritage Coast and designated as Special Landscape Area. Both routes extend across two principal landscape character types described in the Suffolk County Landscape

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Character Assessment; the Ancient estate claylands and the Estate sandlands. The Ancient estate claylands is described as being characterised by arable land use, with fields interspersed with deciduous copses with a settlement pattern of occasional villages and numerous dispersed hamlets and farmsteads. The Estate sandlands is described as a gently rolling plateau of freely-draining sandy soils with arable land uses, plantation woodlands and a sparse settlement pattern. The freight terminal option is located outside the Suffolk Coast and Heaths AONB, Suffolk Heritage Coast and area designated as a SLA. It is located within the Estate sandlands.

- 8.4.8 Both the blue and green route options cross a number of PRow, including the Sandlings Walk and Suffolk Coastal Path long distance paths. Permissive routes include those around Goose Hill and Kenton Hills. A limited number of areas of Open Access Land occur beyond the rail line extensions and within the study area(s), including Leiston Common to the south and Theberton Woods to the north.
- 8.4.9 There are no Scheduled Monuments or Listed Buildings within the rail route boundaries. The green option would pass close to a number of designated heritage assets including Leiston House, a Grade II* Listed building, Fisher's Farm House, a Grade II Listed Building, and Leiston Abbey, which is both a Scheduled Monument and a Grade I Listed Building with associated Grade II buildings. Cropmark features, of possible prehistoric date, have been identified in the fields to the north-east of Buckleswood Road and to the north of Fiscal Policy woodland. Surface scatters of Romano-British and medieval pottery and metal detector finds, including a Bronze Age sword hilt fragment and Roman coins, have been recovered from the fields along the route.
- 8.4.10 The blue route would pass to the north of Hill Farm, a Grade II Listed Building, which dates originally from the 16th/17th century, passing approximately 250m to the north of the curtilage of Leiston Abbey and would pass close to Abbey Cottage and Upper Abbey Farmhouse, which are both Grade II Listed, and the 18th century Grade II Listed barn. Further to the east, the blue route coincides with an earthwork mound of uncertain origin, variously recorded as a possible prehistoric barrow or a landscape feature/folly mound of late 18th or 19th century date, in the corner of woodland adjacent to Abbey Road.
- 8.4.11 There is currently no baseline noise data available for the rail routes. Monitoring data has previously been gathered for SO₂ within the area, including at Leiston Railhead and NO₂ data has also been collected in background locations and along key transport routes (e.g. A12).
- 8.4.12 The blue and green route options are mainly underlain by the Lowerstoft Diamicton (boulder clay) along their western and central sections and by the Lowestoft Sand and Gravels (Secondary Superficial Aquifer) in the east. The new rail terminal and freight laydown area is underlain by boulder clay and sand gravels. These superficial deposits overlie the Crag (Principal Aquifer). The rail line extensions and the new rail terminal area do not cross a Source Protection Zone.
- 8.4.13 There are no watercourses located within or adjacent to the option for a new rail terminal and freight laydown area or the green route. The blue route is located close to the Hundred River. This is a designated WFD heavily modified water body, which is currently considered to have 'poor' ecological potential.

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8.4.14 **Figure 8.4.1** illustrates the key environmental constraints for the rail line extension options.

c) Planned further studies/surveys

8.4.15 EDF Energy is progressing more detailed design work on the rail route options both within and outside the construction area. This includes consideration of how any affected areas of the highway network and public footpaths will be crossed, which in turn has implications for the precise horizontal and vertical alignment adopted and the associated land take. In addition to the land take required for the rail route itself there is likely to be some requirement for storage of surplus earthworks adjacent to the routes in some locations – again the precise extent and location of these is subject to further work. EDF Energy will publish more detailed proposals in this area as part of consultation.

8.4.16 In addition to the above, **Table 8.7** summarises the other potential studies/surveys that are still required for the Rail line extension options.

Table 8.7: Rail line extension options – planned further studies/surveys

Environmental topic	Planned further studies/surveys
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • An extended Phase 1 habitat and protected species survey. • Surveys to determine presence or absence of great crested newts. • Survey to assess the potential for bats to roost in the woodland blocks and to forage/commute along the hedgerows present. • Surveys to determine the presence or absence of reptiles (most likely to be slow worm and common lizard). • Breeding bird surveys to assess the importance of the habitats affected for nesting and foraging bird species.
Landscape and visual	<ul style="list-style-type: none"> • Views and visibility: ZTV modelling for the selected rail route option development proposals. • Carry out assessment based on agreed methodology, study area and viewpoints. • Baseline landscape/ character: Review and update landscape baseline for the selected rail route option for agreed study area. • Develop design principles for the selected rail route option and develop mitigation strategy to assist in the integration of the development and reduction of adverse effects.
Amenity and recreation	<ul style="list-style-type: none"> • Baseline recreation and amenity research will be undertaken including field survey and desk top analysis including the identification of: <ul style="list-style-type: none"> ○ cycle routes and their use; ○ the extent and use of PRoW and Permissive paths; ○ user surveys for PRoW and recreational assets (to utilise information gathered as part of the Main Development Site); ○ preparation of principles for construction phase based on those developed for the rail extension options; and ○ preparation of initial diversion strategy related to temporary works (construction phase) masterplanning.
Terrestrial historic environment	<ul style="list-style-type: none"> • Following completion of the DBA, it is proposed that staged archaeological investigation will be carried out across the preferred option. This would comprise a geophysical survey followed by a programme of trial trenching

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Environmental topic	Planned further studies/surveys
	to confirm the presence/absence of archaeological remains, establish the nature, date and extent of any archaeological remains within the site boundary and inform proposals for mitigation to be agreed with SCCAS and English Heritage for inclusion in the ES.
Noise and vibration	<ul style="list-style-type: none"> A baseline survey is planned for this site to be carried out in Q2 2014. Monitoring sites are as identified by Figure 7.7.4 (as part of the Main Development Site noise survey plan)
Air quality	<ul style="list-style-type: none"> No further surveys (as part of either the construction or operation phase assessment) are planned for the rail line extension options, due to the availability of existing data.
Soils and agriculture	<ul style="list-style-type: none"> Soil survey to be undertaken in accordance with standard ALC methodology.
Geology and land quality	<ul style="list-style-type: none"> Phase 1 ground contamination desk study and potential intrusive investigation subject to the findings of the desk study.
Groundwater	<ul style="list-style-type: none"> No further specific groundwater work is planned, however the geological and groundwater understanding will be updated based on any geotechnical investigations.
Surface water	<ul style="list-style-type: none"> No further survey is proposed for the green route and rail terminal options. The requirement for further studies for the blue route option will be reviewed as scheme design and consultation progresses.

d) Assessment methodology

8.4.17 The approach to assessment and methodology to be undertaken in relation to the rail line extension options is the same as that for the Main Development Site (see **Section 7** for details).

e) Potential impacts and effects

8.4.18 **Table 8.8** details the potential impacts that may give rise to environmental effects. These are based on the current known baseline conditions, which are subject to further studies/surveys outlined in **Table 8.7**. Where it is considered that effects are unlikely, prior to applying mitigation, these have been identified and scoped out, where applicable.

8.4.19 An assessment of the potential impacts and effects during the post-operation phase of the rail line extension will be assessed within the ES.

Table 8.8: Rail line extension options – potential impacts and effects

Environmental topic	Potential impacts and effects
Terrestrial ecology and ornithology	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Potential habitat loss and fragmentation for a variety of species. Potential loss of trees suitable for roosting bats and/or nesting birds. Possible severance of bat commuting routes (especially for barbastelle bats).

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Environmental topic	Potential impacts and effects
	<ul style="list-style-type: none"> Diffuse pollution from surface water runoff affecting Sizewell Marshes SSSI. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Noise disturbance to birds and roosting bats and continued severance of bat commuting routes (especially for barbastelle bats).
Landscape and visual	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance from construction activities and the movement of vehicles and plant. Changes to the existing environment due to removal of vegetation and introduction of new features including soil storage areas, vegetation, infrastructure and buildings. Visual impact arising from construction lighting at night, causing potential disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Changes to the landscape and views due to transport infrastructure and introduction of new landscape features, structures and ancillary features. Increase in rail traffic movement during operation. Visual impact arising from operational lighting at night, causing potential disturbance.
Amenity and recreation	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance and diversion of nearby PRoW resulting from construction activities including increased traffic movement, construction noise, dust and other emissions, and visual disturbance. Disturbance to amenity and recreation assets within the study area and public open space from a range of activities, including construction noise, traffic noise, dust and other emissions, and visual disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Diminished enjoyment of PRoW in the vicinity of the development resulting from general site activity, traffic noise, dust and other emissions and views to the development.
Terrestrial historic environment	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> The nature and extent of buried archaeological remains has not yet been determined. However, there is the potential for the permanent loss of buried archaeological remains during construction. There is the potential for temporary impacts to the settings of designated heritage assets in the vicinity of the green and blue routes. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> There is the potential for impacts to the settings of designated heritage assets in the vicinity of the green and blue routes.
Noise and vibration	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Occupiers of nearby dwellings and other sensitive receptors may experience noise impacts during construction. Vibration impacts may be noticeable in close proximity to the rail line during the construction phase but would be unlikely to pose a risk of damage to structures, even at the closest receptors. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Operation of rail routes and rail heads has the potential to cause adverse impacts on sensitive receptors in close proximity, although only for a relatively short duration as the trains travel to and from site.

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Environmental topic	Potential impacts and effects
	<ul style="list-style-type: none"> Vibration impacts may be noticeable in close proximity to the rail line during the operation phase but would be unlikely to pose a risk of damage to structures, even at the closest receptors.
Air quality	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk. Additional road traffic visiting the rail head during construction has the potential to adversely affect air quality at receptors within 200m of transport routes used. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> The operation of rail traffic and stationary locomotives have the potential to affect nearby sensitive receptors (e.g. residential properties) within 30m. Additional road traffic visiting the rail head during operation has the potential to adversely affect air quality at receptors within 200m of transport routes used.
Soils and agriculture	<ul style="list-style-type: none"> Development may result in soil damage/loss of fertility.
Geology and land quality	<ul style="list-style-type: none"> There are no known contamination risks, however, any other potential sources of contamination will be identified in the risk assessment.
Groundwater	<ul style="list-style-type: none"> The construction of the rail lines is unlikely to impact on groundwater and, therefore, will not be considered in detail as part of the assessment. Development of the new rail terminal and freight laydown area may result in some disturbance of soils, but as this is a greenfield site the risk of any impacts to groundwater quality are low. Construction of buildings and areas of hardstanding have the potential to reduce infiltration to groundwater, but as the area is partly underlain by boulder clay, the magnitude of any change in infiltration is likely to be low. Therefore it is proposed that no further assessment is necessary.
Surface water	<p>For both the green route and new rail terminal options, watercourses are not located in close proximity to the proposals. It is therefore proposed that these two options are scoped out of requiring any further assessment in relation to surface water impacts.</p> <p>In relation to the blue route, the potential impacts and effects include:</p> <p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Given the location of blue route across the upper reaches of the Hundred River, the creation of embankments and culverting could impact on surface water runoff during construction. Additionally, runoff could increase the potential for pollution associated with soil erosion and accidental spills of hydrocarbon or construction materials or post-operation activities. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> During operation, it is proposed that a drainage system will be installed to collect surface water runoff during storm conditions which will be discharged to local watercourses. The impact of culverting sections of watercourses will also need to be considered.

f) Potential mitigation measures

8.4.20 The majority of the potential mitigation measures detailed in **Table 8.9** comprise embedded mitigation, which could be incorporated into the design of the rail extension options to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation. Additional mitigation measures will also form part of the ongoing assessment and will be described within the ES.

Table 8.9: Rail line extension – potential mitigation measures

Environmental topic	Potential mitigation measures
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • Keeping rail routes to a minimum width to reduce habitat loss and fragmentation. • Ensuring that important bat commuting routes are maintained across the line and wider construction area. • Pollution prevention and control measures during construction.
Landscape and visual	<ul style="list-style-type: none"> • Plan the construction and operational phases of the selected rail route option development to optimise land use to reduce/mitigate significant adverse landscape and visual effects where reasonably practicable. • Design and treatment of infrastructure, including lighting, access and fencing, to minimise landscape and visual effects including at night. • Retain existing screening landscape features where reasonably practicable and promote appropriate new landscape design (planting and landform) to mitigate significant adverse landscape and visual effects of the proposed development. • Establish new planting and landform at the earliest reasonable opportunity.
Amenity and recreation	<ul style="list-style-type: none"> • Orchestration of Rights of Way closures and diversions, where practicable, and provision of a comprehensive construction phase masterplan. • Re-establishment of former PRoW and realignment of Permissive paths where practicable and establish recreation areas as part of the EDF Energy Estate Landscape Strategy. • Plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable.
Terrestrial historic environment	<ul style="list-style-type: none"> • For buried archaeological remains mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects from construction. • Significant adverse effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be feasible, enhancements to the asset or its immediate setting may be considered to offset the overall impact. • The need for further specific assessment work on Leiston Abbey, for example, to inform any mitigation planting, will be discussed and agreed with English Heritage.
Noise and vibration	<ul style="list-style-type: none"> • This will depend on which option is selected. Options include various mitigation measures (dependent on circumstances) and physical screening, where necessary and feasible.
Air quality	<ul style="list-style-type: none"> • Construction dust would be controlled through the implementation of standard dust management techniques. • No other specific mitigation for road traffic or rail traffic is anticipated to be required.

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Environmental topic	Potential mitigation measures
Soils and agriculture	<ul style="list-style-type: none">• Use of appropriate soil handling procedures.
Geology and land quality	<ul style="list-style-type: none">• To be considered subject to the proposed risk assessment.
Groundwater	<ul style="list-style-type: none">• The assessment will consider the decrease in recharge and mitigation through the management of surface water runoff. The risk to groundwater quality from any surface water drainage will also be assessed.• Mitigation of any spills or leaks will be in accordance with the Environment Agency Pollution Prevention Guidelines.
Surface water	<ul style="list-style-type: none">• Control measures will be built into the construction process which will require consideration of the drainage implications of the works during the construction of the railway line, and removal of any potential risks associated with hydrocarbon contamination from vehicles and accidental spillages.• Impacts associated with operational effects such as changes to hydrology and drainage will be considered further within the FRA which will inform any further mitigation measures required.

g) Approach to inter-relationships and cumulative assessment

- 8.4.21 Each environmental topic has outlined the approach to inter-relationships and cumulative assessment within the Main Development Site in respect of the relevant topic (see **Section 7**). This same process will apply to the rail extension options.

8.5 A12 improvement – Farnham Bend

a) Description of the off-site associated development site

8.5.1 Preliminary findings set out in Stage 1 consultation identified the likely requirement for options to mitigate the impact of the Main Development Site traffic on the narrow bend at Farnham. Three possible permanent solutions (see **Figure 8.5.1**) were identified including:

- a Farnham bypass;
- road widening at Farnham Bend; and
- HGV traffic controls at Farnham Bend.

i. Farnham bypass

8.5.2 The Farnham bypass would be located north of Farnham village. It would be approximately 1km in length and comprise a single-lane carriageway in each direction. At the southern end of the route it would adjoin the existing A12 close to Stratford St Andrew and at the northern end it would adjoin the existing A12 north of Farnham.

ii. Road widening at Farnham Bend

8.5.3 The road widening at Farnham Bend would require the demolition of a single Grade II Listed property at the Farnham Bend to allow for carriageway widening and an amended junction with the A12.

iii. HGV traffic controls at Farnham Bend

8.5.4 The HGV traffic controls would involve the use of an automated traffic control monitoring system to detect oncoming HGVs and prevent two passing through Farnham Bend at the same time.

b) Site and surrounding environmental conditions

8.5.5 The surrounding landscape supports 15 - 20 ponds within 500m. Nine statutory designated sites are located within 5km of the proposed location of the Farnham bypass, these are as follows: Alde-Ore Estuary (SPA, SAC, SSSI and Ramsar located 4.3km south-east), the Sandlings (SPA and SSSI, located 3.3km to the south). An additional four SSSI site are within 5km; Gromford Meadow (2.7km to the south-east); Snape Warren (4.6km to the south-east); Iken Wood (4.8km to the south-east) and Blaxhall Heath (3.3km to the south). Seven non-statutory designated CWS are located within 2km of the proposed location of the Farnham bypass, these are; Benhall Churchyard (1.5km northeast); Great Wood (2km west); Manor Farm Meadows (1.6km east); Denney's Grove (2km north-west); Farnham Churchyard (350m south); Foxburrow Wood (875m south) and Great Glemham Wood (2km north-west).

8.5.6 Farnham is not located within the Suffolk Coast and Heaths AONB, which lies approximately 3km to the south-east at its nearest point. It does, however, lie within an area designated as an SLA. Farnham village is located at the junction of two landscape character types mapped and described in the Suffolk County Landscape Character Assessment; the Rolling estate sandlands and Valley meadowlands. The

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Rolling estate sandlands are described as a landscape of rolling river terraces with tree belts and plantations throughout. The adjacent lower lying Valley meadowlands landscape occupies the valley of the River Alde and is characterised by cattle grazed pastures and occasional fields converted to arable production.

- 8.5.7 An initial desk-based study has identified there are a number of PRow, the largest concentration being to the south of the A12 and east of Farnham. The majority of the Rights of Way are pedestrian links. There are no areas of Open Access Land.
- 8.5.8 There are a number of Grade II Listed Buildings, including the Old Post Office, within Farnham, as well as the Grade II* Listed Church of St Mary. Farnham is not a designated conservation area.
- 8.5.9 There is currently no baseline noise data available for this site. However, it is known that noise levels at dwellings facing directly onto the A12 are high due to road traffic. Monitoring data for NO₂ has been collected in background locations and along key nearby transport routes (e.g. A12) and data has also been collected by SCDC.
- 8.5.10 The route of the A12 improvement is underlain by river alluvium and by the Crag (Principal Aquifer). The route does not cross a Source Protection Zone and there are no licensed abstractions within 200m of the road.
- 8.5.11 Farnham bypass would run through agricultural land to the north-west of the Street Farm, parts of which are in the flood plain. The route would also cross the River Alde and various drainage ditches. The other options do not cross any watercourses.
- 8.5.12 **Figure 8.5.1** illustrates the key environmental constraints for the A12 improvement options.

c) Planned further studies/surveys

- 8.5.13 Of the Farnham bend options presented, it is considered that the bypass could represent the most substantial in terms of new development and thus also in terms of potential environmental impacts/effects and requirements for mitigation. Therefore, much of the comment in this section focuses on the bypass option although all options have been considered.
- 8.5.14 It should be noted that the alignment shown for the bypass is indicative and further work would be required to establish the alignment of the bypass in more detail along with any associated junction arrangements for connecting the bypass to the A12. This work would need to take account of and mitigate for any significant adverse effects and environmental issues arising from the design, as well as establishing more precisely the permanent land take and the land required during construction.
- 8.5.15 In addition to the above, **Table 8.10** summarises the other potential studies/surveys that are still required for the A12 improvement options.

Table 8.10: A12 improvement options – planned further studies/surveys

Environmental topic	Planned further studies/surveys
Terrestrial ecology and	<ul style="list-style-type: none"> • An extended Phase 1 habitat and protected species survey. • Surveys to determine presence or absence of great crested newts.

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Environmental topic	Planned further studies/surveys
ornithology	<ul style="list-style-type: none"> • Surveys to determine presence or absence of water voles on the River Alde and the network of ditches. • Surveys to determine the presence or absence of holts or lying-up sites used by otters on the River Alde and the network of ditches. • Surveys to establish if riparian trees support roosting bat species and how important the proposed route corridor is for foraging and commuting bat species. • Breeding bird surveys to assess the importance of the habitats affected for nesting bird species.
Landscape and visual	<ul style="list-style-type: none"> • Views and visibility: ZTV modelling for the selected A12 improvement options. • Carry out assessment based on agreed methodology, study area and viewpoints. • Baseline landscape/character: Review and update landscape baseline for the selected A12 improvement option for agreed study area. • Develop design principles for the selected A12 improvement option and develop masterplan and mitigation strategy to assist in the integration of the development and reduction of significant adverse effects.
Amenity and recreation	<ul style="list-style-type: none"> • Baseline recreation and amenity research will be undertaken including field survey and desk top analysis including the identification of: <ul style="list-style-type: none"> ○ cycle routes and their use; ○ the extent and use of PRoW and Permissive paths; ○ preparation of Principles for construction phase based on those developed for the A12 improvement options; and ○ preparation of initial diversion strategy related to temporary works (construction phase) masterplanning.
Terrestrial historic environment	<ul style="list-style-type: none"> • Following completion of the desk study and depending on the option chosen, it is anticipated that staged archaeological investigation will be carried out across the proposed bypass route. This would comprise geophysical survey followed by a programme of trial trenching to confirm the presence/absence of archaeological remains, establish the nature, date and extent of any archaeological remains within the site boundary and inform proposals for mitigation to be agreed with SCCAS and English Heritage and included in the ES. • Should the road widening option be chosen, the need for and scope of any additional assessment and recording of the Grade II Listed Old Post Office building will be discussed with the relevant Conservation Officer and English Heritage.
Noise and vibration	<ul style="list-style-type: none"> • A baseline survey is planned to be carried out in Q2 2014. Monitoring sites are as identified by Figure 8.5.2 and the list below shows a list of planned monitoring locations. <ul style="list-style-type: none"> ○ FB1 – Farnham west. To assess impact of noise from road traffic to the dwellings and leisure uses. ○ FB2 – Farnham east. To assess the impact of road traffic on the existing A12 to assist with verifying noise modelling. ○ FB3 – Farnham south. To assess the impact noise levels from road traffic on the A12/or any bypass to the south of Farnham.
Air quality	<ul style="list-style-type: none"> • No further surveys (as part of either the construction or operation phase assessment) are planned for the Farnham area, due to the availability of existing data.

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Environmental topic	Planned further studies/surveys
Soils and agriculture	<ul style="list-style-type: none"> • Soil survey in accordance with standard ALC methodology.
Geology and land quality	<ul style="list-style-type: none"> • Phase 1 ground contamination desk study and potential intrusive investigation subject to the findings of the desk study.
Groundwater	<ul style="list-style-type: none"> • No further specific groundwater work is planned, however the geological and hydrogeological understanding will be updated based on any geotechnical investigations for the A12 improvement.
Surface water	<ul style="list-style-type: none"> • There is an Environmental Agency flow gauge located close to the proposed bypass site that will be used to inform the impact assessment. • Detailed flood modelling and analysis would be required to help inform the alignment and design of any bypass of Farnham.

d) Assessment methodology

8.5.16 The approach to assessment and methodology to be undertaken in relation to the A12 improvement options is the same as that for the Main Development Site (see **Section 7** for details).

e) Potential impacts and effects

8.5.17 **Table 8.11** details the potential impacts that may give rise to environmental effects. These are based on the current known baseline conditions, which are subject to further studies/surveys outlined in **Table 8.10**. Where it is considered that effects are unlikely, prior to applying mitigation, these have been identified and scoped out, where applicable.

Table 8.11: A12 improvement options – potential impacts and effects

Environmental topic	Potential impacts and effects
Terrestrial ecology and ornithology	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Potential habitat loss and fragmentation. • Potential severance of key bat foraging and commuting routes. • Loss of trees suitable for roosting bats or disturbance from traffic noise and lighting to roosts in retained trees. • Potential disturbance to otters using holts or lying-up sites in the vicinity of the proposed route. • Potential loss of habitat suitable for use by water voles. • Diffuse pollution from surface water runoff affecting the River Alde and, potentially, the Alde – Ore Estuary SAC downstream. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • Potential road mortality for otters if they cannot pass under bridges and culverts during high river flows. • Noise and lighting disturbance to roosting and foraging bat species. • Incidental mortality to bat species forced to cross the road due to severance of commuting and foraging routes. • Increased surface water discharge to the River Alde.

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Environmental topic	Potential impacts and effects
Landscape and visual	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Disturbance from construction activities and the movement of vehicles and plant. • Changes to the existing environment due to removal of vegetation and introduction of new features including soil storage areas, vegetation, infrastructure and buildings. • Visual impact arising from construction lighting at night, causing potential disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • Changes to the landscape and views due to transport infrastructure and introduction of new landscape features, structures and ancillary features. • Increases of and changes in traffic movement along the road network during operation. • Visual impact arising from operational lighting at night, causing potential disturbance.
Amenity and recreation	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Disturbance and potential diversion of nearby PRoW resulting from construction activities including increased traffic movement, construction noise, dust and other emissions, and visual disturbance . • Disturbance to amenity and recreation assets and public open space within the study area from a range of activities, including construction noise, traffic noise, dust and other emissions and visual disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • Diminished enjoyment of PRoW in the vicinity of the development resulting from general site activity, traffic, noise, dust and other emissions and views to the development.
Terrestrial historic environment	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • The nature and extent of buried archaeological remains across the bypass site has not yet been determined. However, there is the potential for the permanent loss of buried archaeological remains during construction. • Should the road widening option be chosen, there would be a direct impact on the Old Post Office, a Grade II Listed building. • There is also the potential for the setting of designated heritage assets in the vicinity of the site to be temporarily affected. • Installation of HGV traffic signals is not expected to cause impacts on heritage assets. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • There is the potential for the settings of designated heritage assets in the vicinity of the sites to be affected.
Noise and vibration	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> • Occupiers of nearby dwellings and other sensitive receptors may experience noise impacts during construction of the bypass. • There may also be construction noise impacts associated with the option of road widening through Farnham but for a short duration. • Installation of HGV traffic signals is not expected to cause noise impacts. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> • If the bypass option was progressed, noise and vibration levels for dwellings which will be bypassed by this scheme are likely to be significantly reduced and the impacts are likely to be beneficial. There will, however, be a potential increase in noise levels to some dwellings to the

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Environmental topic	Potential impacts and effects
	<p>west of the site and to the rear of some receptors to the south east of the bypass.</p> <ul style="list-style-type: none"> The road widening option would reduce the potential for traffic congestion at peak times, but would not remove traffic from the village of Farnham. Properties along the A12 in the village would therefore not benefit from reductions in traffic noise as they would with a bypass. The HGV traffic control option would have no beneficial effect on traffic flow through the village of Farnham and could exacerbate congestion and associated noise impacts.
Air quality	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk. Due to the nature of any construction works at Farnham there may also be temporary adverse effects associated with changes in traffic flow. Traffic management may be required to minimise these temporary air quality effects. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> The operation of the Farnham Bend improvements has the potential to permanently improve air quality in locations which will be adjacent to reduced traffic flows, or have traffic flows relocated to locations further away. Some locations may also be subject to a permanent deterioration in air quality, for example, if traffic is moved closer to other properties.
Soils and agriculture	<ul style="list-style-type: none"> Development of the bypass may result in soil damage/loss of fertility.
Geology and land quality	<ul style="list-style-type: none"> There are no known contamination risks, however, any other potential sources of contamination will be identified in the risk assessment.
Groundwater	<ul style="list-style-type: none"> Construction of the bypass would result in some disturbance of soils and a decrease in infiltration to groundwater along the line of the road and the need to manage surface water runoff. The assessment will consider whether the changes in infiltration to groundwater are significant and whether surface water drainage from the road could represent a risk to groundwater resources.
Surface water	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> The potential requirement to construct the bypass over the River Alde could lead to changes in hydrology and the potential for pollution associated with surface runoff from construction activities and accidental spills. The other two options, however, are unlikely to impact on surface water and therefore have been scoped out from requiring any further assessment. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> There could be permanent changes to the hydrology of the River Alde and vehicle use of the road could lead to run-off containing pollutants.

f) Potential mitigation measures

- 8.5.18 The majority of the potential mitigation measures detailed in **Table 8.12** comprise embedded mitigation, which could be incorporated into the design of the A12 improvement options to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation. Additional mitigation measures will also form part of the ongoing assessment and will be described within the ES.

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Table 8.12: A12 improvement options – potential mitigation measures

Environmental topic	Potential mitigation measures
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • Keeping land take to a minimum to reduce habitat loss and fragmentation. • Design of lighting, bridges and culverts to enable bats, birds, otters and water voles to continue to use the River Alde corridor for commuting and foraging. • Pollution prevention and control measures during construction, and treatment and attenuation of surface water during operation.
Landscape and visual	<ul style="list-style-type: none"> • Plan the construction and operational phases of the selected A12 improvement option development to optimise land use to reduce/mitigate significant adverse landscape and visual effects where reasonably practicable. • Design and treatment of infrastructure, including lighting and fencing, to minimise landscape and visual effects including at night. • Retain existing screening landscape features where reasonably practicable and promote appropriate new landscape design (planting and landform) to mitigate significant adverse landscape and visual effects of the proposed development. • Establish new planting and landform at the earliest reasonable opportunity.
Amenity and recreation	<ul style="list-style-type: none"> • Orchestration of Rights of Way closures and diversions, where practicable, and provision of a comprehensive construction phase masterplan. • Re-establishment of former PRow and realignment of Permissive paths where practicable and establish recreation areas as part of the EDF Energy Estate Landscape Strategy. • Plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable.
Terrestrial historic environment	<ul style="list-style-type: none"> • For buried archaeological (bypass option) remains mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects from construction. • Permanent significant effects on the Grade II Listed Old Post Office could be mitigated through a programme of detailed building recording to be agreed with the relevant Conservation Officer and English Heritage. • Potential significant effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be feasible, enhancements to the asset or its immediate setting may be considered to offset the overall impact.
Noise and vibration	<ul style="list-style-type: none"> • If the bypass option is progressed, additional mitigation options would include sound absorbent road surface, speed limiting and screening where necessary and technically feasible.
Air quality	<ul style="list-style-type: none"> • Construction dust would be controlled through the implementation of standard dust management techniques. • Disruption due to traffic during construction would be mitigated by a traffic management plan. • Precise mitigation measures, if required, would depend on the findings of the air quality assessment.
Soils and agriculture	<ul style="list-style-type: none"> • Use of appropriate soil handling procedures would be applied.
Geology and land quality	<ul style="list-style-type: none"> • To be considered subject to the proposed risk assessment.
Groundwater	<ul style="list-style-type: none"> • The assessment will consider the decrease in recharge and mitigation

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Environmental topic	Potential mitigation measures
	<p>through the management of surface water runoff. The risk to groundwater quality from any surface water drainage will also be assessed.</p> <ul style="list-style-type: none">• Mitigation of any spills or leaks will be in accordance with the Environment Agency Pollution Prevention Guidelines.
Surface water	<ul style="list-style-type: none">• Control measures will be built into the construction process, which will require consideration of the drainage implications of the works during both the construction and operation of the bypass, and removal of any potential risks associated with hydrocarbon contamination from vehicles and accidental spillages.• Impacts associated with operational effects such as changes to hydrology and drainage will be considered further within the FRA which will inform any further mitigation measures required.

g) Approach to inter-relationships and cumulative assessment

- 8.5.19 Each environmental topic has outlined the approach to inter-relationships and cumulative assessment within the Main Development Site in respect of the relevant topic (see **Section 7**). This same process will apply to the A12 improvement – Farnham Bend options.

8.6 Visitor Centre

a) Description of the off-site associated development site

- 8.6.1 The Visitor Centre would be a joint facility with Sizewell B, replacing the existing Visitor Centre associated with the existing station. The Visitor Centre would comprise predominantly exhibition space, galleries and service areas able to accommodate the expected volume of visitors, including school parties. Dedicated parking and access to the facility would also be required.
- 8.6.2 EDF Energy has developed its siting options for the Visitor Centre since Stage 1 and potential siting options being considered (see **Figure 8.6.1**) are:
- a site at Coronation Wood which could be used to serve both construction and operational phases of the proposed development;
 - a two-phased siting approach involving the temporary use of land either east of Leiston or within Leiston town (for the construction phase only) and a site at Goose Hill (within the Main Development Site construction area) which would be constructed after completion of the power station.
- 8.6.3 The Visitor Centre options at Coronation Wood and Goose Hill are within the Main Development Site boundary and, therefore, have already been considered within **Sections 6 and 7**. For the purpose of this section, only the options to the east and within Leiston town have been discussed further.

b) Site and surrounding environmental conditions

- 8.6.4 There are up to twelve statutory designated sites in close proximity, these are: Minsmere-Walberswick (SPA, SAC, SSSI and Ramsar), Alde-Ore Estuary (SPA, SAC, SSSI and Ramsar SPA), Sandlings (SPA and SSSI). Additional SSSIs include Sizewell Marshes, Leiston-Aldeburgh and Round Hill Pit.
- 8.6.5 Visitor Centre options within and to the east of Leiston are outside both the Suffolk Coast and Heaths AONB and Suffolk Heritage Coast. None of the options are located within or immediately adjacent to areas designated as SLA.
- 8.6.6 The Visitor Centre to the east of Leiston is located within the Estate sandlands landscape character type described in the Suffolk County Landscape Character Assessment. The Estate sandlands is described as a gently rolling plateaux of freely-draining sandy soils with arable land uses, plantation woodlands and a sparse settlement pattern.
- 8.6.7 There are a number of PRow which pass through the town and within the study area. A limited number of areas of Open Access Land occur beyond the Leiston Visitor Centre options, including land at Sizewell Common and much of the Walks and Aldringham Common. Sizewell Common is also registered as Common Land.
- 8.6.8 There are no Scheduled Monuments or Listed Buildings. There is also no baseline noise data available at any of the sites under consideration. Baseline air quality information is available for A-road (e.g. A12) and B-road (e.g. B1122) routes near to the Visitor Centre options.

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8.6.9 The Visitor Centre options are located in an area underlain by Lowestoft Sand and Gravels (Secondary Superficial Aquifer) and the Lowerstoft Diamicton (Boulder Clay). These superficial deposits overlie the Crag (Principal Aquifer). East of Leiston, the site lies outside of a Source Protection Zone, but there are two licensed abstractions located at the edge of the search area.

8.6.10 **Figure 8.6.1** illustrates the key environmental constraints for all of the Visitor Centre site options. A location to the east of Leiston is represented by Visitor Centre Option 2B and the site within Leiston town is represented by Option 2C.

c) Planned further studies/surveys

8.6.11 **Table 8.13** summarises the potential studies/surveys that are still required for the Visitor Centre options.

Table 8.13: Visitor Centre options – planned further studies/surveys

Environmental topic	Planned further studies/surveys
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> • An extended Phase 1 habitat and protected species survey. • Survey work to establish if woodland trees are suitable for roosting bat species. Activity surveys for barbastelle bats. • Great crested newt surveys of any ponds within 500m of each site. • Breeding bird surveys of any suitable vegetation.
Landscape and visual	<ul style="list-style-type: none"> • Views and visibility: ZTV modelling for the preferred Visitor Centre options. • Carry out assessment based on agreed methodology, study area and viewpoints. • Baseline landscape/character: Review and update landscape baseline for the preferred Visitor Centre option for agreed study area. • Develop design principles for the preferred Visitor Centre and develop masterplan and mitigation strategy to assist in the integration of the development and reduction of adverse effects.
Amenity and recreation	<ul style="list-style-type: none"> • Baseline recreation and amenity research will be undertaken, including field survey, during week-days and weekends, and desk top analysis including the identification of: <ul style="list-style-type: none"> ○ cycle routes and their use; ○ the extent and use of PRow and Permissive paths; ○ user surveys for PRow and recreational assets (to utilise information gathered as part of the Main Development Site); ○ preparation of principles for construction phase based on those developed for the Visitor Centre options; and ○ preparation of initial diversion strategy related to temporary works (construction phase) masterplanning.
Terrestrial historic environment	<ul style="list-style-type: none"> • Following completion of the desk study it is anticipated that staged archaeological investigation will be carried out across the site. This would comprise geophysical surveys followed by a programme of trial trenching to confirm the presence/absence of archaeological remains, establish the nature, date and extent of any archaeological remains within the site boundary and inform proposals for mitigation to be agreed with SCCAS and English Heritage for inclusion in the ES.
Noise and vibration	<ul style="list-style-type: none"> • A baseline survey would be carried out once a preferred site has been selected, if noise has the potential to have an impact in the vicinity of the

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Environmental topic	Planned further studies/surveys
	chosen site.
Air quality	<ul style="list-style-type: none"> No further studies or surveys are proposed (for either construction or operation impacts), due to the low air quality risks anticipated to be associated with the Visitor Centre.
Soils and agriculture	<ul style="list-style-type: none"> A thorough review will be undertaken of published literature and web-based information to help characterise baseline conditions. In addition to the information sources already consulted, this will include agri-environment schemes and other relevant records held by Defra, for example animal burial pits, records of noxious weeds and the most recent national census of agriculture and horticulture. Consultations will also be held with landowners and land managers in order to understand farming and land-management practices and issues material to the EIA. Further studies/surveys will be undertaken as detailed within the Main Development Site, Section 7.9.
Geology and land quality	<ul style="list-style-type: none"> A thorough review will be undertaken of published literature and web-based information to help characterise baseline conditions. Further studies/surveys will be undertaken as detailed within the Main Development Site, Section 7.10.
Groundwater	<ul style="list-style-type: none"> No further specific groundwater work is planned, however the geological and hydrogeological understanding will be updated based on any geotechnical investigations for the proposed sites.
Surface water	<ul style="list-style-type: none"> The requirement for further studies will be reviewed as scheme design and consultation progresses.

d) Assessment methodology

- 8.6.12 The approach to assessment and methodology to be undertaken in relation to the Visitor Centre options is the same as that for the Main Development Site (see **Section 7** for details).

e) Potential impacts and effects

- 8.6.13 **Table 8.14** details the potential impacts that may give rise to environmental effects. These are based on the current known baseline conditions, which are subject to further studies/surveys outlined in **Table 8.13**. Where it is considered that effects are unlikely, prior to applying mitigation, these have been identified and scoped out, where applicable.
- 8.6.14 An assessment of the potential impacts and effects during the post-operation phase (for the temporary Visitor Centre, should it be progressed) will be assessed within the ES.

Table 8.14: Visitor Centre options - potential impacts and effects

Environmental topic	Potential impacts and effects
Terrestrial ecology and	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Potential habitat loss.

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Environmental topic	Potential impacts and effects
ornithology	<ul style="list-style-type: none"> Potential loss of trees suitable for roosting bats, and/or disturbance from noise and lighting to roosts in retained trees. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Noise and lighting disturbance to roosting and foraging bat species. Disturbance to adjacent habitats and species by visitors.
Landscape and visual	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance from construction activities and the movement of vehicles and plant. Changes to the existing environment due to removal of vegetation and introduction of new features including soil storage areas, vegetation, infrastructure and buildings. Lighting from construction activities at night causing potential disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Permanent changes to the landscape and views through the introduction of new structures/landscape features and ancillary features. Potential disturbance from lighting of structures at night.
Amenity and recreation	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Disturbance of nearby PRow resulting from construction activities, including increased traffic movement, construction noise, dust and other emissions and visual disturbance. Disturbance to amenity and recreation assets and public open space within the study area from a range of activities, including construction noise, traffic noise, dust and other emissions and visual disturbance. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Diminished enjoyment of PRow in the vicinity of the development resulting from general site activity, traffic, noise, dust and other emissions and views to the development.
Terrestrial historic environment	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> The nature and extent of buried archaeological remains across the construction site has not yet been determined, although there is the potential for the permanent loss of buried archaeological remains during construction. There is the potential for temporary impacts to the settings of designated heritage assets in the vicinity of the construction site. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> There is the potential for impacts to the settings of designated heritage assets in the vicinity of the site during operation.
Noise and vibration	<ul style="list-style-type: none"> It is not expected that there would be significant impacts from any of the proposed sites in the context of the wider Sizewell C build.
Air quality	<p>Construction of the off-site associated development</p> <ul style="list-style-type: none"> Dust impacts during the construction phase will be assessed by providing a qualitative assessment of the potential sources and effects, together with a risk assessment to identify those receptors most at risk. <p>Operation of the off-site associated development</p> <ul style="list-style-type: none"> Small anticipated changes in traffic and combustion point sources are expected with the Visitor Centre.
Soils and agriculture	<ul style="list-style-type: none"> The options to the east of Leiston and within Leiston town include both agricultural and brownfield sites.
Geology and	<ul style="list-style-type: none"> The options to the east of Leiston and within Leiston town include both

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Environmental topic	Potential impacts and effects
land quality	agricultural and brownfield sites.
Groundwater	<ul style="list-style-type: none"> Construction will result in some disturbance of soils and the facilities and associated car parking will result in a decrease in infiltration to groundwater and the need to manage surface water runoff. The assessment will consider whether any changes in infiltration are significant and whether surface water drainage from hardstanding areas could represent a risk to groundwater resources. Part of the sites to the east of, and within, Leiston lie within an urban area and therefore the assessment will address the risk to groundwater quality from the disturbance of soils.
Surface water	<ul style="list-style-type: none"> The potential requirement to create a non-permeable surface could impact on surface water runoff to the adjacent designated sites both during construction and operation. Additionally, runoff during construction and the post-operation phase could increase the potential for pollution associated with soil erosion and accidental spills of hydrocarbon or construction materials.

f) Potential mitigation measures

8.6.15 The majority of the potential mitigation measures detailed in **Table 8.15** comprise embedded mitigation, which could be incorporated into the design of the Visitor Centre sites to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation. Additional mitigation measures will also form part of the ongoing assessment and will be described within the ES.

Table 8.15: Visitor Centre options – potential mitigation measures

Environmental topic	Potential mitigation measures
Terrestrial ecology and ornithology	<ul style="list-style-type: none"> At this stage, it is not possible to be precise about what mitigation measures will be required. However, on the basis of the information currently known about the site, mitigation measures are likely to include: <ul style="list-style-type: none"> design of lighting to enable bats to continue to use the local environs for commuting and foraging; pollution prevention and control measures during construction; and management of visitors to avoid trampling of adjacent habitats.
Landscape and visual	<ul style="list-style-type: none"> Plan the construction and operational phases of the selected Visitor Centre option development to optimise land use to reduce/mitigate significant adverse landscape and visual effects where reasonably practicable. Design and treatment of facilities and infrastructure, including lighting, access and fencing, to minimise landscape and visual effects including at night. Retain existing screening landscape features where reasonably practicable and promote appropriate new landscape design (planting and landform) to mitigate significant adverse landscape and visual effects of the proposed development. Establish new planting and landform at the earliest reasonable opportunity if appropriate.
Amenity and recreation	<ul style="list-style-type: none"> Plan the construction and operational phases of the development to optimise land use to reduce/mitigate recreation and amenity effects where reasonably practicable.

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Environmental topic	Potential mitigation measures
Terrestrial historic environment	<ul style="list-style-type: none"> For buried archaeological remains and palaeoenvironmental deposits mitigation would usually entail preservation in-situ or, where this would not be feasible, preservation by record to mitigate any significant adverse effects from construction. Any significant effects on the settings of heritage assets would usually be mitigated through sensitive design, landscape planting or screening. Where this would not be feasible, enhancements to the asset or its immediate setting may be considered.
Noise and vibration	<ul style="list-style-type: none"> Standard mitigation techniques, such as selection of quiet plant and screening to car park areas, could be used if found to be necessary.
Air quality	<ul style="list-style-type: none"> Construction dust would be controlled through the implementation of standard dust management techniques. No other specific operational mitigation for road traffic or heating plant is anticipated to be required.
Soils and agriculture	<ul style="list-style-type: none"> For areas of land that will be restored to agricultural use, appropriate measures will be taken to reduce impacts on soil quality. This will be enabled through appropriate soil handling (for example in relation to soil stripping, stockpiling and tracking by vehicles). Detailed arrangements will be developed in consultation with relevant stakeholders and in line with established soil management principles such as the Defra code of practice "Protecting Our Water, Soil and Air (Defra, 2013) and set out in a Soil Management Plan. The Soil Management Plan will also address soils to be used for non-agricultural purposes for example habitat creation.
Geology and land quality	<ul style="list-style-type: none"> At this stage, no mitigation features are proposed beyond those embedded in the design of the proposed development. For example, the re-use of construction materials where they are suitable for use without pre-treatment and where they wouldn't cause harm to the environment.
Groundwater	<ul style="list-style-type: none"> The assessment will consider the decrease in recharge and mitigation through the management of surface water runoff including the use of sustainable drainage systems. The risk to groundwater quality from any surface water drainage to ground will also be assessed. Mitigation of any spills or leaks will be in accordance with the Environment Agency Pollution Prevention Guidelines.
Surface water	<ul style="list-style-type: none"> Control measures will be built into the construction methodology in order to reduce any increase in surface water runoff, risk of pollution and accidental spills. In addition, Incident Control Plans will be in place.

g) Approach to inter-relationships and cumulative assessment

8.6.16 Each environmental topic has outlined the approach to inter-relationships and cumulative assessment within the Main Development Site in respect of the relevant topic (see **Section 7**). This same process will apply to the Visitor Centre options.

9. SUMMARY

9.1 EIA Scoping Report Summary

- 9.1.1 This EIA Scoping Report accompanies a written request to the Planning Inspectorate for a Scoping Opinion, in accordance with the EIA Regulations. The report sets out the proposed scope, approach and methodologies to be adopted and key matters to be considered in the EIA.
- 9.1.2 The Scoping Opinion will set out what information the Planning Inspectorate considers should be included in the ES for Sizewell C. EDF Energy will consider the Scoping Opinion in its preparation of the ES to be submitted to support the application for development consent. The ES will include all required information as defined by Schedule 4 of the EIA Regulations.
- 9.1.3 EDF Energy is continuing to consult on its emerging proposals for Sizewell C. A second stage of consultation is proposed in 2014. Feedback received will help inform further consultation on EDF Energy's preferred proposals. This will provide more detailed information in relation to the technical and environmental considerations of the proposed development.

9.2 Indicative Proposed ES Structure

- 9.2.1 At this stage, an indicative outline structure for the proposed ES is set out below:
- Volume 1: Introduction
 - Volume 2: Project-wide Considerations (socio-economics and transport)
 - Volume 3: Sizewell C Main Development Site – to include all relevant topics (as outlined in this report)
 - Volumes 4 – 8: Off-site associated development (to include all relevant topics):
 - Volume 4: Northern park and ride
 - Volume 5: Southern park and ride
 - Volume 6: Rail line extension
 - Volume 7: A12 Improvement – Farnham Bend
 - Volume 8: Visitor Centre (if temporary options are taken forward)
 - Volume 9: Cumulative assessment
- 9.2.2 In addition, a non-technical summary of the ES will be provided in support of the application.

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GLOSSARY

Term	Definition
Agricultural Land Classification (ALC)	A classification of agricultural land in England and Wales according to its quality and agricultural versatility. The classifications range from Grade 1 (the best and most versatile), through Grades 2, 3a, 3b, 3c and 4, down to Grade 5 (the least versatile).
Alongshore Transport	Movement parallel to the coastline.
Anchorage	An area off the coast that is suitable for a vessel to anchor.
Annex I Habitats	Habitats listed in Annex I of the Conservation of Habitats and Species Regulations 2010 (SI 2010/490) (as amended).
Anthropogenic	Man-made.
Appropriate Assessment (AA)	A process required by the Habitats Directive 92/43/EEC to avoid adverse effects of plans, programmes and projects on Natura 2000 sites and thereby maintain the integrity of the Natura 2000 network and its features.
Area of Outstanding Natural Beauty (AONB)	AONBs were formally designated under the National Parks and Access to the Countryside Act 1949 to protect areas of the countryside of high scenic quality that cannot be selected for National Park status due to their lack of opportunities for outdoor recreation (an essential objective of National Parks). Further information on AONBs can be found at www.aonb.org.uk
Bathing Water Directive Quality Standards	The microbial standards for water quality at popular beaches and inland bathing sites.
Bathymetric	Related to topography of the seabed.
Bathymetry	The 'topography' of the seabed.
Berth	A designated location where a vessel may be moored.
Biodiversity Action Plan (BAP)	An agreed plan for a habitat or species, which forms part of the UK's commitment to biodiversity. For further information consult the BAP website: www.ukbap.org.uk
Birds Directive	European Community Directive 2009/147/EC (which codified Directive 79/409/EEC) on the conservation of wild birds. In the UK the Directive is implemented via the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (SI 2010/490) (as amended).
Bivalve	Marine or freshwater mollusc whose body is enclosed between two shells hinged together by a ligament on the dorsal side of the body.
British Energy (BE)	British Energy delisted from the London Stock Exchange on 3 February 2009 and is now part of EDF Energy.
Cetaceans	Marine mammals, such as dolphins and porpoises.
Conservation Areas	Designated areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.
Contaminated Land	Land where there may be a presence on site of a noxious substance, which may give rise to a hazard.
Conventional Island	Turbine halls and electrical buildings forming part of the UK EPR.
County Wildlife Site (CWS)	Areas identified and selected for their local nature conservation value.

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Term	Definition
Cross-shore	On or across the shore.
Cumulative effects	Incremental effects that result from the accumulation of a number of individual effects, either caused by the development (intra-project effects) or by other reasonably foreseeable developments which would be under construction at the same time as Sizewell C or built later (inter-project effects).
Decibel (dB)	A unit specifying the logarithm of the ratio between the value of a quantity and a reference value (usually used in the measurement of power and intensity). For sound pressure level the reference quantity is 20µPa, which is the threshold of normal hearing (0 dB). 140 dB is the threshold of pain.
Diamicton	Glacial till.
Disturbance	A perturbation in the system (either biological, e.g. predation or physical, e.g. storms) which alters the nature of the biological community.
Drift nets	Drift netting is a fishing technique where nets, called drift nets, are allowed to float freely at the surface.
EDF Energy Estate	Land owned by EDF Energy in the Sizewell area.
Effect	The consequence of an impact. For example, a change in the perception of a local landscape character.
Embedded mitigation	Mitigation which is incorporated into the design of the proposed development to reduce likely impacts and effects. These mitigation measures will be further developed and will be subject to consultation and agreement.
English Heritage	A Government Agency which promotes conservation and understanding of the historic environment, advises Government on the selection of listed buildings and scheduled monuments for protection and provides grant aid for the maintenance of historic buildings and monuments
Entrainment	Term used to describe the passage of marine organisms small enough to go through the cooling water screens through the power station cooling water circuit and then discharged to sea.
Environment Agency	A Government Agency responsible for matters relating to contaminated land, waste management, surface water drainage and discharges, flood risk management and water quality and has responsibility for ensuring that new nuclear power station designs meet high environmental standards and use the Best Available Techniques (BAT) to achieve this.
Environmental Impact Assessment	Generically, a process for predicting the effects of a proposed development on the environment that informs decision-makers in relation to planning permissions, consents, licences and other statutory approvals, as required by European Union Directive 2011/92/EU (which codified Directive 85/337/EEC) (the EIA Directive).
EIA Scoping Report	A scoping report is usually produced at an early stage in the EIA process and should contain sufficient information to support a developer's request to a regulator for a scoping opinion.
Environmental Statement	The document reporting the process and outcomes of the EIA.
Fauna	Animals.
Future baseline	The situation that would occur in the absence of the proposed development. Predicted impacts are compared against this theoretical scenario. It is typically based upon extrapolating the current baseline forward using technical knowledge of changes which may occur.
Geological Disposal Facility	Disposal underground at a depth of more than about 200 metres (also called "deep geological disposal"). The depth is chosen so as to provide a barrier against the escape of radioactivity and protect the waste from disturbance. This disposal method is appropriate for

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Term	Definition
	high level and intermediate level wastes.
Geomorphology	The scientific study of landforms and the processes that shape them through an understanding of landform history and dynamics (in particular their nature, origin, processes of development and material composition).
Gravity Model	Developed to estimate where non-home-based workers would choose to live and where home-based workers would travel from.
Gross Value Added (GVA)	Gross Value Added measures the value of goods and services produced in a geographical area, industry or economic sector. It is a measure of economic productivity, calculated by valuing the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production.
Groundwater	Water occurring below ground in natural formations (typically rocks, gravels and sands).
Habitats Directive	The Habitats Directive (more formally known as Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) is a European Union Directive adopted in 1992 as a response to the Berne Convention. It is one of the EU's two directives in relation to wildlife and nature conservation (the other being the Birds Directive). It aims to protect over 200 habitats and approximately 1,000 animal and plant species listed in the Directive's Annexes. Annex I covers habitats, Annex II covers species requiring designation of special areas of conservation, Annex III covers the criteria for selecting sites eligible for identification as sites of community importance and designation as special areas of conservation, Annex IV covers species in need of strict protection and Annex V covers species whose taking from the wild can be restricted by European law. These are species and habitats which are considered to be of European interest, following criteria given in the Directive. The Directive led to the setting up of a network of Special Areas of Conservation which, together with the existing Special Protection Areas, form a network of protected sites across the European Union called Natura 2000.
Habitat Regulations Assessment	An assessment to determine compliance of a plan or project with the Habitats Directive (94/43/EEC) and Conservation of Habitats and Species Regulations 2010 (as amended).
Health and Safety Executive (HSE)	A non-departmental public body, which is responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare, and for research into occupational risks in England and Wales and Scotland.
Impact	The change resulting from an action. For example, a new bypass development and the local landscape as the sensitive environmental resource. Here an impact (the change arising from the development's progression) could be the permanent loss of mature trees and hedgerows.
Impingement	Term used to refer to the fish and other marine species becoming trapped on cooling water intake screens.
Informal recreation	Leisure activities which are not undertaken on a formal, organised basis and are generally carried out by individuals or small groups on an intermittent basis with a minimal requirement for supporting facilities.
Inter-relationship	Occurs between individual environmental effects of the proposed development and has the potential to combine together with one another at receptors and lead to significant effects. For example, the combined effect of noise, vibration and dust on a single receptor.
Intertidal	The area of shore between the highest and lowest tides.
Ionising radiation	Radiation, such as alpha, beta, gamma and x-rays, capable of inducing certain changes and effects in materials of living tissues.
Landscaping	A general term used for the means by which, where appropriate, development is made to fit visually into its surroundings by control of siting and layout and use of trees, shrubs or grass (soft landscaping) and/or fences, walls or paving (hard landscaping).
LiDAR	Light Detection and Ranging – a device used to measure distance to, or other properties of, a target.

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Term	Definition
Listed Buildings	Buildings and structures which have been identified by the Secretary of State for Culture, Media and Sport as being of special architectural or historic interest and whose protection and maintenance are the subject of special legislation. Their curtilage and setting is also protected. Listed Building consent is required before any works can be carried out on a listed building.
Longlines	Longline fishing is a commercial fishing technique that uses a long line with baited hooks attached at intervals by means of branch lines.
Main Development Site	The site of the proposed nuclear power station development (the Main Development Site) and construction areas. The permanent features within the Sizewell C development will include: two UK EPRs comprising reactor buildings and associated buildings; turbine halls and electrical buildings; cooling water pumphouses and associated buildings; an Operational Service Centre; fuel and waste storage facilities; external plant including storage tanks; internal roads; ancillary, office and storage facilities; drainage and sewerage infrastructure and a National Grid 400kV Substation and one additional National Grid pylon and removal of an existing pylon. In addition to the permanent development, the following would be sited away from the main station platform: cooling water infrastructure; an access road to join the B1122 and related junction improvements; a bridge connecting the power station to the new access road to the north, car parking, ancillary buildings and helipad; flood defence and coastal protection measures; a beach landing facility to receive deliveries of abnormal indivisible loads by sea, a Simulator Building/Training Centre, options for a Visitor Centre and landscaping.
Marine environment	Anything below the mean high water mark.
Mitigation	Measures recommended through the EIA process and applied through the regulatory approvals process to avoid, reduce or, where appropriate, to offset significant adverse effects on the environment
Morphology	Shape or form.
Natural England	A Government Agency that promotes the conservation of England's wildlife and natural features and is responsible for designating National Nature Reserves, identifying Sites of Special Scientific Interest and for advising a wide range of bodies and individuals including the Government on matters affecting nature conservation.
National Nature Reserve (NNR)	National Nature Reserves are defined under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended) as land primarily for nature conservation, Such a purpose covers the study, research and preservation of flora, fauna and sites with special geological or physiographical features. The NNRs were established to protect the most important areas of wildlife habitat and geological formations in Britain and as places for scientific research. All NNRs are nationally important and are best examples of a particular habitat/ecosystem.
National Grid	National Grid runs and operates the high voltage electric power transmission network in Great Britain, connecting power stations and major sub-stations and ensuring that electricity generated anywhere in Great Britain can be used to satisfy demand elsewhere.
Nearshore	Located close to the shore.
Nuclear Island	Reactor buildings and associated buildings forming part of the UK EPR.
Off-site associated development	Temporary development which is associated with a Nationally Significant Infrastructure Project (NSIP), as defined by the Planning Act 2008 (as amended). For the Sizewell C Project, this will include: two park and ride sites (north lead site: Darsham, south lead site: Wickham Market); an accommodation campus (lead site: development site campus); rail extension for freight and/or a new rail terminal and freight laydown area north of King George's Avenue, Leiston; improvements to the A12 at Farnham Bend (options include: a Farnham Bypass, road widening at Farnham Bend or HGV traffic controls at Farnham Bend) and a Visitor Centre (temporary options on land east of Leiston or in Leiston town for use

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Term	Definition
	during construction. The Visitor Centre options at Coronation Wood (for use during both the construction and operational phases) and Goose Hill (operational phase only) are within the Main Development Site boundary).
On-site associated development	On-site associated development comprises temporary development within the Sizewell C Main Development Site, which includes the following: construction working areas: laydown areas, workshops, storage and offices; temporary structures, including concrete batching plant; management of spoil/stockpile arrangements, including potential sourcing on-site of construction fill materials; temporary bridge between the power station and adjacent construction areas; a temporary jetty for the transport of bulk construction materials, equipment and AILs by sea; options for a temporary rail extension options into the construction site; works areas on the foreshore for the installation of flood defence and coastal protection measures; construction roads, fencing, lighting and security features; site access arrangements and coach, lorry and car parking; and a development site accommodation campus.
Ordnance Datum (Newlyn) (OD)	The UK reference point for height.
Passive gear	An umbrella term for all fishing methods with static fishing gear in the water, such as lobster pots.
Piling	The installation of bored and driven piles and the effecting of ground treatments by vibratory dynamic and other methods of ground stabilisation.
Plankton	Organisms suspended in the water column and incapable of moving against water currents.
Potable water	Drinking water.
Pressurised Water Reactor (PWR)	A type of nuclear power reactor.
Principal Aquifer	Layers of rock or deposits with high permeability that provide a high level of groundwater storage.
Public access	Permitted use of land by members of the public. Access can be allowed by a variety of means including: public rights of way (e.g. footpath, bridleway, byway); Acts of Parliament; the granting of conditional access by landowners (e.g. National Trust); custom or tradition.
Public Rights of Way (PRoW)	These are designated 'highways' under the Countryside and Rights of Way (CRoW) Act 2000, which the public can use at anytime.
Radionuclide	Any man-made or natural element which emits radiation in the form of alpha or beta particles, or as gamma rays.
Ramsar Site	The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat (1971) imposes a requirement on the UK Government to promote the wise use of wetlands and to protect wetlands of international importance. This includes the designation of certain areas as Ramsar Sites, where their importance for nature conservation (especially with respect to waterfowl) and environmental sustainability meet certain criteria. Further information can be found on the RAMSAR convention on wetlands website: www.ramsar.org
Receptor	Used to refer to human beings that may be affected by changes arising due to the development and the socio-economic systems on which they depend. These can be reflected individually or collectively. For example resident, employees, communities.
Resources	Defined as bio-physical features or items of 'environmental capital'. For example, species and their habitats, aquifers, access routes and community facilities.
Secondary Aquifer	Layers of rock or deposits providing lower levels of groundwater storage than a Principal Aquifer.
Scheduled Monument	A feature of national, historical or archaeological importance, either above or below the ground, which is included in the schedule of monuments as identified by the Secretary of State. Not all nationally important archaeological remains are scheduled and sites of lesser

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Term	Definition
	importance may still merit protection.
Shoreline Management Plan (SMP)	A non-statutory plan produced to provide sustainable coastal defence policies (to prevent erosion by the sea and flooding of low-lying coastal land) and to set objectives for the future management of the shoreline. They are prepared by the Environment Agency and maritime local authorities, acting individually or as part of coastal defence groups.
Site of Special Scientific Interest (SSSI)	An area designated as being of special interest by reason of any of its flora, fauna or geological or physiographical features. SSSIs are designated by Natural England under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000.
Source Protection Zones (SPZ)	Defined by the Environment Agency, these zones show the risk of contamination from any activities that might cause pollution in the area.
Spatial scope	An area over which a significant change to the environment may occur.
Special Area of Conservation (SAC)	A site designated via the European Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC) (i.e. the Habitats Directive) to protect rare and endangered habitats and species at a European level. Together with SPAs they form a network of European sites known as Natura 2000.
Special Protection Area (SPA)	Designated under Article 4 of the European Directive on the Conservation of Wild Birds (2009/147/EC) (i.e. the Birds Directive) to protect the habitats of threatened and migratory birds.
Subtidal	Areas below water at all states of tide.
Suffolk Heritage Coast	Areas of coast that are managed to conserve their natural beauty and, where appropriate, to improve accessibility for visitors.
Surface water	Terrestrial water bodies that are found above ground level, such as lakes, rivers and ditches, and including fresh and inland brackish water.
Temporary scope	Is the timeframe over which the environmental impact assessment is undertaken.
Trammel net	A fishing net with three layers of netting that is used to entangle fish or crustaceans.
UK EPR	The third generation Pressurised Water Reactor design. It has been designed and developed mainly in France and Germany. In Europe this reactor design was called the European Pressurised Reactor and the international name of this reactor is Evolutionary Power Reactor, but is now referred to as EPR.
Water Framework Directive (WFD)	European Community Directive (2000/60/EC) on integrated river basin management. The WFD sets out environmental objectives for water status based on: ecological and chemical parameters; common monitoring and assessment strategies; arrangements for river basin administration and planning; and a programme of measures in order to meet the objectives. For further detail consult the European Commission website: http://europa.eu.int
Waterfowl	Wading birds and wildfowl.
Zone of Influence	The maximum geographical area around the Main Development Site and off-site associated development where there is a potential for impacts to occur.
Zone of Theoretical Visibility	The likely (or theoretical) extent of visibility of a development, usually shown on a map.

ABBREVIATIONS

Abbreviation	Term
AA	Appropriate Assessment
ACT	Archaeological Conservation Team
AILs	Abnormal Indivisible Loads
ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
AOD	Above Ordnance Datum
BAP	Biodiversity Action Plan
CRoW	Countryside and Rights of Way Act 2000
CWS	County Wildlife Site
dB	Decibels
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DTI	Department of Trade and Industry
EDF	Electricité de France
ECITB	Engineering Construction Industry Training Board
EIA	Environmental Impact Assessment
EQS	Environmental Quality Standards
ES	Environmental Statement
GDA	Generic Design Assessment
GVA	Gross Value Added
Ha	Hectare
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
ITIS	Integrated Transport Information System
km	Kilometre
km ²	Kilometres squared
LCA	Landscape Character Area
LVIA	Landscape and Visual Impact Assessment
MMO	Marine Management Organisation
mSv	Millisievert
MW	Megawatt
NCA	National Character Area
NCN	National Cycle Network
NNR	National Nature Reserve
OD	Ordnance Datum

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Abbreviation	Term
PRoW	Public Rights of Way
PWR	Pressurised Water Reactor
RCN	Regional Cycle Network
RIFE	Radioactivity In Food and the Environment
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SLA	Special Landscape Area
SMP	Shoreline Management Plan
SPA	Special Protection Area
SPZ	Source Protection Zones
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
UK	United Kingdom
WFD	Water Framework Directive

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Figure 7.9.1	Soils and agriculture	Soils and agriculture – Soil sampling locations in the 2011 ALC survey
Figure 7.9.2		Soils and agriculture – Soils and agriculture study area

NOT PROTECTIVELY MARKED

Figure Reference	Section of Report	Figure Name
Figure 7.9.3		Soils and agriculture – Indicative soil types in the vicinity of the Main Development Site
Figure 7.9.4		Soils and agriculture – ALC grades and non-agricultural land use
Figure 7.10.1	Geology and land quality	Geology and land quality – Borehole monitoring locations
Figure 7.10.2		Geology and land quality – Study area
Figure 7.11.1	Groundwater	Groundwater – Monitoring sites
Figure 7.11.2		Groundwater – Schematic hydrogeological cross section
Figure 7.11.3		Groundwater – Abstraction locations
Figure 7.12.1	Surface water	Surface water – Study area
Figure 7.12.2		Surface water – Location plan of key fluvial features
Figure 7.12.3		Surface water – Water quality sampling sites and gauging stations
Figure 7.13.1	Coastal geomorphology and hydrodynamics	Coastal geomorphology and hydrodynamics – Spatial extent of the study area
Figure 7.14.1	Marine water quality and sediments	Marine water quality and sediments – Sampling locations
Figure 7.15.1	Marine ecology	Marine ecology – Spatial extent of the study areas
Figure 7.16.1	Navigation	Navigation – Principal study area
Figure 8.2.1	Off-site Associated Development – Northern Park and Ride	Off-site associated development – Northern park and ride. Key designations and features
Figure 8.2.2		Noise and vibration – Northern park and ride monitoring locations
Figure 8.3.1	Off-site Associated Development – Southern Park and Ride	Off-site associated development – Southern park and ride. Key designations and features
Figure 8.3.2		Noise and vibration – Southern park and ride monitoring locations
Figure 8.4.1	Off-site Associated Development – Rail line extension	Off-site associated development – Rail extension options. Key designations and features
Figure 8.5.1	Off-site Associated Development – A12 improvement - Farnham Bend	Off-site associated development – Farnham Bend options. Key designations and features
Figure 8.5.2		Noise and vibration – Farnham Bend options monitoring locations
Figure 8.6.1	Off-site Associated Development – Visitor Centre	Off-site associated development – Visitor Centre location options. Key designations and features

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NOTES:

- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 - RAIL EXTENSION OPTIONS
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - FARNHAM BEND OPTIONS
 - FARNHAM BEND OPTIONS:
 - OPTION 1: INDICATIVE BYPASS OF FARNHAM
 - OPTION 2: WIDEN THE ROAD AT FARNHAM BEND
 - OPTION 3: PUT HGV CONTROLS AT FARNHAM (NOT SHOWN)
 - VISITOR CENTRE LOCATION OPTIONS
 - 1. CORONATION WOOD (CONSTRUCTION & OPERATIONAL PHASES)
 - 2A. GOOSE HILL (OPERATIONAL PHASE ONLY)
 - 2B. A LOCATION EAST OF LEISTON OUTSIDE AONB (TEMPORARY CONSTRUCTION PHASE ONLY)
 - 2C. A LOCATION IN LEISTON TOWN (TEMPORARY CONSTRUCTION PHASE ONLY)

REVISED	DATE	BY	REASON FOR REVISION



DOCUMENT:
**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 1**

DRAWING TITLE:
**MAIN DEVELOPMENT SITE AND
OFF-SITE ASSOCIATED DEVELOPMENT
SITES LOCATION PLAN**

DRAWING NO:
FIGURE 1.1.1

REVISION:
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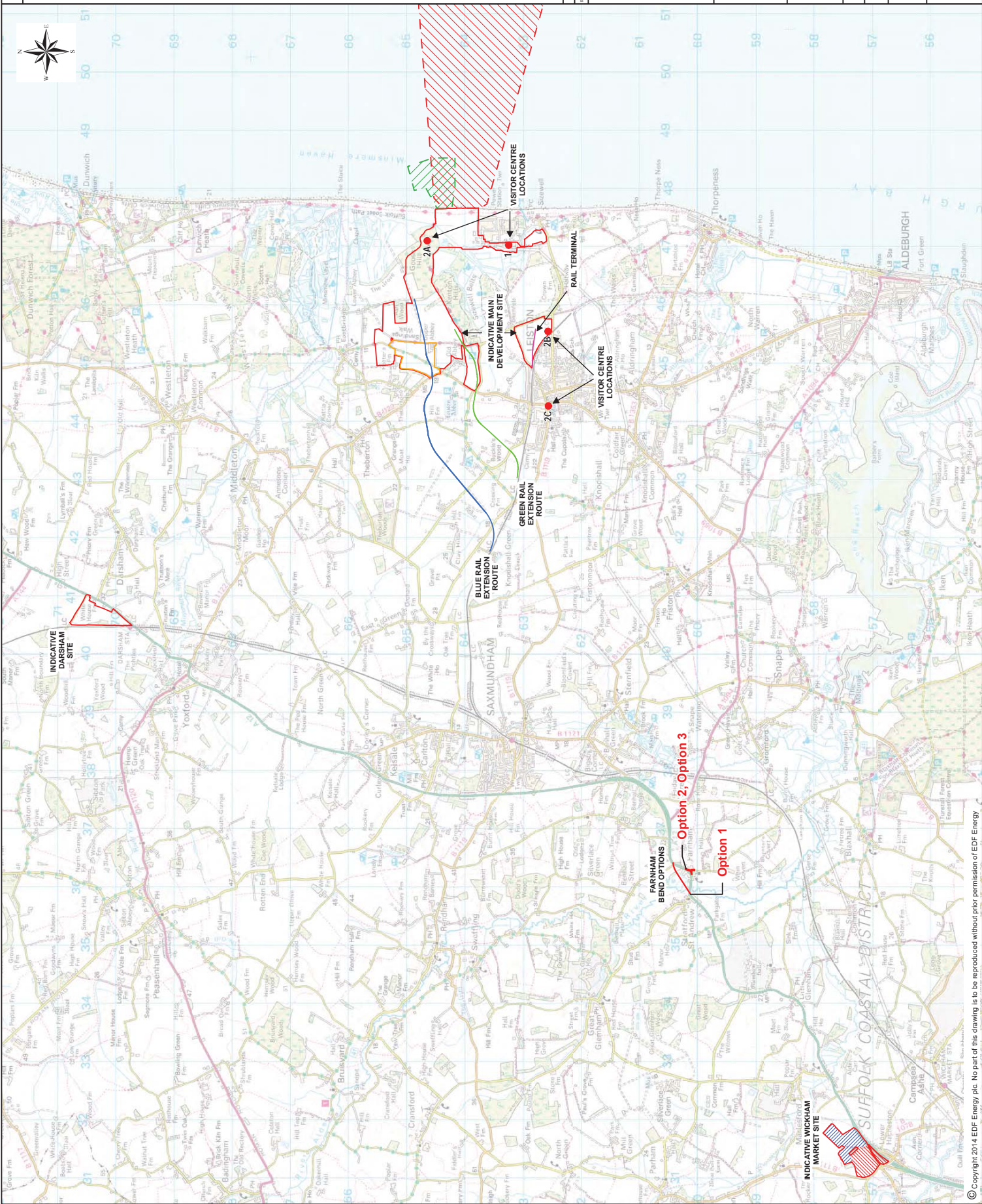
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - OPERATIONAL PLATFORM CONSTRUCTION REQUIREMENTS
 - TEMPORARY CONSTRUCTION AREA (INCLUDING ENVIRONMENTAL BUFFER ZONES AND SITE ACCESS ARRANGEMENTS)

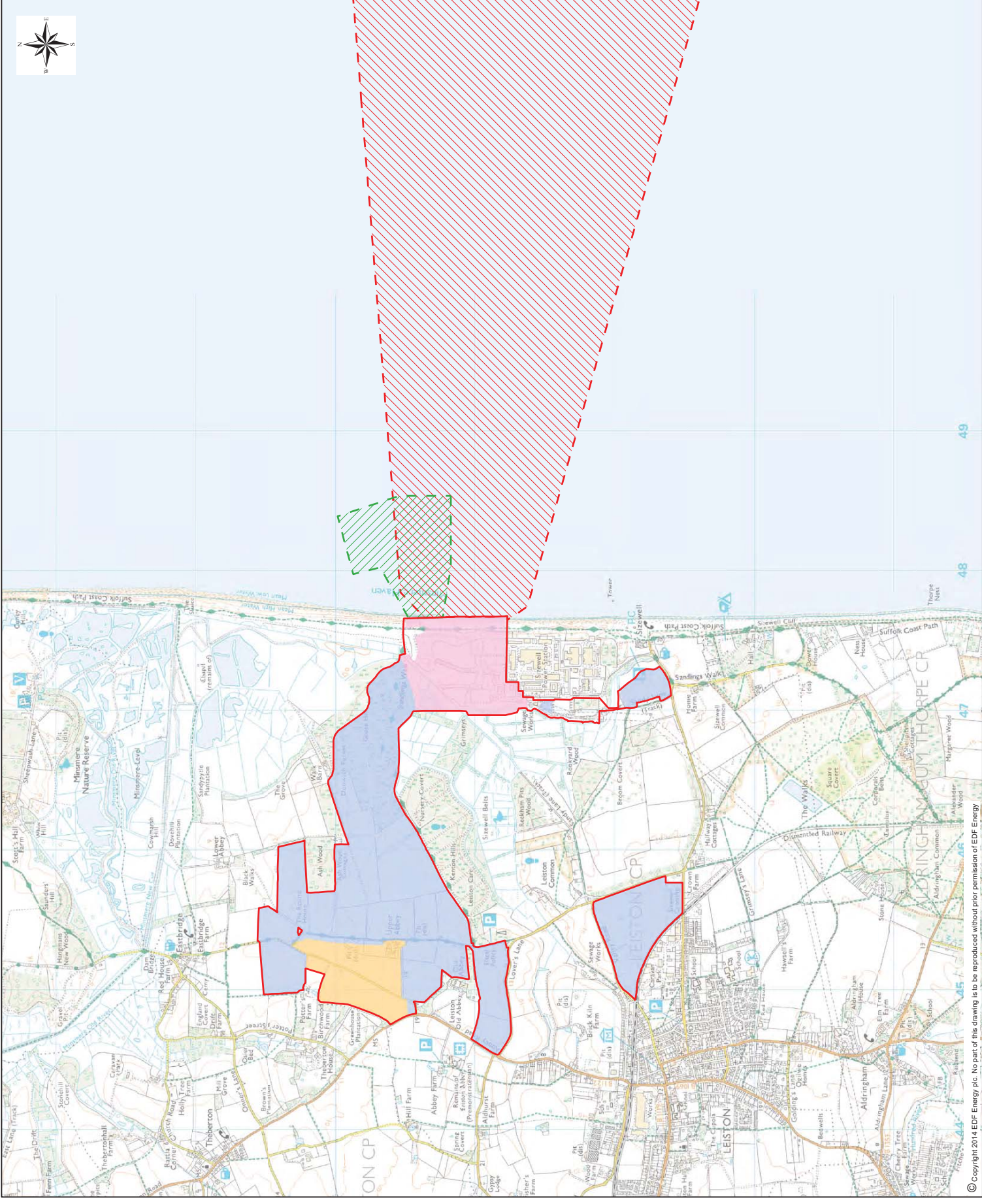


DOCUMENT:
**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 3**

DRAWING TITLE:
MAIN DEVELOPMENT SITE

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 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
- VISUM TRAFFIC MODEL**
- PRIMARY ROADS
 - A-ROADS
 - B-ROADS



REV NO	DATE	ISSUED	DESCRIPTION OF REVISIONS	APPROVED



DOCUMENT:
SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 6

DRAWING TITLE:
TRANSPORT - VISUM TRAFFIC MODEL

DRAWING NO:
FIGURE 6.3.1
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APRIL 2014
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR DEVELOPMENT
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS

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SECTION 6

DRAWING TITLE:
TRANSPORT - SUFFOLK ROAD NETWORK

DRAWING NO:
FIGURE 6.3.2

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DATE:
APRIL 2014

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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - SWAMP
 - STANDING WATER
 - RUNNING WATER
 - SEM-NATURAL BROAD LEAVED WOODLAND
 - PLANTATION CONIFEROUS WOODLAND
 - PLANTATION BROAD-LEAVED WOODLAND
 - PLANTATION MIXED WOODLAND
 - SEM-IMPROVED NEUTRAL GRASSLAND
 - SEM-IMPROVED ACID GRASSLAND
 - MARSHY GRASSLAND
 - DUNE GRASSLAND
 - BUILT-UP HARDSTANDING
 - AMENITY GRASSLAND
 - BRACKEN
 - POND
 - SPECIES-POOR HEDGEROW (INTACT)
 - SPECIES-POOR HEDGEROW (DEFUNCT)
 - SPECIES-POOR HEDGEROW WITH TREES
 - ARABLE LAND
 - IMPROVED GRASSLAND
 - POOR SEM-IMPROVED GRASSLAND
 - SCRUB (SCATTERED)
 - SCRUB (DENSE (CONTINUOUS))



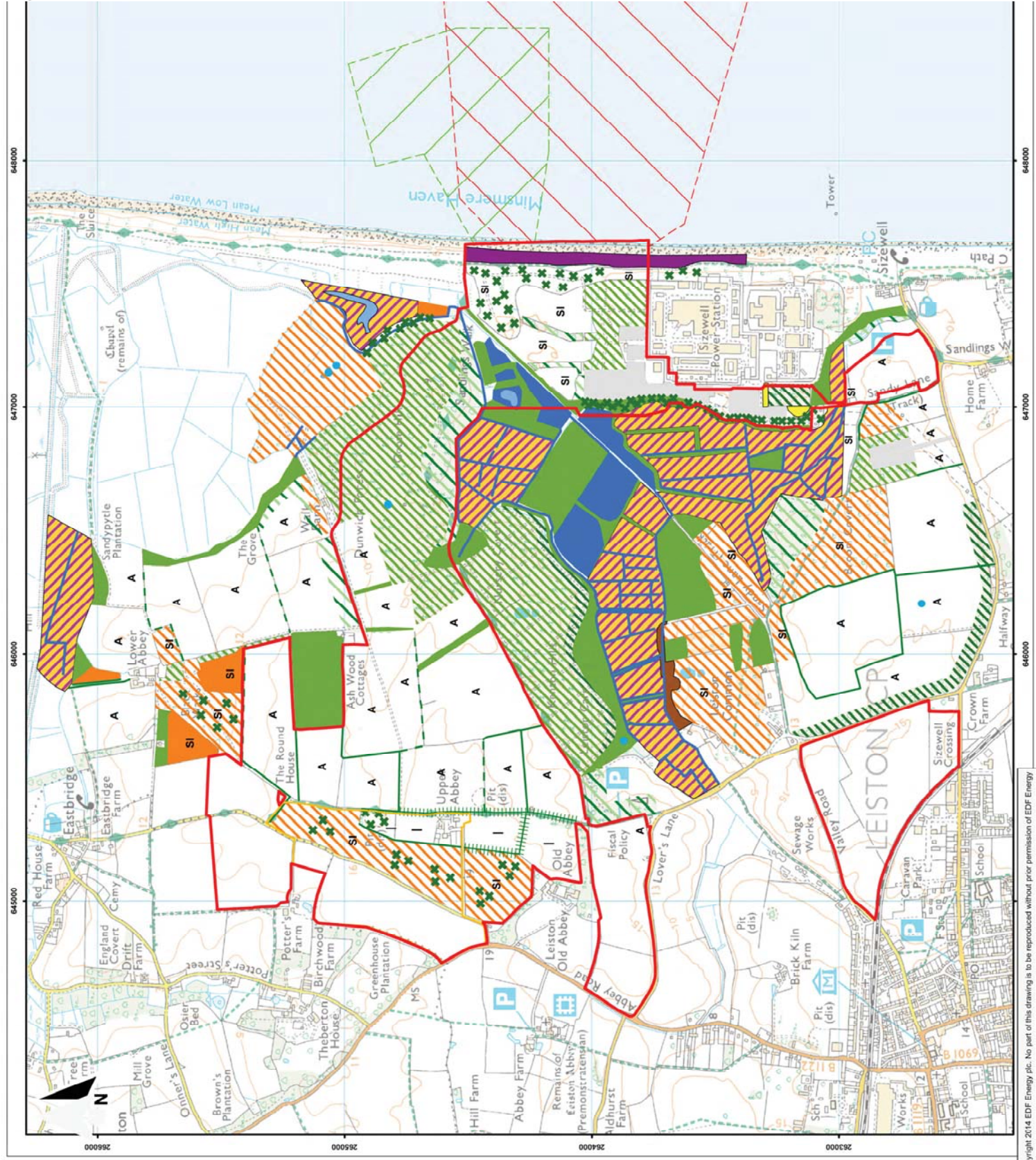
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**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE:
TERRESTRIAL ECOLOGY AND ORNITHOLOGY - PHASE 1 HABITAT SURVEY (INCLUDING EDF ENERGY ESTATE)

DRAWING NO: **FIGURE 7.2.1**
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DATE: **APRIL 2014** C.R. **1:15000@A3**
SCALE BAR: **0 300 600m**
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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- ACCOMMODATION CAMPUS SITE
- INDICATIVE WICKHAM MARKET SITE
- ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- STUDY AREA (20km) - SITE CENTRED
- CONSTRAINTS:
- RECOMMENDED MARINE CONSERVATION ZONE (RM CZ)
- SPECIAL AREA OF CONSERVATION
- SPECIAL PROTECTION AREA
- RAMSAR SITE

REVISION	DATE	REASON FOR REVISION	APPROVED

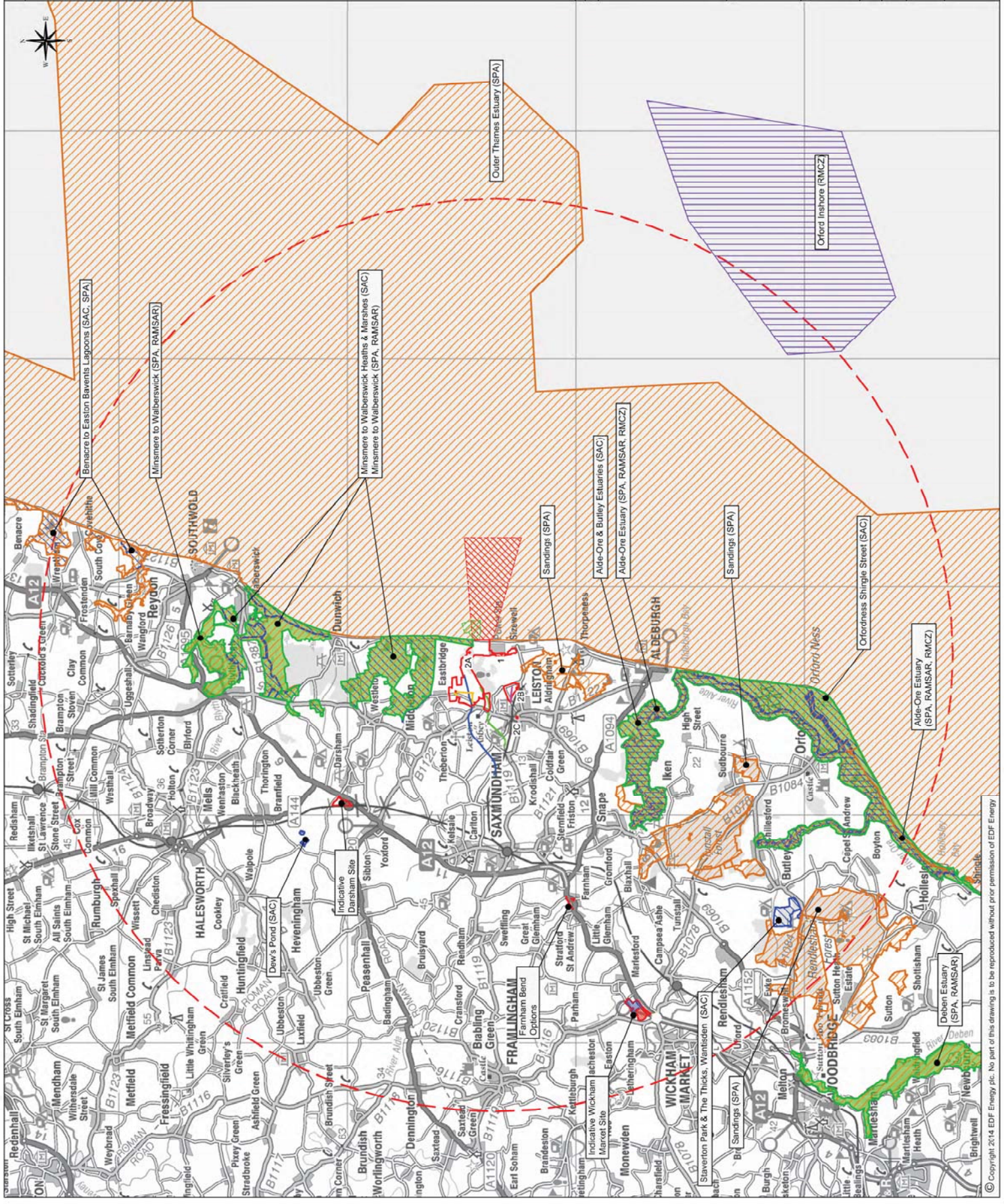


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EIA SCOPING REPORT
SECTION 7

DRAWING TITLE:
TERRESTRIAL ECOLOGY AND ORNITHOLOGICAL-INTERNATIONAL SITES WITHIN 20km RADIUS

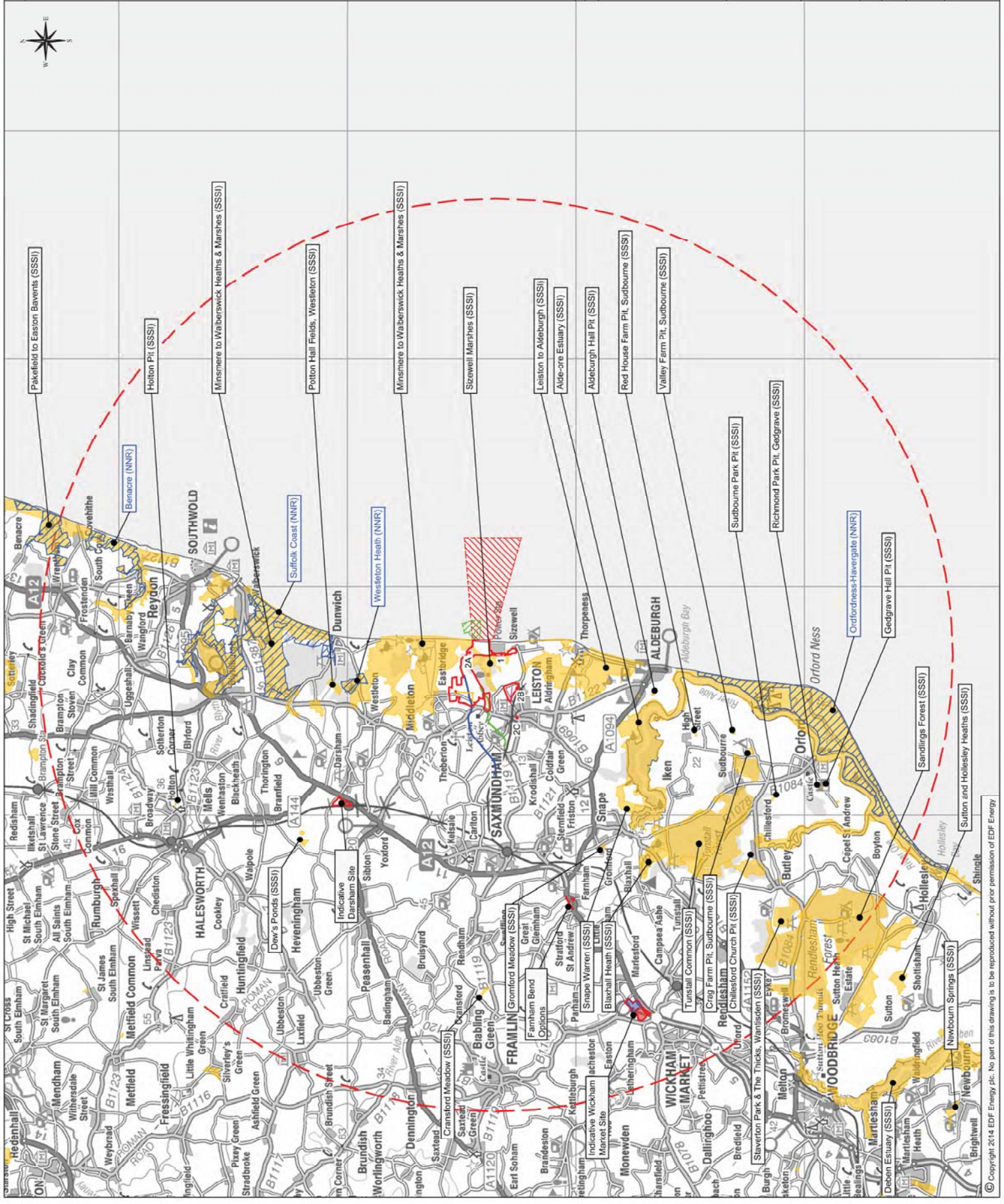
DRAWING NO: FIGURE 7.2.2
SCALE: SCALE 1:150000@A3
DATE: APRIL 2014
SCALE BAR: 0 3 6km
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - STUDY AREA (20km) - SITE CENTRED
- CONSTRAINTS**
- NATIONAL NATURE RESERVE (NNR)
 - SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)



DOCUMENT
SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7

DRAWING TITLE: TERRESTRIAL ECOLOGY AND ORNITHOLOGY - STATUTORY DESIGNATED SITES (NATIONAL SITES, SSSI & NNR WITHIN 20KM RADIUS)

DRAWING NO: FIGURE 7.2.3

DATE: APRIL 2014

SCALE: 1:150000@A3

SCALE BAR: 0 3 6km

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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - STUDY AREA (3km) - SITE CENTRED

- CONSTRAINTS:**
- COUNTY WILDLIFE SITE
 - SUFFOLK WILDLIFE TRUST RESERVE

COUNTY WILDLIFE SITES

REF	SITE NAME
1	SOUTHERN MIMSMERE LEVELS
2	SIZEWELL LEVELS AND ASSOCIATED AREAS
3	LEISTON COMMON
4	SUFFOLK SHINGLE BEACHES
5	DOWER HOUSE
6	DISUSED RAILWAY LINE (ALDRINGHAM-ALDEBURGH)
7	SIZEWELL RIGS

(NOTE: PART OF THE SUFFOLK WILDLIFE TRUST RESERVE IS ALSO DESIGNATED AS PART OF SIZEWELL MARSHES SSSI)

REVISION	DATE	REASON FOR REVISION/COMMENTS	APPROVED



SIZEWELL C

DOCUMENT
**SIZEWELL C PROJECT
EIA SCOPING REPORT
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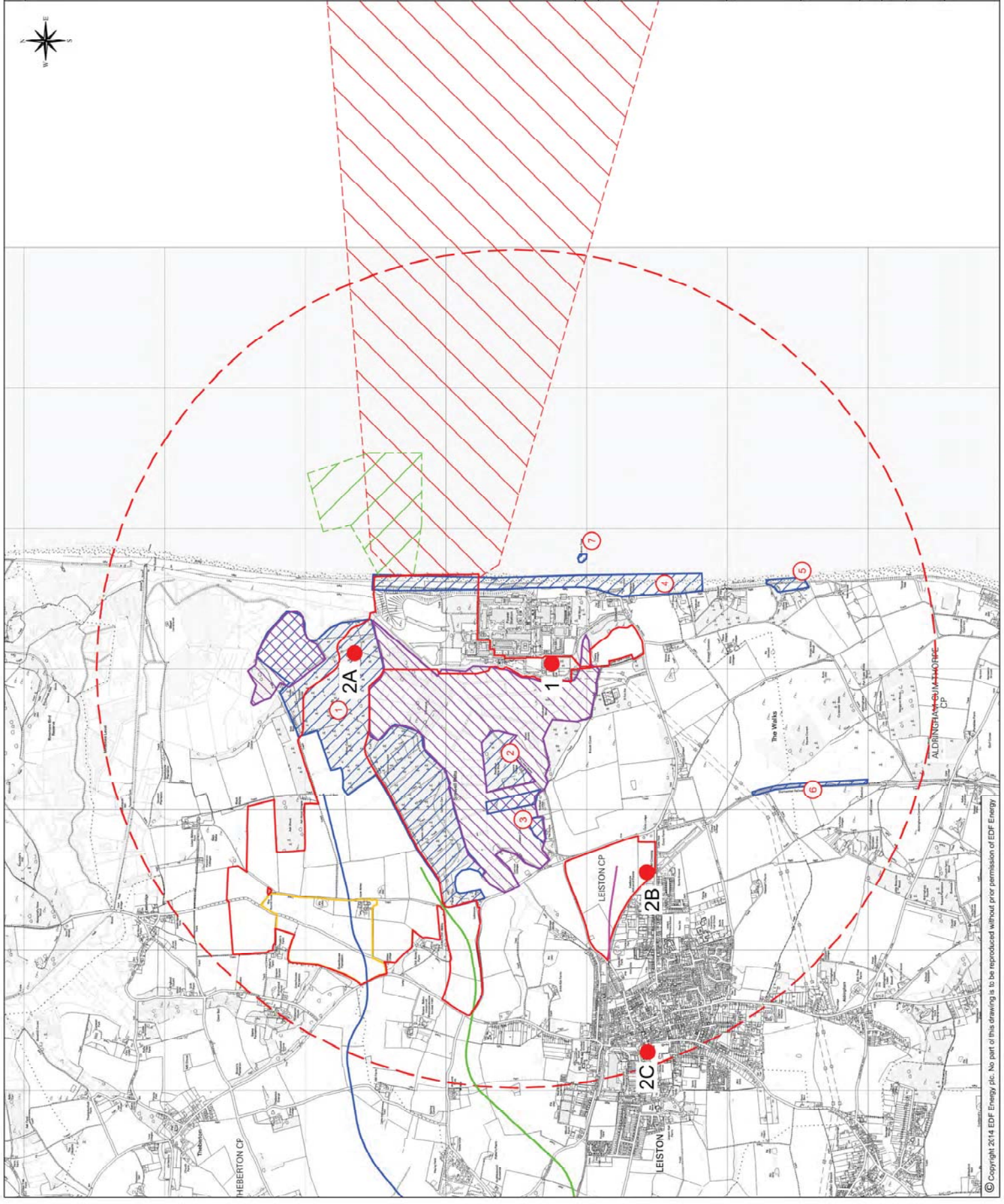
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TERRESTRIAL ECOLOGY AND ORNITHOLOGY - NON STATUTORY DESIGNATED SITES WITHIN 3km RADIUS

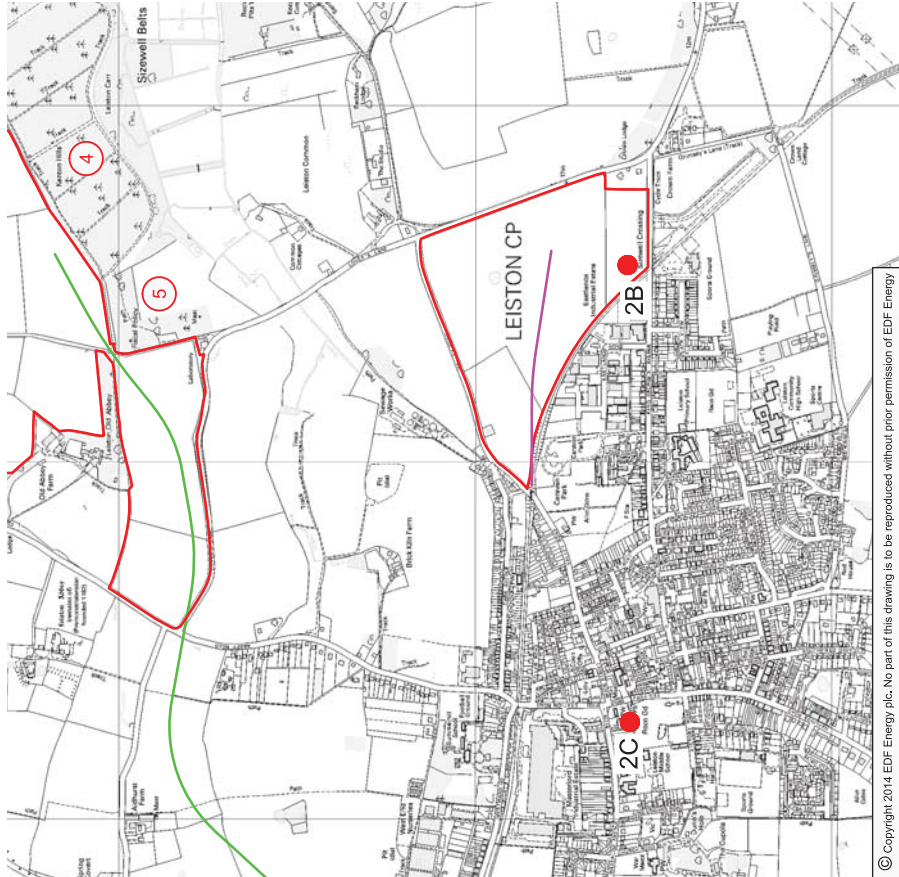
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REVISION: 1.0

DATE: APRIL 2014
C.R.: 1:25000@A3

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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS

REVISION	DATE	DRAWN	CHECKED	APPROVED



DOCUMENT

SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 7

DRAWING TITLE

LANDSCAPE AND VISUAL
 LOCATION OF INDICATIVE MAIN
 DEVELOPMENT SITE

DRAWING NO. FIGURE 7.3.1.
DATE: APRIL 2014
SCALE: 1:25,000 @A3
REVISION: 1.0
DRAWN: D.L.
SCALE BAR: 0 1,000Meters

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NOTES:
 SOURCES: NATURAL ENGLAND, SUFFOLK COASTAL DISTRICT COUNCIL

- KEY**
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - 15 KM STUDY AREA (15 KM AROUND INDICATIVE MAIN DEVELOPMENT SITE)
- LANDSCAPE DESIGNATIONS**
- SUFFOLK COAST AND HEATHS
 - AREA OF OUTSTANDING NATURAL BEAUTY
 - SUFFOLK HERITAGE COAST
 - SPECIAL LANDSCAPE AREAS

REVISION	DATE	BY	CHKD BY	REVISION FOR/REASONING COMMENT	APPROVED



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DRAWING TITLE
LANDSCAPE AND VISUAL NATIONAL AND LOCAL LANDSCAPE DESIGNATIONS

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FIGURE 7.3.2.

DATE
APRIL 2014

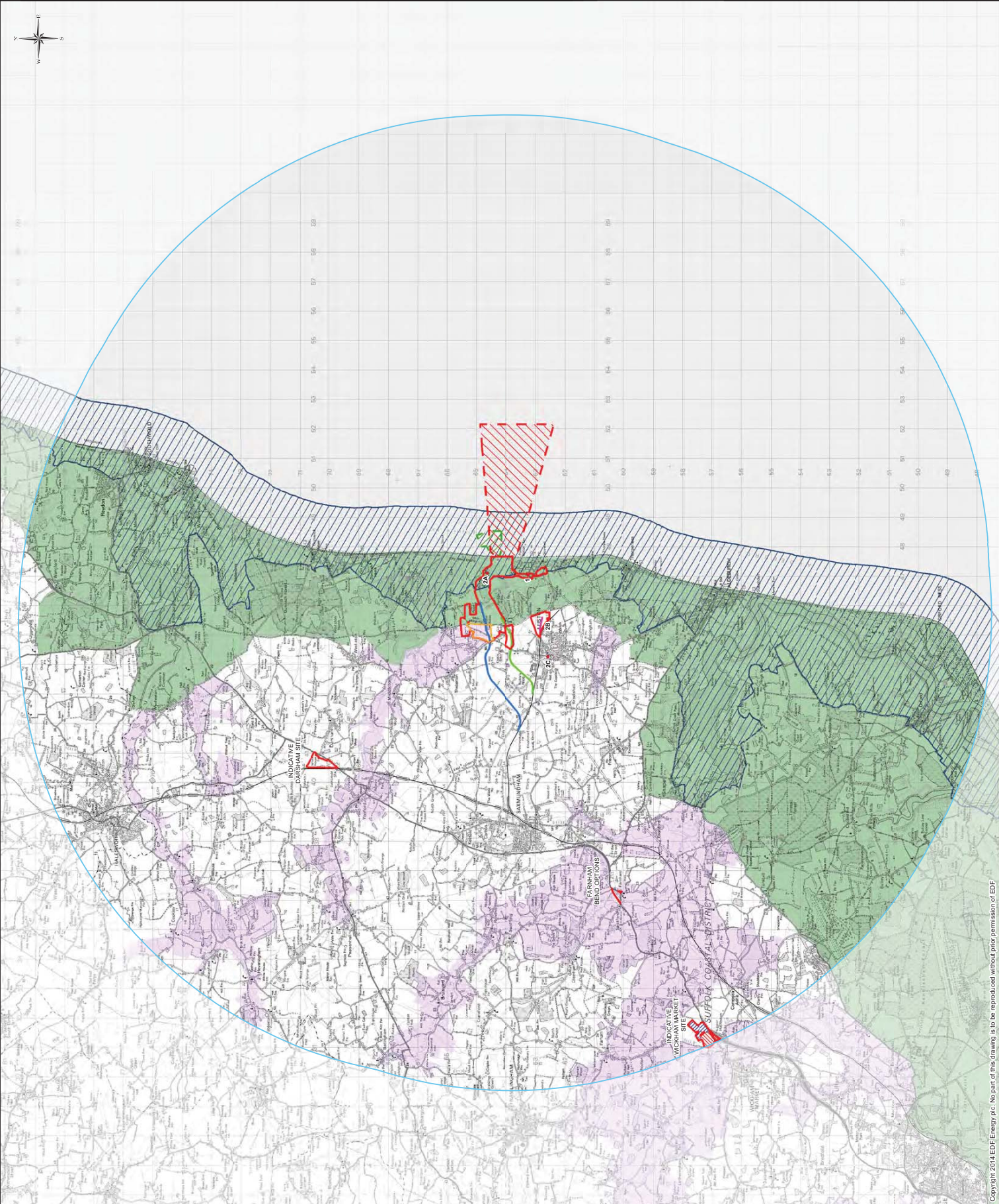
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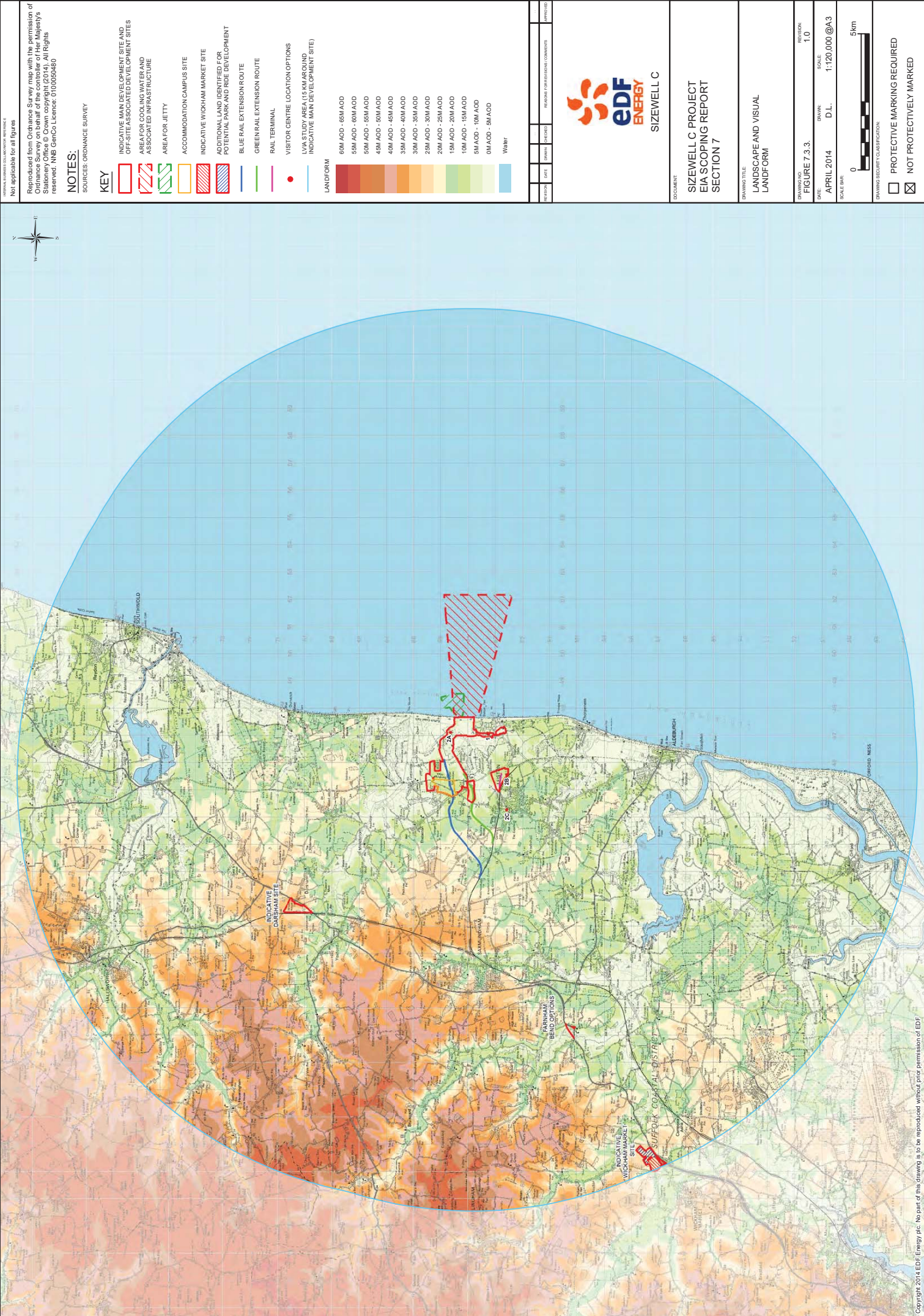
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 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - LVA STUDY AREA (15 KM AROUND INDICATIVE MAIN DEVELOPMENT SITE)
- LANDFORM**
- 60M AOD - 65M AOD
 - 55M AOD - 60M AOD
 - 50M AOD - 55M AOD
 - 45M AOD - 50M AOD
 - 40M AOD - 45M AOD
 - 35M AOD - 40M AOD
 - 30M AOD - 35M AOD
 - 25M AOD - 30M AOD
 - 20M AOD - 25M AOD
 - 15M AOD - 20M AOD
 - 10M AOD - 15M AOD
 - 5M AOD - 10M AOD
 - 0M AOD - 5M AOD
 - Water

DATE	REVISION	REVISION / OBSERVATIONS / COMMENTS	APPROVED

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DRAWING TITLE
 LANDSCAPE AND VISUAL LANDFORM

DRAWING NO
 FIGURE 7.3.3.

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NOTES:
 SOURCES: NATURAL ENGLAND

- KEY**
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 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - LVA STUDY AREA (15 KM AROUND INDICATIVE MAIN DEVELOPMENT SITE)
- NATIONAL CHARACTER AREAS**
- NCA 82 - SUFFOLK COAST AND HEATHS
 - NCA 83 - SOUTH NORFOLK AND HIGH SUFFOLK CLAYLANDS
- SEASCAPE CHARACTER AREAS**
- SUFFOLK COASTAL WATERS
 - EAST ANGLIAN SHIPPING WATERS



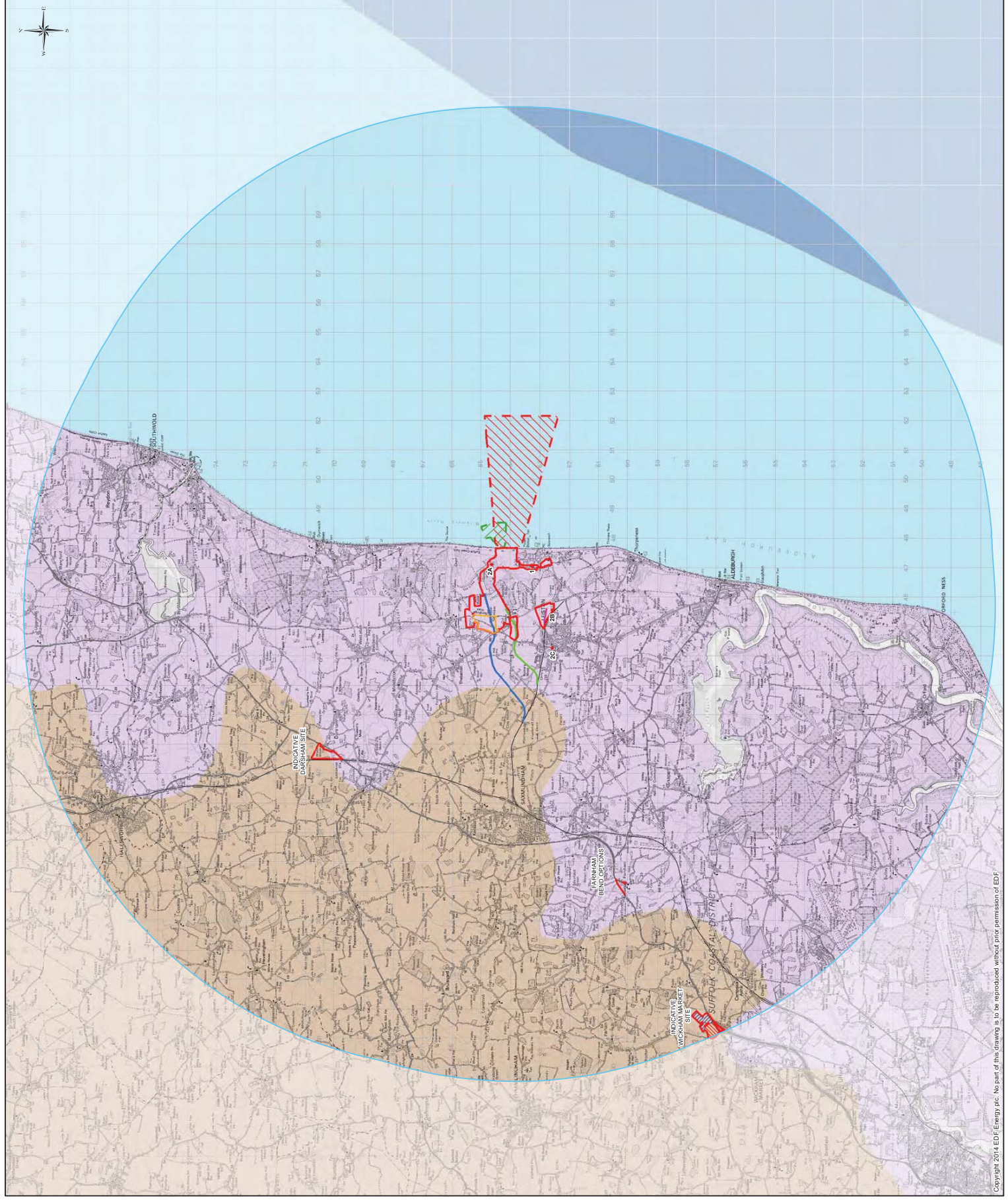
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 SECTION 7

DRAWING TITLE
 LANDSCAPE AND VISUAL
 NATIONAL CHARACTER AREAS AND SEASCAPE
 CHARACTER AREAS

DRAWING NO
 FIGURE 7.3.4.
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NOTES:
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KEY

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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
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- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- LVA STUDY AREA (15 KM AROUND INDICATIVE MAIN DEVELOPMENT SITE)

SUFFOLK LANDSCAPE CHARACTER TYPES (2008)

- ANCIENT ESTATE
- CLAYLANDS
- COASTAL DUNES AND SHINGLE RIDGES
- COASTAL LEVELS
- ESTATE SANDLANDS
- OPEN COASTAL FENS
- PLAYTEAU CLAYLANDS
- ESTATE FARMLANDS
- ROLLING ESTATE FARMLANDS
- ROLLING VALLEY CLAYLANDS
- SALT MARSH
- INTERTIDAL FLATS
- MEADOWLANDS
- VALLEY MEADOWS AND FENS
- WOODED FENS
- URBAN

DOCUMENT

SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7

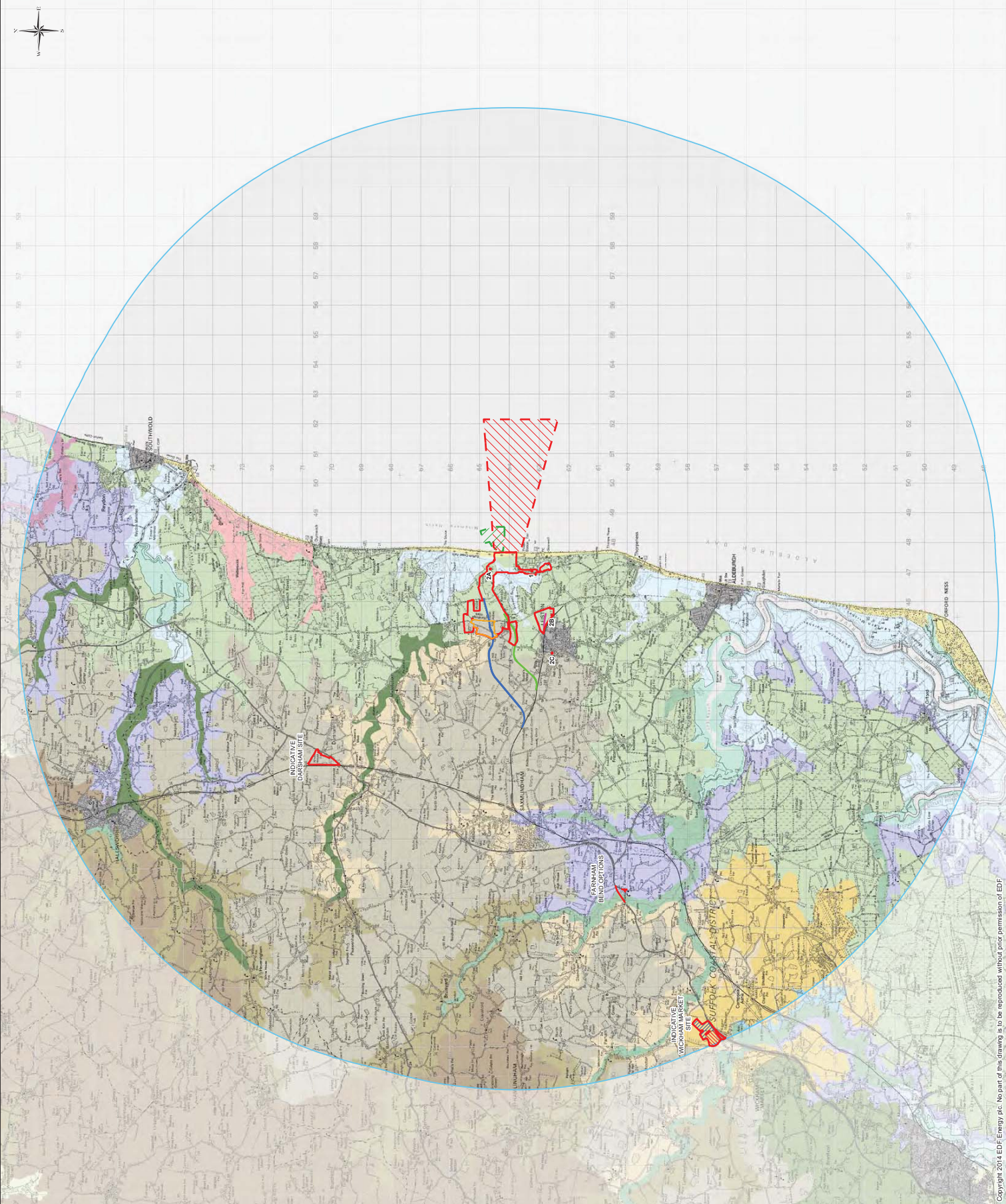
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DRAWING NO FIGURE 7.3.5
DATE APRIL 2014
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REVISION 1.0
DRAWN D.L.
CHECKED D.L.

SCALE BAR
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NOTES:

INDICATIVE MAN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
AREA FOR JETTY
ACCOMMODATION CAMPUS SITE
BLUE RAIL EXTENSION ROUTE
GREEN RAIL EXTENSION ROUTE
RAIL TERMINAL
VISITOR CENTRE LOCATION OPTIONS
AMENITY AND RECREATION STUDY AREA (RAM) AROUND INDICATIVE MAIN DEVELOPMENT SITE

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

INDICATIVE MAN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
AREA FOR JETTY
ACCOMMODATION CAMPUS SITE
BLUE RAIL EXTENSION ROUTE
GREEN RAIL EXTENSION ROUTE
RAIL TERMINAL
VISITOR CENTRE LOCATION OPTIONS
AMENITY AND RECREATION STUDY AREA (RAM) AROUND INDICATIVE MAIN DEVELOPMENT SITE

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
OPEN ACCESS LAND

RIGHTS OF WAY
FOOTPATH
BRIDLEWAY
ROAD USED AS PUBLIC FOOTPATH
OTHER ACCESS ROUTES
LONG DISTANCE ROUTE
SUSTAINS REGIONAL CYCLE ROUTE I2
PERMISSIVE ACCESS ROUTE
ACCESSIBLE LAND
REGISTERED COMMON LAND
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DOCUMENT
**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE
**AMENITY AND RECREATION -
STUDY AREA**

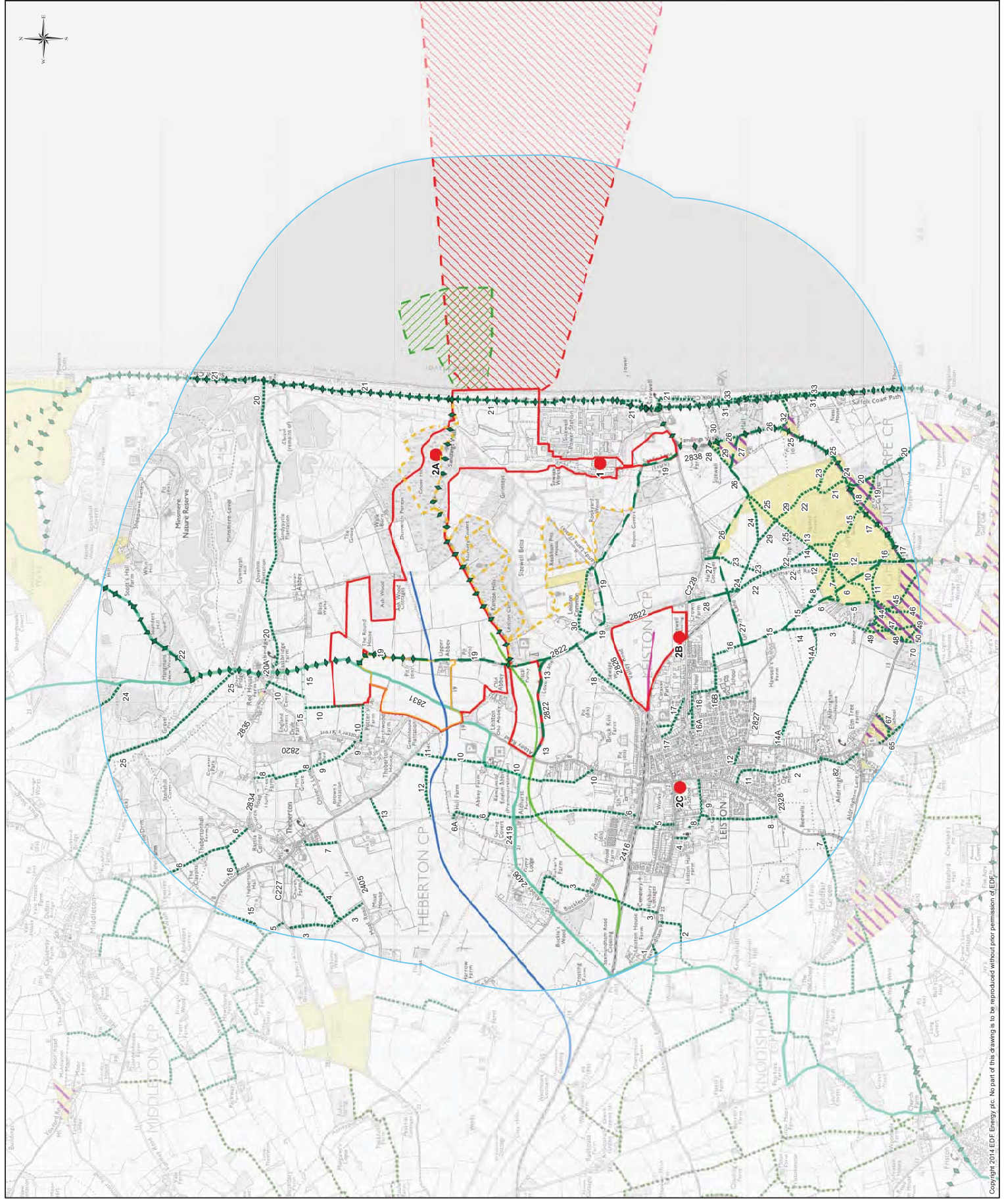
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FIGURE 7.4.1.

DATE:
APRIL 2014

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PROTECTIVE MARKING REQUIRED
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NOTES:

35583-SH01d.dwg

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KEY

- INDICATIVE MAIN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
- ▨ AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- ▨ AREA FOR JETTY
- ▨ ACCOMMODATION CAMPUS SITE
- ▨ BLUE RAIL EXTENSION ROUTE
- ▨ GREEN RAIL EXTENSION ROUTE
- ▨ RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- - - HISTORIC ENVIRONMENT STUDY AREA (1KM) AROUND INDICATIVE MAIN DEVELOPMENT SITE
- - - SETTING STUDY AREA
- ▨ SCHEDULED MONUMENTS
- LISTED BUILDINGS**
 - GRADE I*
 - GRADE II*
 - GRADE II



SIZWELL C

DOCUMENT:
SIZWELL C PROJECT
EIA SCOPING REPORT
SECTION 7

DRAWING TITLE:
TERRESTRIAL HISTORIC ENVIRONMENT -
STUDY AREA WITHIN 1KM

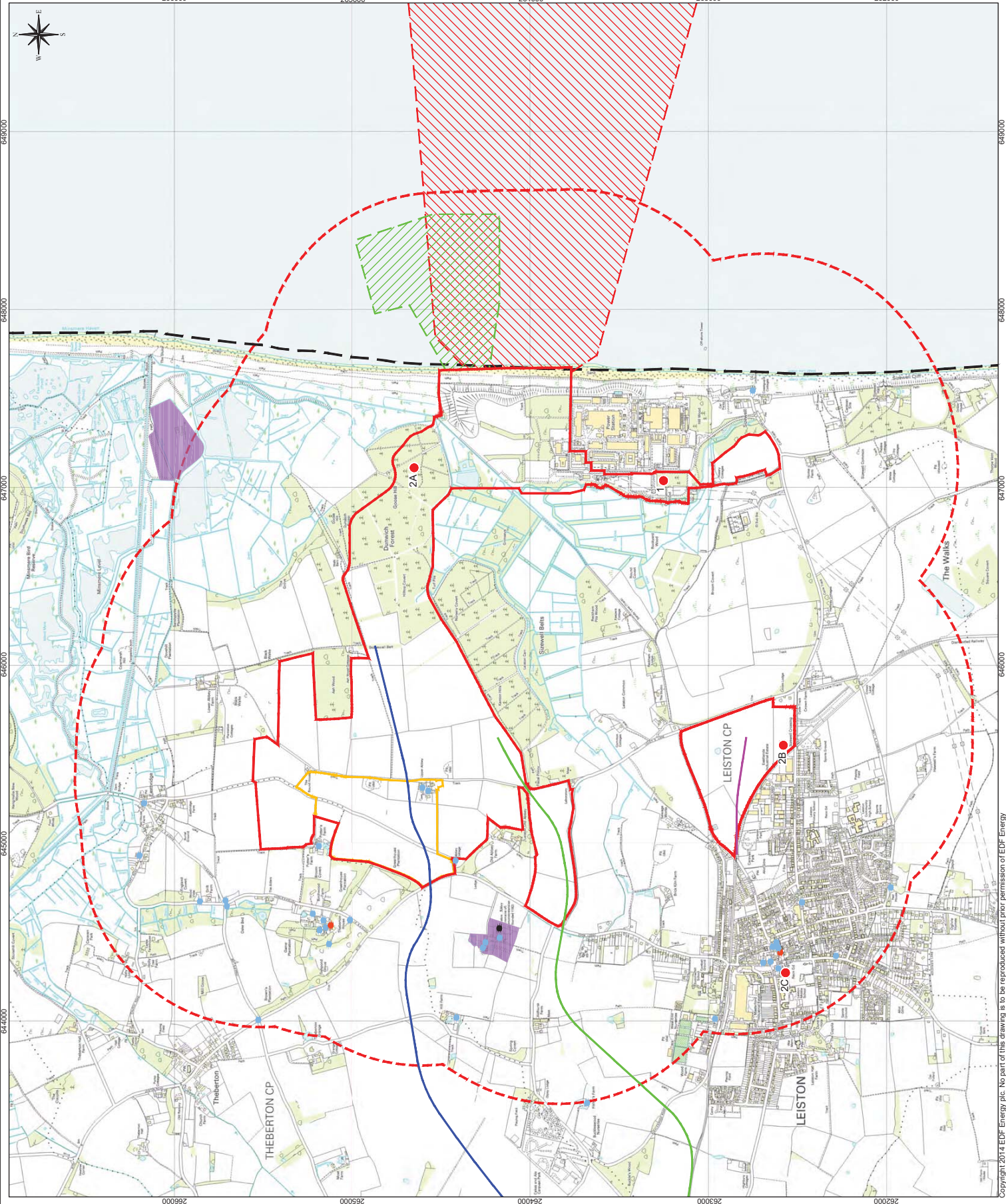
DRAWING NO:
FIGURE 7.5.1

DATE:
APRIL 2014

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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- INDICATIVE WICKHAM MARKET SITE
- ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- HISTORIC ENVIRONMENT STUDY AREA (1KM) AROUND INDICATIVE MAIN DEVELOPMENT SITE
- SETTING STUDY AREA

REVISION	DATE	DRAWN/REVISED	REASON FOR REVISION/ COMMENTS	APPROVED



SIZEWELL C

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SECTION 7

DRAWING TITLE:
TERRESTRIAL HISTORIC ENVIRONMENT -
SETTING STUDY AREA

DRAWING NO:
FIGURE 7.5.2

REVISION:
1.0

DATE:
APRIL 2014

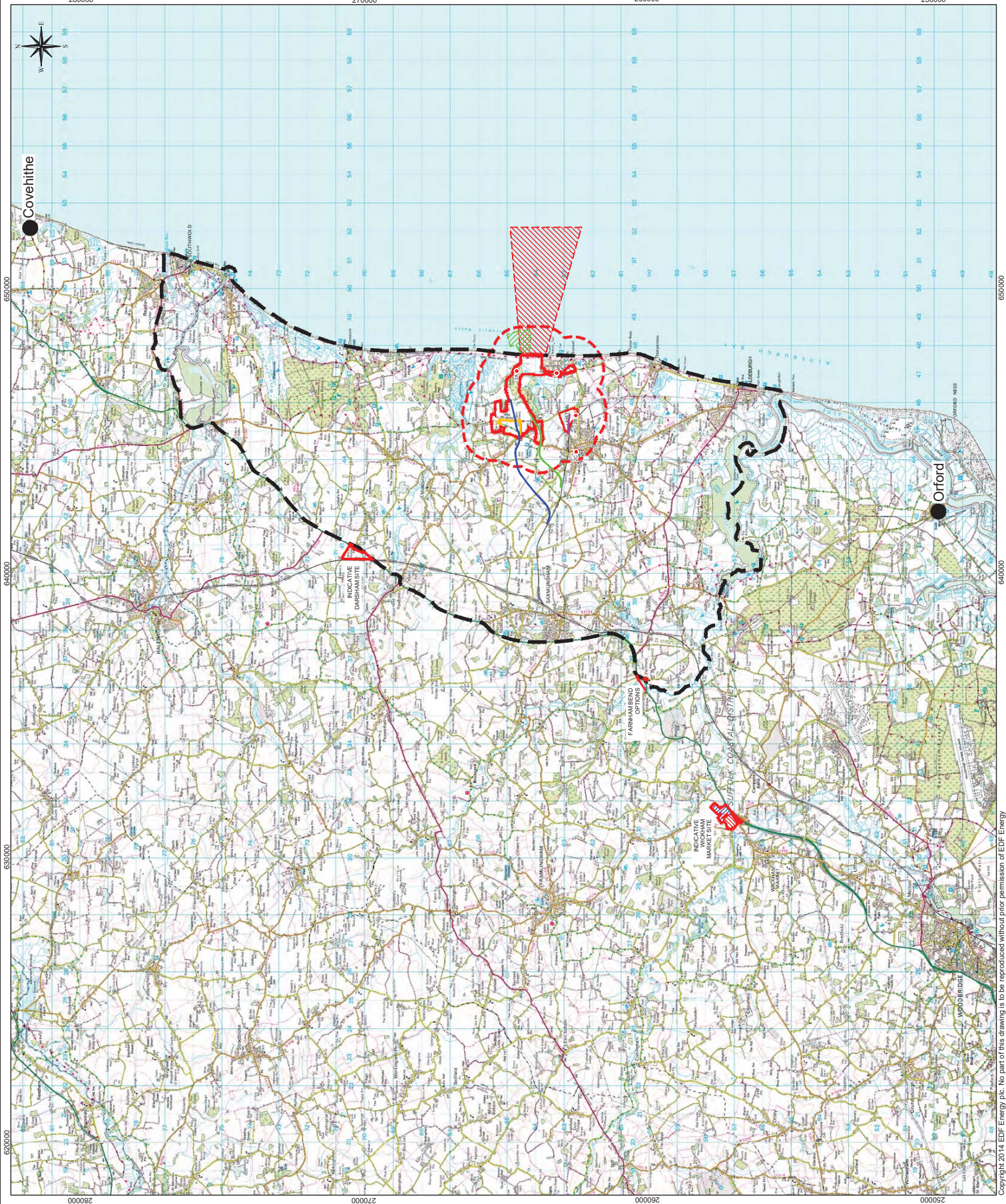
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SCALE:
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SCALE BAR:
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - OFFSHORE AND INTERTIDAL HISTORIC ENVIRONMENT STUDY AREA

REVISION	DATE	DRAWN/RECHECKED	REASON FOR REVISION/ COMMENTS	APPROVED



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SECTION 7**

DRAWING TITLE
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STUDY AREA**

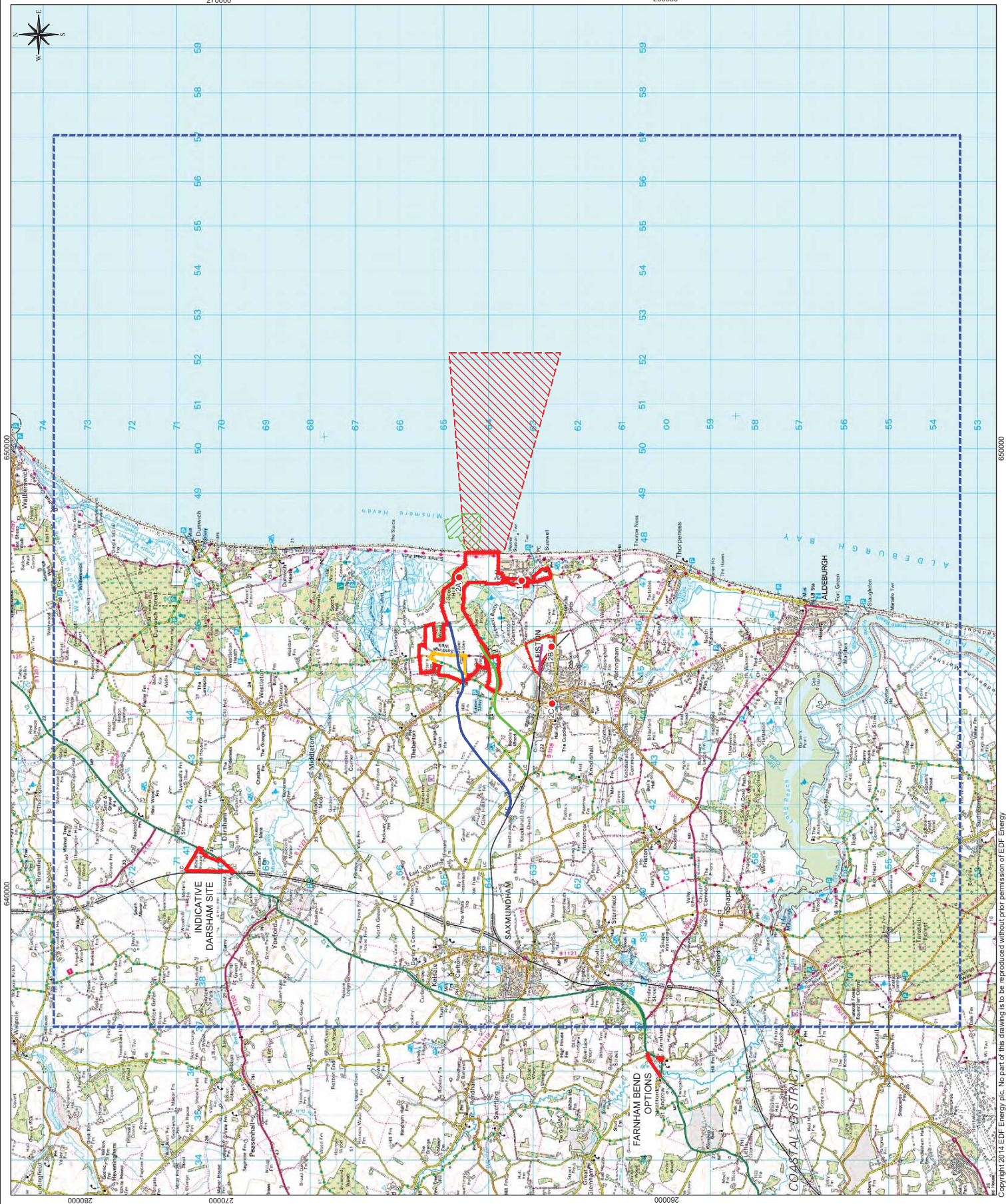
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FIGURE 7.6.1

DATE
APRIL 2014

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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - NOISE MONITORING LOCATIONS 2010 (ML)



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**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE:
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MONITORING LOCATIONS (2010)**

DRAWING NO:
FIGURE 7.7.1

REVISION:
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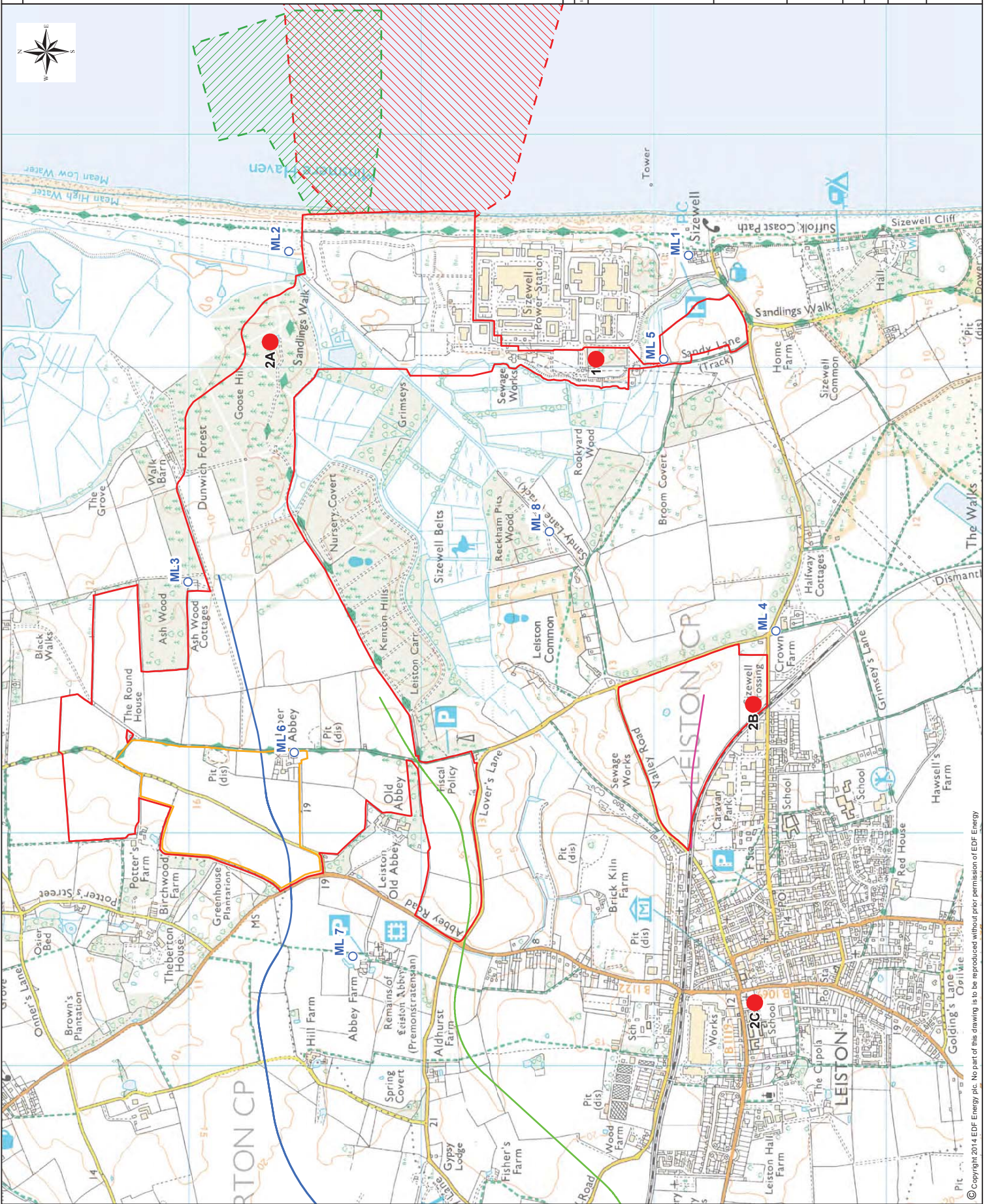
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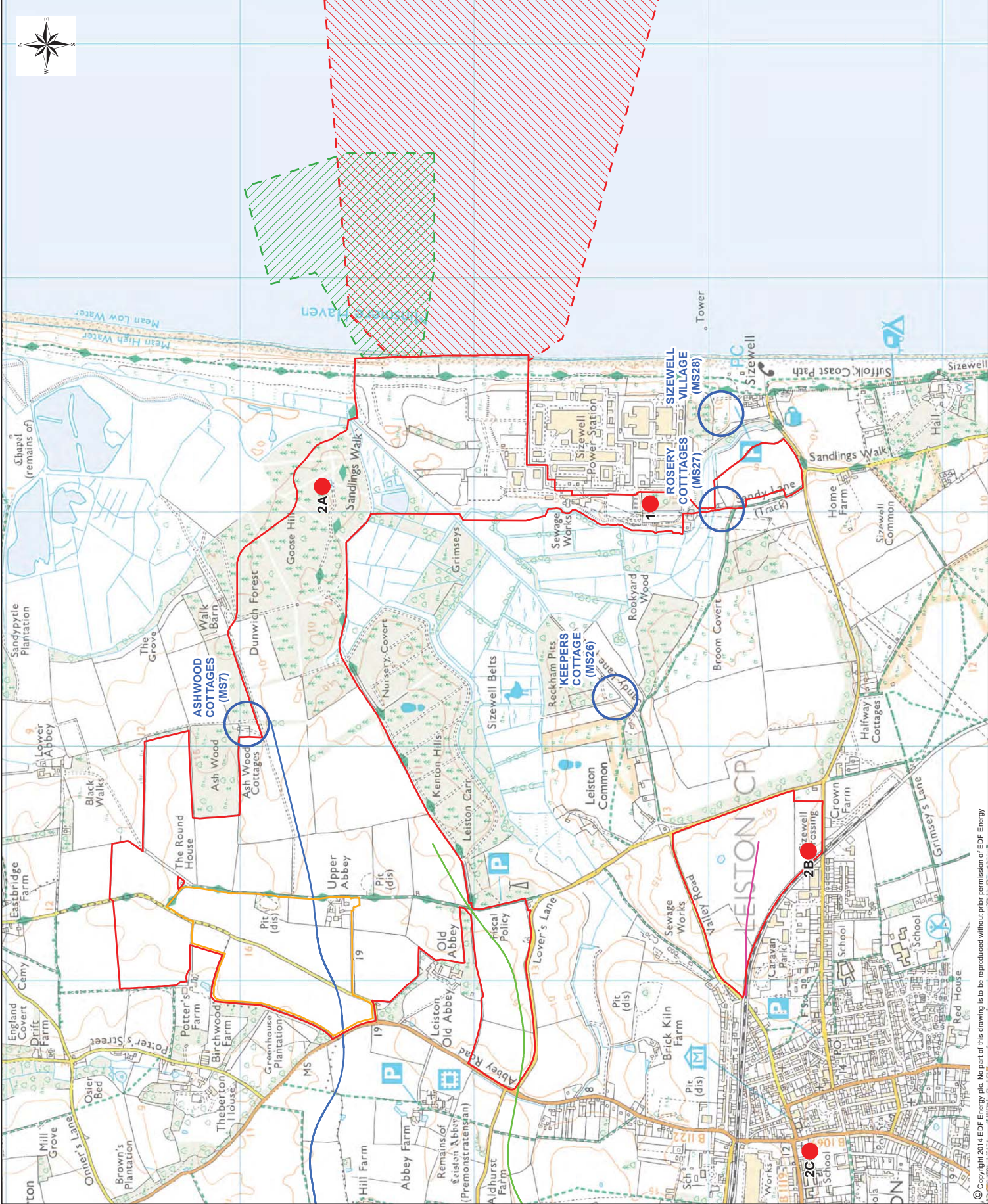
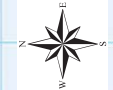
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - NOISE MONITORING LOCATIONS 2013 (MS)



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DRAWING TITLE:
NOISE AND VIBRATION - NOISE
MONITORING LOCATIONS 2013

DRAWING NO:
FIGURE 7.7.2

REVISION:
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DATE:
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - INDICATIVE MAIN DEVELOPMENT SITE
 - NOISE MONITORING STUDY AREA

REVISED	DATE	BY	REASON FOR REVISION



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SECTION 7**

DRAWING TITLE:
**NOISE AND VIBRATION - MAIN
DEVELOPMENT SITE MONITORING
STUDY AREA**

DRAWING NO:
FIGURE 7.7.3

REVISION:
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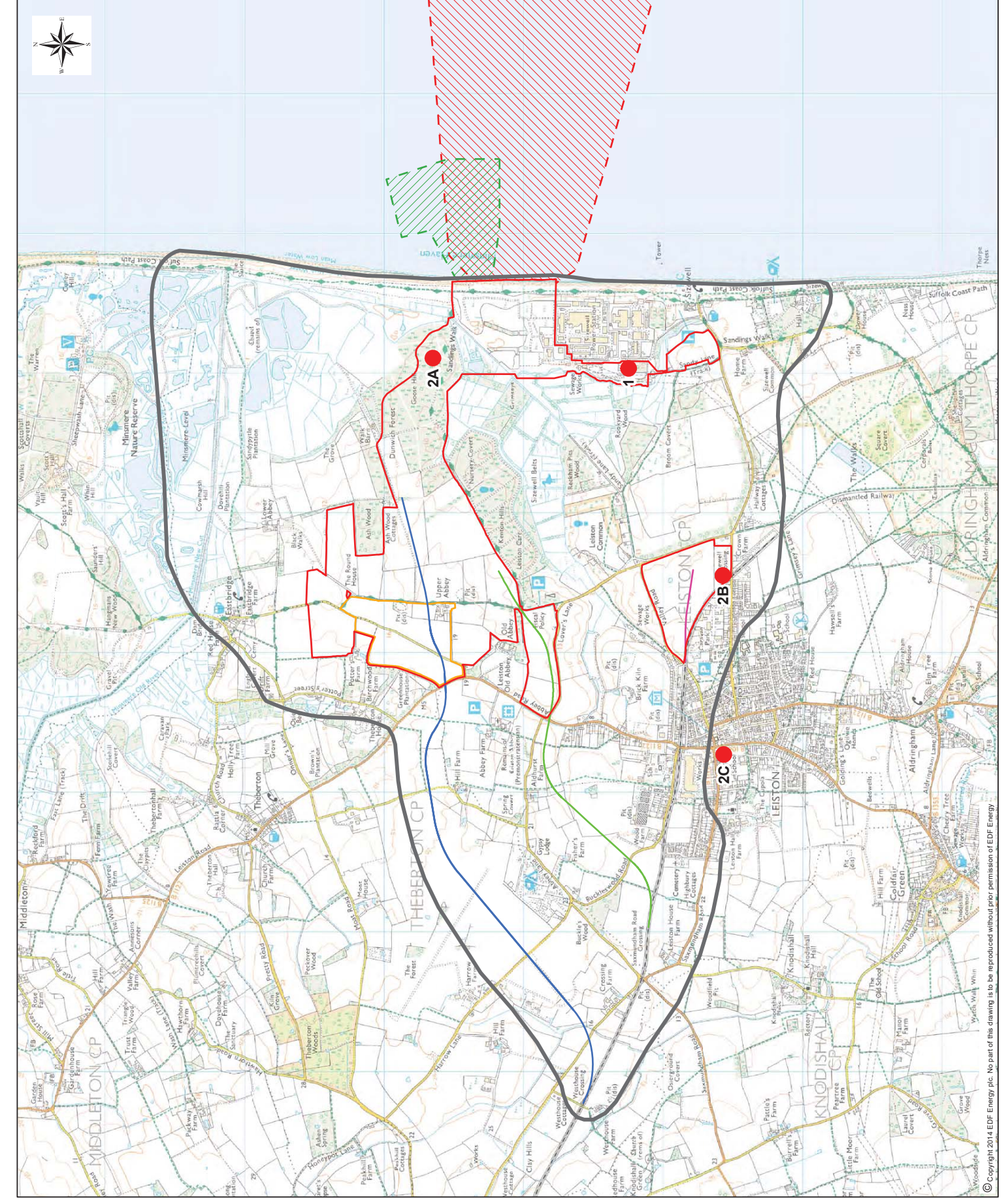
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - INDICATIVE MAIN DEVELOPMENT SITE
 - NOISE MONITORING LOCATION (MS)

MS/MS	DATE	STATUS	REVISIONS/REVISIONS



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EIA SCOPING REPORT
SECTION 7

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NOISE AND VIBRATION - MAIN
DEVELOPMENT SITE MONITORING
LOCATIONS

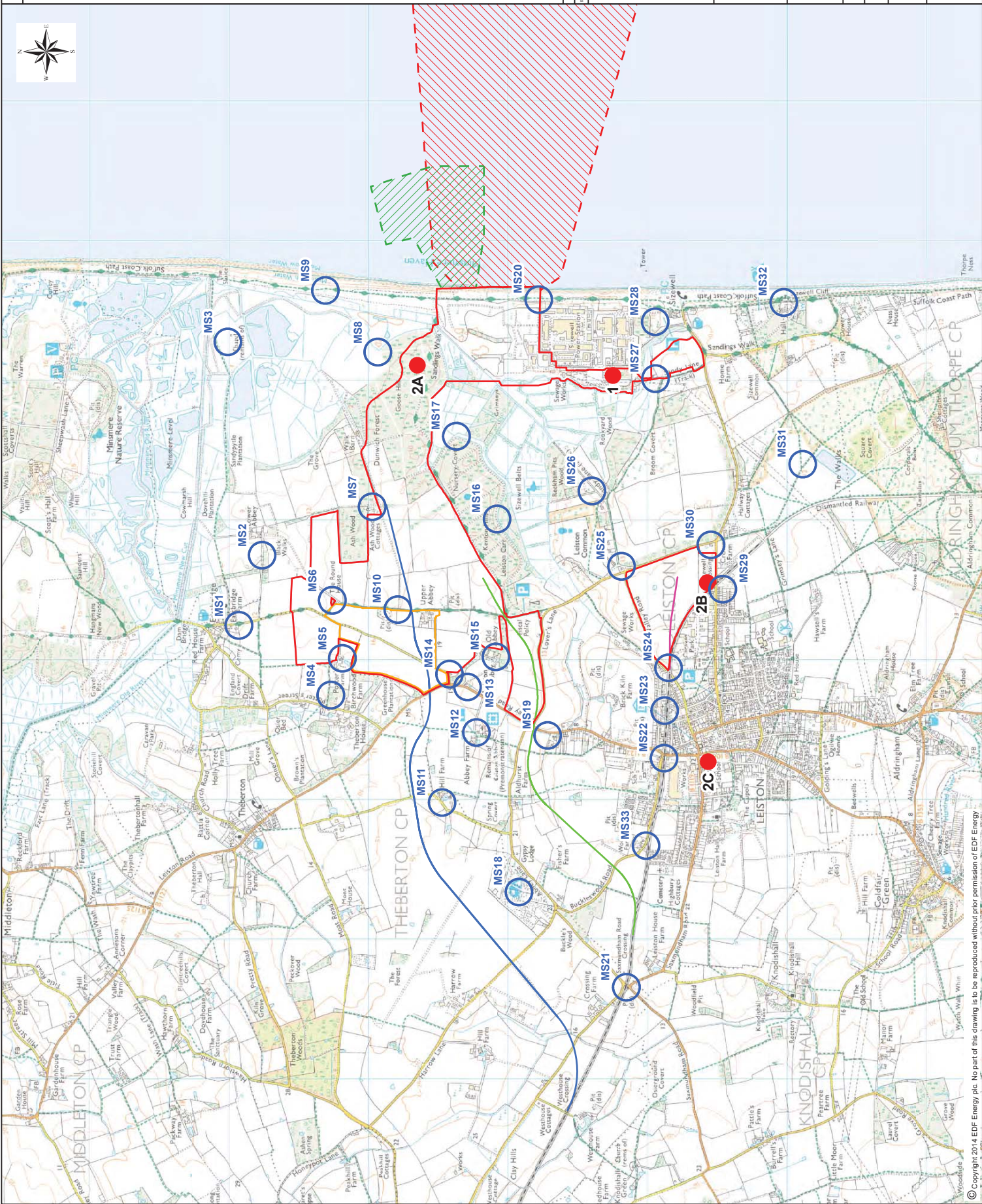
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DATE:
APRIL 2014

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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - INDICATIVE WICKHAM MARKET SITE
 - ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - ROAD TRAFFIC MONITORING LOCATION (RT)



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SECTION 7

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NOISE AND VIBRATION - ROAD TRAFFIC
NOISE MONITORING LOCATIONS

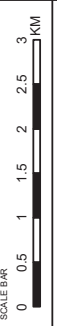
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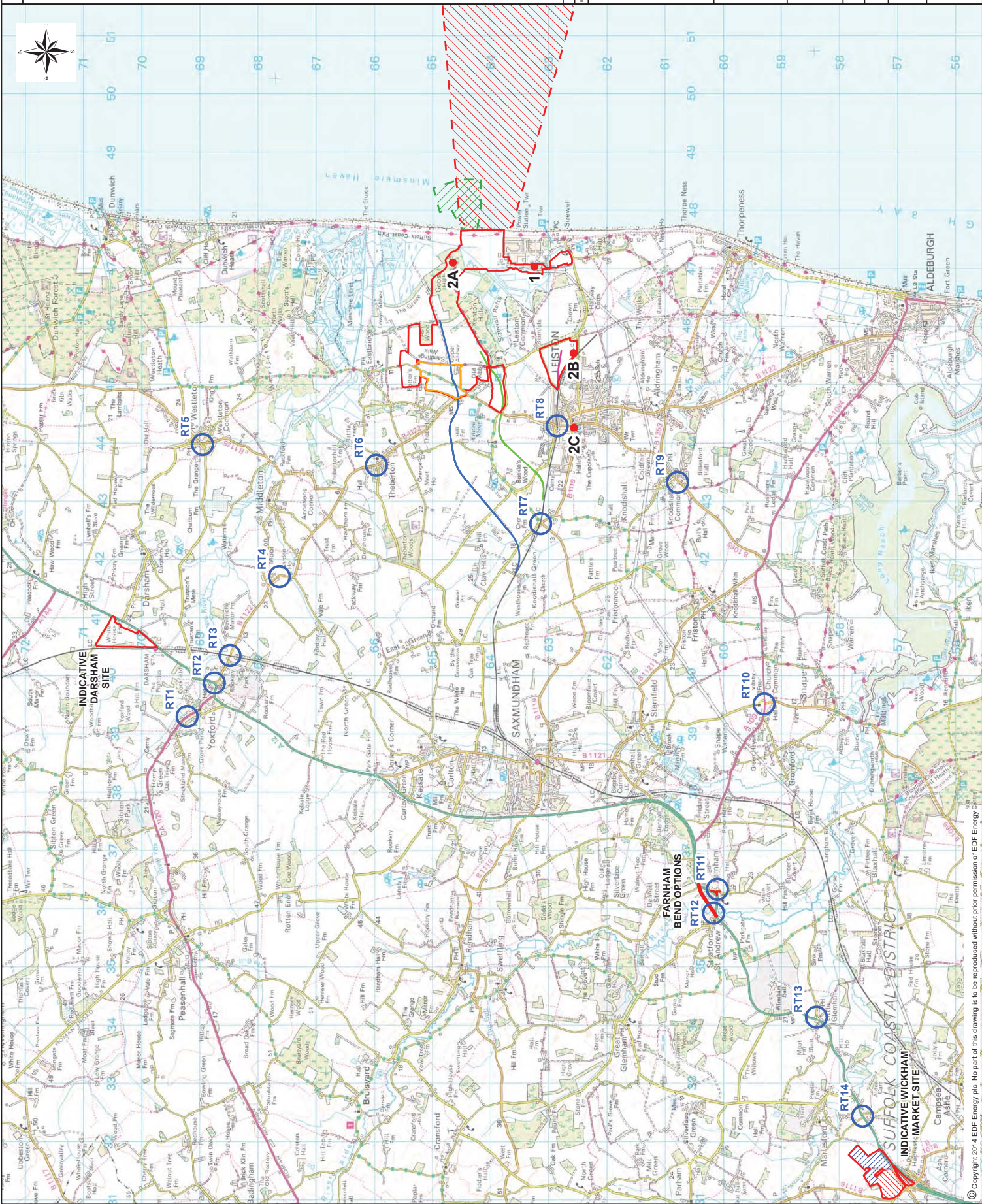
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NOTES:

KEY

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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- INDICATIVE WICKHAM MARKET SITE
- ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
- BLUE RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- BASELINE MONITORING LOCATIONS (AML)
- LOCAL AUTHORITY MONITORING LOCATIONS (WBG, XSG, MEL, MRT, LGM, PAR, STA)



REVISION	DATE	BY	DESCRIPTION



DOCUMENT:
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EIA SCOPING REPORT
SECTION 7

DRAWING TITLE:
AIR QUALITY MONITORING LOCATIONS

DRAWING NO:
FIGURE 7.8.1

DATE:
APRIL 2014

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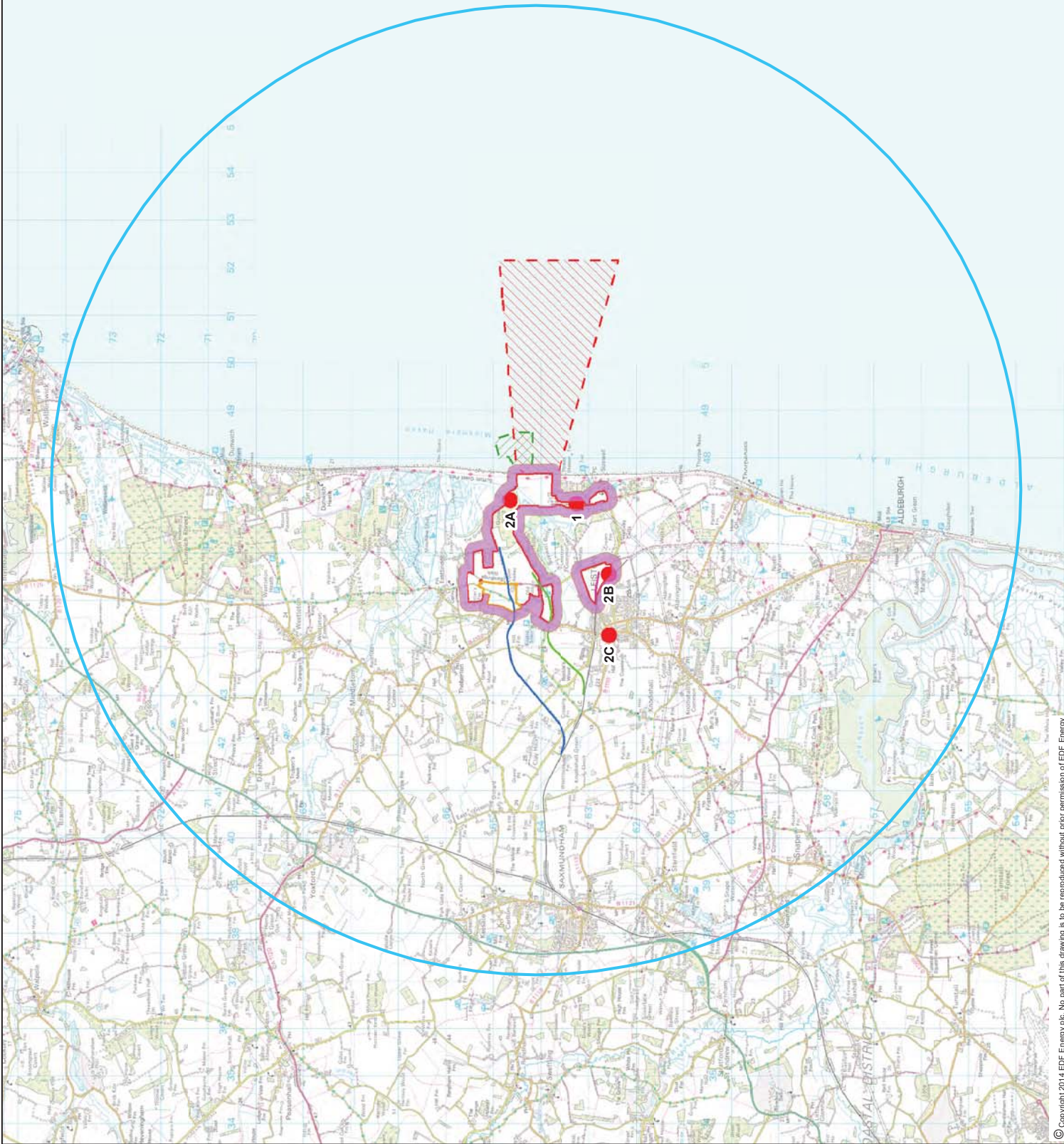
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NOTES:
ROAD TRAFFIC AIR QUALITY STUDY AREAS TO BE
DETERMINED FOLLOWING RECEIPT OF TRAFFIC
DATA AND THE FINALISATION OF CONSTRUCTION
ROUTES AND ACCESS POINTS.
ONLY SOME OF THE OFF-SITE ASSOCIATED
DEVELOPMENTS ARE SHOWN, PLEASE REFER TO
SECTION 8 FOR MORE INFORMATION.

- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - MAXIMUM EXTENT POINT SOURCE STUDY AREA
 - CONSTRUCTION DUST ASSESSMENT AREA



REVISION	DATE	BY	CHKD	DESCRIPTION OF REVISIONS	APPROVED



DOCUMENT:
**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE:
AIR QUALITY STUDY AREA

DRAWING NO:
FIGURE 7.8.2

DATE:
APRIL 2014

SCALE:
1:80,000 @A3

SCALE BAR
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Kilometers

DRAWING SECURITY CLASSIFICATION:
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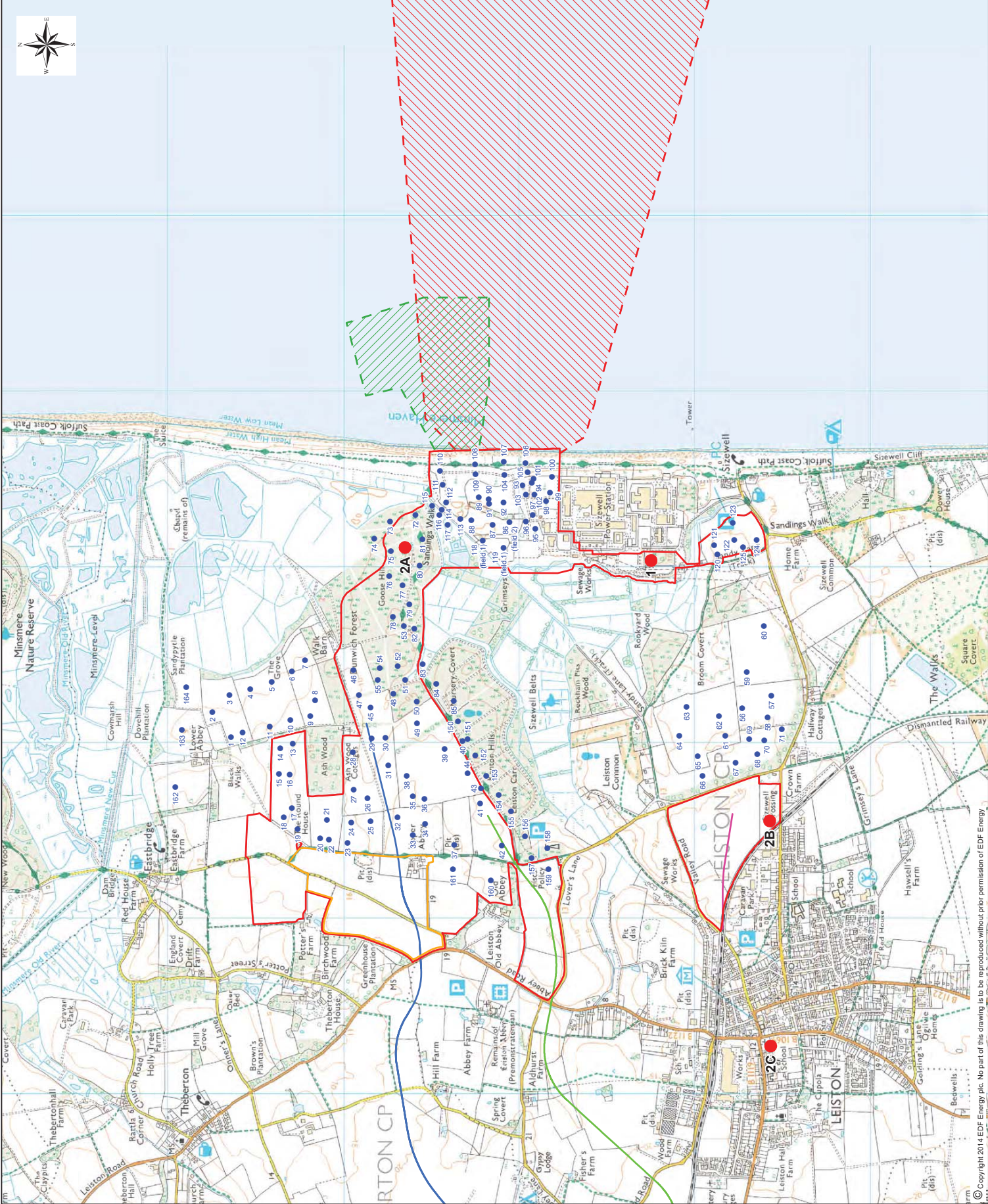
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KEY

- INDICATIVE MAIN DEVELOPMENT SITE
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- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- SOIL SAMPLING LOCATIONS IN THE 2011 ALC SURVEY



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DRAWING TITLE:
 SOILS AND AGRICULTURE - SOIL
 SAMPLING LOCATIONS IN THE 2011
 ALC SURVEY

DRAWING NO:
 FIGURE 7.9.1

DATE:
 APRIL 2014

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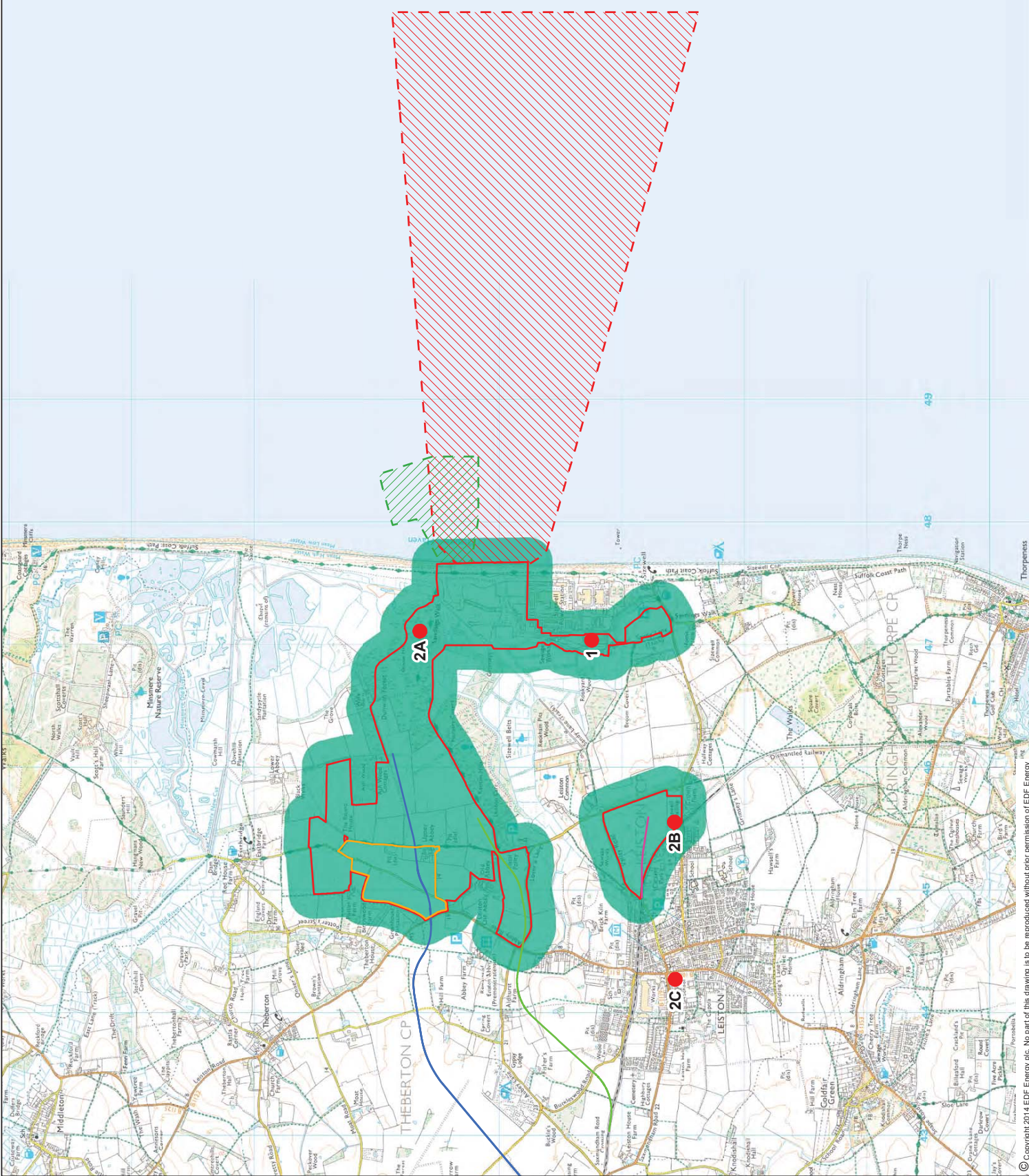
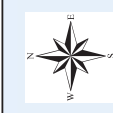
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - SOILS AND AGRICULTURE STUDY AREA



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DOCUMENT:
 SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 7

DRAWING TITLE:
 SOILS AND AGRICULTURE - SOILS AND
 AGRICULTURE STUDY AREA

DRAWING NO:
 FIGURE 7.9.2

REVISION:
 1.0

DATE:
 APRIL 2014

DRAWN:
 S.B.

SCALE:
 1:30,000 @A3

SCALE BAR
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 METRES

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Information taken from the Soil Survey of England and Wales (1984) map at scale of 1:250,000

NOTES:
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS

- SOIL TYPE**
- 361 SANDWICH SOIL ASSOCIATION
 - 55FG NEWPORT 4 SOIL ASSOCIATION
 - 551F NEWPORT 3 SOIL ASSOCIATION
 - 1025 MENDHAM SOIL ASSOCIATION
 - 712G RAGDALE SOIL ASSOCIATION

NO	DATE	STATUS	DESCRIPTION OF REVISIONS	APPROVED



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DRAWING TITLE:
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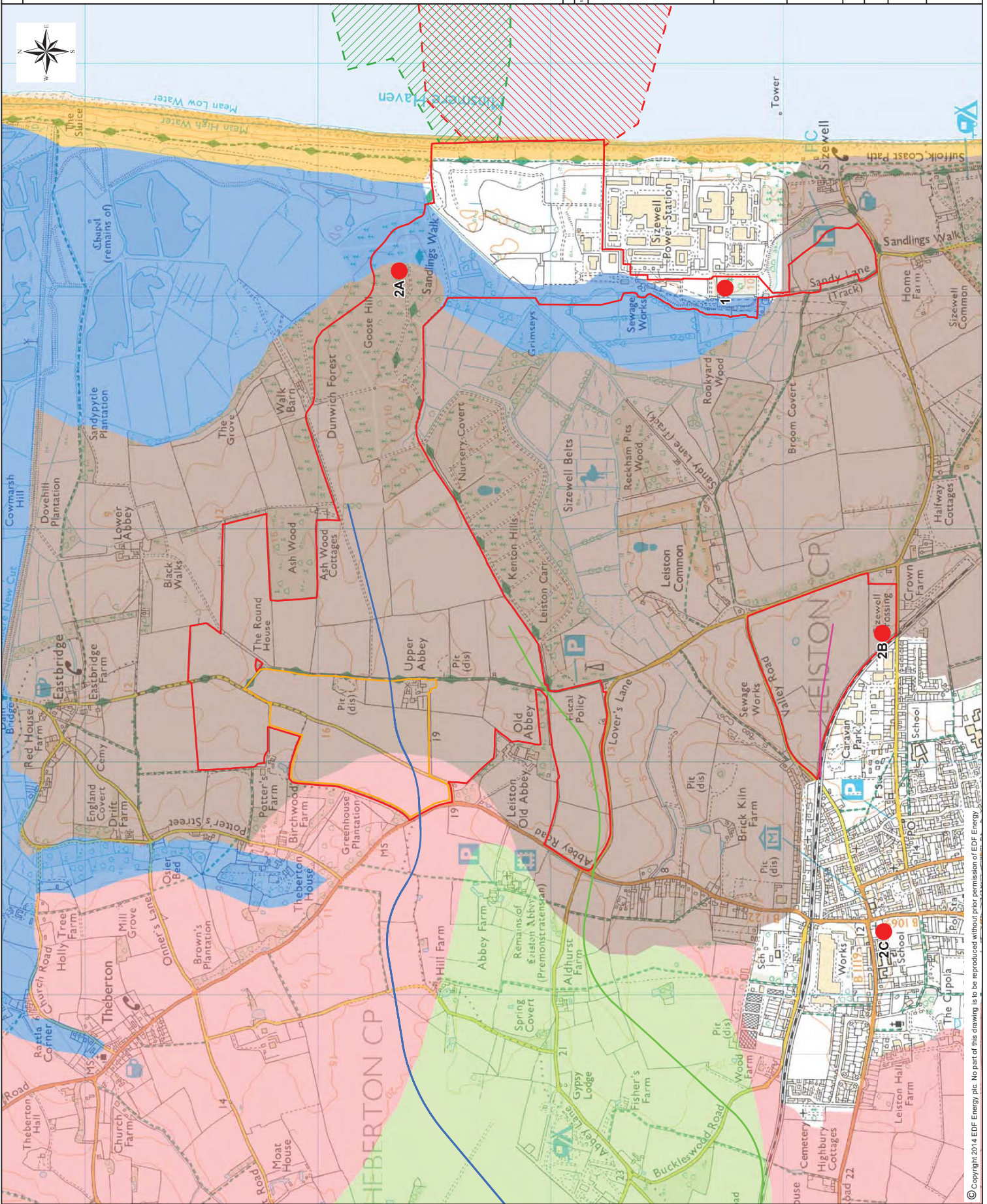
DRAWING NO:
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DATE:
 APRIL 2014

SCALE:
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SCALE BAR
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS (WHERE ASSESSED)

- AGRICULTURAL LAND CLASSIFICATION (WHERE ASSESSED)**
- GRADE 4
 - GRADE 3B
- NON-AGRICULTURAL LAND**
- COASTAL SAND DUNE AND DUNE STACK
 - COMMERCIAL FORESTRY WITHIN THE STUDY AREA
 - MADE GROUND
 - MARSHES

REVISED	DATE	BY	REASON FOR REVISION



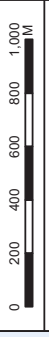
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 EIA SCOPING REPORT
 SECTION 7

DRAWING TITLE:
 SOILS AND AGRICULTURE - ALC GRADES
 AND NON-AGRICULTURAL LAND USE

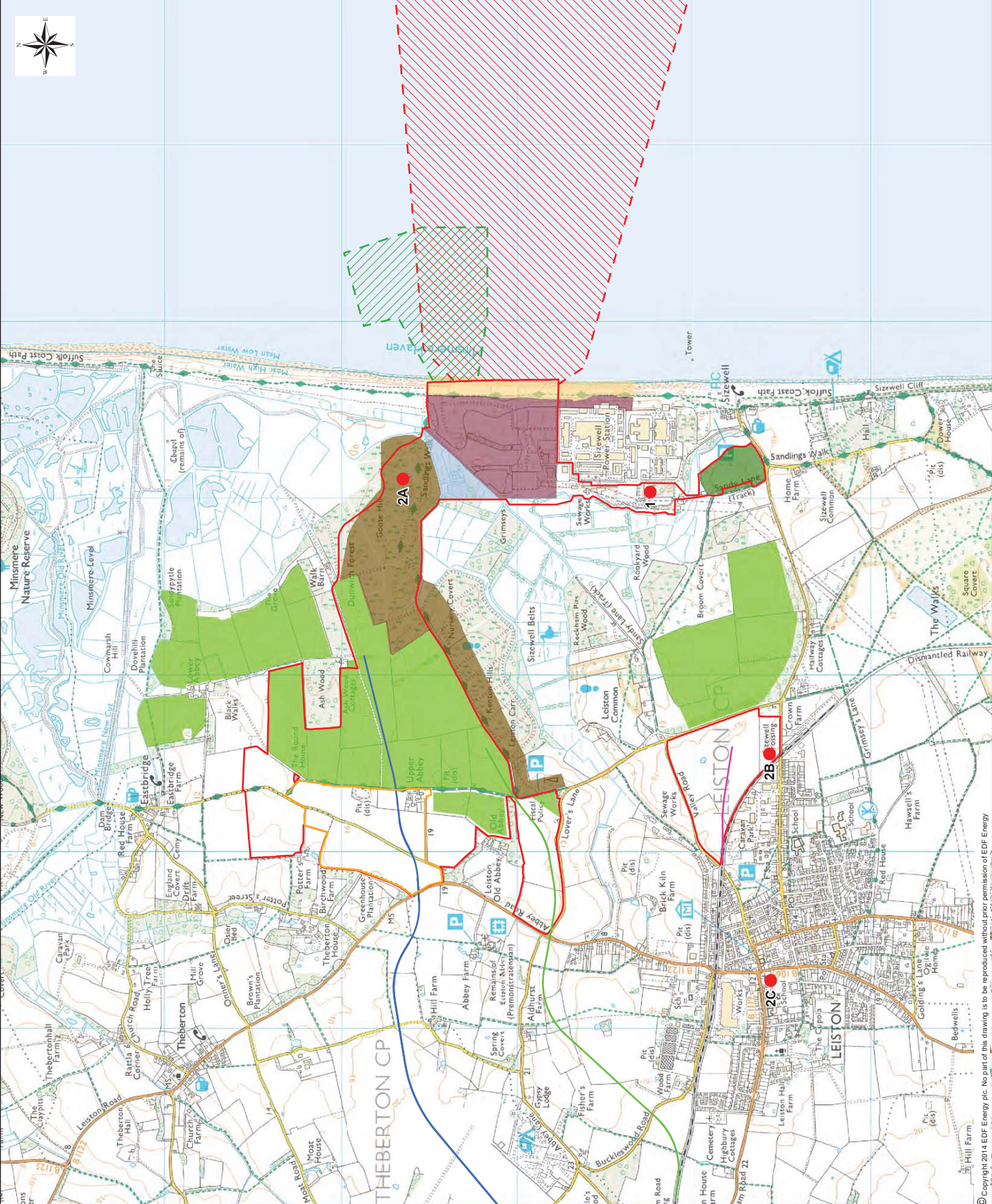
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DATE:
 APRIL 2014

SCALE:
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- PROTECTIVE MARKING REQUIRED
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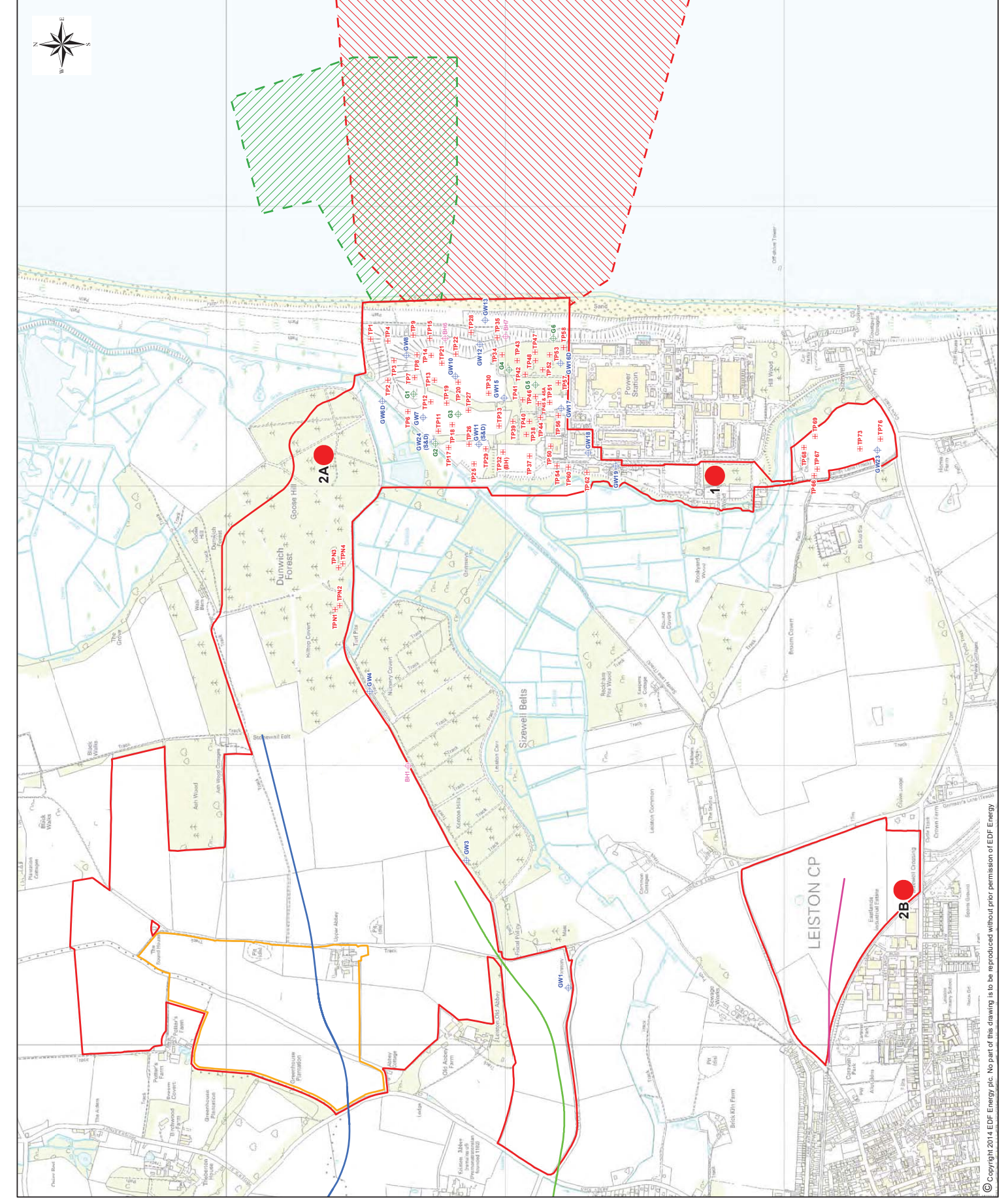
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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
- PHASE 2 INTRUSIVE INVESTIGATION BOREHOLES**
- ⊕ BOREHOLE LOCATION (NO INSTALLATION)
 - ⊕ GAS & GROUNDWATER MONITORING BOREHOLE LOCATION
 - ⊕ GAS ONLY MONITORING BOREHOLE LOCATION
 - ⊕ TRIAL PIT LOCATION



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DOCUMENT:
SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7

DRAWING TITLE:
GEOLOGY AND LAND QUALITY -
BOREHOLE MONITORING LOCATIONS

DRAWING NO:
FIGURE 7.10.1

REVISION:
1.0

DATE:
APRIL 2014

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S.B.

SCALE:
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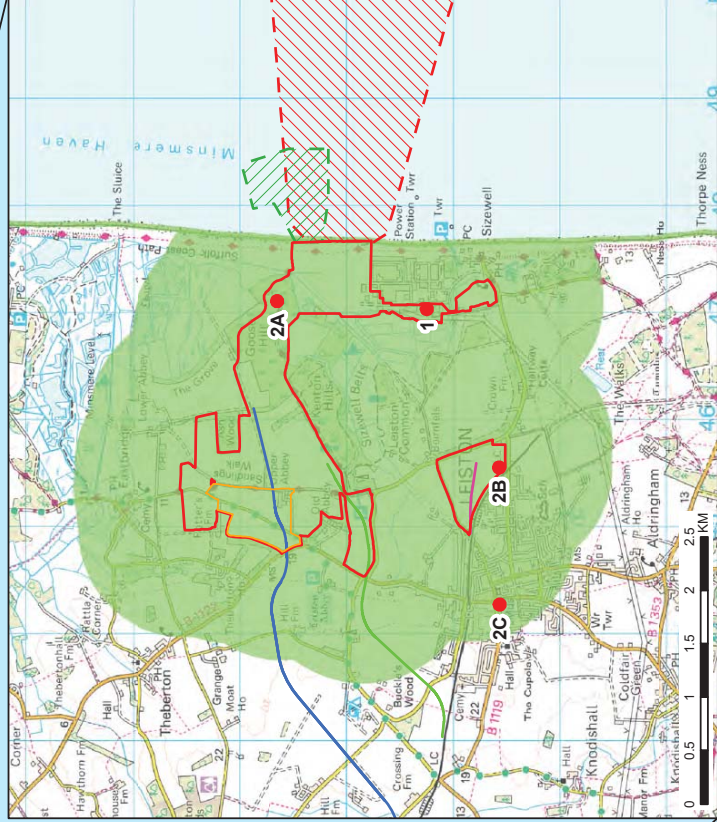
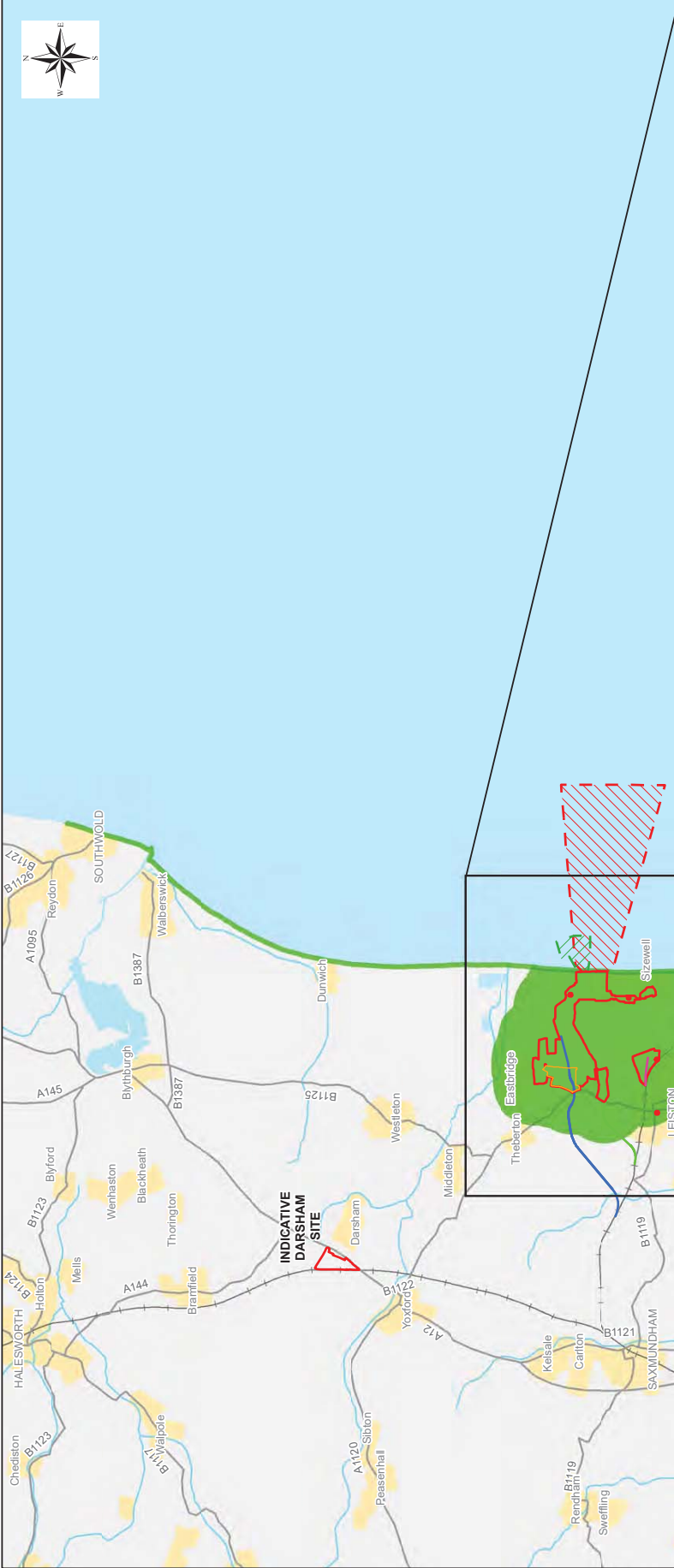
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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- GEOLOGY AND LAND QUALITY STUDY AREA



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**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE:
**GEOLOGY AND LAND QUALITY
STUDY AREA**

DRAWING NO:	FIGURE 7.10.2	REVISION:	1.0
DATE:	APRIL 2014	DRAWN:	S.B.
SCALE:	1:110,000 @A3		

SCALE BAR
0 1 2 3 4 5 KM

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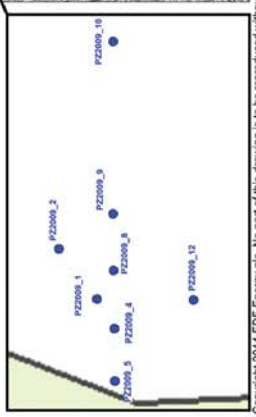
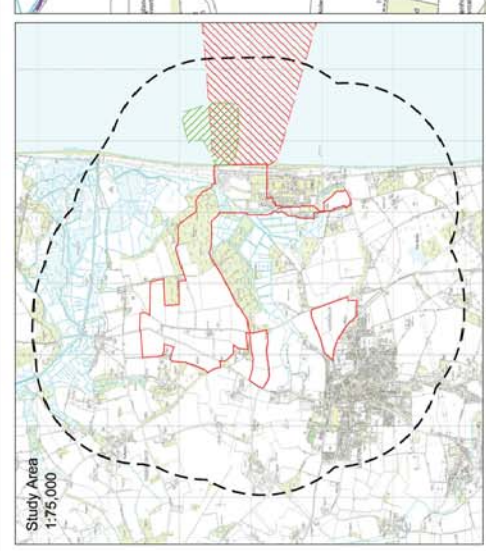
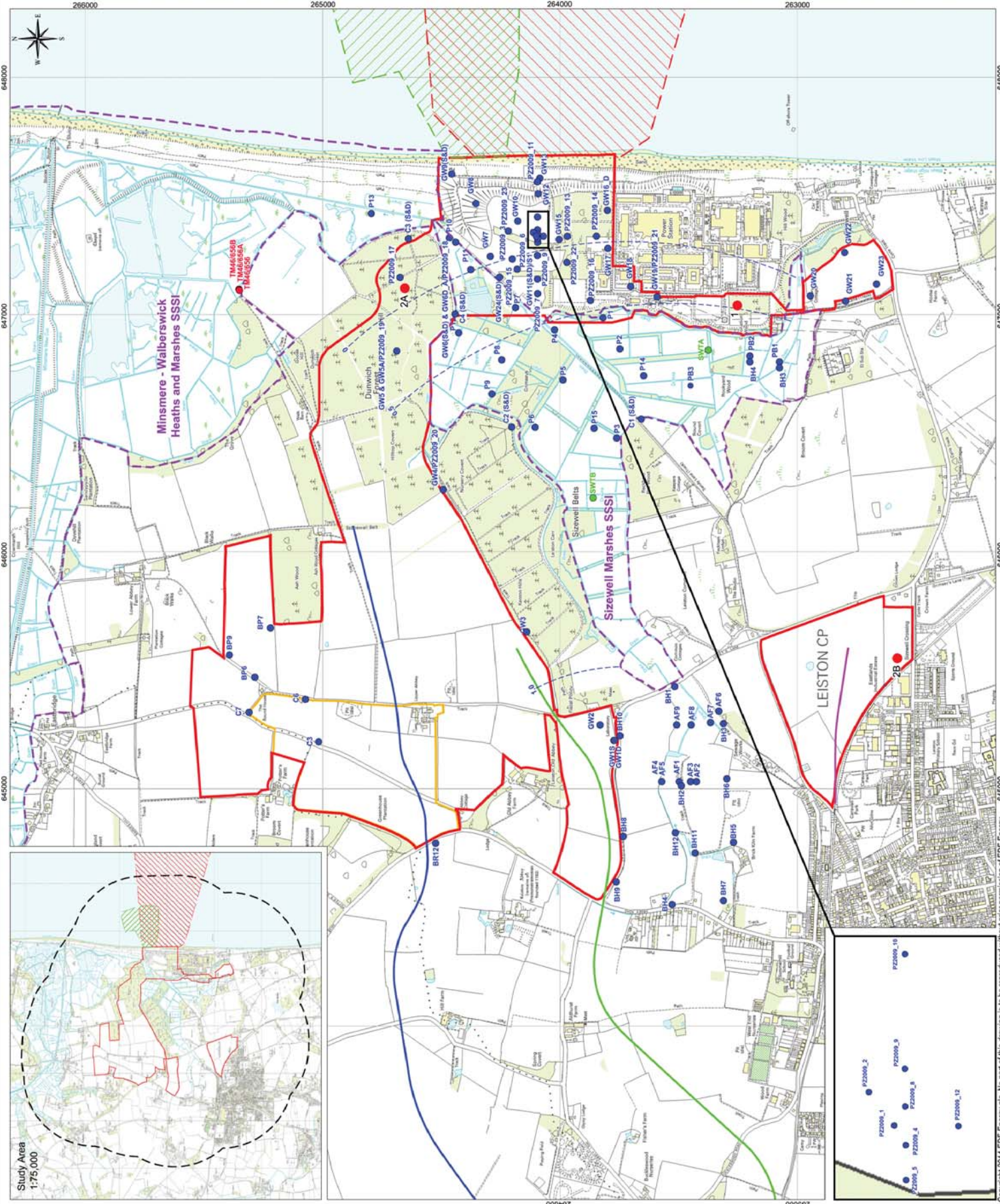
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- INDICATIVE MAIN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - GROUNDWATER STUDY AREA
 - SSSI
 - CRAG GROUNDWATER LEVEL CONTOUR MAOD (OCTOBER 2013)
 - EDF ENERGY MONITORING BOREHOLE
 - ENVIRONMENT AGENCY DIPWELL AND BOREHOLE
 - SUFFOLK WILDLIFE TRUST DIPWELL (PEAT)



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FIGURE 7.11.1	APRIL 2014	J.P.			
REVISION	1.0				
DRAWING SECURITY CLASSIFICATION			<input type="checkbox"/> PROTECTIVELY MARKING REQUIRED <input checked="" type="checkbox"/> NOT PROTECTIVELY MARKED		



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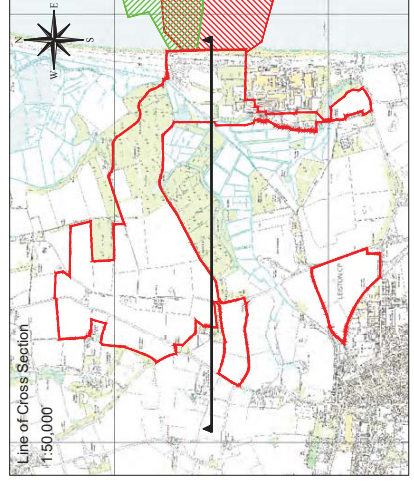
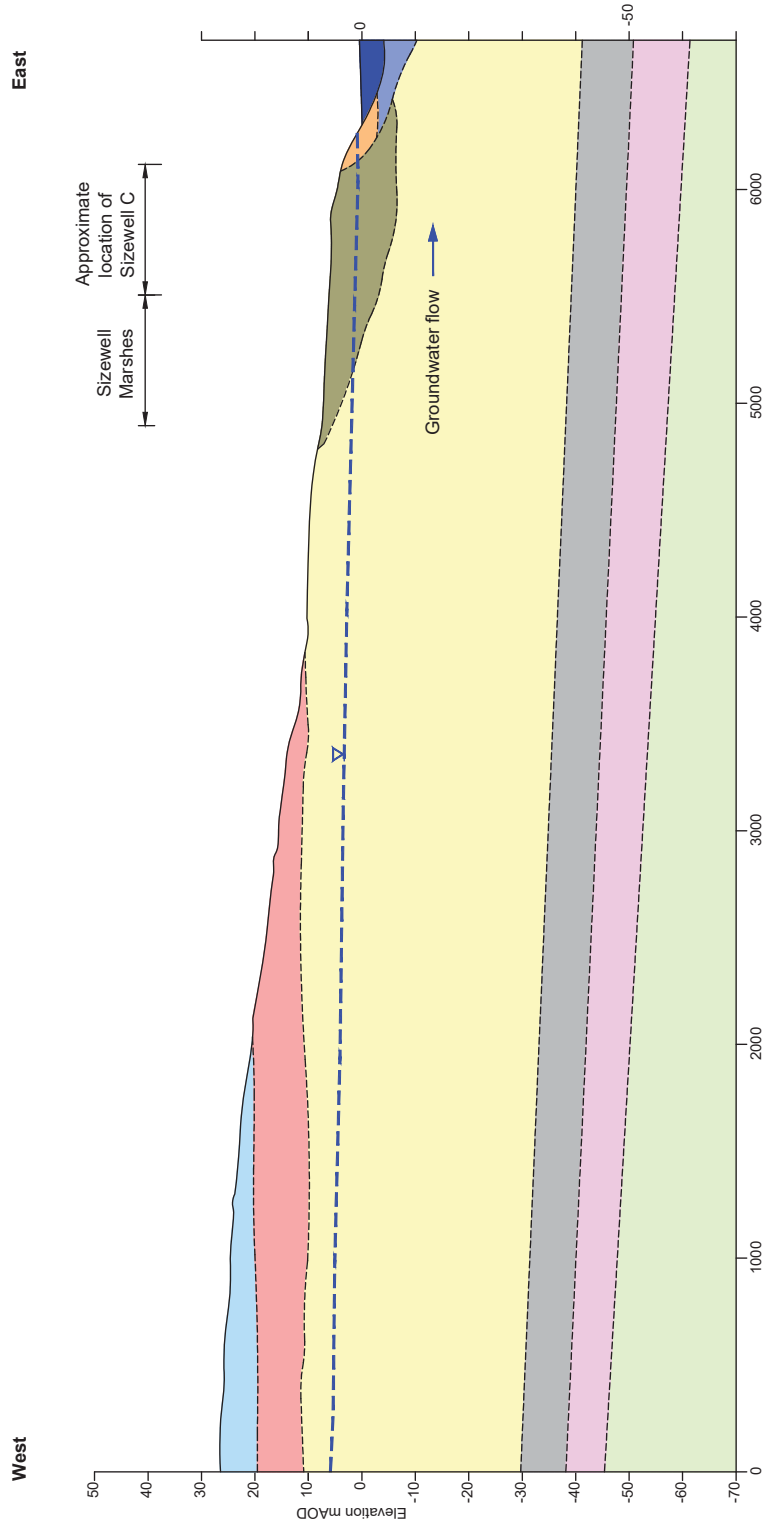
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KEY

- INDICATIVE MAIN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES
- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- DIAMICTON (BOULDER CLAY)
- PEAT AND ALLUVIUM
- SAND AND GRAVEL SECONDARY AQUIFER
- BEACH DEPOSITS
- MARINE DEPOSITS
- NORWICH CRAG PRINCIPAL AQUIFER
- LONDON CLAY
- NORWICH FORMATION, LAMBETH GROUP, ORMESKY FORMATION
- PRINCIPAL CHALK AQUIFER
- GROUNDWATER LEVEL



SIZEWELL C

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SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 7

DRAWING TITLE
GROUNDWATER - SCHEMATIC
HYDROGEOLOGICAL CROSS SECTION

DRAWING NO
FIGURE 7.11.2

DATE
APRIL 2014

SCALE BAR
0 km 1.5 km

DRAWING SECURITY CLASSIFICATION
25 x vertical exaggeration

REVISION
1.0

SCALE
1:25,000 @ A3

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J.P.

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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- SSSI
- ENVIRONMENT AGENCY LICENSED ABSTRACTION
- PRIVATE ABSTRACTION



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EIA SCOPING REPORT
SECTION 7**

DRAWING TITLE
**GROUNDWATER - ABSTRACTION
LOCATIONS**

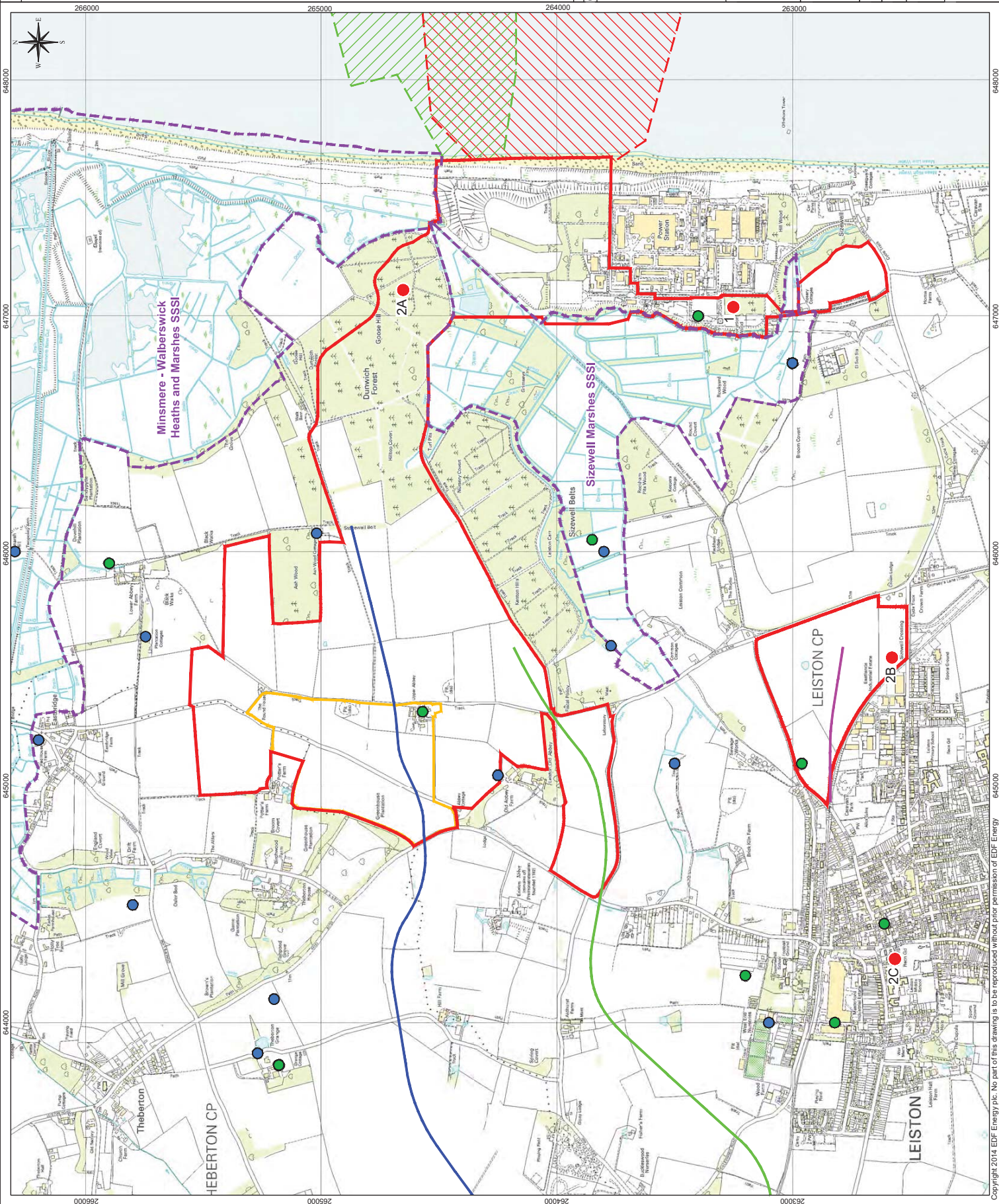
DRAWING NO
FIGURE 7.11.3

DATE
APRIL 2014

SCALE
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SCALE BAR
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- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- VISITOR CENTRE LOCATION OPTIONS
- STUDY AREA WATER CATCHMENTS

NO.	DATE	BY	REVISION



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SECTION 7

DRAWING TITLE:
SURFACE WATER - STUDY AREA

DRAWING NO:
Figure 7.12.1

REVISION:
1.0

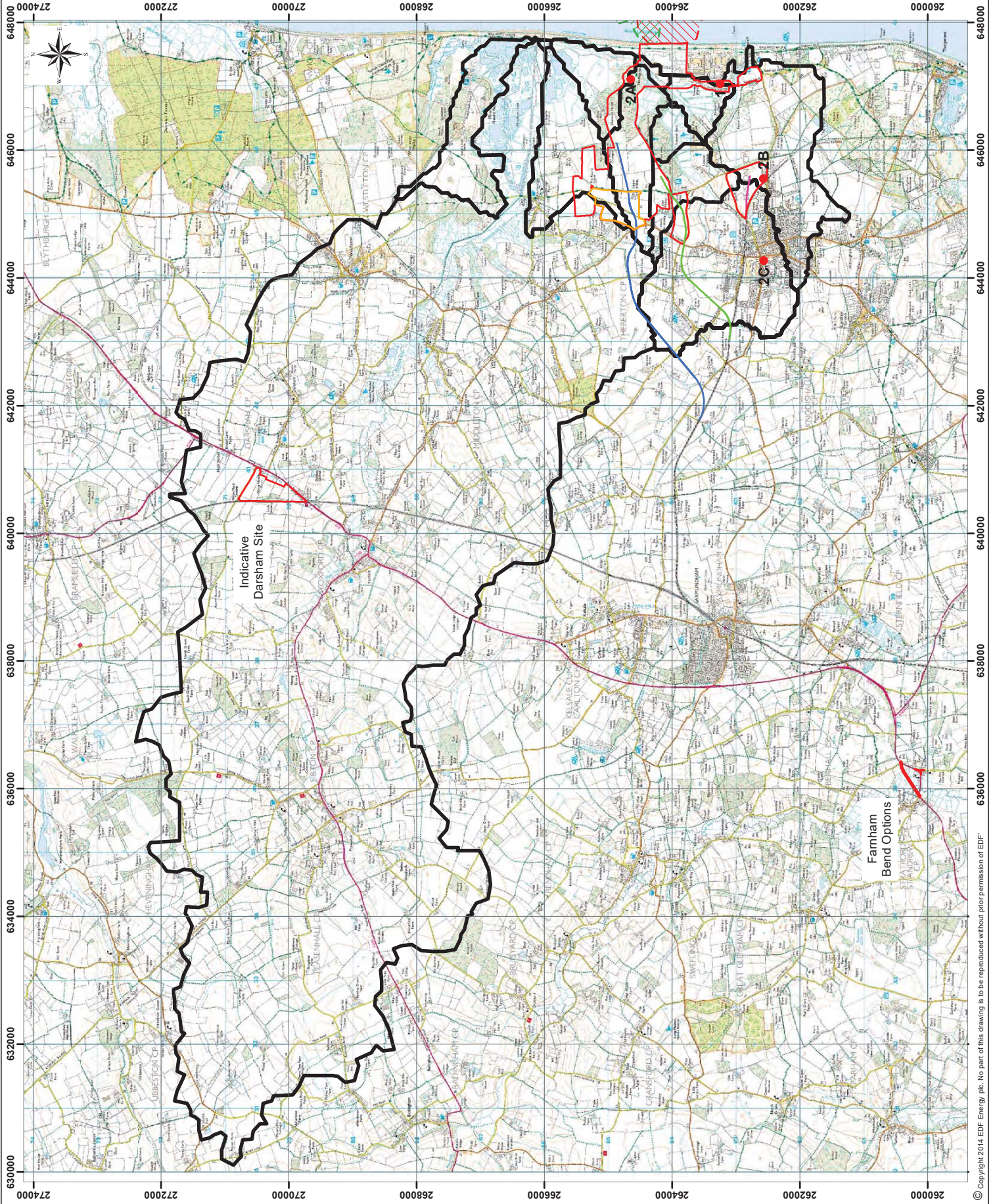
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APRIL 2014

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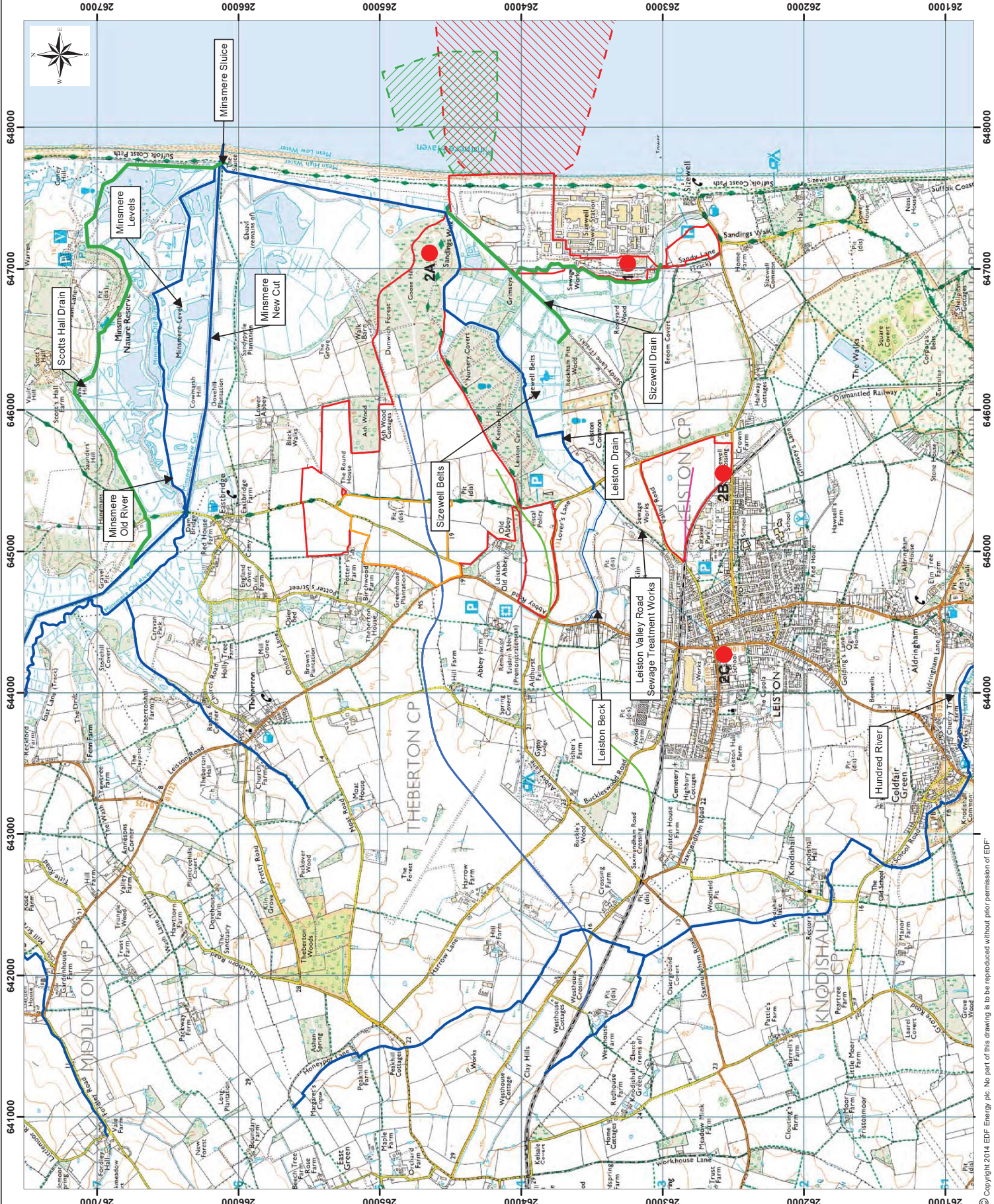


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 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - MAIN RIVERS
 - OTHER WATERCOURSES



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EDF ENERGY
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DRAWING TITLE:
 SURFACE WATER - LOCATION PLAN
 OF KEY FLUVIAL FEATURES

DRAWING NO:
 Figure 7.12.2

REVISION:
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DATE:
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SCALE:
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SCALE BAR
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 km

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 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - BLUE RAIL EXTENSION ROUTE
 - GREEN RAIL EXTENSION ROUTE
 - RAIL TERMINAL
 - VISITOR CENTRE LOCATION OPTIONS
 - MAIN RIVERS
 - OTHER WATERCOURSES
 - GAUGING STATIONS
 - WATER SAMPLING LOCATIONS

NO.	DATE	STATUS	APPROVED USER/EXPERIMENTALIST



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 SURFACE WATER - WATER QUALITY
 SAMPLING SITES AND GAUGING STATIONS

DRAWING NO:
 Figure 7.12.3

REVISION:
 1.0

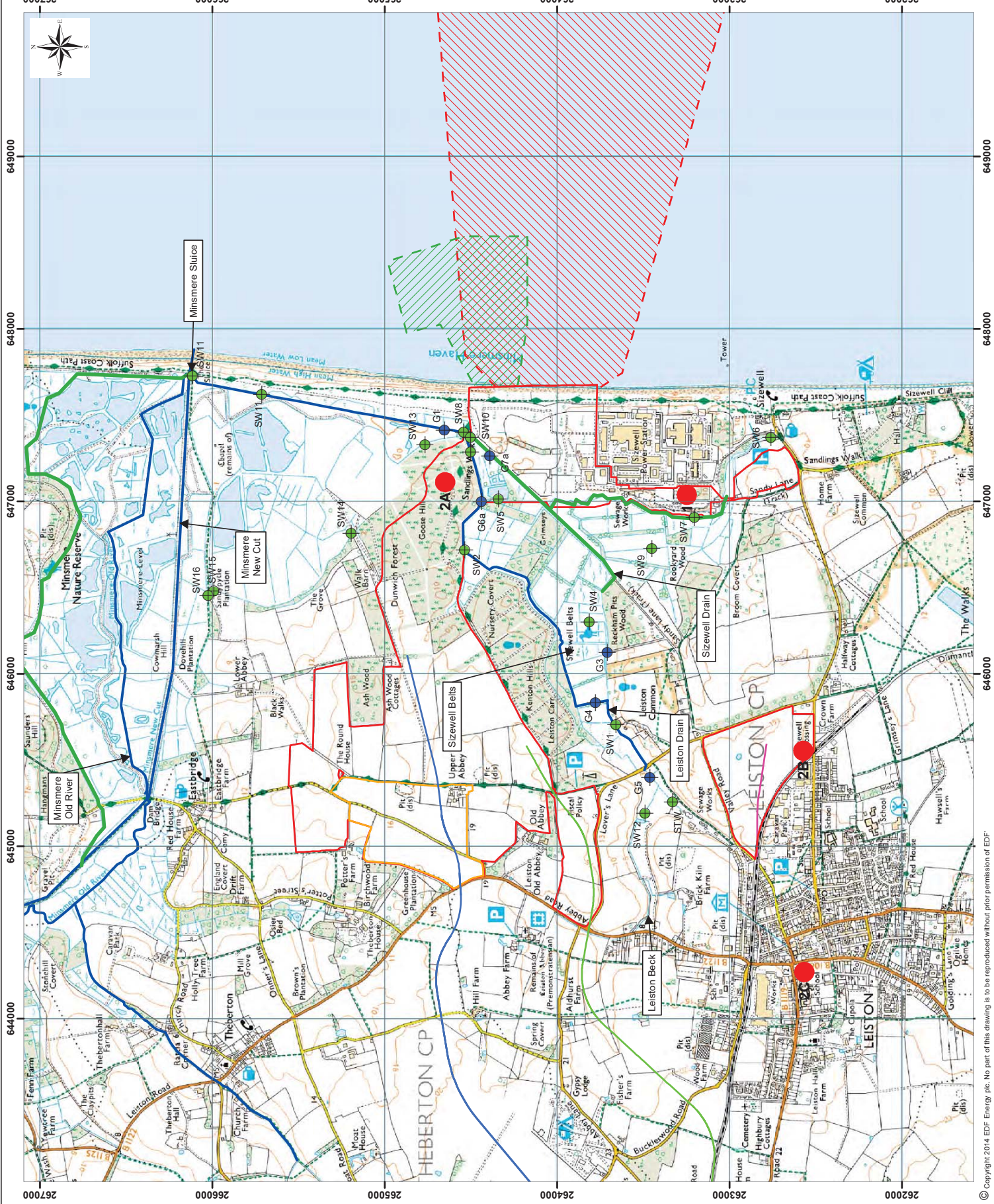
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NOTES:

KEY

- INDICATIVE MAIN DEVELOPMENT SITE
- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- SIZEWELL A AND B POWER STATIONS
- TELEMAC COASTAL PROCESSES MODELLING AREA
- AREA FOR SEABED SEDIMENT SAMPLING
- 4000 METRE RADAR RANGE
- EXTENT OF AVAILABLE LIDAR DATA

HYDRODYNAMIC MEASUREMENT CAMPAIGNS

- 2008
- 2009
- 2013

ADDITIONAL SOURCES OF DATA

- WAVRIDERS
- ENVIRONMENT AGENCY MONITORING LOCATIONS

WATER DEPTH IN METRES TO ORDNANCE DATUM NEWLYN



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 SECTION 7

DRAWING TITLE

COASTAL GEOMORPHOLOGY AND HYDRODYNAMICS - SPATIAL EXTENT OF THE STUDY AREA

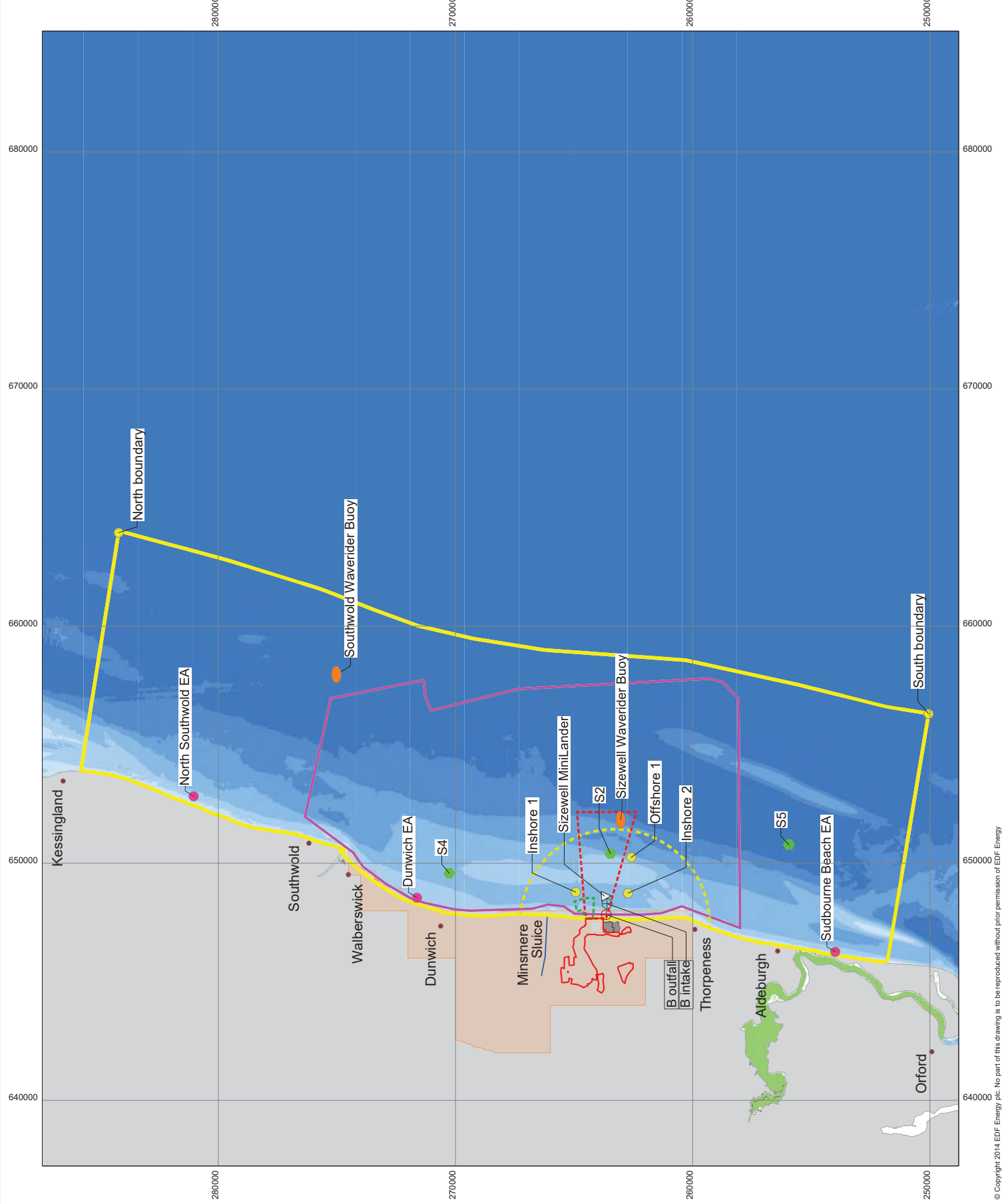
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 REVISION: 1.0

DATE: APRIL 2014
 DRAWN: B.B.

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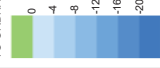
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KEY

- INDICATIVE MAIN DEVELOPMENT SITE
- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY

- MARINE WATER QUALITY SAMPLING LOCATIONS
- / SAMPLING STATION NUMBER

WATER DEPTH IN METRES TO ORDNANCE DATUM NEWLYN



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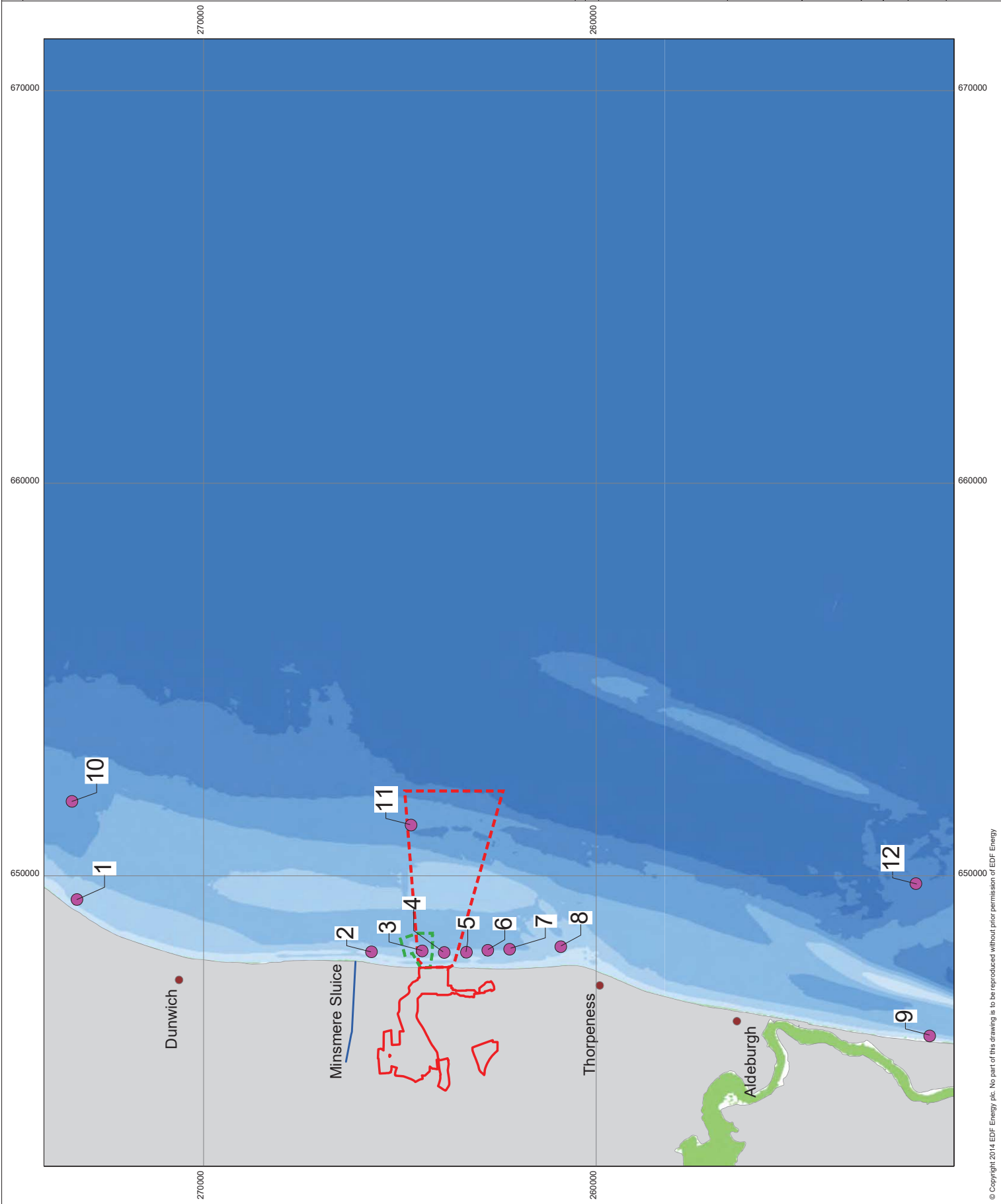


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DRAWING TITLE
**MARINE WATER QUALITY AND SEDIMENTS -
 SAMPLING LOCATIONS**

DRAWING NO: **FIGURE 7.14.1**
 SCALE: **1:0**
 DATE: **APRIL 2014** DRAWN: **B.B.** SCALE: **1:90000 @ A3**
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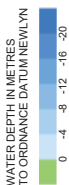
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NOTES:

KEY

- INDICATIVE MAIN DEVELOPMENT SITE
- AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- SIZEWELL B POWER STATION
- ⊕ SZB COOLING WATER INTAKE
- ⊕ SZB COOLING WATER OUTFALL
- SAMPLING AREAS
- COMMERCIAL OTTER TRAWL
- BEAM TRAWL, GRAB AND CORE (INTERSTITIAL)
- PLANKTON NET AND LUND TUBE
- SONAR SURVEYS - HABITAT AND MORPHOLOGY MAPPING



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SECTION 7**

DRAWING TITLE

**MARINE ECOLOGY -
SPATIAL EXTENT OF THE STUDY AREAS**

DRAWING NO.

FIGURE 7.15.1

SCALE

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DATE

APRIL 2014

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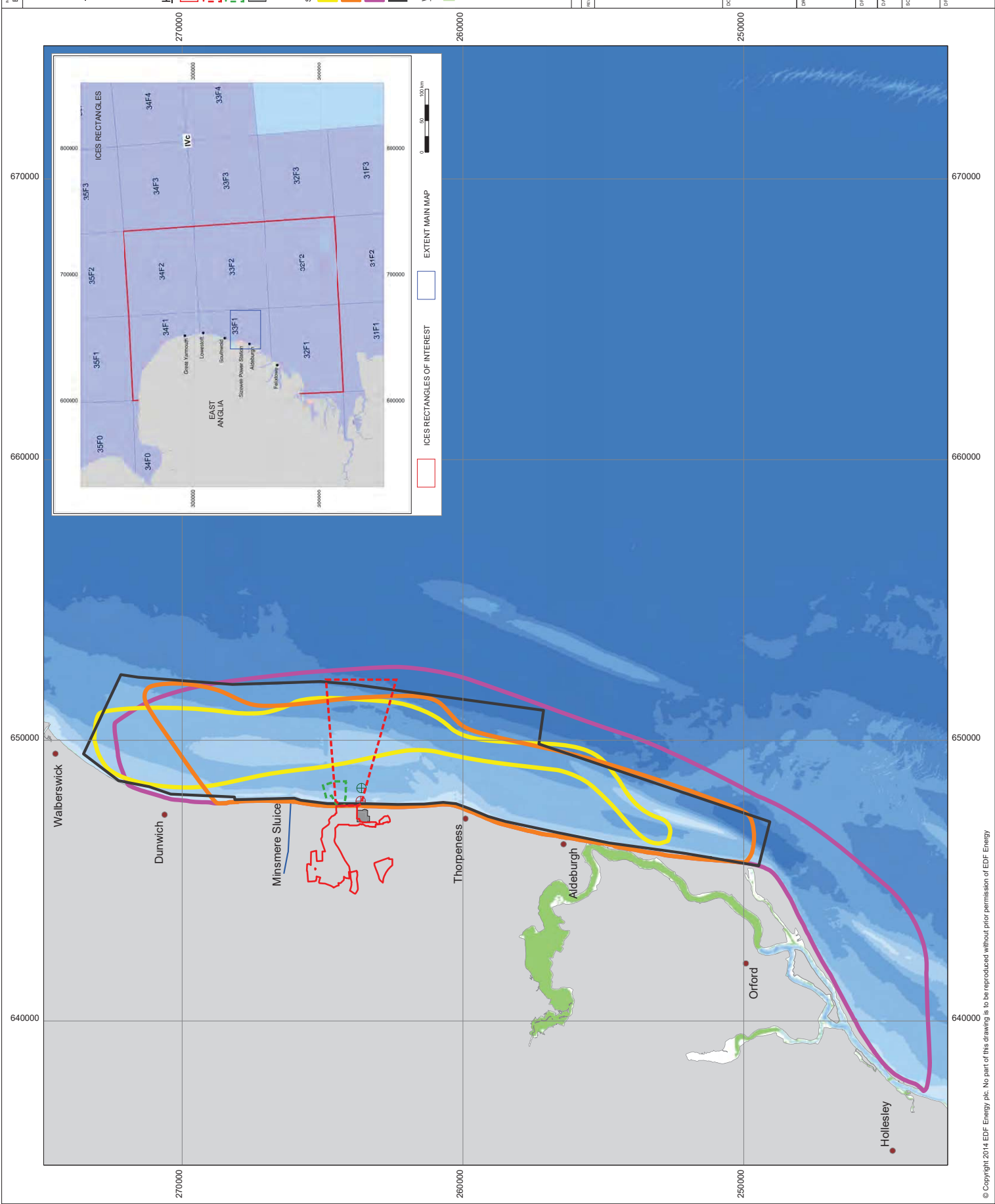
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-  AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
-  AREA FOR JETTY
-  NAVIGATION STUDY AREA

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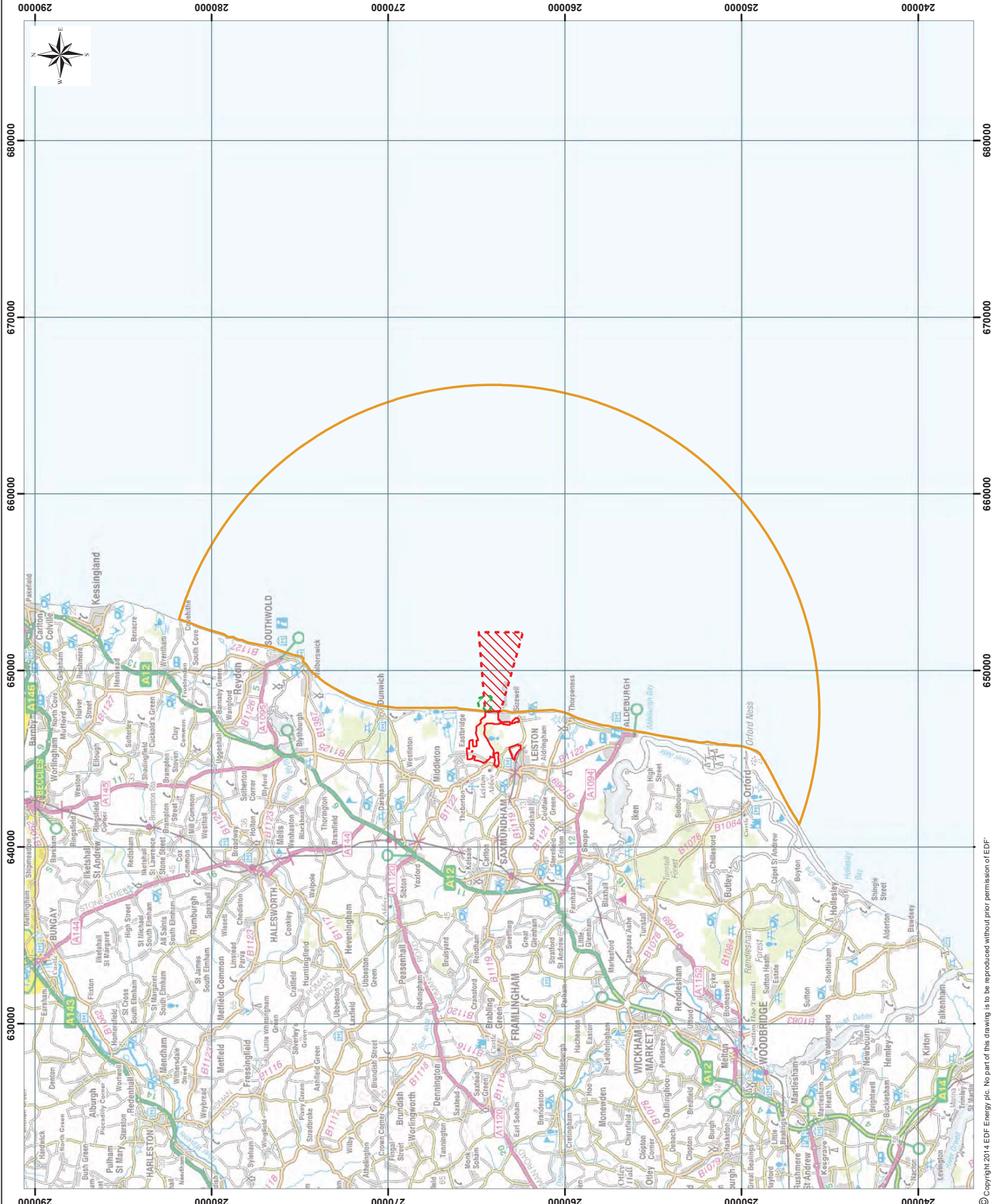
DRAWING TITLE:
NAVIGATION - PRINCIPAL STUDY AREA

DRAWING NO:
FIGURE 7.16.1
REVISION:
1.0

DATE:
APRIL 2014
DRAWN:
M.P.
SCALE:
1:200,000@A3

SCALE BAR
0 2.5 5 7.5 10
km

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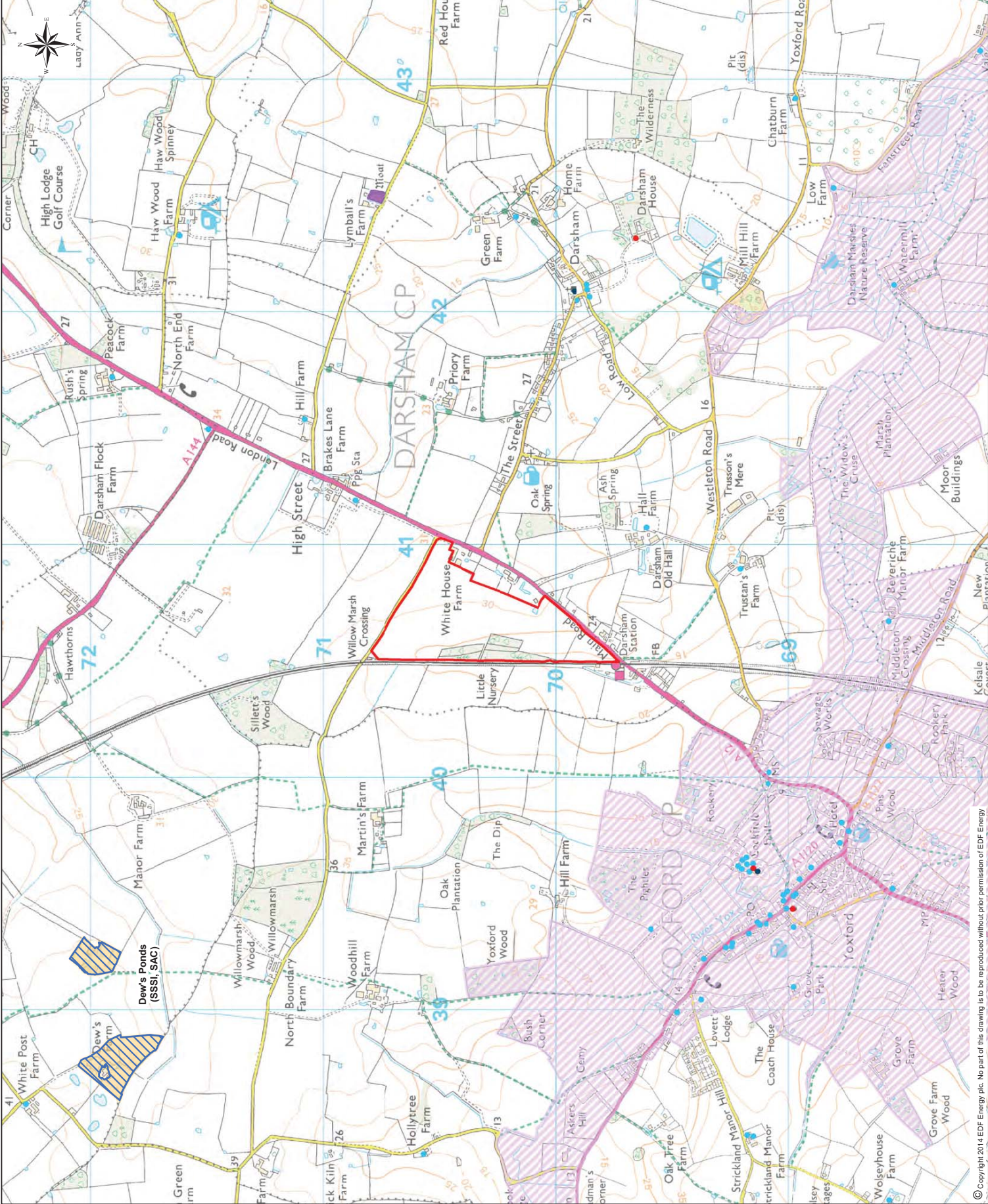
Special Landscape Areas Source: Suffolk Local Plan

NOTES:

ONLY SOME OF THE OFF-SITE ASSOCIATED DEVELOPMENTS ARE SHOWN. PLEASE REFER TO SECTION 9 FOR MORE INFORMATION

KEY

- INDICATIVE DARSHAM SITE
- SPECIAL AREA OF CONSERVATION (SAC)
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- SPECIAL LANDSCAPE AREAS
- SCHEDULED MONUMENTS
- LISTED BUILDINGS
- GRADE I
- GRADE II*
- GRADE II



NO	DATE	ISSUED	REVISIONS OR ENCLOSURES	APPROVED



DOCUMENT:
**SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 8**

DRAWING TITLE:
**OFF-SITE ASSOCIATED DEVELOPMENT -
NORTHERN PARK AND RIDE,
KEY DESIGNATIONS AND FEATURES**

DRAWING NO:
FIGURE 8.2.1

REVISION:
1.0

DATE:
APRIL 2014

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NOTES:

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KEY

- INDICATIVE DARSHAM SITE
- NORTHERN PARK AND RIDE MONITORING LOCATIONS (PRN)

DOCUMENT:

SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 8

DRAWING TITLE:

NOISE AND VIBRATION - NORTHERN PARK AND RIDE MONITORING LOCATIONS

DRAWING NO.: FIGURE 8.2.2

REVISION: 1.0

DATE: APRIL 2014

DRAWN: S.B.

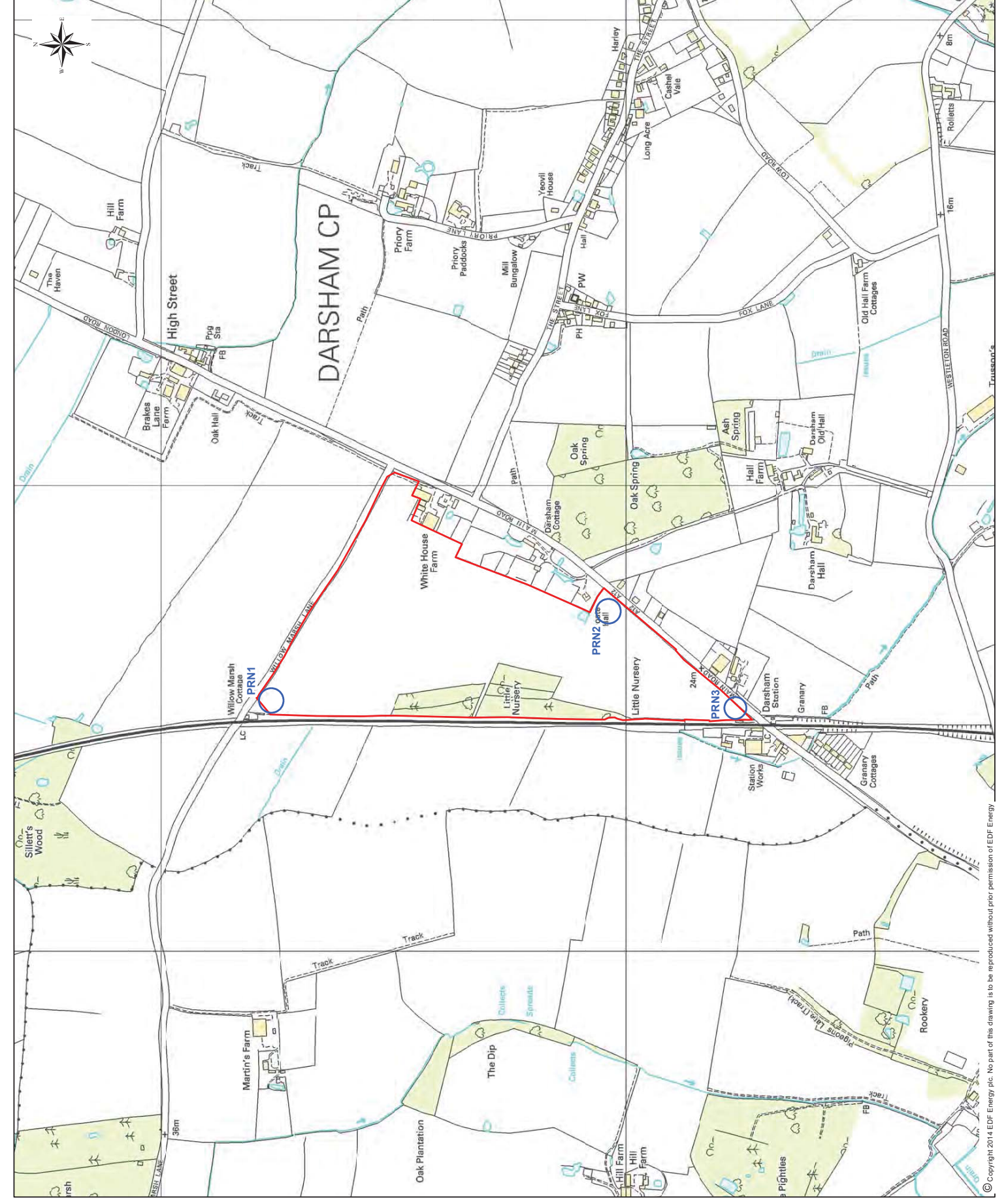
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Special Landscapes Areas Source: Suffolk Local Plan

NOTES:

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- KEY**
-  INDICATIVE WICKHAM MARKET SITE
 -  ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 -  SPECIAL LANDSCAPE AREAS
 -  SCHEDULED MONUMENTS
 -  LISTED BUILDINGS
 -  GRADE I
 -  GRADE II*
 -  GRADE II

NB: THE SITE WOULD OCCUPY A SMALLER PROPORTION OF THE HATCHED AREA IDENTIFIED, WHICH IS CURRENTLY UNDER REVIEW SUBJECT TO ONGOING ENVIRONMENTAL STUDIES

REVISED	DATE	BY	REASON FOR REVISION



DOCUMENT:
 SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 8

DRAWING TITLE:
 OFF-SITE ASSOCIATED DEVELOPMENT - SOUTHERN PARK AND RIDE, KEY DESIGNATIONS AND FEATURES

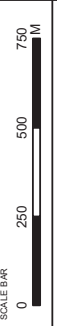
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REVISION:
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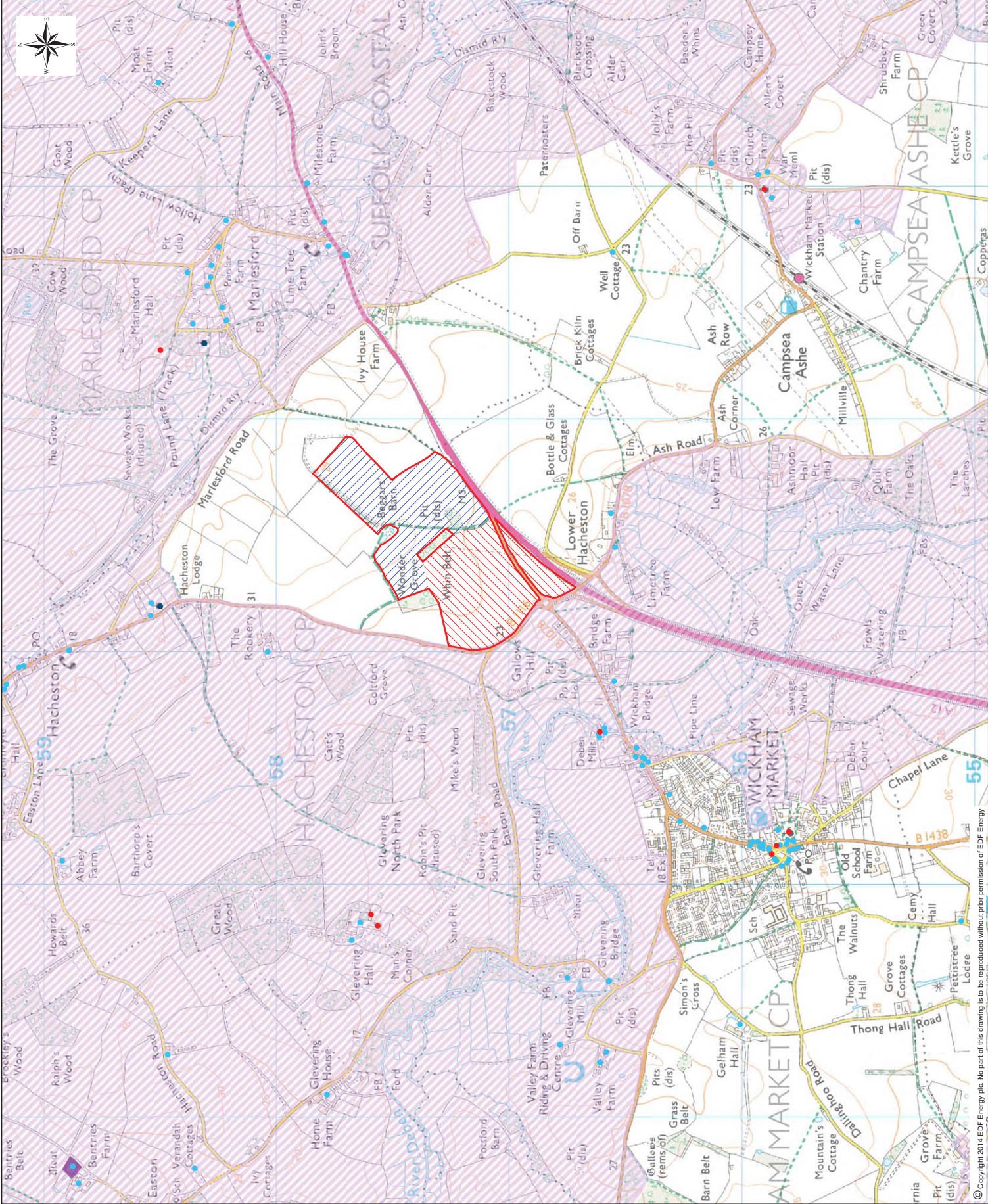
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NOTES:

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- KEY**
-  INDICATIVE WICKHAM MARKET SITE
 -  ADDITIONAL LAND IDENTIFIED FOR POTENTIAL PARK AND RIDE DEVELOPMENT
 -  SOUTHERN PARK AND RIDE MONITORING LOCATIONS (PRS)

REVISED	DATE	BY	REASON FOR REVISION	APPROVED



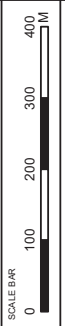
DOCUMENT:
 SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 8

DRAWING TITLE:
 NOISE AND VIBRATION - SOUTHERN
 PARK AND RIDE MONITORING
 LOCATIONS

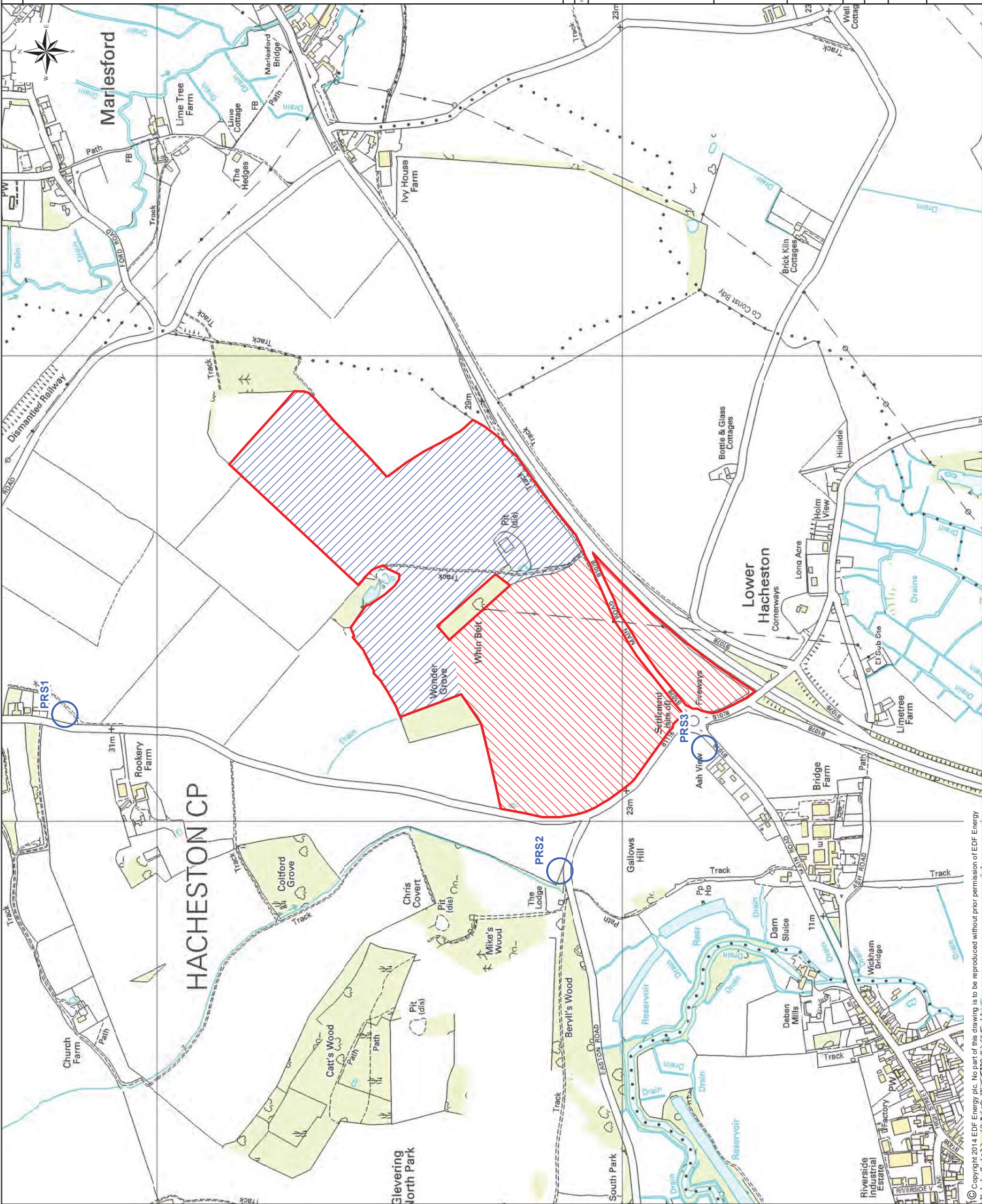
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 FIGURE 8.3.2

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Special Landscapes Areas Source: Suffolk Local Plan

NOTES:

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KEY

- INDICATIVE MAIN DEVELOPMENT SITE
- AREA FOR COOLING, WATER AND ASSOCIATED INFRASTRUCTURE
- AREA FOR JETTY
- ACCOMMODATION CAMPUS SITE
- BLUE RAIL EXTENSION ROUTE
- GREEN RAIL EXTENSION ROUTE
- RAIL TERMINAL
- SPECIAL AREA OF CONSERVATION (SAC)
- SPECIAL PROTECTION AREA (SPA)
- RAMSAR
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- AREA OF OUTSTANDING NATURAL BEAUTY (AONB)
- SPECIAL LANDSCAPE AREAS
- SCHEDULED MONUMENTS

LISTED BUILDINGS

- GRADE I
- GRADE II*
- GRADE II

EDF ENERGY
 SIZEWELL C

DOCUMENT:
 SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 8

DRAWING TITLE:
 OFF-SITE ASSOCIATED DEVELOPMENT -
 RAIL EXTENSION OPTIONS.
 KEY DESIGNATIONS AND FEATURES

DRAWING NO:
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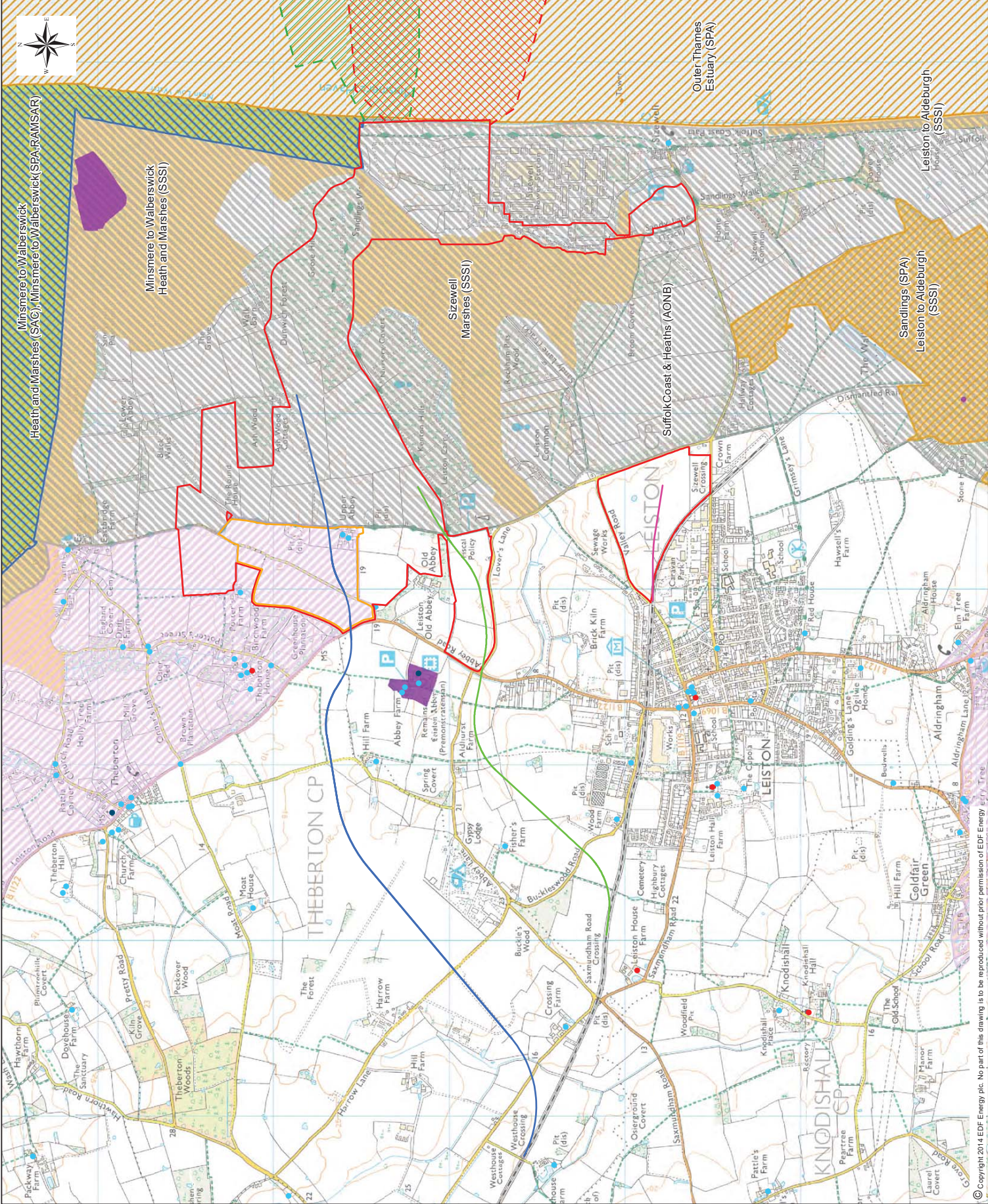
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KEY

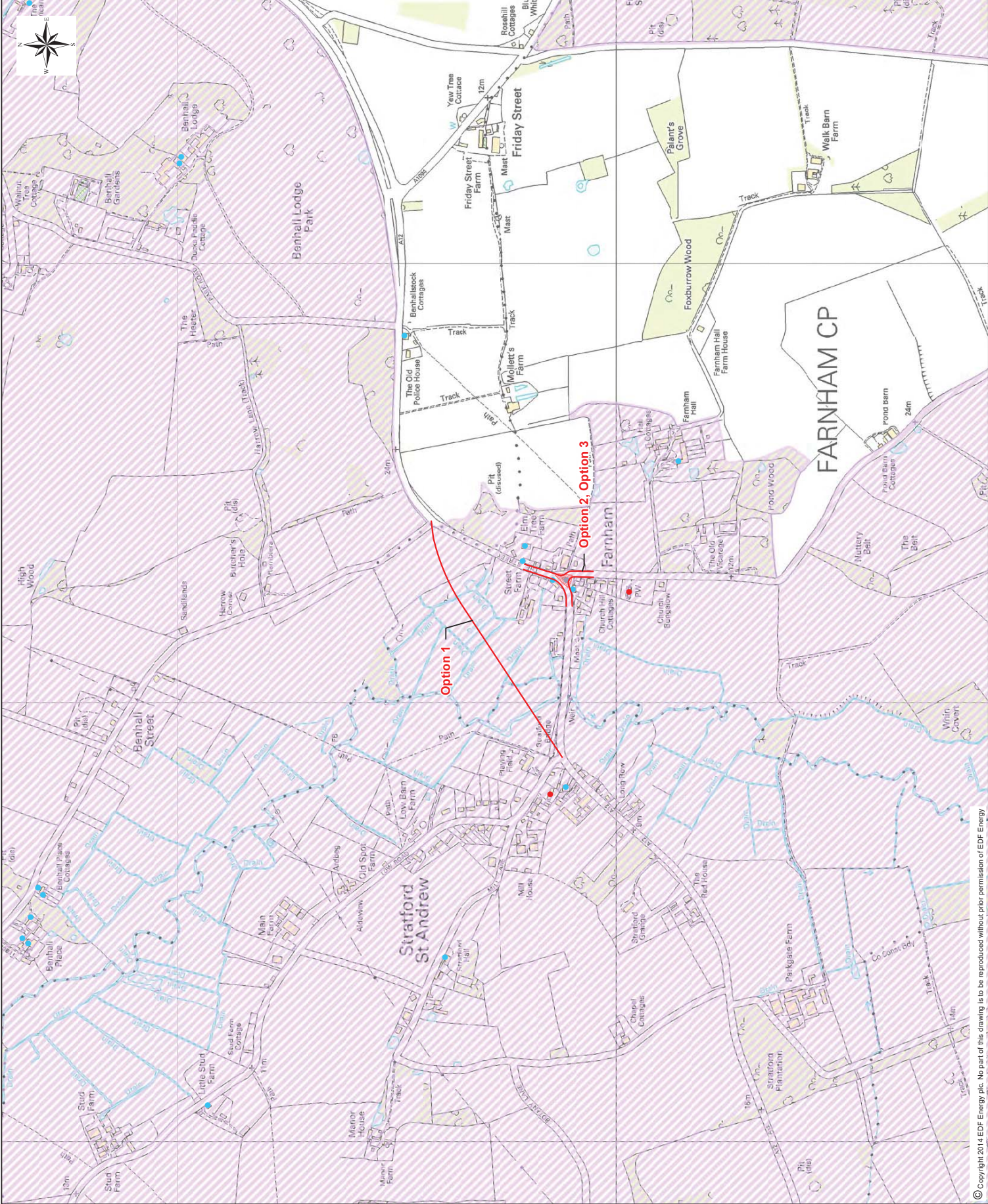
- FARNHAM BEND OPTIONS
- AFFECTED PROPERTY

FARNHAM BEND OPTIONS:

- OPTION 1: INDICATIVE BYPASS OF FARNHAM
- OPTION 2: WIDEN THE ROAD AT FARNHAM BEND
- OPTION 3: PUT HGV CONTROLS AT FARNHAM (NOT SHOWN)

SPECIAL LANDSCAPE AREAS

- LISTED BUILDINGS
- GRADE II*
- GRADE II



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DOCUMENT:
SIZEWELL C PROJECT
EIA SCOPING REPORT
SECTION 8

DRAWING TITLE:
OFF-SITE ASSOCIATED DEVELOPMENT - FARNHAM BEND OPTIONS. KEY DESIGNATIONS AND FEATURES

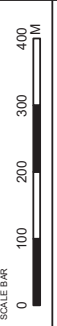
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FIGURE 8.5.1

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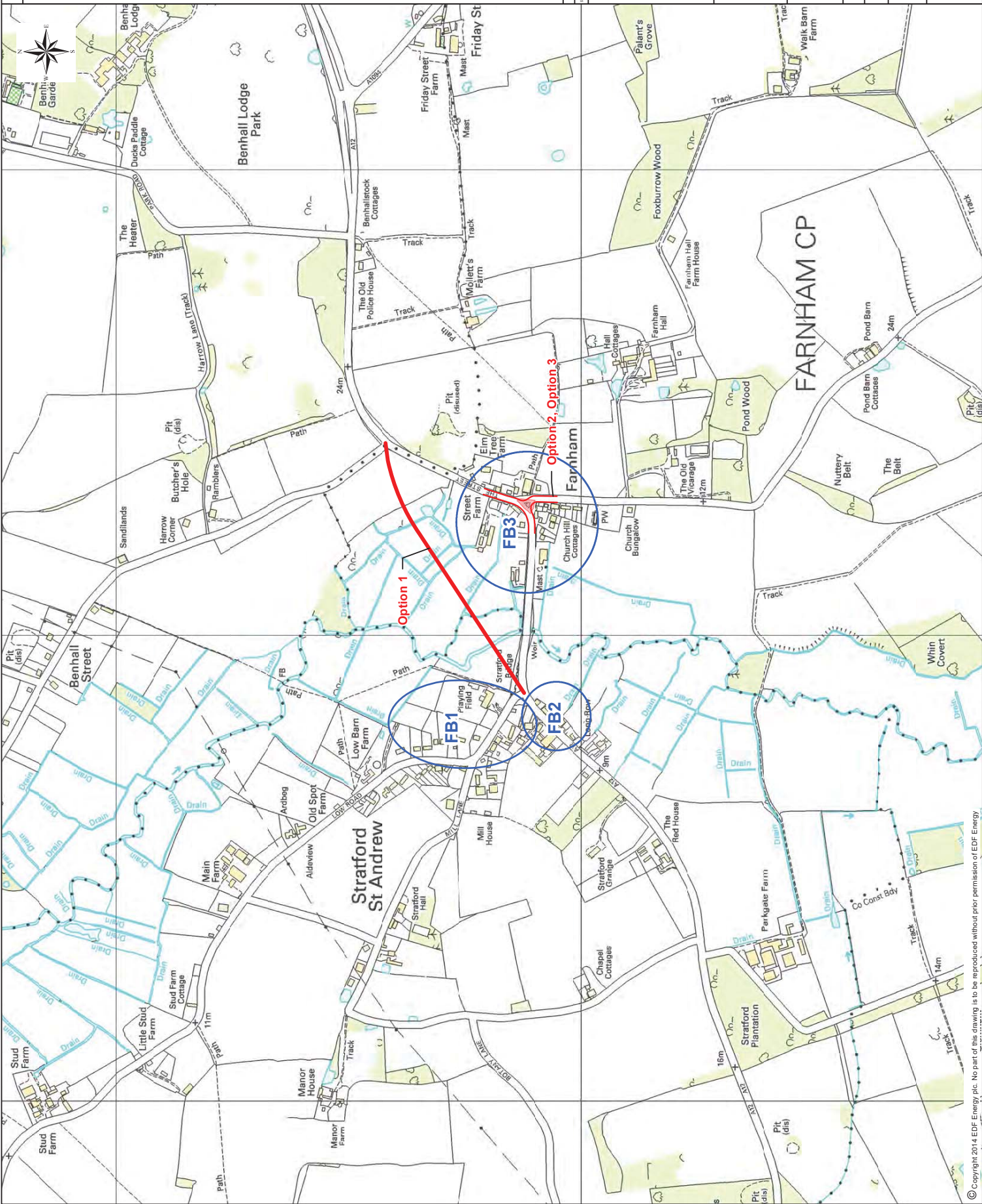
NOTES:

ONLY SOME OF THE OFF-SITE ASSOCIATED DEVELOPMENTS ARE SHOWN. PLEASE REFER TO SECTION 8 FOR MORE INFORMATION

KEY

- FARNHAM BEND OPTIONS
- AFFECTED PROPERTY
- FARNHAM BYPASS ROUTE
- NOISE MONITORING LOCATIONS (FB)

OPTION 1: INDICATIVE BYPASS OF FARNHAM
OPTION 2: WIDEN THE ROAD AT FARNHAM BEND
OPTION 3: PUT HGV CONTROLS AT FARNHAM (NOT SHOWN)



REVISED	DATE	BY	REASON FOR REVISION	APPROVED

DOCUMENT:

SIZWELL C PROJECT
EIA SCOPING REPORT
SECTION 8

DRAWING TITLE:

NOISE AND VIBRATION - FARNHAM
BEND OPTIONS MONITORING LOCATIONS

DRAWING NO: FIGURE 8.5.2
REVISION: 1.0
DATE: APRIL 2014
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 Special Landscape Areas Source: Suffolk Local Plan

NOTES:
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- KEY**
- INDICATIVE MAIN DEVELOPMENT SITE
 - AREA FOR COOLING WATER AND ASSOCIATED INFRASTRUCTURE
 - AREA FOR JETTY
 - ACCOMMODATION CAMPUS SITE
 - VISITOR CENTRE LOCATION OPTIONS
- VISITOR CENTRE LOCATION OPTIONS:**
1. CORONATION WOOD (CONSTRUCTION & OPERATIONAL PHASES)
 - 2A. GOOSE HILL (OPERATIONAL PHASE ONLY)
 - 2B. A LOCATION EAST OF LEISTON OUTSIDE AONB (TEMPORARY CONSTRUCTION PHASE ONLY)
 - 2C. A LOCATION IN LEISTON TOWN (TEMPORARY CONSTRUCTION PHASE ONLY)

- SPECIAL AREA OF CONSERVATION (SAC)
 - SPECIAL PROTECTION AREA (SPA)
 - RAMSAR
 - SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
 - AREA OF OUTSTANDING NATURAL BEAUTY (AONB)
 - SPECIAL LANDSCAPE AREAS
 - SCHEDULED MONUMENTS
- LISTED BUILDINGS**
- GRADE I
 - GRADE II*
 - GRADE II

NO.	DATE	ISSUED	REVISIONS OR DISCREPANCIES	APPROVED



DOCUMENT:
**SIZEWELL C PROJECT
 EIA SCOPING REPORT
 SECTION 8**

DRAWING TITLE:
OFF-SITE ASSOCIATED DEVELOPMENT - VISITOR CENTRE LOCATION OPTIONS. KEY DESIGNATIONS AND FEATURES

DRAWING NO:
FIGURE 8.6.1

REVISION:
1.0

DATE:
APRIL 2014

DRAWN:
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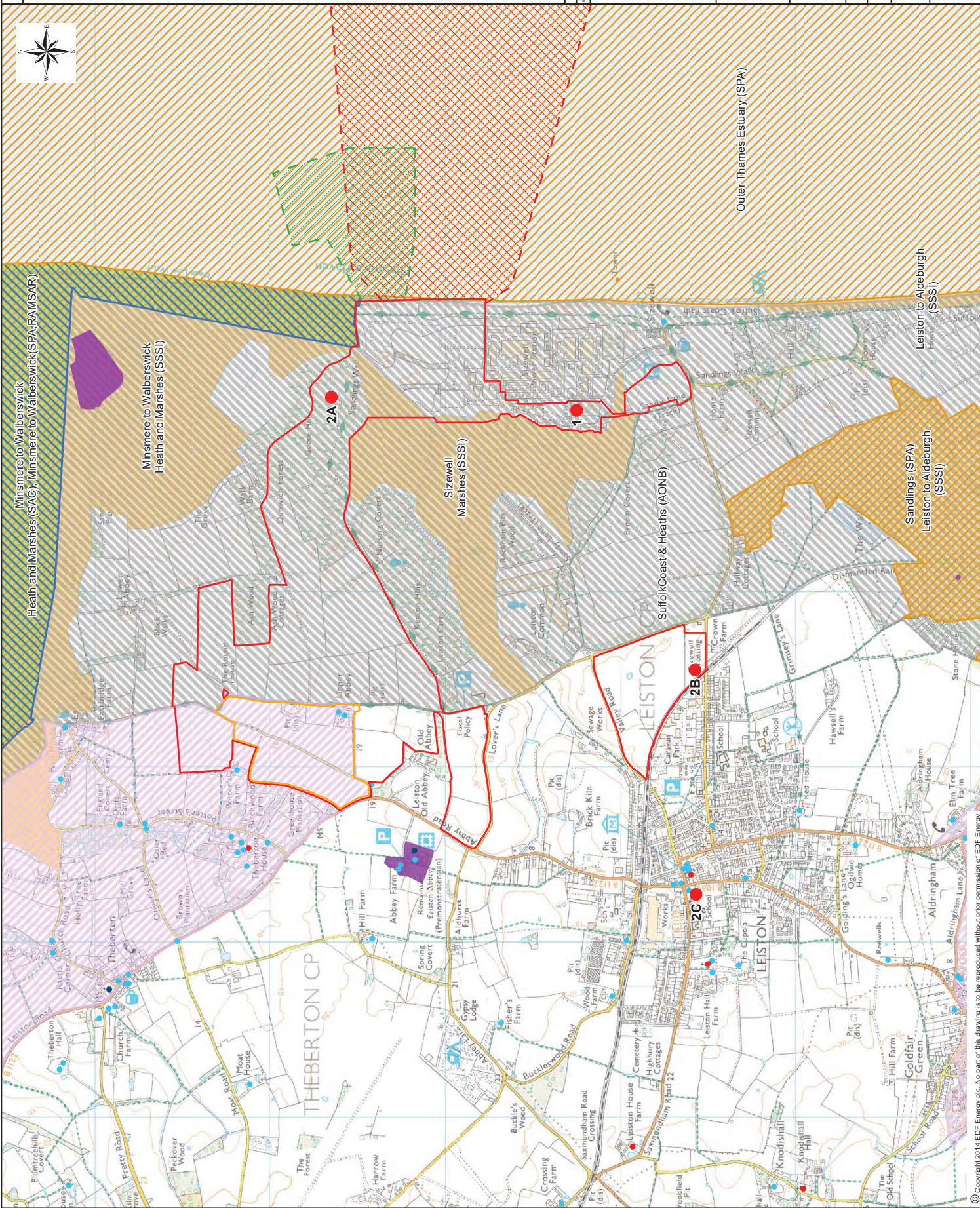
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APPENDIX 1B: 2014 EIA SCOPING OPINION



SCOPING OPINION

Proposed Sizewell C Nuclear Development



June 2014



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2.0 THE PROPOSED DEVELOPMENT	4
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APPENDIX 1 – LIST OF CONSULTEES

APPENDIX 2 – RESPONDENTS TO CONSULTATION AND COPIES OF REPLIES

APPENDIX 3 – PRESENTATION OF THE ENVIRONMENTAL STATEMENT



EXECUTIVE SUMMARY

This is the Scoping Opinion (the Opinion) provided by the Secretary of State in respect of the content of the Environmental Statement for Sizewell C Proposed Nuclear Development, Near Leiston in Suffolk.

This Opinion sets out the Secretary of State's opinion on the basis of the information provided in EDF Energy's ('the applicant') report entitled 'Sizewell C EIA Scoping Report (April 2014)' ('the Scoping Report'). This Opinion can only reflect the proposals as currently described by the applicant.

The Secretary of State has consulted on the Scoping Report and the responses received have been taken into account in adopting this Opinion. The Secretary of State is satisfied that the topic areas identified in the Scoping Report encompass those matters identified in Schedule 4, Part 1, paragraph 19 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended).

The Secretary of State draws attention both to the general points and those made in respect of each of the specialist topic areas in this Opinion. The main potential issues identified are:

- Socio-economic;
- Transport;
- Terrestrial ecology and ornithology;
- Groundwater;
- Surface water;
- Coastal geomorphology and hydrodynamics; and
- Construction impacts (including noise and vibration and air quality).

Matters are not scoped out unless specifically addressed and justified by the applicant, and confirmed as being scoped out by the Secretary of State.

The Secretary of State notes the potential need to carry out an assessment under the Habitats Regulations¹.

¹ The Conservation of Habitats and Species Regulations 2010 (as amended)

1.0 INTRODUCTION

Background

- 1.1 On 23 April 2014, the Secretary of State (SoS) received the Scoping Report submitted by the applicant under Regulation 8 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2263) (as amended) ('the EIA Regulations') in order to request a scoping opinion for the proposed Sizewell C Proposed Nuclear Development ('the proposed development'). This Opinion is made in response to this request and should be read in conjunction with the applicant's Scoping Report.
- 1.2 The applicant has formally provided notification under Regulation 6(1)(b) of the EIA Regulations that it proposes to provide an ES in respect of the proposed development. Therefore, in accordance with Regulation 4(2)(a) of the EIA Regulations, the proposed development is determined to be EIA development.
- 1.3 The EIA Regulations enable an applicant, before making an application for an order granting development consent, to ask the SoS to state in writing their formal opinion (a 'scoping opinion') on the information to be provided in the environmental statement (ES).
- 1.4 Before adopting a scoping opinion the SoS must take into account:
 - (a) the specific characteristics of the particular development;
 - (b) the specific characteristics of the development of the type concerned; and
 - (c) environmental features likely to be affected by the development'.

(EIA Regulation 8 (9))
- 1.5 This Opinion sets out what information the SoS considers should be included in the ES for the proposed development. The Opinion has taken account of:
 - i the EIA Regulations
 - ii the nature and scale of the proposed development
 - iii the nature of the receiving environment, and
 - iv current best practice in the preparation of environmental statements.
- 1.6 The SoS has also taken account of the responses received from the statutory consultees (see Appendix 2 of this Opinion). The matters addressed by the applicant have been carefully considered

and use has been made of professional judgement and experience in order to adopt this Opinion. It should be noted that when it comes to consider the ES, the SoS will take account of relevant legislation and guidelines (as appropriate). The SoS will not be precluded from requiring additional information if it is considered necessary in connection with the ES submitted with that application when considering the application for a development consent order (DCO).

1.7 This Opinion should not be construed as implying that the SoS agrees with the information or comments provided by the applicant in their request for an opinion from the SoS. In particular, comments from the SoS in this Opinion are without prejudice to any decision taken by the SoS (on submission of the application) that any development identified by the applicant is necessarily to be treated as part of a nationally significant infrastructure project (NSIP), or associated development, or development that does not require development consent.

1.8 Regulation 8(3) of the EIA Regulations states that a request for a scoping opinion must include:

- (a) 'a plan sufficient to identify the land;
- (b) a brief description of the nature and purpose of the development and of its possible effects on the environment; and
- (c) such other information or representations as the person making the request may wish to provide or make'.

(EIA Regulation 8 (3))

1.9 The SoS considers that this has been provided in the applicant's Scoping Report.

The Secretary of State's Consultation

1.10 The SoS has a duty under Regulation 8(6) of the EIA Regulations to consult widely before adopting a scoping opinion. A full list of the consultation bodies is provided at Appendix 1. The list has been compiled by the SoS under their duty to notify the consultees in accordance with Regulation 9(1)(a). The applicant should note that whilst the SoS's list can inform their consultation, it should not be relied upon for that purpose.

1.11 The list of respondents who replied within the statutory timeframe and whose comments have been taken into account in the preparation of this Opinion is provided at Appendix 2 along with copies of their comments, to which the applicant should refer when undertaking the EIA.

- 1.12 The ES submitted by the applicant should demonstrate consideration of the points raised by the consultation bodies. It is recommended that a table is provided in the ES summarising the scoping responses from the consultation bodies and how they are, or are not, addressed in the ES.
- 1.13 Any consultation responses received after the statutory deadline for receipt of comments will not be taken into account within this Opinion. Late responses will be forwarded to the applicant and will be made available on the Planning Inspectorate's website. The applicant should also give due consideration to those comments when undertaking the EIA.

Structure of the Document

- 1.14 This Opinion is structured as follows:

- Section 1 Introduction
- Section 2 The proposed development
- Section 3 EIA approach and topic areas
- Section 4 Other information

This Opinion is accompanied by the following Appendices:

- Appendix 1 List of consultees
- Appendix 2 Respondents to consultation and copies of replies
- Appendix 3 Presentation of the environmental statement

2.0 THE PROPOSED DEVELOPMENT

Introduction

2.1 The following is a summary of the information on the proposed development and its site and surroundings prepared by the applicant and included in their Scoping Report. The information has not been verified and it has been assumed that the information provided reflects the existing knowledge of the proposed development and the potential receptors/resources.

The Applicant's Information

Overview of the proposed development

2.2 The proposed development, Sizewell C, is a new nuclear power station comprising two European Pressurised Reactors (EPRs), associated access roads, and temporary development associated with construction. Sizewell C will be located predominantly to the north of the existing operational Sizewell B power station, east of the settlement of Leiston, Suffolk. The proposed development is expected to have an electrical capacity of approximately 3,260 megawatts (MW) when operational.

2.3 Section 3 of the Scoping Report describes the proposed development, which has been separated into consideration of the 'Main Development Site' and 'off-site associated development'.

2.4 The Main Development Site would include both permanent and temporary development. Permanent development within the Main Development Site includes the following:

- Two EPRs including reactor buildings and associated buildings (referred to as the 'Nuclear Island');
- Turbine halls and electrical buildings (referred to as the 'Conventional Island');
- Cooling water pumphouses and associated buildings;
- An Operational Service Centre;
- Fuel and waste storage facilities, including Interim Spent Fuel Store (ISFS);
- External plant, including storage tanks;
- Internal roads;
- Ancillary, office and storage facilities;
- Drainage and sewerage infrastructure;
- Cooling water infrastructure;

- Access road to the B1122 road and related junction arrangements;
- A bridge connecting the power station to the new access road to the north;
- Car parking, some ancillary buildings and a helipad;
- Flood defence and coastal protection measures;
- Installation of a cut-off wall around the operational platform;
- A beach landing facility to receive deliveries of Abnormal Indivisible Loads (AILs) by sea;
- Simulator Building/Training Centre;
- Options for a Visitor Centre; and
- Landscaping of the areas to be restored following construction.

2.5 Temporary development within the Main Development Site comprises the following:

- Construction working areas, including laydown areas, workshops, storage and offices;
- Temporary structures, including concrete batching plant;
- Management of spoil/stockpile arrangements, including potential sourcing on-site of construction fill materials;
- Temporary bridge between the power station and adjacent construction areas;
- Temporary jetty for transport of bulk construction materials, equipment and AILs by sea;
- Options for a temporary rail route extending into the Main Development Site;
- Works area on the foreshore for the installation of flood defence and coastal protection measures;
- Construction roads, fencing, lighting and security features;
- Site access arrangements and coach, lorry and car parking; and
- A development site accommodation campus.

2.6 In addition to the Main Development Site, additional land will be required for associated development to support the construction of the nuclear power station. Section 3.3 of the Scoping Report describes the off-site associated development currently considered for the impact assessment. The off-site associated development includes lead sites (likely, but not definite sites for associated development) and those where lead sites have not yet been determined (i.e. options). The off-site associated development currently undergoing investigation includes:

- Two temporary park and ride sites (one to the north of Sizewell C at Darsham and one to the south of Sizewell C, at Wickham Market);
- A potential postal consolidation facility and construction induction centre may also be located at one of the park and ride sites;
- A temporary extension of the existing Saxmundham to Leiston railway line into the construction site (two options are currently being considered) or a new rail terminal and freight laydown area north of King George's Avenue, Leiston; and
- The need for permanent highway improvements to the A12 road. Three potential options have been identified to date:
 - A Farnham bypass;
 - Road widening at Farnham Bend; or
 - HGV traffic controls at Farnham Bend.

2.7 Sections 3.4 to 3.6 of the Scoping Report describe the construction, operation and decommissioning phases of the proposed development. Section 3.7 of the Scoping Report describes the proposed approach to conventional waste management, whilst Section 3.8 describes the approach to spent fuel and radioactive waste management.

Description of the site and surrounding area

The Main Development Site

2.8 The Main Development Site lies predominantly to the north of the existing Sizewell A and operational Sizewell B power stations complex; to the east of the town of Leiston, Suffolk and adjacent to the North Sea. The Main Development Site comprises the area allocated for the power station (the 'operational platform construction area'), together with a wider area associated with the construction works (the 'temporary construction area') and an accommodation campus site. These construction areas are presented on Figure 3.2.1 in the Scoping Report.

2.9 The nearest principal settlement is Leiston, located to the west of the Main Development Site. Further inland is the town of Saxmundham. A number of villages, hamlets and isolated dwellings are distributed throughout the wider landscape. The coast in the vicinity of the development contains limited settlement, with the exception of the village of Sizewell to the south of the existing Sizewell A and B power stations complex. The coastal towns of Thorpeness and Aldeburgh are located to the south. Dunwich and Southwold are located to the north.

2.10 There are a number of statutory and non-statutory designated sites for nature conservation that lie within and immediately

adjacent to the Main Development Site. The Scoping Report identifies a total of 16 international and nationally statutory designated sites for nature conservation within 20km of the proposed development. Seven County Wildlife Sites (CWS) and a Suffolk Wildlife Trust Nature Reserve were also identified within 3km of the proposed development.

- 2.11 The majority of the non-designated habitats within the Main Development Site are identified as comprising agricultural farmland with smaller areas of deciduous woodland, coniferous plantation, acid grassland/lowland heath, and neutral grassland. Two hills are present within and adjacent to the site, Goose Hill and Kenton Hills. These predominantly comprise plantation woodlands. All agricultural land within the Main Development Site, described as being surveyed to date, comprises subgrade 3b (moderate quality) soils or lower. Dune and shingle habitats are present on the coastal frontage of the Main Development Site. The area of Sizewell Marshes SSSI located within the Main Development Site includes a mosaic of open water, reedbed, and wet woodland habitats.
- 2.12 The Main Development Site lies almost entirely within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) and partially within areas designated as the Suffolk Heritage Coast. A small area of the Main Development Site lies within an area designated as a Special Landscape Area, whilst the entire terrestrial development lies within the Suffolk Coast and Heaths National Character Area. The area for cooling waters and associated infrastructure and the jetty lie within the Suffolk Coastal Waters Seascape Character Area.
- 2.13 No Scheduled Ancient Monuments (SAM) are identified within the Main Development Site. The nearest SAM is Leiston Abbey and moated site located approximately 600m west of the Main Development Site. This SAM also includes the remains of St Mary's Abbey, a Grade I Listed Building, and three Grade II Listed Buildings, the Retreat House, Barn and Guesten Hall. There are three Grade II Listed Buildings either located within or immediately adjacent to the Main Development Site: Upper Abbey Farmhouse; Barn at Upper Abbey Farmhouse; and Abbey Cottage. The terrestrial designated heritage assets baseline study identified over 300 designated assets within a study area of 2 to 3km from the proposed development. A desk-based assessment for the Marine Historic Environment identified 162 wrecks within the study area of 20km x 20km, with the Main Development Site at its centre.
- 2.14 Two long distance paths, the Suffolk Coastal Path and Sandlings Walk, a bridleway, a Sustrans route and permissive paths are located within the Main Development Site. Permissive routes include those around Goose Hill and Kenton Hills. A number of areas of Open Access Land occur beyond the Main Development

Site, including land near Leiston Common, Sizewell Common land to the north of Dower House, and parts of The Walks and Aldringham Common. Registered Common Land is also present within the local area, mainly to the south and east of Leiston.

- 2.15 A number of watercourses were identified within a study area of water catchments, including a small number located within the Main Development Site. Two major drains are crossed by the Main Development Site. The Leiston Drain flows along the north of the Sizewell Belts. The Sizewell Drain rises from the south of Sizewell B Power Station and joins with the Leiston Drain at the north of Sizewell B Power Station before flowing north to the coast at Minesmere Sluice, where they discharge to the sea. The Sizewell Marshes SSSI/Sizewell Belts lie adjacent to the Main Development Site, which comprise a series of interconnected drainage ditch systems. There are also two small lakes within the SSSI.
- 2.16 The marine environment, in which the jetty and cooling water and associated infrastructure would be located, includes a sand bank approximately 1.5km from the shore. This bank is referred to as Sizewell Bank and Dunwich Bank, and comprises a continuous feature running parallel with the shore, extending approximately 8km north to south. The cooling water intakes for the proposed development are described within the Scoping Report as likely to be located to the east of the bank, further offshore. The area in which the marine elements of the proposed development are located lies within the East Suffolk Zone of the Anglian River Basin District.
- 2.17 Commercial navigation, in the form of aggregate dredging, fishing, and offshore wind farm development occur within the North Sea surrounding the proposed development. Fish and shellfish fisheries are also noted to operate in the area. Recreational navigation occurs in the locality including: sea kayaking, canoeing, and sailboarding in creeks and minor rivers; dinghy and small boat sailing in rivers and offshore to c.15nm; cruising under motor and sail; and use of personal watercraft. Two medium-use recreational sailing routes are identified as passing the Main Development Site, including the Coastal Route North and the Long Distance Route North. The Coastal Route North is an inshore route that passes between Sizewell B's intake and outfall head structures and Sizewell Bank.

The Off-Site Associated Development

- 2.18 The proposed development includes a number of potential associated off-site elements. A description of each element and its surroundings is described below.

Northern Park and Ride site

- 2.19 The Northern Park and Ride lead site would be located in an area of open land to the west of the village of Darsham. The site is bounded by the main line Saxmundham-Halesworth railway to the south and west of the site, the A12 in part to the east of the site, and Willow Marsh Lane to the north.
- 2.20 Nine statutory designated sites for nature conservation are located within 5km of the site. The site is located outside the Suffolk Coast and Heaths AONB, which lies approximately 3.5km to the east. The site is also outwith the Special Landscape Area. There are a number of Public Rights of Way (PRoW) within the vicinity of the site. There are no SAM or Listed Buildings within the site. However, a number of Listed Buildings are located within the local area.
- 2.21 There are no statutory or non-statutory geological designated sites within 500m of the site and there is no known on-site contamination of the site. The site does not lie within a Source Protection Zone (SPZ); however, there is a licensed abstraction located on the southern edge of the site. A small watercourse is located approximately 250m south-west of the site, which flows into the Minsmere Old River c1.2km downstream. The Minsmere Old River forms part of the Water Framework Directive (WFD) water body 'Leiston Beck and Minsmere Old River', which is identified as heavily modified. The River Yox is located 160m south-east of the site.

Southern Park and Ride site

- 2.22 The Southern Park and Ride lead site is located to north-east of Wickham Market between the A12 and B1078/B1116. The site currently comprises the following areas: an indicative Wickham Market park and ride site (approximately 20.47ha); and additional land for potential development (approximately 22.84ha).
- 2.23 The B1078/B1116 is located to the west of the site; the A12 carriageway is located to the south. The site is bounded by field boundaries and two wooded copses lie to the northern and eastern boundaries of the indicative Wickham Market park and ride site. The closest residential properties are located to the west of the site, at a distance of approximately 100m.
- 2.24 No statutory designated sites are located within 5km of the site and the site is located outside of the Suffolk Coast and Heaths AONB; however, it is noted that a Special Landscape Area lies adjacent. The Roman settlement of the River Deben is located approximately 400m to the west of the site. There is a pond located within the site boundary. There are a number of PRoW within the vicinity of the site, including a number in close proximity to the southern site boundary. A bridleway crosses

between the indicative park and ride site and the additional land for potential development.

- 2.25 The soils within the site are deep, well-drained loams over slowly permeable sub-soils and are classified as Agricultural Land Classification (ALC) grade 3. There are no designated geological sites within 500m of the site and there are no known sources of ground contamination. The site lies within an outer SPZ (SPZ2), although the abstraction associated with this SPZ is located approximately 2km south-south east of the site. The nearest groundwater abstraction is located on the eastern edge of the site.

Rail Line Extension

- 2.26 The potential blue or green rail route options would provide a temporary extension of the Saxmundham-Leiston branch line. The blue route would spur off the existing Saxmundham-Leiston branch line shortly after (east of) the Westhouse level crossing and would be constructed largely within open countryside to the north of Hill Farm, Abbey Lane, and the remains of Leiston Abbey. The blue route would enter the south of the lead site for the campus accommodation for the development, north of the Abbey Farmhouse buildings, and then into the proposed construction area.
- 2.27 The green route would spur off the Saxmundham-Leiston branch shortly after (east of) the Saxmundham Road level crossing. The proposed route would cross open countryside to the north of Leiston and south of Abbey Lane and the remains of Leiston Abbey. The green route would enter the development in the vicinity of Fiscal Policy woodland, in an area to the north of Lovers Lane.
- 2.28 The third option would be a new rail freight terminal currently under consideration would be located on land north east of Leiston industrial estate, to the north of King George's Avenue, Leiston. This option would not require an extension to existing rail lines, although would not enable direct rail access to the development site.
- 2.29 A total of eight statutory designated sites for nature conservation are located within 5km of the rail route options, the nearest of which is Sizewell Marshes SSSI, located 415m to the east. The blue and green rail routes lie partially within the Suffolk Coast and Heaths AONB. The blue route also extends into an area defined as the Suffolk Heritage Coast and an area designated as a Special Landscape Area. Both the blue and green routes cross a number of PRoW, including two long-distance paths: the Sandlings Walk and Suffolk Coastal Path, and permissive paths around Goose Hill and Kenton Hills.

- 2.30 There are no SAM and Listed Buildings within the rail route boundaries. The blue and green routes would pass in close proximity to a number of designated heritage assets including listed buildings and the Leiston Abbey SAM.
- 2.31 The rail extensions and rail freight terminal site do not cross any SPZ. There are no watercourses located within or adjacent to the new rail freight terminal or the green rail route; however, the blue route is located close to the Hundred River. This river is classified as a heavily modified waterbody under the WFD, and is currently considered to have 'poor' ecological potential.

A12 Road Improvements

- 2.32 There are three potential options for the A12 road improvements that may be required to facilitate the development, including: a Farnham bypass; road widening at Farnham; and HGV traffic controls at Farnham bend.
- 2.33 The Farnham bypass would be located to the north of the village of Farnham. It would be approximately 1km in length and comprise a single-lane carriageway in each direction. At the southern end it would adjoin the existing A12 close to Stratford St Andrew. At the northern end it would adjoin the existing A12 north of Farnham. The road widening and HGV traffic control options would both occur on the A12 at Farnham Bend.
- 2.34 Nine statutory and seven non-statutory designated sites for nature conservation are located within 5km of the Farnham Bypass. The surrounding area supports 10 to 20 ponds within 500m of the proposed road improvements. The road improvement works do not lie within the Suffolk Coast and Heaths AONB but are within an area designated as a Special Landscape Area. There are a number of Listed Buildings within close proximity to proposed developments, including the Old Post Office Grade II Listed Building and the Grade II* Listed Church of St Mary.
- 2.35 A number of PRoW are present within the local area, the majority of which are pedestrian links. There are no areas of Open Access Land within the locality.
- 2.36 The route does not cross a SPZ. The Farnham bypass option would be constructed within agricultural land to the north of Farnham, parts of which are in the floodplain. The route would also cross the River Alde and various drainage ditches.

Visitor Centre

- 2.37 Two siting options for the Visitor Centre are currently under consideration: a site at Coronation Wood (Site 1 on Figure 8.6.1 to the Scoping Report), which would serve both construction and operational phases of the proposed development; and a two-

phased approach, with the temporary use of land either east of west of Leiston during the construction phase (Sites 2C or 2B on Figure 8.6.1, respectively) and a site at Goose Hill within the Main Development Site (Site 2A on Figure 8.6.1), which would be constructed after the completion of the power station and used throughout its operational phase. As the Coronation Wood and Goose Hill sites are located within the Main Development Site, the site and surrounding area are described within the Main Development Site above.

- 2.38 There are up to 12 statutory designated sites within close proximity to the two Visitor Centre option sites in Leiston. Both sites are located outside of the Suffolk Coast and Heaths AONB and Suffolk Heritage Coast. There are a number of PRoW that pass through Leiston. A limited number of areas of Open Access Land are present within the local area, including Sizewell Common and much of The Walks and Aldringham Common.
- 2.39 There are no SAM within close proximity to the option sites. The option site to the east of Leiston lies outside of a SPZ, but there are two licensed abstractions located at the edge of the search area.

Alternatives

- 2.40 Schedule 4 of the EIA Regulations requires the ES to include an outline of the main alternatives studied by the applicant and provide an indication of the main reasons for the applicant's choice, taking into account environmental effects.
- 2.41 Chapter 4 of the Scoping Report addresses the consideration of alternatives for both the Main Development Site and the off-site associated infrastructure.
- 2.42 The Scoping Report states that no alternative sites for the power station will be considered, as the site meets the Strategic Site Assessment (SSA) criteria for nuclear power stations and determined suitable for the deployment of a nuclear power station within National Policy Statement (NPS) for Nuclear Power Generation (EN-6).
- 2.43 The Scoping Report states that no alternative reactor designs will be considered, as the reactor design has been developed and completed within the UK's Generic Design Assessment (GDA) process, with the award of a Design Acceptance Confirmation from the Office of Nuclear Regulation (ONR) and a Statement of Design Acceptability from the Environment Agency. Although the reactors will not be subject to alternative design considerations, Section 4.2 of the Scoping Report confirms that potential alternative layouts for the new nuclear power station within the Main Development Site will be explored, particularly for the land required during construction, and alternative designs of elements of the

development other than the reactors, and alternatives to the layout of the development will be considered in the ES.

2.44 Section 4.3 of the Scoping Report describes the key alternative design options to be considered for the on-site infrastructure associated with the Main Development Site. Key alternative design options will include the consideration of:

- masterplan design concepts and layout of the Main Development Site;
- landscaping;
- sea defences along the eastern edge of the site;
- length, location, and design of the cooling water intakes and outfall structures;
- transmission infrastructure;
- length, structure, and location of beach landing facility;
- length, structure, and location of a temporary jetty;
- on-site interim storage of spent fuel;
- access road alignment and design of the bridges;
- drainage strategies; and
- location of temporary construction areas.

2.45 Section 4.4 of the Scoping Report describes the approach to the selection of suitable sites for off-site associated development. The Scoping Report states that the applicant is currently undergoing this selection process, the findings of which will be reported within the ES.

Description of the proposed Main Development Site

2.46 Sizewell C nuclear power station would comprise two EPRs together with associated infrastructure, with an expected combined electrical capacity of approximately 3,260 megawatts (MW). The main permanent operational platform would be located to the immediate north of the operational Sizewell B power station, and would be built at a platform height of approximately 6.4m Above Ordnance Datum (AOD). A new access road would connect to the power station from the B1122. The access road would include a new, permanent bridge over the Sizewell Marshes SSSI.

2.47 Cooling water infrastructure would be installed from the power station to offshore, with intake structures installed at a distance of approximately 3km from the shore, and outfall structures installed between 0.8 and 3km from the shore. The outfall and intake structures would be connected to the station by horizontal tunnels below the sea bed. These would be installed through the use of

tunnel boring machinery rather than cut and fill. Flood defence and coastal protection measures would also be installed from the foreshore for the power station.

- 2.48 The permanent development within the Main Development Site will include a National Grid 400kV substation, plus one National Grid pylon, removal of an existing pylon and associated realignment of overhead lines.
- 2.49 The strategy for managing spent fuel and radioactive waste would include the initial storage of spent fuel underwater in a reactor fuel pool. Following the initial storage period, the spent fuel assemblies would be transferred to a separate on-site ISFS, where they would be stored until a Geological Disposal Facility is available and the spent fuel is removed for final disposal. The ISFS would be designed for a life of at least 100 years, which would be extended if necessary. The ISFS would be designed to operate independently from other parts of the power station due to its operating lifetime, which would be beyond the life of the proposed development.

Description of the proposed off-site associated development

- 2.50 As described within Paragraph 2.6 of the Scoping Opinion, the proposed off-site associated development currently comprises: two park and ride sites; a potential postal consolidation facility and construction induction centre at one of the park and ride sites; temporary extension of the existing Saxmundham to Leiston railway line into the construction site (blue and green rail route options) or a new rail terminal and freight laydown area north of King George's Avenue, Leiston; and permanent highway improvements to the A12 road, of which three potential options are being considered: a Farnham bypass; road widening at Farnham Bend; or HGV traffic controls at Farnham Bend.

Northern and Southern Park and Rides

- 2.51 The Northern Park and Ride would be located at Darsham and occupy an area of approximately 28ha. The Southern Park and Ride is proposed for a site to north-east of Wickham Market between the A12 and B1078/B1116. The lead site currently comprises the following areas: an indicative Wickham Market park and ride site (approximately 20.47ha); and additional land for potential development (approximately 22.84ha).
- 2.52 The Northern and Southern park and rides would include the following:
- car parking areas with up to approximately 1,000 spaces per site;
 - bus terminus and parking, including shelters;

- perimeter security fencing and lighting;
- welfare building;
- on-site soil storage pending restoration once Sizewell C is built; and
- external areas including roadways, footways, landscaping and drainage.

2.53 Either the Northern or Southern park and ride may also include an induction centre for construction workers and a postal consolidation facility.

Rail Line Extension

2.54 The options currently being explored for off-site associated development include two options for a temporary extension to the existing Saxmundham to Leiston railway line into the construction site (blue and green routes) or a new rail terminal and freight laydown area north of King George's Avenue, Leiston.

2.55 These rail line extensions are currently being explored as a potential mitigation option to reduce and manage the traffic on the local highway network as a result of movement of freight during construction. The rail routes could be used to deliver bulk construction materials to the proposed development site in advance of the temporary jetty construction.

A12 Road Improvements

2.56 Three road improvements to the A12 are currently being explored as a result of preliminary findings that indicate that traffic associated with the proposed development could increase the potential for congestion and exacerbate safety concerns associated with the narrow bend at Farnham. Road improvements are therefore being investigated as potential mitigation measures.

2.57 The precise alignment, any associated junction arrangements, and the permanent and temporary landtake requirements for the Farnham bypass are not yet determined. The details of the road widening or HGV traffic controls are also not provided at this stage; however, it is considered likely that the road widening option at Farnham Bend would affect the Grade II Listed Building, The Old Post Office, at this location.

Visitor Centre

2.58 The Visitor Centre would be a joint facility with Sizewell B and would replace the existing Visitor Centre. Two main options are being explored, as set out at 2.37 above. The Visitor Centre would predominantly comprise exhibition space, galleries, and service areas. Dedicated parking and access to the facility would also be required.

Proposed access

Main Development Site

- 2.59 The proposed access for the Main Development Site would be a new access road from the B1122. No information is provided regarding the proposed access to the development site prior to construction of the new access road.

Off-site Associated Development

- 2.60 The entrance to the Northern Park and Ride site is described as 1.3km north of the A12/B1122 junction. The proposed access to the Southern Park and Ride site is not described within the Scoping Report; however, the site is described as being located with the B1078/B1116 to the west and A12 to the south.
- 2.61 The rail extension routes are described within Section 8.4 of the Scoping Report. The blue route option would spur off the existing Saxmundham-Leiston branch line shortly after the Westhouse level crossing. The routes of the proposed blue and green options, together with the new freight terminal are shown on Figure 8.4.1; however, no detail regarding landtake and construction access is provided at this stage.
- 2.62 No information is provided regarding access to the options for the Visitor Centres. The potential Visitor Centre for the operational power station would be located within the Main Development Site.

Construction

- 2.63 Section 3.4 of the Scoping Report provides a brief overview of the construction phase of the proposed development.
- 2.64 The Scoping Report states that there would be initial works to relocate buildings and activities currently located to the north of Sizewell B power station to enable the construction works for the Sizewell C power station. The relocation site for these existing buildings and activities is currently being considered and includes the Sizewell B power station site and Coronation Wood.
- 2.65 Construction works are described as commencing with site clearance and preparation. These works would include:
- construction of a new access road into the site from the B1122;
 - establishment of temporary construction areas;
 - permanent and temporary bridges linking to the main platform on which the power station would be built;
 - construction of a jetty; and

- commencement of earthworks, including platform development, a cut-off wall, deep excavations, stockpiling and grading of materials prior to re-use and backfilling.
- 2.66 The Scoping Report states that prior to the jetty becoming operational and the construction of any temporary extension of the Saxmundham-Leiston branch railway line into the construction site (off-site associated development), construction materials could be delivered and exported either by rail via the existing railhead at Leiston or by road. To facilitate the use of the existing railhead, the Scoping Report states that small-scale refurbishment of the railhead is likely to be required prior to the completion of any additional rail development.
- 2.67 The construction phase is described within the Scoping Report as requiring the excavation of large amounts of spoil (comprising soil, made ground, peat, alluvium and Crag sand) to reach the required foundation depths for the buildings and structures within the Main Development Site. Additional engineering fill material would be required to raise the Main Development Site platform to 6.4m AOD. This additional material is stated to either be won from the temporary construction area or sourced from off-site. The Scoping Report describes that excavated peat and alluvium may either be retained on site for earthworks or could be used within a new nature reserve currently being created at Wallasea Island, Essex. Material would need to be exported to the latter via barge from the development jetty.
- 2.68 Following initial site preparation works, the main construction of the proposed development is likely to take between seven and nine years. At its peak, the construction workforce is likely to comprise 5,600 persons.
- 2.69 Following construction, the Scoping Report describes that the land used temporarily would be landscaped in line with a wider landscape strategy.
- 2.70 The Scoping Report identifies that a number of the potential off-site associated development options are temporary. No information has been provided regarding the removal of the temporary elements of potential off-site associated development. The temporary elements indicated to be removed following construction include the following (should they be carried forward within the development application):
- northern Park and Ride and southern Park and Ride (including induction centre at one of the park and ride sites);
 - rail line extension; and
 - temporary Visitor Centre within Leiston.

- 2.71 The Farnham bypass/road widening at Farnham bend would be permanent road improvements. However, it is unclear from the Scoping Report whether the HGV traffic controls at Farnham Bend would remain.

Operation and maintenance

- 2.72 Section 3.5 of the Scoping Report provides a brief overview of the operational phase of the proposed development. Sizewell C power station would have a design life of 60 years. During operation, planned refuelling and maintenance outages would take place approximately every 18 months for each EPR reactor unit and last typically between one and three months. It is expected that during these periods approximately 900 staff would be employed.

Decommissioning

- 2.73 The decommissioning of the Main Development Site is discussed briefly within Section 3.6 of the Scoping Report.
- 2.74 The Scoping Report states that the EPR has been designed with decommissioning in mind, to limit the quantities of radioactive waste that would be present when decommissioning takes place. The proposed strategy for the decommissioning of Sizewell C is described within the Scoping Report as 'early site clearance', and would take place as soon as practicable after the end of electricity generation. The decommissioning of Sizewell C, with the exception of the ISFS, is stated as potentially being achieved within approximately 20 years following the end of electricity generation. The ISFS would continue to operate until a UK Geological Disposal Facility is available and the spent fuel is ready for disposal. The ISFS life span would be at least 100 years.
- 2.75 A high-level environmental assessment of decommissioning is proposed to be included with the Sizewell C ES, which would identify and summarise the types of environmental impacts anticipated to occur during decommissioning.
- 2.76 The Scoping Report acknowledges that the decommissioning of Sizewell C power station would be subject to separate consent from the ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended), which will require the submission of an ES following an EIA and period of public consultation.

The Secretary of State's Comments

Description of the application site and surrounding area

- 2.77 Very little textual information is provided in the introductory chapters regarding the existing conditions at the Main Development Site and the features of the surrounding area. In

addition to detailed baseline information to be provided within topic specific chapters of the ES, the SoS would expect the ES to include a section that describes the baseline of the Main Development Site, plus any off-site associated development, and its surroundings. This would identify the context of the proposed development, any relevant designations and sensitive receptors. This section should identify land that could be directly or indirectly affected by the proposed development and any associated auxiliary facilities, landscaping areas, and potential off-site mitigation or compensation schemes.

Description of the proposed development

- 2.78 The description of the project provided within the Scoping Report is limited and of high-level. The applicant should ensure that the description of the proposed development that is being applied for is as accurate and firm as possible as this will form the basis of the environmental impact assessment. It is understood that at this stage in the evolution of the scheme, the description of the proposals and the location of elements of the proposed development may not be confirmed. The applicant should be aware, however, that the description of the development in the ES must be sufficiently certain to meet the requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations and there should therefore be more certainty by the time the ES is submitted with the DCO. The applicant's attention is directed to the comments of the Environment Agency regarding the description of the project in Appendix 2.
- 2.79 Any proposed works and/or infrastructure required as associated development, or as an ancillary matter, (whether on or off-site) should be considered as part of an integrated approach to environmental assessment.
- 2.80 The SoS recommends that the ES should include a clear description of all aspects of the proposed development, at the construction, operation and decommissioning stages, and include:
- Land use requirements, including land required for any off-site associated development;
 - Site preparation;
 - Construction processes and methods;
 - Transport routes, both temporary and permanent;
 - Operational requirements, including the main characteristics of the production process and the nature and quantity of materials used, as well as waste arisings (both conventional and radioactive waste) and their disposal;
 - Maintenance activities including any potential environmental impacts, and

- Emissions- water, air and soil pollution, noise, vibration, light, heat, radiation.
- 2.81 The environmental effects of all wastes to be processed and removed from the site should be addressed. The ES will need to identify and describe the control processes and mitigation procedures for storing and transporting waste both on and off-site. All waste types should be quantified and classified.
- 2.82 The Scoping Report makes reference to the potential for dredging activities associated with the construction and operation (maintenance) of the proposed development; however, the requirement for and information provided is limited. The ES will need to detail the requirements and methodologies associated with any identified dredging activities, together with an assessment of potential impacts on the environment. The applicant's attention is drawn to the comments of the MMO regarding dredging and licensable activities (see Appendix 2). The MMO response also identifies that licensing under the Marine and Coastal Access Act 2009 may be required for other activities associated with the proposed development. The SoS recommends that consultation with the MMO regarding the need (or otherwise) for licences is undertaken early in the EIA process.
- 2.83 The SoS notes that the proposed development would include a National Grid 400kv substation, plus a pylon, removal of an existing pylon, and associated realignment of overhead lines. However, it is not clear how the proposed development would connect to the national grid. This should be clarified in the ES.

Alternatives

- 2.84 The ES requires that the applicant provide 'An outline of the main alternatives studied by the applicant and an indication of the main *reasons for the applicant's choice, taking into account the environmental effects*' (See Appendix 3).
- 2.85 The SoS notes that no alternatives will be considered for the location of the Sizewell C site and the design of the reactors, as these have been determined through a site selection assessment and the UK GDA process, as outlined above. The SoS welcomes the proposed consideration of alternatives in respect of the design and layout of remaining aspects of the development, with consideration given to environmental effects.
- 2.86 The applicant is directed to the comments of the Environment Agency in Appendix 2 regarding the consideration of alternatives associated with the treatment of radioactive waste. The applicant is also directed to the comments of Suffolk County Council regarding the consideration of alternatives (see Appendix 2).

- 2.87 The SoS notes that alternatives for the off-site associated development have been considered as part of a site selection process and are continuing to be developed/assessed. The SoS reminds the applicant to provide details of the alternatives considered for the off-site associated development and to assess the impacts of selected options.

Flexibility

- 2.88 The Scoping Report confirms that a Rochdale/Design Envelope approach will be applied to the proposed development and states that the approach will be to clearly define the project design parameters and assessment made on a realistic worst case scenario identified for each receptor/topic group. Information regarding the likely design parameters of each element of the proposed development has not been provided within the Scoping Report at this stage.
- 2.89 The applicant's attention is drawn to Advice Note 9 'Using the 'Rochdale Envelope', which is available on the Planning Inspectorate's website and to the 'Flexibility' section in Appendix 3 of this Scoping Opinion which provides additional details on the recommended approach.
- 2.90 The applicant should make every attempt to narrow the range of options and explain clearly in the ES which elements of the scheme have yet to be finalised and provide the reasons. At the time of application, any proposed scheme parameters should not be so wide ranging as to represent effectively different schemes. The scheme parameters will need to be clearly defined in the draft DCO and therefore in the accompanying ES. It is a matter for the applicant, in preparing an ES, to consider whether it is possible to robustly assess a range of impacts resulting from a large number of undecided parameters. The description of the proposed development in the ES must not be so wide that it is insufficiently certain to comply with requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations.
- 2.91 It should be noted that if the proposed development changes substantially during the EIA process, prior to application submission, the applicant may wish to consider the need to request a new scoping opinion.

Proposed access

- 2.92 The Scoping Report identifies the requirement for a new access road, a temporary and permanent bridge to the main operational platform, together with various roads and river crossings potentially associated with off-site associated development. However, it does not provide information regarding the location of these routes and ingress/egress to be used for the proposed development both during the construction and operational phase.

The SoS understands that these elements are still under consideration; however, the SoS would expect the final ES to provide this information, including access to any off-site associated development and an assessment of the impacts of constructing and using such accesses.

Construction

- 2.93 Paragraph 3.4.7 of the Scoping Report notes that the main construction period, following site preparation, would last between seven and nine years. However, the SoS considers that a clearer indication of the phasing of the timescales for the entire construction period, including site preparation, enabling works, and any off-site associated development should be provided within the ES.
- 2.94 The SoS considers that the following information on the construction phase should be included and assessed within the ES: construction methods and activities associated with each phase; siting and size of construction compounds (including on and off-site); lighting equipment/requirements; and number, movements and parking of construction vehicles (both HGVs and staff). Information should also be provided within the ES on whether any construction activities are restricted to a particular time of year.
- 2.95 The SoS notes that there are various aspects of the proposed development that are described as temporary. The ES should clearly describe the elements of the project that are temporary, including the timescales and methodology for their removal.
- 2.96 The SoS also notes that prior to the jetty becoming operational and the construction of any temporary extension of the Saxmundham-Leiston branch railway line into the construction site (off-site associated development), construction materials could be delivered and exported by rail via the existing railhead at Leiston, which would require small-scale refurbishment of the railhead. This refurbishment should be considered within the ES, which should also clarify whether this work would form part of the DCO application or would be consented under a separate regime. Construction traffic movements associated with the refurbished rail head would also need to be considered in the ES.
- 2.97 The Scoping Report describes that excavated peat and alluvium could potentially be used within a new nature reserve currently being created at Wallasea Island, Essex. The applicant's attention is directed to the response of Essex County Council regarding planning conditions attached to the Wallasea Island project in Appendix 2 of this Opinion, in particular, the restrictions in respect of material type and the timing for receipt of material associated with this project.

Operation and maintenance

- 2.98 Information on the operation and maintenance of the proposed development should be included in the ES and should cover, but not be limited to, such matters as: the number of full/part-time jobs; the operational hours and if appropriate, shift patterns; the number and types of vehicle movements generated during the operational stage.

Decommissioning

- 2.99 In terms of decommissioning, the SoS acknowledges that separate consent will be required from the ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended). The SoS welcomes the inclusion of a high-level environmental assessment of the decommissioning of the proposed development with the ES. An assessment of environmental impacts at the decommissioning stage is necessary to enable the decommissioning works to be taken into account in the design and use of materials, such that structures can be taken down with the minimum of disruption. The SoS considers that the process and methods of decommissioning should be considered and options presented in the ES, where possible.
- 2.100 The SoS notes that the operational life of the Sizewell C power station is 60 years. The life of the spent fuel storage element of the development would be at least 100 years, beyond the life of the operational power station. The SoS recommends that the EIA considers how the spent fuel storage would be maintained throughout the anticipated 100 years life of the facility.

3.0 EIA APPROACH AND TOPIC AREAS

Introduction

- 3.1 This section contains the SoS's specific comments on the approach to the ES and topic areas as set out in the Scoping Report. General advice on the presentation of an ES is provided at Appendix 3 of this Opinion and should be read in conjunction with this Section.
- 3.2 Applicants are advised that the scope of the DCO application should be clearly addressed and assessed consistently within the ES.

Environmental Statement (ES) - approach

- 3.3 The information provided in the Scoping Report sets out the proposed approach to the preparation of the ES. Whilst early engagement on the scope of the ES is to be welcomed, the SoS notes that the level of information provided at this stage is not always sufficient to allow for detailed comments from either the SoS or the consultees.
- 3.4 The SoS would suggest that the applicant ensures that appropriate consultation is undertaken with the relevant consultees in order to agree, wherever possible, the timing and relevance of survey work as well as the methodologies to be used. The SoS notes and welcomes the intention for ongoing liaison with key statutory consultees and other interested parties, including scope of survey work as described within a number of topic areas in Section 7 of the Scoping Report.
- 3.5 The SoS recommends that the physical scope of the study areas should be identified under all the environmental topics and should be sufficiently robust in order to undertake the assessment. The extent of the study areas should be on the basis of recognised professional guidance, whenever such guidance is available. The study areas should also be agreed with the relevant consultees and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given. The scope should also cover the breadth of the topic area and the temporal scope, and these aspects should be described and justified. The SoS notes and welcomes the intention to define the spatial and temporal scope within the ES.
- 3.6 It is not clear from the Scoping Report which elements are temporary during construction, at what stage these will be decommissioned and how these will be considered within the proposed ES. The ES will need to ensure that an assessment of all activities associated with the proposed development is included within the EIA.

Matters to be scoped out

- 3.7 The applicant has identified that at present none of the identified topics within the relevant sections of the Scoping Report are to be 'scoped out' from the assessment of the Main Development Site. The Scoping Report states that there is the potential to scope out topics from the assessment of associated off-site development. The topics identified to be scoped out for each element of the associated off-site development are listed below. These include:
- marine historic environment;
 - coastal geomorphology and hydrodynamics;
 - marine water quality and sediments;
 - marine ecology;
 - navigation; and
 - radiological.
- 3.8 The ES will need to justify the removal of these topics from the ES and confirm that there are no potential effect pathways between the off-site associated development and marine resources, based on the off-site development carried forward within the DCO application.
- 3.9 It is noted that radiological impacts are also scoped out of the assessment of off-site associated development for the reason that radiological impacts are not associated with the off-site associated development sites. The SoS agrees that it may be possible to scope out radiological impacts on these areas; however, further information will need to be provided in the ES to support this conclusion and confirm that there are no linkages between these sites and radiological material, such as through the transportation of radioactive material.
- 3.10 Matters are not scoped out unless specifically addressed and justified by the applicant, and confirmed as being scoped out by the SoS. However, if the applicant subsequently agrees with the relevant consultees to scope matters out of the ES, which may be on the basis that further evidence has been provided to justify this approach, this approach should be explained fully in the ES.
- 3.11 In order to demonstrate that topics have not simply been overlooked, where topics are scoped out prior to submission of the DCO application, the ES should still explain the reasoning and justify the approach taken.

National Policy Statements (NPSs)

- 3.12 Sector specific NPSs are produced by the relevant Government Departments and set out national policy for nationally significant

infrastructure projects (NSIPs). They provide the framework within which the Examining Authority will make their recommendations to the SoS and include the Government's objectives for the development of NSIPs.

- 3.13 The relevant NPSs for the proposed development, i.e. EN-1 and EN-6, set out both the generic and technology-specific impacts that should be considered in the EIA for the proposed development. When undertaking the EIA, the applicant must have regard to both the generic and technology-specific impacts and identify how these impacts have been assessed in the ES.

Environmental Statement - Structure

- 3.14 The SoS notes that an indicative structure for the ES is provided in Section 9.2 of the ES. The ES is proposed to comprise nine volumes as follows:

- Volume 1: Introduction;
- Volume 2: Project-wide Considerations;
- Volume 3: Sizewell C Main Development Site;
- Volumes 4 to 8: Off-site Associated Development;
- Volume 9: Cumulative Assessment.

- 3.15 Section 6 of the Scoping Report identifies two topics: socio-economics and transport, which will be considered on a project-wide basis within the ES, rather than being assessed separately under both the Main Development Site and associated off-site development. The SoS notes that these two chapters will form Volume 2 of the ES.

- 3.16 Section 7 of the Scoping Report sets out the proposed ES environmental topics associated with the Main Development Site on which the applicant seeks the opinion of the SoS. The topics listed include:

- Terrestrial ecology and ornithology;
- Landscape and visual;
- Amenity and recreation;
- Terrestrial historic environment;
- Marine historic environment;
- Noise and vibration;
- Air quality;
- Soils and agriculture;
- Geology and land quality;
- Groundwater;

- Surface water;
- Coastal geomorphology and hydrodynamics;
- Marine water quality and sediments;
- Marine ecology;
- Navigation; and
- Radiological.

3.17 Section 8 of the Scoping Report identifies each element of the off-site associated development and the topics currently proposed to be considered for each element. At present, the SoS notes that the following topic areas will be assessed for all off-site associated development:

- Terrestrial ecology and ornithology;
- Landscape and visual;
- Amenity and recreation;
- Terrestrial historic environment;
- Noise and vibration;
- Air quality;
- Soils and agriculture;
- Geology and land quality;
- Groundwater; and
- Surface water.

3.18 The Scoping Report refers to a high-level assessment to be undertaken for the decommissioning of Sizewell C power station; however, it is unclear how and where this information will be presented within the ES. No reference to decommissioning has been made within the individual topic chapters. The SoS recommends that the ES structure include for the high-level assessment of decommissioning.

3.19 The SoS considers that the ES should not be a series of disparate reports and stresses the importance of considering inter-relationships and cumulative effects throughout the ES.

Environmental Statement - General Comments

3.20 The SoS notes that the eastern boundary of the proposed 'area for cooling water and associated infrastructure' is not entirely included on a number of figures provided with the Scoping Report (for example Figures 1.1.1 and 3.2.1). The SoS advises that the figures presented within the ES include a greater mapped area to clearly show the considered boundary of the cooling water and associated infrastructure.

- 3.21 A list of abbreviations and glossary has been provided with the Scoping Report; however, it is noted that this is incomplete. Examples include EPRs and BERR. The ES will need to ensure that all abbreviation/acronyms are included within the ES and first occurrences are stated.
- 3.22 Where the applicant has identified mitigation relied upon in the ES, the SoS reminds the applicant to ensure that such mitigation is adequately secured via requirements within the draft DCO. The SoS recommends that the applicant provides a table appended to the ES setting out how the mitigation identified and relied upon within each topic chapter in the ES has been secured through the draft DCO. This should be by reference to the draft requirement number in the DCO and identifying any plans or strategies that would be relied upon to deliver such mitigation.
- 3.23 The scope of cumulative projects is described within the Scoping Report; however, only the Galloper offshore windfarm has been specifically referenced in the report. The applicant's attention is drawn to the comments of the MMO in respect of cumulative projects, which recommends the cumulative assessment also take into consideration wider developments such as port developments in the region, including Harwich and Felixstowe.

Topic Areas

Project-wide considerations

Socio-economics (see Scoping Report Section 6.2)

- 3.24 Consideration should be given to whether the baseline for this topic assessment should also include agricultural interests and businesses in the area, bearing in mind that agricultural land may be affected, particularly during construction. No specific mention is given to agricultural interests in Section 6.2, although Section 7.9 refers to the consideration of socio-economic effects on agricultural businesses, which is stated to be included in Section 6.2.
- 3.25 The SoS welcomes the development of a Gravity Model with Suffolk County Council, Suffolk Coastal District Council, and Waveney District Council. The SoS would expect on-going discussions and agreement, where possible, with such bodies. The SoS also welcomes the use of updated baseline information as this becomes available, as stated within the Scoping Report. The applicant should ensure that the baseline data relied upon for the assessment is up-to-date and robust within the ES. The applicant is directed to the comments of Suffolk County Council in Appendix 2 of this Opinion, regarding the proposed modelling.
- 3.26 The SoS recommends that the socio-economic ES chapter assess the impacts of the proposed development on potential tourism

receptors beyond the consideration of tourist accommodation, for example, visitors to the Heritage Coast. The applicant's attention is drawn to the comments of Theberton and Eastbridge Council and Suffolk County Council in Appendix 2 of this Opinion.

- 3.27 Details of the construction methods, working hours, and duration of works should be provided in the ES. Cross-reference should be made to the transport assessment and any impacts the construction and operational development may have on the local network, including consideration of potential works to existing and new access roads.
- 3.28 The ES should assess the socio-economic impacts of the proposed campus accommodation on the local community. The applicant's attention is drawn to the comments of Swefling Parish Council and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion, in this regard.
- 3.29 The Scoping Report states that the cumulative effects assessment would use broader 'macro' projections of cumulative influences relevant to potential effects, rather than focusing on the cumulative potential effects of other specific developments. The SoS recommends that the applicant confirms that the applied 'macro' projections do take account of any cumulative effects of specific developments.

Transport and Access (see Scoping Report Section 6.3)

- 3.30 The SoS welcomes the development of the assessment of transport impacts in association with the local highways authority, Suffolk County Council. The SoS would expect on-going discussions and agreement of the scope of the assessment and modelling approach, where possible. The applicant's attention is drawn to the detailed comments provided by Suffolk County Council regarding the scope of the transport assessment (see Appendix 2 of this Opinion).
- 3.31 The SoS notes the proposed limited number of further count surveys in 2014, to establish whether there has been any material change since the initial surveys in 2011/2012. The applicant should ensure that the baseline data relied upon for the assessment is up-to-date and robust within the ES and should be agreed with the local highways authority.
- 3.32 The Scoping Report currently identifies a number of off-site associated developments that may be taken forward to mitigate potential impacts of construction associated with movement of freight and the number of traffic movements associated with the construction workforce. These are described as embedded mitigation, although the decision to proceed with any or a number of these options is not yet determined. The SoS expects the applicant to present the embedded mitigation relied upon within

the ES and that any traffic assessment would need to take account of the chosen mitigation options.

- 3.33 It is noted that the focus of the transport chapter is the assessment of impacts on the road network; however, the transport study should also include an assessment of impacts on the rail network and vessel movements, if these additional modes of transport are to be used by the development.
- 3.34 The Transport Assessment should consider the movements of any waste/spoil off-site during construction and following completion of construction works, where a requirement for this is identified. For example, Section 3.4 of the Scoping Report identifies the potential for exportation of extra material for use at an off-site nature reserve such as Wallasea Island. The assessment would need to address the form of transport and possible routing, if required.
- 3.35 The Scoping Report states a number of Traffic Management Plans (TMP) will be implemented. Any mitigation measures should be detailed in the ES and draft TMPs provided.
- 3.36 The SoS recommends that the ES should take account of the location of footpaths and any PRow including bridleways and byways and existing permissive paths. The ES should clearly set out impacts on them including within the wider area. It is important to minimise hindrance to them where possible.
- 3.37 The applicant's attention is drawn to a number of responses in respect of traffic and transport, including the responses of Suffolk County Council, Essex County Council, Farnham with Stratford St Andrew Parish Council, Middleton-cum-Fordley Parish Council, Swefling Parish Council, and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion.

Main Development Site

Terrestrial ecology and ornithology (see Scoping Report Section 7.2)

- 3.38 The SoS notes that further ecological work and surveys are proposed to inform the EIA. The ES should detail the methodology, including the timing, of the surveys which have been used to inform the baseline. It is noted that the timing of surveys are not included within the Scoping Report and therefore, it is not currently possible to ascertain whether the surveys are proposed within the optimum time period. Survey data to inform the EIA should be undertaken at an appropriate time of year, including the minimum number of survey visits, in agreement with the relevant statutory nature conservation bodies. Surveys should be undertaken in accordance with recognised best practice guidance.
- 3.39 The applicant's attention is drawn to the comments of the Environment Agency in respect of the scope of potential ecological

receptors in Appendix 2 of this Opinion. It is noted that the Scoping Report makes no reference to potential fish and eel receptors. The applicant is also referred to the comments of the MMO in Appendix 2 regarding the marine and coastal birds to be considered within the ES. The Scoping Report does not make clear whether the ES will assess impacts on bird species beyond red-throated diver, little tern, and sandwich tern. It is recommended that these species groups are considered and the scope of any further studies required agreed with the relevant statutory bodies, including Natural England, the MMO, and the Environment Agency.

- 3.40 The SoS notes that only receptors of medium value (i.e. County/Regional importance) are to be considered within the detailed assessment of Key Ecological Receptors (KERs). The SoS reminds the applicant to ensure that sufficient information is included within the ES to allow the SoS to fulfil their duty under the NERC Act 2006 (as amended) to have regard to biodiversity. The applicant's attention is also drawn to the requirements of NPS EN-1 and EN-6.
- 3.41 The ES chapter will need to define the spatial boundaries of the ecological assessment in respect of the intertidal environment and designated sites within the marine and coastal environment, to ensure designated sites, habitats, and species of the intertidal environment are fully assessed either within the terrestrial ecology and ornithology ES chapter or the marine ecology chapter. The SoS notes from Paragraph 7.2.5 of the Scoping Report that the geographical study area has been defined by defined the potential influence of the scheme (noted to be up to a distance of 20km); however, the SoS reminds the applicant to provide evidence within the ES to define how the ecological zone of influence has been determined. The applicant's attention is drawn to the comments of Kelsale cum Carlton Parish Council in Appendix 2. The applicant's attention is also directed to the comments of Natural England and Suffolk County Council regarding the proposed study area of 5km for bats. The SoS recommends that the scope of the further surveys and study areas for ecological receptors be agreed with the relevant statutory bodies, including Natural England.
- 3.42 The SoS notes that a number of internationally and nationally designated sites for nature conservation lie within 20km of the proposed development, as presented on Figures 7.2.2 and 7.2.3 to the Scoping Report, and Table 7.2.2 of the Scoping Report only discusses the most relevant/Key designated sites. Following on from the SoS comments above, the applicant is reminded to consider the potential ecological zone of influence when assessing ecological receptors, including designated sites. The SoS considers that it may not be possible at this stage to identify the Key designated sites carried forward in the assessment. The applicant is directed to the comments of the Environment Agency in Appendix 2 of this Opinion, which recommend that Dew's Pond

Special Area of Conservation (SAC) is considered, and also the comments of Suffolk County Council, which recommend that the Deben Estuary Special Protection Area (SPA) be considered.

- 3.43 The Scoping Report makes reference to consideration of impacts associated with noise, lighting, visual disturbance, emissions and pollutants. The SoS recommends that cross-reference is made to other specialist reports on these topic areas to be produced for the application in support of the ecological impact assessment.
- 3.44 Reference is made to proposals to restore and create habitats as part of embedded mitigation for the proposed development. The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.

Landscape and visual (see Scoping Report Section 7.3)

- 3.45 The SoS welcomes the approach to involve local planning authorities, Natural England and Suffolk Coast and Heaths AONB Partnership in agreeing the methodology, study area and appropriate viewpoints for the Landscape and Visual Impact Assessment (LVIA).
- 3.46 The LVIA section in the Scoping Report refers to an indicative Zone of Theoretical Visibility (ZTV) that has been produced. The SoS advises that the ES should describe the model used, provide information on the area covered and the timing of any survey work and methodology used.
- 3.47 The SoS notes the reference to professional judgement in the assessment process. The SoS expects that the ES makes it clear where and how professional judgement has been applied in relation to the assessment.
- 3.48 The proposals will be for a large structure in respect of the power station. The SoS requests that careful consideration should be given to the form, siting, and use of materials and colours in terms of minimising the adverse visual impact of the operational power station (for those elements where alternative design approaches are feasible).
- 3.49 The Scoping Report describes potential impacts at night due to lighting; however, no methodology for the assessment of lighting and night time effects is described. The SoS recommends that the ES include an assessment of night time views and lighting impact assessment, including an assessment of light spill to local residents where this has the potential to lead to disturbance during the construction or operational periods. The ES should assess potential lighting effects associated with all aspects of the development, including the power station site, roads, campus accommodation, and any off-site associated development. The

applicant's attention is drawn to the comments of Suffolk County Council, Middleton-cum-Fordley Parish Council and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion, regarding lighting.

- 3.50 The Scoping Report refers to the preparation of two landscape strategies, for the construction and operational stages of the proposed development, both of which would incorporate mitigation measures to offset potential impacts. The SoS welcomes the inclusion of landscape strategies within the ES and reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO. The applicant is also reminded of the need to tailor these plans to accommodate ecology and other mitigation measures which may be required.
- 3.51 The applicant is referred to the comments made by Natural England in respect of designated landscapes and landscape character, as included in Appendix 2 of this Opinion.

Amenity and recreation (see Scoping Report Section 7.4)

- 3.52 The SoS notes the current study area of 2km, although reference is made to the potential inclusion of routes and recreational interests beyond this distance. The ES should include the reasoning behind, and justification of, the selection of the study area for the assessment. The study area should be agreed in consultation with the relevant consultees.
- 3.53 The Scoping Report provides very little information regarding the methodology and scope of the proposed further collection of field survey data and desk study information. The SoS recommends that the methodology for data collection and sources of desk study information be agreed with Suffolk County Council, Suffolk Coastal District Council and other relevant consultees.
- 3.54 The amenity and recreation studies may be required to inform the Habitats Regulations Assessment (HRA). Should this be required, the applicant should ensure that sufficient and appropriate information is collated to inform recreational effects on European sites. This may include the need to provide quantitative baseline data on numbers of users of existing PRoW, permissive paths and open access land (including coastline). The applicant is referred to the SoS's comments on the HRA process in Section 4 of this Opinion.
- 3.55 The Scoping Report refers to the use of primary mitigation measures/embedded mitigation to mitigate the effects of the proposed development on amenity and recreation, where possible (such as through the project design, standard management practices, and the use of a landscape strategy), and secondary mitigation measures not secured through design. The SoS

reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.

- 3.56 The applicant is directed to the advice provided and comments made by Natural England in relation to access and recreation and also comments provided by Suffolk County Council (see Appendix 2 in this Opinion).

Terrestrial historic environment (see Scoping Report Section 7.5)

- 3.57 The SoS welcomes the agreement of the proposed trial trenching programme, site visits to identify off-site heritage assets, the need for site-specific heritage viewpoints as part of the LVIA assessment, and the scope of cumulative assessment with English Heritage and the Suffolk County Council's Archaeological Service. The applicant's attention is drawn to the comments provided by English heritage in Appendix 2 of this Opinion, with regard to updated techniques that could be applied to the further surveys.

- 3.58 The SoS notes that the proposed assessment methodology makes use of matrices, in line with Chapter 5 of the Scoping Report. The applicant's attention is drawn to the comments of English Heritage and Suffolk County Council regarding the application of an alternative/additional approach to the assessment methodology (see Appendix 2 of this Opinion). The SoS recommends that the approach to the assessment methodology be discussed further and an approach agreed with English Heritage and Suffolk County Council's Archaeological Service.

- 3.59 The SoS notes that the setting of cultural heritage resources could be affected; this includes SAM, listed buildings, conservation areas, and archaeological sites. The SoS considers that these should be addressed in the ES. Cross-reference should be made to the Landscape and Visual chapter of the ES. The applicant is directed to the comments made by English Heritage (see Appendix 2 of this Opinion).

- 3.60 The SoS recommends that mitigation works are agreed with English Heritage in addition to the relevant local authority archaeological advisors.

- 3.61 The applicant's attention is drawn to the comments of Suffolk County Council in Appendix 2, including information regarding recently designated heritage assets and guidance documents.

Marine historic environment (see Scoping Report Section 7.6)

- 3.62 The SoS welcomes the agreement of the scope of the marine historic environment assessment with the English Heritage. The applicant's attention is directed to the comments of English Heritage in Appendix 2 of this Opinion, regarding the appropriate contact within English Heritage.

- 3.63 The Scoping Report identifies 162 wrecks within the marine study area but concludes the proposed development is not expected to directly impact on these sites. The SoS reminds the applicant that the ES will need to present the reasoning and evidence to support the scoping out of impacts on historic environment assets and to support the conclusions of the assessment. The applicant is also directed to the comments of the MMO and English Nature in this regard (see Appendix 2 of this Opinion).
- 3.64 The Scoping Report paragraph 7.6.3 refers to new geophysical and geomorphological data of the offshore region and the adjacent coastline; however, no detail has been provided regarding the sources and scope of the data. The SoS recommends that the scope and methodology for further marine historic environment surveys be agreed with the relevant statutory bodies, including English Heritage. The applicant is directed to the comments and advice of English Heritage in Appendix 2 of this Opinion, with regard to the requirements of any Written Scheme of Investigation prepared for the proposed development and the information required for the ES.
- 3.65 The SoS notes reference is made to an assessment of Historic Seascape Character within the discussion of proposed inter-relationships; however, no reference is made to the proposed undertaking of a Historic Seascape Character assessment prior to this reference. The SoS advises that the ES should describe the methodology used and provide information on the area covered. The assessment should follow established best practice guidance for Historic Seascape Character assessment. The Historic Seascape Character assessment should be cross-referenced with the LVIA in the landscape and visual ES chapter. The applicant is directed to the comments and advice of English Heritage in Appendix 2 of this Opinion, with regard to historic seascape assessment and assessment of cumulative impacts.

Noise and vibration (see Scoping Report Section 7.7)

- 3.66 The SoS notes the proposed collection of further comprehensive noise surveys in 2014 and recommends that the methodology and choice of noise receptors should be agreed with the relevant Environmental Health Department of the relevant Council and the Environment Agency.
- 3.67 The SoS notes that data was collected during the Sizewell B outage in June 2013 to establish noise levels in the absence of the operating Sizewell B power station. The SoS considers it important to establish an appropriate and agreed baseline for the proposed development, in view of the decommissioning of the existing power station. Noise levels will change throughout the operation of both stations and the cessation of operation and decommissioning of Sizewell B.

- 3.68 The Scoping Report states that the assessment will take place for a number of different scenarios associated with the construction and operational phases of the development, and will use a number of 'reasonable worst case scenarios' in each case. Information should be provided in the ES regarding the parameters used in the assessment of worst case, such as types of vehicles and plant to be used during the construction phase.
- 3.69 The ES should state the proposed working hours and shift arrangements for the construction and operation of the proposed development. Noise impacts on different receptor groups should be specifically addressed and in particular any potential noise disturbance at night and other unsocial hours such as weekends and public holidays.
- 3.70 The noise and vibration data and assessment should also be suitable to assess potential impacts on both human and wildlife receptors, such as birds and fish. Noise and vibration levels along the foreshore potentially affecting birds and aquatic organisms, such as fish, should be addressed, together with noise and vibration on marine ecology that could potential arise from the offshore construction works and vessel movements. It is unclear from the Scoping Report how underwater noise levels would be calculated and any potential impacts on marine ecology assessed. This should be clarified within the ES.
- 3.71 With regard to mitigation, consideration should also be given to monitoring noise complaints during construction and when the development is operational.
- 3.72 The applicant's attention is drawn to additional comments made by Suffolk County Council in Appendix 2 of this Opinion, in respect of the noise and vibration assessment.

Air quality (see Scoping Report Section 7.8)

- 3.73 The SoS notes that the need for the collection of further data and the details of any monitoring will be agreed in consultation with relevant stakeholders through the preparation of an air quality monitoring strategy. The SoS welcomes the proposed consultation and recommends that the adequacy of the baseline data and any further data collection required be agreed with both the Environmental Health Department of the relevant Council and the Environment Agency.
- 3.74 The SoS recommends that receptor locations identified in the quantitative assessments of air quality (both the road traffic and point source modelling) are agreed with the Environmental Health Department of the relevant Council and also with the Environment Agency.

- 3.75 The SoS recommends that within the ES attempts are made to quantify the overall impact of the proposed development both on the nearby Air Quality Management Areas (AQMA's) (including the potential AQMA under consultation) and at agreed receptor locations. The applicant's attention is drawn to the comments of Suffolk County Council in respect of an AQMA at Stratford St Andrew (see Appendix 2 of this Opinion).
- 3.76 The SoS considers that the site lies within a sensitive area, which includes Sizewell Marshes SSSI. The impacts on Sizewell Marshes and other nearby designated sites should be carefully assessed. There is a need to consider potential related effects due to an increase in airborne pollution including fugitive dust especially during site preparation and construction. The SoS recommends that cross-reference is provided to the terrestrial ecology and ornithology ES chapter and HRA report.
- 3.77 The SoS welcomes that the applicant has noted, that should it not prove possible to demonstrate insignificance in relation to deposition on ecological receptors, further assessment will be undertaken with reference to the Critical Loads of the receptor concerned.
- 3.78 Air quality and dust levels should be considered not only on site but also off-site, including along access roads, local footpaths and other PRoW.
- 3.79 The SoS welcomes that potential mitigation measures beyond the embedded mitigation have been considered and that the air quality assessment will be used to identify the need for such measures.
- 3.80 The SoS recommends that consideration should be given to the monitoring of dust complaints.
- 3.81 The SoS recommends that the applicant gains agreement from both the Environmental Health Department of the relevant Council and the Environment Agency over the developments to be included in the cumulative assessment.
- 3.82 The applicant is directed to the comments of the Environment Agency and Suffolk County Council in Appendix 2 of this Opinion, in respect of the air quality assessment.

Soils and agriculture (see Scoping Report Section 7.9)

- 3.83 It is unclear whether Table 5.3 of the Scoping Report would be used to calculate significance, as the SoS notes that a table or text to define the significance of the impact is absent from the soils and agriculture section, although a major/moderate/minor/negligible scale appears to be applied. The ES should detail how the significance of impacts is proposed to be assessed.

- 3.84 The Scoping Report acknowledges that not all areas of the Main Development Site have been studied to date. The SoS therefore welcomes the proposals to update the Agricultural Land Classification study to include all areas of the Main Development Site.
- 3.85 The SoS welcomes the preparation of the Soils Management Plan, a draft of which should be provided within the ES.
- 3.86 The SoS advises that this section should consider the inter-relationship with ecology, in particular the impacts from the removal of grassland, trees and hedgerows that provide ecological habitat. Appropriate reference should also be made to the socio-economic assessment in the ES.
- 3.87 The applicant is also directed to the advice provided by Natural England in relation to soils and agricultural land quality (see Appendix 2 of this Opinion).

Geology and land quality (see Scoping Report Section 7.10)

- 3.88 The Geology and Land Quality section of the Scoping Report presents tables of sensitivity and magnitude for the assessment of designated geological sites; however, no definition of significance is provided within this section. The ES should detail how the significance of impacts is proposed to be assessed.
- 3.89 This Scoping Report only considers geological designated sites within the coast line study area. It is unclear whether there are any geological sites beyond the coast line, within the Main Development Site study area that would be affected by the proposed development. The ES should make reference to any geological sites within the study area and/or which could be affected by the proposed development.
- 3.90 The Scoping Report refers to the use of embedded mitigation to mitigate the risk of impacts on geology and land quality. The SoS reminds the applicant that embedded mitigation should be secured within the design and presented within the DCO application.
- 3.91 The applicant's attention is directed to the comments provided by Suffolk County Council in respect of material importation, storage and disposal in Appendix 2 of this Opinion.

Groundwater (see Scoping Report Section 7.11)

- 3.92 The SoS welcomes the use of a multi-layered groundwater and surface water model. The model should be agreed with the Environment Agency. The applicant is directed to the comments of Natural England in Appendix 2 of this Opinion, which confirm that Natural England would be happy to provide technical

expertise into the modelling of impacts within Sizewell Marshes SSSI.

- 3.93 The SoS notes that groundwater level monitoring will continue through 2014 and additional site investigations have been initiated. It is unclear from the text whether the additional site investigation locations are currently shown on Figure 7.11.1 or whether these additional locations are not yet shown.
- 3.94 Table 7.11.2 of the Scoping Report lists 'Principal Aquifers with public water supply abstractions' under both categories of High and Medium value/sensitivity. The ES should clarify the assignment of value/sensitivity and where a resource is intended to be assigned to more than one category, an explanation should be provided as to how a judgement will be made (such as through professional judgement).
- 3.95 The Scoping Report provides no clear details regarding the source of water for the proposed development, both during construction and operation, and for the variety of sources for which it will be required, such as the campus accommodation, main power station site, for the concrete batching plant etc. The applicant's attention is drawn to the comments of the Environment Agency in respect of water resources. The requirement for and the effects associated with water resources will need to be assessed in the ES and cross-reference made to the surface water chapter and the suggested Utilities and Infrastructure Assets chapter (see Paragraph 3.156 to 3.159 of this Opinion in respect of the latter). The water supply strategy for the proposed development will need to be agreed with the Environment Agency.
- 3.96 The Scoping Report identifies a number of potential groundwater impacts that are correlated to surface water impacts and vice versa. The SoS advises that the inter-relationship between groundwater and surface water be presented clearly within the two proposed chapters, with appropriate cross-referencing.
- 3.97 Mitigation measures should be addressed and the SoS advises that reference should be made to other regimes (such as pollution prevention from the EA). On-going monitoring should also be addressed and agreed with the relevant authorities to ensure that any mitigation measures are effective. The applicant is directed to the comments of Suffolk County Council in Appendix 2 of this Opinion, with regard to monitoring.
- 3.98 The SoS notes that a Flood Risk Assessment (FRA) will be provided outside of the ES but as a separate document to the DCO Application. The SoS advises that the results of the FRA, in respect of groundwater as a potential pathway for discharge to surface and coastal waters, be taken into account within the groundwater chapter of the ES.

Surface water (see Scoping Report Section 7.12)

- 3.99 The SoS welcomes the provision of a FRA and the on-going consultation with the Environment Agency and other relevant stakeholders. The SoS also welcomes the consultation with the Environment Agency, Natural England and Suffolk Wildlife Trust regarding the water quality monitoring stations.
- 3.100 The Scoping Report refers to the Freshwater Fish Directive; however, this directive has been revoked. The ES will need to refer to the Water Framework Directive. The applicant's attention is directed to the comments of the Environment Agency in Appendix 2 of this Opinion, regarding the approach and methodology and potential impacts and effects.
- 3.101 The Scoping Report identifies that the construction period, following site preparation, is envisaged to last between seven and nine years. Section 7.12 of the Scoping Report classifies temporary impacts (long-term) if the effects are experienced over a period of no more than five years. The SoS queries how impacts that may occur beyond five years (in the event that they are identified) would be classified.
- 3.102 The Scoping Report contains no information regarding sewage disposal for the proposed development, although it is noted that the design of foul water management features is yet to be developed. The ES will need to detail the proposed foul water management strategy and agree this with the Environment Agency. The applicant's attention is drawn to the comments of the Environment Agency in Appendix 2 of this Opinion.
- 3.103 Reference is made to control measures to mitigate for potential impacts on water quality and hydrology. The SoS reminds the applicant that any control measures as embedded mitigation should be secured within the project design and presented within the DCO application. All other mitigation relied on in the ES will need to be adequately secured via requirements within the draft DCO.
- 3.104 The SoS recommends that the study area for the assessment of other projects and plans as part of the cumulative assessment be defined within the ES and agreed with the Environment Agency.
- 3.105 The applicant's is directed to the comments of Natural England in respect of surface water modelling and monitoring of effects during operation (see Appendix 2).

Coastal geomorphology and hydrodynamics (see Scoping Report Section 7.13)

- 3.106 It is unclear from this section whether thermal plumes will be assessed in this ES chapter, in addition to the marine quality and

sediment chapter. The SoS recommends that full consideration will need to be given to the potential effects of the cooling water system, including scour, increase temperature, and the introduction of any chemicals, as required. Cross-reference should be made between the assessments undertaken for coastal morphology and hydrodynamics and those within the marine water quality and sediments chapter.

- 3.107 It will be important to justify the physical study area for this section and ensure that impacts are considered over a sufficiently wide area. The applicant is also directed to the comments of Suffolk County Council regarding the study area (see Appendix 2).
- 3.108 The SoS notes that the inter-relationship between coastal geomorphology and hydrodynamics and the marine historic environment is not discussed within the Scoping Report. The applicant is directed to the detailed comments within the response of English Heritage in Appendix 2 of this Opinion, with regard to the inter-relationship with the marine historic environment and potential effects.
- 3.109 This section should draw on the FRA to include consideration of tidal flood risk and the potential for breaching/overtopping of the proposed flood defences under present and projected sea level scenarios. The potential impacts of flood defences and coastal protection measures will need to be fully assessed. The SoS considers that the implications of climate change, in respect of increased surface water run-off, higher sea levels, and proposed/existing coastal defences, should also be carefully considered in the ES. The applicant is directed to the detailed comments of the MMO and Suffolk County Council in Appendix 2 of this Opinion, in respect of the assessment of coastal geomorphology and hydrodynamics.
- 3.110 Information will need to be provided within the ES to detail the construction methodology for the permanent and temporary coastal and off-shore infrastructure associated with the proposed development, including the treatment of any waste arisings (such as from the proposed tunnel boring techniques). The applicant's attention is drawn to the comments of the MMO regarding dredging activities (see Appendix 2) and also Natural England in regard to potential impacts associated with the beach landing facility.
- 3.111 The potential impacts and approach to cumulative impact sub-sections draw conclusions on the likelihood of impacts in the absence of supporting evidence. The SoS reminds the applicant that conclusions drawn within the ES need to be robustly supported by evidence and justified. The applicant is directed to the comments of English Heritage in respect of cumulative projects (see Appendix 2).

- 3.112 The applicant's attention is directed to the Environment Agency response in Appendix 2 of this Opinion and the recommendation to include Policy Development Zone 5 (Thorpeness to Orfordness) of the Suffolk Shoreline Management Plan 2 within the key national policy and legislation considered for the ES.
- 3.113 The applicant is also directed to the comments of Galloper Windfarm Ltd in Appendix 2 of this Opinion, in relation to a need to assess impacts of the proposed development on the infrastructure associated with Galloper windfarm. Cross-reference should be made to the suggested Utilities and Infrastructure Assets chapter of the ES (see Paragraph 3.156 to 3.159 below).

Marine water quality and sediments (see Scoping Report Section 7.14)

- 3.114 The SoS welcomes the proposed further monitoring in 2014 to supplement the water quality data obtained to date, together with sediment sampling for the offshore structures, and the proposals to agree modelling with the Environment Agency. The SoS recommends that the scope of the assessment and modelling also be agreed with the MMO. The applicant's attention is directed to the MMO's response in Appendix 2 of this Opinion, which includes reference to the expected sampling requirements. The applicant is also directed to the comments of Suffolk County Council regarding the sampling (see Appendix 2).
- 3.115 The Scoping Report Section 7.14 identifies the modelled baseline for the cooling water model is the situation without Sizewell B. The applicant's attention is drawn to the comments of the Environment Agency in Appendix 2 of this Opinion. The Environment Agency disagrees with this modelled baseline, due to the likely overlap between the two operational power stations. The SoS recommends that the modelling be agreed with the Environment Agency.
- 3.116 Cross-reference should be made to the information contained within and the assessments undertaken for coastal morphology and hydrodynamics chapter. Inter-relationships should also be considered for socio-economic and navigation that could be affected by changes to marine water quality or sedimentation.
- 3.117 Reference is made to process chemicals and discharges/effluent via the cooling water system. The SoS would expect the information regarding discharges to be included within the ES.
- 3.118 The cumulative assessment should define all projects and plans that have been considered within the assessment, which may include other projects in addition to the Galloper Wind Farm.

Marine ecology (see Scoping Report Section 7.15)

- 3.119 The SoS recommends that the selected study areas for the marine ecology impact assessment be discussed and agreed with relevant statutory bodies including the MMO, Cefas, Natural England, and the Environment Agency. The SoS also encourages consultation with local fishing organisations and fishermen throughout the EIA process. The applicant is directed to the comments of the Environment Agency regarding the spatial scope for the study area (see Appendix 2).
- 3.120 The Scoping Report does not specifically identify the marine ecology receptors likely to be assessed in the ES. The SoS recommends that appropriate ecological receptors be identified within the ES, for example benthic ecology, commercial fisheries. The applicant is also directed to the comments of the MMO and Natural England in this regard (see Appendix 2).
- 3.121 The Scoping Report does not contain sufficient information regarding the surveys undertaken to date (including methodology) and the methodology of proposed further studies to ascertain whether these are appropriate and adequate. The ES will need to provide detailed information regarding the surveys including methodology, timing, and detail of the equipment used. It is recommended that the scope of the surveys/studies be agreed with the relevant statutory bodies including the MMO, Cefas, Natural England, and the Environment Agency. The applicant's attention is directed to the detailed comments of the MMO within Appendix 2 of this Opinion, regarding the scope of the surveys, study area, ecological receptors and potential impacts.
- 3.122 The legislation to be considered in the assessment should also include the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
- 3.123 Reference is made to the assessment of underwater noise as part of the marine ecology ES chapter; however, no detail regarding the proposed methodology and approach to the assessment of underwater noise has been provided within the Scoping Report. The scope of the underwater noise assessment and potential receptors should be discussed and agreed with the relevant organisations, including the MMO, Natural England and the Environment Agency.
- 3.124 The assessment should also address any impacts associated with the removal of temporary structures from the marine environment, including the temporary jetty. The Scoping Report provides limited information regarding any maintenance measures associated with the offshore structures. Information regarding construction, operational, and decommissioning works and an assessment of these works on the marine environment will need to

be included in the ES. The applicant is also directed to the comments of the Environment Agency and MMO in Appendix 2.

- 3.125 Reference is made to proposals to deliver embedded mitigation to reduce fish mortality. The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately contained within the design of the proposed development and where not embedded in the design, secured via requirements within the draft DCO.
- 3.126 The SoS advises that inter-relationships between the marine ecology ES chapter and other relevant chapters are adequately discussed. Relevant ES chapters would include (but not be limited to) terrestrial ecology and ornithology, marine water quality and sedimentation, coastal geomorphology and hydrodynamics, surface water, socio-economics, and navigation. The applicant is also directed to the comments of the Environment Agency in Appendix 2 of this Opinion, regarding the consideration of potential additive impacts (cumulative and interdependent impacts on fish populations) and also the comments of the MMO and Natural England.
- 3.127 The cumulative assessment should define all projects and plans that have been considered within the assessment, which may include other projects in addition to the Galloper Wind Farm.

Navigation (see Scoping Report Section 7.16)

- 3.128 The SoS welcomes the proposed further consultations with the Maritime and Coastguard Agency, Trinity House, and Royal Yachting Association and encourages this to continue throughout the EIA process in order to identify potential impacts and appropriate mitigation. The applicant's attention is drawn to the comments of Trinity House in Appendix 2 of this Opinion.
- 3.129 The ES should identify the anticipated type and number of vessel movements generated by the development during the construction and operation phases and assess the potential impact to other existing vessel movements in the area. Cross-reference also should be made to the Transport section of the ES. The applicant is directed to comments of the MMO in Appendix 2 of this Opinion, with regard to navigation.

Radiological (see Scoping Report Section 7.17)

- 3.130 Sampling locations and the study area are not identified in plan form within the Scoping Report. The ES should include detailed information regarding the sampling sites, including sample type and location, ideally shown on a plan.
- 3.131 Limited information is provided within the Scoping Report regarding transportation of radioactive waste during the operation

of the development (as identified in Paragraph 7.17.11 of the Scoping Report) and how this will be assessed. The ES will need to include information regarding proposed transport methods, including frequency, modes and routes, and an assessment of potential impacts.

- 3.132 The applicant's attention is directed to the comments of the Environment Agency and Suffolk County Council in Appendix 2.

Off-site Associated Development (see Scoping Report Section 8)

General Comments

- 3.133 The SoS notes that the study areas for each individual topic area included within the assessment of each off-site associated development site are not clearly defined within the Scoping Report. The ES will need to include a description of the study area for each topic area, as assessed for each off-site associated development site (for example, all statutory designated sites for nature conservation have been considered within 5km of the boundary of each site).
- 3.134 Section 8 of the Scoping Report does not include timings for the proposed further surveys nor does it specify the proposed methodologies/best practice standards to be followed for the majority of the topic areas. The SoS notes that more detailed information was included in Section 7 of the Scoping Report and therefore, the information provided within Section 7 may also apply to Section 8; however, this is not made clear within the text. The ES should provide clear justification for the baseline surveys undertaken/not undertaken in respect of each off-site associated development site.
- 3.135 Proposed consultations are specified for some topic areas within each off-site associated development (such as landscape and visual and terrestrial historic environment); however, the consultation organisation is not always specified. The SoS recommends that the scope of the study area, further surveys/monitoring locations, and methodologies be agreed with the relevant stakeholders, including those topics where consultation has not been identified, such as noise and vibration.
- 3.136 The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.

Northern Park and Ride site

- 3.137 Potential impacts on terrestrial ecology and ornithology identified within this chapter include potential construction impacts on birds; however, no bird surveys are identified within Table 8.1. The need or otherwise for bird surveys (or other further ecological surveys)

should be identified following the initial Extended Phase 1 habitat survey. Surveys should be undertaken at an appropriate time of year, following established best practice guidance, and reported within the ES.

- 3.138 The Scoping Report does not make clear whether the park and ride site will be removed and if so, at what phase of the power station development. If the park and ride site is to be temporary, the EIA will need to consider the impact of decommissioning the park and ride site.
- 3.139 The Scoping Report identifies soil damage/loss of fertility; however, it is not clear if there would be loss of agricultural soils associated with the proposed development. This should be made clear within the ES.
- 3.140 Table 8.2 of the Scoping Report refers to a risk assessment in respect of geology and land quality; however, it is not made clear how this risk assessment is undertaken.
- 3.141 The SoS notes that Table 8.2 (potential impacts and effects of the Northern park and ride site) also scopes out a detailed assessment of surface water; however, the terrestrial ecology and ornithology topic area considers potential diffuse pollution on the Minsmere River and Darsham Marshes as a result of surface water run-off in both the construction and operation phase. The ES will need to identify whether there is a potential effect pathway to the river and marshes and if so, an assessment made regarding any potential impacts and mitigation. The applicant's attention is drawn to the comments of the Environment Agency regarding potential impacts on water resources, FRA, and protected species in Appendix 2 of this Opinion.

Southern Park and Ride site

- 3.142 The Scoping Report refers to the Roman settlement of Hacheston; however, the location of this site is not identified within the report. The ES will need to include information regarding the location of this site in relation to the proposed development.
- 3.143 The SoS notes reference to potential impacts on ground nesting birds; however, bird surveys are not identified within Table 8.4 planned further studies/surveys. The need or otherwise for bird surveys (or other further ecological surveys) should be identified following the initial Extended Phase 1 habitat survey. Surveys should be undertaken at an appropriate time of year, following established best practice guidance, and reported within the ES.
- 3.144 The Scoping Report identifies soil damage/loss of fertility; however, it is not clear if there would be loss of agricultural soils associated with the proposed development. This should be made clear within the ES.

- 3.145 The SoS notes that Table 8.3 scopes out a detailed assessment of surface water; however, the terrestrial ecology and ornithology topic area considers potential diffuse pollution on the River Deben as a result of surface water run-off in both the construction and operation phase. The ES will need to identify whether there is a potential effect pathway to the river and marshes and if so, an assessment made regarding any potential impacts and mitigation. The applicant's attention is drawn to the comments of the Environment Agency regarding potential impacts on water resources and FRA in Appendix 2 of this Opinion.

Rail line extension

- 3.146 The ES will need to present the working width for the preferred rail line options, including land required for any engineering works such as changes to ground levels and road/PRoW crossings, and any additional land required for soil storage.
- 3.147 The EIA will need to consider the number and frequency of train trips associated with the proposed development (in the event that the new rail lines are taken forward), to assess potential impacts in respect of noise and air quality in particular. If rail crossings are to be at grade, the impact to local traffic movements will also need to be considered. Cross-reference should be made to the Transport assessment of the ES and the suggested Utilities and Infrastructure Assets chapter (see Paragraphs 3.156 to 3.159 of the Scoping Opinion, below).
- 3.148 The Scoping Report identifies the rail options as temporary development; however, it is not clear when the rail option would be removed in relation to the development of the power station. The removal of the temporary rail option, depending on the selected design and required engineering works, could require significant construction activity. The EIA will need to consider the decommissioning of the rail option.
- 3.149 The applicant's attention is directed to the comments of Network Rail and the Environment Agency in respect of the railway options in Appendix 2 of this Opinion.

A12 improvement – Farnham Bend

- 3.150 The ES will need to present the working width for the preferred options, in particular should the bypass option be carried forward. This will need to include land required for any engineering works such as changes to ground levels, land for new road junctions, and any additional land for soil storage or storage of surface water run-off.
- 3.151 The applicant is referred to the comments of Farnham with Stratford St Andrew Parish Council regarding the potential off-site associated development at Farnham (see Appendix 2). The Parish

Council identifies a number of potential impacts associated with protected species (water voles, which are identified as present in the local area), landscape and visual impacts on the local landscape, impacts on amenity and recreation including amenity land within the footprint of the bypass and also local facilities, impacts of noise/vibration and air quality on receptors in Stratford St Andrew in addition to Farnham, and impacts on surface water (presence of floodplain and regular flooding events recorded).

- 3.152 The applicant's attention is also directed to the comments of the Environment Agency in Appendix 2 of this Opinion, in respect of the A12 road improvements. The Environment Agency identify that the River Alde is a European eel migratory route.

Visitor Centre (temporary options)

- 3.153 The ES will need to include detail regarding the parking area and access. An assessment of the anticipated number of visitors should be considered to establish an appropriate size of car park and any potential environmental effects, as this may result in impacts on the local road network and local residents.
- 3.154 Consideration should be given to background noise levels, type of building, construction method, and proximity to residential properties and other sensitive receptors in respect of potential noise impacts. It may be too early to scope out noise-related impacts associated with the temporary visitor centre and these should be considered further in the ES.

Water Framework Directive

- 3.155 The SoS welcomes the submission of a Water Framework Directive (WFD) Compliance Assessment for the proposed development, which the SoS understands will be prepared in consultation with the Environment Agency and appended to the ES.

Other ES Topic Areas to be Included

Utilities and Infrastructure Assets

- 3.156 The SoS recommends that the ES include an additional chapter entitled Utilities and Infrastructure Assets (or similar), to assess any potential impacts of the proposed development on other utility receptors/ infrastructure assets, such as (but not limited to) existing gas and water pipelines, overhead/underground electrical cables, sewer network, potable water supply, and railway network. This should include consideration of both onshore and offshore receptors and assess impacts during construction and operation of the proposed development. The applicant is referred to the comments of Galloper Windfarm Ltd and Network Rail in Appendix 2 to this Opinion, in respect of potential impacts on their infrastructure assets.

- 3.157 The SoS also recommends that this chapter includes a description of any utilities that may be required to service the development, together with an assessment of any direct and indirect impacts that may result from the construction and operation of associated utilities and services. The applicant's attention is drawn to the comments of Norfolk County Council and Suffolk County Council in Appendix 2 of this Opinion, regarding the need to assess the impacts of the proposed development on the electricity network. Limited information is provided within the Scoping Report regarding the required upgrade to the electricity network to facilitate the project. Further detailed information should be provided in the ES.
- 3.158 The ES should include an assessment of inter-relationships and cumulative impacts, including cross-reference to other relevant ES chapters.
- 3.159 The applicant's attention is also directed to comments of The Coal Authority in Appendix 2 of this Opinion, which confirm that the current proposals lie outside of the defined coalfield.

4.0 OTHER INFORMATION

- 4.1 This section does not form part of the SoS's Opinion as to the information to be provided in the ES. However, it does respond to other issues that the SoS has identified which may help to inform the preparation of the application for the DCO.

Habitats Regulations Assessment (HRA)

- 4.2 The SoS notes that European sites may be located close to the proposed development. It is the applicant's responsibility to provide sufficient information to the Competent Authority (CA) to enable them to carry out a HRA if required. The applicant should note that the CA is the SoS.
- 4.3 The applicant's attention is drawn to The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (The APFP Regulations) and the need to include information identifying European sites to which the Habitats Regulations applies or any Ramsar site or potential SPA which may be affected by a proposal. The submitted information should be sufficient for the Competent Authority (CA) to make an appropriate assessment (AA) of the implications for the site if required by Regulation 61(1) of the Habitats Regulations.
- 4.4 The report to be submitted under Regulation 5(2)(g) of the APFP Regulations with the DCO application must deal with two issues: the first is to enable a formal assessment by the CA of whether there is a likely significant effect; and the second, should it be required, is to enable the carrying out of an AA by the CA. European sites identified in the Scoping Report include: The Outer Thames Estuary Special Protection Area (SPA); Sandings SPA; Minsmere to Walberswick SPA and Ramsar sites; Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC); Alde-Ore and Butley Estuaries SPA; Alde-Ore Estuary SPA, Ramsar; Staverton Park and The Thicks, Wantisden SAC, Dew's Pond SAC; Orfordness Shingle Street SAC; Deben Estuary SPA and Ramsar sites; Stour and Orwell Estuaries SPA and Ramsar sites; and Benacre to Easton Bavents Lagoons SAC and SPA sites.
- 4.5 When considering aspects of the environment likely to be affected by the proposed development; including flora, fauna, soil, water, air and the inter-relationship between these, consideration should be given to the designated sites in the vicinity of the proposed development.

Evidence Plans

- 4.6 An evidence plan is a formal mechanism to agree upfront what information the applicant needs to supply to the Planning Inspectorate as part of a DCO application. An evidence plan will

help to ensure compliance with the Habitats Regulations. It will be particularly relevant to NSIPs where impacts may be complex, large amounts of evidence may be needed or there are a number of uncertainties. It will also help applicants meet the requirement to provide sufficient information (as explained in the Planning Inspectorate's Advice Note 10 on HRA) in their application, so the Examining Authority can recommend to the SoS whether or not to accept the application for examination and whether an AA is required.

- 4.7 It is noted that the applicant is already engaged with the evidence plan process. The applicant's attention is drawn to the response from the MMO in Appendix 2 in this Opinion, requesting their involvement with discussions and reviewing documentation.

Sites of Special Scientific Interest (SSSIs)

- 4.8 The Secretary of State notes that a number of SSSIs are located close to or within the proposed development, including:

- Sizewell Marshes SSSI;
- Minsmere to Walberswick Heaths and Marshes SSSI;
- Leiston to Aldeburgh SSSI;
- Pakefield to Easton Bavents SSSI;
- Holton Pit SSSI;
- Potton Hall Fields, Westleton SSSI;
- Alde-Ore Estuary SSSI;
- Aldeburgh Hall Pit SSSI;
- Red House Farm Pit, Sudbourne SSSI;
- Valley Pit Farm, Sudbourne SSSI;
- Sudbourne Park Pit SSSI;
- Richmond Park Pit, Gedgrave SSSI;
- Gedgrave Hall Pit SSSI;
- Sandlings Forest SSSI;
- Staverton Park and The Thicks, Wantisden SSSI;
- Chillesford Church Pit SSSI;
- Crag Farm Pit, Sudbourne SSSI;
- Tunstall Common SSSI;
- Blaxhall Heath SSSI;
- Snape Warren SSSI; and
- Gromford Meadows SSSI.

- 4.9 Where there may be potential impacts on the SSSIs, the SoS has duties under sections 28(G) and 28(I) of the Wildlife and Countryside Act 1981 (as amended). These are set out below for information.
- 4.10 Under s28(G), the SoS has a general duty ‘...to take reasonable steps, consistent with the proper exercise of the authority’s functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest’.
- 4.11 Under s28(I), the SoS must notify the relevant nature conservation body (NCB), Natural England in this case, before authorising the carrying out of operations likely to damage the special interest features of a SSSI. Under these circumstances 28 days must elapse before deciding whether to grant consent, and the SoS must take account of any advice received from Natural England, including advice on attaching conditions to the consent. Natural England will be notified during the examination period.
- 4.12 If applicants consider it likely that notification may be necessary under s28(I), they are advised to resolve any issues with the NCB before the DCO application is submitted to the SoS. If, following assessment by applicants, it is considered that operations affecting the SSSI will not lead to damage of the special interest features, applicants should make this clear in the ES. The application documents submitted in accordance with Regulation 5(2)(l) could also provide this information. Applicants should seek to agree with the NCB the DCO requirements which will provide protection for the SSSI before the DCO application is submitted.

European Protected Species (EPS)

- 4.13 Applicants should be aware that the decision maker under the Planning Act 2008 (PA 2008) has, as the CA, a duty to engage with the Habitats Directive. Where a potential risk to an EPS is identified, and before making a decision to grant development consent, the CA must, amongst other things, address the derogation tests² in Regulation 53 of the Habitats Regulations. Therefore the applicant may wish to provide information which will assist the decision maker to meet this duty.
- 4.14 If an applicant has concluded that an EPS licence is required the ExA will need to understand whether there is any impediment to the licence being granted. The decision to apply for a licence or not, will rest with the applicant as the person responsible for commissioning the proposed activity, by taking into account the advice of their consultant ecologist.

² Key case law on Article 16 of the Habitats Directive should be considered, for example, Woolley vs East Cheshire County Council 2009 and Morge v Hampshire County Council 2010

- 4.15 Applicants are encouraged to consult with Natural England and, where required, to agree appropriate requirements to secure necessary mitigation. It would assist the examination if applicants could provide, with the application documents, confirmation from Natural England whether any issues have been identified which would prevent the EPS licence being granted.
- 4.16 Generally, Natural England are unable to grant an EPS licence in respect of any development until all the necessary consents required have been secured in order to proceed. For NSIPs, Natural England will assess a draft licence application in order to ensure that all the relevant issues have been addressed. Within 30 working days of receipt, Natural England will either issue 'a letter of no impediment' stating that it is satisfied, insofar as it can make a judgement, that the proposals presented comply with the regulations or will issue a letter outlining why Natural England consider the proposals do not meet licensing requirements and what further information is required before a 'letter of no impediment' can be issued. The applicant is responsible for ensure draft licence applications are satisfactory for the purposes of informing formal pre-application assessment by Natural England.
- 4.17 Ecological conditions on the site may change over time. It will be the applicant's responsibility to ensure information is satisfactory for the purposes of informing the assessment of no detriment to the maintenance of favourable conservation status (FCS) of the population of EPS affected by the proposals³. Applicants are advised that current conservation status of populations may or may not be favourable. Demonstration of no detriment to favourable populations may require further survey and/or submission of revised short or long term mitigation or compensation proposals. In England the focus concerns the provision of up to date survey information which is then made available to Natural England (along with any resulting amendments to the draft licence application). This approach will help to ensure no delay in issuing the licence should the DCO application be successful. Applicants with projects in England or English waters can find further information on Natural England's protected species licensing procedures in relation to NSIP's by clicking on the following link:

http://www.naturalengland.org.uk/Images/wml-g36_tcm6-28566.pdf

- 4.18 In England or English Waters, assistance may be obtained from the Consents Service Unit (CSU). The CSU works with applicants

³ Key case law in respect of the application of the FCS test at a site level: Hafod Quarry Land Tribunal (Mersey Waste (Holdings) Limited v Wrexham County Borough Council) 2012, and Court of Appeal 2012

to coordinate key non-planning consents associated with nationally significant infrastructure projects. The CSU's remit includes EPS licences. The service is free of charge and entirely voluntary. Further information is available from the following link:

<http://infrastructure.planningportal.gov.uk/legislation-and-advice/consents-service-unit/>

Flood Risk Assessment

- 4.19 The SoS notes that a separate FRA will be submitted with the DCO application. The Scoping Report confirms that, in accordance with the National Planning Policy Framework (NPPF), the FRA will assess the flood risk both to and from the proposed development and demonstrate how that flood risk (from all sources) will be managed over the lifetime of the site, taking into account the effects of climate change, including sea-level rise. The SoS welcomes the consideration of potential sources of flooding from: fluvial; coastal; groundwater; surface water resulting from intense rainfall (pluvial) events; sewers (also resulting from intense pluvial events); and non-natural water bodies (i.e. canals and reservoirs), either from individual or multiple sources, in accordance with the NPPF. The Scoping Report confirms that the FRA will also take account of any future geomorphological change, including the potential for increased flooding risk due to coastal erosion. The applicant's attention is drawn to the comments of the Environment Agency in respect of the FRA (see Appendix 2 of this Opinion).
- 4.20 The SoS notes that decommissioning would be the subject of a separate FRA.

Transport Assessment

- 4.21 The SoS notes the proposed inclusion of a separate Transport Assessment (TA) with the DCO application. The SoS understands that the TA will include assessments of both the construction and operational phases and will assess the impact of the Sizewell C proposed development on road and network capacity, the operation of junctions and journey times both locally and in the wider context (where necessary), taking account of the transport strategy adopted for the Sizewell C proposed development and proposed mitigation. The applicant is referred to the SoS' comments in paragraph 3.33 of this Opinion, in regard to extending the scope of the TA to include consideration of potential impacts on the rail network and navigation.

Sustainability Appraisal

- 4.22 The SoS notes the inclusion of a Sustainability Appraisal with the DCO application. The SoS understands that the appraisal will be informed by a sustainability strategy and will have regard to: the

Government's Appraisal of Sustainability (AoS) of the NPS for Nuclear Power Generation (EN-6) and the AoS Site Report for Sizewell; relevant legislation and planning policy; EDF Energy's own corporate sustainability policy; best practices set by other major infrastructure projects in the UK; and the views and interests of stakeholders.

Health Impact Assessment

- 4.23 The SoS considers that it is a matter for the applicant to decide whether or not to submit a stand-alone Health Impact Assessment (HIA) and notes that the applicant has decided to include an HIA with the DCO application. The applicant should have regard to the responses received from the relevant consultees regarding health, and in particular to the comments from Public Health England, Suffolk County Council, Swefling Parish Council, and Theberton and Eastbridge Parish Council in relation to the need to assess all potential impacts on human health (see Appendix 2 of this Opinion).
- 4.24 The methodology for the HIA should be agreed with the relevant statutory consultees and take into account mitigation measures for acute risks.

Other regulatory regimes

- 4.25 The SoS recommends that the applicant should state clearly what regulatory areas are addressed in the ES and that the applicant should ensure that all relevant authorisations, licences, permits and consents that are necessary to enable operations to proceed are described in the ES. Also it should be clear that any likely significant effects of the proposed development which may be regulated by other statutory regimes have been properly taken into account in the ES.
- 4.26 The applicant's attention is drawn to the comments of the Environment Agency in Appendix 2 of this Opinion, regarding consenting requirements.
- 4.27 It will not necessarily follow that the granting of consent under one regime will ensure consent under another regime. For those consents not capable of being included in an application for consent under the PA 2008, the SoS will require a level of assurance or comfort from the relevant regulatory authorities that the proposal is acceptable and likely to be approved, before they make a recommendation or decision on an application. The applicant is encouraged to make early contact with other regulators. Information from the applicant about progress in obtaining other permits, licences or consents, including any confirmation that there is no obvious reason why these will not

subsequently be granted, will be helpful in supporting an application for development consent to the SoS.

Transboundary Impacts

- 4.28 The SoS has noted that the applicant has not at this stage indicated whether the proposed development is likely to have significant impacts on another European Economic Area (EEA) State.
- 4.29 Regulation 24 of the EIA Regulations, which *inter alia* require the SoS to publicise a DCO application if the SoS is of the view that the proposal is likely to have significant effects on the environment of another EEA state and where relevant to consult with the EEA state affected. The SoS considers that where Regulation 24 applies, this is likely to have implications for the examination of a DCO application.
- 4.30 The SoS recommends that the ES should identify whether the proposed development has the potential for significant transboundary impacts and if so, what these are and which EEA States would be affected.

Scoping Opinion for Sizewell C Proposed Nuclear Development

APPENDIX 1

List of Consultees

Scoping Opinion for Sizewell C Proposed Nuclear Development

APPENDIX 1

LIST OF BODIES FORMALLY CONSULTED DURING THE SCOPING EXERCISE

CONSULTEE	ORGANISATION
SCHEDULE 1	
The Welsh Ministers	Welsh Government
The Welsh Ministers	Welsh Government
The Scottish Executive	Scottish Government
The Scottish Executive	Scottish Government
The Relevant Northern Ireland Department	Northern Ireland Assembly
The Health and Safety Executive	Health and Safety Executive
The Relevant Strategic Health Authority (post 1 April 2013)	NHS England Ipswich and East Suffolk Clinical Commissioning Group Great Yarmouth and Waveney Clinical Commissioning Group
Natural England	Natural England
The Historic Buildings and Monuments Commission for England	English Heritage
The Relevant Fire and Rescue Authority	Suffolk Fire and Rescue Service
The Relevant Police and Crime Commissioner	Suffolk Police and Crime Commissioner
The Relevant Parish Council(s) or Relevant Community Council	Aldringham cum Thorpe Parish Council Benhall and Sternfield Parish Council Blaxhall Parish Council Blythburgh Parish Council Bramfield and Thorington Parish Council Campsea Ashe Parish Council Darsham Parish Council Dunwich Parish Meeting Easton Parish Council Farnham with Stratford St Andrew Parish Council Great Glemham Parish Council Hacheston Parish Council Kelsale cum Carlton Parish Council Knodishall Parish Council Leiston cum Sizewell Town Council Letheringham Parish Council Little Glemham Parish Council Marlesford Parish Council

CONSULTEE	ORGANISATION
	Middleton Parish Council Parham Parish Council Rendham Parish Council Saxmundham Town Council Snape Parish Council Sweffling Parish Council Theberton and Eastbridge Parish Council Westleton Parish Council Wickham Market Parish Council Yoxford Parish Council
The Environment Agency	The Environment Agency
The Commission for Architecture and The Built Environment	CABE at Design Council
The Equality and Human Rights Commission	Equality and Human Rights Commission
The Homes and Communities Agency	Homes and Communities Agency
The Joint Nature Conservation Committee	Joint Nature Conservation Committee
The Maritime and Coastguard Agency	The Maritime and Coastguard Agency
The Marine and Fisheries Agency	Marine Management Organisation (MMO)
The Scottish Fisheries Protection Agency	Marine Scotland Conservation
The Highways Agency	The Highways Agency
The Relevant Highways Authority	Suffolk County Council
The Passengers Council	Passenger Focus
The Disabled Persons Transport Advisory Committee	Disabled Persons Transport Advisory Committee
The Coal Authority	The Coal Authority
The Office Of Rail Regulation	Office of Rail Regulation (Customer Correspondence Team Manager)
Approved Operator	Network Rail Infrastructure Ltd Network Rail (CTRL) Ltd
The Gas and Electricity Markets Authority	OFGEM
The Water Services Regulation Authority	OFWAT
The Relevant Waste Regulation Authority	Environment Agency
The Relevant Internal Drainage Board	East Suffolk Internal Drainage Board
The Canal and River Trust	The Canal and River Trust
Trinity House	Trinity House
The Health Protection Agency (post 1 April 2013)	Public Health England
The Relevant Local Resilience	Suffolk Local Resilience Forum

CONSULTEE	ORGANISATION
forum	
The Crown Estate Commissioners	The Crown Estate
The Office for Nuclear Regulation (from 1 April 2014)	The Office for Nuclear Regulation
RELEVANT STATUTORY UNDERTAKERS	
Health Bodies (s.16 of the Acquisition of Land Act (ALA) 1981)	
The Relevant Strategic Health Authority (England only) (post 1 April 2013)	NHS England Ipswich and East Suffolk Clinical Commissioning Group Great Yarmouth and Waveney Clinical Commissioning Group
Primary Care Trusts (England only) (post 1 April 2013)	NHS England Ipswich and East Suffolk Clinical Commissioning Group Great Yarmouth and Waveney Clinical Commissioning Group East Anglia Area Team
NHS Trust (England only)	Ipswich Hospital NHS Trust
Ambulance Trusts	East of England Ambulance Trust
Relevant Statutory Undertakers (s.8 ALA 1981)	
Railway	Network Rail Infrastructure Ltd Highways Agency Historical Railways Estate Network Rail (CTRL) Ltd
Universal Service Provider	Royal Mail Group
Relevant Homes and Communities Agency	Homes and Communities Agency
Relevant Environment Agency	The Environment Agency
Water and Sewage Undertakers	Anglian Water Essex and Suffolk Water
Public Gas Transporter	British Gas Pipelines Limited Energetics Gas Limited ES Pipelines Ltd ESP Connections Ltd ESP Networks Ltd ESP Pipelines Ltd Fulcrum Pipelines Limited GTC Pipelines Limited Independent Pipelines Limited LNG Portable Pipeline Services Limited National Grid Gas Plc National Grid Plc Quadrant Pipelines Limited SSE Pipelines Ltd The Gas Transportation Company

CONSULTEE	ORGANISATION
	Limited Utility Grid Installations Limited Scotland Gas Networks Plc Southern Gas Networks Plc
Electricity Generators With CPO Powers	EDF Energy Nuclear Generation Limited NNB Generation Company Limited Galloper Wind Farm Limited Greater Gabbard Offshore Winds Limited RWE Npower Renewables SSE Generation Ltd Energetics Electricity Limited ESP Electricity Limited Independent Power Networks Limited The Electricity Network Company Limited UK Power Networks Limited
Electricity Transmitters With CPO Powers	National Grid Electricity Transmission Plc National Grid Plc Greater Gabbard OFTO Plc
LOCAL AUTHORITIES (SECTION 43)	
Marine Management Organisation (MMO) The Broads Authority Suffolk Coastal District Council Waveney District Council Mid Suffolk District Council Babergh District Council Ipswich Borough Council Suffolk County Council Norfolk County Council Cambridgeshire County Council Essex County Council	
NON-PRESCRIBED CONSULTATION BODIES	
Ministry of Defence Royal National Lifeboat Institution	

APPENDIX 2

Respondents to Consultation and Copies of Replies

APPENDIX 2

LIST OF BODIES WHO REPLIED BY THE STATUTORY DEADLINE

Blythburgh Parish Council
The Broads Authority
The Coal Authority
The Crown Estate
Department of Environment, Northern Ireland
English Heritage
Environment Agency
Essex County Council
The Equality and Human Rights Commission
Farnham with Stratford St Andrew Parish Council
Fulcrum Pipelines Ltd
Galloper Wind Farm Ltd
GTC on behalf of: <ul style="list-style-type: none">• Independent Power Networks• Utility Grid Installations• Independent Pipelines• The Electricity Network Company• GTC Pipelines• Quadrant Pipelines
Health and Safety Executive
Kelsale cum Carlton Parish Council
Middleton-cum-Fordley Parish Council
Marine Management Organisation (MMO)
Natural England
Network Rail
Norfolk County Council
Office for Nuclear Regulation
Public Health England
Saxmundham Parish Council
Suffolk County Council
Swefling Parish Council
Theberton and Eastbridge Parish Council
Trinity House

From: Blythburgh Parish Council [mailto:blythburgh.pc@gmail.com]
Sent: 14 May 2014 13:37
To: Environmental Services
Subject: Application by EDF Energy - Sizewell C proposed Nuclear Development

Dear Sir / Madam

Blythburgh Parish Council have reviewed the documentation and wish at this point to make no comment

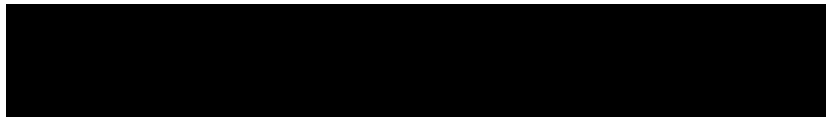
--

regards

J Boggis

Clerk to Blythburgh with Bulcamp & Hinton Parish Council

telephone;



post;

e-mail; blythburgh.pc@gmail.com

web site; <http://blythburgh.onesuffolk.net/>

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Correspondents should note that all communications to Department for Communities and Local Government may be automatically logged, monitored and/or recorded for lawful purposes.

From: Mark King [mailto:Mark.King@broads-authority.gov.uk]
Sent: 19 May 2014 15:07
To: Environmental Services
Subject: EN010012 - Sizewell C

Dear Madam,

Application No : **BA/2014/0172/NEIGHS**
Description : **Scoping Opinion regarding Sizewell C Nuclear Plant**
Address : **Sizewell C Nuclear Plant, Sizewell, ,**
Applicant : **EDF Energy**

I write with reference to the above Scoping Opinion that was sent to the Broads Authority last month.

As the location of the site is some way outside the Broads Executive Area we have no comments to make.

I hope this is satisfactory to you.

Kind Regards

Mark King

Planning Technical Support Officer

Broads Authority

Tel: 01603 756028

Email: mark.king@broads-authority.gov.uk



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200 Lichfield Lane
Berry Hill
Mansfield
Nottinghamshire
NG18 4RG

Tel: 01623 637 119 (Planning Enquiries)

Email: planningconsultation@coal.gov.uk

Web: www.coal.decc.gov.uk/services/planning

Ms Laura Allen – Senior EIA and Land Rights Advisor
The Planning Inspectorate

[By Email: environmentalservices@infrastructure.gsi.gov.uk]

Your Ref: EN010012

15 May 2014

Dear Ms Allen

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) – Regulations 8 and 9

Application by EDF Energy for an Order Granting Development Consent for the Sizewell C Proposed Nuclear Development

Thank you for your consultation letter of 24 April 2014 seeking the views of The Coal Authority on the EIA Scoping Opinion for the above proposal.

The Coal Authority is a non-departmental public body sponsored by the Department of Energy and Climate Change. As a statutory consultee, The Coal Authority has a duty to respond to planning applications and development plans in order to protect the public and the environment in mining areas.

The Coal Authority Response:

I have reviewed the proposals and confirm that the proposed EIA development is located outside of the defined coalfield. Accordingly, The Coal Authority has **no comments** to make regarding the information to be contained in the Environmental Statement that will accompany this proposal.

As this proposal lies outside of the defined coalfield, in accordance with Regulation 3 and Schedule 1 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 it will not be necessary for any further consultations to be undertaken with The Coal Authority on this Nationally Significant Infrastructure Project. This letter can

be used by the applicant as evidence for the legal and procedural consultation requirements.

Please do not hesitate to contact me if you would like to discuss this matter further.

Yours sincerely

Mark Harrison

Mark E. N. Harrison *B.A.(Hons), DipTP, LL.M, MInstLM, MRTPI*
Planning Liaison Manager

Disclaimer

The above consultation response is provided by The Coal Authority as a Statutory Consultee and is based upon the latest available data and records held by The Coal Authority on the date of the response. The comments made are also based upon only the information provided to The Coal Authority by the Local Planning Authority and/or has been published on the Council's website for consultation purposes in relation to this specific planning application. The views and conclusions contained in this response may be subject to review and amendment by The Coal Authority if additional or new data/information (such as a revised Coal Mining Risk Assessment) is provided by the Local Planning Authority or the applicant for consultation purposes.

The Planning Inspectorate
Attention: Laura Allen
3/18 Eagle Wing
Temple Quay House
2 The Square
Bristol, BS1 6PN

Dr David Tudor
Senior Marine Policy & Planning Manager
Tel: 020 7851 5071
Fax: 020 7851 5125
E-mail: david.tudor@thecrownestate.co.uk

22 May 2014

Dear Ms Allen

Scoping consultation for the Sizewell C Proposed Nuclear Development

Reference is made to your letter dated 24 April 2014 inviting The Crown Estate to comment on the request for a scoping opinion submitted for the above proposal by EDF Energy.

The Crown Estate manages property and rights which are owned by Her Majesty in right of the Crown. This portfolio includes around half of the foreshore and almost the entire seabed out to 12 nautical miles around the UK. Under the Energy Act 2004 and the Energy Act 2008, The Crown Estate also manages the rights over the continental shelf to offshore energy generation and the rights to carbon dioxide and natural gas storage and transportation (respectively). We note that EDF Energy's proposal will impact on The Crown Estate's portfolio, given its nature and location.

To date no agreement has been reached between The Crown Estate and EDF Energy in relation to the grant of lease/licence rights that EDF Energy will require to carry out the scheme described in the Sizewell C Scoping Report, namely in relation to the development's cooling water outfall and intake. Discussions are ongoing between The Crown Estate and EDF Energy in relation to such rights being granted; any comment by The Crown Estate is therefore without prejudice to these discussions.

We note in addition that two offshore wind transmission interests to the south of the proposed Sizewell C development are potentially affected by the proposals; the nearest is the Galloper Offshore Wind Farm export cable corridor, and south of that the Greater Gabbard Offshore Wind Farm export cable corridor.

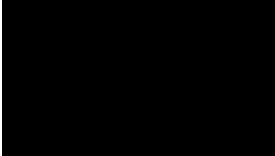
An agreement for lease (Afl) is in place between The Crown Estate and Galloper Wind Farm Ltd for the Galloper Offshore Wind Farm export cable corridor; the cable corridor is covered by the Development Consent Order (DCO) and Deemed Marine Licence which was made by the Secretary of State on the 24 May 2013. We understand that discussions between EDF Energy and Galloper Wind Farm Ltd in 2012/13 resolved issues regarding seabed requirements and the proposed cooling water intake and outfall locations for the Sizewell C development and that these were reflected in the final DCO for the Galloper Offshore Wind Farm. We would therefore expect the current proposals for the Sizewell C development to align with the previously agreed position.

The Greater Gabbard Offshore Wind Farm export cable corridor is leased to an offshore transmission operator (OFTO), and contains 3 x 132kV subsea electricity cables held within a lease of easement from The Crown Estate to Greater Gabbard OFTO Plc. The Crown Estate has given covenants not to

permit certain works within proximity of the cables. As such we recommend continuing engagement between EDF Energy and Greater Gabbard OFTO Plc and ourselves in this respect; in particular, discussions between the applicant and Gabbard OFTO Plc should be held over what proximity is needed in the event that a cable repair is required and further cable needs to be laid down.

Should you have any queries or require any additional information with regard to this matter, please do not hesitate to contact me on 0207 851 5071.

Yours sincerely,

A large black rectangular redaction box covering the signature area.

p.p

Dr David Tudor
Senior Marine Policy & Planning Manager

Strategic Planning Division

**FOR THE ATTENTION OF
LAURA ALLEN**

The Planning Inspectorate
3/18 Eagle Wing
Temple Quay House
2 The Square
BRISTOL
BS1 6PN

4th Floor
Causeway Exchange
1-7 Bedford Street
Town Parks
BELFAST
BT2 7EG

Telephone: (028) 90823324
Facsimile:
Email: simon.kirk@doeni.gov.uk
Martha.linton@doeni.gov.uk
Your Ref: EN010012
Our Ref:
Date: 6 May 2014

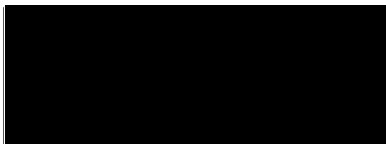
Dear Laura

**APPLICATION BY EDF ENERGY FOR THE SIZEWELL C PROPOSED NUCLEAR
DEVELOPMENT – SCOPING CONSULTATION**

Thank you for your correspondence of 24 April regarding the above.

I can confirm on behalf of the Department of the Environment for Northern Ireland that we have no comments to make on the information to be provided in an environmental statement.

Yours sincerely



SIMON KIRK
Director, Strategic Planning Division



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The Planning Inspectorate
3/18 Eagle Wing
2 The Square
Bristol
BS1 6PN

Direct dial: 01223-582710
Direct Fax: 01223 582701

Your Ref: **EN010012**

19th May 2014

Dear Sir or Madam,

INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2009 SI 2263 (as amended) (the EIA Regulations)
PROPOSED Sizewell C Nuclear Development (the project)
PROPOSAL BY EDF Energy Limited (the applicant)

Thank you for consulting English Heritage on the Environmental Impact Assessment Scoping Report for the Sizewell C Project (development at Sizewell, Suffolk). English Heritage is the Government's independent advisor on all aspects of the historic environment in England; we operate as an Executive Non-departmental Public Body and report to Parliament through the Secretary of State for Culture, Media and Sport. Our remit extends to both the terrestrial and marine environments, where our general powers under the National Heritage Act 1983 were extended (via the National Heritage Act 2002) to modify our functions to include securing the preservation of monuments in, on, or under the seabed within the seaward limits of the UK Territorial Sea adjacent to England i.e. the area of sea extending up to 12 nautical miles from the coastal 'baseline' adjacent to England.

We consider that this project has the potential to impact upon the historic environment both directly, through permanent physical changes, and indirectly through changes to the setting of heritage assets. We are also aware that impacts would vary throughout the life of the project. Some impacts during the construction phase will be temporary, but elements of the project would bring permanent change. Changes and impacts are also not confined to the main development area at Sizewell and elements of the project include the northern and southern park and ride, the rail extension, improvements to the A12, and a potential visitor centre. Other indirect changes, such as those to local infrastructure (e.g. roads, signage and lighting), are also anticipated. As is the potential for impacts in the marine zone. The historic environment assessment for all these separate elements of the project will need to be undertaken to the

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same high level and with the same consistency across all sections of the Environmental Statement.

All aspects of the historic environment, designated and undesignated, should be considered; however the particular remit of English Heritage in relation to this project would be the impact on Scheduled Monuments (SM's), grade I and II* listed buildings and conservation areas. We have an additional remit in relation to the intertidal and fully marine environments.

Undesignated archaeological remains would more properly be the province of the County Council, so we recommend the applicant consult with Suffolk County Council Archaeological Service. Similarly, the conservation officers at Suffolk Coastal District Council should be consulted regarding listed buildings, including those listed at grade II, as well as conservation areas and undesignated assets

The Scoping Report

The Scoping Report sets out the applicant's approach to assessing the impact of the proposed development on the Terrestrial and Marine historic environments (sections 7.5, 7.6 and 7.13). Section 7.3, Landscape and Visual Assessment, is also of relevance in considering the historic environment. Section 8, which represents EIA – Off-site Associated development, also has Terrestrial historic environment components.

We are broadly content with the approach and layout of the document but we have specific observations to make on heritage assessment, particularly for the marine historic environment (please see below). As regards the Landscape Assessment we would make the general observation that this assessment should be mindful of the historic development of landscape and the role it plays in the wider setting of heritage assets. A methodology for landscape assessment should therefore be flexible enough to consider the historic environment and inform the assessment. All sections of the report where there are elements that affect the historic environment should be cross-referenced. This is particularly important at critical interfaces such as those between the terrestrial and marine environments.

Section 2 of the Scoping Report identifies and describes the consent regimes and environmental assessment required for Nationally Significant Infrastructure Projects and the necessary licensing which is specific to nuclear establishments under the Nuclear Installations Act 1965. In addition to the national guidance and principles established by the NSIP process and for energy generation it is worth noting that the process for the assessment of the impact for the historic environment is through the National Planning Policy

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Framework. We would also recommend the Practice Guide to PPS5, which sits alongside the NPPF, is consulted as it provides useful guidance on the setting of heritage assets. English Heritage's guidance on *The Setting of Heritage Assets* and *Seeing History in the View* would also be useful to the applicant's consultants as they establish the range of ways in which setting can contribute to heritage assets' significance and a framework for assessing individual sites. Guidance detailing the assessment of the marine historic environment is also available and additional references are provided below where relevant.

It is worth noting at this stage that at the appropriate point in the planning process, we would anticipate that the applicant would be seeking establish a separate Statement of Common Ground which specifically relates to the Historic Environment, between English Heritage and the applicant.

Section 7.5 Terrestrial Historic Environment

This section of the report is relatively coherent and English Heritage has been involved in considerable pre-application discussions (see 7.5.4) and would be happy to continue to liaise with the applicant through-out the production of the draft EIA chapter. We offer the following comments on the Scoping Report:

We accept and agree with the chosen the study areas for the main development site and for the setting of heritage assets (see 7.5.8 and 7.5.9). Our primary concerns are the direct and indirect impacts upon the sites of Leiston Abbey (which is an English Heritage guardianship property) and Leiston Old Abbey, which is situated to the north of the development within the RSPB's Minsmere estate. Both sites are scheduled monuments and are of national importance. Likewise they are both publically accessible to visitors at all reasonable times and are highly valued. Their rural setting is a significant part of their value and attractiveness. Because Leiston Abbey is a part of English Heritage's public estate it has added significance. In addition the applicant should also consider the setting of a number of heritage assets within the area surrounding the development, including long distance views up and down the coast, as well as assets within the setting of off-site associated development. English Heritage would be providing further advice and comment on the archaeological strategy and any Written Scheme of Investigation produced as part of the Development Consent Order.

We recognise that the use of geophysical survey (7.5.5) is an important tool but we are also aware that techniques have developed considerably in the last 10 years. In conjunction with Suffolk County Council, Archaeology Service the applicant may like to consider particular techniques for specific historic environment site, in particular the use of ground penetrating radar (GPR).

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We note that the assessment methodology (see 7.5.29) for the historic environment proposed the use of assessment matrices. We do not consider that this form of assessment on its own is sufficient to fully understand the impact upon the historic environment. The approach is overly formulaic and the results of assessment can be particularly problematic for assessing the setting of heritage assets. Further advice on is given in our setting guidance, however, the use of an alternative method of assessment should be considered; in particular the use of a non-technical narrative argument based on good professional judgement to support the assessment and set out the effect of the proposed development in terms significance, benefit, harm and loss; as used in the NPPF.

Section 7.6 Marine Historic Environment

In historic environment terms the marine section is one of the weaker parts of the report, and we therefore wish to offer a number of comments.

No explanation is provided in this section regarding the proposed works within the Main Development Site (as described in section 3.2) either permanent or temporary developments. We feel this may compromise the overall attention given to the marine historic environment, how it will be assessed, and any impacts identified within the ES.

Paragraph 7.6.2 mentions the preparation of a Desk-Based Assessment (DBA) which alludes to interpretation of “new” geophysics data (7.6.3). However, we have not been supplied with a copy of the referenced DBA, so we are unable to provide a comment on the information sources utilised to complete this DBA. Similarly, in paragraph 7.6.4 it was noted that archaeological contractors were given access to borehole data taken on the route of the proposed seabed cooling water infrastructure. It states that no archaeological interests were encountered at these locations, but no further information is provided to enable us to provide advice about appropriate mitigation measures.

Paragraph 7.6.8, identified 162 wrecks within the 20km x 20km square marine study area, with the Dunwich bank designated historic shipwreck site located 4.5km to north. We recommend that this information is addressed in detail in the ES, to ensure corroboration between national and local desk-based sources and known or potential sites of historic or archaeological interest, which are identified through commissioned marine survey.

In paragraph 7.6.10 we note that geotechnical analysis is to be completed (i.e. production of a sedimentary deposit model) and that any new sub-bottom

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survey data will also be subject to archaeological interpretation. We also noted the statement regarding the potential to encounter archaeological material within the proposed development area. It is important any objectives for any further offshore survey programmes are agreed beforehand, and that English Heritage and marine archaeologists are involved at the earliest stage of the planning, to ensure that data obtained are of sufficient quality/quantity to support archaeological interpretation.

In paragraphs 7.6.12, 7.6.26 and 7.6.30 we note that the incorrect job titles are stated. We feel this demonstrates the lack of engagement with English Heritage in relation to the marine historic environment in the preparation of this Report. It is therefore essential that effective communication is established with English Heritage staff to support the preparation the ES. Paragraphs 7.6.22, 7.6.26 and 7.6.27 all mention mitigation and that mitigation would be proposed, but no further details are provided. This is in contrast to the other historic environment sections of the Scoping Report. We therefore encourage the applicant to discuss such matters with English Heritage's Head of Marine Planning without delay. In particular we consider the information presented in this report to be insufficient, given that the most likely mitigation measures are not described; for example the preparation of an archaeological Written Scheme of Investigation (WSI) and a Reporting Protocol for Archaeological Discoveries.

In addition to the above, paragraph 7.6.3 mentions new geophysical and geomorphological data, but no specific attention is given to how such survey work will be conducted in the context of a project-specific Archaeological Written Scheme of Investigation. We therefore take this opportunity to highlight the matters which should be addressed within any archaeological WSI prepared for this proposed project and which should be included in any ES prepared in support of this proposed development:

- Suitable techniques and methodologies for data capture and archaeological interpretation of geophysical and geotechnical survey data commissioned in support of the proposed project;
- Methodological explanation of the interpretation of any video (ROV or drop down camera) and diver investigation of anomalies of known or possible archaeological interest;
- Spatial identification of any Archaeological Exclusion Zones (AEZs) which must be differentiated from other required exclusion zones (e.g. for cables, UXO etc);

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- The Protocol for Archaeological Discoveries should be clearly identified as a stand alone document and prepared in agreement with English Heritage and any relevant local authority (vis-à-vis any foreshore components of the proposed development); and
- Any archaeological reports produced as a result of this project will be deposited through the English Heritage OASIS (Online AccesS to the Index of archaeological investigations') system with a digital copy of any agreed report(s).

Paragraph 7.6.24 includes the comment “The nature and extent of submerged remains / deposits offshore has not yet been determined.” In consideration of the detail provided in this section regarding the work completed to date by the archaeological contractors and other analysis to follow, it is our view that that full reporting should be produced to inform any ES prepared for this proposed project.

Under Paragraph 7.6.27, the matter regarding the option for “preservation by record” requires consideration in the context of UKMPS and the relevant National Policy Statement. Likewise under Paragraph 7.6.29 we consider that insufficient explanation was provided about how Historic Seascape Character will cross reference with “LVIA”.

Paragraph 7.6.31 regards the determination of any cumulative Impacts and we look forward to reviewing the detail of this aspect of the assessment within the ES and offer the following as a useful reference:

Oxford Archaeology Ltd & George Lambrick(2008) *Guidance for the assessment of cumulative impacts on the historic environment from offshore renewable energy* (Published by COWRIE).

Please also note that the date given to the publication in the final bullet point of Paragraph 7.6.13, should read 2012, and under Paragraph 7.6.15, the correct reference should read ‘A Maritime Archaeological Research Agenda for England’ (published 2013), Eds. J. Ransley, F. Sturt, J. Dix, J Adams and L. Blue (Council for British Archaeology – Research Report 171).

The EIA scoping proposes the use of tables and matrices in order to assess the impact upon the marine historic environment. As with the terrestrial assessment (see above) we would recommended the use of a non-technical narrative argument to support the assessment and set out the effect of the proposed development in the language, terms and definitions given in UK Marine Policy Statement and relevant National Policy Statement.

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Section 7.13 Coastal geomorphology and hydrodynamics

Under Paragraph 7.13.2, we noted the detail provided regarding “*high resolution bathymetric surveys of Sizewell-Dunwich Bank (2008/9) with further surveys in 2010, 2011 and 2012...*” and “*a comprehensive analysis of all available modern and historical datasets in order to examine the behaviour of shoreline change at Sizewell...*” However, it is not made clear in either this section of the EIA Scoping Report, or section 7.6, that this data was subject to archaeological examination and interpretation. We therefore stress the importance that any ES prepared for this proposed project utilises marine geophysical data (multi-beam, single beam, side-scan sonar and magnetometer etc.) to corroborate other desk-based sources of information about the historic environment held by national and local curators.

Paragraphs 7.13.3 and 7.13.19 also includes the mention of a “jetty” which is not mentioned in Section 7.6. We therefore require that any and all geophysical and geotechnical data acquired to support this proposed development is also subject to archaeological analysis. This matter is particularly relevant in reference to determination of long-shore sedimentary dynamics and the identification of known sites of archaeological interest and potential sites of archaeological interest. This paragraph also makes reference to “*...the designated site at Shingle Street*”. We were unsure under what legislative regime the site was designated. We also noted that this paragraph details the following: “*The location of the cooling water infrastructure is subject to current engineering studies and the seaward extent of the study area was set at approximately 4km in order to allow flexibility in those studies.*” We therefore require any ES prepared for this proposed project ensures that all archaeological studies are also completed as relevant to any area of foreshore or seabed as might be impacted (directly or indirectly) by this proposed development (permanent and temporary) as detailed in section 3.2.

An important statement is made in Paragraph 7.13.4, regarding the “*...assessment of shore line variability and offshore sand banks requires much longer term scales of years to decades.*” We therefore require that the ES directs attention at determining any historic environment interests as might be affected by the proposed development given the sedimentary dynamics encountered in this area with particular reference to the Sizewell-Dunwich Bank (as mentioned in paragraph 7.13.7).

A particular point is made in Paragraph 7.13.14 regarding “*...the heat sink capacity for the Sizewell power stations...*” this seems to be a technical matter which, if relevant to the determination of impact within an EIA, will need to be fully explained. Similarly, paragraph 7.13.16 includes reference to the Coast

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Protection Act 1949, but offers no explanation to what, if any, extant legal matters are still addressed by this act. It also appears that the UK Marine Policy Statement (cf. section 2.6.8) has been omitted from the section on “national policy and legislation”.

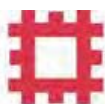
In table 7.13.2, any reference in this table to “conservation value” must also be considered applicable to historic and archaeological sites (designated or non-designated and in accordance with the UK Marine Policy Statement cf. section 2.6.6). Likewise in table 7.13.3, the definitions of effects detailed in this table require close attention in any ES prepared for this proposed project. It was noted that in “major” and “moderate” reference is made to “Very large or large changes to the coastal or sea bed geological features” and “Intermediate change in the coastal or sea bed geological features” respectively, but for “minor” and “negligible” reference is made to “Small change in coastal or sea bed features” and “No discernible change in the coastline or sediment processes” respectively. However, the receptors identified in this table appear to be too dissimilar to enable effective determination of impact.

In Paragraph 7.13.29 we note the attention that is given to dredging activities for the proposed jetty. This not addressed in Section 7.6, and it is therefore essential that any and all data commissioned in support of any dredging programme is done so in reference to agreed archaeological objectives for data capture and analysis.

Paragraph 7.13.30 mentions the cooling water outfall and intake structure connected to the station by horizontal tunnels below the “sea bed”. We would require any ES prepared for this proposed development to provide detailed assessment of seabed sedimentary structures as might be impacted by any tunnelling and any associated historic environment interests that might be impacted. Likewise in Paragraph 7.13.31, the same matter is applicable to any operation to drill vertical shafts through the seabed to connect to cooling water tunnels.

Paragraph 7.13.35 makes mention of dredging and maintenance activities during operation and possible change in bathymetry. We would suggest that that this assessment must also be inclusive of any identified anomalies of archaeological interest as might be affected.

Under Paragraph 7.13.37, we recommend that it would be appropriate for any mitigation measures identified to consider impacts to heritage assets (see definition given in UK Marine Policy Statement) and ensure that these are reported within the relevant chapter of the ES. It is apparent that inter-



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relationships identified in paragraph 7.13.38 are presently inadequate to support the completion of any EIA.

In our view, the mention in Paragraphs 7.13.39 and 7.13.40 of cumulative effects is too limited in scope. We recommend for example that attention is given to the cumulative effects of seabed infrastructure associated with previous phases of development at Sizewell Nuclear power station.

Recommendations

We recognise that there are significant and detailed historic environment advice and comments contained within this letter. English Heritage would therefore welcome the opportunity to engage in further discussions in relation to the assessment of the terrestrial historic environment. We recommend however that detailed discussion on the marine historic environment are undertaken with English Heritage Marine Team at the earliest opportunity, and the assessments needed to support this part of the draft ES are discussed before the work progresses any further.

In the meantime, if further clarification is needed in relation to the above comments then please do not hesitate to contact us.

Yours sincerely

Dr William Fletcher
Inspector of Ancient Monuments
will.fletcher@english-heritage.org.uk

Our reference: AE/2014/117690/01
Your reference: EN010012



Ms Laura Allen
Senior EIA and Land Rights Advisor
The Planning Inspectorate
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22 May 2014

Dear Ms Allen,

**Sizewell C Nuclear New Build Project
Scoping Opinion – Planning Act 2008 (as amended) and The Infrastructure Planning
(Environmental Impact Assessment) Regulations 2009 (as amended) – Regulations 8 and 9**

We refer to your letter of 24 April 2014 which requests our views on the Sizewell C Environmental Impact Assessment (EIA) Scoping Opinion (dated April 2014) related to the proposal for a new nuclear power station and associated development sites.

Environment Agency Position

After reviewing the EIA Scoping Report we are pleased to see, from our perspective, that the majority of topic areas we would expect to see have been included. However there are some additional items which will need to be scoped into the process and some items which need to be expanded to ensure the EIA can be considered fit for purpose, in particular water resources and water quality. We look forward to continued engagement with NNB GenCo in the production of their Environmental Statement.

General Comments

Water Resources

There is no clear indication of how water will be sourced - either for construction, or operation. The availability of water resources is an important consideration for the proposed development. We will have to agree to the water supply strategy. The infrastructure associated with construction (for example concrete batching plants) will require significant volumes of water. Furthermore, there is no indication of how water will be sourced for the large number of workers who would be resident on the accommodation campus. There will presumably also be a potable water supply requirement for the operational power station. Given the local environmental setting, and the scarcity of water resources in Eastern England, this is an important consideration and may directly effect design proposals. It is therefore our view that the issue of water resources must be scoped into the EIA.

Further information can also be found in the East Suffolk Abstraction Management Strategy, which is available at the following link: <https://www.gov.uk/government/publications/cams-east-suffolk-abstraction-licensing-strategy>

Water Quality

The issue of sewage disposal is an important aspect that needs careful consideration to ensure there is no adverse environmental impact (particularly given the downstream location of the Sizewell Marshes SSSI). NNB GenCo's foul drainage strategy should address the construction and operational phases of development for the main site and where applicable associated development sites. We will need to agree the sewage disposal strategy. There are a number of potential options for disposing of foul water which will require detailed consideration and consultation with relevant organisations. The potential impacts associated with each option will need to be assessed and therefore it is our view that this needs to be scoped into the EIA.

It must be ensured that any risk to the water environment is minimised both during construction and operation of the site. Adequate controls and measures need to be fully considered and incorporated into the design of the site to minimise any risk of pollution to the water environment. It is our view that this needs to be highlighted in the EIA.

Detailed Comments

Please see our detailed comments on NNB GenCo's EIA scoping below. For ease of reference we have followed the same order of the headings presented in the EIA Scoping Opinion report.

2. Consenting Regimes and Environmental Assessment

2.2 Other Relevant Consents

2.2.6 – This section provides a useful context regarding the permits that will be required from the Environment Agency under the Environmental Permitting Regulations (England and Wales) 2010. It could go further to explain the interaction with the EIA regulations.

Consenting Requirements

Any works in, under or over the channel of a main river or within 9 metres of the top of the bank will require Flood Defence Consent from us under Sections 109 and 210 of the Water Resources Act 1991 and associated land drainage and sea defence byelaws. This is to ensure that flood risk is not increased, as well as to ensure our ability to carry out our permissive powers is not adversely affected by the works.

Flood Defence Consent is also likely to be required under our land drainage and sea defence byelaws for the works taking place along the coastal frontage due to the proximity to the sea defences for example the flood defence modification works.

2.3 Related Assessments

(a) Habitat Regulations Assessment

The EIA and HRA process is interlinked this needs to be reflected in NNB GenCo's approach. Evidence which forms the foundation of the EIA process is also required for the HRA and permitting process.

(b) Flood Risk Assessment

2.3.4 – 2.3.5 – The FRA must include and take full account of a number of issues that are identified for inclusion in the EIA Scoping Report which have a bearing on flood risk. This includes coastal geomorphology and hydrodynamics (including the potential for increased risk from coastal erosion) surface water and groundwater flood risk.

Whilst a separate FRA is to be produced and will address flood risk issues this will need to be cross-referenced and any impacts highlighted in the EIA.

3. Description of the Proposed Development

3.2 Main Development Site

The description of the project seems to be high level. However it is unclear if this section is intended to be an exhaustive list of infrastructure or just intended to identify key infrastructure. There is for example, no mention of standby generators, which will require an environmental permit from us to operate.

3.2.4 – It is stated that the permanent development is to be built at approximately 6.4mAOD. The final level is to be determined through the FRA process.

3.7 Conventional Waste Management

3.7.4 – The first bullet point confirms that the main waste streams and predicted volumes likely to arise from the construction, operation and post-operation phases will be identified. The waste assessment should identify all possible options and routes for all waste arisings, and provide full justifications of why

any will not be pursued. The waste assessment needs to apply to both the main site and associated development sites.

3.8 Spent Fuel and Radioactive Waste Management

This section refers to storage of spent fuel but makes no reference to other alternatives for dealing with spent fuel (e.g. reprocessing). This is not covered in the section on alternatives. The EIA should include this topic area.

There is no reference in the report to the application of Best Available Technology (BAT) or the waste hierarchy to minimise volumes and activity of radioactive wastes. This needs to be incorporated into the EIA.

5. Approach to the EIA

5.3 Assessment of Effects and Determining Significance

Table 5.1 – For each of the „value/ sensitivity“ categories there is a generic guideline for the assessment of sensitivity. The guidelines centre round environmentally important and designated areas and features. Whilst the purpose of the table appears to be to provide more generic guidelines, it is not clear which category other features, such as watercourses or ditches, would fit into. Whilst these features may not be located within a designated site (although some are) they are nevertheless important features, often upstream of designated sites, which support and sustain aquatic ecology. As such, any impacts or effects to such features not listed need to be given appropriate consideration in the EIA.

7. EIA – Main Development Site

7.2 Terrestrial Ecology and Ornithology

Table 7.2.1 – There is no reference to fish and eels in this table which sets out the proposed study areas for potential ecological resources. There are potential impacts to fish and eels associated with the main development site, including from the possible re-routing of the Sizewell Ditch. For this reason fish and eels need to be scoped into the EIA.

Table 7.2.2 – We consider that reference also needs to be made to Dew’s Ponds SAC which has been identified through Habitat Regulation Assessment work to date.

7.7 Noise and Vibration

Impacts from the periodic testing of the back-up, emergency diesel generators should be incorporated into this section.

7.8 Air Quality

(c) Approach and methodology

7.8.14 – Reference is made to the Environment Agency (2010) Horizontal Guidance Note H1. This should be 2011.

(iv) Assessment methodology – Construction methodology

7.8.46 – It is suggested that the modelling will only be undertaken for short-term averaging periods because combustion emissions sources are expected to only be used as back-up on a short term basis. The worst case scenario needs to be considered and the likely impacts assessed. Further information about what the likely period of operation of the diesel generators and the justification/ evidence for the period selected is required.

(v) Assumptions and limitations

7.8.48 – This paragraph suggests the operator may need to duplicate work. We recommend that the potential worst case scenarios are considered (e.g. prolonged operation due to breakdown/maintenance etc). This assessment may then be suitable for both planning and permitting regimes.

7.8.54 – Point sources emissions from diesel generators must include total particulates, PM10 and PM2.5, CO, NO_x and SO₂. Potential receptors include ecological sites up to 15km from the point source emission points.

7.11 Groundwater and 7.12 Surface Water

Water Resources

There is no clear indication of how water will be sourced - either for construction, or operation. The availability of water resources is an important consideration for the proposed development. We will have to agree to the water supply strategy. We refer you back to our earlier general comments on water resources.

Any effect of a proposed abstraction on local features needs to be undertaken. We recommend NNB GenCo contact us at an early stage to discuss this issue given the scarcity of water resources discussed and potential restriction which may occur.

Foul Water

The issue of sewage disposal is an important aspect that needs careful consideration to ensure there is no adverse environmental impact. We will have to agree to the sewage disposal strategy. We refer you back to our earlier general comments on water quality.

(c) Approach and methodology

7.12.13 – The results of the monitoring detailed in this paragraph is as expected.

7.12.14 – Reference should no longer be made to the Freshwater Fish Directive as this has now been revoked. Sole reference should be made to the WFD standards.

7.12.21-23 – It is important that opportunities to improve watercourses should be considered in addition to just protecting them.

7.12.26 (fifth bullet point) – Water Framework Directive (WFD) Environmental Quality Standards apply to all water bodies.

(d) Potential Impacts and Effects

7.12.27 – We refer you back to our earlier general comments on foul water disposal.

7.12.29 – Eroded sediment has the potential to lead to the blanketing of channels which could cause negative impacts to habitat. Windblown soil also needs to be considered as a significant issue as the soils are generally very light and tend to be blown when dry.

7.12.40 – Land quality should also be included as an inter-relationship as there is a potential inter-relationship between surface water impacts and land quality.

7.13 Coastal Geomorphology & Hydrodynamics

7.13.16 – It is recognised in the Scoping Report that there is a possible risk of coastal geomorphology South of Thorpeness being affected by the construction. We therefore consider that Policy Development Zone 5 – Thorpeness to Orfordness – of the Suffolk Shoreline Management Plan 2 is also included in the list of national policy and legislation.

7.13.39 – The potential impacts on coastal geomorphology and hydrodynamics resulting from the decommissioning of Sizewell B need to be assessed as part of the cumulative effects.

7.14 Marine Water Quality & Sediments

7.14.3 – We note that modelling work has been undertaken in accordance with Environment Agency modelling guidelines. We will need to review and agree the modelling work.

7.14.7 – We do not consider this can be the baseline; the impacts from Sizewell C also need to be assessed with Sizewell B in operation as the overlap in operation is potentially significant.

7.14.9 – To determine whether this approach is appropriate we will need to review and agree these models.

7.15 Marine Ecology

Table 7.15.1 - Work in relation to Entrainment Mimic Unit has been completed. We will need to review and agree this work as part of the British Energy Estuarine and Marine Studies (BEEMS) reports.

7.15.4 – We consider the zone of effect to extend to the wider fisheries ecology rather than just the area impacted by the plumes.

7.15.5 – The EIA needs to include fish populations more generally and not just commercial fisheries.

7.15.21 – We refer to the fifth bullet point which reads “*the maintenance of any maritime exclusion zones around beach landing and offshore structures, during construction or operation*”; it is unclear what this relates to. Further information will be required in the EIA on the nature of these exclusion zones and what “maintenance” actually means.

7.15.37 – There is no mention of key impacts – both interdependent and cumulative on fish populations. The adverse impacts of impingement /entrainment and the impacts of chemical and thermal discharges on the fish populations is a key consideration which needs to be addressed in the EIA.

7.17 Radiological

7.17.4 – It is unclear what the justification is for bounding the radiological impacts of decommissioning to those for routine operational activities. Discharges during operations will be different from those during decommissioning.

The impacts associated with the decommissioning of a reactor will be addressed under a separate EIA as required under the Nuclear Reactors (Environmental Impact for Decommissioning) Regulations 1999 (as detailed in paragraph 7.17.9).

7.17.10 – For completeness, we draw your attention to a new habits survey that is due to take place around Sizewell in early 2015. This may conclude that the critical group in the area is different to that currently postulated. Furthermore, the impact assessment needs to be flexible enough to accommodate changes to future pathways over time.

7.17.14 – Further baseline data will also be available through the Sizewell environmental monitoring programme (which is a permit requirement placed on both Sizewell A and Sizewell B). Sizewell A currently co-ordinate the programme so will hold the relevant data.

7.17.27 – We note that an assessment of discharges will be included in the EIA which we support. A point to consider will be whether discharges will be modelled on a continuous discharge or on a more realistic model (e.g. Pressurised Water Reactor peak discharges during re-fuelling outages).

7.17.40 – It should be noted that assessment of impacts to non-human species forms part of the environmental permitting process.

7.17.53 – The application of BAT is required through our permit rather than through OSPAR (OSPAR is an international treaty that places certain obligations on the UK Government). The application of BAT does not “ensure” compliance.

7.17.58 – It is important that the cumulative impact assessment includes worst case scenarios, such as a refuelling outage at Sizewell B and C at the same time resulting in peak discharges to the environment.

8. EIA – Associated Development Site

8.1.4 – The final sentence of the second bullet point states that “*flooding has been addressed within the surface water sections*”. We note that flood risk has not been considered in section 7.12 (surface water) so this reference to flooding must be under the environmental topic of „surface water“ for each associated development site.

8.2 Northern park and ride

Table 8.1 includes protected species surveys. We are aware that otters are in this general location and should be recognised in table 8.4.

Table 8.2 identifies potential impacts and effects to water quantity and quality in the Minsmere River and Darsham Marshes both during construction and operation of the site. We refer you back to our earlier general comments on water quality at the start of our response. Of particular concern is the disposal of foul water and preventing pollution from surface water run-off to the identified receptors – the site is to include a welfare building, including toilets, with capacity for approximately 1,000 cars and bus terminus.

We refer you back to our earlier general comments on water resources. Of particular concern is how water will be sourced both during construction and operation to ensure there is no significant harm to the environment.

The site is located within Flood Zone 1. The site is approximately 28 hectares and so the management of surface water will be important to ensure flood risk is not increased off-site. Flood risk is to be addressed in the FRA however any impacts need to be highlighted in the EIA.

8.3 Southern park and ride

We refer you back to our general comments on water quality. Of particular concern is the disposal of foul water and preventing pollution from surface water run-off – the site is to include a welfare building, including toilets, with capacity for approximately 1,000 cars and bus terminus.

We refer you back to our earlier comments on water resources. Of particular concern is how water will be sourced both during construction and operation to ensure there is no significant harm to the environment.

The site is located within Flood Zone 1. The site is approximately 43 hectares and so the management of surface water will be important to ensure flood risk is not increased off-site. Flood risk is to be addressed in the FRA however any impacts need to be highlighted in the EIA.

8.4 Rail line extension

Three rail extension options are included – a new rail terminal and freight laydown area, a green route, and a blue route.

There are no rivers located within or adjacent to the options for a new rail terminal and freight laydown area or the green route. Considering this we concur that this particular issue can be scoped out of this section of the EIA. We refer you back to our earlier general comments on water quality. Of particular relevance is minimising any risk of pollution to the water environment.

The proposed blue route is however located close to, and crosses, the Thorpeness Hundred River. We agree that the potential impact to the water environment through pollution, both during construction and operation, needs to be assessed in the EIA. The blue route is located within Flood Zone 1; the management of surface water will be important. In addition, we will need to agree the design of the culvert, where the rail route crosses the river, to ensure this does not negatively impact on the

conveyance of the river. Flood risk is to be addressed in the FRA however any impacts need to be highlighted in the EIA.

8.5 A12 improvement – Farnham Bend

It is recognised that Option 1 (bypass option) represents the most substantial in terms of potential environmental impacts. As such section 8.5 focuses on the bypass option.

The proposed route crosses the River Alde, which is a European Eel migratory route, and an area of woodland/grassland which contains a number of interconnecting ditches and ponds. It is likely that this area provides suitable habitat for water vole, otter and brook lamprey. The ponds in the area may well be suitable for amphibians. We support the further surveys and studies identified in table 8.10.

The proposed bypass option would cross the River Alde (Main River) floodplain - Flood Zone 3, an area of high flood risk. A separate FRA is to be produced. Flood risk is referred to within the surface water section of tables 8.11 and 8.12; the FRA must consider all relevant sources of flooding including fluvial flood risk as well as surface water flood risk. Whilst flood risk is to be addressed in the FRA any impacts need to be highlighted in the EIA.

We have a flow gauging station just downstream, adjacent to the A12 road bridge, which might be adversely affected from the bypass option. Any potential impacts to the function of this station must be assessed and considered at an early stage. It is crucial that our ability to measure flows and use this station for operational purposes is not compromised.

8.6 Visitor Centre

We refer you back to our earlier general comments on water quality under the Environment Agency's position at the start of our response. Of particular relevance is minimising any risk of pollution to the water environment.

9. Summary

9.2 Indicative Proposed ES Structure

9.2.1 – The ES will need to assess any cumulative effects associated with the proposed development. As such we support the inclusion of a cumulative assessment (proposed as volume 9). There are four distinct phases to the proposed development; these include site preparation, construction, commissioning and operation, and decommissioning. It is important that the ES is structured in such a way that assists in defining and assessing the environmental issues relevant to each of the phases, but also the cumulative effects where there are overlaps. This should help define the potential impacts (alone and in combination), and establish whether the proposed mitigation is sufficient.

Should you have any questions then please do contact me on the details below.

Yours sincerely,



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From: Correspondence [mailto:Correspondence@equalityhumanrights.com]
Sent: 14 May 2014 15:13
To: Environmental Services
Subject: EHRC-CU01535 Allen 20140514 Acknowledgement of letter dated 24 April 2014



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Email: environmentalservices@infrastructure.gsi.gov.uk

Your Ref: EN010012

Our Ref: EHRC-CU01535

14 May 2014

Dear Ms Allen

Subject: Application by EDF Energy for an Order Granting Development Consent for the Sizewell C Proposed Nuclear Development

Thank you for your letter dated 24 April 2014, the contents of which have been raised with the relevant team in the Commission.

The Commission does not have the resources to respond to all consultations, but will respond to consultations where it considers they raise issues of strategic importance.

Yours sincerely

Philippa Bullen
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SIZEWELL C PROPOSED NUCLEAR DEVELOPMENT – SCOPING REPORT, APRIL 2014

The County Council would like to make the following comments concerning the Scoping Report.

Paragraph 3.4.5

This paragraph refers to the construction of the power station involving the excavation of large amounts of spoil comprising soil, made ground, peat, alluvium and Crag sand. ECC welcomes reference to the preparation of a Materials Management Plan (MMP) , which seeks to re-use as much spoil on site. It is noted that the excavated peat and alluvium may either be retained on-site to help balance the earthworks, or could be used within a new nature reserve currently being created at Wallasea Island in Essex, in which case it would be transported there by barge via the jetty.

The Wallasea Island Project currently has planning permission (ESS/54/08/ROC.) and is now included within the Nature Improvement Area (April 2012). The planning permission contains some restrictions which need to be considered in relation to the option proposed by EDF in paragraph 3.4.5. These include:

- Condition 2 references the proposal for the imported material to be inert
- Condition 39 requires the development, including restoration, to be complete by 31 December 2019
- Condition 40 requires all associated infrastructure to be removed by 31 December 2019 and the unloading facility to be removed within 12 months of the completion of the final phase

On 25 April 2014, ECC Development and Regulation Committee resolved to approve application ESS/09/14/ROC for 'continuation of the importation of waste to develop a coastal nature reserve without compliance with conditions 2 (compliance with submitted details); 39 (cessation of operations and restoration by 31 December 2019); and 40 (removal of construction infrastructure) attached to planning permission ref ESS/54/08/ROC to allow the importation of suitable natural material and to require cessation of site operations and restoration by 31 December 2025, together with the inclusion of previously agreed non-material amendments to permission ref ESS/54/08/ROC'.

The resolution is subject to the Secretary of State not calling in the application for his own determination; the completion within 12 months of a S106a legal agreement relating to the removal of the existing obligation for imported material to be clean, inert and uncontaminated; and conditions.

The Secretary of State has confirmed receipt of the referral and ECC, as Waste Planning Authority, is currently awaiting his decision.

In the event that planning application ESS/09/14/ROC is granted, the proposed use of excavated peat and alluvium from the Sizewell site would be allowable, subject to its importation by sea only. Currently, planning permission ref ESS/54/08/ROC does not allow the importation of such material since it is not considered to be 'inert'.

Initial Proposals and Options, Transport Strategy

Essex County Council notes the following points in relation to the emerging transport strategy:

- home based and non home based workers travelling from Essex is likely to be minimal, and hence minimal impact on the County's highway network; the Construction Daily Commuting Zone (90 minutes) covers North Essex
- significant measures are being undertaken to reduce the impact of Sizewell C construction traffic on the local sections of the A12 (Ipswich to Lowestoft), and potentially beyond, through the use of sea and rail freight delivery options, and park and ride;

Whilst it presently appears that impact of the proposal on the County Highway Network is minimal, the County Council would wish to be kept informed of any change to the Transport Strategy, which may impact upon the County Highway network.

Farnham with Stratford St Andrew Parish Council
Brereton House
Great Glemham Road
Stratford St Andrew
Suffolk
IP17 1LL

19 May 2014

Dear Sir/Madam

Your ref: EN010012

I am writing on behalf of the parish council in response to your letter dated 24 April 2014. This response identifies the information the parish council considers should be provided in the environmental statement to be provided by EDF Energy.

The parish council has limited its response to section 8.5 of the Scoping Report, main text, as this is the main issue affecting the villages of the parish. We understand that the environmental statement relates to the three options put forward by EDF Energy for proposed improvements to the A12 and not to their merits. However, the parish council wishes to put on record that it does not believe any of the three options will provide reasonable mitigation against the impact of the additional traffic that will be caused by the proposed construction of the Sizewell C Proposed Nuclear Development.

Terrestrial ecology and ornithology

The report states there will be surveys to determine the presence or absence of water voles on the River Alde and the network of ditches. Water voles have been sighted in this area as recently as last week and photographs obtained. The water vole is a fully protected species under Schedule 5 of the Wildlife and Countryside Act 1981.

Landscape and visual

As the land proposed to be taken for the short bypass, EDF Energy's preferred option, is flood plain we presume the new road will need to be raised up. It is our view that no form of landscaping can mask the effect this road will have visually on the local landscape. We will just end up with two roads instead of the current one. The new road will be closer to more houses than the current one.

Amenity and recreation

Nowhere in the report does it mention that the land proposed to be used for the short bypass is amenity land owned by a charitable trust that also owns the Riverside Community Centre. The charitable trust is totally against selling the land and losing this important resource. This is the only local amenity land and is used by many people from both local and outlying areas. It is used for dog walking, fortnightly car boot sales and local sports. Next to the amenity land is a children's playground which is used daily by local families. The presence of a main road next to the playground would make it unusable due to noise and pollution.

The proposed new road would also effectively cut the parish and two villages in half.

Noise and vibration

The report states a baseline survey will be carried out in various areas of Farnham. The proposed new bypass will start in Stratford St Andrew but this is never mentioned. Full surveys for noise and vibration must be carried out in Stratford St Andrew as well as in Farnham, particularly for those properties in Great Glemham Road which will be close to the new road.

An up to date traffic impact assessment is still awaited from EDF Energy.

Air quality

Suffolk Coastal District Council has just issued a Detailed Assessment Report for air quality in the parish. This identified that NO₂ levels in a location in Stratford St Andrew are above national limits. Again the report only mentions not conducting further surveys for the village of Farnham when there is a serious problem in Stratford St Andrew that must be considered particularly if a new bypass is proposed that starts in the village.

Surface water

The land proposed for the new bypass is a flood plain and subject to regular flooding. Photographs are available to evidence the extent of this.

Hannah Nelson

From: Penlington, Graham <Graham.Penlington@fulcrum.co.uk> on behalf of &box_FPLplantprotection_conx, <FPLplantprotection@fulcrum.co.uk>
Sent: 02 May 2014 11:42
To: Environmental Services
Subject: RE: Sizewell C New Nuclear Power Station - EIA Scoping Request

Thank you for asking Fulcrum Pipelines Limited to examine your consultation document for the above project.

We can confirm that Fulcrum Pipelines Limited have no comments to make on this scoping report. Please note that we are constantly adding to our underground assets and would strongly advise that you consult us again prior to undertaking any excavations.

Please note that other gas transporters may have plant in this locality which could be affected.

We will always make every effort to help you where we can, but Fulcrum Pipelines Limited will not be held responsible for any incident or accident arising from the use of the information associated with this search. The details provided are given in good faith, but no liability whatsoever can be accepted in respect thereof.

GRAHAM PENLINGTON
Process Assistant



Tel: 0845 641 3060
Direct Dial:
Email: Graham.Penlington@fulcrum.co.uk
Web: www.fulcrum.co.uk



FULCRUM NEWS

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We are delighted to announce that Fulcrum is a Utility Week Achievement Award Winner for the gas utility works we delivered at the 2012 Olympic Games. [Learn more.](#)

From: Environmental Services [mailto:EnvironmentalServices@infrastructure.gsi.gov.uk]
Sent: 24 April 2014 11:05

To: nsip.applications@hse.gsi.gov.uk
Subject: Sizewell C New Nuclear Power Station - EIA Scoping Request

Dear Sir/Madam

Please see the attached letter in relation to the EIA Scoping Request for the proposed Sizewell C New Nuclear Power Station.

Kind regards,

Hannah Nelson
EIA & Land Rights Advisor
Major Applications and Plans
The Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Direct Line: 0303 444 5061

Helpline: 0303 444 5000

Email: hannah.nelson@infrastructure.gsi.gov.uk

Web: www.planningportal.gov.uk/planninginspectorate (Planning Inspectorate casework and appeals)

Web: www.planningportal.gov.uk/infrastructure (Planning Inspectorate's National Infrastructure Planning portal)

This communication does not constitute legal advice.

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Laura Allen
Planning Inspectorate
3/18 Eagle Wing
Temple Quay House
2 The Square
Bristol BS1 6PN

Your Ref ENO10012
Our Ref 001693421-01
Name Colin McAllister
Telephone 01793 474113
Email colin.mcallister@rwe.com

Via email to environmentalservices@infrastructure.gsi.gov.uk

22 May 2014

Sizewell C Proposed Nuclear Development – Scoping Consultation

Dear Laura

Thank you for your letter of 24 April 2014 addressed to RWE npower renewables. Please note that RWE npower renewables has recently changed name to RWE Innogy UK (based at the same address) and I would appreciate it if you could amend your records accordingly.

With regard the Sizewell C proposed nuclear development DCO application I can confirm that RWE Innogy is a consultation body to the DCO application and, more specifically, Galloper Wind Farm Ltd (GWFL) is located in close proximity to elements of the proposed Sizewell C site onshore and offshore. GWFL will therefore respond to all DCO consultation requests on behalf of RWE Innogy. Please direct all correspondence relating to such to the Development Department, Galloper Wind Farm Ltd at the address below.

GWFL and EDFE (Sizewell C and Sizewell B) maintain regular communication on a strategic basis to ensure that activities which may affect the other party are communicated. GWFL has commenced pre-construction for the onshore infrastructure. Detailed discussions around method statements with regard to this activity has taken place and is ongoing and in so doing ensures that we manage our respective activities and protection of assets to mutual satisfaction. GWFL welcomes this dialogue and hope such cooperative engagement is maintained to allow any potential impacts on the Galloper Wind Farm (GWF) infrastructure and operations to be properly considered and potential mitigation measures included in the Sizewell C ES.

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Registered office:
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Auckland House
Lydiard Fields
Great Western Way
Swindon
SN5 8ZT
Company No. 07320597

Previous Consultation

GWFL has previously commented on an EDF Energy (EDFE) led Stage 1 Pre-Application Consultation. A copy of the GWFL response to that consultation is enclosed with this letter. GWFL consider that many of the points raised in that response remain valid and have not been adequately addressed in the Sizewell C Scoping Consultation documents. Further, there is no reassurance within the report that these concerns will be adequately addressed in the Environmental Impact Assessment (EIA) and documented in the subsequent Environmental Statement (ES).

The GWFL response to the Stage 1 consultation recommended five ways in which the potential for conflict between the Sizewell C nuclear power station NSIP and Galloper Wind Farm NSIP could be reduced as follows:

- *Completion of a proximity agreement between EDFE and GWFL with respect to satisfactory coexistence of GWFL's proposed export cables and EDFE's proposed cooling water intakes and connecting tunnels;*
- *Confirmation that EDFE's draft DCO will contain the Protective Provisions declared jointly by EDFE and GWFL in their statement to the Planning Inspectorate's Examination of Galloper Wind Farm, attached as [Appendix A] to this submission;*
- *Confirmation that Option 2 is not to be progressed, or will be significantly amended, so as to avoid any conflict with the Order Limits of the proposed GWF DCO;*
- *Confirmation that the planting proposed in Pill Box field in GWFL's DCO will be unaffected by proposals brought forward as part of Sizewell C;*
- *Confirmation of the spatial separation of all other proposals where sufficient information is not available at the current time for GWFL to provide an informed Section 47 response, or confirmation that GWFL's consultation and agreement will be sought to any proposals where a spatial separation has not yet been identified.*

The current status of the above are discussed in turn below.

Proximity agreement

GWFL is disappointed at the lack of progress made on finalising a Proximity Agreement between EDFE and GWFL and is awaiting a response from EDFE from proposals submitted by GWFL in July 2013. A Proximity Agreement acceptable to both GWFL and EDFE which offers protection and surety with regard the Sizewell C intakes and GWF export cables would allow many of the potential impacts of the Sizewell C proposals on the GWF NSIP to be mitigated.

DCO protective provisions

GWFL notes that the Scoping Report contains no reference to the Protective Provisions declared jointly by EDFE and GWFL in their statement to the Planning Inspectorate's Examination of Galloper Wind Farm. GWFL anticipate that the Planning Inspectorate will advise EDFE to address this as part of the next consultation stage.

Workers campus Option 2

GWFL is pleased to note that the Option 2 proposal for a workers campus adjacent to Sizewell Gap Road that had potential to impact on the GWF onshore works is no longer being considered by EDFE.

Pill box field proposals

GWFL expects EDFE to address the potential impact of proposals in Pill Box field on GWF infrastructure (specifically the landscape planting to the east of Sandy Lane) as part of the next consultation stage.

Spatial separation of Sizewell C and GWF infrastructure

The Scoping Report does not clearly set out infrastructure assets onshore and offshore which could be impacted by Sizewell C. GWFL considers that the ES which accompanies the Sizewell C DCO application must address these potential impacts. In GWFL's response to the Stage 1 consultation we recommended that EDFE included an 'other human activities' chapter in an environmental statement which the effects on GWF and other infrastructure (e.g. Greater Gabbard Offshore Wind Farm, inshore fisheries, etc) can be considered. Such a chapter should include clear plans which show the location of known (existing and proposed) infrastructure.

Scoping Report consultation

The Scoping Report is generally lacking in the detail necessary for GWFL to consider the potential impacts of the proposed Sizewell C development. GWFL acknowledges, however, that this detail may be forthcoming in future consultations on preliminary environmental information and the ES.

Of fundamental concern to GWFL, regarding the Scoping Report, is that although GWF is mentioned on a number of occasions as having potential for cumulative impacts on other receptors it is not acknowledged that the proposed Sizewell C development could itself have an impact on GWF. It is GWFL's opinion that any environmental statement which does not acknowledge infrastructure such as the GWF as a receptor and to then assess potential impacts on it does not therefore give proper consideration to *The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 Schedule 4 Part 1* which requires that information to be included in an ES to include 'a description of the aspects of the environment likely to be significantly affected by the development, including...material assets.'

In considering the potential impacts on GWF, proper consideration must also be made regarding the timing of the impacts as impacts will differ if the construction phase of Sizewell C overlaps with the GWF construction, operations or decommissioning phase (as will the Sizewell cumulative impacts with GWF, on other receptors such as construction traffic). GWFL request that EDF provide further clarity as to the timing of the development in the ES.

GWFL acknowledges that EDFE has included further detail relating to the proposed offshore infrastructure in the Scoping Report. GWFL expects EDFE to provide a detailed assessment of potential effects of the Sizewell C development on GWFL's assets in the area, including the export cable corridor and onshore infrastructure. A future ES should consider potential effects on GWF during the developments construction, operation and decommissioning phases. Details of the GWFL assets are available on the

PINS website or GWFL can provide such on request.

An ES must clarify the timing and locations of any restrictions to access to the beach as it may affect GWF assets, in particular if beach access is to potentially be prohibited for construction or maintenance activities. As mentioned above, GWFL requests that the statements specifically includes a chapter on 'other human activities' in which the assessed effects on GWF and other infrastructure are presented.

As noted above, GWFL requires the Sizewell C – GWF Proximity Agreement to be finalised to have confidence that the EDFE works associated with the outfalls will not have a significant adverse effect on GWFL assets, in particular the export cables which will be located in close proximity to the proposed Sizewell C intakes. Protective Provisions should be included in the Sizewell C DCO reciprocal to those that are included in the GWF DCO. It is also essential that GWFL is made constantly aware of any factors that could affect the previously agreed (in the GWF DCO) proposed centre points of the water intakes, either arising from EDFE's further studies or through representations from other parties.

GWF should be considered as a key receptor with regard coastal geomorphology and hydrodynamics, in particular regarding the potential effects on the GWF export cables (as located offshore and on the foreshore). GWFL acknowledges that the GWF is referred to in paragraph 7.13.39 but this only refers to construction and not to GWF's value as a receptor. Given GWF status as a NSIP, it should be acknowledged and assessed as a high value receptor as defined in Table 7.13.2.

GWF should be considered as a key receptor with regard traffic and transport, in particular when considering the effects of Sizewell C construction traffic and any road closures which may occur during construction and operation (e.g. associated with the railway extension proposals).

GWF should also be considered as a key receptor with regard navigation, in particular when considering the effects of Sizewell C construction of the water intakes on construction and maintenance of GWF export cables in their vicinity.

In conclusion, GWFL has a number of concerns with regarding the Sizewell C Scoping Report, particularly in relation to its failure to acknowledge GWF as a high value receptor against which potential impacts from Sizewell C development should be assessed. GWFL does however welcome the ongoing dialogue that is taking place with EDFE in relation to Sizewell C and trust that this will allow mitigation measures for potential impacts on GWF to be identified and agreed at an early stage in the DCO application process.

Note that the above comments are without prejudice to any other future comments that GWFL may identify from further information received from these comments or through future consultation opportunities afforded by EDFE.



Colin McAllister

Galoper Wind Farm Ltd

Enclosures

GWFL response EDF Energy led Stage 1 Pre-Application Consultation

Sizewell Nuclear New Build
FREEPOST LON20574
London, W1E 3EZ

**BY EMAIL TO (sizewell@edfconsultation.info)
AND POST**

Galloper Wind Farm

Our ref: 001425774
Name: Robert Gully
Phone : 01793 474100
E-Mail: rob.gully@rwe.com

06 February 2013

Dear Sir or Madam

Re: Galloper Wind Farm Limited response to Sizewell C Proposed Nuclear Development Stage 1 Pre-Application Consultation

The following is the Galloper Wind Farm Ltd (GWFL) response to the EDF Energy (EDFE) Sizewell C Stage 1 Pre-Application Consultation. GWFL understands that this consultation is being carried out under Section 47 of the Planning Act 2008 and therefore in accordance with EDFE's published Statement of Community Consultation.

The published Statement of Community Consultation identifies that the Consultation Document and Environmental Report comprise Preliminary Environmental Information (PEI).

The documents comprising this consultation were as follows:

- Initial Proposals and Options: Consultation Document;
- Sizewell C Stage 1 Environmental Report;
- Transport Strategy;
- Environmental Report Appendices.

At this time GWFL does not have any specific comments to raise on the Transport Strategy or Environmental Report Appendices beyond the comments made on the other main consultation documents.

Consultation Document

Section 1.3: We would recommend that the high-level project description in future consultation stages / documents should more clearly bring to the reader's attention the marine components of the scheme as they are of material interest and concern to GWFL and may be to other stakeholders.

Para 1.4.12: The proposal for any beach access restrictions should not inhibit any of the necessary construction or operational (including maintenance) work areas or access points associated with the Galloper Wind Farm (GWF) export

RWE npower renewables

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I www.npower-renewables.com

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Ltd

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83-85 Great Victoria Street
Belfast
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Registered no: NI043239

cable landfalls. At present the consultation does not provide detail of the precise location where such restricted access may occur, the timing of any such restrictions, or how these may affect GWFL's interests, hence GWFL is currently unable to make informed comment on whether such restrictions would be of concern.

Paragraph 2.2.38: GWFL welcome the distinct recognition by EDFE of the importance of the GWF Development Consent Order (DCO) application and acknowledge the significant progress that has already been made by the parties in agreeing a final form of the GWF draft DCO and other legal agreements on many matters. Whilst significant agreement has been reached, GWFL and EDFE continue to seek the conclusion of a proximity agreement in relation to GWFL's export cables and EDFE's water intakes and connecting tunnels, on which Heads of Terms have been reached previously. Furthermore GWFL raises particular concern in relation to Option 2 for the construction campus on which this is GWFL's first opportunity to comment.

Paragraphs 3.1.2: GWFL are aware of the cooling water infrastructure requirements for Sizewell C through discussions held between both parties during the GWF DCO examination process. Agreement of proposed Protective Provisions for both Sizewell C and GWF, and Heads of Terms for a legal agreement, was reached on the basis of headworks centre points provided by EDFE at that time. The content of the Protective Provisions for both projects was submitted to the Planning Inspectorate (at the GWF Examination) in a joint statement included at Appendix A to this response (Note that Appendix B to this submission provides the final version of Appendix 15.1 to that Joint Statement). To bring matters between the two parties to a satisfactory conclusion, and in line with the joint statement in Appendix A, GWFL and EDFE will be required to reach conclusion of the full proximity agreement, ensure that reciprocal Protective Provisions are included in the EDFE draft DCO, and that they are pursued for inclusion by the Secretary of State in their final granted DCO.

Following conclusion of the proximity agreement, GWFL will continue to retain a significant interest in any factors that could affect the proposed centre points of the water intake headworks that are governed by the Protective Provisions or other agreements.

Paragraph 3.1.2: "Sea protection" is referenced as being an element of the permanent works. GWFL requires further information before it can make informed comment on these matters in relation to potential effects on GWF construction and operational activity, although GWFL notes that the extent of foreshore included in the indicative site boundary would only appear to give rise to potential conflict between offshore vessels.

Paragraph 3.1.3: The full potential zone where jetty works could occur is not shown on Figure 3.1, it is shown in full in Figure 3.4. GWFL notes that the extent of the zone would only appear to give rise to potential conflict between offshore vessels, on which it would request further information from EDFE.

Paragraph 3.1.3: Work areas on the foreshore "for the installation of cooling water infrastructure and sea protection" is referenced as being an element of the temporary works. GWFL requires further information before it can make

informed comment on these matters in relation to potential effects on GWF construction and operational activity, although GWFL notes that the extent of foreshore included in the indicative site boundary would only appear to give rise to potential conflict between offshore vessels.

Figures 3.1 and 3.4: These figures identify the area within which the cooling water and associated infrastructure are proposed. The zone identifies an area that is broader than the detailed figures that define Protective Provisions in favour of GWFL (to be included in the Sizewell C DCO) and on which reciprocal Protective Provisions in the GWF DCO were agreed. It is essential that GWFL are made constantly aware of any factors that could affect the proposed centre points of the water intakes, either arising from EDFE's further studies or through representations from other parties.

GWFL and EDFE issued a joint statement (Appendix A) to the GWF Examination setting out the above and confirming that both parties had reached Head of Terms agreement. GWFL seeks the finalisation of the full Proximity Agreement deriving from these Heads of Terms to bring the successful coexistence of each NSIP's respective water intake and export cable assets to a conclusion.

GWFL notes that EDFE and itself are in active and regular discussions to conclude the above.

Paragraph 3.1.4 and Figure 3.1: GWFL considers that it would assist in future consultation if all other spatially focussed associated development could be shown in the Introductory section so that they are brought to the attention of readers more prominently. In this document the potential for conflict between Sizewell C's associated development and GWFL's Order Limits is not apparent within Chapter 3, instead being referenced in Chapters 5 and 6.

Figure 3.2 (Indicative onshore landscape plan): GWF considers that it would be helpful in future consultations to show the proposed GWF onshore substation, associated infrastructure and landscaping proposals on an alternative version of Figure 3.2. Such an inclusion would allow other consultees to understand the different landscaping arrangements that would be in place in the event that the GWF DCO is granted, and the extensive landscaping agreed with SCC, SCDC and EDFE for that scheme is implemented to accord with the wider Sizewell Vision.

Paragraph 3.2.31: GWFL should also be considered as a key stakeholder with regard to the effect of Sizewell C development on coastal processes. Furthermore any potential effect on the export cables for both wind farms should be considered as part of the Sizewell C DCO Environmental Impact Assessment.

Paragraph 3.3.22: The location of Option 2 and its access may conflict with the GWF DCO Order Limits which include for designated access routes to the beach for construction and maintenance of assets at the landfall from and near the Sizewell Beach Café car park. GWFL requires further information before it can make informed comment on these matters in relation to potential effects on GWF construction and operational activity..

Section 5.3: At present GWF has no comment to make on Options 1 or 3 for

the campus accommodation and has not, in light of the information available at present, identified any reason why either option would prove unsuitable to it, save for subsequent detailed information and in particular identifying that GWFL's access to its works would not be affected.

However GWFL note with significant concern the direct spatial conflict between the footprint for Option 2 and the Order Limits of the GWF DCO application. No agreement has been sought or reached between GWFL and EDFE in relation to this proposal. Given the national importance of both the GWF and Sizewell C projects, GWFL does not consider it appropriate to seek only a temporal separation between the overlapping works.

Whilst the Option 2 proposals respect some of the GWF works, the Sizewell C car parking area and associated landscaping for the campus is located on the essential construction compound for the GWF substation. It would be unacceptable to GWFL for the Sizewell C and GWF DCO Order Limits to overlap in this way and therefore GWFL would strongly resist any such proposals, which EDFE acknowledges are a secondary proposal to its preferred Option 1.

Paragraph 6.3.14: All three options to temporarily extend the rail line have the potential to significantly affect the designated HGV route for the GWF onshore development. GWFL would need to be satisfied that extending the rail line would not adversely affect GWF access for construction and operation activities.

Sizewell C Stage 1 Environmental Report:

Section 2.4.2: GWFL note the potential for the Sizewell C development to make temporary use of Pill Box field and acknowledge that the area contained within GWFL's DCO has been shown outside the current 'Indicative site boundary' (whilst not discernable from the printed consultation document, it is assumed that the EDFE boundary is coincident with the GWFL boundary and that no works are proposed outside this as part of associated development). GWFL would require that this spatial separation is maintained and that the proposed tree planting in Pill Box Field, which is part of the GWF DCO application (and which has been agreed with EDFE), is fully taken into account in any adjacent proposals for this field.

Section 4.12: GWFL note that EDFE identify potential effects on coastal geomorphology and hydrogeology as a result of construction and operational effect from the outlet, intake and jetty infrastructure. GWFL seeks assurances from EDFE that the effects of offshore works on geomorphology and hydrogeology fully consider the potential effect on GWF infrastructure, including an assessment of the effects on the GWF buried export cables (once installed).

Section 4.16 Whilst it is acknowledged that effects on GWFL vessel movements are captured in this section, GWFL notes that there is no wider consideration of potential effects on its interests in this document. GWFL would wish to see an '*other human activity*' or similar chapter in future consultation and submission documents (as is common many EIAs) which specifically addresses the impacts

on relevant operators such as Galloper, given the proximity of the developments. In particular, save for matters covered by agreements reached between GWFL and EDFE, GWFL would wish to see specific discussion of any impacts arising from any of the offshore (below Mean High Water Springs) construction works with regard to its proposed export cable and landfall locations.

The production of such a chapter will require regular and ongoing dialogue with the relevant human operators.

Paragraph 4.16.20: GWFL welcomes the recognition as a potentially affected party with regard to vessel movements associated with the GWF project and looks forward to constructive dialogue with EDFE as part of their iterative pre-application EIA process.

Paragraph 5.3.17-5.3.24: GWFL is not aware of any previous consultation on EDFE's process of identifying and assessing potential sites and therefore cannot comment on the robustness or otherwise of this process used to arrive at the proposed Option 2 in a shortlist of 3. Whilst the consultation document identifies the avoidance of landscaping works by Galloper Wind Farm at paragraph 5.3.17, the document does not address the direct spatial conflict between the proposals and other activities within the GWF Order Limits. GWFL would strongly oppose any impact upon its ability to deliver its scheme, which also represents a NSIP under the 2008 Planning Act..

In conclusion, GWFL has set out in this response its primary comments arising from the Sizewell C consultation documents. In a number of areas further information is required by GWFL before it can provide an informed response to the Section 42 Sizewell C consultation. At the current time GWFL cannot conclude that the GWF NSIP will not be significantly affected by any future Sizewell C DCO application.

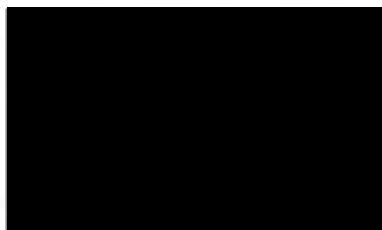
However GWFL welcomes the instigation of a regular meeting with EDFE, as an extension of the existing relationship between the two parties, to discuss the proposed Sizewell C application. GWFL hopes that such ongoing dialogue and information exchange, underpinned by resolution of the following key matters, will satisfactorily resolve the following:

- Completion of a proximity agreement between EDFE and GWFL with respect to satisfactory coexistence of GWFL's proposed export cables and EDFE's proposed cooling water intakes and connecting tunnels;
- Confirmation that EDFE's draft DCO will contain the Protective Provisions declared jointly by EDFE and GWFL in their statement to the Planning Inspectorate's Examination of Galloper Wind Farm, attached as [Appendix A] to this submission;
- Confirmation that Option 2 is not to be progressed, or will be significantly amended, so as to avoid any conflict with the Order Limits of the proposed GWF DCO;
- Confirmation that the planting proposed in Pill Box field in GWFL's DCO will be unaffected by proposals brought forward as part of Sizewell C;

- Confirmation of the spatial separation of all other proposals where sufficient information is not available at the current time for GWFL to provide an informed Section 47 response, or confirmation that GWFL's consultation and agreement will be sought to any proposals where a spatial separation has not yet been identified.

Note that the above comments are without prejudice to any other future comments that GWFL may identify from further information received from these comments or through future consultation opportunities afforded by EDFE.

Yours faithfully



Robert Gully
Development Manager
Gallop Wind Farm Limited

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Web : www.gallopwindfarm.com

From: Margaret.Ketteridge@gtc-uk.co.uk [mailto:Margaret.Ketteridge@gtc-uk.co.uk]
Sent: 08 May 2014 12:13
To: Environmental Services
Subject: EN010012

Dear Sirs

With regards to the reference above, I can confirm that the following have no comments to make at this moment in time.

Independent Power Networks
Utility Grid Installations
Independent Pipelines
The Electricity Network Company
GTC Pipelines
Quadrant Pipelines

Kind Regards

Maggie

Maggie Ketteridge
Engineering Support Officer
GTC
Energy House
Woolpit Business Park
Woolpit
Bury St Edmunds
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Tel: 01359 245406
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NOTE:

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Hannah Nelson

From: Dave.MHPD.Adams@hse.gsi.gov.uk on behalf of NSIP.Applications@hse.gsi.gov.uk
Sent: 24 April 2014 11:40
To: Environmental Services
Subject: RE: Sizewell C New Nuclear Power Station - EIA Scoping Request

Dear Planning Inspectorate,

HSE acknowledges receipt of this EIA Scoping Request.

Kind regards,

Dave..

Dave.MHPD.Adams

Land Use Planning Policy, Major Hazards Policy Division, Hazardous Installations Directorate, Health and Safety Executive.

Desk 20, 5.S.2, Redgrave Court, Merton Road, Bootle, Merseyside L20 7HS

0151 951 3408 dave.mhpd.adams@hse.gsi.gov.uk

www.hse.gov.uk | <http://hse.gov.uk/landuseplanning>

From: Environmental Services [mailto:EnvironmentalServices@infrastructure.gsi.gov.uk]
Sent: 24 April 2014 11:05
To: NSIP Applications
Subject: Sizewell C New Nuclear Power Station - EIA Scoping Request

Dear Sir/Madam

Please see the attached letter in relation to the EIA Scoping Request for the proposed Sizewell C New Nuclear Power Station.

Kind regards,

Hannah Nelson
EIA & Land Rights Advisor
Major Applications and Plans
The Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Direct Line: 0303 444 5061

Helpline: 0303 444 5000

Email: hannah.nelson@infrastructure.gsi.gov.uk

Web: www.planningportal.gov.uk/planninginspectorate (Planning Inspectorate casework and appeals)

Web: www.planningportal.gov.uk/infrastructure (Planning Inspectorate's National Infrastructure Planning portal)

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From: Edwina [REDACTED]
Sent: 21 May 2014 21:39
To: Environmental Services
Subject: Sizewell Scoping Consultation attn Laura Allen

Dear Laura

Re 7.2.2

I believe that the environmental impact review should be broadened beyond the major sites referred to (within the 20 mile radius) to include Simpson's Fromus Reserve and consideration also given to the point that some sites that are not currently protected should be as they may be of no lesser value. A wider review of potential impact should take place.

Yours sincerely

Edwina Galloway
Kelsale Cum Carlton Parish Council

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Hannah Nelson

From: John Rayner <townclerk@leistontowncouncil.gov.uk>
Sent: 28 April 2014 14:10
To: Environmental Services
Subject: For Laura Allen - Sizewell C Scoping request

Dear Laura,

With regard to the scoping report submitted by EDF for Sizewell C. It would be much appreciated if Leiston-cum-Sizewell Town Council could be included as a named consultee in Paragraph 7.4.4 with regards to RoW etc.

Many thanks
Regards
John

--

John Rayner
Town Clerk
Leiston-cum-Sizewell Town Council
Council Chambers
Main Street
LEISTON
IP16 4ER
01728 830388
townclerk@leistontowncouncil.gov.uk

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MIDDLETON – cum – FORDLEY
PARISH COUNCIL

Chairman:- Mr John Morris

Parish Clerk:-

Douglas Colyer,

FAO Laura Allen
Senior ETA & Land Right Advisor
The Planning Inspectorate
3/18 Eagle Wing
Temple House Quay
2The Square
Bristol
BS1 6PN

Dear Madam

Sizewell C Environmental Impact Assessment Scoping Report

Referring to your letter dated the 24th April 2014, I am instructed by the Chairman and the Councillors of Middleton-cum-Fordley Parish Council that we wish to comment on two particular issues, namely the impact of traffic (particularly on the B1122) from the A12 to the site, and the absence of any reference to light pollution . We also have general reservations about the applicants' whole approach to consultation and their general disregard of matters of public concern.

(i) Artificial light

As far as we are aware, artificial light has not yet been raised as a major issue. Nevertheless we are concerned about its impact on the night sky, particularly during construction of the power station – from the construction and fabrication areas as well as the worker campus. There is no reference to the problem at all in the scoping report. One of the pleasures of living in this part of Suffolk, and a major factor for tourism in this coastal area, is the lack of light pollution. We know that with proper planning and the use of appropriate lighting the impact on the night sky can be much reduced

(ii) Traffic from the A12

We know that many people have expressed concern about traffic and access from the A12. Yet the proposed EIA Scope is fundamentally flawed in that it fails to address the issue at all. The existing road providing the link between the A12 and the current Sizewell sites, the B1122, experienced considerable traffic, environment and safety problems during the much smaller Sizewell B build. Yet the Scoping Report makes no mention of any study of the impact of the proposed far larger development on this route, or any proposal for the creation of a new route.

Validated and agreed traffic impact analysis has to be obtained not just for the A12/B1122 junction and the B1122 itself, but also the other routes that could be affected by any enforced

closure of the B1122 due to repair, breakdown or accident. These would include but not necessarily restricted to:

- the B1125 and its junctions with the A12 and B1122;
- the A1120 and its junction with the A12 at Yoxford; and
- the B1119.

The most serious, indeed fatal, omission in the Scoping Report is any consideration of the impact upon future emergency evacuation movements, on the B1122 or any realignment of it, or a new route.

Until it can be otherwise justified, it is our considered view that as a very minimum major strengthening, widening, alignment and junction alterations will be required. But more likely - and far less environmentally damaging - a new wide single two-lane road should be provided to provide uncongested, safe, shorter and more convenient access to all four power stations. These options must be recognised in the report to make it credible and, arguably, lawful.

(iii) The applicant's general approach to consultation

The lack of any real in-depth consideration of the problems of access from the A12 to the site is indicative of the developer's whole approach to consultation with the public and statutory consultees.

Contrary to the advice given to them by PINS at their meeting on 31 October 2013, EDFE have failed to comment upon, or inform of ongoing development to their proposals arising from, the responses to the Stage 1 Consultation.

We urge PINS to press the developer to take an active and inclusive approach to expanding the range of agreed matters. If not, local interests will focus on objecting to, rather than co-operating with, the developer's proposals.

Yours faithfully

Douglas Colyer

Clerk to Middleton –cum-Fordley Parish Council



Marine Management
Organisation
Lancaster House
Hampshire Court
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NE4 7YH

T 0300 123 1032
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The Planning Inspectorate
3/18 Eagle Wing
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2 The Square
Bristol, BS1 6PN

Our reference:
DCO/2014/00014
Your reference: EN030002

BY EMAIL ONLY

22 May 2014

Dear Ms Allen,

Sizewell C Proposed Nuclear Development – Scoping Report comments

Thank you for your letter dated 24 April 2014 requesting the Marine Management Organisation's comments on the Sizewell C Proposed Nuclear Development Environmental Scoping Report, dated April 2014. Enclosed with this letter are the Marine Management Organisation's comments on that report.

If you have any queries or require clarification on any of the above, then please do not hesitate to contact me.

Yours sincerely,

Joanna Wooles
Inshore Licensing Team

D 0191 376 2637

E joanna.wooles@marinemanagement.org.uk



INVESTORS
IN PEOPLE

Our reference: DCO/2013/00021
Your reference: EN010012

Sizewell C Proposed Nuclear Development

Comments on the Environmental Scoping Report, dated April 2014

1. The proposal

- 1.1. EDF Energy proposes to build, operate and decommission a new nuclear power station comprising two UK European Pressurized Reactors with an expected electrical capacity of approximately 3,260 megawatts at Sizewell in Suffolk, known as Sizewell C (the “Project”).
- 1.2. The Project will consist of:
 - a main development site, located mainly to the north of the existing Sizewell B power station, which will include the nuclear power station, access road and temporary development required for construction; and
 - off-site associated development including temporary park and ride sites, the temporary extension of an existing railway line/new rail terminal and freight laydown area, possible works to road networks, and a visitor centre.
- 1.3. An Environmental Scoping Report ‘Sizewell C EIA Scoping Report’ dated April 2014 (the “Report”) has been prepared by EDF Energy as part of the Environmental Impact Assessment (“EIA”) process.

2. The MMO’s role in Nationally Significant Infrastructure Projects

- 2.1. The Marine Management Organisation (the “MMO”) was established by the Marine and Coastal Access Act 2009 (the “2009 Act”) to make a contribution to sustainable development in the marine area and to promote clean, healthy, safe, productive and biologically diverse oceans and seas.
- 2.2. The responsibilities of the MMO include the licensing of construction works, deposits and removals in the marine area by way of a marine licence¹. Marine licences are required for deposits or removals of articles or substances below the level of mean high water springs (“MHWS”), unless a relevant exemption applies.
- 2.3. In the case of Nationally Significant Infrastructure Projects (“NSIPs”), the Planning Act 2008 (the “2008 Act”) enables Development Consent Order’s (“DCO”) for projects which affect the marine environment to include provisions which deem

¹ Under Part 4 of the 2009 Act

marine licences². Alternatively, applicants may wish to separately seek consent for a marine licence directly from the MMO rather than having it deemed by a DCO.

- 2.4. For NSIPs where applicants choose to have a marine licence deemed by a DCO, during pre-application the MMO will advise developers on the aspects of a project that may have an impact on the marine area or those who use it. In addition to considering the impacts of any construction within the marine area, this would also include assessing any risks to human health, other legitimate uses of the sea and any potential impacts on the marine environment from terrestrial works.
- 2.5. Whether a marine licence is deemed within a DCO or consented independently by the MMO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment. As such, the MMO has a keen interest in ensuring that provisions drafted in a deemed marine licence enable the MMO to fulfil these obligations. This includes ensuring that there has been a thorough assessment of the impact of the works on the marine environment (both direct and indirect), that it is clear within the DCO which works are consented within the deemed marine licence, that conditions or provisions imposed are proportionate, robust and enforceable and that there is clear and sufficient detail to allow for monitoring and enforcement. To achieve this, the MMO would seek to agree the deemed marine licence with the developer for inclusion with their application to the Planning Inspectorate (“PINS”).
- 2.6. Further information on licensable activities can be found on the MMOs website³. Further information on the interaction between PINS and the MMO can be found in our joint advice note⁴.
- 2.7. The MMO recognises there is some overlap between the geographical jurisdiction of the MMO and the local planning authorities (i.e. between MHWS and mean low water springs).
- 2.8. The MMO has considered this and is of the view that matters which fall within the scope of the marine licensing provisions of the 2009 Act (i.e. anything below MHWS) are generally best regulated by conditions on marine licences. This should minimize the risk of inconsistency between different schemes of regulation, or of a duplication of controls.
- 2.9. In considering applications for marine licences to be consented independently by the MMO, the MMO regularly consults with bodies including, but not limited, to:
 - the Environment Agency
 - Natural England
 - Natural Resources Wales (for works in or affecting Wales)
 - the Maritime and Coastguard Agency
 - English Heritage
 - local planning authorities
 - local harbour authorities

² Section 149A of the 2008 Act

³ <http://www.marinemangement.org.uk/licensing/marine.htm>

⁴ <http://infrastructure.planningportal.gov.uk/wp-content/uploads/2013/04/Advice-note-11-v2.pdf>

- local inshore fisheries and conservation authorities
- the Royal Yachting Association
- the Royal Society for the Protection of Birds
- the corporation of the Trinity House of Deptford Strond.

Where a marine licence is to be deemed within a DCO, the MMO would expect that comments provided by the above list of bodies and any other relevant bodies are taken into consideration.

3. Activities for this project which would be licensable under the 2009 Act

3.1. At this stage of the development the MMO have identified the following licensable activities as stated in the Report:

- Cooling water infrastructure (including cooling water tunnels extending out to sea, intake and outfall headworks on the sea bed, and associated fish recovery and return system);
- Beach landing facility to receive deliveries of Abnormal Indivisible Loads (“AILs”) by sea throughout the power station’s operational life;
- Temporary jetty for the transport of bulk construction materials, equipment and AILs by sea;
- Temporary works areas on the foreshore for the installation of flood defence and coastal protection measures;
- Construction of flood defence and coastal protection measures;
- Dredging.

3.2. It should be noted that the Report includes limited detail regarding work activities and methodologies. Specifically, the requirement for dredging is unclear and how any dredge arisings will be dealt with. Should dredge arisings be disposed of at sea, this is also a licensable activity under the 2009 Act. The MMO would expect to see each activity clearly described and assessed during the EIA process. This should also include ongoing activities which may be necessary, such as maintenance dredging. Paragraphs 4.9 & 4.19 of this document provide further information on this.

3.3. The Report mentions a number of mitigation measures which may constitute licensable activities under the 2009 Act. This includes such things as beach recycling, beach recharge and scour protection. Further information should be provided regarding these during the EIA process.

3.4. Any additional works or activities in the marine area which may require a marine licence under the 2009 Act should be notified to the MMO at the earliest opportunity and the impacts of such works considered in the EIA process.

4. Comments on the Report

General comments

- 4.1. The comments expressed in this document are made in respect of the MMOs jurisdiction which is outlined in paragraph 2.8 of this document.
- 4.2. The Report is well written and provides a broad overview of the Project. However, due to the high level nature of the document and lack of Project detail, confidence in the assessments made is limited. For example, as stated in section 3 of this document, only a broad overview of the works to be undertaken has been provided. This limits the confidence that all relevant elements of the project have been scoped with regards to impact pathways and receptors. This is detailed in the relevant sections of this document.
- 4.3. In general, the methodology for scoping impact pathways and receptors appears to be appropriate. The Report provides a high level overview of impact pathways and receptors, with nothing explicitly being scoped in or out of the assessment at this stage. Where impact pathways and receptors are scoped out, the Environmental Statement (“ES”) will need to clearly justify the rationale for the approach taken and decisions made.
- 4.4. References are made throughout the report to baseline studies undertaken, though details of methodologies used and results obtained are only provided in summary. The description of the baseline and survey work is often vague, for example in relation to ornithology and marine ecology. It is therefore difficult to confirm whether all relevant baseline material has been accessed, or whether the surveys undertaken or proposed are adequate. The MMO would welcome sight of any relevant baseline studies during the pre-application phases of the project to ensure their suitability. Specific examples of this are included in the relevant sections of this document.
- 4.5. Where there is overlap in subject matters, cross referencing to other relevant chapters should be provided.
- 4.6. The Project is within the East Marine Plan Area. Marine planning provides guidance for sustainable development within the plan area. Any decision made must have regard to the marine plan. As such, the EIA should demonstrate how the project meets the requirements of the marine plan and should include how the plan polices support the Project, the case for going ahead with the Project if it differs from plan policies and any evidence for this. The MMO will also have regard to the marine plan when providing advice to PINS.

Chapter 2 – Consenting regimes and environmental assessment

- 4.7. Section 2.3 of the Report recognises the need for an Appropriate Assessment for the Project. There is no reference to the scope of a Habitats Regulation Assessment (HRA) which is likely to be required to address the potential impact on the Outer Thames Special Protection Area (SPA). The Report refers to the development and agreement of an Evidence Plan with Natural England. Given that the information will also be relevant to the consideration of ornithology within the ES, it will be important that other statutory bodies such as the MMO are involved in those discussions and in reviewing documentation associated with this.

Chapter 3 – Description of the proposed development

- 4.8. Paragraph 3.2 of the Report outlines the main development activities, providing a high level overview of the Project. Whilst it is appreciated that at this stage of the project final designs are yet to be agreed, and the applicant is seeking to work to the Rochdale Envelope approach, the lack of detail lowers confidence in the identification of impact pathways and receptors and assessments made. A detailed design of the project, and any variations thereof, must be presented and assessed within the EIA process, as is outlined in the Planning Inspectorates *Advice Note 9: Using the Rochdale Envelope*.
- 4.9. Dredging and the disposal of dredged material is referred to elsewhere in the Report, for example, in sections 7.13 (Coastal geomorphology and hydrodynamic) and 7.14 (Marine water quality and sediments), however, not when describing the proposed development and work activities within Chapter 3. Dredging and the disposal of dredged material at sea are licensable activities under the 2009 Act. These activities will need to be described in full, assessed thoroughly in the EIA process and included in any marine licence. Should disposal of dredged material at sea be required, the MMO would expect the EIA process to include sampling of sediments to the same standard as would be required for an application made to the MMO. Further guidance can be found on the MMO's website⁵.

Chapter 4 – Consideration of alternatives

- 4.10. The scoping report confirms that the consideration of alternatives will focus on the principal site-specific and design alternatives and goes on to detail some of the on-site associated infrastructure (section 4.3) for which alternative design solutions will be explored. The MMO welcome this approach and request that relevant environmental impact pathways which have been screened in are considered in the design alternatives and that this is documented in the ES.

Section 7.3 – Terrestrial Ecology and Ornithology

- 4.11. The MMOs comments on this section of the report relate to seabirds and marine ornithology. Within this section there is no reference to the need for, and scope of, a Habitats Regulation Assessment (HRA) which is likely to be required to address the potential impact on the Outer Thames SPA. The ornithology section and HRA should be cross referenced to ensure appropriate details are included in each section.
- 4.12. It is unclear whether all relevant marine and coastal bird species will be included in the assessment. Red-throated Diver, Little Tern and Sandwich Tern are mentioned but other species, such as gulls and coastal waterbirds that could be impacted by changes to the marine environment will be included should also be scoped and assessed accordingly. Consideration to changes in fish populations and impacts of

⁵ <http://www.marinemanagement.org.uk/licensing/index.htm>

prey structures should be considered. Cross references should be provided where appropriate for example in relation to impacts of fish mortality on seabirds.

- 4.13. The suggested survey types (breeding bird, wintering bird and seabird surveys) are considered to be appropriate, as are the study areas and the key statutory designated sites highlighted within the Report. However it is not possible to assess whether the studies will be adequate, due to a lack of detail regarding the timing, duration and number of surveys, and a lack of detail regarding the methodology both for the surveys and data analysis. The report indicates that surveys began in 2007, but no further detail is provided as to the study periods or the frequency of surveys. The Report outlines the methodology that will be used to assess impacts in the EIA in more detail, referencing IEEM guidance (IEEM 2006). Reference should be made to the more up-to-date IEEM (2010) guidance for marine EIAs.

Section 7.6 – Marine historic environment

- 4.14. Paragraph 7.6.8 of the Report states that, while there are 162 wrecks within the marine study area, 'the proposed development is not expected to directly impact any of these'. No further information or justification for this comment is provided. The EIA should fully assess possible impacts and justify any comments made regarding effects. If impacts are to be scoped out, clear justification should be provided for this.

Section 7.13 – Coastal geomorphology and hydrodynamics

- 4.15. The Report provides good detail on the approach for the ES and the modelling appears to cover the appropriate scale of change (temporal and spatial). However, there is a lack of transparency in the scoping of issues and no issues have been clearly scoped out. Issues should be clearly scoped in and out of the ES with clear justifications and assessed appropriately to ensure all potential impacts and impact pathways have been identified and assessed appropriately.
- 4.16. Specifically, the Report is missing the impact pathways and implications of climate change over the life time of the project such as changing patterns of offshore banks and flood and coastal erosion risk, including the potential for changing beach profiles reducing effectiveness of the beach. Therefore, it is unclear whether all potential impacts and impact pathways have been linked due to the limited project description. More detailed information, specifically on construction and operation, is required to ensure all impacts and impact pathways are identified.
- 4.17. Consideration needs to be given to modelling extreme events and climate change. Modelling should cover the cooling water discharges, contaminant concentrations, sediment disturbance (e.g. long term dredging) and provide sensitivity analysis to cover inherent variability and uncertainty in calibration and input parameters.
- 4.18. No modelling results have been presented in the report, although there is indication that this has been undertaken. More detailed modelling is proposed and this will need to be documented in the ES. New wave, flow and localised erosion data are being collected to hindcast information. The consideration of the interrelationship

between wind, wave, and coastal erosion is required within ES. Data are indicated as being available but has not been summarised within the Report.

- 4.19. Paragraph 7.13.29 of the Report refers to 'dredging activities for the jetty and its navigation approach, should this prove necessary'. Paragraph 7.13.35 also indicates a possible requirement for ongoing dredging to maintain navigational access. As stated in paragraphs 3.2 and 4.9 of this document, information should be provided to detail this dredging activity. Information provided to the MMO to support such applications includes, but may not be limited to, dredging locations, the volume of material to be dredged, the type of dredger to be used, working hours, duration of the dredge, how disposing the material will be managed, a pre-dredge survey and any details regarding dredging history. Should disposal of dredged material to sea be required analysis of sediment for potential contamination will also be required prior to consent being granted. If a new marine disposal site is required, characterisation of the site would be required. These factors should be considered in the EIA process and documented in the ES.
- 4.20. Paragraph 7.13.23 of the Report details elements of the Project that could have impacts on coastal geomorphology and hydrodynamics. This should also include capital and maintenance dredge and disposal requirements. Should the berthing pocket require hard standing, this would also need to be included in the assessment. The impacts of the decommissioning of Sizewell B on the baseline coastal geomorphology and hydrodynamics should be considered within the ES.
- 4.21. All information for the purposes of EIA should result from the analysis of the data already collected, the range of modelling said to have been carried out and the proposed further modelling. A Modelling Technical Appendix should be included in the ES.

Section 7.14 – Marine water quality and sediments

- 4.22. The assessment is based upon Water Framework Directive/Environmental Quality Standards (EQS Water) and sediment contamination guideline information. The baseline information and modelling approach to inform assessment of water column EQS compliance is robust, to the extent that it is applied to all relevant substances potentially discharged from the site.
- 4.23. However, the project description is not sufficiently clear to identify whether all potential water quality impacts and impact pathways have been identified. Mobilisation of contaminants within sediments (or biota) is not identified as an impact pathway in the Report and no methodology is therefore presented for assessing such risks. This also has implications for potential impacts to other receptors, particularly marine ecology. These impacts should be scoped and assessed in the ES and cross referenced accordingly. A Modelling Technical Appendix should be included in the ES.
- 4.24. Section 7.14.24 states that sediment core samples will be taken around likely navigation channels. As discussed previously in paragraph 4.19, the MMO would expect the EIA process to include sampling of sediments to the same standard as

would be required for an application made to the MMO⁶. Should disposal of dredged material to sea be required, OSPAR will need to be considered in section 7.14.25 under European legislation.

Section 7.15 – Marine ecology

- 4.25. The marine ecology chapter currently merges a range of receptors into one chapter (commercial fisheries, pelagic ecology, benthic ecology, marine mammals and fish and shellfish). Consideration should be given to splitting these receptors into different sections to make specific pathways clearer or clarify the use of judgement where necessary.
- 4.26. Section 7.15.21 lists construction activities but does not identify the impact pathways and receptors and link back to other relevant chapters as required. This section should also include capital and maintenance dredge and disposal requirements. Details of what is required in the “maintenance of the maritime exclusion zone” should be included and what impacts this could have on marine ecology should be identified. Should the berthing pocket require hard standing, this would also need to be included in the assessment. This should include an in-combination assessment with other activities that may increase the re-suspension of sediments. The impact of the increase in vessel movements should also be considered during the EIA process. It is not currently considered in section 7.16 on Navigation but should be cross referenced where appropriate.
- 4.27. The Report currently makes broad references to elements of the proposed development that could have effects on marine ecology and therefore it is unclear whether all possible pathways and receptors have been identified and considered. Impacts that have not been identified include: the possible effect of climate change in relation to direct and indirect impacts on fish stocks; the impact on protected species, including twaite shad; the impact on eels and consideration of the eels regulations; impacts from bioaccumulation or dispersal of radionuclides in the marine environment; impacts of the cooling water infrastructure, including biofouling and biocides, thermal plume; and, in-combination effects with Sizewell B. These should be scoped and assessed in the EIA process and documented be clearly justified in the ES. However, there is not enough information in the report to identify all information gaps
- 4.28. The types of data being collected are considered to be appropriate however more detail on the survey methods and survey design is required. The descriptions of the methods used to collect the data are very brief and, in the absence of detailed information, it is not possible to determine whether the surveys are appropriate. The approach to the assessment of impacts (including cumulative impacts) is unclear; for example, section iv does not provide any detail concerning how the magnitude of change in relation specific impacts will be quantified.
- 4.29. The marine ecology baseline information is brief, often vague and incomplete with no clear references made to whether the statements are based on judgement or

⁶ Further information is available at http://www.marinemanagement.org.uk/licensing/how/sample_analysis.htm

references. The detail of the surveys is missing and references are not provided in the report and should be clearly documented in the ES where necessary. It is noted that habitat mapping studies have been completed and are not planned as part of future studies. Detail on the habitat mapping undertaken and reasons that no further surveys are required must be provided in the ES.

- 4.30. The fish and habitat surveys do not appear to cover all of the anticipated area for the cooling water and associated infrastructure (Figure 7.15.1). Adequate information is required for the area in the immediate vicinity of the structures to inform the assessment (particularly the habitat, beam trawl and commercial otter trawls do not extend to the seaward extent of the potential development area).
- 4.31. Some broad information on the planned marine ecology studies is provided (in relation to intertidal, subtidal, impingement and entrainment and fishing activity), however as stated previously the information it is not sufficiently detailed to confirm if the surveys proposed are adequate.
- 4.32. The majority of habitats and species contained in the BAP priority lists are now considered as habitats or species of principal importance for the conservation of biodiversity in England under the 2006 Natural Environment and Rural Communities (NERC) Act.
- 4.33. There is little consideration of the impacts on fish and fish populations. The impacts described in section 7.3 of the Report identify long term effects on bird populations but not on the fish themselves which is considered to be a significant omission.
- 4.34. The magnitudes of the populations of the fish under consideration are not considered which makes it difficult to accurately consider the level of impact. Paragraph 7.15.8 notes that herring eggs and or larvae are found in the vicinity however it is unclear to which population this relates. If the herring are from the Blackwater population on the Eagle Bank then the impacts on the population would be much greater than if they were from the general North Sea stock.
- 4.35. Paragraph 7.15.9 lists the species of conservation concern. Several species that are known to occur at this site and are impinged on the B station screens are missing from discussion. These include mackerel (*Scomber scombrus*), sea lamprey (*Petromyzon marinus*) and scad (*Trachurus trachurus*) which are all in the BAP species list. These should be considered in the ES and if scoped out, clear justification should be provided.
- 4.36. The Report covers many of the issues related to the impacts of cooling water abstractions on fish but lacks details of the design concept. It is not clear if alternatives to the plan have been considered and why they were dismissed. Different cooling technologies can differ markedly in the volume of water extracted and therefore differ in their potential impacts. If the technologies to be used have been decided, justification and evidence should be provided to support these decisions. There is reference to fish deterrent and fish return systems but no discussion or reference as to their effectiveness. This should be explored and discussed in the ES.

- 4.37. Some potential mitigation of the impacts on fish is proposed such as the use of low velocity side entry (LVSE) intakes and both acoustic fish deterrent (AFD) and fish recovery and return (FRR) system. The benefits and limitations should be considered of these measures and if other alternatives have been scoped out, the justification for these should be explained. Consideration should be given to the effectiveness of any proposed mitigation over the lifetime of the Project.
- 4.38. The Report makes little reference to the local fishing industry however the information that is included appears to be an accurate assessment of the local fleet composition and size. The report does not detail the possible effects of the development upon the fishing industry and the works have the potential to have significant disruption in terms of lost ground during the construction phase to the fishing industry. Furthermore, from the information supplied, the loss of available fishing ground may have a long term impact. Public engagement with the local fishing industry is strongly recommended to fully appreciate the impact these works will have on local fishermen. This should be documented in the ES.

Section 7.16 - Navigation

- 4.39. The MMO consider that this is a well written and comprehensive chapter. The Report provides a commentary on the navigational aspects within the defined study area. This information is qualitative in nature and as such cannot be directly evaluated.
- 4.40. All plausible pathways have been considered in Section 7.16.21 through to 7.16.23, split into Construction and Operation however nothing is scoped out. The Report identifies that a Navigational Risk Assessments ("NRA") is required, which will form part of the EIA chapter. Given the size and scale of the proposed project in relation to navigation considerations, this is considered appropriate. The EIA chapter on navigation will consider recreation and commercial navigation, plus any cumulative effects. These cumulative effects should relate to the cumulative effects section as discussed in paragraph 4.44.
- 4.41. Information sources that are identified as part of the NRA and EIA process are appropriate. It would be beneficial to characterise vessel traffic to and from ports and harbours within the study area, including Southwold, Walberswick and Slaughden Quay, and large ports and harbours adjacent to the study area, including Felixstowe, Harwich, Ipswich and Lowestoft. In addition, effects and interaction with marine traffic using the Southwold Ship-to-Ship transfer area should also be considered within the context of the NRA and EIA.
- 4.42. In the report section entitled 'Work undertaken to date' the document states all the sources of information considered have looked at (RYA, AIS, MMO, Fisheries etc), but the supporting figure shows an OS outline with a semi-circle to denote the area they will more fully consider in the EIA. Figure 17.16.1 should be updated to show information compiled for the baseline (for example, RYA routes, indicative vessel transit routes, AIS data from the MMO, RYA racing areas, etc).
- 4.43. The coastline adjacent to the proposed location of the Project is frequented by recreational vessels from marinas at Orford, Aldeburgh and Southwold. Commercial

angling boats also operate in the inshore area around Sizewell. The effect upon these sea-users would be dependent upon the extent of any exclusion zone imposed during and after the works and should be assessed within the ES.

Chapter 9 – Summary

- 4.44. Section 9.2.1 provides an indicative outline structure for the proposed ES. The MMO welcome the addition of an overarching chapter Cumulative Assessment as Volume 9. The Report identifies Galloper offshore wind farm as the only other project that has been scoped in for consideration in an in-combination effects assessment. This should be widened to incorporate other projects such as port developments in the region including Felixstowe and Harwich. This should include, but not limited to, the operation and decommissioning of Sizewell B. Consideration of methods to be used during construction and timing of works should also be considered in this overarching volume and in other volumes as required.

5. Consultation process and next steps

- 5.1. The items highlighted in this letter should be considered in the EIA process, and evidenced in the ES. However, this should not be seen as a definitive list of all EIA/ES requirements and other work may prove necessary, particularly as it is made clear what works will be undertaken in, or have an impact on, the marine area.
- 5.2. The MMO welcomes the ongoing consultation with EDF Energy and recommends that this continues.

Date: 22 May 2014
Our ref: 119244
Your ref: EN010012



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Dear Laura

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) – Regulations 8 and 9

Application by EDF Energy for an Order Granting Development Consent for the Sizewell C Proposed Nuclear Development

Scoping consultation and notification of the applicant's contact details and duty to make available information to the applicant if requested

Thank you for seeking our advice on the scope of the Environmental Statement (ES) in your consultation dated 24 April 2014 which we received on 24 April 2014.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Case law¹ and guidance² has stressed the need for a full set of environmental information to be available for consideration prior to a decision being taken on whether or not to grant planning permission. Annex A to this letter provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for this development. More detailed comment on the content of the report entitled *Sizewell C EIA Scoping Report* (EDF Energy, April 2014) is given in Annex B to this letter.

Should the proposal be amended in a way which significantly affects its impact on the natural environment then, in accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England should be consulted again.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us. For any queries relating to the specific advice in this letter only please contact Alison Collins on 01284 735236. For any new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

¹ Harrison, J in *R. v. Cornwall County Council ex parte Hardy* (2001)

² *Note on Environmental Impact Assessment Directive for Local Planning Authorities* Office of the Deputy Prime Minister (April 2004) available from

<http://webarchive.nationalarchives.gov.uk/+http://www.communities.gov.uk/planningandbuilding/planning/sustainability/environmental/environmentalimpactassessment/noteenvironmental/>



We really value your feedback to help us improve the service we offer. We have attached a feedback form to this letter and welcome any comments you might have about our service.

Yours sincerely

AJ Collins

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Annex A – Advice related to EIA Scoping Requirements

1. General Principles

Schedule 4 of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011, sets out the necessary information to assess impacts on the natural environment to be included in an ES, specifically:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases.
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen.
- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects. Effects should relate to the existence of the development, the use of natural resources and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment.
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
- A non-technical summary of the information.
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications. A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

2. Biodiversity and Geology

2.1 Ecological Aspects of an Environmental Statement

Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance on such matters. Guidelines for Ecological Impact Assessment (EclA) have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and are available on their website.

EclA is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. EclA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal.

The National Planning Policy Framework sets out guidance in S.118 on how to take account of biodiversity interests in planning decisions and the framework that local authorities should provide to assist developers.

2.2 Internationally and Nationally Designated Sites

The ES should thoroughly assess the potential for the proposal to affect designated sites. European sites (e.g. designated Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) fall within the scope of the Conservation of Habitats and Species Regulations 2010. In addition, paragraph 118 of the National Planning Policy Framework requires that potential SPAs, possible SACs, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites.

Under Regulation 61 of the Conservation of Habitats and Species Regulations 2010 an appropriate assessment needs to be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site.

Should a Likely Significant Effect on a European/Internationally designated site be identified or be uncertain, the competent authority (in this case the Planning Inspectorate) may need to prepare an Appropriate Assessment, in addition to consideration of impacts through the EIA process.

2.2.1 Sites of Special Scientific Interest (SSSIs) and sites of European or international importance (Special Areas of Conservation, Special Protection Areas and Ramsar sites)

The development site is within Sizewell Marshes SSSI and Outer Thames Estuary Special Protection Area (SPA) and is immediately adjacent to the following designated nature conservation sites:

- Minsmere-Walberswick Heaths and Marshes SSSI
- Minsmere-Walberswick SPA
- Minsmere-Walberswick Ramsar site
- Minsmere to Walberswick Heaths & Marshes SAC

The development site is in the near vicinity of the following designated nature conservation sites:

- Leiston-Aldeburgh SSSI
- Sandlings SPA
- Alde-Ore Estuary SSSI
- Alde-Ore Estuary SPA
- Alde-Ore Estuary Ramsar site
- Alde-Ore & Butley Estuaries SAC
- Orfordness-Shingle Street SAC
- Westleton Heath National Nature Reserve (NNR)
- Suffolk Coast NNR
- Orfordness-Havergate NNR.

In addition, there are a number of nationally and internationally designated sites within a 20km radius from the proposed development site (shown in Figures 7.2.2 and 7.2.3) which will need to be considered as part of the EIA where indirect impacts may be predicted to occur over a wider area, such as might arise from changes to coastal processes and marine water quality.

Further information on the designated sites and their special interest features can be found at www.natureonthemap.naturalengland.org.uk. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within these sites and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects. Natura 2000 network site conservation objectives are available on our internet site [here](#).

In this case the proposal is not directly connected with, or necessary to, the management of a European site. In our view it is likely that it will have a significant effect on internationally designated sites and therefore will require assessment under the Habitats Regulations. We recommend that there should be a separate section of the Environmental Statement to address impacts upon

European and Ramsar sites entitled 'Information for Habitats Regulations Assessment'.

Natural England is currently in the process of agreeing an Evidence Plan with EDF, which will set out the evidence requirements for a Habitats Regulations Assessment (HRA). In this case, as the Evidence Plan process is still underway, we are not in a position to comment further on the information required for a HRA at this stage (see section 2.3.3).

2.3 Regionally and Locally Important Sites

The EIA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife and geodiversity interests of such sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures. Contact Suffolk Wildlife Trust, GeoSuffolk or Suffolk Biological Records Centre for further information.

2.4 Protected Species - Species protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010

The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law, but advises on the procedures and legislation relevant to such species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.

The conservation of species protected by law is explained in Part IV and Annex A of Government Circular 06/2005 *Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System*. The area likely to be affected by the proposal should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES.

In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and where necessary, licensed, consultants. Natural England has adopted [standing advice](#) for protected species which includes links to guidance on survey and mitigation.

2.5 Habitats and Species of Principal Importance

The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List, published under the requirements of S41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act 2006 places a general duty on all public authorities, including local planning authorities, to conserve and enhance biodiversity. Further information on this duty is available in the Defra publication '[Guidance for Local Authorities on Implementing the Biodiversity Duty](#)'.

Government Circular 06/2005 states that Biodiversity Action Plan (BAP) species and habitats, 'are capable of being a material consideration...in the making of planning decisions'. Natural England therefore advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES. Consideration should also be given to those species and habitats included in the relevant Local BAP.

Natural England advises that a habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (e.g. from previous surveys);
- Additional surveys carried out as part of this proposal;
- The habitats and species present;
- The status of these habitats and species (eg whether priority species or habitat);
- The direct and indirect effects of the development upon those habitats and species;
- Full details of any mitigation or compensation that might be required.

The development should seek if possible to avoid adverse impact on sensitive areas for wildlife within the site, and if possible provide opportunities for overall wildlife gain.

The record centre for the relevant Local Authorities should be able to provide the relevant information on the location and type of priority habitat for the area under consideration.

2.6 Contacts for Local Records

Natural England does not hold local information on local sites, local landscape character and local or national biodiversity priority habitats and species. We recommend that you seek further information from the appropriate bodies (which may include the Suffolk Biological Records Centre, Suffolk Wildlife Trust, GeoSuffolk or other recording society and a local landscape characterisation document).

- Local Record Centre (LRC) in Suffolk please contact: <http://www.suffolkbrc.org.uk/>
- County Wildlife Sites in Suffolk please contact: <http://www.suffolkbrc.org.uk/> or <http://www.suffolkwildlifetrust.org/>
- Geological sites in Suffolk please contact: <http://www.geosuffolk.co.uk/>

3. Designated Landscapes and Landscape Character

3.1 Nationally Designated Landscapes

As the development site is within Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB), consideration should be given to the direct and indirect effects upon this designated landscape and in particular the effect upon its purpose for designation within the environmental impact assessment, as well as the content of the relevant management plan for Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB). The development site is also within Suffolk Heritage Coast which is a non-statutory designation and in the vicinity of several locally designated Special Landscape Areas (see Figure 7.3.2).

3.2 Landscape and visual impacts

Natural England would wish to see details of local landscape and seascape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in topography. The European Landscape Convention places a duty on Local Planning Authorities to consider the impacts of landscape when exercising their functions.

The EIA should include a full assessment of the potential impacts of the development on local landscape and seascape character using landscape and seascape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any

location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed.

Natural England supports the publication *Guidelines for Landscape and Visual Impact Assessment*, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment.

In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England encourages all new development to consider the character and distinctiveness of the area, with the siting and design of the proposed development reflecting local design characteristics and, wherever possible, using local materials. The EIA process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be likely to be a material consideration at the time of determination of the planning application.

The assessment should refer to the relevant [National Character Areas](#) which can be found on our website. Links for Landscape Character Assessment at a local level are also available on the same page.

3.3 Heritage Landscapes

You should consider whether there is land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific or historic interest. An up-to-date list may be obtained at www.hmrc.gov.uk/heritage/lbsearch.htm and further information can be found on Natural England's landscape pages [here](#).

4. Access and Recreation

Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

4.1 Rights of Way, Access land and coastal access

The EIA should consider potential impacts on access land, public open land, rights of way and coastal access routes in the vicinity of the development. Appropriate mitigation measures should be incorporated for any adverse impacts. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

5. Soil and Agricultural Land Quality

Impacts from the development should be considered in light of the Government's policy for the protection of the best and most versatile (BMV) agricultural land as set out in paragraph 112 of the NPPF. We also recommend that soils should be considered under a more general heading of

sustainable use of land and the ecosystem services they provide as a natural resource in line with paragraph 109 of the NPPF.

Soil is a finite resource that fulfils many important functions and services (ecosystem services) for society, for example as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution. It is therefore important that the soil resources are protected and used sustainably.

The applicant should consider the following issues as part of the Environmental Statement:

- The degree to which soils are going to be disturbed/harmed as part of this development and whether 'best and most versatile' agricultural land is involved. This may require a detailed survey if one is not already available. For further information on the availability of existing agricultural land classification (ALC) information see www.magic.gov.uk. Natural England Technical Information Note 049 - [Agricultural Land Classification: protecting the best and most versatile agricultural land](#) also contains useful background information.
- If required, an agricultural land classification and soil survey of the land should be undertaken. This should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres.
- Proposals for handling different types of topsoil and subsoil and the storage of soils and their management whilst in store. Reference could usefully be made to [MAFF's Good Practice Guide for Handling Soils](#) which comprises separate sections, describing the typical choice of machinery and method of their use for handling soils at various phases. The techniques described by Sheets 1-4 are recommended for the successful reinstatement of higher quality soils.
- The method of assessing whether soils are in a suitably dry condition to be handled (i.e. dry and friable), and the avoidance of soil handling, trafficking and cultivation during the wetter winter period.
- A description of the proposed depths and soil types of the restored soil profiles; normally to an overall depth of 1.2 m over an evenly graded overburden layer.
- The effects on land drainage, agricultural access and water supplies, including other agricultural land in the vicinity.
- The impacts of the development on farm structure and viability, and on other established rural land use and interests, both during the site working period and following its reclamation.
- A detailed Restoration Plan illustrating the restored landform and the proposed afteruses, together with details of surface features, water bodies and the availability of outfalls to accommodate future drainage requirements.

The Environmental Statement should provide details of how any adverse impacts on soils can be minimised. Further guidance is contained in the [Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites](#).

6. Air Quality

Air quality in the UK has improved over recent decades but air pollution remains a significant issue; for example over 97% of sensitive habitat area in England is predicted to exceed the critical loads for ecosystem protection from atmospheric nitrogen deposition ([England Biodiversity Strategy](#), Defra 2011). A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on

biodiversity. The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The assessment should take account of the risks of air pollution and how these can be managed or reduced. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk). Further information on air pollution modelling and assessment can be found on the Environment Agency website.

7. Climate Change Adaptation

The [England Biodiversity Strategy](#) published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained. The NPPF requires that the planning system should contribute to the enhancement of the natural environment 'by establishing coherent ecological networks that are more resilient to current and future pressures' ([NPPF](#) Para 109), which should be demonstrated through the ES.

8. Contribution to local environmental initiatives and priorities

The applicant should consider how this development can contribute to local initiatives and priorities, such as any green infrastructure strategies and any environmental enhancement schemes proposed within Suffolk Coast & Heaths AONB.

9. Cumulative and in-combination effects

A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment, (subject to available information):

- a. existing completed projects;
- b. approved but uncompleted projects;
- c. ongoing activities;
- d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
- e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Annex B: Specific comments on Sizewell C EIA Scoping Report

General

In general, the Sizewell C EIA Scoping Report is well constructed and addresses the key environmental effects to be covered by the Environmental Impact Assessment (EIA). However, Natural England has some general comments to make.

A major omission from the scoping exercise is a consideration of the water supply and treatment of wastewater that will be needed for the construction phase, both for the physical construction of buildings and structures using concrete and also to supply the campus site for the workforce that would be required on site. Also, the EIA should consider the impacts of the removal of temporary constructions, including campus site, rail lines, bridge, construction compounds etc. and should identify the effects of the decommissioning of Sizewell B during the operational life of Sizewell C.

We would like to ensure that the EIA process and the HRA process are joined-up, such that the EIA captures those impacts that are not covered by the HRA. EDF needs to ensure that they have sufficient communication and other mechanisms in place to address this.

2. Consenting Regimes and Environmental Assessment

2.2.a Licensing

Please note that it is likely that licences from Natural England will be required to address any offences which the proposed development may otherwise have on European Protected Species, including bats and otter, and nationally protected species, such as badger.

7. EIA – Main Development Site

7.2 Terrestrial ecology and ornithology

Table 7.2.1 'Proposed study areas for potential ecological resources' states that a study area of 5km from the application boundary will be considered for bats, however, we suggest that surveys may need to extend beyond 5km depending on species, connectivity of bat habitat in the wider landscape etc. We would be happy to advise further on this matter. (Note that section 7.2.5 states that study area for bats may extend up to 20km away).

7.2.11 note that the proposed landtake of the SSSI is to the north-east and east of the SSSI, not the south-west corner as stated.

7.2.38 The list of key construction impacts should include:

- habitat loss due to requirement to re-align Sizewell Ditch (IDB drain) and associated ditches within Sizewell Marshes SSSI
- impacts on vegetation within Sizewell Marshes SSSI due to tracking vehicles across wetland habitats in order to insert sheet-piling, dig replacement ditches, construct bridges etc.
- impacts on nearby designated sites from displacement of recreational users from Sizewell Estate

7.2.39 The list of key operational impacts should include:

- the impact of impingement and entrainment of fish species within the cooling water intake which may be prey items for red-throated diver, little tern and Sandwich tern
- any impacts which arise from changes to human behaviour in terms of recreational use of nearby designated sites, i.e. habituation to patterns of use formed during construction phase.

7.3 Landscape and visual

7.3.2 We welcome the refresh and use of the analysis of special qualities and natural beauty study to inform the LVIA baseline.

Table 7.3.2 Landscape Value – this includes Heritage Coasts in a list of nationally and internationally designated landscapes, but Heritage Coasts are not a statutory designation. Most do coincide with National Parks or AONBs which helps to provide for their protection and National Planning Policy does seek to protect the undeveloped coast which HCs help to define.

7.3.9 We welcome the commitment to an LVIA which conforms to the Guidelines for Landscape and Visual Impact Assessment Third Edition.

7.3.10 We note that the study area for the construction phase may need to be extended beyond 15km agreed for the operational phase.

7.3.17 Note that Natural England would not normally agree the location of LVIA viewpoints.

7.3.44 – 48 Effects on landscape during construction and operation should also include effects on seascape.

7.3.49 We emphasise the importance of ongoing work to finalise a Landscape Strategy for the EDF Energy Estate, the need to work with NE and others to ensure that its potential to mitigate the effects of the development is fully realised, and for the LVIA to be based on a fully developed Strategy and the mitigation measures it will provide.

7.4 Amenity and recreation

7.4.9 Natural England has an over-arching statutory duty to promote access to the countryside and more specific statutory responsibilities in relation to Open Access Land, National Trails and access to the coast (for more information, please see <http://www.naturalengland.org.uk/ourwork/access/default.aspx>).

7.4.10 Natural England would like to see provision for a continuous signed and managed coastal footpath incorporated into masterplanning for Sizewell C with minimum disruption to existing coastal access during the construction phase.

7.4.35 the list of potential impacts and effects arising during construction should include:

- the impact of the potential displacement of recreational users of amenities within Sizewell Estate to other sites

7.4.36 the potential impacts during operation should include:

- any impacts which are likely to arise from long term changes to human behaviour in terms of recreational use i.e. habituation to patterns of use formed during construction phase.

7.4.39 We welcome the proposal to mitigate the impact on amenity and recreational resources within the Landscape Strategy.

7.9 Soils and agriculture

7.9.33 We welcome measures to reduce impacts on soil quality during construction, including the

production of a Soil Management Plan.

7.10 Geology and land quality

7.10.23 We welcome the assessment of impact on statutory and non-statutory geological and geomorphological features of designated sites.

7.11 Groundwater

7.11.3 Natural England would be happy to provide technical expertise into the development of a predictive model to provide a tool to assess the impacts of the groundwater environment and closely related surface water environment within Sizewell Marshes SSSI.

7.11.29 the list of potential activities that would potentially impact groundwater should include:

- supply of water for construction activities, such as concrete batching, and supply of water to the campus site. This is a key consideration and needs to be addressed accordingly in the ES. Any impacts of water supply for designated sites needs to be included, even if the source of water is remote from the application site.

7.11.45 we welcome the cumulative assessment of the impact on ecologically sensitive receptors and designated sites, e.g. Sizewell Marshes SSSI and Minsmere-Walberswick Heaths and Marshes SSSI.

7.12 Surface water

7.12.3 3 Natural England would be happy to provide technical expertise into the development of a predictive model to simulate the flows through the River Minsmere and Leiston Beck in order to assess the impact of the development on the surface water environment within Sizewell Marshes SSSI and Minsmere-Walberswick Heaths and Marshes SSSI.

7.12.28 We would appreciate more information about what the preferred option is for the watercourses under the bridges; are they to be joined or kept separate?

7.12.33 We welcome the production of an Incident Control Plan during construction to control and reduce pollution of surface waters and would advise that a monitoring strategy also needs to be provided in order to ensure that action can be taken if water quality and water flows are likely to cause an adverse effect on the designated wetlands.

7.12.38 We advise that a monitoring strategy is agreed at the operational phase in order to ensure that action can be taken to remedy any identified adverse effects.

7.13 Coastal geomorphology and hydrodynamics

7.13.24 The receptors and resources that are of potential concern need to include:

- an assessment of the system in the absence of Sizewell C
- designated sites with coastal geomorphological interest features, both north and south of the application site. Such features include vegetated shingle, saline lagoons etc.

7.13.36 The impact of the beach landing facility on coastal processes needs to be included in the assessment.

7.13.39 An assessment of the impact on coastal geomorphology and hydrodynamics due to the decommissioning of Sizewell B should be included in the assessment of inter-relationships.

7.15 Marine ecology

7.15.3 the study area for marine ecology should be extended beyond the potential zone of effect to ensure that any likely effects can be placed within the wider marine ecological context.

7.15.21 in assessing the potential impacts and effects of the proposed Main Development Site on marine ecology, the potential impact pathways need to be clearly defined; it may be helpful to consider categories of receptors, such as commercial fisheries, benthic ecology and pelagic ecology.

7.15.23 the list of construction activities potentially affecting marine ecology needs to include the impacts of dredging and disposal of dredged material.

7.15.29 The impact of the operation of the cooling water system needs to consider the impacts on all fish species including prey species of SPA birds.

7.15.25 Construction noise may also impact on SPA seabirds in the marine environment, such as red-throated diver, little tern and Sandwich tern.

7.15.37 The possible inter-relationships of effects in the marine environment need to be carefully considered, for example the effect of the development on the food web of marine organisms in relation to combined thermal and chemical effects, sediment re-suspension, noise and other disturbance effects, local effects on plankton, fish populations, mammals etc.

7.16 Navigation

Information from the movements of shipping traffic and other vessels in the area should be incorporated into the assessment of impact on red-throated diver which may be adversely affected by disturbance from increased boat movements in Outer Thames Estuary SPA, particularly during the construction phase when the jetty is in use.

8. EIA – Offsite Associated Development

8.2 Northern park and ride

No specific comments but please refer to our general principles for EIA in Annex A.

8.3 Southern park and ride

As above.

8.4 Rail line extension

Table 8.8 'Rail line extension options - potential impacts and effects' should include an assessment of the impacts on the notified features of statutory designated sites and the purpose of designation of protected landscapes. An assessment of the impacts of removing the rail line should also be included.

8.5 A12 improvement – Farnham Bend

No specific comments but please refer to our general principles for EIA in Annex A.

8.6 Visitor Centre

Table 8.14 ‘Visitor Centre options – potential impacts and effects’ should include an assessment of the impacts on the notified features of statutory designated sites and the purpose of designation of protected landscapes.

From: Stamp Elliot [mailto:Elliot.Stamp@networkrail.co.uk]

Sent: 21 May 2014 17:27

To: Environmental Services

Subject: Network Rail Consultation - Sizewell C Proposed Nuclear Development - FAO Laura Allen

Dear Laura,

Thank you very much for consulting with Network Rail in regards to proposed Sizewell C Proposed Nuclear Development – Scoping Report.

The safety of the operational railway and of those crossing it is of the highest importance to Network Rail. Level crossings are of a particular interest in relation to safety.

It is anticipated that the proposed development will have an impact on a number of level crossings which are located in the surrounding area. As a result the applicant should fully investigate the potential impact that the proposed development will have on the level crossings within the EIA and in further planning applications. This will enable Network Rail to fully assess the impact of the proposal on the crossings and help to determine what mitigation measures will need to be introduced at the crossings. Network Rail will contact the applicant directly to arrange a meeting to discuss this matter.

I understand that the applicant has been in contact and met with representatives of Network Rail's Route Freight team in relation to the proposed development and the associated railway related developments. The applicant should continue to liaise with the appropriate Network Rail teams as the proposal progresses.

If you have any questions please contact me

Thank you

Kind Regards



Elliot Stamp
Town Planning Technician
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Please send all Notifications and Consultations to TownPlanningSE@networkrail.co.uk or by post to Network Rail, Town Planning, 5th Floor, 1 Eversholt Street, London, NW1 2DN

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From: Faulkner, Stephen [mailto:stephen.faulkner@norfolk.gov.uk]
Sent: 14 May 2014 09:04
To: Environmental Services
Cc: Eastaugh, Sandra
Subject: Sizewell C - Scoping Consultation

FAO Laura Allen

The Planning Inspectorate

Thank you for consulting Norfolk County Council on the above Scoping Opinion.

As the proposed development is in Suffolk there is unlikely to be any significant environmental impact on Norfolk.

However, it is felt that the EIA will need to address the wider impacts of the proposed development on the electricity distribution network i.e. relating to the national (400kv) and regional (132kv) networks. In particular the EIA should consider the cross-boundary impacts of the proposed Sizewell C Nuclear Development in relation to the potential need for either (a) new over-head power lines; and/or (b) reinforcement of existing power lines.

Should you have any queries with the above comments please call or email me.

Regards

Stephen

Stephen Faulkner BA(Hons) MSc DipTP MRTPI

Principal Planner

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Environment Transport and Development

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L20 7HS

Our Reference: 2014/186956
Unique Number: SZC50146N

19 May 2014

Dear Ms Allen

Planning Act 2008 - Application by EdF Energy for Development Consent for the Sizewell C Nuclear Development: Request for a Scoping Opinion

Your letter of 24th April 2014, seeking views on EdF Energy's request for an environmental scoping opinion for Sizewell C, was passed on to me by colleagues in the Health & Safety Executive (HSE). I understand that you have been informed that from April 1st, the Office for Nuclear Regulation (ONR) ceased to be an Agency of HSE to become a separate independent statutory body, responsible for the regulation of the UK's nuclear industry. The relevant Planning Act related legislation has been amended via the Energy Act 2013, which created the statutory ONR, to ensure that we are now named as an interested party/statutory consultee for nuclear developments.

For proposed new nuclear power stations, I am the head of the Licensing sub-programme, and I would be grateful if PINS could amend its records to ensure that future correspondence relating to nuclear developments is addressed to me. Although ONR will be the health and safety regulator for the Sizewell C main development site, my colleagues in HSE will retain regulatory responsibilities in relation to off-site associated developments and they should therefore continue to be consulted as appropriate.

Turning to the Sizewell C Scoping Report, as is usual with such documents there is little in it that relates to matters which fall within our regulatory interest. We have reviewed the document and have not identified any significant inaccuracies in its description of the regulatory regime which ONR enforces, or our enforcement role in relation to the proposed development at Sizewell C. The document's proposals for the parts of the Environmental Statement that will deal with potential radiological accidents are not detailed, but we assume that the details will be developed to be similar to the equivalent ES for Hinkley Point C, which we found to be sufficient in scope, approach and accuracy. We look forward to having the opportunity to provide comments on the Sizewell C ES in due course.

Yours sincerely



Dr Craig Reiersen
ONR Superintending Inspector – Nuclear Safety
Head of New Reactor Licensing



Office for
Nuclear Regulation

cc:

Tim Randles

Stephen Kinghorn-Perry

Dave Adams (HSE HID)



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F.A.O Laura Allen

Your Ref : EN010012
Our Ref : En NU 140425 311

22nd May 2014

Dear Sirs

**Re: Scoping Consultation
Application by EDF Energy for an Order Granting Development Consent for the
Sizewell C Proposed Nuclear Development.**

Thank you for including Public Health England (PHE) in the scoping consultation phase of the above application. Our response focuses on health protection issues relating to chemicals and radiation. Advice offered by PHE is impartial and independent.

In order to ensure that health is fully and comprehensively considered the Environmental Statement (ES) should provide sufficient information to allow the potential impact of the development on public health to be fully assessed.

We understand that the promoter will wish to avoid unnecessary duplication and that many issues including air quality, emissions to water, waste, contaminated land etc. will be covered elsewhere in the ES. PHE however believes the summation of relevant issues into a specific section of the report provides a focus which ensures that public health is given adequate consideration. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted.

In terms of the level of detail to be included in an ES, we recognise that the differing nature of projects is such that their impacts will vary. Any assessments undertaken to inform the ES should be proportionate to the potential impacts of the proposal, therefore we accept that, in some circumstances particular assessments may not be relevant to an application, or that an assessment may be adequately completed using a qualitative rather than quantitative methodology. In cases where this

decision is made the promoters should fully explain and justify their rationale in the submitted documentation.

PHE is pleased to note that the scoping report addresses many of the areas highlighted in our previous response to Sizewell C Proposed Nuclear Development (provided to them in January 2013). We are particularly pleased to see that a section on human health will be included in the subsequent submissions. We note that the proposals for the assessment of the impacts on air quality, land and water all require additional monitoring and assessment and that the final reports will be provided later. We will provide further comments once the final reports are available.

PHE can confirm that we are happy with the general approach proposed for the EIA but wish to highlight the following areas for the proposer's consideration:

- 1) There is currently no reference made to electric or magnetic fields. We appreciate that the development is adjacent to existing power generation and distribution facilities and would expect the human health impacts associated with electromagnetic fields exposure to be fully considered in the final documentation.
- 2) When assessing the impacts on ground and surface waters the reports should fully consider any source / pathway/ receptor linkages that may have an impact on human health. This would include recreational use of the coastal and surface waters.
- 3) The final documentation should include a detailed Construction Environmental Management Plan and Decommissioning Environmental Management Plan outlining how the environmental and health impacts of the construction process will be adequately mitigated or managed during the construction process.
- 4) The report does not currently consider any community anxiety or stress that may arise from the development. These impacts should be addressed in the next stage of document submission.
- 5) Section 7.17.4 of the scoping report states that the radiological impacts of the decommissioning are bounded by the routine operational activities and therefore not detailed further. Further explanation in support of this statement could usefully be provided. Given that the Applicant is required to satisfy the Environment Agency that discharges and disposal made into the environment are minimised and their effects are acceptable, such that people and the environment will be properly protected throughout the whole lifecycle of the plant, including decommissioning, as part of the Generic Design Assessment it would be useful to provide information from this assessment.
- 6) Section 7.17.31 it states 'the National Radiological Protection Board (now known as Public Health England)'. This is a minor point but it would be more accurate to state 'Public Health England (formerly the Health Protection Agency and previous to that NRPB)'.

Should the proposer wish to discuss or clarify any of the issues raised above PHE will of course be pleased to assist.

Yours faithfully



Antony Bexon
Head of Environmental Assessments Department

nsipconsultations@phe.gov.uk

Please mark any correspondence for the attention of National Infrastructure Planning Administration.

From: Saxmundham Town Clerk [mailto:towncouncil@btinternet.com]
Sent: 16 May 2014 15:17
To: Environmental Services
Subject: EN010012 24 April 2014

For the attention of Laura Allen

Good afternoon Laura

Saxmundham Town Council are unable to respond to your Scoping consultation within the time scale permitted.

Kind regards

Maddie (Gallop)

Town Clerk

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Your Ref: EN010012
Our Ref:
Date: 22nd May 2014
Enquiries to: Michael Wilks / Philip Ridley
Tel: 01473 264064 / 01394 444432
Email: michael.wilks@suffolk.gov.uk /
philip.ridley@suffolkcoastal.gov.uk



Laura Allen
3/18 Eagle Wing
Temple Quay House
2 The Square
Bristol,
BS1 6PN

Dear Ms Allen

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) – Regulations 8 and 9

Application by EDF Energy for an Order Granting Development Consent for the Sizewell C Proposed Nuclear Development

Scoping consultation and notification of the applicant's contact details and duty to make available information to the applicant if requested

Further to your letter dated 24th April 2014, please find below a joint response of both Suffolk County Council and Suffolk Coastal District Council to this request.

EXECUTIVE SUMMARY

The approach set out to the Environmental Statement (ES) is generally satisfactory and we are pleased that it reflects the nature of, and progress in, discussions the local authorities have had with EDF Energy on the undertaking of assessments to date.

However, we draw particular attention to the following matters:

- Further discussions are required with EDF in describing the magnitude of impacts, in particular the spatial extent and duration of effect that are used to derive the corresponding magnitude. As currently described, the ES is likely to underreport localised impacts of significant duration. A better acknowledgement of the longevity of the temporary, but long-term construction period is required.
- We are concerned that alternatives are being scoped out of the process at an early stage, without a full appreciation of the effects of EDF's preferred option. Alternatives should be appraised having regard to the respective socio-economic and environmental effects alongside consideration of operational requirements. The ES should clearly articulate how alternatives have been evaluated in a balanced way.
- The ES should clearly articulate the cumulative effects of all individual elements of the project as many receptors will be impacted by separate developments. This needs to be fully acknowledged.
- The phasing of the construction programme needs to be provided and sensitivity testing in the timing of the delivery of mitigation proposals, such as the MOLF, accommodation, campus, park and rides and rail extension undertaken so that they are delivered at the

optimum time having regards to the impacts associated with their construction, and their ability to reduce impacts on local communities and the environment.

Some general, introductory comments are made immediately below, followed by some more detailed comments relating to the specific sections in the Scoping Report.

1. GENERAL COMMENTS

1.1. Structure of the Environmental Statement

1.1.1. It is proposed that Volume 2 of the ES focuses on 'Project-wide considerations', namely socio-economics and transport, whereas environmental matters are to be considered on a site-specific basis.

1.1.2. The ES should acknowledge the scale and the geographic extent of the development is such that it will have very wide ranging environmental effects over a large area, particularly when one considers:

- The environmental effects of the offsite associated development sites
- The environmental effects of transport movements, terrestrially and at sea
- The environmental effects associated with the deflection or displacement of recreational users to wider/alternative areas.

1.1.3. Consequently, we would not wish the environmental impacts to be presented in such a way that the full scale of effects is not readily appreciable. In addition to interactions with other projects or programmes Volume 9 (Cumulative assessment) therefore needs to consider the cumulative effect of all the individual elements of the project, particularly where they impact on the same receptor (for example the rail line extension, site entrance works and the campus will all separately impact on Leiston Abbey). It would also, in this vein, be useful for the ES to explain the interrelationship with the Habitats Regulation Assessment.

1.1.4. Conversely, we would not wish the *localised* transport and socio-economic impacts to be underplayed. For example, the campus will have localised impacts by virtue of its proximity to other communities which may be presented in such a way that other socio-economic impacts on the labour market or accommodation availability take dominance.

1.1.5. There is a particular case to consider whether the impacts of the campus development (currently wrapped in to the 'Main Development Site') need to be specifically isolated within the ES, because of the particular sensitivities, environmentally and socio-economically, associated with EDF's preferred site, and the existence of alternative site locations. While the campus offers mitigation in some respects (6.3.59), it will give rise to others of its own making. In particular, the ES should assess the impact on nearby residential properties and mitigation measures included as necessary.

1.2. Magnitude of impacts – Temporary and permanent

1.2.1. The ES should clearly distinguish between temporary impacts and permanent impacts and also be consistent with how the duration of impact relates to significance of effect.

1.2.2. Table 5.2 sets out the generic guidelines for the assessment of magnitude. We have some concerns with the definitions used here. With a construction project of such magnitude, duration and geographic spread, terms such as "permanent/irreversible" and "whole development area" need to be carefully defined. A literal interpretation of this table would suggest it is not possible for a temporary

(albeit of 10 year lifespan) associated development site to result in a high magnitude effect. The table also implies a degree of rigidity in structure and conflation of the terms 'scale', 'duration' and 'certainty'. For example, wider-scale effects of temporary duration within any one of the red line areas should still be able to derive a high magnitude effect.

1.2.3. Clarity on the interpretation of likely/unlikely would be helpful. It is noted the Ecology chapter is more quantitative in this respect (7.2.28), but it is debatable that something with a 49% probability of occurring could be described as 'unlikely'.

1.2.4. So, while Table 5.2 is described as generic guidelines it could better reflect the specific circumstances of the project. It is noted that in some chapters, some of these definitions are refined – for example in Ecology and Surface Water chapters 'temporary' is further subdivided (short term <2 yrs; medium term 3-5yrs; long-term >5 years), though the Landscape chapter uses a different scale for duration of effect (short term <2 years; medium term 2-10 years; long term >10 years).

1.2.5. Above all, the ES should be consistent on how these terms are used or explain very clearly why any inconsistencies do arise.

1.3. Value and sensitivity

1.3.1. The ES, for example Table 5.1 uses these terms synonymously, whereas this may not be the case. It is possible for sites to be designated for their landscape or ecological value, i.e. be of high value, but nevertheless have capacity to accommodate change (i.e. low sensitivity). The ES should recognise this – in particular because, as written, the ES will not focus on impacts on receptors of low value, for example local nature reserves – which may nonetheless be very sensitive.

1.4. Significance of effect

1.4.1. As a result of the issues outlined above, we are concerned that impacts may be defined as of less than moderate/major significance and therefore not significant, when that is not the case. This table should continue to reflect the precautionary principle so that the burden of proof remains on EDF demonstrating robustly that impacts will be not significant.

1.5. In-combination effects (“interrelationships”)

1.5.1. Consistency in terminology is particularly important to facilitate the measurement of in-combination effects. We are concerned that the ES could underreport these effects if it does not acknowledge the potential for accumulation of effects of minor significance. The ES should explain how the significance of an in-combination effect will be determined – for example, for a given receptor, is the significance of a moderate noise impact plus a moderate air quality impact moderate or major?

1.5.2. We would also expect the ES not to overlook opportunities to mitigate effects of minor significance so that they rather become 'negligible'.

1.6. Cumulative impacts

1.6.1. Paragraph 5.5.1 suggests that only cumulative effects with projects in the *vicinity* of the development site will be considered. The geographic scope will need to be considered on a case by case basis. In the case of socio-economics the approach in paragraph 6.2.42 is acknowledged, though this could overlook localised cumulative effects, for example decommissioning of Sizewell A.

1.6.2. The ES should recognise that as a consequence of the Sizewell C development, the impact of existing development may change. For example if Coronation Wood is used (3.3.6/3.4.1), this may affect the mitigation it offers for the existing Sizewell A and B developments. Consequently the assessment of the

cumulative impacts should reflect any changes in the future baseline that would heighten the impact of existing development. The onshore elements of the consented Galloper Offshore Windfarm are also relevant in this respect.

1.6.3. Paragraph 2.1.9 confirms that while Sizewell is connected to the National Grid's high voltage network, local modifications and wider network reinforcement is required – the local authorities understand this to be reconductoring of the Sizewell to Bramford line, and additionally a new line between Bramford and Twinstead – registered with PINS as the 'Bramford to Twinstead Overhead Line project'. The most up to date Need Case for that project, confirms that, based on the currently contracted connection dates, Sizewell C, alongside the East Anglia Array, is a significant contributor to that need – however it is the Sizewell C project that currently triggers the need for the Bramford to Twinstead project¹.

1.6.4. The Environmental Statement should address the wider environmental implications of development elsewhere necessitated in whole or in part by the Sizewell C project.

1.6.5. Furthermore, paragraph 6.3.58 states EDF will provide “support to Network Rail to deliver a new passing loop on the East Suffolk Line near Wickham Market station. This is not discussed further in the Scoping Report (for example as offsite associated development). The impacts of this should be presented in the ES. The location of this development is adjacent to a new housing development and consideration should therefore be given to minimising train waiting times during passing manoeuvres, or exploring other engineering options (such as lengthening the loop) to minimise impacts on those residents.

1.7. Future baseline

1.7.1. With regard to the future environmental baseline, it should be noted that all non-agricultural land within the Main Development Site is managed by Suffolk Wildlife Trust on behalf of EDF Energy (7.9.15). Consequently, the ES should not underestimate the environmental quality of the future baseline without development, and thus underestimate the impacts of the development.

1.7.2. Furthermore, the ES should recognise that the projected future baseline case includes consideration of how the Sizewell A and B sites will change under decommissioning over the construction life of SZC.

1.8. Construction Programme

1.8.1. The ES should provide a phasing programme for construction so it is clear which activities are occurring when, and when mitigation will be delivered – for example the park and ride sites, rail routes, jetty and accommodation campus. The timing of these will have a significant bearing on the impacts of the development and the local authorities suggest very careful thought will be needed to ensure that they are delivered at the optimum time in the construction programme.

1.8.2. We note (3.4.7) that the main construction could take seven to nine years following site preparation – which would include main site earthworks construction of a new access road, new bridges, and a jetty (3.4.2). The ES should ensure that the full duration of activity is reported accurately.

¹ http://nationalgrid.opendebate.co.uk/files/20131114_Need_Case_2013_FINAL.PDF Figure 4.1

1.8.3. Along with the phasing, the ES will need also need to detail the location of all major engineering tasks to be carried out (for example excavation work, dredging, dewatering, piling, stockpiling of soil/peat, road building, demolition of existing buildings, use of explosives, construction of new buildings, borrow pit workings *et cetera*). It should be clear where engineering works are contingent on offsite constraints, such as the receiving capacity of Wallasea Island to accommodate any peat winnings (3.4.5). A worst case in terms of the need for stockpiling should be assumed.

1.8.4. ES will need to detail the hours of working both onsite and at any offsite facilities and the timing of all anticipated transportation movements to and from the site or to any offsite facilities. It is noted that 24 hour working shift patterns are likely to be used and consideration will need to be given to mitigating noise from night time and weekend works.

1.9. Alternatives

1.9.1. We welcome the intention (paragraph 4.2.1) to review alternatives for land required during construction (taken to mean not just the laydown land, but also all the associated development) – this consideration should of course not just include layout, but overall scale and location. With particular regard to sea defences (4.3.2), consideration also needs to be given to the north and south of the site, if coastal erosion and flooding affect these areas as may be predicted. The ILWS is taken to be included on this list under Main Development Site.

1.9.2. With reference to the construction laydown land adjacent to the main site, particular regard should be had to alternative options which reduce the impact on the AONB, for example using existing employment land in the vicinity. Similarly, the alternative of siting the Visitor Centre outside the AONB will need to be considered.

1.9.3. The local authorities are concerned that in some cases EDF has not sufficiently justified its preferred option and is therefore prematurely curtailing more detailed assessment of alternatives. Of particular relevance are the proposals for freight management. Paragraph 4.4.6 indicates that EDF does not propose to consider Freight Management Site further, given it ‘anticipates’ HGV movements could ‘potentially’ be managed through electronic/camera based systems which ‘could’ reduce the need for further associated development sites.

1.9.4. Given the evident uncertainty and lack of discussions/agreement with the local authorities on this matter, we do suggest it is premature to scope out the potential need for such a facility. Consequently, we suggest the ES should report should report on alternative measures to manage freight and their comparative effects. Other alternatives should include rationalising the use of land across all three nuclear sites, sharing facilities, for example parking wherever possible.

1.9.5. In presenting how EDF has come to its preferred alternative it should be clear how it has weighted the various determining factors – for example environmental impact, transport impact, cost.

1.10. Health Impact Assessment

1.10.1. The production of an HIA is welcome, however it should aim to *maximise the potential positive* health and wellbeing impacts of the proposed development’, rather than solely *reduce or remove potential adverse* impacts on health and wellbeing (2.3.10). It will also need to identify *all* significant impacts on health (2.3.12).

1.10.2. The HIA should follow a similar format to that set out in Section 5.3. In terms of mitigating the adverse effects of development, the hierarchy set out in Section 5.4, namely: 1. Prevention; 2. Reduce or abate effects, is appropriate for HIA, though repair and compensation are less relevant. The plan to seek identification of

mitigation opportunities throughout the evolution of the proposed development is also applicable to health impacts. Prevention of course remains the priority for significant health impacts.

1.10.3. The sections in the ES on air quality and noise and vibration will be particularly relevant to the HIA.

1.10.4. Monitoring and evaluation of possible health impacts should be conducted to inform ongoing assessment of the health impact.

1.11. Life span of the development/decommissioning

1.11.1. The ES should be clear on the duration of effects for which it is assessing – does the ‘lifetime of the site’ (for example 2.1.9) include the decommissioning phase? How does this also relate to the ISFS and ILW, and their respective design lives (section 3.8)? The design life for the ILW and LLW stores should also be clarified.

1.11.2. The ES should, as far as is possible detail a programme for the decommissioning of the site. This should include;

- The types of works that will be undertaken,
- The removal of existing structures,
- The disposal of all remaining waste material,
- The suitability of the site for restoration or future use.

1.12. It is noted that a separate Flood Risk Assessment (FRA) will be produced for the decommissioning phase (2.3.4); any mitigation actions arising from this FRA may have implications for the design of the Sizewell C site – so thought needs to be given at this stage to the decommissioning FRA.

2. TOPIC SPECIFIC COMMENTS

2.1. Transport

2.1.1. The transport assessment (TA) will need to be prepared in line with the DfT’s Guidance on Transport Assessments (2007). The TA, like the rest of the ES (as discussed above) should also pull together the cumulative impacts of the individual elements of the development, both the construction of the main development site, the associated development sites and any mitigation schemes.

2.1.2. The TA will also need to recognise that the benefits of highway mitigation will not apply to all stages of the development (due to the timing of their delivery) and consequently there will be phases of the development where impacts on the highway network will need to be reported in the absence of such mitigation being in place. For example, the construction of the rail line extension and MOLF will ostensibly require all HGV movements arriving by road, as opposed to later phases of the development where materials will be delivered by a combination of road, rail and sea.

Approach & Methodology

2.1.3. The scenarios assessed within the TA should include construction, operation, decommissioning and the impact of outages, of both Sizewell C and B reactors. Tourism is an important part of the Suffolk economy and the impact of construction vehicle movements on the summertime traffic movements should be assessed. A method of assessing seasonal impacts needs to be agreed. The impact on significant local events, for example the Latitude Festival also need to be considered and measures put in place to accommodate the impact that these events have on the network.

2.1.4. The report refers to the use of Visum modelling to determine impacts on the highway network, SCC considers that the use of modelling is only one way of assessing impacts and other methods should be considered. Modelling should not be relied upon as the only method of assessment.

2.1.5. The report suggests that the impacts of construction traffic are 'temporary'; the ES needs to fully acknowledge the likely duration of the construction period and report the effects accordingly.

2.1.6. The report should state the years of assessment.

2.1.7. The baseline information makes no reference to the collection of data for non-motorised users (NMU's), i.e. pedestrians, cyclists and equestrians using the highway network, this should include the Public Rights of Way network.

2.1.8. The report refers to using shift patterns to assess the timings of commuter travel. However, no information was provided on how HGV/OGV movements would be managed to inform an assessment of impact.

Types of Impact

2.1.9. The report sets out the types of impact that will be examined with respect to the traffic generated. These include severance, pedestrian amenity, driver delay and accidents and safety.

2.1.10. The assessment should consider the effect the increase in traffic will have on cyclists and equestrian road users and consider the anxiety and intimidation the increase in traffic will impose. It should be noted that equestrians are sensitive to smaller increases in traffic and this group may cease to use parts of the network affected by significant increases in traffic and make established horse-riding routes untenable.

2.1.11. The types of impact should include the effects that vehicles and in particular HGV's will have on pedestrians and residents (see below).

2.1.12. The report makes no reference to the transportation of hazardous materials. The ES should clarify whether hazardous materials will be transported on the highway network to and from the site either/and during construction and operation. If hazardous material will/may be used then details need to be provided on how the impact will be assessed and mitigated.

Sensitivity of receptors

2.1.13. A classification of possible receptors and their likely sensitivity is set out in Table 6.3.1. It is unclear where these categories are derived from. This table does not refer to equestrians and cyclists, focussing on pedestrians as the only NMU's. Cyclists need to be considered either as local road users or recreational tourist based users. The latter group are likely to include family groups that would be considered more vulnerable road users with respect to increased traffic flows. It is not unreasonable to assume a higher level of recreational activity in the area considering its location to the coast and the AONB.

2.1.14. It should also be noted that the National Cycle Network regional routes 31, 41 and 42 intersect the B1119 to the west and the B1122 to the north of Leiston - in addition to intersecting the A12 at a number of locations within the study area. Impacts on users of these routes need to be assessed. More generally, rights of way crossing points should be identified a sensitive receptor and the effects of severance thereon assessed.

2.1.15. There is a further category of receptors to be considered. These are residents of dwellings likely to be affected by anxiety and intimidation from traffic passing close to their homes. This will be an issue in areas additional to the

Farnham bend. The ES should identify residential dwellings that are located close to the edge of the carriageway and categorise these as a separate category of receptor. Estimates should be made of the population of communities affected by severance due to traffic, taking into consideration the location of community facilities, including schools, relative to the road causing severance.

Magnitude of impact

2.1.16. The magnitudes of impact are set out under “Types of Impact” within the report, where the impacts are allocated to one of four categories: Negligible, Minor, Moderate and Substantial. These categories relate to those suggested in the IEMA guidelines and the DMRB, where the impact referred to here as “Minor” is termed “Slight”.

2.1.17. There is some concern over the large proportion of effects that will rely on the application of “Professional Judgement” within Table 6.3.2 of the report. To inform this judgement and assist in reaching agreement, it is proposed that the assessment is informed and supported by quantifiable (evidence-based) analysis as detailed below.

Severance

2.1.18. In addition to the IEMA Guidelines, a more detailed scale of impacts is set out in DMRB 11.3.8.7 Table 1, distinguishing between Built-Up and Rural areas and providing more detail as to their application. It is recommended that reference is made to this table.

2.1.19. Furthermore, areas where a 10% increase in flows is considered significant should be identified and agreed.

2.1.20. It is noted that the categories adopted relate to changes in traffic flows along existing roads and are not related to any absolute measure of existing levels of severance. DMRB 11.3.8.6 defines three categories of severance; Slight, Moderate and Severe. Although technically these relate to new severance, i.e. new highway schemes, they provide one possible way of quantifying severance in absolute rather than relative terms. To quantify existing levels of severance, it is suggested that reference is made to these categories.

Pedestrian delay

2.1.21. The use of a threshold of 1,400 vehicles per hour is supported by IEMA guidelines, though unilaterally applying these guidelines should be avoided – regard should be had to the health impacts on reducing pedestrian amenity or increasing delays in travel. We expect the figure of 1,400 vehicles per hour to relate to an exceedance in any hour, not to represent an average.

2.1.22. To assist in some quantification of impacts above this threshold, DMRB 11.3.8.7 figure 1 should be referred to where mean pedestrian delays associated with different road crossing situations are presented in graphical form.

Pedestrian amenity

2.1.23. It is proposed that this will be assessed using professional judgment on links where there is an increase of more than 100% in either total or HGV flows. The use of a threshold of 100% does not appear consistent with the other thresholds. Using this criterion for assessing impact and risks will result in almost all of the impacts being dismissed as “Negligible”.

2.1.24. It is proposed that the percentage criteria adopted for “Severance” should be used to inform the assessment of pedestrian amenity. This would mean adopting a threshold of 30% above which impacts would be assessed as Minor/Slight, Moderate

or Substantial. The 10% threshold should also be used for specifically sensitive areas.

2.1.25. The existing levels of pedestrian amenity on the network should be assessed using DMRB 11.3.8.4

Driver delay and accidents & safety

2.1.26. - The driver stress section of the DMRB 11.3.9 should be consulted as the use of the DMRB Driver Stress methodology would allow a more detailed assessment with respect to driver delay and road safety. DMRB 11.3.9.4 should inform the process of professional judgement.

Specifically sensitive areas

2.1.27. This should include areas where there is an increase of 10% or more in HGV flows, not just total flows.

Injury and death

2.1.28. In addition to the above, the TA should include an assessment of the impact of different transport options on the incidence of transport related injury and death. This should inform the Health Impact Assessment.

Construction

2.1.29. As mentioned, the impact of Sizewell outages and other local events, for example the Latitude festival, need to be assessed/accommodated within the assessment of impacts.

Assumptions and limitations

2.1.30. The ES will need to detail the assumptions it has made on the approximate quantities of all incoming materials to be stored on site or at offsite facilities, including how this material will be transported to the site and, proportionately, by which mode.

2.1.31. The assessment of impact of construction related traffic should also consider contingency measures, for example the implication of extended bad weather preventing the use of the MOLF.

2.1.32. Sensitivity testing should also be undertaken to reflect an uncertainty of delivery of materials by rail and sea. This should include alternative plans for the delivery of Abnormal Indivisible Loads (AILs).

Potential impacts and effects

Construction

2.1.33. Clear distinctions needs to be made on the longevity and reversibility of impacts.

2.1.34. The TA will need to include an assessment of recreational trips made by residents of the campus accommodation.

2.1.35. The report refers to impacts on the A12 down to Ipswich; this should refer to the A12 down to its junction with the A14 (Copdock Interchange, Junction 55). The Highways Agency may have concerns around the management of HGV traffic on the A14, in particular at the Seven Hills (Junction 58) and Copdock junctions and over the Orwell Bridge. In the case of the closure of the Orwell Bridge, methods to manage additional HGV traffic on the diversion route through Ipswich will need to be considered.

2.1.36. In response to the Stage 1 consultation, concerns were raised about the impact of construction and commuter traffic on the B1122. This needs to be assessed.

2.1.37. Furthermore, information is required on how HGV deliveries and departures to/from the main site will be managed, together with the volumes and timing of movements associated with the accommodation campus and on-site car park. These issues should be considered within the TA.

Operation

2.1.38. This section of the report refers to the impact of the outage work for each reactor. Clarification is needed on whether this should also refer to Sizewell B and how the outages will be coordinated (if it is possible to do so). The ES will also need to describe how the outage staff will be accommodated and transported to/from the site –for example the level of additional parking.

2.1.39. Consideration should be given to assessing the traffic related to the outage works as a permanent increase on the road network during the operation phased due to their frequency and duration of its occurrence.

2.1.40. The decommissioning phase should also be assessed, as far as is possible, as it will result in an impact over an extended period of time. It may also overlap with the elements of the decommissioning programme of Sizewell B - more information is required.

Potential mitigation

2.1.41. The detail of mitigation provided in the report is considered an early estimate and is not considered exhaustive. An assessment using the criteria set out in Section 6.3, with the additional assessment requirements detailed in this response is likely to identify the need for additional mitigation measures, which will require environmental assessment. In particular reference should be made to the active transport options for the workforce, for example cycle routes to/from park and ride sites. We have also at Stage 1 indicated broad parameters for a Travel Plan, which will need to be provided within the ES.

2.1.42. An effective method of managing the timing of HGV and OGV movements will be required to manage the impact on the network during peak times and any maximum flow quota for key routes. We are yet to be presented with evidence of the efficiency of managing HGV traffic using electronic/camera based systems.

2.1.43. The park and rides will result in a reduction of commuter traffic originating from the north, south or west of the A12 on the local road network and to local villages east of the A12. However, the proposed provision of a 1,000 space car park to accommodate commuters from destinations east of the A12 will result in an increase in traffic on the local network and villages/towns east of the A12 and this will need to be assessed thoroughly and mitigation provided as necessary.

2.1.44. The report does not refer to mitigation of impacts on the B1122 from its junction with the A12 to the site entrance and then to Leiston. This was a concern raised at the Stage 1 consultation. This route should also be assessed against the sensitivity criteria discussed above to ensure the full range of possible effects are examined, as the B1122 has been identified as the primary delivery route.

2.1.45. The current mitigation measures reflect the outcome of assumptions relating to the gravity model, transport model and construction programme and delivery assumptions. There are likely to be cumulative inaccuracies within this process and sensitivity testing should be undertaken to ensure that variability in these assumptions is fully considered.

2.2. Socio-economics

Gravity model

2.2.1. As acknowledged in 6.2.31, the socio-economic environment is of a dynamic nature, underlining the need for sensitivity testing of the gravity model to different economic circumstances. This should then provide a better understanding of the likely need for/nature of appropriate triggers for contingency measures as part of the mitigation proposals.

2.2.2. The sensitivity testing should be informed by appropriate data refreshing to ensure the most up to date information will inform the application at the point of submission.

2.2.3. The ES should also explain all the assumptions used in the Gravity Model – for example around the rates of pay, length of contracts and terms and conditions that will prevail and thus contribute to the attractiveness to prospective employees. Such factors will have a significant bearing on the potential for displacement of the labour force.

Supply chain

2.2.4. The ES should set out how EDF Energy proposes to engage with the supply chain locally and increase its capacity to respond to the demands of the project. This will increase the proportion of labour sourced locally with significant socio-economic benefits. Leakage of benefits outside the area is a major concern of the local authorities.

2.2.5. The development of the Economic Strategy is welcomed, though consideration should be given to the opportunity to engage with other relevant stakeholders.

Skills/employment

2.2.6. The ES should recognise the barriers to employment faced by unemployed/under-employed people in the region. Early identification of these needs can lead to a more effective package of mitigation developed with relevant stakeholders.

2.2.7. The report uses the level of JSA claimants as a measure of unemployment but it would also be useful to recognise that the pool of people who are economically inactive, but wanting to work, is often significantly greater than the numbers who are registered as unemployment benefit claimants.

2.2.8. With reference to paragraph 6.2.35 and Table 6.2.4, whilst there will be a positive impact from direct and indirect job creation, there is a risk that this will create displacement elsewhere in the economy as the construction competes for the same local workforce and skills alongside other sectors, for example construction, manufacturing, engineering. This could make it more difficult for local companies to recruit and retain their workforce and this should be considered in the ES in the terms EN-1 requires.

2.2.9. With respect to mitigation, measures should be put in place for the operational and construction phases. For example, the skills and training strategy should aim to maximise the opportunities for local residents at all stages – in particular enabling local people to secure the long-term operational employment opportunities.

Other effects

2.2.10. Consideration should be given to a public attitudes survey aimed at understanding in particular the less tangible social effects such as local anxiety associated with a major development prior, during and following construction. EN-1 (5.12.3) identifies the potential for impacts on social cohesion. Such concerns warrant analysis and mitigation as necessary.

Accommodation provision

2.2.11. The ES needs to consider the impacts of temporary as well as permanent staff on accommodation provision in the local area during the *operational* phase of development (6.2.38). Paragraph 3.5.1 indicates approximately 1,000 additional staff would be employed during outage work, which, for each reactor, occurs for up to three months every 18 months.

2.2.12. Consideration should be given to the likely cumulative impacts where there are coincident outages on reactors, either both the Sizewell C reactors or Sizewell B, or indeed all three. While it is understood that this would not be planned – unplanned outages do occur and are indeed part of EDF's justification for being unable to rationalise some infrastructure (for example parking) across the A, B and C sites.

Tourism

2.2.13. The ES should recognise the potential for wider impacts on the tourism sector than just the take up of tourist accommodation. The spending patterns of, and use of local facilities by, incoming workers will be different to that of tourists, so that should be assessed. There will also be wider perceptions over the attractiveness of the area during the construction, and potentially operational, period which may have an impact on tourism. Equally, however, it is acknowledged that major construction programmes can be an attraction in themselves.

2.2.14. The discussion on study areas in (6.2.5) should recognise the existence of the Suffolk Coast Destination Management Organisation (DMO) area² as a relevant unit for the purposes of assessment. The Suffolk Coast Tourism Strategy³ describes this area.

2.3. Terrestrial ecology & ornithology

2.3.1. The issue of definition of permanent and temporary impacts has been discussed earlier, though with particular reference to this chapter, while paragraph 7.2.29 subdivides temporary impacts in to further phases, it is not clear how that is then reflected in an assessment of the magnitude of impact (Table 7.2.6).

2.3.2. It is important that the study area reflects the actual extent of the impacts – and that includes those impacts associated with the displacement of recreational activity which may intensify activity on other SSSIs and County Wildlife Sites (Table 7.2.1). For the same reasons the Deben Estuary SPA should be included in Table 7.2.2.

2.3.3. Additionally, we have concerns that the proposed 5km study area for bats (Table 7.2.1) may be insufficient to fully understand the significance of development area for bats – this will need to be justified through further survey.

2.3.4. As indicated earlier, we have some concerns that the ES could underplay impacts on features/resources classified as being of local value (7.2.25). As National Policy Statement EN-1 states, the ES must set out clearly any effects on locally designated sites of ecological importance, and on habitats and species identified as being of importance to the conservation of biodiversity. We would expect therefore to see a thorough assessment of the impacts of the development on local Biodiversity Action Plan (BAP) priority habitats and species. Table 7.2.5 omits reference to the latter.

2.3.5. Consequently, while we welcome the commitment to making full use of the mitigation hierarchy (5.4), in order to do this a comprehensive and robust assessment

² www.thesuffolkcoast.co.uk – with area described

³ Page 10 <http://www.suffolkcoastandheaths.org/assets/Projects--Partnerships/BALANCE/TourismStrategy.pdf>

of the impacts, including on BAP species will be required. With reference to the proposed loss of the SSSI, we suggest that the Defra biodiversity offsetting pilot metrics are applied⁴.

2.3.6. In terms of impacts during construction and operation, those listed (7.2.38/39) do not explicitly identify ecological impacts associated with transport movements. The ecological consequences of the displacement of maritime activity, for example recreational sailing, should also be considered.

2.3.7. It is important that the proposed mitigation strategies across the environmental disciplines are closely aligned to ensure the mitigation proposals are complementary, for example for landscape, ecology and recreation. There will be a particular need for them to make provision for ongoing monitoring with associated trigger points for a review of the mitigation as necessary.

Errors/omissions

2.3.8. Southern Minsmere Levels CWS is incorrectly labelled on Figure 7.2.4 (Number "1" is positioned on Goose Hill which is part of Sizewell Levels and Associated Areas – listed as CWS Reference "2" in key).

2.3.9. In Table 7.2.3 Southern Minsmere Levels CWS text is incorrect as this is mainly grazing marsh - this could be due to mislabelling of this site on Figure 7.2.4.

2.3.10. The Annex II status of Barbestelle (*Barbastella barbastellus*) should be noted in Table 7.2.4. Also missing is reference to BAP habitats and species - except for breeding birds.

2.3.11. Paragraph 7.2.11 and Fig 7.2.5 should refer to the north east corner of Sizewell Marshes.

2.3.12. Shingle habitat is missing from identified habitats in Figure 7.2.1.

2.4. Landscape & visual

2.4.1. The proposed scope of the LVIA and the methodology is broadly acceptable, though we again emphasise the need to address terminology with respect to the duration of impact as discussed above. In particular, we welcome the three pieces of work that are ongoing - that is a) a review of the landscape seascape baseline; b) ZTV and LVIA/SVIA viewpoints and c) the development of the Landscape Strategy. We also note that discussions on the 'special qualities' of the AONB⁵ remain ongoing (7.3.2).

2.4.2. It is however important to clarify that at this stage, viewpoints have been agreed for the operational platform only (7.3.3) and not for the whole of the "main development site" as defined on Figure 3.2.1. Further viewpoints will need to be agreed for example for the rail routes taking account of the proposal to store materials adjacent to the line (3.3.3).

2.4.3. We note the recognition of the risks to the purpose of the designation of the AONB identified in EN-6, Volume 2. This statement (7.3.8) and section 7.3.49 should consequently acknowledge that the need for offsetting residual impacts is highly likely, a precedent for which exists with the Sizewell B Dry Fuel Store⁶.

2.4.4. We note and welcome that landscape should be taken also as seascape as set out in EN-1 (7.3.6) and that it is recognised that there will be offshore visual receptors (7.3.17 should therefore refer to LVIA and SVIA). An LVIA and SVIA

⁴ <https://www.gov.uk/biodiversity-offsetting>

⁵ The glossary reference to AONBs should refer the reader to <http://www.landscapesforlife.org.uk/>

⁶ <http://www.suffolkcoastandheaths.org/assets/Grants--Funding/AAF/AAF-leaflet.pdf>

assessment to reflect the seasonal changes, and a night time assessment in both cases, will also be needed (lighting from the Operational Service Centre is a particular concern). The ES should therefore provide an indication of the locations, height, design, sensors and luminance of all construction site floodlighting (including the jetty) and all permanent site lighting, together with details of any mitigation measures used to;

- Limit obtrusive glare to nearby residential properties including the extent of light reduction achieved,
- Minimise sky-glow.

2.4.5. Regional seascape units were used for the assessment of the Galloper wind farm, and suggest that these may also inform discussion of the seascape character of the study area.

2.4.6. The ES will need to consider seascape and visual impacts associated with shipping and rail *activity* (i.e. not just the existence of the jetty and the rail line, but the associated transport movements), respectively, during construction. The impacts of the stacks associated with the fuel store and reactor domes along with those related to the permanent beach landing facility need to be reported.

2.4.7. With reference to cumulative effects (7.3.51) Galloper Wind Farm substation *will* need to be included in this assessment. The existing Gabbard onshore infrastructure forms part of the baseline.

2.5. Amenity & recreation

2.5.1. The ES should present a fuller understanding of the likely impacts on recreational activity as a consequence of the development than the Scoping Report suggests. In particular, there needs to be a better appreciation of impacts of the incoming construction workers associated with the campus and, furthermore, the indirect effects arising from changing habits of existing recreational users in response to the development.

2.5.2. While it is understood that high quality leisure facilities would be provided within the campus accommodation, with up to 3,000 bed spaces, some workers will undoubtedly make use of the high quality environment during their residency at the campus.

2.5.3. While the Scoping Report touches on deflection (7.4.22), the study area of 2km (7.4.12) does not have a clear logic and will not be sufficient to address this – it does not even include the entirety of the blue rail route – omission of Aldeburgh/Thorpeness is also particularly noticeable.

2.5.4. The ES will need to present a thorough understanding of how people are using the area at the moment and how those habits are likely to change during the construction and operational phases of development.

2.5.5. In particular, it needs to examine where people may be deflected to and the sensitivity of those sites to increased recreational pressure – for example increased dog walking on SSSIs. It will also need to look at how workers, both in the construction and operational phases may access the site using the rights of way network and how this access may be affected and enhanced to offset this. For example, Bridleway 19 is currently used by commuting workers as well as for recreation. Its temporary closure could deflect cyclists on to busier roads (or indeed participation in cycling/walking may decrease) so this will need to be assessed and mitigated for to ensure a similar standard of recreational opportunities remain available during and post-construction. The findings of this work should also inform the HIA.

2.5.6. These are key construction impacts that are not adequately captured (7.4.35). It should also be recognised any changes to patterns of recreational use could have wider economic consequences, given that high quality recreational opportunities are a significant driver of the local tourist economy (with trails promoted nationally). So, with displacement of recreation is potentially displacement of income. The surveys planned (7.4.16), in addition to capturing quantitative and qualitative data on the use of public rights of way, should attempt to capture information on local spending. Additionally, there may be actual physical damage to rights of way including that caused direct by the construction work itself and by possible increased level of use by construction workers.

2.5.7. The ES should assess impacts on open access land – this is omitted from further baseline research (7.4.18) and as a possible impact of the development (7.4.35). Paragraph 7.4.13 should also refer to *restricted* byways in its description of a right of way, and carriage driving should be included within list of extra rights. Figure 7.4.1 also has a number of errors that need to be addressed - Roads Used As Public Paths should be shown as Restricted Byways, for example.

2.5.8. In terms of mitigation (7.4.40), it is especially important that long distance routes are kept open during the construction phase. We would also suggest that, in line with the EN-1, the ES should set out opportunities to enhance green infrastructure in the locality by, for example, creating new public access, be it a right of way or open access land, having regard to other constraints, such as ecology.

2.5.9. Re-establishment of rights of way should be to a level commensurate with expected increased use – for example by staff accessing the site during operation.

2.6. Terrestrial historic environment

2.6.1. The impact on Leiston Conservation will need to be assessed – Sizewell B is clearly visible from within and adjacent to it (7.5.20).

2.6.2. It should be noted that English Heritage has now listed at Grade II several WWI, WWII and Cold War military structures at Orford Ness (7.5.22).

2.6.3. An assessment in association with Conservation Officers is welcome, though should include non-designated heritage assets in addition to designated ones (7.5.26).

2.6.4. Table 7.5.1 relies heavily on criteria drawn from the DMRB and its appropriateness beyond road schemes is questionable – reference should be made to English Heritage's Conservation Principles and the new British Standard. In respect of paragraph 7.5.29, reference to '*Standards for Field Archaeology in the East of England*' (Gurney 2003, East Anglian Archaeology Occasional Paper 14)⁷ and the Suffolk County Council Archaeology Service Conservation Team documents '*Requirements for Trenched Archaeological Evaluation 2012 Ver 1.3*' and '*Requirements for Archaeological Excavation 2012 Ver 1.1*'⁸ should also be made

2.6.5. While Table 7.5.1 refers to historic buildings (which clearly could include non-designated as well as designated heritage assets) and historic landscapes, Table 7.5.2 refers exclusively to impacts on designated heritage assets. As mentioned above, non-designated heritage assets should not be excluded from an assessment of the magnitude of change and should therefore be reflected in paragraphs 7.5.45/47/52/53.

2.6.6. The proposed terminology used in assessing significance (7.5.39) could usefully reflect that used in the Section 12 of the NPPF, i.e. 'substantial' and 'less

⁷ <http://www.eaareports.org.uk/Regional%20Standards.pdf>

⁸ <http://www.suffolk.gov.uk/libraries-and-culture/culture-and-heritage/archaeology/>

than substantial'. These are the tests that are applied on a daily basis to heritage assets and are terms in widespread use. 'Less than substantial' could be graded into differing kinds of effects that are not substantial. It is noted that there is some mapping of terms in the Ecology section (Table 7.2.8) to maintain consistency with industry-standard terminology and this could equally be applied here.

2.6.7. In addition to the assessment of inter-relationships and cumulative effects, which is welcome, it may be that individual heritage assessments are required to be undertaken of those designated heritage assets of the greatest importance (and, therefore, sensitivity) within the Historic Environment Study Area - such as Scheduled Monuments and Grade I and Grade II* listed buildings, in order that impacts arising from the proposal can be most fully understood.

2.7. Marine historic environment

2.7.1. No comment

2.8. Noise and vibration

Traffic – related impacts

2.8.1. It is important that the Noise & vibration and Air Quality Assessments are based on the information contained within the Transport Assessment (TA). Data in the TA should therefore be presented in the format that it will be used in the noise and air quality assessments for example 18 hour, 8 hour, hourly, 24 hourly flows, together with proportions of heavy goods vehicles and average speeds to allow transparency and cross checking.

2.8.2. The noise level monitoring locations look to be comprehensive, though consideration should be given to the need for additional points on routes likely to be used by construction workers, such as the A1120. Any short term monitoring of road traffic noise should be carried out strictly in accordance with the "Shortened measurement procedure" as set down in the Calculation of Road Traffic Noise methodology, and be carried out over a full three hour period within the stated hours and not over shorter snapshot periods.

2.8.3. It is acknowledged that road traffic noise monitoring is useful for any noise model calibration and verification work, but that noise level changes during the construction period and once the site becomes operational would be established by calculation and direct comparison of the relevant scenarios.

2.8.4. The number of noise sensitive properties affected in each scenario should be included, so that the overall impact and scale of effects can be assessed. Rather than following the Design Manual for Roads and Bridges to the letter, which may result in the worst affected façade subject to change being counted which is not always the façade facing and closest to the route, the ES should provide a simple assessment of noise level changes for the façade that is closest to the route to allow residents the opportunity of gauging the potential direct effect.

2.8.5. Inclusion of a preliminary programme of construction activities and plant use, to identify impacts and variability throughout the construction period, would clarify impacts. Also, whether night-time traffic movements would be necessary, either for workers or construction vehicles, and any shift working and changeover times, if significant.

2.8.6. It is noted that the currently proposed length of the construction period is estimated to be seven to nine years (plus time for site preparation). The definition of "long term" and criteria for the assessment of magnitude should follow recommendations in the most up to date versions of BS5228 with respect to noise and also vibration, and any other relevant documents. As mentioned earlier, the ES

should generally maintain consistency in the definition of terms (temporary, long, medium short et cetera) unless there is a clear reason to depart from this.

2.8.7. It is noted that the NPPF and specifically the associated Guidance relating to Noise is not referred to and the validity of Table 7.7.3 is queried. Also, whether separate assessment of magnitude criteria should be applied to road traffic noise increases on the construction traffic routes, in accordance with the guidance for short term impacts contained in DMRB. The content of Table 7.7.5 is agreed.

2.8.8. The NPPF Guidance⁹ refers to the Noise Policy Statement for England (NPSE), which includes the types of noise which are within its scope, which include:

- “environmental noise” which includes noise from transportation sources;
- “neighbourhood noise” which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.”

2.8.9. Consideration should be given to the appropriateness of referring to this Guidance (given its status in the NSIP regime) and the description of “Effect Levels” within the assessment. As mentioned above, it is noted that there is some mapping of terms in the Ecology section (Table 7.2.8) to maintain consistency with industry-standard terminology and this could equally be applied here.

2.8.10. The assessment of vibration from road traffic is welcomed. In accordance with guidance, cumulative effects are to be addressed, which is also welcomed.

2.8.11. Generally, the proposed methodologies are acceptable, however, since drafting of the Scoping Report, BS5228 has been updated to BS5228-1:2009+A1:2014 and as mentioned previously, the most up to date guidance available at time of assessment should be used. Furthermore, we note that where professional judgement is relied upon (7.7.9), this should be in the form of evidence-based judgements, rather than reasoning alone.

2.8.12. With respect to road traffic noise impacts, an indication of whether any dwellings adjacent to new or altered lengths of carriageway and also the construction traffic routes would qualify for noise insulation under the Noise Insulation Regulations 1975(as amended), with appropriate explanations, should be included. Any other mitigation measures or mitigation schemes identified for further consideration should be outlined.

2.8.13. With respect to the effects of noise and vibration on people and wildlife, the evidence of different noise levels on human physical and mental health, both of acute and chronic noise exposure has a robust evidence base. This potentially includes comparative studies with non-human species exposed to different noise levels. For example there is a large evidence base on the physiological and behavioural effects of different noise exposure levels on rodents (7.7.15).

Construction-related impacts

2.8.14. The 33 measurement locations and measurement protocol described in the Scoping Report has been agreed with the Environmental Protection Team at Suffolk Coastal District Council. The ES should present the noise monitoring data together with an assessment of magnitude of impact and sensitivity of receptor.

⁹ <http://planningguidance.planningportal.gov.uk/blog/guidance/noise/noise-guidance/>

2.8.15. Where noise or vibration from site construction working is anticipated to have adverse effects on occupiers of nearby residential properties, based on the prevailing background noise levels, utilising BS:5228:09 and BS:4142:90; the ES should detail all such construction and demolition works (for example diggers, excavators, piling, riveters, mixers, explosives, pneumatic breakers, drills, dewatering pumps, boring equipment, compressors, generators etc.) and indicate the mitigation measures to be taken either;

- At source,
- By way of barrier or shielding,
- Any other form of mitigation.

2.8.16. The ES should also detail the degree of noise reduction likely to be achieved by the mitigation measures by way of comparison with the existing background and ambient noise levels, measured as part of the scoping process. Methods of noise or vibration attenuation should be specified for each specific construction activity so as to achieve 'Best Environmental Practice' within the ES. Any other acoustic or vibration data in respect of confined tones or low frequency noise propagation should also be made available within the ES.

2.8.17. All site transportation movements or essential construction works (e.g. dewatering, dredging, marine landing operations etc.) which may be adversely affect nearby noise sensitive properties during the evening or at night should be particularly highlighted as these may cause sleep loss. Mitigation will be particularly important in these circumstances.

2.8.18. It is noted and agreed that BS:8233 will be used as design criteria for the new campus accommodation.

Noise & vibration – operational impacts

2.8.19. Projected levels for general site noise from the newly constructed Sizewell C power station should be calculated and represented as a $L_{Aeq(1hour)}$ value during daytime hours and $L_{Aeq(5\text{ minute})}$ value during night time hours at all nearby noise sensitive properties. If noise from the site is anticipated to adversely affect occupiers of any nearby residential properties based on the prevailing background noise levels, then proposed methods of noise attenuation should be specified to achieve 'Best Environmental Practice'.

2.8.20. Projected noise levels for grid reconnections following reactor trips and outages shall be calculated and represented as a $L_{Aeq(5\text{ minute})}$ value at all nearby noise sensitive properties. If this noise is anticipated to adversely affect occupiers of any nearby residential properties based on the prevailing background noise levels, then proposed methods of noise attenuation or time limitations on reconnection should be specified to achieve 'Best Environmental Practice'.

2.8.21. Projected noise levels for the proposed 'Stand-by Diesel Generators' shall be calculated and represented as a $L_{Aeq(5\text{ minute})}$ value at all nearby noise sensitive properties. If this noise is anticipated to adversely affect occupiers of any nearby residential properties based on the prevailing background noise levels, then proposed methods of noise attenuation or time limitation's on testing times should be specified to achieve 'Best Environmental Practice'.

2.8.22. A proposed 'Complaints Procedure' detailing who will undertake investigations of noise complaints on behalf of the site operators and the scope of amelioration in the event that complaints are justified should be provided.

2.9. Air quality

Traffic-related impacts

2.9.1. No reference has been made to the National Planning Practice Guidance relating to Air Quality. Consideration should be given as to whether this is relevant.

2.9.2. The air quality monitoring regime is acceptable. The Scoping Report advises that Suffolk Coastal District Council is in the process of consulting with the Department of Environment, Food and Rural affairs (DEFRA) on the need to declare an Air Quality Management Area (AQMA) in Stratford St Andrew (7.8.12). DEFRA has now confirmed the need for an AQMA to be declared at this location and, following a Public Consultation currently underway, the AQMA Order will be made in June 2014.

2.9.3. Impacts at locations such as Yoxford, and along the B1122, such as Theberton and Middleton Moor where there are a relatively high number of properties in a rural location, should be specifically quantified. Numbers of properties affected should be included, as well as timescales and durations, which would be relevant to the National Objective Limit levels for the significant pollutants (including nitrogen dioxide and particulate matter (PM₁₀), as set out in the Local Air Quality Management Regime'). The road traffic assessment pollutants of nitrogen dioxide and particulate matter are agreed.

2.9.4. It is noted that traffic datasets derived from the Transport Assessment will be used.

2.9.5. The most up to date guidance available at the time of assessment should be used. A number of the relevant documents are under review at the present time. Reference could be made to the Suffolk Local Authorities Air Quality Management and New Development 2011 Planning Guidance¹⁰.

Construction – related impacts

2.9.6. The ES should detail all potential construction site operations which may give rise to atmospheric concentrations of particulate matter (PM₁₀) or dust (e.g. excavation, demolition, use of explosives, movement of vehicles, loading operations, stockpiling of soil and rubble, crushing of material etc.). These should be specified together with the point source location and the particular methods of dust suppression to be used for each specific activity. The study area described in 7.8.19 should reflect that dust emissions may arise from transport modes other than road – i.e. by rail too and these may arise further than 500m from the site entrance.

2.9.7. The predicted concentrations of particulate matter (PM₁₀) and dust for each receptor should be formatted for comparison with the Local Air Quality Management Regime and the objectives included in the Air Quality (England) Regulations 2000 and Air Quality (England) Amendment Regulations 2002. The methodology as laid out in the Scoping Report for evaluating the magnitude and significance of air quality effects from construction is agreed.

2.9.8. If any of the above Air Quality Standards or Objectives is predicted to be exceeded by the above mentioned activities, further assessment will be required. This may include monitoring at relevant receptor locations, detailed computer modelling and investigations of solutions to reduce pollutant concentrations.

Operational impact

¹⁰ <http://www.suffolk.gov.uk/business/planning-and-design-advice/supplementary-guidance-air-quality-management-and-new-development-2011/>

2.9.9. The ES should detail the atmospheric concentration of the seven pollutants included in the 'Local Air Quality Management Regime' namely; carbon monoxide; nitrogen dioxide; benzene; 1,3-butadiene; Lead; sulphur dioxide; and particulate matter (PM₁₀) which arise from site related Combustion Processes including stand-by equipment. These pollutants shall be predicted at the nearest relevant receptor locations. The predicted concentrations for each receptor shall be formatted for comparison with the objectives included in the Air Quality (England) Regulations 2000 and Air Quality (England) Amendment Regulations 2002. Again, Sizewell Beach should be included as a relevant receptor location for the pollutant objectives with averaging times of 15 minutes and 1 hour.

2.9.10. Predictions should also include the combined emissions arising from Sizewell B and C power stations at the nearest relevant receptor locations. It is important to also include emissions from standby equipment. The methodology for evaluating the magnitude and significance of air quality effects from site operation as laid out in the Scoping Report is also agreed.

2.9.11. Full details shall be submitted regarding the type, location, chimney height requirements and emissions from the Standby Diesel Generators. If any of the above Air Quality Standards or Objectives are predicted to be exceeded by the site related Combustion Processes, including stand-by equipment, further assessment will be required. This may include monitoring at relevant receptor locations, detailed computer modelling and investigations of solutions to reduce pollutant concentrations.

2.10. Soils & agriculture

2.10.1. Reference is made to returning land to agriculture (7.9.33); we would prefer, as part of the 'Estate Vision' to see the whole of the estate returned to semi-natural habitats with gradation of public access south to north.

2.11. Geology & land quality

2.11.1. A site survey including samples from 150 locations across the Sizewell C site has been undertaken for the presence of Contaminated Material. This survey has not indicated any significant forms of contamination and as such the site remains in a low to very low category of potential risk for contamination. Additional sampling will need to be undertaken during site excavation and any identified contamination will need to be safely removed or encapsulation on site. The assumption that there is no anthropogenic contamination beyond the normal application of fertilisers and pesticides should however be validated (7.10.24).

2.11.2. Details of any material (e.g. soil, peat, contaminated material *et cetera*) removed from site for disposal purposes or safely encapsulated on site shall be notified to both the Environmental Protection Team at Suffolk Coastal District Council and the Environment Agency. Validation shall be required following this remediation action to indicate the site is suitable for its new specified use.

2.11.3. Detailed evidence in the form of certification to 'CLEA standard' will need to be supplied to indicate the source and suitability of all imported material used on site.

2.11.4. With reference to the samples undertaken (7.10.5/13) it is not clear for which radionuclides they were tested or against what they were compared.

2.12. Ground water

2.12.1. The ES should identify the magnitude and any potential impact on hydraulic continuity caused by: dewatering, coffer dam construction, spoil heap/stockpile leachate, runoff or infiltration, which may adversely affect private water supply quality in the area, and specify proposed measures to protect the aquifer source.

2.12.2. We are particularly concerned that the potential impacts of the construction of the bridges and their ongoing impact on groundwater processes are assessed and managed.

2.12.3. Groundwater monitoring (including for radiochemicals) should be included within the mitigation plan and this should cover flows outside the cut-off wall in the SSSI. There should not be a complete reliance on modelling – this will need to be ground-truthed (7.11.40).

2.13. Surface water

2.13.1. With reference to Table 7.12.3, we suggest that watercourses in, and feeding into/adjacent to, protected sites should be assigned as being of high value.

2.13.2. During construction the cut off wall adjacent to Sizewell drain could impact on surface water hydrology.

2.13.3. As with groundwater, the ES should include provision for monitoring, during and post construction, which links to appropriate mitigation as necessary (7.12.38).

2.13.4. The ES should assess all temporary (for example for the campus) and permanent foul water drainage arrangements, with any sea water disposal discharge designed to;

- Minimise any harmful effect on sea life diversity,
- Control temperature and turbidity which may encourage algae blooms.

2.14. Coastal geomorphology and hydrodynamics

2.14.1. It is important that the study area is clearly defined – which is not the case in Figure 7.13.1. The study area must include the potential impact of interrupted 'natural' sediment flow on the coastline from the Blyth Estuary to at least Orford Ness. However, if the observed net sediment transfer is southwards (7.13.3), the southern boundary of the Telemac study needs to be moved further south to include Shingle Street to correct the current northern bias.

2.14.2. The ES should recognise that during the lifetime of the Sizewell C project rates of erosion could be significantly different to the current era. 7.13.6 notes that there has been high periods of erosion in the past but since 1925 it has been relatively low. However, 1925 is just 90 years ago and this development will last more than 100 years into the future and therefore the implication that erosion will stay low may be misleading. In this context, full consideration should be given to the predicted impacts of climate change including the potential for acidification / chemical change to the sea over the coming decades and its impact on the protective crag rock that the site depends upon for its protection.

2.14.3. The ES should ensure that it considers the impacts arising on a worst-case basis – for example, while the jetty is described as temporary, the ES should ensure that it assesses its maximum possible lifespan.

2.14.4. In the Marine Ecology section outfall structures are identified as potentially affecting sediment transport (7.15.32). This is not recognised in the corresponding section of the Coastal Geomorphology chapter.

2.14.5. As detailed in other sections of this report, we have concerns with the guidelines to be used to determine descriptions of magnitude, particularly so given the predominantly soft nature of the Suffolk coastline. In these circumstances impacts of the development may well be quite localised within the study area, but nonetheless have very material consequences if those impacts affect property frontages. Table 7.13 is constructed in such a way that, for example an effect of a ten year duration, affecting half the study area would be described as low magnitude.

2.14.6. With respect to assumptions and limitations (7.13.21), the ES should acknowledge that the baseline scenario and also the potential impacts of the new build and operation of the site will be difficult to predict with high confidence and so a range of potential outcomes need to be forecast and which will require ongoing monitoring to review and respond to in either a proactive or reactive fashion. The monitoring plan and associated interpretation / response liabilities are a critical issue for the local authorities.

2.14.7. The section on mitigation (7.13.27) should acknowledge the potential for the need for the protection of the Sizewell C site (possibly A and B sites too) prior to full / final removal, requiring interventions that disrupt 'natural' sediment movement across the frontage, which produces a negative impact on adjacent shorelines i.e. Thorpeness, Aldeburgh, Orford and (less likely) Minsmere and Dunwich. These impacts may cause significant effects and require mitigation, albeit decades hence. The ES should recognise this and create a process under which this risk is assessed and appropriate mitigation planned and delivered.

2.14.8. It is absolutely critical that the ES sets out how the impacts of the development will be monitored for the lifetime of the development and how that monitoring will inform any remedial action required.

2.15. Marine water quality and sediments

2.15.1. The ES should clarify which radionuclides have been measured (7.14.17). Furthermore, evidence has shown that radionuclides, through the process of adsorption, will concentrate in fine sediment area, for example in mud flats and salt marshes. Therefore, in terms of sediment analysis, further studies should be undertaken within the Alde and Ore estuary to establish the monitoring baseline on contaminate build-up.

2.16. Marine ecology

2.16.1. Underwater vibration should be identified as a potential impact (7.15.25), the mitigation for which should include monitoring.

2.16.2. It is reported that Sizewell B 'impinged' Sprat, herring band whiting 'in large numbers'; it is not clear how this would score against the degrees of magnitude in 7.15.16. The ES should report on the cumulative impacts on commercial fisheries through direct fish mortality and through loss of fishing grounds associated with Sizewell B, C (including jetty/outfall construction) and laying of offshore wind farm cables (and/or placement of turbines) for both Galloper and other windfarms within recognised commercial fishing areas.

2.16.3. Consideration should be given to aligning this study area with that related to the HRA process – as mentioned above the interrelationship between the EIA and HRA process should be clear.

2.17. Navigation

2.17.1. The ES should assess the potential for ecological effects to arise from rerouting of shipping traffic (7.16.22).

2.17.2. Recognition should be made of the opportunities on the Alde-Ore estuary (7.16.9).

2.18. Radiological

2.18.1. The ES should assess the need for monitoring (during appropriate conditions) of airborne radiological pollution through either aerosol (very fine spray) or sea spray dispersal – reference should be made to the research undertaken at North Uist.

2.18.2. The Scoping Report does not specifically rule out the future use of Mixed Oxide Fuels (MOX) at Sizewell C. The ES should either rule out the use of MOX fuel or comment on the radiological significance and justification for this fuel if it is intended to be used.

2.18.3. The ES should identify and compare baseline/existing terrestrial and marine radiological data with any projected data for the new Sizewell C site.

2.18.4. Detailed information should be provided as to the integrity of all radioactive material storage and any radioactive waste packaging facility on site. This should include comments on the suitability of storage over the proposed 'lifetime' of the site.

2.18.5. Any intended off-site storage of radioactive waste, whether interim or permanent, should be detailed in full, including location and capacity, together with the radiological significance and justification for storing this type of fuel off-site.

2.18.6. The issues surrounding the utilisation Sizewell C for the storing of radioactive waste derived from other sources, together with any impact of increased radioactive discharges that may arise in such circumstances, should be considered within the ES.

2.18.7. We would ask PINS to confirm through which process would the potential environmental effects of an incident involving radioactive material be assessed - for example impacts on ground water/surface water features should emergency cooling be required. The Scoping Report gives little attention to the potential environmental implications associated with the storage of spent fuel (section 3.8).

2.19. EMFs

2.19.1. The ES should identify any pylon or overhead power-line/cabling alterations to be undertaken in connection with this development, together with any likely increases of the Electro-magnetic radiation fields, which may adversely affect occupiers of nearby residential properties.

2.20. Health and Safety

2.20.1. The ES should detail a health and safety risk analysis for site workers and any members of the public which may be adversely affected by the constructional phase of the works. A further health and safety risk assessment should be provided to cover public safety for all access along the shore line and public areas surrounding the site once Sizewell C is operational.

2.21. Conventional waste

2.21.1. The ES should detail all non-radioactive wastes stored or disposed of on site, identifying and categorising material so as to indicate 'Best Environmental Practice' is being taken, for example storing fuel oil stored in double-bunded tanks etc.

3. ASSOCIATED DEVELOPMENT

3.1. For all sites:

3.1.1. the **amenity and recreation** studies should gather information on the extent to which local roads are used by all non-motorised users, particularly pedestrians. Generally, it should be noted that mitigation could also be achieved by *enhancing* local non-motorised access.

3.1.2. **Ecological studies** should have regard to Biodiversity habitats and species. The study area for bats in particular will need to be agreed.

3.1.3. Viewpoints will need to be agreed for the **LVIA**. Mitigation for landscape and visual effects should include advance planting and/or 'instant' hedging – else

mitigation is not likely to be effective during the lifetime of the associated development.

3.1.4. It is agreed that **noise and vibration** impacts should be assessed using the same methodologies as discussed above. Care however needs to be taken with the description of potential mitigation measures – there is reference in Tables 8.3 and 8.6 to “screening or planting” for noise and vibration mitigation. Planting would not necessarily provide adequate noise mitigation unless very dense and further explanation of this would be helpful.

3.1.5. environmental impacts on nearby residential properties (e.g. construction works, noise, dust, lighting, foul drainage etc) should be assessed and mitigation measures provided where necessary.

3.1.6. An Air Quality Assessment and calculated Traffic Predictions should be provided within the ES for the chosen park and ride sites and should any of the Air Quality Objectives (AQO) be predicted to be exceeded, then mitigation measures should be recommended.

3.2. Northern Park and Ride

3.2.1. The access details will need to be agreed with the Highways Authority. A solution is required to provide a layby area for long vehicles to pull in once they have crossed the East Suffolk railway line. There have been discussions with Network Rail but no proposals have been presented to date.

3.2.2. The impact of the new car park to the south of the rail station will need to be considered in any assessment.

3.3. Southern Park & Ride

3.3.1. The access details will need to be agreed with the Highways Authority. There are concerns about the safe egress of traffic from the existing slip road onto the A12 which will need to be assessed and appropriate mitigation proposed

3.3.2. In view of the likely need to close the existing bridleway through the site, local rights of way enhancements are particularly important for this site.

3.3.3. Reference is made to potential ecological impacts on the River Deben – this will need to be picked up through the HRA process.

3.4. Rail Line Extension

3.4.1. The proposed new rail routes into the site cross a number of Public Rights of Way. There appears to be an assumption within the report that these routes will be closed or diverted. Although this may be considered for temporary works, more sustainable mitigation will be required for the proposed construction period. Mitigation should include the potential for grade separation or combining with safe and convenient road crossings (Table 8.9).

3.4.2. Further information will be needed with respect to the impact of the proposed rail routes on the existing highway network, especially with respect to any proposals for new rail crossings.

3.4.3. The amenity and recreation study assess the use of open access sites in the area that may be affected.

3.4.4. The selection of viewpoints will need to have regard to the potential for soil storage alongside the rail line. Mitigation should therefore consider a means of minimising this storage.

3.4.5. Noise disturbance from unloading of materials may be a source of concern should the potential option of a terminal north of King George's Avenue, Leiston be used at unsociable hours.

3.5. A12 Improvement – Farnham Bend

3.5.1. The options presented in the report will need to be assessed in line with Section 6.3 of the report together with the additional assessment criteria identified in this response.

3.5.2. The options presented in the report remain as presented in the Stage 1 Consultation. Based on the evidence presented to date, these are not considered likely to be sufficiently extensive or acceptable and the local authorities maintain their support for a bypass of the four A12 villages of Marlesford, Little Glemham, Stratford St Andrew and Farnham. The ES will need to ensure that adequate mitigation is provided to address impacts arising in all of these locations.

3.5.3. The ES will need to assess the construction method and layout including timing of works and piling for example. Consideration should be given to noise and dust from construction works and noise from the new road layout. Mitigation measures such as screening, quiet road surfacing, speed limits that can reduce these impacts on local residents should be discussed within the ES. Air Quality modelling should also be included for this purpose and should any of the Air Quality Objectives (AQO) be predicted to be exceeded, then mitigation measures should be recommended.

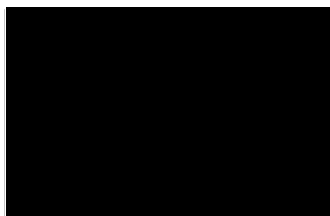
3.5.4. Similar assessments would likely be needed for any other highway improvements.

3.6. Visitor Centre

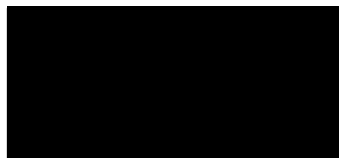
3.6.1. The ES will need to detail at what point the Visitor Centre will be constructed and then become operational –cumulative impacts will arise with the other associated development sites as well as the main site development. It is likely that this facility will attract more pedestrians and cyclists to the area and sufficient mitigation will be required to accommodate this increase in vulnerable road users.

We trust that these comments are useful. If they require further clarification, please do not hesitate to contact us on the details above.

Yours sincerely



Michael Wilks
Planning Projects Manager
Suffolk County Council



Philip Ridley
Head of Planning & Coastal
Management
Suffolk Coastal District Council

F.a.o Laura Allen
The Planning Inspectorate
3/18 Eagle Wing
Temple Quay House
2 The Square
Bristol
BS1 6PN

Your Ref: EN010012
21st May 2014

Dear Madam,

Re. response to application by EDF Energy for an Order Granting Development Consent for Sizewell C Proposed Nuclear Development - Scoping Consultation.

Swefling Parish Council has been identified as a consultation body which must be consulted by the Secretary of State before adopting its scoping opinion. As Clerk to Swefling Parish Council I am writing on their behalf to inform the Secretary of State of information this Council considers should be provided in the environmental statement.

Swefling Parish Council has two areas of concern that particularly affect the parishioners of Swefling:

1) Transport Assessment (2.3.8)

Sweffling village is 3 miles from the A12 and most south-bound journeys from the village require a right hand turn onto the A12 either at Farnham or Marlesford. We are informed that during the constructional phase there could be extra traffic on the A12 of lorries at the rate of one every 45 seconds. We are concerned for the safety of vehicles turning right to make their daily routine journeys and the long delays which such right turns might incur.

Because of the increased heavy traffic on the A12 we are concerned that other vehicles may start to use the smaller, quieter routes through

villages such as ours. This would be inappropriate as these routes are narrow and often single-track.

2) Health Assessment

Nowhere in the main text of the scoping report can we see any reference to increased health services for the 3,600 non home-based workers. Swefling Parish Council is concerned that local doctor's surgeries, ambulance services, hospitals, dentists; indeed any related branch of the already pressurised health service will be compromised for the permanent population of this area.

Thank you for seeking our comments. We hope this information can be acted upon for the benefit of parishioners.

Yours faithfully

Mrs Jill Abbott
Clerk to Swefling Parish Council

This Parish Council would like to register its disappointment that only 4 weeks were allowed in which to respond to such a weighty document, little enough time to properly assess the report let alone share responses with colleagues.

Theberton and Eastbridge Parish Council [TEPC] represents a very small rural community of 240 residents, who will suffer the biggest adverse impact from EDFE's plans for their proposed twin reactor nuclear power station at Sizewell. This includes a campus for up to 3000 workers on the edge of Eastbridge, and the use of the B1122 as the only access to what will be 4 nuclear power stations.

There is widespread concern in this parish and beyond that the developer's plans relating to the siting of the campus, and the reliance on the B1122, will fundamentally change, indeed destroy, the character of this small tranquil area, for many years and probably for ever. It is therefore very disappointing that future consultations seek only to "inform and refine the development proposals", which suggests to us that there is little willingness to consider making any critical changes, whatever arguments are put forward by the host communities and others.

Indeed there is little or no evidence in the Scoping Report that concerns raised by this parish council, individuals and interested bodies at Stage 1 about key issues affecting this community have been seriously addressed by the developer. There has been little or no change in their preferred direction (eg regarding the siting of the campus and the use of the B1122), and very little information about studies, eg on transport, carried out over the last 18 months. Until more information is provided, those consulted have to make assumptions, which is not conducive to constructive engagement with the developer.

The following comments have reference numbers from the document where relevant.

1.5.3 Regarding EDFE's preferred accommodation site, there is no evidence that ongoing consultation "continues to inform and refine" development proposals. Concerns have been expressed at and since Stage 1 Consultation but EDF's Option 1 for the campus remains in place. Also see 1.5.6

2.1.9 We question whether in reality 'there is sufficient land area within the nominated boundary' – we believe Sizewell C is only 32ha whereas Hinkley C is 58ha. If EDF need more land this would mean eating into even more AONB land. We also question assurances that the site is safe from flooding and coastal erosion, bearing in mind major historical coastal damage and erosion caused by very recent tidal surges on this fragile, unpredictable coast. Many experts agree that there is no certainty on this issue.

2.1.12 It is hard to see how, given the very particular and special environmental features of this area, this site is entirely suitable for the proposed build and at least as viable as other potential sites. This Parish Council would appreciate access to more information regarding the Habitats Assessment of other potential sites and an understanding of the nature of, and significance in planning terms of 'potential adverse impacts on European Sites'. We note 4.1.4

2.3.8, and 2.3.9 EDFE's use of the B1122 country road as the only route in and out of the site, and only emergency evacuation route to the A12 must be challenged, and it does not satisfy the requirement for two separate access roads. It would seem that a full TA might only be available at the DCO application. However,

we would like to stress how important it is that full information on transport assessment is shared with interested bodies by the interim Stage 2 consultation to allow informed response by those affected.

2.3.10 Health Impact Assessment – this is a key issue and must be given due weight. Ever since the Stage 1 Consultation, EDFE’s proposals have had an adverse impact on local people - including the many older and retired people - through mental stress. The prospect of living next door to 3000 workers for years, instead of (for Eastbridge) barely 100 neighbours – this alone has already caused untold stress. Add to this the physical harm that can be caused by noise, air and light pollution, and fears about crime and anti-social behaviour, and security. It is vital that the Scoping Report recognises the adverse effects that have been felt for nearly two years already, and will continue. There will be a cumulative effect of course if the build goes ahead.

2.3.13 Community and Equalities: The footprint of the proposed campus option 1, plus social facilities for workers, and the adjacent laydown area, is clearly out of scale with the footprint of the closest village (Eastbridge, 300m away) and completely out of sympathy with the environment. It is hard to see how a socio-economic assessment can satisfy common sense. Much of the impact on human receptors cannot be measured. It is to be hoped, indeed it is essential, that any assessment takes due regard of the less tangible impacts.

3.3.4 The B1122 should be included here and investigated as not fit for purpose. Like the A12, it has at the very least the ‘potential for congestions and exacerbate safety concerns’ at a number of places along it. A new Sizewell Relief Road is required.

3.8 Spent Fuel: increased storage of spent nuclear waste at Sizewell is of great concern to local people, particularly as no permanent solution is likely to be available for many, many years to come.

Table 5.1 Given that the area occupied by the proposed campus is surely of **“high value/sensitivity”** why is it still being considered, when alternatives are available? It has often been suggested to EDFE that smaller dispersed sites in centres where the size of population and local infrastructure could better absorb the impact of up to 3000 workers, would be a better way to mitigate the impact of the build. There is no evidence that this suggestion or similar has been seriously researched by EDFE, including the possibility of designing off-site accommodation so that one or more, with a change of use application, could become legacy housing. If it has, the research results should be made available. It is hard to avoid the impression that the campus location is one driven by commercial considerations, with no genuine thought given to the enormous negative impact on the local community. The Scoping Report should cover this question fully.

5.4 Mitigation: more information is needed on noise, light and air pollution, and vibration from increased traffic on the B1122 likely to cause physical damage to buildings. There appears to be no information on how EDFE intend to calculate the expected light pollution, or how they will deal with it.

6.2.21, 6.2.22, 6.2.27, 6.2.28 “Some impacts cannot be quantitatively assessed...so a qualitative assessment will be used”. Many aspects of the quality of life in this beautiful rural countryside will be destroyed by EDFE’s proposals. Who will arbitrate on EDFE’s criteria assessment? How can the Parish Council and others engage constructively on the impact effects on our local community?

6.3.54 Transport: it is noted that, as well as construction traffic including HGVs, home based workers cars, workers buses from the park and ride locations at Wickham Market and Darsham using the B1122 from Yoxford, there will also be dedicated bus services from Ipswich and Lowestoft and buses picking up workers

from Darsham and Saxmundham stations using this road. The transport study should clearly include all of this traffic and the impact it will have, including the junction of the A12 with the B1122 at Yoxford.

7.3.42 It is to be hoped that **“tranquillity”** will be recognised as a particular and highly valued feature of this parish, as well as of adjacent recreational areas.

7.3.50 The cumulative effects of all these aspects should be carefully considered.

7.4.36 Light pollution at night will be experienced all along the B1122 from Yoxford through Middleton Moor and Theberton from construction vehicles, HGVs, workers’ buses and cars. Also from the campus accommodation and floodlit sports facilities, and from the new road through the construction lay down areas. This all requires detailed studies to show current levels of light pollution, and what it will be like if Sizewell C and D are built.

Table 7.7.1 Monitoring locations should include more around Eastbridge and Theberton, in addition to what is proposed. Location codes MS3, MS8 and MS9 refer to considering the **“local impact on quiet character of area”**. The same should be applied to the neighbouring villages, including Eastbridge and Theberton, where a key feature is **“the quiet character of the area”**.

7.7.2 Monitoring locations for traffic should include at least one for Eastbridge South.

Tourism along the Heritage Coast is one of the highest sources of employment and income. Visitors from all over the country return every year, sometimes several times a year. They appreciate the tranquillity, the unspoilt landscapes, the night skies, the wildlife. The Scoping Report appears not to devote much, if any space to a study of the adverse impacts on this industry. Sensitive independent surveys are essential to establish visitors’ views and likely reactions once construction starts, if Sizewell C goes ahead. Indeed, experience locally would tell us that the vast majority have no knowledge of the Sizewell C proposals and are shocked by the same issues that concern this parish. We believe their interest in this area will be lost, for at least the construction period, and may lose the habit of coming to Suffolk for ever. Studies of high-end accommodation providers and catering facilities should also be part of the Scoping Report. Any interest generated by the Visitor’s Centre is irrelevant.

From: Navigation Directorate [mailto:Navigation.Directorate@thls.org]
Sent: 21 May 2014 12:57
To: Environmental Services
Cc: Nick Dodson
Subject: RE: Sizewell C New Nuclear Power Station - EIA Scoping Request

Good morning Hannah,

Please be advised that Trinity House has no comments to make concerning the above.

However, in order to address specific mitigation measures concerning the works below the high water mark, we would suggest that, upon completion of the Navigation Risk Assessment, the applicant contacts Trinity House to discuss any marine risk mitigation measures that may be required.

Kind regards,

Steve Vanstone

Navigation Services Officer

APPENDIX 3

Presentation of the Environmental Statement

APPENDIX 3

PRESENTATION OF THE ENVIRONMENTAL STATEMENT

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (SI 2264) (as amended) sets out the information which must be provided for an application for a development consent order (DCO) for nationally significant infrastructure under the Planning Act 2008. Where required, this includes an environmental statement. Applicants may also provide any other documents considered necessary to support the application. Information which is not environmental information need not be replicated or included in the ES.

An environmental statement (ES) is described under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2263) (as amended) (the EIA Regulations) as a statement:

- a) 'that includes such of the information referred to in Part 1 of Schedule 4 as is reasonably required to assess the environmental effects of the development and of any associated development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile; but
- b) that includes at least the information required in Part 2 of Schedule 4'.

(EIA Regulations Regulation 2)

The purpose of an ES is to ensure that the environmental effects of a proposed development are fully considered, together with the economic or social benefits of the development, before the development consent application under the Planning Act 2008 is determined. The ES should be an aid to decision making.

The SoS advises that the ES should be laid out clearly with a minimum amount of technical terms and should provide a clear objective and realistic description of the likely significant impacts of the proposed development. The information should be presented so as to be comprehensible to the specialist and non-specialist alike. The SoS recommends that the ES be concise with technical information placed in appendices.

ES Indicative Contents

The SoS emphasises that the ES should be a 'stand alone' document in line with best practice and case law. The EIA Regulations Schedule 4, Parts 1 and 2, set out the information for inclusion in environmental statements.

Schedule 4 Part 1 of the EIA Regulations states this information includes:

- '17. *Description of the development, including in particular—*

- (a) *a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;*
 - (b) *a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;*
 - (c) *an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the proposed development.*
18. *An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.*
19. *A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.*
20. *A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:*
- (a) *the existence of the development;*
 - (b) *the use of natural resources;*
 - (c) *the emission of pollutants, the creation of nuisances and the elimination of waste,*
- and the description by the applicant of the forecasting methods used to assess the effects on the environment.*
21. *A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.*
22. *A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.*
23. *An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information'.*

EIA Regulations Schedule 4 Part 1

The content of the ES must include as a minimum those matters set out in Schedule 4 Part 2 of the EIA Regulations. This includes the consideration of 'the main alternatives studied by the applicant' which the SoS recommends could be addressed as a separate chapter in the ES. Part 2 is included below for reference:

Schedule 4 Part 2

- A description of the development comprising information on the site, design and size of the development
- A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects
- The data required to identify and assess the main effects which the development is likely to have on the environment
- An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects, and
- A non-technical summary of the information provided [*under the four paragraphs above*].

Traffic and transport is not specified as a topic for assessment under Schedule 4; although in line with good practice the SoS considers it is an important consideration *per se*, as well as being the source of further impacts in terms of air quality and noise and vibration.

Balance

The SoS recommends that the ES should be balanced, with matters which give rise to a greater number or more significant impacts being given greater prominence. Where few or no impacts are identified, the technical section may be much shorter, with greater use of information in appendices as appropriate.

The SoS considers that the ES should not be a series of disparate reports and stresses the importance of considering inter-relationships between factors and cumulative impacts.

Scheme Proposals

The scheme parameters will need to be clearly defined in the draft DCO and therefore in the accompanying ES which should support the application as described. The SoS is not able to entertain material changes to a project once an application is submitted. The SoS draws the attention of the applicant to the DCLG and the Planning Inspectorate's published advice on the preparation of a draft DCO and accompanying application documents.

Flexibility

The SoS acknowledges that the EIA process is iterative, and therefore the proposals may change and evolve. For example, there may be changes to the scheme design in response to consultation. Such changes should be addressed in the ES. However, at the time of the application for a DCO, any proposed scheme parameters should not be so wide ranging as to represent effectively different schemes.

It is a matter for the applicant, in preparing an ES, to consider whether it is possible to assess robustly a range of impacts resulting from a large number of undecided parameters. The description of the proposed development in the ES must not be so wide that it is insufficiently certain to comply with requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations.

The Rochdale Envelope principle (see *R v Rochdale MBC ex parte Tew (1999)* and *R v Rochdale MBC ex parte Milne (2000)*) is an accepted way of dealing with uncertainty in preparing development applications. The applicant's attention is drawn to the Planning Inspectorate's Advice Note 9 'Rochdale Envelope' which is available on the Advice Note's page of the National Infrastructure Planning website.

The applicant should make every attempt to narrow the range of options and explain clearly in the ES which elements of the scheme have yet to be finalised and provide the reasons. Where some flexibility is sought and the precise details are not known, the applicant should assess the maximum potential adverse impacts the project could have to ensure that the project as it may be constructed has been properly assessed.

The ES should be able to confirm that any changes to the development within any proposed parameters would not result in significant impacts not previously identified and assessed. The maximum and other dimensions of the proposed development should be clearly described in the ES, with appropriate justification. It will also be important to consider choice of materials, colour and the form of the structures and of any buildings. Lighting proposals should also be described.

Scope

The SoS recommends that the physical scope of the study areas should be identified under all the environmental topics and should be sufficiently robust in order to undertake the assessment. The extent of the study areas should be on the basis of recognised professional guidance, whenever such guidance is available. The study areas should also be agreed with the relevant consultees and local authorities and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given. The scope should also cover the breadth of the topic area and the temporal scope, and these aspects should be described and justified.

Physical Scope

In general the SoS recommends that the physical scope for the EIA should be determined in the light of:

- the nature of the proposal being considered
- the relevance in terms of the specialist topic
- the breadth of the topic
- the physical extent of any surveys or the study area, and

- the potential significant impacts.

The SoS recommends that the physical scope of the study areas should be identified for each of the environmental topics and should be sufficiently robust in order to undertake the assessment. This should include at least the whole of the application site, and include all offsite works. For certain topics, such as landscape and transport, the study area will need to be wider. The extent of the study areas should be on the basis of recognised professional guidance and best practice, whenever this is available, and determined by establishing the physical extent of the likely impacts. The study areas should also be agreed with the relevant consultees and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given.

Breadth of the Topic Area

The ES should explain the range of matters to be considered under each topic and this may respond partly to the type of project being considered. If the range considered is drawn narrowly then a justification for the approach should be provided.

Temporal Scope

The assessment should consider:

- environmental impacts during construction works
- environmental impacts on completion/operation of the proposed development
- where appropriate, environmental impacts a suitable number of years after completion of the proposed development (for example, in order to allow for traffic growth or maturing of any landscape proposals), and
- environmental impacts during decommissioning.

In terms of decommissioning, the SoS acknowledges that the further into the future any assessment is made, the less reliance may be placed on the outcome. However, the purpose of such a long term assessment, as well as to enable the decommissioning of the works to be taken into account, is to encourage early consideration as to how structures can be taken down. The purpose of this is to seek to minimise disruption, to re-use materials and to restore the site or put it to a suitable new use. The SoS encourages consideration of such matters in the ES.

The SoS recommends that these matters should be set out clearly in the ES and that the suitable time period for the assessment should be agreed with the relevant statutory consultees.

The SoS recommends that throughout the ES a standard terminology for time periods should be defined, such that for example, 'short term' always refers to the same period of time.

Baseline

The SoS recommends that the baseline should describe the position from which the impacts of the proposed development are measured. The baseline should be chosen carefully and, whenever possible, be consistent between topics. The identification of a single baseline is to be welcomed in terms of the approach to the assessment, although it is recognised that this may not always be possible.

The SoS recommends that the baseline environment should be clearly explained in the ES, including any dates of surveys, and care should be taken to ensure that all the baseline data remains relevant and up to date.

For each of the environmental topics, the data source(s) for the baseline should be set out together with any survey work undertaken with the dates. The timing and scope of all surveys should be agreed with the relevant statutory bodies and appropriate consultees, wherever possible.

The baseline situation and the proposed development should be described within the context of the site and any other proposals in the vicinity.

Identification of Impacts and Method Statement

Legislation and Guidelines

In terms of the EIA methodology, the SoS recommends that reference should be made to best practice and any standards, guidelines and legislation that have been used to inform the assessment. This should include guidelines prepared by relevant professional bodies.

In terms of other regulatory regimes, the SoS recommends that relevant legislation and all permit and licences required should be listed in the ES where relevant to each topic. This information should also be submitted with the application in accordance with the APFP Regulations.

In terms of assessing the impacts, the ES should approach all relevant planning and environmental policy – local, regional and national (and where appropriate international) – in a consistent manner.

Assessment of Effects and Impact Significance

The EIA Regulations require the identification of the 'likely significant effects of the development on the environment' (Schedule 4 Part 1 paragraph 20).

As a matter of principle, the SoS applies the precautionary approach to follow the Court's⁴ reasoning in judging 'significant effects'. In other words

⁴ See Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw (Waddenzee Case No C 127/02/2004)

'likely to affect' will be taken as meaning that there is a probability or risk that the proposed development will have an effect, and not that a development will definitely have an effect.

The SoS considers it is imperative for the ES to define the meaning of 'significant' in the context of each of the specialist topics and for significant impacts to be clearly identified. The SoS recommends that the criteria should be set out fully and that the ES should set out clearly the interpretation of 'significant' in terms of each of the EIA topics. Quantitative criteria should be used where available. The SoS considers that this should also apply to the consideration of cumulative impacts and impact inter-relationships.

The SoS recognises that the way in which each element of the environment may be affected by the proposed development can be approached in a number of ways. However it considers that it would be helpful, in terms of ease of understanding and in terms of clarity of presentation, to consider the impact assessment in a similar manner for each of the specialist topic areas. The SoS recommends that a common format should be applied where possible.

Inter-relationships between environmental factors

The inter-relationship between aspects of the environments likely to be significantly affected is a requirement of the EIA Regulations (see Schedule 4 Part 1 of the EIA Regulations). These occur where a number of separate impacts, e.g. noise and air quality, affect a single receptor such as fauna.

The SoS considers that the inter-relationships between factors must be assessed in order to address the environmental impacts of the proposal as a whole. This will help to ensure that the ES is not a series of separate reports collated into one document, but rather a comprehensive assessment drawing together the environmental impacts of the proposed development. This is particularly important when considering impacts in terms of any permutations or parameters to the proposed development.

Cumulative Impacts

The potential cumulative impacts with other major developments will need to be identified, as required by the Directive. The significance of such impacts should be shown to have been assessed against the baseline position (which would include built and operational development). In assessing cumulative impacts, other major development should be identified through consultation with the local planning authorities and other relevant authorities on the basis of those that are:

- projects that are under construction
 - permitted application(s) not yet implemented
 - submitted application(s) not yet determined
 - all refusals subject to appeal procedures not yet determined
-

- projects on the National Infrastructure's programme of projects, and
- projects identified in the relevant development plan (and emerging development plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.

Details should be provided in the ES, including the types of development, location and key aspects that may affect the EIA and how these have been taken into account as part of the assessment.

The SoS recommends that offshore wind farms should also take account of any offshore licensed and consented activities in the area, for the purposes of assessing cumulative effects, through consultation with the relevant licensing/consenting bodies.

For the purposes of identifying any cumulative effects with other developments in the area, applicants should also consult consenting bodies in other EU states to assist in identifying those developments (see commentary on Transboundary Effects below).

Related Development

The ES should give equal prominence to any development which is related with the proposed development to ensure that all the impacts of the proposal are assessed.

The SoS recommends that the applicant should distinguish between the proposed development for which development consent will be sought and any other development. This distinction should be clear in the ES.

Alternatives

The ES must set out an outline of the main alternatives studied by the applicant and provide an indication of the main reasons for the applicant's choice, taking account of the environmental effect (Schedule 4 Part 1 paragraph 18).

Matters should be included, such as *inter alia* alternative design options and alternative mitigation measures. The justification for the final choice and evolution of the scheme development should be made clear. Where other sites have been considered, the reasons for the final choice should be addressed.

The SoS advises that the ES should give sufficient attention to the alternative forms and locations for the off-site proposals, where appropriate, and justify the needs and choices made in terms of the form of the development proposed and the sites chosen.

Mitigation Measures

Mitigation measures may fall into certain categories namely: avoid; reduce; compensate or enhance (see Schedule 4 Part 1 paragraph 21); and should be identified as such in the specialist topics. Mitigation measures should not be developed in isolation as they may relate to more than one topic area. For each topic, the ES should set out any mitigation measures required to prevent, reduce and where possible offset any significant adverse effects, and to identify any residual effects with mitigation in place. Any proposed mitigation should be discussed and agreed with the relevant consultees.

The effectiveness of mitigation should be apparent. Only mitigation measures which are a firm commitment and can be shown to be deliverable should be taken into account as part of the assessment.

It would be helpful if the mitigation measures proposed could be cross referred to specific provisions and/or requirements proposed within the draft development consent order. This could be achieved by means of describing the mitigation measures proposed either in each of the specialist reports or collating these within a summary section on mitigation.

The SoS advises that it is considered best practice to outline in the ES, the structure of the environmental management and monitoring plan and safety procedures which will be adopted during construction and operation and may be adopted during decommissioning.

Cross References and Interactions

The SoS recommends that all the specialist topics in the ES should cross reference their text to other relevant disciplines. Interactions between the specialist topics is essential to the production of a robust assessment, as the ES should not be a collection of separate specialist topics, but a comprehensive assessment of the environmental impacts of the proposal and how these impacts can be mitigated.

As set out in EIA Regulations Schedule 4 Part 1 paragraph 23, the ES should include an indication of any technical difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

Consultation

The SoS recommends that any changes to the scheme design in response to consultation should be addressed in the ES.

It is recommended that the applicant provides preliminary environmental information (PEI) (this term is defined in the EIA Regulations under regulation 2 'Interpretation') to the local authorities.

Consultation with the local community should be carried out in accordance with the SoCC which will state how the applicant intends to consult on the

preliminary environmental information (PEI). This PEI could include results of detailed surveys and recommended mitigation actions. Where effective consultation is carried out in accordance with Section 47 of the Planning Act, this could usefully assist the applicant in the EIA process – for example the local community may be able to identify possible mitigation measures to address the impacts identified in the PEI. Attention is drawn to the duty upon applicants under Section 50 of the Planning Act to have regard to the guidance on pre-application consultation.

Transboundary Effects

The SoS recommends that consideration should be given in the ES to any likely significant effects on the environment of another Member State of the European Economic Area. In particular, the SoS recommends consideration should be given to discharges to the air and water and to potential impacts on migratory species and to impacts on shipping and fishing areas.

The Applicant's attention is also drawn to the Planning Inspectorate's Advice Note 12 'Development with significant transboundary impacts consultation' which is available on the Advice Notes Page of the National Infrastructure Planning website

Summary Tables

The SoS recommends that in order to assist the decision making process, the applicant may wish to consider the use of tables:

Table X to identify and collate the residual impacts after mitigation on the basis of specialist topics, inter-relationships and cumulative impacts.

Table XX to demonstrate how the assessment has taken account of this Opinion and other responses to consultation.

Table XXX to set out the mitigation measures proposed, as well as assisting the reader, the SoS considers that this would also enable the applicant to cross refer mitigation to specific provisions proposed to be included within the draft Development Consent Order.

Table XXXX to cross reference where details in the HRA (where one is provided) such as descriptions of sites and their locations, together with any mitigation or compensation measures, are to be found in the ES.

Terminology and Glossary of Technical Terms

The SoS recommends that a common terminology should be adopted. This will help to ensure consistency and ease of understanding for the decision making process. For example, 'the site' should be defined and used only in

terms of this definition so as to avoid confusion with, for example, the wider site area or the surrounding site.

A glossary of technical terms should be included in the ES.

Presentation

The ES should have all of its paragraphs numbered, as this makes referencing easier as well as accurate.

Appendices must be clearly referenced, again with all paragraphs numbered.

All figures and drawings, photographs and photomontages should be clearly referenced. Figures should clearly show the proposed site application boundary.

Bibliography

A bibliography should be included in the ES. The author, date and publication title should be included for all references. All publications referred to within the technical reports should be included.

Non Technical Summary

The EIA Regulations require a Non Technical Summary (EIA Regulations Schedule 4 Part 1 paragraph 22). This should be a summary of the assessment in simple language. It should be supported by appropriate figures, photographs and photomontages.



APPENDIX 1C: RESPONSE TO THE 2014 EIA SCOPING OPINION

APPENDIX 1C: RESPONSE TO THE 2014 EIA SCOPING OPINION

1 INTRODUCTION

1.1.1 This appendix presents a table which incorporates each of the major points made within the 2014 EIA Scoping Opinion as well as the EDF Energy response. The EDF Energy response is provided as of May 2019 and so accounts for changes to the proposals since 2014 as well as the progress to date of the EIA process.

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Description of the proposed development	2.77	In addition to detailed baseline information to be provided within topic specific chapters of the ES, the Secretary of State (SoS) would expect the ES to include a section that describes the baseline of the Main Development Site, plus any off-site associated development, and its surroundings. This would identify the context of the proposed development, any relevant designations and sensitive receptors. This section should identify land that could be directly or indirectly affected by the proposed development and any associated auxiliary facilities, landscaping areas, and potential off-site mitigation or compensation schemes.	As set out in Table 7.1 of the EIA Scoping Report, a description of the baseline for the main development site and the off-site associated developments will be provided within the ES.
Project-wide	Description of the proposed development	2.78	The applicant should ensure that the description of the proposed development that is being applied for is as accurate and firm as possible as this will form the basis of the environmental impact assessment. It is understood that at this stage in the evolution of the scheme [EIA Scoping], the description of the proposals and	As set out in Table 7.1 of the EIA Scoping Report, each site-specific volume of the ES will contain an accurate description of the proposed

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Description of the proposed development	2.79	<p>the location of elements of the proposed development may not be confirmed. The applicant should be aware, however, that the description of the development in the ES must be sufficiently certain to meet the requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations and there should therefore be more certainty by the time the ES is submitted with the DCO. The applicant's attention is directed to the comments of the Environment Agency regarding the description of the project in Appendix 2.</p> <p>Any proposed works and/or infrastructure required as associated development, or as an ancillary matter, (whether on or off-site) should be considered as part of an integrated approach to environmental assessment.</p>	<p>development at that site.</p> <p>As set out in Chapters 3 and 6 of the EIA Scoping Report and detailed in Table 7.1, the ES will assess both works on at the main development site and off-site works associated with Sizewell C. Where project-wide effects, arising from a number of project elements, are predicted these will be assessed using an integrated approach.</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Description of the proposed development	2.80	<p>The SoS recommends that the ES should include a clear description of all aspects of the proposed development, at the construction, operation and decommissioning stages, and include:</p> <ul style="list-style-type: none"> • Land use requirements, including land required for any offsite associated development; • Site preparation; • Construction processes and methods; • Transport routes, both temporary and permanent; • Operational requirements, including the main characteristics of the production process and the nature and quantity of materials used, as well as waste arisings (both conventional and radioactive waste) and their disposal; • Maintenance activities including any potential environmental impacts, and • Emissions- water, air and soil pollution, noise, vibration, light, heat, radiation. 	<p>As set out in Table 7.1 of the EIA Scoping Report, a description of these elements will be provided within the relevant volume of the ES.</p>
Project-wide	Waste management	2.81	<p>The environmental effects of all wastes to be processed and removed from the site should be addressed. The ES will need to identify and describe the control processes and mitigation procedures for storing and transporting waste both on and off-site. All waste types should be quantified and classified.</p>	<p>The ES will include estimates of waste to be processed and removed at the main development site and for each of the off-site associated developments. An outline waste strategy appended to the ES will include indicative</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
				approaches to storage as well as an assessment of the impacts on capacities at local waste management facilities.
Project-wide	Description of the proposed development	2.82	<p>The Scoping Report makes reference to the potential for dredging activities associated with the construction and operation (maintenance) of the proposed development; however, the requirement for and information provided is limited. The ES will need to detail the requirements and methodologies associated with any identified dredging activities, together with an assessment of potential impacts on the environment. The applicant's attention is drawn to the comments of the MMO regarding dredging and licensable activities (see Appendix 2). The MMO response also identifies that licensing under the Marine and Coastal Access Act 2009 may be required for other activities associated with the proposed development. The SoS recommends that consultation with the MMO regarding the need (or otherwise) for licences is undertaken early in the EIA process.</p>	<p>This point is noted. Consultation with the MMO is ongoing in relation to licensing.</p>
Project-wide	Description of the proposed development	2.83	<p>The SoS notes that the proposed development would include a National Grid 400kv substation, plus a pylon, removal of an existing pylon, and associated realignment of overhead lines. However, it is not clear how the proposed development would connect to the national grid. This should be clarified in the ES.</p>	<p>An overview of the connection is provided in Chapter 3 of the EIA Scoping Report and further detail will be provided in Volume 2 of the ES.</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Alternatives	2.84	The ES requires that the applicant provide 'An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects' (See Appendix 3).	As described in Chapter 4 of the EIA Scoping Report the ES will describe main alternatives to the proposed development.
Project-wide	Alternatives	2.85	The SoS notes that no alternatives will be considered for the location of the Sizewell C site and the design of the reactors, as these have been determined through a site selection assessment and the UK GDA process, as outlined above. The SoS welcomes the proposed consideration of alternatives in respect of the design and layout of remaining aspects of the development, with consideration given to environmental effects.	As described in Chapter 4 of the EIA Scoping Report, the ES will describe the main alternatives to the chosen design and layouts and will define the main reasons for excluding those alternatives which have not been progressed.
Project-wide	Alternatives	2.86	The applicant is directed to the comments of the Environment Agency in Appendix 2 regarding the consideration of alternatives associated with the treatment of radioactive waste. The applicant is also directed to the comments of Suffolk County Council regarding the consideration of alternatives (see Appendix 2).	This point is noted.
Project-wide	Alternatives	2.87	The SoS notes that alternatives for the off-site associated development have been considered as part of a site selection process and are continuing to be developed/assessed. The SoS reminds the applicant to provide details of the alternatives considered for the off-site associated development and to assess the impacts of selected options.	As described in Chapter 4 of the EIA Scoping Report, the ES will describe the main alternatives to the proposed associated developments and will define the main reasons for

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Approach to the EIA	2.89	The applicant's attention is drawn to Advice Note 9 'Using the 'Rochdale Envelope', which is available on the Planning Inspectorate's website and to the 'Flexibility' section in Appendix 3 of this Scoping Opinion which provides additional details on the recommended approach.	excluding those alternatives which have not been progressed. The ES and the EIA approach will be cognisant of the 'Rochdale Envelope' approach as well as relevant guidance on flexibility.
Project-wide	Approach to the EIA	2.90	The applicant should make every attempt to narrow the range of options and explain clearly in the ES which elements of the scheme have yet to be finalised and provide the reasons. At the time of application, any proposed scheme parameters should not be so wide ranging as to represent effectively different schemes. The scheme parameters will need to be clearly defined in the draft DCO and therefore in the accompanying ES. It is a matter for the applicant, in preparing an ES, to consider whether it is possible to robustly assess a range of impacts resulting from a large number of undecided parameters. The description of the proposed development in the ES must not be so wide that it is insufficiently certain to comply with requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations.	The ES will clearly identify the scheme parameters, reflecting those defined in the draft DCO.
Project-wide	Approach to the EIA	2.91	It should be noted that if the proposed development changes substantially during the EIA process, prior to application submission, the applicant may wish to consider the need to	This EIA Scoping Report is accompanied by a letter requesting a new scoping

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			request a new scoping opinion.	opinion.
Project-wide	Description of the proposed development	2.92	The Scoping Report identifies the requirement for a new access road, a temporary and permanent bridge to the main operational platform, together with various roads and river crossings potentially associated with off-site associated development. However, it does not provide information regarding the location of these routes and ingresses/egresses to be used for the proposed development both during the construction and operational phase. The SoS understands that these elements are still under consideration; however, the SoS would expect the final ES to provide this information, including access to any off-site associated development and an assessment of the impacts of constructing and using such accesses.	This EIA Scoping Report provides an update on the associated development requirements. More detailed information on the associated developments and further details of access and egress at each location will be provided within the ES.
Project-wide	Description of the proposed development	2.93	Paragraph 3.4.7 of the Scoping Report notes that the main construction period, following site preparation, would last between seven and nine years. However, the SoS considers that a clearer indication of the phasing of the timescales for the entire construction period, including site preparation, enabling works, and any off-site associated development should be provided within the ES.	A brief description of the construction of the proposed development is provided within the EIA Scoping Report. Further information on timing and phasing for construction will be provided in the ES.

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Project-wide	Description of the proposed development	2.94	The SoS considers that the following information on the construction phase should be included and assessed within the ES: construction methods and activities associated with each phase; siting and size of construction compounds (including on and offsite); lighting equipment/requirements; and number, movements and parking of construction vehicles (both HGVs and staff). Information should also be provided within the ES on whether any construction activities are restricted to a particular time of year.	A detailed description of construction phasing and methodologies will be provided within the ES.
Project-wide	Description of the proposed development	2.95	The SoS notes that there are various aspects of the proposed development that are described as temporary. The ES should clearly describe the elements of the project that are temporary, including the timescales and methodology for their removal.	Chapter 3 of this EIA Scoping Report identifies which elements of the proposed development are temporary. The ES will provide further details on times, classes and methodology for removal and/or reinstatement for each temporary element.
Project-wide	Description of the proposed development	2.96	The SoS also notes that prior to the jetty becoming operational and the construction of any temporary extension of the Saxmundham-Leiston branch railway line into the construction site (off-site associated development), construction materials could be delivered and exported by rail via the existing railhead at Leiston, which would require small-scale refurbishment of the railhead. This refurbishment should be considered within the ES, which	An updated description of the proposed development is provided within Chapter 3 of the EIA Scoping Report and Chapter 6 identifies the proposed scope of the assessments. A full

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Project-wide	Description of the proposed development	2.97	<p>The Scoping Report describes that excavated peat and alluvium could potentially be used within a new nature reserve currently being created at Wallasea Island, Essex. The applicant's attention is directed to the response of Essex County Council regarding planning conditions attached to the Wallasea Island project in Appendix 2 of this Opinion, in particular, the restrictions in respect of material type and the timing for receipt of material associated with this project.</p>	<p>description will be included in the ES and will include any refurbishment proposed to the existing railhead in Leiston (Sizewell Halt).</p> <p>Under the freight management strategies currently under consideration, a jetty for the import of construction materials is not now proposed.</p> <p>The use of Wallasea Island is now no longer being considered as part of the proposed development.</p>
Project-wide	Description of the proposed development	2.98	<p>Information on the operation and maintenance of the proposed development should be included in the ES and should cover, but not be limited to, such matters as: the number of full/part-time jobs; the operational hours and if appropriate, shift patterns; the number and types of vehicle movements generated during the operational stage.</p>	<p>Further details of the requested information are provided within Chapter 3 of the EIA Scoping Report. Full details will be provided within the ES.</p>

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Project-wide	Approach to the EIA	2.99	<p>In terms of decommissioning, the SoS acknowledges that separate consent will be required from the ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended). The SoS welcomes the inclusion of a high-level environmental assessment of the decommissioning of the proposed development with the ES. An assessment of environmental impacts at the decommissioning stage is necessary to enable the decommissioning works to be taken into account in the design and use of materials, such that structures can be taken down with the minimum of disruption. The SoS considers that the process and methods of decommissioning should be considered and options presented in the ES, where possible.</p>	<p>As explained in Chapter 5 of this EIA Scoping Report, a high-level assessment of the decommissioning phase of the power station will be presented within each of the technical assessments.</p>
Project-wide	Approach to the EIA	2.100	<p>The SoS notes that the operational life of the Sizewell C power station is 60 years. The life of the spent fuel storage element of the development would be at least 100 years, beyond the life of the operational power station. The SoS recommends that the EIA considers how the spent fuel storage would be maintained throughout the anticipated 100 years life of the facility.</p>	<p>This point is noted.</p>

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Project-wide	Approach to the EIA	3.4	<p>The SoS would suggest that the applicant ensures that appropriate consultation is undertaken with the relevant consultees in order to agree, wherever possible, the timing and relevance of survey work as well as the methodologies to be used. The SoS notes and welcomes the intention for ongoing liaison with key statutory consultees and other interested parties, including scope of survey work as described within a number of topic areas in Section 7 of the Scoping Report.</p>	<p>Chapter 6 of the EIA Scoping Report outlines where consultation has been undertaken to agree methodologies and survey work following the 2014 EIA Scoping Report.</p> <p>Further consultation is likely to be undertaken in relation to the new Scoping Opinion.</p> <p>Details of the consultation undertaken and how this has informed the methodologies will be included within the ES.</p>
Project-wide	Approach to the EIA	3.5	<p>The SoS recommends that the physical scope of the study areas should be identified under all the environmental topics and should be sufficiently robust in order to undertake the assessment. The extent of the study areas should be on the basis of recognised professional guidance, whenever such guidance is available. The study areas should also be agreed with the relevant consultees and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given. The scope should also cover the breadth of the topic area and the temporal scope, and these aspects should be described and justified. The SoS notes and welcomes the intention to define the spatial and temporal</p>	<p>Chapter 6 of the EIA Scoping Report identifies Study areas for each of the topics, with a few exceptions.</p> <p>The ES will clearly identify the study area for each assessment as well as the temporal scope.</p>

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Project-wide	Approach to the EIA	3.6	<p>scope within the ES.</p> <p>It is not clear from the Scoping Report which elements are temporary during construction, at what stage these will be decommissioned and how these will be considered within the proposed ES. The ES will need to ensure that an assessment of all activities associated with the proposed development is included within the EIA.</p>	<p>Chapter 3 of the EIA Scoping Report identifies which elements of the proposed development are temporary. The ES will provide further details on these elements and the technical assessments will include consideration of the 'removal and reinstatement' phase where relevant (e.g. for the temporary park and ride facilities)</p>
Project-wide	Approach to the EIA	3.8	<p>The ES will need to justify the removal of these [scoped out off-site associated development] topics from the ES and confirm that there are no potential effect pathways between the off-site associated development and marine resources, based on the off-site development carried forward within the DCO application.</p>	<p>Chapter 6 of the EIA Scoping Report identifies the elements of the proposed development that will be considered as part of the EIA.</p>

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Project-wide	Approach to the EIA	3.9	It is noted that radiological impacts are also scoped out of the assessment of off-site associated development for the reason that radiological impacts are not associated with the off-site associated development sites. The SoS agrees that it may be possible to scope out radiological impacts on these areas; however, further information will need to be provided in the ES to support this conclusion and confirm that there are no linkages between these sites and radiological material, such as through the transportation of radioactive material.	This point is noted.
Project-wide	Approach to the EIA	3.10	Matters are not scoped out unless specifically addressed and justified by the applicant, and confirmed as being scoped out by the SoS. However, if the applicant subsequently agrees with the relevant consultees to scope matters out of the ES, which may be on the basis that further evidence has been provided to justify this approach, this approach should be explained fully in the ES.	Details of further consultation with stakeholders is provided within Chapter 6 of the EIA Scoping Report. Details of discussions with consultees will be included within the ES and will include where agreement has been reached to scope matters out of the ES.
Project-wide	Approach to the EIA	3.11	In order to demonstrate that topics have not simply been overlooked, where topics are scoped out prior to submission of the DCO application, the ES should still explain the reasoning and justify the approach taken.	This point is noted. Justification will be provided where topics have been scoped out.

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Project-wide	Approach to the EIA	3.13	The relevant NPSs for the proposed development, i.e. EN-1 and EN-6, set out both the generic and technology-specific impacts that should be considered in the EIA for the proposed development. When undertaking the EIA, the applicant must have regard to both the generic and technology-specific impacts and identify how these impacts have been assessed in the ES.	The technical assessments within the ES will include a series of tables which will explain how the assessment requirements defined within NPS EN-1 and EN-6 have been addressed.
Project-wide	ES preparation	3.18	The Scoping Report refers to a high-level assessment to be undertaken for the decommissioning of Sizewell C power station; however, it is unclear how and where this information will be presented within the ES. No reference to decommissioning has been made within the individual topic chapters. The SoS recommends that the ES structure include for the high-level assessment of decommissioning.	This point has been clarified within Chapter 5 of the EIA Scoping Report and a short summary of the decommissioning phase is to be included within each technical assessment in the ES.
Project-wide	ES preparation	3.19	The SoS considers that the ES should not be a series of disparate reports and stresses the importance of considering interrelationships and cumulative effects throughout the ES.	Chapters 5 and 7 of the EIA Scoping Report explains how interrelationships and cumulative effects are to be assessed and presented within a single volume of the ES.

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Project-wide	Description of the proposed development	3.20	The SoS notes that the eastern boundary of the proposed 'area for cooling water and associated infrastructure' is not entirely included on a number of figures provided with the Scoping Report (for example Figures 1.1.1 and 3.2.1). The SoS advises that the figures presented within the ES include a greater mapped area to clearly show the considered boundary of the cooling water and associated infrastructure.	A series of new figures are provided to accompany this EIA Scoping Report. These are listed at the front of the document.
Project-wide	ES preparation	3.21	A list of abbreviations and glossary has been provided with the Scoping Report; however, it is noted that this is incomplete. Examples include EPRs and BERR. The ES will need to ensure that all abbreviation/acronyms are included within the ES and first occurrences are stated.	An updated abbreviations list is included with this EIA Scoping Report. The ES will include a full list of abbreviations and a glossary of key terms.
Project-wide	Approach to the EIA	3.22	Where the applicant has identified mitigation relied upon in the ES, the SoS reminds the applicant to ensure that such mitigation is adequately secured via requirements within the draft DCO. The SoS recommends that the applicant provides a table appended to the ES setting out how the mitigation identified and relied upon within each topic chapter in the ES has been secured through the draft DCO. This should be by reference to the draft requirement number in the DCO and identifying any plans or strategies that would be relied upon to deliver such mitigation.	This point is noted and will be considered in the preparation of the draft DCO as well as the ES. A mitigation schedule will accompany the wider application and will be aligned with the mitigation defined within the ES.

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Project-wide	Approach to the EIA	3.23	<p>The scope of cumulative projects is described within the Scoping Report; however, only the Galloper offshore windfarm has been specifically referenced in the report. The applicant's attention is drawn to the comments of the MMO in respect of cumulative projects, which recommends the cumulative assessment also take into consideration wider developments such as port developments in the region, including Harwich and Felixstowe.</p>	<p>A new approach to cumulative effects assessment has been presented within Chapter 5 of this EIA Scoping Report and discussions will continue with relevant consultees to ensure all appropriate schemes are considered during the assessment.</p>
Project-wide	Socio-economics	3.24	<p>Consideration should be given to whether the baseline for this topic assessment should also include agricultural interests and businesses in the area, bearing in mind that agricultural land may be affected, particularly during construction. No specific mention is given to agricultural interests in Section 6.2, although Section 7.9 refers to the consideration of socio-economic effects on agricultural businesses, which is stated to be included in Section 6.2.</p>	<p>The assessment will include an assessment of the socio-economic impact of the potential loss of agricultural land, severance within farm units, and the related direct and indirect socio-economic impacts. The assessment will not involve the undertaking of site surveys or landowner interviews but these will be undertaken as part of the soils and agriculture assessment. The socio-economic receptors related to agricultural land are identified as the wider sub-regional economy, and site-specific features including</p>

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Project-wide	Socio-economics	3.25	<p>The SoS welcomes the development of a Gravity Model with Suffolk County Council, Suffolk Coastal District Council, and Waveney District Council. The SoS would expect on-going discussions and agreement, where possible, with such bodies.</p> <p>The SoS also welcomes the use of updated baseline information as this becomes available, as stated within the Scoping Report. The applicant should ensure that the baseline data relied upon for the assessment is up-to-date and robust within the ES. The applicant is directed to the comments of Suffolk County Council in Appendix 2 of this Opinion, regarding the proposed modelling.</p>	<p>individual farm units, in terms of disruption to farm operations, loss of land and severance of land/access.</p> <p>The Gravity Model and other technical assessments have been developed in collaboration with SCC. EDF Energy will continue to review the baseline and central case assessments to point at which it is agreed that the proposed development is fixed, to allow a robust impact assessment to be undertaken. Any impact assessment will recognise that the baseline data represents a single point in time, and will therefore include sensitivity testing and commitments to monitoring through a Section 106 Agreement.</p>

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Project-wide	Socio-economics	3.26	<p>The SoS recommends that the socio-economic ES chapter assess the impacts of the proposed development on potential tourism receptors beyond the consideration of tourist accommodation, for example, visitors to the Heritage Coast. The applicant's attention is drawn to the comments of Theberton and Eastbridge Council and Suffolk County Council in Appendix 2 of this Opinion.</p>	<p>EN-1 requires that socio-economic effects of the proposed development on tourism are assessed. The proportion of tourist accommodation taken by construction workers will be a key part of the impact assessment as noted. The assessment will be informed by a quantitative tourism survey to be undertaken by Ipsos MORI in Summer 2019.</p>

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Project-wide	Socio-economics	3.27	<p>Details of the construction methods, working hours, and duration of works should be provided in the ES. Cross-reference should be made to the transport assessment and any impacts the construction and operational development may have on the local network, including consideration of potential works to existing and new access roads.</p>	<p>Where possible, details of the construction methods, working hours, and duration of the works will be provided in the ES. Cross-reference will be made to the Transport assessment where local works have a community receptor i.e. cause severance or delay assessed as 'significant'. These will be drawn together in the 'Community Impact Report' to accompany the SE assessment - a sub-district summary of environmental effects on communities.</p>
Project-wide	Socio-economics	3.28	<p>The ES should assess the socio-economic impacts of the proposed campus accommodation on the local community. The applicant's attention is drawn to the comments of Swefling Parish Council and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion, in this regard.</p>	<p>The campus will have a range of effects, both positive and negative during construction and operation. The construction phase of the accommodation campus, and the rest of the main development site, will be assessed in individual environmental topic chapters in regard to specific topic-</p>

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Project-wide	Socio-economics	3.29	The Scoping Report states that the cumulative effects assessment would use broader 'macro' projections of cumulative influences relevant to potential effects, rather than focusing on the cumulative potential effects of other specific developments. The SoS recommends that the applicant confirms that the applied 'macro' projections do take account of any cumulative effects of specific developments.	<p>related effects.. . A full assessment of the potential sub-district effects on the use of, for example, GP surgeries (as raised by Swefling PC) will be included within the assessment. An assessment of the campus will be included within the socio-economic assessment of the effects of the proposed development as a whole. In terms of less quantifiable/tangible effects, a Community Impact report will draw together the various local environmental effects of the proposed development, in particular the main development site, on a sub-local authority scale.</p> <p>The 'macro' projections are informed by a database of large-scale construction projects in the Region. In addition, the assessment will consider the 'Development Schedule', which will underpin</p>

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				the assessment of cumulative effects for all topics.
Project-wide	Transport	3.30	The SoS welcomes the development of the assessment of transport impacts in association with the local highways authority, Suffolk County Council. The SoS would expect on-going discussions and agreement of the scope of the assessment and modelling approach, where possible. The applicant's attention is drawn to the detailed comments provided by Suffolk County Council regarding the scope of the transport assessment (see Appendix 2 of this Opinion).	Regular meetings are being held with SCC officers to progress and agree the Transport Assessment and modelling.
Project-wide	Transport	3.31	The SoS notes the proposed limited number of further count surveys in 2014, to establish whether there has been any material change since the initial surveys in 2011/2012. The applicant should ensure that the baseline data relied upon for the assessment is up-to-date and robust within the ES and should be agreed with the local highways authority.	Further surveys have been undertaken since 2014 based on ongoing consultation with SCC to agree the modelling. Refer to Section 6.3 of the EIA Scoping Report.

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Project-wide	Transport	3.32	<p>The Scoping Report currently identifies a number of off-site associated developments that may be taken forward to mitigate potential impacts of construction associated with movement of freight and the number of traffic movements associated with the construction workforce. These are described as embedded mitigation, although the decision to proceed with any or a number of these options is not yet determined. The SoS expects the applicant to present the embedded mitigation relied upon within the ES and that any traffic assessment would need to take account of the chosen mitigation options.</p>	<p>The transport chapter of the ES and the Transport Assessment will be based on the chosen mitigation package.</p>
Project-wide	Transport	3.33	<p>It is noted that the focus of the transport chapter is the assessment of impacts on the road network; however, the transport study should also include an assessment of impacts on the rail network and vessel movements, if these additional modes of transport are to be used by the development.</p>	<p>Separate reports on the rail network and marine navigation studies are being undertaken to support the DCO application and will inform the EIA as relevant.</p>
Project-wide	Transport	3.34	<p>The Transport Assessment should consider the movements of any waste/spoil off-site during construction and following completion of construction works, where a requirement for this is identified. For example, Section 3.4 of the Scoping Report identifies the potential for exportation of extra material for use at an off-site nature reserve such as Wallasea Island. The assessment would need to address the form of transport and possible routing, if required.</p>	<p>The traffic modelling includes HGV movements for all construction activities. Only a relatively small proportion of off-site movements will relate to waste / spoil, as the focus is on maximising the retention of material on-site. As noted above, the use of Wallasea</p>

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Project-wide	Transport	3.35	The Scoping Report states a number of Traffic Management Plans (TMP) will be implemented. Any mitigation measures should be detailed in the ES and draft TMPs provided.	Island has now been excluded.
Project-wide	Transport	3.36	The SoS recommends that the ES should take account of the location of footpaths and any PRow including bridleways and byways and existing permissive paths. The ES should clearly set out impacts on them including within the wider area. It is important to minimise hindrance to them where possible.	The mitigation measures will be detailed in the ES and draft TMPs. Discussions are being held with the PRow officer and SCC highway officers to agree the strategy for PRow's impacted by the development. The ES transport chapter will take account of PRow as well as footways and cycle routes. The ES will also include assessments on Amenity and Recreation which will assess the impacts on the recreational resource.
Project-wide	Transport	3.37	The applicant's attention is drawn to a number of responses in respect of traffic and transport, including the responses of Suffolk County Council, Essex County Council, Farnham with Stratford St Andrew Parish Council, Middleton-cum-Fordley Parish Council, Sweffling Parish Council, and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion.	The comments have been reviewed and considered in this Scoping Report and will be reflected in the ES and the Transport Assessment as relevant.

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Main Development Site	Terrestrial ecology and ornithology	3.38	<p>The SoS notes that further ecological work and surveys are proposed to inform the EIA. The ES should detail the methodology, including the timing, of the surveys which have been used to inform the baseline. It is noted that the timing of surveys are not included within the Scoping Report and therefore, it is not currently possible to ascertain whether the surveys are proposed within the optimum time period. Survey data to inform the EIA should be undertaken at an appropriate time of year, including the minimum number of survey visits, in agreement with the relevant statutory nature conservation bodies. Surveys should be undertaken in accordance with recognised best practice guidance.</p>	<p>This Scoping report provides an update on the additional surveys that are being undertaken in 2019 and all of these are being undertaken at the optimum time of year.</p>
Main Development Site	Terrestrial ecology and ornithology	3.39	<p>The applicant's attention is drawn to the comments of the Environment Agency in respect of the scope of potential ecological receptors in Appendix 2 of this Opinion. It is noted that the Scoping Report makes no reference to potential fish and eel receptors. The applicant is also referred to the comments of the MMO in Appendix 2 regarding the marine and coastal birds to be considered within the ES. The Scoping Report does not make clear whether the ES will assess impacts on bird species beyond red-throated diver, little tern, and sandwich tern. It is recommended that these species groups are considered and the scope of any further studies required agreed with the relevant statutory bodies, including Natural England, the MMO, and the Environment Agency.</p>	<p>No formal fish surveys have been conducted. Glass eels were identified in Sizewell Marshes Site of Special Scientific Interest (SSSI) during aquatic macrophyte surveys and desk study data has highlighted the presence of other coarse fish. Potential impacts on fish will be assessed within the ES. The ES will also assess impacts on bird species beyond red-throated diver, little</p>

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Main Development Site	Terrestrial ecology and ornithology	3.40	<p>The SoS notes that only receptors of medium value (i.e. County/Regional importance) are to be considered within the detailed assessment of Key Ecological Receptors (KERs). The SoS reminds the applicant to ensure that sufficient information is included within the ES to allow the SoS to fulfil their duty under the NERC Act 2006 (as amended) to have regard to biodiversity.</p> <p>The applicant's attention is also drawn to the requirements of NPS EN-1 and EN-6.</p>	<p>tern, and sandwich tern, drawing in particular upon the parallel Habitat Regulation Assessment workstream</p> <p>The ES ecological baseline will highlight all habitats and species listed under the NERC Act and these will be fully assessed with the ES.</p> <p>The technical assessments within the ES will include a series of tables which will explain how the assessment requirements defined within NPS EN-1 and EN-6 have been addressed.</p>

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Main Development Site	Terrestrial ecology and ornithology	3.41	<p>The ES chapter will need to define the spatial boundaries of the ecological assessment in respect of the intertidal environment and designated sites within the marine and coastal environment, to ensure designated sites, habitats, and species of the intertidal environment are fully assessed either within the terrestrial ecology and ornithology ES chapter or the marine ecology chapter. The SoS notes from Paragraph 7.2.5 of the Scoping Report that the geographical study area has been defined by defined the potential influence of the scheme (noted to be up to a distance of 20km); however, the SoS reminds the applicant to provide evidence within the ES to define how the ecological zone of influence has been determined. The applicant's attention is drawn to the comments of Kelsale cum Carlton Parish Council in Appendix 2. The applicant's attention is also directed to the comments of Natural England and Suffolk County Council regarding the proposed study area of 5km for bats. The SoS recommends that the scope of the further surveys and study areas for ecological receptors be agreed with the relevant statutory bodies, including Natural England.</p>	<p>The intertidal environment will be dealt with in the marine ecology chapter of the ES main development site volume although impacts on birds using the marine environment including the intertidal zone will be included in the terrestrial ecology and ornithology chapter.</p>
Main Development Site	Terrestrial ecology and ornithology	3.42	<p>The SoS notes that a number of internationally and nationally designated sites for nature conservation lie within 20km of the proposed development, as presented on Figures 7.2.2 and 7.2.3 to the Scoping Report, and Table 7.2.2 of the Scoping Report only discusses the most relevant/Key designated sites. Following on from the SoS comments above, the applicant is reminded to</p>	<p>The ES will provide justification as to how the zones of influence have been determined. Extensive consultation with regulatory bodies has taken place regarding the scope of ecological survey.</p>

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Main Development Site	Terrestrial ecology and ornithology	3.43	<p>consider the potential ecological zone of influence when assessing ecological receptors, including designated sites.</p> <p>The SoS considers that it may not be possible at this stage to identify the Key designated sites carried forward in the assessment. The applicant is directed to the comments of the Environment Agency in Appendix 2 of this Opinion, which recommend that Dew's Pond Special Area of Conservation (SAC) is considered, and also the comments of Suffolk County Council, which recommend that the Deben Estuary Special Protection Area (SPA) be considered.</p>	<p>For example, the study area for bats has been extended up to 10km (dependent of species) to consider core sustenance zones from known roost sites and radio-tracking studies have been undertaken over a survey area wider than 5km.</p> <p>Potential zones of influence have been fully considered regards designated sites and potential effects on both Dews Pond SAC and the Deben SPA have been assessed where it is considered a potential impact pathway exists. If no impact pathway has been identified, then sites have been appropriately scoped out of the assessment within a clear justification as to why.</p>
			<p>The Scoping Report makes reference to consideration of impacts associated with noise, lighting, visual disturbance, emissions and pollutants. The SoS recommends that cross-reference is made to other specialist reports on these topic areas to be produced for the application in support of the ecological impact assessment.</p>	<p>In the ES, cross-references between the ecology chapters and other technical chapters and technical reports will be used as necessary and where</p>

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				the assessment on ecological receptors relies on those other technical assessments.
Main Development Site	Terrestrial ecology and ornithology	3.44	Reference is made to proposals to restore and create habitats as part of embedded mitigation for the proposed development. The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.	The draft DCO will be accompanied by a Mitigation Schedule which will explain how each element of mitigation is to be secured.
Main Development Site	Landscape and visual	3.46	The LVIA section in the Scoping Report refers to an indicative Zone of Theoretical Visibility (ZTV) that has been produced. The SoS advises that the ES should describe the model used, provide information on the area covered and the timing of any survey work and methodology used.	As indicated in this EIA Scoping Report, a full methodology for the production of ZTVs will be included as an appendix to the LVIA chapters of the ES.
Main Development Site	Landscape and visual	3.47	The SoS notes the reference to professional judgement in the assessment process. The SoS expects that the ES makes it clear where and how professional judgement has been applied in relation to the assessment.	As indicated in this EIA Scoping Report, a full explanation of how professional judgement is applied within the assessment process will be included within the LVIA chapters of the ES.

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Main Development Site	Landscape and visual	3.48	The proposals will be for a large structure in respect of the power station. The SoS requests that careful consideration should be given to the form, siting, and use of materials and colours in terms of minimising the adverse visual impact of the operational power station (for those elements where alternative design approaches are feasible).	An iterative design process is being utilised to minimise adverse visual impacts of the power station and this will be reported within the LVIA chapter of the ES (Main Development Site volume)
Main Development Site	Landscape and visual	3.49	The Scoping Report describes potential impacts at night due to lighting; however, no methodology for the assessment of lighting and night time effects is described. The SoS recommends that the ES include an assessment of night time views and lighting impact assessment, including an assessment of light spill to local residents where this has the potential to lead to disturbance during the construction or operational periods. The ES should assess potential lighting effects associated with all aspects of the development, including the power station site, roads, campus accommodation, and any off-site associated development. The applicant's attention is drawn to the comments of Suffolk County Council, Middleton-cum-Fordley Parish Council and Theberton and Eastbridge Parish Council in Appendix 2 of this Opinion, regarding lighting.	A brief summary of the approach to the assessment of lighting and night-time effects is included in Section 6.6 of the EIA Scoping Report. A full methodology and assessment will be included as an appendix to the LVIA chapters of the ES.

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Main Development Site	Landscape and visual	3.50	<p>The Scoping Report refers to the preparation of two landscape strategies, for the construction and operational stages of the proposed development, both of which would incorporate mitigation measures to offset potential impacts.</p> <p>The SoS welcomes the inclusion of landscape strategies within the ES and reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO. The applicant is also reminded of the need to tailor these plans to accommodate ecology and other mitigation measures which may be required.</p>	<p>The landscape strategies for both the construction and operational phases continue to evolve, and are being prepared collaboratively to incorporate ecological considerations and all other mitigation measures.</p> <p>The integrated proposals will be included as part of the application and will inform the assessments in the ES for Landscape and Visual, Terrestrial Ecology and Ornithology and Amenity and Recreation.</p>
Main Development Site	Amenity and recreation	3.52	<p>The SoS notes the current study area of 2km, although reference is made to the potential inclusion of routes and recreational interests beyond this distance. The ES should include the reasoning behind, and justification of, the selection of the study area for the assessment. The study area should be agreed in consultation with the relevant consultees.</p>	<p>The ES will provide justification to the size of the study area for the main development site.</p>

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Amenity and recreation	3.53	<p>The Scoping Report provides very little information regarding the methodology and scope of the proposed further collection of field survey data and desk study information. The SoS recommends that the methodology for data collection and sources of desk study information be agreed with Suffolk County Council, Suffolk Coastal District Council and other relevant consultees.</p>	<p>The ES will provide the methodology and the scope of any further field survey data collected as well as any agreement reached with the consultees</p>
Main Development Site	Amenity and recreation	3.54	<p>The amenity and recreation studies may be required to inform the Habitats Regulations Assessment (HRA). Should this be required, the applicant should ensure that sufficient and appropriate information is collated to inform recreational effects on European sites. This may include the need to provide quantitative baseline data on numbers of users of existing PRoW, permissive paths and open access land (including coastline). The applicant is referred to the SoS's comments on the HRA process in Section 4 of this Opinion.</p>	<p>The amenity and recreation assessment will feed directly into the HRA as appropriate. The HRA will include information on expected recreational displacement associated with the Sizewell C proposals. The information will include quantitative baseline data collected by studies undertaken by EDF Energy as well as existing visitor numbers supplied by key stakeholders e.g. RSPB Minsmere.</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Amenity and recreation	3.55	The Scoping Report refers to the use of primary mitigation measures/embedded mitigation to mitigate the effects of the proposed development on amenity and recreation, where possible (such as through the project design, standard management practices, and the use of a landscape strategy), and secondary mitigation measures not secured through design. The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.	The draft DCO will be accompanied by a Mitigation Schedule which will explain how each element of mitigation is to be secured. The Mitigation Schedule will be aligned with the mitigation relied upon within in ES.
Main Development Site	Terrestrial historic environment	3.58	The SoS notes that the proposed assessment methodology makes use of matrices, in line with Chapter 5 of the Scoping Report. The applicant's attention is drawn to the comments of English Heritage and Suffolk County Council regarding the application of an alternative/additional approach to the assessment methodology (see Appendix 2 of this Opinion). The SoS recommends that the approach to the assessment methodology be discussed further and an approach agreed with English Heritage and Suffolk County Council's Archaeological Service.	An updated methodology has been produced and will be agreed with the stakeholders, taking into account Suffolk County Council's Archaeological Service and Historic England comments.

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Terrestrial historic environment	3.59	The SoS notes that the setting of cultural heritage resources could be affected; this includes SAM, listed buildings, conservation areas, and archaeological sites. The SoS considers that these should be addressed in the ES. Cross-reference should be made to the Landscape and Visual chapter of the ES. The applicant is directed to the comments made by English Heritage (see Appendix 2 of this Opinion).	The setting of heritage assets will be assessed in the ES. The scope of which assets should be included will be agreed with the ESC conservation officer / SCCAS / Historic England as appropriate. The assessment will cross reference to other chapters as appropriate, including noise and landscape and visual.
Main Development Site	Terrestrial historic environment	3.60	The SoS recommends that mitigation works are agreed with English Heritage in addition to the relevant local authority archaeological advisors.	Mitigation will be agreed with the ESC conservation officer / SCCAS / Historic England as appropriate.
Main Development Site	Marine historic environment	3.63	The Scoping Report identifies 162 wrecks within the marine study area but concludes the proposed development is not expected to directly impact on these sites. The SoS reminds the applicant that the ES will need to present the reasoning and evidence to support the scoping out of impacts on historic environment assets and to support the conclusions of the assessment. The applicant is also directed to the comments of the MMO and English Nature in this regard (see Appendix 2 of this Opinion).	The point and the comments referenced are noted and will be considered where relevant in the ES chapter.

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Marine historic environment	3.64	<p>The Scoping Report paragraph 7.6.3 refers to new geophysical and geomorphological data of the offshore region and the adjacent coastline; however, no detail has been provided regarding the sources and scope of the data. The SoS recommends that the scope and methodology for further marine historic environment surveys be agreed with the relevant statutory bodies, including English Heritage. The applicant is directed to the comments and advice of English Heritage in Appendix 2 of this Opinion, with regard to the requirements of any Written Scheme of Investigation prepared for the proposed development and the information required for the ES.</p>	<p>The points and the comments referenced are noted and will be considered where relevant in the ES chapter.</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Marine historic environment	3.65	<p>The SoS notes reference is made to an assessment of Historic Seascape Character within the discussion of proposed interrelationships; however, no reference is made to the proposed undertaking of a Historic Seascape Character assessment prior to this reference. The SoS advises that the ES should describe the methodology used and provide information on the area covered. The assessment should follow established best practice guidance for Historic Seascape Character assessment. The Historic Seascape Character assessment should be cross-referenced with the LVIA in the landscape and visual ES chapter. The applicant is directed to the comments and advice of English Heritage in Appendix 2 of this Opinion, with regard to historic seascape assessment and assessment of cumulative impacts.</p>	<p>The points and the comments referenced are noted and will be considered where relevant in the ES chapter.</p>
Main Development Site	Noise and vibration	3.66	<p>The SoS notes the proposed collection of further comprehensive noise surveys in 2014 and recommends that the methodology and choice of noise receptors should be agreed with the relevant Environmental Health Department of the relevant Council and the Environment Agency.</p>	<p>As detailed in section 6.4 of the EIA Scoping Report, additional surveys of noise and vibration levels were carried out in 2014, 2015 and 2016. In addition to these, surveys have also been carried out at a small number of additional locations (such as those within the RSPB reserve at Minsmere).</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Noise and vibration	3.67	The SoS notes that data was collected during the Sizewell B outage in June 2013 to establish noise levels in the absence of the operating Sizewell B power station. The SoS considers it important to establish an appropriate and agreed baseline for the proposed development, in view of the decommissioning of the existing power station. Noise levels will change throughout the operation of both stations and the cessation of operation and decommissioning of Sizewell B.	<p>Survey locations were discussed with stakeholders in 2016 and general agreement was reached at that time on the appropriateness of the locations.</p> <p>Further consultation was undertaken in March 2019 with SDC (now ESC) and SCC, and additional survey locations are being proposed to address changes in the development proposals.</p>
				<p>Further baseline surveys have been undertaken in the area outside of an outage, during normal operation of Sizewell B capturing the operational noise levels which will inform the baseline to be used in the ES.</p>

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Noise and vibration	3.68	<p>The Scoping Report states that the assessment will take place for a number of different scenarios associated with the construction and operational phases of the development, and will use a number of 'reasonable worst case scenarios' in each case. Information should be provided in the ES regarding the parameters used in the assessment of worst case, such as types of vehicles and plant to be used during the construction phase.</p>	<p>The noise and vibration assessment within the ES will set out the assumptions (e.g. schedule of plant and operating times) and any parameters applied to the assessment scenarios for the construction, operation and any required removal and reinstatement works for the main development site and associated developments.</p>
Main Development Site	Noise and vibration	3.69	<p>The ES should state the proposed working hours and shift arrangements for the construction and operation of the proposed development. Noise impacts on different receptor groups should be specifically addressed and in particular any potential noise disturbance at night and other unsocial hours such as weekends and public holidays.</p>	<p>The descriptions of development in the ES will set out the working hours and shift assumptions for the construction phases and once operational, including any overnight construction activity and associated workforce and traffic movements. Any impacts associated with the workforce and the different shifts will be assessed for all relevant topics within the EIA, including the noise and</p>

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Noise and vibration	3.70	<p>The noise and vibration data and assessment should also be suitable to assess potential impacts on both human and wildlife receptors, such as birds and fish. Noise and vibration levels along the foreshore potentially affecting birds and aquatic organisms, such as fish, should be addressed, together with noise and vibration on marine ecology that could potential arise from the offshore construction works and vessel movements. It is unclear from the Scoping Report how underwater noise levels would be calculated and any potential impacts on marine ecology assessed. This should be clarified within the ES.</p>	<p>vibration impact assessment.</p> <p>Potential noise and vibration impacts on terrestrial ecological receptors, including bat and bird species will be assessed by the Terrestrial Ecology and Ornithology assessments (refer to Section 6.7 of the EIA Scoping Report), and the potential impact of noise and vibration from works in the marine environment on fish and mammal species will be assessed by the Marine Ecology assessment (refer to section 6.16 of the EIA Scoping Report). These assessments will draw upon the noise and vibration assessment and technical reports as relevant with appropriate cross-referencing.</p>

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Noise and vibration	3.71	With regard to mitigation, consideration should also be given to monitoring noise complaints during construction and when the development is operational.	The Outline Construction Environmental Management Plan, which will accompany the application, will set out the requirements for both noise monitoring and managing complaints.
Main Development Site	Air quality	3.73	The SoS notes that the need for the collection of further data and the details of any monitoring will be agreed in consultation with relevant stakeholders through the preparation of an air quality monitoring strategy. The SoS welcomes the proposed consultation and recommends that the adequacy of the baseline data and any further data collection required be agreed with both the Environmental Health Department of the relevant Council and the Environment Agency.	As detailed in Section 6.5 of the EIA Scoping Report, further baseline monitoring was undertaken in September 2016 and September 2017 - the locations for which were determined in consultation with SCDC (now ESC) and SCC.
Main Development Site	Air quality	3.74	The SoS recommends that receptor locations identified in the quantitative assessments of air quality (both the road traffic and point source modelling) are agreed with the Environmental Health Department of the relevant Council and also with the Environment Agency.	The locations for baseline monitoring were determined in consultation with SCDC (now ESC) and SCC. Consultation has also been undertaken with the Environment Agency with regard to operational emissions from the diesel generators as part of the pre-application engagement on the

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				proposed Combustion Activities permit.
Main Development Site	Air quality	3.75	The SoS recommends that within the ES attempts are made to quantify the overall impact of the proposed development both on the nearby Air Quality Management Areas (AQMA's) (including the potential AQMA under consultation) and at agreed receptor locations. The applicant's attention is drawn to the comments of Suffolk County Council in respect of an AQMA at Stratford St Andrew (see Appendix 2 of this Opinion).	The air dispersion modelling takes full account of the AQMA and information published by SDC (now ESC) under their local air quality management duties.
Main Development Site	Air quality	3.76	The SoS considers that the site lies within a sensitive area, which includes Sizewell Marshes SSSI. The impacts on Sizewell Marshes and other nearby designated sites should be carefully assessed. There is a need to consider potential related effects due to an increase in airborne pollution including fugitive dust especially during site preparation and construction. The SoS recommends that cross-reference is provided to the terrestrial ecology and ornithology ES chapter and HRA report.	Potential air quality impacts on the surrounding area, including sensitive habitats such as the Sizewell Marshes SSSI and Minsmere nature reserve will be assessed in the Terrestrial Ecology and Ornithology assessment in the ES, and in the 'shadow' Habitats Regulations Assessment (HRA), drawing on the air quality assessment. Cross-references will be provided in

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Air quality	3.78	Air quality and dust levels should be considered not only on site but also off-site, including along access roads, local footpaths and other PRoW.	the ES as relevant. As detailed in Section 6.4 , the air quality assessment will consider potential impacts off-site from dust and other emissions arising from the proposed development for example: construction dust will be assessed up to 200m from the boundary of the main development site and associated development sites, plus along the corridor along public roads extending 500m from construction site egress points.
Main Development Site	Air quality	3.79	The SoS welcomes that potential mitigation measures beyond the embedded mitigation have been considered and that the air quality assessment will be used to identify the need for such measures.	The air quality assessment will identify mitigation measures to mitigate any dust impacts, emissions from plant and traffic emissions as required. These will be detailed in the air quality chapters of the ES, and the Outline Construction Environmental Management

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				Plan where appropriate.
Main Development Site	Air quality	3.80	The SoS recommends that consideration should be given to the monitoring of dust complaints.	The Outline Construction Environmental Management Plan will set out requirements for both dust monitoring and managing complaints.
Main Development Site	Air quality	3.81	The SoS recommends that the applicant gains agreement from both the Environmental Health Department of the relevant Council and the Environment Agency over the developments to be included in the cumulative assessment.	EDF Energy will be consulting with both SCC and ESC, as well as the Environment Agency on the list of developments to be included in the cumulative impact assessment.
Main Development Site	Soils and agriculture	3.83	It is unclear whether Table 5.3 of the Scoping Report would be used to calculate significance, as the SoS notes that a table or text to define the significance of the impact is absent from the soils and agriculture section, although a major/moderate/minor/negligible scale appears to be applied. The ES should detail how the significance of impacts is proposed to be assessed.	The assessment methodology to be used in the ES will be as set out in the 2014 EIA Scoping Report (paragraphs 7.9.24 to 7.9.27) with the exception of the assessment of value and sensitivity of the receptors. This has been updated to reflect current best practice (under development by IEMA). The key change is the inclusion of all best and

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				most versatile land grades (Grades 1, 2 and 3a) as High sensitivity.
Main Development Site	Soils and agriculture	3.85	The SoS welcomes the preparation of the Soils Management Plan, a draft of which should be provided within the ES.	A draft Soil Management Plan will be submitted as an appendix to the soils and agriculture chapter of the ES.
Main Development Site	Soils and agriculture	3.86	The SoS advises that this section should consider the interrelationship with ecology, in particular the impacts from the removal of grassland, trees and hedgerows that provide ecological habitat. Appropriate reference should also be made to the socioeconomic assessment in the ES.	A draft Soil Management Plan will be submitted as an appendix to the soils and agriculture chapter of the ES. It will consider the interrelationships with ecology. The soils and agriculture chapter will reference the socio-economic assessment, where appropriate.
Main Development Site	Geology and land quality	3.88	The Geology and Land Quality section of the Scoping Report presents tables of sensitivity and magnitude for the assessment of designated geological sites; however, no definition of significance is provided within this section. The ES should detail how the significance of impacts is proposed to be assessed.	The approach to the assessment of likely significant effects on land quality will be undertaken using the methodology detailed in Table 5.3 and paragraph 5.3.6 of the 2014 EIA Scoping Report. The sensitivity of a receptor and

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Geology and land quality	3.89	This Scoping Report only considers geological designated sites within the coast line study area. It is unclear whether there are any geological sites beyond the coast line, within the Main Development Site study area that would be affected by the proposed development. The ES should make reference to any geological sites within the study area and/or which could be affected by the proposed development.	the magnitude of the impact will be used to classify an effect.
Main Development Site	Geology and land quality	3.90	The Scoping Report refers to the use of embedded mitigation to mitigate the risk of impacts on geology and land quality. The SoS reminds the applicant that embedded mitigation should be secured within the design and presented within the DCO application.	No geological statutory designated sites have been identified within the main development site, the off-site associated development sites or the wider study area including the offshore coastal area. The draft DCO will be accompanied by a Mitigation Schedule which will explain how each element of mitigation is to be secured. The Mitigation Schedule will be aligned with the mitigation relied upon within in ES.

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Main Development Site	Groundwater	3.92	<p>The SoS welcomes the use of a multi-layered groundwater and surface water model. The model should be agreed with the Environment Agency. The applicant is directed to the comments of Natural England in Appendix 2 of this Opinion, which confirm that Natural England would be happy to provide technical expertise into the modelling of impacts within Sizewell Marshes SSSI.</p>	<p>The development of the groundwater model and water level interactions is being developed in direct consultation with Natural England and the Environment Agency, drawing on their respective technical experts.</p>
Main Development Site	Groundwater	3.93	<p>The SoS notes that groundwater level monitoring will continue through 2014 and additional site investigations have been initiated. It is unclear from the text whether the additional site investigation locations are currently shown on Figure 7.11.1 or whether these additional locations are not yet shown.</p>	<p>An updated groundwater-monitoring plan will be included with the ES, along with a future monitoring programme for construction and operational phases.</p>
Main Development Site	Groundwater	3.94	<p>Table 7.11.2 of the Scoping Report lists 'Principal Aquifers with public water supply abstractions' under both categories of High and Medium value/sensitivity. The ES should clarify the assignment of value/sensitivity and where a resource is intended to be assigned to more than one category, an explanation should be provided as to how a judgement will be made (such as through professional judgement).</p>	<p>The sensitivity of all receptors will be explained and distinguished in the ES, including the status of principal aquifers providing water supply.</p>

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Main Development Site	Groundwater	3.95	<p>The Scoping Report provides no clear details regarding the source of water for the proposed development, both during construction and operation, and for the variety of sources for which it will be required, such as the campus accommodation, main power station site, for the concrete batching plant etc. The applicant's attention is drawn to the comments of the Environment Agency in respect of water resources. The requirement for and the effects associated with water resources will need to be assessed in the ES and cross-reference made to the surface water chapter and the suggested Utilities and Infrastructure Assets chapter (see Paragraph 3.156 to 3.159 of this Opinion in respect of the latter). The water supply strategy for the proposed development will need to be agreed with the Environment Agency.</p>	<p>The water supply strategy for the proposed development will be presented alongside the ES, taking into consideration of the Environment Agency's feedback and in the context of the Water Resource Management Plan issued by Essex & Suffolk Water, and will be developed in consultation with both these parties.</p>
Main Development Site	Groundwater	3.96	<p>The Scoping Report identifies a number of potential groundwater impacts that are correlated to surface water impacts and vice versa. The SoS advises that the inter-relationship between groundwater and surface water be presented clearly within the two proposed chapters, with appropriate cross-referencing.</p>	<p>The close relationship between surface and groundwater regimes is well noted and will be drawn together under a single ES chapter.</p>
Main Development Site	Groundwater	3.97	<p>Mitigation measures should be addressed and the SoS advises that reference should be made to other regimes (such as pollution prevention from the EA). On-going monitoring should also be addressed and agreed with the relevant authorities to ensure that any mitigation measures are effective. The applicant is directed to the comments of Suffolk County Council in Appendix 2 of this</p>	<p>A monitoring and mitigation strategy will be presented as part of the ES, addressing water level management control aspects. A Drainage Strategy will be presented with</p>

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			Opinion, with regard to monitoring.	the ES to describe pollution control measures in the context of surface water management during construction and operation.
Main Development Site	Groundwater	3.98	The SoS notes that a Flood Risk Assessment (FRA) will be provided outside of the ES but as a separate document to the DCO Application. The SoS advises that the results of the FRA, in respect of groundwater as a potential pathway for discharge to surface and coastal waters, be taken into account within the groundwater chapter of the ES.	The results and conclusions of the FRAs will be summarised in the respective combined groundwater / surface water chapters in the ES.
Main Development Site	Surface water	3.100	The Scoping Report refers to the Freshwater Fish Directive; however, this directive has been revoked. The ES will need to refer to the Water Framework Directive. The applicant's attention is directed to the comments of the Environment Agency in Appendix 2 of this Opinion, regarding the approach and methodology and potential impacts and effects.	The ES will incorporate the results and conclusions of Water Framework Directive assessments.
Main Development Site	Surface water	3.101	The Scoping Report identifies that the construction period, following site preparation, is envisaged to last between seven and nine years. Section 7.12 of the Scoping Report classifies temporary impacts (long-term) if the effects are experienced over a period of no more than five years. The SoS queries how impacts that may occur beyond five years (in the event that they are identified) would be classified.	The construction of Sizewell C is now considered to take between 10-12 years. For the Surface water assessment, the ES will provide greater clarification on the assessment of impacts over a longer period

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				of time, where relevant.
Main Development Site	Surface water	3.102	The Scoping Report contains no information regarding sewage disposal for the proposed development, although it is noted that the design of foul water management features is yet to be developed. The ES will need to detail the proposed foul water management strategy and agree this with the Environment Agency. The applicant's attention is drawn to the comments of the Environment Agency in Appendix 2 of this Opinion.	The management of foul water will form part of the outline Drainage Strategy, which will accompany the ES.
Main Development Site	Surface water	3.103	Reference is made to control measures to mitigate for potential impacts on water quality and hydrology. The SoS reminds the applicant that any control measures as embedded mitigation should be secured within the project design and presented within the DCO application. All other mitigation relied on in the ES will need to be adequately secured via requirements within the draft DCO.	Mitigation control measures will be presented as either embedded mitigation within the design or additional mitigation measures, both clearly set out in the ES.
Main Development Site	Surface water	3.104	The SoS recommends that the study area for the assessment of other projects and plans as part of the cumulative assessment be defined within the ES and agreed with the Environment Agency.	The study area (or 'Zone of Influence') for the purposes of cumulative impact assessment will take into consideration other developments and will

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				be described clearly in the ES within the cumulative assessment
Main Development Site	Coastal geomorphology and hydrodynamics	3.106	It is unclear from this section whether thermal plumes will be assessed in this ES chapter, in addition to the marine quality and sediment chapter. The SoS recommends that full consideration will need to be given to the potential effects of the cooling water system, including scour, increase temperature, and the introduction of any chemicals, as required. Cross-reference should be made between the assessments undertaken for coastal morphology and hydrodynamics and those within the marine water quality and sediments chapter.	This point is noted. The impacts of the hydraulic effects of the plumes on coastal geomorphology will be addressed in the ES. Cross-referencing between the marine chapters will be provided where relevant.
Main Development Site	Coastal geomorphology and hydrodynamics	3.107	It will be important to justify the physical study area for this section and ensure that impacts are considered over a sufficiently wide area. The applicant is also directed to the comments of Suffolk County Council regarding the study area (see Appendix 2).	The study area will be the Greater Sizewell Bay, which is the complete sediment transport cell. The ES will justify the assessment area.
Main Development Site	Coastal geomorphology and hydrodynamics	3.108	The SoS notes that the inter-relationship between coastal geomorphology and hydrodynamics and the marine historic environment is not discussed within the Scoping Report. The applicant is directed to the detailed comments within the response of English Heritage in Appendix 2 of this Opinion, with regard to the inter-relationship with the marine historic environment and potential effects.	The interface between coastal geomorphology and hydrodynamics and the marine historic environment will be addressed in the ES and will be addressed predominantly in the marine historic environment chapter, with

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				cross-referencing as required.
Main Development Site	Coastal geomorphology and hydrodynamics	3.109	<p>This section should draw on the FRA to include consideration of tidal flood risk and the potential for breaching/overlapping of the proposed flood defences under present and projected sea level scenarios. The potential impacts of flood defences and coastal protection measures will need to be fully assessed. The SoS considers that the implications of climate change, in respect of increased surface water run-off, higher sea levels, and proposed/existing coastal defences, should also be carefully considered in the ES. The applicant is directed to the detailed comments of the MMO and Suffolk County Council in Appendix 2 of this Opinion, in respect of the assessment of coastal geomorphology and hydrodynamics.</p>	<p>Coastal flooding, including assessment of climate change, sea level rise etc. is will be covered in the FRA and will be summarised elsewhere as required. The coastal geomorphology and hydrodynamics chapter will describe the design, construction and operation of the coastal defence structures and the impacts of their presence on coastal geomorphology.</p>

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Main Development Site	Coastal geomorphology and hydrodynamics	3.110	Information will need to be provided within the ES to detail the construction methodology for the permanent and temporary coastal and off-shore infrastructure associated with the proposed development, including the treatment of any waste arisings (such as from the proposed tunnel boring techniques). The applicant's attention is drawn to the comments of the MMO regarding dredging activities (see Appendix 2) and also Natural England in regard to potential impacts associated with the beach landing facility.	The ES will include description of the proposed construction methods and impacts will be assessed accordingly.
Main Development Site	Coastal geomorphology and hydrodynamics	3.111	The potential impacts and approach to cumulative impact subsections draw conclusions on the likelihood of impacts in the absence of supporting evidence. The SoS reminds the applicant that conclusions drawn within the ES need to be robustly supported by evidence and justified. The applicant is directed to the comments of English Heritage in respect of cumulative projects (see Appendix 2).	Cumulative impacts will be fully assessed in the ES within a cumulative assessment, which will draw on a thorough review of all relevant proposed marine developments, presented in a 'Development Schedule'. Existing developments or those, which will be built shortly, will form part of the (future) baseline.

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Marine water quality and sediments	3.114	The SoS welcomes the proposed further monitoring in 2014 to supplement the water quality data obtained to date, together with sediment sampling for the offshore structures, and the proposals to agree modelling with the Environment Agency. The SoS recommends that the scope of the assessment and modelling also be agreed with the MMO. The applicant's attention is directed to the MMO's response in Appendix 2 of this Opinion, which includes reference to the expected sampling requirements. The applicant is also directed to the comments of Suffolk County Council regarding the sampling (see Appendix 2).	The modelling approaches have now been shared and agreed with EA and MMO and the outputs shared during consultation.
Main Development Site	Marine water quality and sediments	3.115	The Scoping Report Section 7.14 identifies the modelled baseline for the cooling water model is the situation without Sizewell B. The applicant's attention is drawn to the comments of the Environment Agency in Appendix 2 of this Opinion. The Environment Agency disagrees with this modelled baseline, due to the likely overlap between the two operational power stations. The SoS recommends that the modelling be agreed with the Environment Agency.	The impacts have been modelled with and without Sizewell B operating.
Main Development Site	Marine water quality and sediments	3.116	Cross-reference should be made to the information contained within and the assessments undertaken for coastal morphology and hydrodynamics chapter. Inter-relationships should also be considered for socio-economic and navigation that could be affected by changes to marine water quality or sedimentation.	In the ES, the marine water quality and sediments chapter will cross-refer to the other marine topics as required.

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Main Development Site	Marine water quality and sediments	3.117	Reference is made to process chemicals and discharges/effluent via the cooling water system. The SoS would expect the information regarding discharges to be included within the ES.	As much information as possible on specific discharges will be provided in the ES. Where information cannot be confirmed, bounding conditions (parameters) will be assessed.
Main Development Site	Marine water quality and sediments	3.118	The cumulative assessment should define all projects and plans that have been considered within the assessment, which may include other projects in addition to the Galloper Wind Farm.	Cumulative impacts will be fully assessed in the ES within a cumulative assessment, which will draw on a thorough review of all relevant proposed marine developments, presented in a 'Development Schedule'. Existing developments or those, which will be built shortly, will form part of the (future) baseline.

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Main Development Site	Marine ecology	3.119	The SoS recommends that the selected study areas for the marine ecology impact assessment be discussed and agreed with relevant statutory bodies including the MMO, Cefas, Natural England, and the Environment Agency. The SoS also encourages consultation with local fishing organisations and fishermen throughout the EIA process. The applicant is directed to the comments of the Environment Agency regarding the spatial scope for the study area (see Appendix 2).	Consultations have been held with EA, MMO, NE and the Eastern IFCA on the marine ecology studies, including the spatial scope.
Main Development Site	Marine ecology	3.120	The Scoping Report does not specifically identify the marine ecology receptors likely to be assessed in the ES. The SoS recommends that appropriate ecological receptors be identified within the ES, for example benthic ecology, commercial fisheries. The applicant is also directed to the comments of the MMO and Natural England in this regard (see Appendix 2).	The ES will identify all specific marine ecology receptors.

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Main Development Site	Marine ecology	3.121	<p>The Scoping Report does not contain sufficient information regarding the surveys undertaken to date (including methodology) and the methodology of proposed further studies to ascertain whether these are appropriate and adequate. The ES will need to provide detailed information regarding the surveys including methodology, timing, and detail of the equipment used. It is recommended that the scope of the surveys/studies be agreed with the relevant statutory bodies including the MMO, Cefas, Natural England, and the Environment Agency. The applicant's attention is directed to the detailed comments of the MMO within Appendix 2 of this Opinion, regarding the scope of the surveys, study area, ecological receptors and potential impacts.</p>	<p>The Environment Statement will provide the details of the surveys undertaken for the marine ecology EIA.</p> <p>Consultations have been held with EA, MMO, NE and the Eastern IFCA on the marine ecology studies, including the scope of surveys.</p>
Main Development Site	Marine ecology	3.122	<p>The legislation to be considered in the assessment should also include the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended).</p>	<p>The ES will cite this legislation and the assessments will be undertaken in the context of the legislation as well as relevant planning policy.</p>
Main Development Site	Marine ecology	3.123	<p>Reference is made to the assessment of underwater noise as part of the marine ecology ES chapter; however, no detail regarding the proposed methodology and approach to the assessment of underwater noise has been provided within the Scoping Report. The scope of the underwater noise assessment and potential receptors should be discussed and agreed with the relevant organisations, including the MMO, Natural England and the Environment Agency.</p>	<p>The noise assessment has been shared with the EA, MMO, NE and the IFCA. Both static and fleeing response models have been used.</p>

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Main Development Site	Marine ecology	3.124	The assessment should also address any impacts associated with the removal of temporary structures from the marine environment, including the temporary jetty. The Scoping Report provides limited information regarding any maintenance measures associated with the offshore structures. Information regarding construction, operational, and decommissioning works and an assessment of these works on the marine environment will need to be included in the ES. The applicant is also directed to the comments of the Environment Agency and MMO in Appendix 2.	The jetty is not included in the current proposals. The BLF has been retained and once built will remain in place throughout operation. A high-level assessment of the decommissioning of the power station will be provided for each technical area.
Main Development Site	Marine ecology	3.125	Reference is made to proposals to deliver embedded mitigation to reduce fish mortality. The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately contained within the design of the proposed development and where not embedded in the design, secured via requirements within the draft DCO.	The ES will include as much information on the design of the fish protection measures as is available at the time of writing.

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Main Development Site	Marine ecology	3.126	<p>The SoS advises that inter-relationships between the marine ecology ES chapter and other relevant chapters are adequately discussed. Relevant ES chapters would include (but not be limited to) terrestrial ecology and ornithology, marine water quality and sedimentation, coastal geomorphology and hydrodynamics, surface water, socio-economics, and navigation. The applicant is also directed to the comments of the Environment Agency in Appendix 2 of this Opinion, regarding the consideration of potential additive impacts (cumulative and interdependent impacts on fish populations) and also the comments of the MMO and Natural England.</p>	<p>Inter-relationships will be fully assessed in the ES within the most relevant technical topic chapter, typically those in which the receptor is best assessed. Inter-relationships on marine ecology receptors will be assessed in the marine ecology chapter.</p>
Main Development Site	Marine ecology	3.127	<p>The cumulative assessment should define all projects and plans that have been considered within the assessment, which may include other projects in addition to the Galloper Wind Farm.</p>	<p>Cumulative impacts will be fully assessed in the ES within a cumulative assessment, which will draw on a thorough review of all relevant proposed marine developments, presented in a 'Development Schedule'. Existing developments or those which will be built shortly will form part of the (future) baseline.</p>

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Main Development Site	Navigation	3.129	The ES should identify the anticipated type and number of vessel movements generated by the development during the construction and operation phases and assess the potential impact to other existing vessel movements in the area. Cross-reference also should be made to the Transport section of the ES. The applicant is directed to comments of the MMO in Appendix 2 of this Opinion, with regard to navigation.	The ES will provide information on types of vessel and assess the impacts on other vessel movements in the area.
Main Development Site	Radiological	3.130	Sampling locations and the study area are not identified in plan form within the Scoping Report. The ES should include detailed information regarding the sampling sites, including sample type and location, ideally shown on a plan.	The ES will provide an assessment consistent with the approach used for Hinkley Point C
Main Development Site	Radiological	3.131	Limited information is provided within the Scoping Report regarding transportation of radioactive waste during the operation of the development (as identified in Paragraph 7.17.11 of the Scoping Report) and how this will be assessed. The ES will need to include information regarding proposed transport methods, including frequency, modes and routes, and an assessment of potential impacts.	Radioactive waste would be retained on site in the nuclear waste storage building within the nuclear island and only transported offsite once the UK has identified a geological facility for the long-term storage of this material. No assessment is proposed for these (as yet unknown) off-site movements.

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Off-site associated development	ES preparation	3.133	The SoS notes that the study areas for each individual topic area included within the assessment of each off-site associated development site are not clearly defined within the Scoping Report. The ES will need to include a description of the study area for each topic area, as assessed for each off-site associated development site (for example, all statutory designated sites for nature conservation have been considered within 5km of the boundary of each site).	Each of the study areas for the technical assessments of the off-site associated development sites will be defined on plans in the ES.
Off-site associated development	ES preparation	3.134	Section 8 of the Scoping Report does not include timings for the proposed further surveys nor does it specify the proposed methodologies/best practice standards to be followed for the majority of the topic areas. The SoS notes that more detailed information was included in Section 7 of the Scoping Report and therefore, the information provided within Section 7 may also apply to Section 8; however, this is not made clear within the text. The ES should provide clear justification for the baseline surveys undertaken/not undertaken in respect of each off-site associated development site.	Each of the surveys used for the technical assessments of the off-site associated development sites will be defined in the ES.
Off-site associated development	Consultation	3.135	Proposed consultations are specified for some topic areas within each off-site associated development (such as landscape and visual and terrestrial historic environment); however, the consultation organisation is not always specified. The SoS recommends that the scope of the study area, further surveys/monitoring locations, and methodologies be agreed with	Chapter 6 of this EIA Scoping Report outlines the consultation that has been undertaken to date in preparing the scope of the assessments and assessment

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Off-site associated development	ES preparation	3.136	<p>the relevant stakeholders, including those topics where consultation has not been identified, such as noise and vibration.</p> <p>The SoS reminds the applicant to ensure that all mitigation relied on in the ES is adequately secured via requirements within the draft DCO.</p>	<p>methodologies are set out within in each technical section.</p> <p>The draft DCO will be accompanied by a Mitigation Schedule which will explain how each element of mitigation is to be secured.</p> <p>The Mitigation Schedule will be aligned with the mitigation relied upon within in ES.</p>
Northern park and ride	Terrestrial ecology and ornithology	3.137	<p>Potential impacts on terrestrial ecology and ornithology identified within this chapter include potential construction impacts on birds; however, no bird surveys are identified within Table 8.1. The need or otherwise for bird surveys (or other further ecological surveys) should be identified following the initial Extended Phase 1 habitat survey. Surveys should be undertaken at an appropriate time of year, following established best practice guidance, and reported within the ES.</p>	<p>Brief details on the scope of ornithology survey work undertaken are provided within Section 6.7 of this EIA Scoping Report.</p> <p>Full details of the surveys including timing and methodology will be included in the ecological baseline underpinning the ES chapter</p>
Northern park and ride	Description of the proposed development	3.138	<p>The Scoping Report does not make clear whether the park and ride site will be removed and if so, at what phase of the power station development. If the park and ride site is to be temporary,</p>	<p>Chapter 3 of the EIA Scoping Report identified those elements of the proposed</p>

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			the EIA will need to consider the impact of decommissioning the park and ride site.	development are permanent and those that are temporary. The park and ride facility will be temporary and will be removed once the power station has been built.
Northern park and ride	Soils and agriculture	3.139	The Scoping Report identifies soil damage/loss of fertility; however, it is not clear if there would be loss of agricultural soils associated with the proposed development. This should be made clear within the ES.	As set out in Table 6.16 of the EIA Scoping Report the ES will consider the temporary and permanent loss of land from agricultural production. Top soils would be stored on site during operation of the facility and replaced during the 'removal and restoration' phase.
Northern park and ride	Geology and land quality	3.140	Table 8.2 of the Scoping Report refers to a risk assessment in respect of geology and land quality; however, it is not made clear how this risk assessment is undertaken.	A geology and contaminated land phase 1 desk study report was carried out at the site. The aim of the study is to collate and assess, where possible, the findings of the environmental desk study relevant to the proposed development and to identify

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Northern park and ride	Surface water	3. 141	The SoS notes that Table 8.2 (potential impacts and effects of the Northern park and ride site) also scopes out a detailed assessment of surface water; however, the terrestrial ecology and ornithology topic area considers potential diffuse pollution on the Minsmere River and Darsham Marshes as a result of surface water run-off in both the construction and operation phase. The ES will need to identify whether there is a potential effect pathway to the river and marshes and if so, an assessment made regarding any potential impacts and mitigation. The applicant's attention is drawn to the comments of the Environment Agency regarding potential impacts on water resources, FRA, and protected species in Appendix 2 of this Opinion.	key gaps in data should there be any. The key focus of the report is to identify potential contamination risks associated with the proposed development through preparation of a factual summary of the available information and where necessary, to assess the completeness and relevance of this information to identify requirements for further investigation.
				Surface water remains scoped out of the proposed assessment. Pollution prevention measures are being described as part of the Drainage Strategy.

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Southern park and ride	Terrestrial historic environment	3.142	The Scoping Report refers to the Roman settlement of Hacheston; however, the location of this site is not identified within the report. The ES will need to include information regarding the location of this site in relation to the proposed development.	The Roman settlement is located partly within and near the proposed southern park and ride site Details will therefore be provided in the ES historic environment chapter for this location.
Southern park and ride	Terrestrial ecology and ornithology	3.143	The SoS notes reference to potential impacts on ground nesting birds; however, bird surveys are not identified within Table 8.4 planned further studies/surveys. The need or otherwise for bird surveys (or other further ecological surveys) should be identified following the initial Extended Phase 1 habitat survey. Surveys should be undertaken at an appropriate time of year, following established best practice guidance, and reported within the ES.	Brief details on the scope of ornithology survey work undertaken are provided with in Section 6.7 of this EIA Scoping Report. Full details of the surveys including timing and methodology will be included in the ecological baseline underpinning the ES chapter
Southern park and ride	Soils and agriculture	3.144	The Scoping Report identifies soil damage/loss of fertility; however, it is not clear if there would be loss of agricultural soils associated with the proposed development. This should be made clear within the ES.	As set out in Table 6.16 of this EIA Scoping Report, the ES will consider the temporary and permanent loss of land from agricultural production. Top soils would be stored on site during operation of the facility and replaced during the

2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
				'removal and restoration' phase.
Southern park and ride	Surface water	3.145	<p>The SoS notes that Table 8.3 scopes out a detailed assessment of surface water; however, the terrestrial ecology and ornithology topic area considers potential diffuse pollution on the River Deben as a result of surface water run-off in both the construction and operation phase. The ES will need to identify whether there is a potential effect pathway to the river and marshes and if so, an assessment made regarding any potential impacts and mitigation. The applicant's attention is drawn to the comments of the Environment Agency regarding potential impacts on water resources and FRA in Appendix 2 of this Opinion.</p>	<p>Surface water remains scoped out of the proposed assessment.</p> <p>Pollution prevention measures are being described as part of the Drainage Strategy.</p>
Rail line extension	Description of the proposed development	3.146	<p>The ES will need to present the working width for the preferred rail line options, including land required for any engineering works such as changes to ground levels and road/PRoW crossings, and any additional land required for soil storage.</p>	<p>The details listed will be included within the description of development for the Green Rail Route in the relevant ES volume.</p>

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Rail line extension	Description of the proposed development	3.147	The EIA will need to consider the number and frequency of train trips associated with the proposed development (in the event that the new rail lines are taken forward), to assess potential impacts in respect of noise and air quality in particular. If rail crossings are to be at grade, the impact to local traffic movements will also need to be considered. Cross-reference should be made to the Transport assessment of the ES and the suggested Utilities and Infrastructure Assets chapter (see Paragraphs 3.156 to 3.159 of the Scoping Opinion, below).	<p>Section 3 of the EIA Scoping Report sets out the number of daily rail movements associated with the proposed development.</p> <p>This description and the impact of level crossings will be provided within the ES and the TA as relevant.</p>
Rail line extension	Description of the proposed development	3.148	The Scoping Report identifies the rail options as temporary development; however, it is not clear when the rail option would be removed in relation to the development of the power station. The removal of the temporary rail option, depending on the selected design and required engineering works, could require significant construction activity. The EIA will need to consider the decommissioning of the rail option.	<p>As set out in Chapter 5 of the EIA Scoping Report, the ES will consider the environmental effects associated with the restoration and removal of any temporary development.</p> <p>The Green Rail Route would be temporary for the duration of construction of the power station and the ES would consider the impacts of the removal and reinstatement phase.</p>
A12 improvement	Description of the proposed	3.151	The ES will need to present the working width for the preferred options, in particular should the bypass option be carried forward.	The details listed will be included within the description

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	development		This will need to include land required for any engineering works such as changes to ground levels, land for new road junctions, and any additional land for soil storage or storage of surface water run-off.	of development for the Two Village bypass. Similar details will be provided for the other offsite associated developments in the relevant ES volume(s).
Visitor centre	Description of the proposed development	3.153	The ES will need to include detail regarding the parking area and access. An assessment of the anticipated number of visitors should be considered to establish an appropriate size of car park and any potential environmental effects, as this may result in impacts on the local road network and local residents.	Whilst proposals have developed since this comment was made, this point is noted and will be considered during the preparation of the ES.
Visitor centre	Noise and vibration	3.154	Consideration should be given to background noise levels, type of building, construction method, and proximity to residential properties and other sensitive receptors in respect of potential noise impacts. It may be too early to scope out noise-related impacts associated with the temporary visitor centre and these should be considered further in the ES.	The noise and vibration assessment will assess the potential impacts associated with the construction, operation and any required removal and reinstatement works for the main development site and associated developments. This includes the construction and operation of the visitor centre, which also forms part of the Sizewell B Relocated Facilities proposals. It is proposed that the visitor centre is a shared

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Project-wide	ES preparation	3.156	<p>The SoS recommends that the ES include an additional chapter entitled Utilities and Infrastructure Assets (or similar), to assess any potential impacts of the proposed development on other utility receptors/ infrastructure assets, such as (but not limited to) existing gas and water pipelines, overhead/underground electrical cables, sewer network, potable water supply, and railway network. This should include consideration of both onshore and offshore receptors and assess impacts during construction and operation of the proposed development. The applicant is referred to the comments of Galloper Windfarm Ltd and Network Rail in Appendix 2 to this Opinion, in respect of potential impacts on their infrastructure assets.</p>	<p>facility between Sizewell B and Sizewell C, and will be included in the main Sizewell C ES.</p>
				<p>It is not proposed to present a standalone Utilities and Infrastructure chapter of the ES although impacts on existing utilities and infrastructure will be assessed in the technical chapters as relevant.</p>

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Project-wide	ES preparation	3.157	<p>The SoS also recommends that this chapter includes a description of any utilities that may be required to service the development, together with an assessment of any direct and indirect impacts that may result from the construction and operation of associated utilities and services. The applicant's attention is drawn to the comments of Norfolk County Council and Suffolk County Council in Appendix 2 of this Opinion, regarding the need to assess the impacts of the proposed development on the electricity network. Limited information is provided within the Scoping Report regarding the required upgrade to the electricity network to facilitate the project. Further detailed information should be provided in the ES.</p>	<p>The description of the proposed development provided within the ES will include a description of the utilities required where these details are known. These will be considered where relevant within the technical assessments.</p>
Project-wide	ES preparation	3.158	<p>The ES should include an assessment of inter-relationships and cumulative impacts, including cross-reference to other relevant ES chapters.</p>	<p>A separate volume will be provided to assess cumulative effects. Inter-relationships will be described in the most appropriate technical chapter, typically determined by where the receptor is described, with cross-referencing provided as required.</p>

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Project-wide	HRA	4.2	The SoS notes that European sites may be located close to the proposed development. It is the applicant's responsibility to provide sufficient information to the Competent Authority (CA) to enable them to carry out a HRA if required. The applicant should note that the CA is the SoS.*	A Shadow HRA report is being prepared by EDF Energy to enable the SoS to undertake an appropriate assessment.
Project-wide	HRA	4.3	The applicant's attention is drawn to The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (The APFP Regulations) and the need to include information identifying European sites to which the Habitats Regulations applies or any Ramsar site or potential SPA which may be affected by a proposal. The submitted information should be sufficient for the Competent Authority (CA) to make an appropriate assessment (AA) of the implications for the site if required by Regulation 61(1) of the Habitats Regulations.*	A Shadow HRA report is being prepared by EDF Energy to enable the SoS to undertake an appropriate assessment. It will include the information identified as well as the relevant technical assessments.

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Project-wide	HRA	4.4	<p>The report to be submitted under Regulation 5(2)(g) of the APFP Regulations with the DCO application must deal with two issues: the first is to enable a formal assessment by the CA of whether there is a likely significant effect; and the second, should it be required, is to enable the carrying out of an AA by the CA.</p> <p>European sites identified in the Scoping Report include: The Outer Thames Estuary Special Protection Area (SPA); Sandlings SPA; Minsmere to Walberswick SPA and Ramsar sites; Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC); Alde-Ore and Butley Estuaries SPA; Alde-Ore Estuary SPA, Ramsar; Staverton Park and The Thicks, Wantisden SAC, Dew's Pond SAC; Orfordness Shingle Street SAC; Deben Estuary SPA and Ramsar sites; Stour and Orwell Estuaries SPA and Ramsar sites; and Benacre to Easton Bavenets Lagoons SAC and SPA sites.*</p>	<p>A Shadow HRA report is being prepared by EDF Energy to enable the SoS to undertake an appropriate assessment.</p> <p>It will include the information identified as well as the relevant technical assessments.</p>
Project-wide	HRA	4.5	<p>When considering aspects of the environment likely to be affected by the proposed development; including flora, fauna, soil, water, air and the inter-relationship between these, consideration should be given to the designated sites in the vicinity of the proposed development.*</p>	<p>The impacts on designated sites will be assessed as relevant.</p>

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Project-wide	Terrestrial ecology and ornithology	4.9 - 4.12	<p>Where there may be potential impacts on the SSSIs, the SoS has duties under sections 28(G) and 28(I) of the Wildlife and Countryside Act 1981 (as amended). These are set out below for information.</p> <p>Under s28(G), the SoS has a general duty ‘...to take reasonable steps, consistent with the proper exercise of the authority’s functions, to further the conservation and enhancement of the flora, fauna or geological or physiological features by reason of which the site is of special scientific interest’.</p> <p>Under s28(I), the SoS must notify the relevant nature conservation body (NCB), Natural England in this case, before authorising the carrying out of operations likely to damage the special interest features of a SSSI. Under these circumstances 28 days must elapse before deciding whether to grant consent, and the SoS must take account of any advice received from Natural England, including advice on attaching conditions to the consent. Natural England will be notified during the examination period. If applicants consider it likely that notification may be necessary under s28(I), they are advised to resolve any issues with the NCB before the DCO application is submitted to the SoS. If, following assessment by applicants, it is considered that operations affecting the SSSI will not lead to damage of the special interest features, applicants should make this clear in the ES. The application documents submitted in accordance with Regulation 5(2)(I) could also provide this information. Applicants should seek to agree with the NCB the DCO requirements which will provide protection for the SSSI before the DCO application is submitted.*</p>	<p>The duties of the SoS are noted.</p>

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Project-wide	Terrestrial ecology and ornithology	4.13	<p>Applicants should be aware that the decision maker under the Planning Act 2008 (PA 2008) has, as the CA, a duty to engage with the Habitats Directive. Where a potential risk to an EPS is identified, and before making a decision to grant development consent, the CA must, amongst other things, address the derogation tests² in Regulation 53 of the Habitats Regulations. Therefore the applicant may wish to provide information which will assist the decision maker to meet this duty.*</p>	<p>A Shadow HRA report is being prepared by EDF Energy to enable the SoS to undertake an appropriate assessment. It will include the information identified as well as the relevant technical assessments.</p>
Project-wide	Terrestrial ecology and ornithology	4.14	<p>If an applicant has concluded that an EPS licence is required the ExA will need to understand whether there is any impediment to the licence being granted. The decision to apply for a licence or not, will rest with the applicant as the person responsible for commissioning the proposed activity, by taking into account the advice of their consultant ecologist.*</p>	<p>This point is noted. Consultation with Natural England in relation to EPS licenses is ongoing.</p>
Project-wide	Terrestrial ecology and ornithology	4.15	<p>Applicants are encouraged to consult with Natural England and, where required, to agree appropriate requirements to secure necessary mitigation. It would assist the examination if applicants could provide, with the application documents, confirmation from Natural England whether any issues have been identified which would prevent the EPS licence being granted.*</p>	<p>This point is noted. Consultation with Natural England in relation to EPS licenses and related mitigation strategies is ongoing.</p>

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Project-wide	Terrestrial ecology and ornithology	4.16	<p>Generally, Natural England are unable to grant an EPS licence in respect of any development until all the necessary consents required have been secured in order to proceed. For NSIPs, Natural England will assess a draft licence application in order to ensure that all the relevant issues have been addressed. Within 30 working days of receipt, Natural England will either issue 'a letter of no impediment' stating that it is satisfied, insofar as it can make a judgement, that the proposals presented comply with the regulations or will issue a letter outlining why Natural England consider the proposals do not meet licensing requirements and what further information is required before a 'letter of no impediment' can be issued. The applicant is responsible for ensuring draft licence applications are satisfactory for the purposes of informing formal pre-application assessment by Natural England.*</p>	<p>This point is noted. Consultation with Natural England in relation to EPS licenses and related mitigation strategies is ongoing.</p>

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Project-wide	Terrestrial ecology and ornithology	4.17	<p>Ecological conditions on the site may change over time. It will be the applicant's responsibility to ensure information is satisfactory for the purposes of informing the assessment of no detriment to the maintenance of favourable conservation status (FCS) of the population of EPS affected by the proposals³. Applicants are advised that current conservation status of populations may or may not be favourable. Demonstration of no detriment to favourable populations may require further survey and/or submission of revised short or long term mitigation or compensation proposals. In England the focus concerns the provision of up to date survey information which is then made available to Natural England (along with any resulting amendments to the draft licence application). This approach will help to ensure no delay in issuing the licence should the DCO application be successful. Applicants with projects in England or English waters can find further information on Natural England's protected species licensing procedures in relation to NSIP's by clicking on the following link: http://www.naturalengland.org.uk/Images/wml-g36_tcm6-28566.pdf*</p>	<p>Section 6.7 of the EIA Scoping Report details the additional surveys that have been undertaken since the 2014 EIA Scoping Report and sets out the surveys that are proposed to be undertaken in 2019 to inform the assessment.</p>
Project-wide	Transport	4.21	<p>The applicant is referred to the SoS' comments in paragraph 3.33 of this Opinion, in regard to extending the scope of the TA to include consideration of potential impacts on the rail network and navigation.*</p>	<p>The TA will be a separate document to the EIA and this comment will be addressed outside the ES. The ES will detail the effects of the proposed development on transport and marine</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	Health Impact Assessment	4.24	The methodology for the HIA should be agreed with the relevant statutory consultees and take into account mitigation measures for acute risks.*	navigation. To facilitate agreement of the methodology, and to further explore and address potential public health concerns (including and extending beyond those raised in the 2014 Scoping Opinion Relevant Consultee Comments) the Sizewell C Health Working Group was established.
Project-wide	ES preparation	4.25	The SoS recommends that the applicant should state clearly what regulatory areas are addressed in the ES and that the applicant should ensure that all relevant authorisations, licences, permits and consents that are necessary to enable operations to proceed are described in the ES. Also it should be clear that any likely significant effects of the proposed development which may be regulated by other statutory regimes have been properly taken into account in the ES.*	This point is noted and will be considered during the preparation of the ES.

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Project-wide	ES preparation	4.27	<p>It will not necessarily follow that the granting of consent under one regime will ensure consent under another regime. For those consents not capable of being included in an application for consent under the PA 2008, the SoS will require a level of assurance or comfort from the relevant regulatory authorities that the proposal is acceptable and likely to be approved, before they make a recommendation or decision on an application. The applicant is encouraged to make early contact with other regulators. Information from the applicant about progress in obtaining other permits, licences or consents, including any confirmation that there is no obvious reason why these will not subsequently be granted, will be helpful in supporting an application for development consent to the SoS.*</p>	<p>This point is noted.</p>
Project-wide	ES preparation	4.30	<p>The SoS recommends that the ES should identify whether the proposed development has the potential for significant transboundary impacts and if so, what these are and which EEA States would be affected.*</p>	<p>This point is noted. As set out in Chapter 5 of the EIA Scoping Report the ES will identify if the proposed development has the potential for significant transboundary effects.</p>

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	ES preparation	Appendix 3	The SoS advises that the ES should be laid out clearly with a minimum amount of technical terms and should provide a clear objective and realistic description of the likely significant impacts of the proposed development. The information should be presented so as to be comprehensible to the specialist and non-specialist alike. The SoS recommends that the ES be concise with technical information placed in appendices.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The SoS emphasises that the ES should be a 'standalone' document in line with best practice and case law. The EIA Regulations Schedule 4, Parts 1 and 2, set out the information for inclusion in ESS.	Chapter 7 of the EIA Scoping Report sets out the proposed structure of the ES and identifies where it is proposed to include the information required under Schedule 4 of the EIA Regulations.
Project-wide	ES preparation	Appendix 3	The content of the ES must include as a minimum those matters set out in Schedule 4 Part 2 of the EIA Regulations. This includes the consideration of 'the main alternatives studied by the applicant' which the SoS recommends could be addressed as a separate chapter in the ES.	Chapter 7 of the EIA Scoping Reports sets out the proposed structure of the ES and identifies where it is proposed to include the information required under Schedule 4 of the EIA Regulations. A separate ES chapter on alternatives will be included within Volume 2 of the ES.

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Project-wide	ES preparation	Appendix 3	Traffic and transport is not specified as a topic for assessment under Schedule 4; although in line with good practice the SoS considers it is an important consideration per se, as well as being the source of further impacts in terms of air quality and noise and vibration.	As set out in the EIA Scoping Report the ES will assess the traffic effects associated with the proposed development. This will include the traffic related effects within the noise and air quality assessments.
Project-wide	ES preparation	Appendix 3	The SoS recommends that the ES should be balanced, with matters which give rise to a greater number or more significant impacts being given greater prominence. Where few or no impacts are identified, the technical section may be much shorter, with greater use of information in appendices as appropriate.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The SoS considers that the ES should not be a series of disparate reports and stresses the importance of considering inter-relationships between factors and cumulative impacts.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The scheme parameters will need to be clearly defined in the draft DCO and therefore in the accompanying ES which should support the application as described. The SoS is not able to entertain material changes to a project once an application is submitted. The SoS draws the attention of the applicant to the DCLG and the Planning Inspectorate's published advice on the preparation of a draft DCO and accompanying application documents.	This point is noted and guidance will be considered during the preparation of the ES.

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Project-wide	ES preparation	Appendix 3	<p>The SoS acknowledges that the EIA process is iterative, and therefore the proposals may change and evolve. For example, there may be changes to the scheme design in response to consultation. Such changes should be addressed in the ES. However, at the time of the application for a DCO, any proposed scheme parameters should not be so wide ranging as to represent effectively different schemes.</p>	<p>This point is noted. This EIA Scoping Report is a response to the evolution of the Sizewell C proposals.</p>
Project-wide	ES preparation	Appendix 3	<p>It is a matter for the applicant, in preparing an ES, to consider whether it is possible to assess robustly a range of impacts resulting from a large number of undecided parameters. The description of the proposed development in the ES must not be so wide that it is insufficiently certain to comply with requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations.</p>	<p>The description of the proposed development within the ES will comply with the requirements of paragraph 17 of Schedule 4 Part 1 of the EIA Regulations.</p>
Project-wide	Approach to the EIA	Appendix 3	<p>The Rochdale Envelope principle (see R v Rochdale MBC ex parte Tew (1999) and R v Rochdale MBC ex parte Milne (2000)) is an accepted way of dealing with uncertainty in preparing development applications. The applicant's attention is drawn to the Planning Inspectorate's Advice Note 9 'Rochdale Envelope' which is available on the Advice Note's page of the National Infrastructure Planning website.</p>	<p>This point is noted and guidance within PINS Advice Note 9 will be considered during the preparation of the ES.</p>

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Project-wide	Approach to the EIA	Appendix 3	The applicant should make every attempt to narrow the range of options and explain clearly in the ES which elements of the scheme have yet to be finalised and provide the reasons. Where some flexibility is sought and the precise details are not known, the applicant should assess the maximum potential adverse impacts the project could have to ensure that the project as it may be constructed has been properly assessed.	This point is noted and guidance will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The ES should be able to confirm that any changes to the development within any proposed parameters would not result in significant impacts not previously identified and assessed. The maximum and other dimensions of the proposed development should be clearly described in the ES, with appropriate justification. It will also be important to consider choice of materials, colour and the form of the structures and of any buildings. Lighting proposals should also be described.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The SoS recommends that the physical scope of the study areas should be identified under all the environmental topics and should be sufficiently robust in order to undertake the assessment. The extent of the study areas should be on the basis of recognised professional guidance, whenever such guidance is available. The study areas should also be agreed with the relevant consultees and local authorities and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given. The scope should also cover the breadth of the topic area and the temporal scope, and these aspects should be described and	As set out within Chapter 6 of the EIA Scoping Report, study areas have been identified in line with recognised professional guidance (where available). Where these have been agreed with stakeholders, this will be noted within the ES.

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Project-wide	Approach to the EIA	Appendix 3	<p>In general the SoS recommends that the physical scope for the EIA should be determined in the light of:</p> <ul style="list-style-type: none"> • the nature of the proposal being considered • the relevance in terms of the specialist topic • the breadth of the topic • the physical extent of any surveys or the study area, and • the potential significant impacts. 	<p>This point is noted and has been considered in preparing Chapter 6 of the EIA Scoping Report</p>
			<p>justified.</p>	

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Project-wide	ES preparation	Appendix 3	<p>The SoS recommends that the physical scope of the study areas should be identified for each of the environmental topics and should be sufficiently robust in order to undertake the assessment. This should include at least the whole of the application site, and include all offsite works. For certain topics, such as landscape and transport, the study area will need to be wider. The extent of the study areas should be on the basis of recognised professional guidance and best practice, whenever this is available, and determined by establishing the physical extent of the likely impacts. The study areas should also be agreed with the relevant consultees and, where this is not possible, this should be stated clearly in the ES and a reasoned justification given.</p>	<p>Details of study areas are provided within Chapter 5 of the EIA Scoping Report. These will also be detailed within the relevant chapters of the ES.</p>
Project-wide	ES preparation	Appendix 3	<p>The ES should explain the range of matters to be considered under each topic and this may respond partly to the type of project being considered. If the range considered is drawn narrowly then a justification for the approach should be provided.</p>	<p>The range of matters to be considered within each topic is set out within Chapter 6 of the EIA Scoping Report. This will also be detailed within the ES.</p>

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Project-wide	Approach to the EIA	Appendix 3	<p>The assessment should consider:</p> <ul style="list-style-type: none"> • environmental impacts during construction works • environmental impacts on completion/operation of the proposed development • where appropriate, environmental impacts a suitable number of years after completion of the proposed development (for example, in order to allow for traffic growth or maturing of any landscape proposals), and • environmental impacts during decommissioning. 	<p>The assessment scenarios to be considered within the ES are set out within Chapter 5 of the EIA Scoping Report. Where additional assessments are to be undertaken a statement will be made within the relevant chapter of the ES.</p>
Project-wide	ES preparation	Appendix 3	<p>In terms of decommissioning, the SoS acknowledges that the further into the future any assessment is made, the less reliance may be placed on the outcome. However, the purpose of such a long term assessment, as well as to enable the decommissioning of the works to be taken into account, is to encourage early consideration as to how structures can be taken down. The purpose of this is to seek to minimise disruption, to reuse materials and to restore the site or put it to a suitable new use. The SoS encourages consideration of such matters in the ES.</p>	<p>As set out within Section 3.3 of the EIA Scoping Report, each topic chapter within the ES will include a high level environmental assessment of decommissioning, which will identify and summarise the types of environmental impacts anticipated to occur during decommissioning.</p>
Project-wide	ES preparation	Appendix 3	<p>The SoS recommends that these matters should be set out clearly in the ES and that the suitable time period for the assessment should be agreed with the relevant statutory consultees.</p>	<p>This point is noted.</p>

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Project-wide	ES preparation	Appendix 3	The SoS recommends that throughout the ES a standard terminology for time periods should be defined, such that for example, 'short term' always refers to the same period of time.	This point is noted and will be considered within the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The SoS recommends that the baseline should describe the position from which the impacts of the proposed development are measured. The baseline should be chosen carefully and, whenever possible, be consistent between topics. The identification of a single baseline is to be welcomed in terms of the approach to the assessment, although it is recognised that this may not always be possible.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	The SoS recommends that the baseline environment should be clearly explained in the ES, including any dates of surveys, and care should be taken to ensure that all the baseline data remains relevant and up to date.	This point is noted and will be considered during the preparation of each of the technical chapters of the ES.
Project-wide	ES preparation	Appendix 3	For each of the environmental topics, the data source(s) for the baseline should be set out together with any survey work undertaken with the dates. The timing and scope of all surveys should be agreed with the relevant statutory bodies and appropriate consultees, wherever possible.	Any data sources and survey work undertaken to inform the baseline will be provided (and clearly referenced) within the relevant chapters of the ES.
Project-wide	ES preparation	Appendix 3	The baseline situation and the proposed development should be described within the context of the site and any other proposals in the vicinity.	This point is noted and will be considered during the preparation of the ES.

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Project-wide	ES preparation	Appendix 3	In terms of the EIA methodology, the SoS recommends that reference should be made to best practice and any standards, guidelines and legislation that have been used to inform the assessment. This should include guidelines prepared by relevant professional bodies.	This point is noted and will be considered during the preparation of the ES. Reference is made to guidance and legislation throughout Chapter 6 of the EIA Scoping Report when discussing the proposed assessment methodologies.
Project-wide	ES preparation	Appendix 3	In terms of other regulatory regimes, the SoS recommends that relevant legislation and all permit and licences required should be listed in the ES where relevant to each topic. This information should also be submitted with the application in accordance with the APFP Regulations.	This point is noted.
Project-wide	ES preparation	Appendix 3	In terms of assessing the impacts, the ES should approach all relevant planning and environmental policy – local, regional and national (and where appropriate international) – in a consistent manner.	This point is noted and will be considered during the preparation of the ES. As set out in Section 5.7 of the EIA Scoping Report, legislation and policy is to be covered within each of the technical chapters of the ES.

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Project-wide	ES preparation	Appendix 3	<p>The EIA Regulations require the identification of the 'likely significant effects of the development on the environment' (Schedule 4 Part 1 paragraph 20). As a matter of principle, the SoS applies the precautionary approach to follow the Court's reasoning in judging 'significant effects'. In other words 'likely to affect' will be taken as meaning that there is a probability or risk that the proposed development will have an effect, and not that a development will definitely have an effect.</p>	<p>This point is noted.</p>
Project-wide	ES preparation	Appendix 3	<p>The SoS considers it is imperative for the ES to define the meaning of 'significant' in the context of each of the specialist topics and for significant impacts to be clearly identified. The SoS recommends that the criteria should be set out fully and that the ES should set out clearly the interpretation of 'significant' in terms of each of the EIA topics. Quantitative criteria should be used where available. The SoS considers that this should also apply to the consideration of cumulative impacts and impact inter-relationships.</p>	<p>This point is noted and the agreed assessment criteria will be outline within relevant chapters of the ES.</p>
Project-wide	ES preparation	Appendix 3	<p>The SoS recognises that the way in which each element of the environment may be affected by the proposed development can be approached in a number of ways. However it considers that it would be helpful, in terms of ease of understanding and in terms of clarity of presentation, to consider the impact assessment in a similar manner for each of the specialist topic areas. The SoS recommends that a common format should be applied where possible.</p>	<p>As set out in Section 5.7 of the EIA Scoping Report, it is proposed for each specialist topic chapter to be presented in the same way.</p>

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Project-wide	ES preparation	Appendix 3	<p>The SoS considers that the inter-relationships between factors must be assessed in order to address the environmental impacts of the proposal as a whole. This will help to ensure that the ES is not a series of separate reports collated into one document, but rather a comprehensive assessment drawing together the environmental impacts of the proposed development. This is particularly important when considering impacts in terms of any permutations or parameters to the proposed development.</p>	<p>As stated in Chapter 5 and Chapter 7 of the EIA Scoping Report, and assessment of the inter-relationships between factors will be presented in the ES.</p>

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Project-wide	Cumulative impacts	Appendix 3	<p>The potential cumulative impacts with other major developments will need to be identified, as required by the Directive. The significance of such impacts should be shown to have been assessed against the baseline position (which would include built and operational development). In assessing cumulative impacts, other major development should be identified through consultation with the local planning authorities and other relevant authorities on the basis of those that are:</p> <ul style="list-style-type: none"> • projects that are under construction • permitted application(s) not yet implemented • submitted application(s) not yet determined • all refusals subject to appeal procedures not yet determined • projects on the National Infrastructure's programme of projects, and • projects identified in the relevant development plan (and emerging development plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited. <p>Details should be provided in the ES, including the types of development, location and key aspects that may affect the EIA and how these have been taken into account as part of the assessment.</p>	<p>As set out in Chapter 7 of the EIA Scoping Report a separate volume of the ES is now proposed to assess cumulative and in-combination effects. Section 5.4 of the EIA Scoping Report identifies the types of development that have been considered in developing the long list.</p>
Project-wide	Cumulative impacts	Appendix 3	<p>The SoS recommends that offshore wind farms should also take account of any offshore licensed and consented activities in the area, for the purposes of assessing cumulative effects, through consultation with the relevant licensing/consenting bodies.</p>	<p>The Cumulative Effects Assessment will include consideration of offshore licenced facilities and</p>

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				activities.
Project-wide	Cumulative impacts	Appendix 3	For the purposes of identifying any cumulative effects with other developments in the area, applicants should also consult consenting bodies in other EU states to assist in identifying those developments (see commentary on Transboundary Effects below).	This will be covered through consultation with stakeholders as part of the assessment process.
Project-wide	ES preparation	Appendix 3	The ES should give equal prominence to any development which is related with the proposed development to ensure that all the impacts of the proposal are assessed.	Chapter 6 of the EIA Scoping reports established the proposed scope of the EIA.
Project-wide	ES preparation	Appendix 3	The SoS recommends that the applicant should distinguish between the proposed development for which development consent will be sought and any other development. This distinction should be clear in the ES.	This point is noted and will be considered during the preparation of the ES.

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Project-wide	ES preparation	Appendix 3	<p>The ES must set out an outline of the main alternatives studied by the applicant and provide an indication of the main reasons for the applicant's choice, taking account of the environmental effect (Schedule 4 Part 1 paragraph 18). Matters should be included, such as inter alia alternative design options and alternative mitigation measures. The justification for the final choice and evolution of the scheme development should be made clear. Where other sites have been considered, the reasons for the final choice should be addressed. The SoS advises that the ES should give sufficient attention to the alternative forms and locations for the off-site proposals, where appropriate, and justify the needs and choices made in terms of the form of the development proposed and the sites chosen.</p>	<p>As set out in Chapter 7 and Section 5.4 of the EIA Scoping Report, the ES will outline the main alternatives to the proposed development.</p>
Project-wide	Approach to the EIA	Appendix 3	<p>Mitigation measures may fall into certain categories namely: avoid; reduce; compensate or enhance (see Schedule 4 Part 1 paragraph 21); and should be identified as such in the specialist topics. Mitigation measures should not be developed in isolation as they may relate to more than one topic area. For each topic, the ES should set out any mitigation measures required to prevent, reduce and where possible offset any significant adverse effects, and to identify any residual effects with mitigation in place. Any proposed mitigation should be discussed and agreed with the relevant consultees.</p>	<p>This point is noted and will be considered during the preparation of the ES and mitigation schedule.</p>
Project-wide	Approach to the EIA	Appendix 3	<p>The effectiveness of mitigation should be apparent. Only mitigation measures which are a firm commitment and can be</p>	<p>This point is noted and will be considered during the</p>

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			shown to be deliverable should be taken into account as part of the assessment.	preparation of the ES and mitigation schedule.
Project-wide	ES preparation	Appendix 3	It would be helpful if the mitigation measures proposed could be cross referred to specific provisions and/or requirements proposed within the draft development consent order. This could be achieved by means of describing the mitigation measures proposed either in each of the specialist reports or collating these within a summary section on mitigation.	This point is noted and will be considered during the preparation of the ES and mitigation schedule.
Project-wide	ES preparation	Appendix 3	The SoS advises that it is considered best practice to outline in the ES, the structure of the environmental management and monitoring plan and safety procedures which will be adopted during construction and operation and may be adopted during decommissioning.	This point is noted.
Project-wide	ES preparation	Appendix 3	The SoS recommends that all the specialist topics in the ES should cross reference their text to other relevant disciplines. Interactions between the specialist topics is essential to the production of a robust assessment, as the ES should not be a collection of separate specialist topics, but a comprehensive assessment of the environmental impacts of the proposal and how these impacts can be mitigated.	This point is noted and will be considered during the preparation of the ES and cross-references will be made where appropriate.

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Project-wide	ES preparation	Appendix 3	As set out in EIA Regulations Schedule 4 Part 1 paragraph 23, the ES should include an indication of any technical difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	This point is noted and will be considered during the preparation of the ES. This will be included in technical chapters where relevant.
Project-wide	ES preparation	Appendix 3	The SoS recommends that any changes to the scheme design in response to consultation should be addressed in the ES.	This point is noted and will be considered during the preparation of the ES.
Project-wide	ES preparation	Appendix 3	It is recommended that the applicant provides preliminary environmental information (PEI) (this term is defined in the EIA Regulations under regulation 2 'interpretation') to the local authorities.	This point is noted. A PEI was provided at Stage 3 consultation.
Project-wide	Consultation	Appendix 3	Consultation with the local community should be carried out in accordance with the SoCC which will state how the applicant intends to consult on the preliminary environmental information (PEI). This PEI could include results of detailed surveys and recommended mitigation actions. Where effective consultation is carried out in accordance with Section 47 of the Planning Act, this could usefully assist the applicant in the EIA process – for example the local community may be able to identify possible mitigation measures to address the impacts identified in the PEI. Attention is drawn to the duty upon applicants under Section 50 of the Planning Act to have regard to the guidance on pre-application consultation.	This point is noted. A PEI was provided at Stage 3 consultation.

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2014 EIA Scoping Report ref Site	2014 EIA Scoping Report Topic Chapter	2014 EIA Scoping Opinion	2014 EIA Scoping Opinion Comment	EDF Energy Response
Project-wide	ES preparation	Appendix 3	The SoS recommends that consideration should be given in the ES to any likely significant effects on the environment of another Member State of the European Economic Area. In particular, the SoS recommends consideration should be given to discharges to the air and water and to potential impacts on migratory species and to impacts on shipping and fishing areas.	As set out in paragraph 5.6.3 of the EIA Scoping Report- "EDF Energy will consider whether there is any potential for significant effects on the environment in other EEA states by completing the transboundary screening matrix (as detailed in the Planning Inspectorate Advice Note twelve)"
Project-wide	ES preparation	Appendix 3	The Applicant's attention is also drawn to the Planning Inspectorate's Advice Note 12 'Development with significant transboundary impacts consultation' which is available on the Advice Notes Page of the National Infrastructure Planning website	This point is noted and PINS Advice Note 12 will be considered during the preparation of the ES.

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Project-wide	ES preparation	Appendix 3	<p>The SoS recommends that in order to assist the decision making process, the applicant may wish to consider the use of tables: Table X to identify and collate the residual impacts after mitigation on the basis of specialist topics, inter-relationships and cumulative impacts.</p> <p>Table XX to demonstrate how the assessment has taken account of this Opinion and other responses to consultation.</p> <p>Table XXX to set out the mitigation measures proposed, as well as assisting the reader, the SoS considers that this would also enable the applicant to cross refer mitigation to specific provisions proposed to be included within the draft Development Consent Order.</p> <p>Table XXXX to cross reference where details in the HRA (where one is provided) such as descriptions of sites and their locations, together with any mitigation or compensation measures, are to be found in the ES.</p>	<p>This point is noted and will be considered during the preparation of the ES.</p>
Project-wide	ES preparation	Appendix 3	<p>The SoS recommends that a common terminology should be adopted. This will help to ensure consistency and ease of understanding for the decision making process. For example, 'the site' should be defined and used only in terms of this definition so as to avoid confusion with, for example, the wider site area or the surrounding site. A glossary of technical terms should be included in the ES.</p>	<p>This point is noted and will be considered during the preparation of the ES. A glossary of technical terms will be provided as part of the ES</p>
Project-wide	ES preparation	Appendix 3	<p>The ES should have all of its paragraphs numbered, as this makes referencing easier as well as accurate.</p>	<p>This point is noted and will be considered during the</p>

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				preparation of the ES. Paragraphs are to be numbered.
Project-wide	ES preparation	Appendix 3	Appendices must be clearly referenced, again with all paragraphs numbered.	This point is noted and will be considered during the preparation of the ES. All appendices are to be clearly referenced within the text.
Project-wide	ES preparation	Appendix 3	All figures and drawings, photographs and photomontages should be clearly referenced. Figures should clearly show the proposed site application boundary.	This point is noted and will be considered during the preparation of the ES. All figures/drawings are to be clearly referenced within the text.
Project-wide	ES preparation	Appendix 3	A bibliography should be included in the ES. The author, date and publication title should be included for all references. All publications referred to within the technical reports should be included.	This point is noted and a bibliography / reference list will be included within the ES.
Project-wide	ES preparation	Appendix 3	The EIA Regulations require a Non-Technical Summary (EIA Regulations Schedule 4 Part 1 paragraph 22). This should be a summary of the assessment in simple language. It should be supported by appropriate figures, photographs and photomontages.	As set out in Chapter 7 of the EIA Scoping Report, a Non-Technical Summary will be prepared to accompany the ES.



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<p>* This comment does not form part of the SoS's Opinion as to the information to be provided in the ES. However, it does respond to other issues that the SoS has identified which may help to inform the preparation of the application for the DCO.</p>				

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