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SIZEWELL C PROPOSED NUCLEAR DEVELOPMENT

HRA EVIDENCE PLAN

VOLUME I OF II

OCTOBER 2014

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VOLUME I HRA EVIDENCE PLAN

APPENDICES

[Note Appendices 3 and 4 form **Volume II**.]

1. INTRODUCTION

1.1 Background

1.1.1 EDF Energy[1] is proposing to build a new nuclear power station comprising two UK European Pressurised Reactors (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 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.

1.1.2 EDF Energy is undertaking technical investigations to assess the environmental impacts of Sizewell C during its construction and operation. The results of these investigations are being used to inform decisions on mitigation measures to be embedded in the design to avoid, reduce and mitigate potential adverse effects.

1.1.3 In addition, they will inform an Environmental Statement (ES) that will be submitted in support of the application for Development Consent in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009.

1.1.4 Since the development is likely to affect one or more ecological sites designated as being of European or international importance for nature conservation, a report (hereafter called a 'Shadow HRA Report') must also be provided to support the Development Consent Order application, as well as applications for Environmental Permits[2]. This Shadow HRA Report must identify the designated site(s) that may be affected and contain sufficient information to enable decision-makers[3] to undertake Habitats Regulations Assessment (HRA) in accordance with The Conservation of Habitats and Species Regulations 2010 (as amended) (the 'Habitats Regulations'). The technical investigations must therefore also be adequate to inform a robust HRA.

1.2 European and international sites

1.2.1 The HRA must consider all potential cause-effect impact linkages between the Sizewell C Project and designated features of European sites. By this is meant features designated under Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') and Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive'), as implemented by the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations) the Offshore Marine Conservation (Natural Habitats & c.) Regulations 2007 (as amended).

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[1] NNB Generation Company Limited, whose registered office is at 40 Grosvenor Place, London, SW1X 7EN (referred to in this document as 'EDF Energy').

[2] For the operational phase of Sizewell C, these would comprise the 'Radioactive Substances Regulation', 'Combustion Activity' and 'Water Discharge Activity' Environmental Permits. Additional Environmental Permits will also be required for certain activities during the construction phase.

[3] For Sizewell C, the decision-makers would be the Secretary of State in respect of the Development Consent Order application and the Environment Agency in respect of the Environmental Permit applications.

1.2.2 In addition, internationally important wetland sites designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as Special Areas of Conservation (SACs) designated under the Habitats Directive, and Special Protection Areas (SPAs) designated under the Birds Directive, when considering development proposals (as stated in ODPM Circular 06/2005).

1.2.3 Therefore HRAs must consider potential effects upon *inter alia*:

- ornithological interests – designated species populations of SPAs, potential SPAs (pSPAs) if appropriate and Ramsar sites, including rare and vulnerable birds (as listed on Annex I of the Birds Directive), regularly occurring migratory species and species forming designated assemblages (including impacts on those species that are designated as a feature of an SPA/Ramsar, and that may be affected outside of the boundaries of designated sites);
- SACs and candidate SACs (cSACs), if appropriate, (as listed in Annex I of the Habitats Directive);
- SAC designated species populations (as listed in Annex II of the Habitats Directive);
- habitats and species populations of Ramsar sites not covered under SPA and SAC designations; and
- supporting species and habitats in those cases where there are potential impacts upon designated features through indirect effects (e.g. prey species).

1.3 HRA evidence plans

1.3.1 The Evidence Plan process is a relatively new, voluntary mechanism to establish, upfront, the evidence that an applicant needs to provide for HRA. By doing this upfront, it gives the applicant an opportunity to scope its investigations accordingly.

1.3.2 The Evidence Plan is not legally binding.

1.3.3 The Evidence Plan does not replace or duplicate statutory requirements such as the pre-application process for DCO applications submitted under the Planning Act 2008 (as amended). It has been prepared by EDF Energy following informal technical consultation with a number of stakeholders including Natural England, the Environment Agency, the local authorities, Suffolk Wildlife Trust and the RSPB.

1.3.4 While the intention of the Evidence Plan is to agree the evidence needs for the HRA with stakeholders, NNB GenCo has discretion over the evidence that is collected.

1.3.5 The Evidence Plan process (as set out herein) will provide an audit trail for areas of agreement (and any areas of disagreement) with participating stakeholders in the evidence base for the HRA, which can inform Statements of Common Ground.

1.3.6 NNB GenCo is aware that the Shadow HRA should, where relevant, address transboundary impacts which may affect other Member States and European Economic Area (EEA) states. However, no such effects are envisaged in the context of the Sizewell C Project so they are not currently included in the Evidence Plan.

1.4 Relevant policy context

1.4.1 Sizewell C was nominated for new nuclear build by EDF Energy in 2009 and is identified in the Nuclear National Policy Statement (NPS) (DECC, 2011) which was ratified by the Government on the 19th July 2011.

1.4.2 Nominated sites were initially screened for their potential to affect European or international sites of importance for nature conservation (hereafter referred to as 'European sites'). Where nominated sites were screened as having potential effects on European sites, strategic site-based HRAs were undertaken.

1.4.3 The strategic site-based HRA for Sizewell C identified that, as a result of the development, likely significant effects (LSE) in respect of a number of European sites could arise. (Further information on the definition of LSE is provided in **Section 6** herein.) These effects were then assessed further through the appropriate assessment (AA) stage of the HRA, which took into account the environmental and project information available at the time. Given the lack of any detailed project information, the AA adopted a highly precautionary approach. It was concluded that, at the strategic level of the HRA, the potential for adverse effects on the integrity of the European sites identified at the screening stage (via potential impacts on water resources and quality, habitat and species loss and fragmentation and/or disturbance (noise, light and visual)) could not be discounted for some European sites.

1.4.4 It was also concluded that the employment of appropriate measures may be sufficient to mitigate the potential adverse effects on the integrity of the European sites that were identified. However, the effectiveness of any such measures could only be ascertained with certainty through HRA at a project level, where the specific details of developments and primary data sources would be available.

1.4.5 A project-level Shadow HRA Report for the proposed Sizewell C development is, therefore, required in support of applications for the DCO and Environmental Permits.

1.5 Purpose of this document

1.5.1 This HRA Evidence Plan for the Sizewell C Project aims to:

- Provide the scope of cause-effect pathways to be considered at the LSE screening stage[4].
- Ensure that evidence gathering focusses on areas of LSE.
- Outline the types of evidence that need to be provided.
- Define and programme a series of technical workshops for more detailed consideration of evidence requirements, outputs and impact assessments.
- Define the roles, responsibilities and working arrangements of EDF Energy and participating technical stakeholders throughout the Evidence Plan process.

[4] This has been carried out using best-available project and environmental information. The information is more advanced than in 2011 when the strategic HRA for the NPS was carried out. Note that Shadow LSE screening will be undertaken after Stage 2 Consultation, when further information is available.

- Set out some of the important aspects, considerations and methodologies for the HRA that have already been discussed with stakeholders e.g. determination of LSE, methodology for in-combination assessment and change management.

1.5.2 The Evidence Plan comprises two volumes:

- Volume I – Evidence Plan.
- Volume II – Case Studies.

1.5.3 At the heart of the Evidence Plan are a set of Likely Significant Effect (LSE) Scoping tables for the construction and operation phases of the development (**see Table A2.3a Scoping Likely Significant Effects – Construction Phase** and **Table A2.3b Scoping Likely Significant Effects – Operation Phase** in **Appendix 2.3**). These tables represent an agreed position with technical stakeholders on what cause-effect pathways should be considered at formal LSE screening.

1.5.4 The LSE Scoping tables have been informed by a number of 'case studies' (see **Appendix 3, Volume II**) developed to help enhance conceptual environmental understanding relating to potential cause-effect pathways in some key areas, as follows:

- Operational cooling water system impacts on red-throated diver[5].
- Construction disturbance effects on bittern and marsh harrier.
- Groundwater effects conceptualisation and preliminary modelling.
- Air quality effects conceptualisation and screening.
- Approach for assessing disturbance due to increases in recreational pressure.

1.5.5 The content of the example case studies is provisional as they represent work in progress which will be completed later in the Evidence Plan process. The example case studies illustrate the complex issues being explored and the types of data and methods being employed. At the end of each case study, preliminary comments from the stakeholders are presented.

1.5.6 The LSE Scoping tables are intended to provide a framework for further, more detailed discussions with technical stakeholders on evidence requirements. The case studies are intended to provide context for these discussions going forward.

1.5.7 Set out in **Section 9** of the Evidence Plan is a '**Route Map**' which identifies a number of 'topic group' meetings to be held between September 2014 and May 2015 (approximate dates only, which may be subject to change). These meetings would be held on each technical theme stemming from the LSE Scoping tables e.g. groundwater effects, marine water quality effects, marine ornithology etc. An outline of the evidence to be provided at each meeting is indicated in the route map. The

[5] EDF Energy also gave a presentation to the HRA Evidence Plan Working Group on assessing the effects of marine infrastructure, such as the proposed Marine Off-loading Facility (MOLF) and its associated vessel movements, on red throated divers; on which comments were received and recorded. These will be taken into account in the LSE Screening stage.

purpose of meetings would be for EDF Energy and relevant technical stakeholders to consider the detailed evidence requirements, data outputs and impact assessments.

1.5.8 Progress through the Evidence Plan process will be reviewed periodically by a Steering Group whose make-up and functions are set out in the Evidence Plan.

1.5.9 The focus of this Evidence Plan is to consider the evidence requirements of the HRA specifically, and not other assessments, such as the Environmental Impact Assessment or Water Framework Directive Compliance Assessment, although it is acknowledged that (where they overlap) a consistent evidence base is required.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This section of the Evidence Plan 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.

2.1.2 The development proposals are summarised in the following two sections:

- Main Development Site; and
- off-site associated development.

2.2 Main Development Site

a) Permanent development

2.2.1 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.

2.2.2 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.

2.2.3 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;
- a habitat creation scheme to compensate for development in part of Sizewell Marshes Site of Special Scientific Interest (SSSI); and
- landscaping of the areas to be restored following their use during construction.

2.2.4 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 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

2.2.5 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:

- a development site accommodation campus;
- 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 route extending 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;
- surface water management facilities incorporating SUDs; and
- environmental buffer zones incorporating bunds and acoustic fencing.

2.2.6 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.

2.2.7 **Figure 1, Appendix 1** illustrates the areas for construction and operation on the Main Development Site, including the accommodation campus site.

2.3 Off-site Associated Development

2.3.1 To support the construction and/or operation of Sizewell C, EDF Energy would also need to use additional land for associated development.

2.3.2 **Figure 2, Appendix 1** illustrates the areas for potential off-site associated development. Since Stage 1 consultation EDF Energy has progressed in its consideration of the potential off-site associated development sites and in some cases a lead option has been identified, which is the focus of this Evidence Plan. 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. Should the lead sites change, the Evidence Plan may need to be updated. Where a lead site has not been identified, all options have been considered and will be taken forward for further assessment in the Evidence Plan.

2.3.3 The off-site associated development currently proposed includes:

- 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 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). In addition, a postal consolidation facility and construction induction centre may 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 potential routes are being considered; green or blue) or a new rail terminal and freight laydown area north of King George's Avenue, Leiston.

2.3.4 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.

2.3.5 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.

2.3.6 These options 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.

2.3.7 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
- 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.

2.3.8 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).

2.4 Construction Phase

2.4.1 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.

2.4.2 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.

2.4.3 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.

2.4.4 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.

2.4.5 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.

2.4.6 The main construction phase would include the erection of the key buildings and ancillary facilities and the installation of the mechanical and electrical plant.

2.4.7 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.

2.5 Operation Phase

2.5.1 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.

2.6 Decommissioning

2.6.1 At the end of electricity generation at Sizewell C the site would be decommissioned. This would be the responsibility of EDF Energy. 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.

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

2.6.3 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.

2.6.4 The ISFS would continue to operate until a UK Geological Disposal Facility is available and the spent fuel is ready for disposal.

2.6.5 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. HRA EVIDENCE PLAN PROCESS

3.1 Introduction

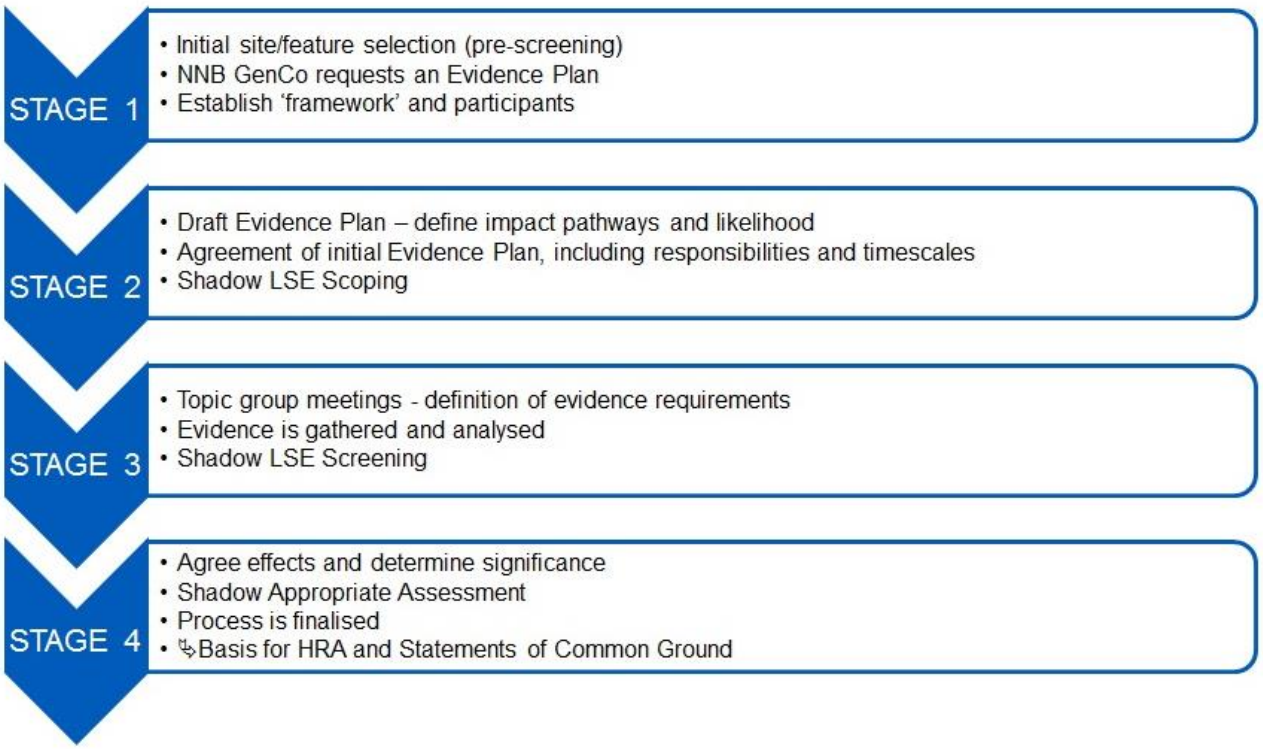
3.1.1 This section describes the process that was followed to prepare and agree the Evidence Plan for the Sizewell C Project HRA, including the organisations and groups involved and their roles and responsibilities, the scope of the process, working arrangements and the principles of the assessment approach taking account of the likely impact pathways between the Sizewell C Project and designated interest features of relevant European sites. The proposals for taking the Evidence Plan forward are also described and a 'Route Map' has been prepared (see **Section 9**).

3.2 Evidence plan stages

3.2.1 NNB GenCo's HRA Evidence Plan process comprises four stages:

- Stage 1 Applicant requests an Evidence Plan.
- Stage 2 Preparation of Evidence Plan.
- Stage 3 Topic Group Meetings / LSE Screening.
- Stage 4 Topic Group Meetings / Appropriate Assessment.

3.2.2 The graphic below provides further information on each stage:



3.2.3 The Evidence Plan stages overlap with the four statutory stages of HRA, as set out in detail in **Section 6** (Determination of LSE).

3.2.4 Furthermore, the Evidence Plan / HRA stages should not be confused with the statutory pre-application consultation programme for Sizewell C. NNB GenCo carried out Stage 1 Consultation in 2012 and plans to publish Stage 2 Consultation shortly.

3.2.5 **Schematic 1** (overleaf) shows the relationship between the statutory Sizewell C Pre-application Consultation process and the voluntary HRA Evidence Plan process. The former is a joint public and technical consultation that is published in accordance with the Statement of Community Consultation (SoCC), the latter is a technical process.

3.3 Stakeholder involvement

a) General principles

3.3.1 Representatives of technical stakeholders must have the authority to ensure that any agreed position is an agreed corporate position and not the advice of the officer only. Representatives must also be in a position to provide expert technical advice on evidence requirements (either directly or via specialist colleagues).

3.3.2 All project and environmental information, documents and data of whatsoever description that are provided by NNB GenCo to technical stakeholders during the Evidence Plan process will be on a strictly confidential basis and will be marked '**UK Protect - Commercial**'. The published Evidence Plan will not be protectively marked.

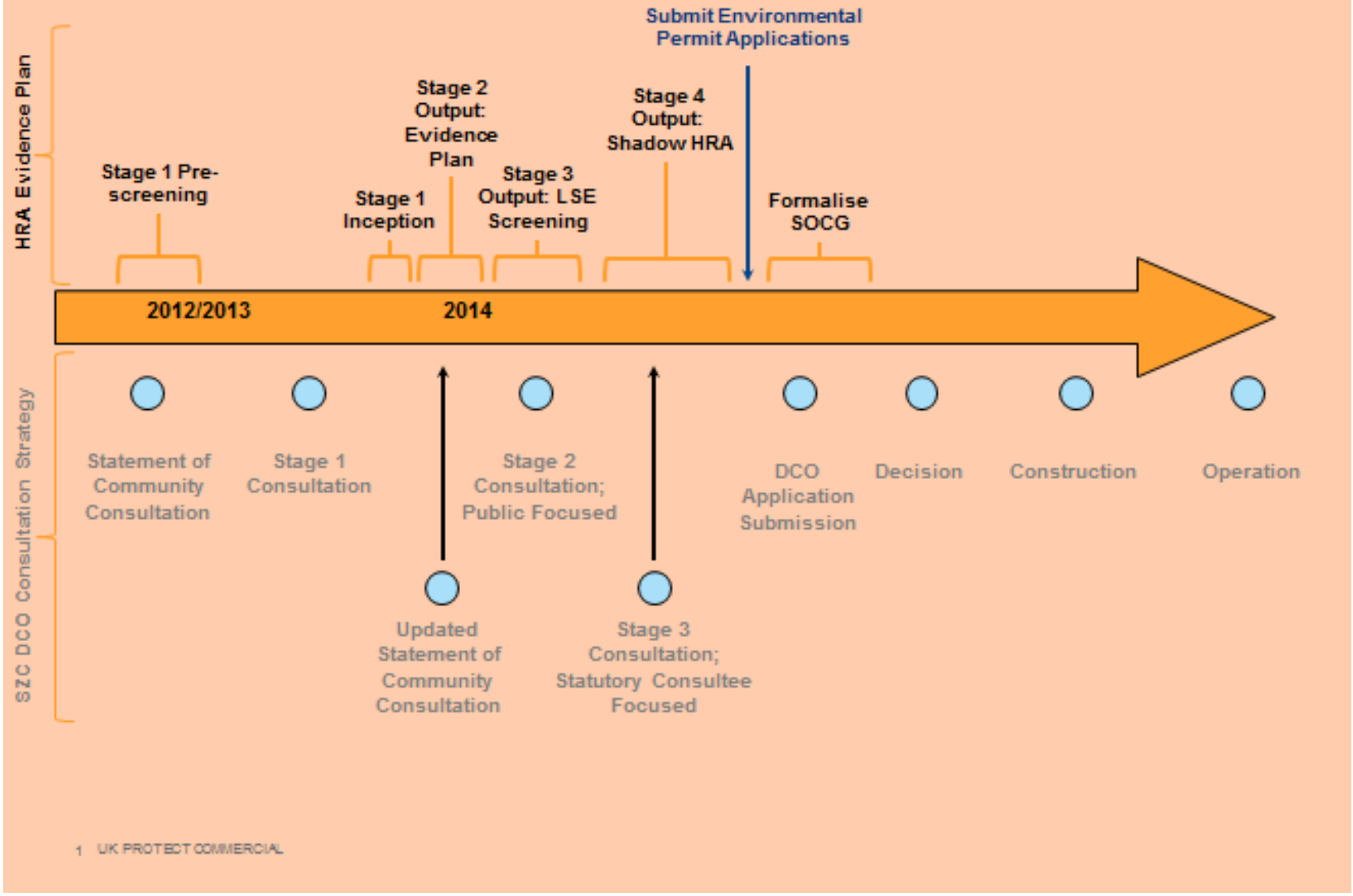
3.3.3 Ultimately it will be for the competent authorities to screen European sites for LSE and to undertake Appropriate Assessment (AA). NNB GenCo will undertake Shadow LSE screening and AA in Stages 3 and 4, respectively, of the Evidence Plan process using best available information and professional judgement.

b) Steering Group

3.3.4 The Evidence Plan Steering Group for Sizewell C was set up and met in January 2014, in Stage 1 of the Evidence Plan process. The Steering Group has not met during Stage 2 but will meet in subsequent stages, broadly in accordance with the intervals set out in the Route Map (see **Section 9**). It consists of the following bodies:

- NNB GenCo, which chairs the Steering Group and has led the drafting of the Evidence Plan, and will implement it in general accordance with the 'Route Map';
- the Major Infrastructure and Environment Unit (MIEU), which maintains oversight of, and acts as a facilitator for, drafting and implementation of the Evidence Plan;
- Natural England, which is the lead SNCB for agreement/sign-off of the Evidence Plan and for providing specialist technical advice during its implementation;
- the Environment Agency, which provides advice and input into the Evidence Plan process and will be the competent authority for Environmental Permit applications;
- the Marine Management Organisation (MMO), which will provide technical advice on the marine environment during implementation of the Evidence Plan; and
- the Planning Inspectorate, which maintains a watching brief (as the examining authority for the DCO application) during preparation and implementation of the Evidence Plan.

Schematic 1- Relationship between the Sizewell C Project Consultation Strategy and the HRA Evidence Plan Process



1 UK PROTECT COMMERCIAL

3.3.5 The role of the Steering Group is:

- to initiate the preparation of the Evidence Plan, and monitor its implementation;
- to use reasonable endeavours to agree the way forward throughout Stages 3 and 4 of the Evidence Plan process, taking account of the published Evidence Plan;
- to consider thresholds for LSE screening and assessment of effects on integrity;
- to monitor progress in the collection of agreed evidence;
- to consider feedback from the Topic Groups;
- to determine if there are areas where evidence appears to be inadequate for the purposes of ruling out LSE, or undertaking AA, and advise on evidence needs;
- to consider whether further mitigation measures may be required; and
- to capture any learning from the process and suggest areas where improvements to the Evidence Plan process could be made (e.g. to the MIEU guidance).

3.3.6 As stated in Paragraph 1.3.3, while the intention of Evidence Plan process is to agree the evidence needs for the HRA with the lead SNCB, NNB GenCo ultimately has discretion over the details of the evidence that is collected, and the assessments.

3.3.7 Following publication of the Evidence Plan, it is envisaged that Steering Group meetings will be held on a quarterly basis approximately (or as otherwise required).

c) Evidence Plan Working Group

3.3.8 NNB GenCo set up an Evidence Plan Working Group to prepare the Evidence Plan which was attended and chaired by NNB GenCo and represented by the following:

- Natural England;
- Environment Agency;
- Suffolk Coastal District Council;
- Suffolk County Council;
- MIEU;
- PINS;
- Suffolk Wildlife Trust; and
- Royal Society for the Protection of Birds.

3.3.9 The Evidence Plan Working Group sat on four occasions in 2014 (in March, May, June and July) to discuss and agree the HRA Evidence Plan for Sizewell C.

3.3.10 It is envisaged that further meetings will be convened at key milestones throughout the Evidence Plan process e.g. to discuss the results of Shadow LSE Screening and Shadow AA.

d) Topic Groups

3.3.11 NNB GenCo will organise and chair Topic Group meetings between small groups of technical experts from relevant bodies to discuss the detailed evidence requirements.

3.3.12 The following Topic Groups will be created:

- Terrestrial Ornithology & Ecology.
- In-combination Assessment.
- Groundwater & Surface Water.
- Air Quality.
- Marine Ornithology.
- Recreational Pressure.
- Radiological Effects.
- Marine Water Quality.
- Coastal Geomorphology.
- Marine Noise.
- Effects on Fish.

3.3.13 Meetings will be held broadly in accordance with the Route Map (see **Section 9**) or as otherwise required, subject to sufficient and adequately robust information being available, and key outcomes will be fed back to the Steering Group.

3.3.14 The Topic Group meetings will have the following terms of reference:

- to consider detailed evidence requirements in the context of the Evidence Plan;
- to consider the relevance, appropriateness and sufficiency of evidence for the specific assessment requirement under consideration (including both site specific and contextual data);
- where appropriate, to agree the survey methods/metrics etc.; and
- to consider methods for assessment(s) and assumptions (including agreed change thresholds).

3.4 Roles and responsibilities

a) NNB GenCo

3.4.1 Draft and implement the Evidence Plan (subject to approval by the SNCB), recognising that it is a 'live' document that may need to be adapted as the Sizewell C project develops due to new project or environmental information.

3.4.2 Collect, analyse, review and share evidence with participating technical stakeholders at appropriate intervals. Update the relevant SNCB, the Planning Inspectorate and other consenting bodies on modifications to the Sizewell C Project.

3.4.3 Use reasonable endeavours to provide all reports, documents etc. for topic meetings in a timely manner to allow review/comment by stakeholders within agreed time periods, in general accordance with the Route Map (see **Section 9**). Where possible, HRA Topic Group meetings will be co-ordinated to coincide with other workstream meetings e.g. EIA, WFD etc (insofar as they are relevant to the HRA).

3.4.4 Organise meetings with the Steering Group to discuss progress with implementation of the Evidence Plan in general accordance with the Route Map (see **Section 9**).

3.4.5 Work with the Steering Group to resolve as many issues as possible at the pre-application stage and set out the issues agreed, or not agreed, using the Evidence Plan as a mechanism to do this (as recorded in the Decision Log, see **Section 3.7**).

3.4.6 Prepare and maintain a Decision Log to record areas of agreement (and disagreement) to assist with the preparation of Statement(s) of Common Ground.

3.4.7 Finalise the Evidence Plan and use it to inform the Topic Group meetings, Shadow LSE Screening and Shadow AA for the DCO and environmental permit applications.

b) MIEU

3.4.8 Oversee and monitor the Evidence Plan process, e.g. monitoring agreement of the Plan within the development timeframe, and monitor implementation.

3.4.9 If necessary, facilitate agreement of the Evidence Plan or, if there are any subsequent disputes that cannot be resolved throughout the duration of the Evidence Plan process, document the background to these for audit trail purposes.

3.4.10 As necessary, facilitate co-ordination between different Defra organisations.

3.4.11 Once the Evidence Plan has been agreed, and this has been confirmed by the lead SNCB, it will be issued to MIEU to publish on PINS' website. MIEU will ensure that the most up-to-date version of the Evidence Plan is available on the PINS website.

c) Planning Inspectorate

3.4.12 Maintain a watching brief over the Evidence Plan process, including during Stage 2 Evidence Plan preparation and through attendance of Steering Group meetings.

d) Natural England (lead SNCB)

3.4.13 Advise on which European sites and features need to be considered in the Evidence Plan (including the status of any potential changes to designated features).

3.4.14 Advise on the conservation objectives and conservation status of relevant sites.

3.4.15 Discuss and agree the Evidence Plan with NNB GenCo, ensuring that evidence requirements are proportionate to the potential impacts of Sizewell C, taking account of 'the precautionary principle' and having regard to cost and programme.

3.4.16 Assess and review evidence provided by NNB GenCo at agreed regular reviews, giving written feedback on progress to agreed timescales. In this context, Natural England and the Environment Agency have agreed to apportion topics/issues between themselves, in order to make best use of their expertise and avoid the duplication of functions (i.e. to allocate topic owners) between Defra organisations.

3.4.17 Identify and provide to NNB GenCo any relevant public domain information (e.g. conservation objectives, monitoring reports, site condition assessment data; grey literature) they have access to in order to inform the Evidence Plan / assessment.

3.4.18 Ensure consistency of approach to advice between this Project and other NSIPs.

3.4.19 Work with NNB GenCo to resolve as many issues as possible during the pre-application period, to agreed timescales, including through the Statement(s) of Common Ground. Consultation and timescales/deadlines should be agreed with Expert Topic Groups or the Steering Group.

3.4.20 Arrangements for Natural England's participation in the Evidence Plan process post Stage 2 will be agreed between NNB GenCo and Natural England as needed.

e) Environment Agency

3.4.21 Assess and evaluate evidence provided by NNB GenCo at agreed regular reviews, giving feedback on progress. The Environment Agency's role as the competent authority for the environmental permits is noted.

3.4.22 Identify and provide to NNB GenCo any relevant public domain information they have access to that can usefully inform the Evidence Plan / assessment. It is recognised that Natural England, rather than the Environment Agency, is likely to have access to much of the relevant information (e.g. conservation objectives and site condition assessment data).

3.4.23 Work with NNB GenCo to resolve as many issues as possible during the pre-application period, to agreed timescales, including through the Statement(s) of Common Ground. Consultation and timescales/deadlines should be agreed with Expert Topic Groups or the Steering Group.

3.4.24 It is acknowledged that the Environment Agency is in a period of transition which will be reflected in arrangements for the Evidence Plan process. Arrangements for Environment Agency participation in Stages 3 and 4 of the process will be agreed with NNB GenCo nearer the time. The Environment Agency has committed to always ensure that a suitably accountable member of their Sizewell C project team attends.

f) Suffolk Coastal District Council and Suffolk County Council

3.4.25 Offer expert views on the Evidence Plan process.

3.4.26 Identify and provide to NNB GenCo any relevant public domain information (e.g. conservation objectives, monitoring reports, site condition assessment data; grey literature) they have access to in order to inform the Evidence Plan / assessment.

3.4.27 Advise on other relevant plans and projects for in-combination assessment within their jurisdiction.

3.4.28 Make available local knowledge / expertise to assist the Evidence Plan Working Group in preparing the Evidence Plan using the agreed risk-based approach.

3.4.29 Provide expert input into relevant Topic Group meetings.

g) Marine Management Organisation

3.4.30 The MMO confirmed that as they are not a SNCB or competent authority for Sizewell C they would not contribute to Stage 2 of the Evidence Plan process. However, the MMO agreed to respond to all statutory requests and to offer advice at the developer's discretion. The MMO will be invited by NNB GenCo to participate fully from Stage 3 onwards, contributing on all marine aspects, as appropriate.

h) Suffolk Wildlife Trust & the RSPB

3.4.31 Offer expert views on the Evidence Plan process.

3.4.32 Identify and provide to NNB GenCo any relevant public domain information (e.g. conservation objectives, monitoring reports, site condition assessment data; grey literature) they have access to in order to inform the Evidence Plan / assessment.

3.4.33 Make available local knowledge / expertise to assist the Evidence Plan Working Group in preparing the Evidence Plan using the agreed risk-based approach.

3.4.34 Provide expert input into relevant Topic Group meetings.

3.5 Working arrangements

3.5.1 The following general principles will apply:

- NNB GenCo should endeavour to arrange meetings 2 months in advance and should circulate an agenda and any documents 10 working days in advance;
- technical stakeholders should endeavour to provide NNB GenCo with written advice / comments within 10 working days of the meeting;
- documents, guidance and/or advice given should be clear and comprehensive;
- in order to optimise meeting efficiency, adequate preparation and full participation is expected of all involved;
- in order to understand the process requirements and effort, all participants should log the time spent on the Evidence Plan process;
- where costs may be incurred, NNB GenCo is to be provided with cost estimates for approval before they are incurred (at intervals to be agreed); and
- key points of contact with NNB GenCo should be established for all participants in order to provide a clear communication route.

3.6 Programme

a) Evidence plan preparation

3.6.1 Key milestones in the Evidence Plan process to date have been as follows:

- **January 2014** - update of the high-level pre-screening assessment undertaken in 2012 (EDF Energy, 2012) to reflect the current project proposals and examine potential cause-effect relationships in more detail (potential impact pathways for selected European sites and features).
- **January 2014** - inception meeting of the Steering Group.
- **February 2014** - production of an Evidence Plan Framework for discussion and development of the LSE scoping assessment based on review of the ecological species and habitat survey work undertaken to date.
- **March 2014** - first workshop with the Evidence Plan Working Group to provide a project update and overview of the on-going ecological and hydrodynamic investigations, and to discuss and agree the Evidence Plan Framework and the

scope of further work proposed (e.g. the required evidence base for low likelihood effects).

- **March/April 2014** – development of the LSE scoping assessment.
- **May 2014** - second workshop with the Evidence Plan Working Group to shape the Evidence Plan and discuss the development of the LSE scoping tables for the construction and operation of Sizewell C (including case studies on cooling water, disturbance and groundwater effects), as well as proposals for defining LSE and addressing change management and in-combination effects.
- **June 2014** - third workshop with the Evidence Plan Working Group to agree the revised LSE Scoping tables.
- **July 2014** - fourth and final workshop with the Evidence Plan Working Group to agree the completed Evidence Plan and discuss the Route Map (including discussion of case studies on air quality screening and recreational pressure).
- **October 2014** – review/sign-off of Evidence Plan by Natural England as the lead SNCB and publication, by MIEU, of the agreed final Evidence Plan on PINS' website.

b) Indicative forward programme

3.6.2 The indicative forward programme for implementation of the Evidence Plan is set out in the Route Map (see **Section 9**). Broadly, a number of half-day or full-day Topic Group meetings will be held with relevant technical stakeholders between September 2014 and May 2015 (approximately, since topic meetings and dates may change).

3.6.3 Shadow LSE Screening will occur after the Stage 2 DCO Consultation, benefiting from the additional project information available at that time. Shadow AA will occur between then and submission of the Environmental Permit/DCO applications.

3.7 Audit trail

a) Meeting minutes

3.7.1 NNG GenCo shall take minutes of each meeting.

3.7.2 A draft set of meeting minutes shall be provided to participating stakeholders within one week of the meeting (approximately). Following receipt of written comments on the draft, NNB GenCo shall prepare and circulate a final set of minutes for the record.

b) Written comments

3.7.3 All participating stakeholders shall provide NNB GenCo with a detailed written response following each meeting. This response should be in relation to the matters discussed at the meeting and should answer any questions raised by NNB GenCo.

3.7.4 NNB GenCo shall be responsible for logging and tracking stakeholder comments and actions.

c) Decision log

3.7.5 NNB GenCo shall prepare and maintain a 'Decision Log' comprising a record of key decisions and areas of agreement. The Decision Log will also make a record of any areas of disagreement between NNB GenCo and SNCB and/or other relevant parties regarding the data used within the HRA process and the potential impacts identified and assessed, such that this is clear to all parties, including the Examining Authority. A register of key project assumptions has also been initiated and will be maintained by NNB GenCo in conjunction with the log. A log of agreements will enable an iterative approach to be taken to generating Statement(s) of Common Ground. In this way, during the DCO examination period, it will be possible to trace the decision making process back through a clear and agreed audit trail.

3.7.6 The Decision Log is being compiled as a stand-alone document and does not form part of this Evidence Plan. Details of the format of the Log are yet to be agreed.

4. SUMMARY OF PREVIOUS HRA-RELATED STUDIES FOR SIZEWELL C

4.1 Introduction

4.1.1 This section outlines previous HRA-related studies for Sizewell C, which have been taken into account in preparation of this Evidence Plan. These are:

- the strategic HRA carried out by the Department of Energy and Climate Change (DECC) for the National Policy Statement for new nuclear (DECC, 2009); and
- previous work carried out by NNB GenCo in 2012, prior to the Stage 1 DCO Consultation.

4.2 NPS HRA

4.2.1 The approach taken in the NPS HRA was to initially include all European sites within a 20km range of the proposed development site (listed in **Table 1** and shown on **Figure 3, Appendix 1**) (DECC, 2009). This area of search was chosen as it reflected guidance recommendations at the time (CLG, 2006), but distance is in itself not a definitive guide to the likelihood or potential cause-effect impact pathways.

Table 1 – European sites present within 20km of the proposed Sizewell C new nuclear development

Site Name	Designation	Proximity to Sizewell C Development Site
Alde-Ore and Butley Estuaries	SAC	5 km
Alde-Ore Estuary	SPA	5 km
Alde-Ore Estuary	Ramsar	5 km
Benacre to Easton Bavents Lagoons	SAC	15.5 km
Benacre to Easton Bavents Lagoons	SPA	15 km
Dew's Ponds	SAC	9 km
Minsmere to Walberswick Heaths and Marshes	SAC	Adjacent
Minsmere to Walberswick	SPA	Adjacent
Minsmere to Walberswick	Ramsar	Adjacent
Orfordness-Shingle Street	SAC	8 km
Outer Thames Estuary	SPA	Within and adjacent
Staverton Park and the Thicks	SAC	15.5 km
Sandlings	SPA	0.7 km

4.2.2 A selection of these sites was subsequently screened into the NPS HRA for Sizewell C (see **Table 2**), while other sites were screened out (see **Table 3**) because there were no identified significant potential cause-effect impact pathways (DECC, 2010).

Table 2 – European sites present within 20km of the proposed Sizewell C new nuclear development screened into the NPS HRA

Site Name	Designation	Proximity to Sizewell C Development Site
Alde-Ore and Butley Estuaries	SAC	5 km
Alde-Ore Estuary	SPA	5 km
Alde-Ore Estuary	Ramsar	5 km
Minsmere to Walberswick	SPA	Adjacent
Minsmere to Walberswick	Ramsar	Adjacent
Minsmere to Walberswick Heaths and Marshes	SAC	Adjacent
Orfordness-Shingle Street	SAC	8 km
Outer Thames Estuary	SPA	Within and adjacent
Sandlings	SPA	0.7 km

Table 3 – European sites present within 20km of the proposed Sizewell C new nuclear development screened out of the NPS HRA

Site Name	Designation	Proximity to Sizewell C Development Site
Benacre to Easton Bavents Lagoons	SAC	15.5 km
Benacre to Easton Bavents Lagoons	SPA	15 km
Dew's Ponds	SAC	9 km
Staverton Park and the Thicks	SAC	15.5 km

4.2.3 The NPS HRA for Sizewell C reached preliminary conclusions, in the absence of project details, on the likelihood that a significant effect could arise for the designated features of each European site that was 'screened in' due to potential defined effects.

4.2.4 It identifies the following potential effects as being of particular importance:

- direct habitat loss;
- habitat fragmentation;
- disturbance;
- effects on water quality; and
- effects on air quality.

4.2.5 The full findings are outlined in **Table A2.1a**, **Appendix 2.1** for potential identified construction effects and **Table A2.1b**, **Appendix 2.1** for potential operation effects.

4.3 Previous NNB GenCo Study (2012)

4.3.1 NNB GenCo undertook a high level 'pre-screening' site selection process in 2012. This was done in consultation with a number of statutory and non-statutory stakeholders, which comprised Natural England, the Environment Agency, the Marine Management Organisation, Suffolk Coastal District Council, Suffolk County Council, Suffolk Wildlife Trust and the Royal Society for the Protection of Birds.

4.3.2 This assessment benefited from more project information than was available for the NPS HRA, although this information was still at a relatively strategic level. Significant professional judgement was therefore exercised in the interpretation of information and in the assessment of potential cause-effect linkages. Where relevant information was not available, or uncertainties existed, the precautionary principle was applied.

4.3.3 On the advice of stakeholders, sites screened out of the NPS HRA for Sizewell were included in NNB GenCo's HRA site selection process (see **Table A2.2**, **Appendix 2.2**). In addition, the site selection exercise identified a few European sites where activities associated with proposed associated development (e.g. a park and ride scheme at Woodbridge and the possibility that construction materials and Abnormal Indivisible Loads (AILs) could be transported via vessels using port facilities at Ipswich and/or Lowestoft) potentially could influence designated site features.

4.3.4 Given this, the Deben Estuary SPA and Ramsar site and the Stour and Orwell Estuaries SPA and Ramsar site were also screened-in within the initial site selection (see **Figure 3**, **Appendix 1** showing all European sites that were screened-in).

4.3.5 On the basis of knowledge of the types of project activities associated with the development of new nuclear power stations, the following potential effects were identified, which were broadly consistent with those identified in the NPS HRA, although there were a number of important differences, which are highlighted:

During construction (including commissioning):

- direct terrestrial habitat loss and alteration;
- alteration in hydrological conditions and implications for habitat features (and associated species) as a result of potential changes (**not in NPS HRA**);
- marine habitat loss and alteration due to construction of marine infrastructure;
- alteration in coastal processes and sediment transport due to the presence of temporary structures in the marine environment and the effect that any alteration may have on other environmental (physical and ecological) attributes;
- disturbance effects to birds related to human presence, transport of materials (by sea and land), noise and night time lighting;
- disturbance effects to birds resulting from potential increases in recreational pressure due to construction/operational workforce and displacement of existing recreational users (**not in NPS HRA**);
- underwater noise and vibration from works undertaken in the marine environment (**not in NPS HRA**);
- change in water quality due to discharges from land-based activities (e.g. site clearance) and works in the marine environment;

- change in marine water quality due to sediment re-suspension during construction in the marine environment;
- change in water quality due to accidental or emergency discharges of polluting substances; and
- changes in air quality due to dust emissions associated in particular with earthworks, vehicle emissions and combustion plant emissions (e.g. associated with commissioning of stand-by diesel generators).

During operation:

- long-term alteration in local hydrological conditions and effects on terrestrial habitats and species (**not in NPS HRA**);
- long-term alteration in coastal processes and sediment transport due to the presence of structures in the marine environment and the effect that any alteration may have on other environmental (physical and ecological) attributes;
- entrainment and impingement effects of the cooling water system on marine organisms and any consequential effects that this may have on ecological dependencies (e.g. prey-predator relationships);
- change in marine water quality due to chemical and thermal properties of the cooling water discharge;
- discharge of radionuclides to air and the marine environment (the NPS HRA notes that there is a strict regulatory regime in place such that no significant effect should arise (unless there is an accidental release));
- change in terrestrial water quality due to wastewater discharges from the development;
- change in water quality due to accidental or emergency discharges of polluting substances;
- disturbance effects to birds related to human presence, transport activities, noise and night time lighting; and
- localised changes in air quality due to emissions from operational activities, including the testing/potential use of standby diesel generators.

4.3.6 The high-level assessment is set out in full in **Table A2.2**, **Appendix 2.2**.

4.3.7 This assessment deselected some of the more tenuous cause-effect relationships discussed in the NPS HRA for Sizewell (based on further project information), for example, potential cooling water effects on the Sandlings SPA and physical effects associated with an algal blooms affecting vegetated shingle.

5. LSE SCOPING & EVIDENCE REQUIREMENTS

5.1 Identification of Potential Cause-Effect Impact Pathways

5.1.1 The previous HRA-related studies have been reviewed, updated and developed, taking account of current project and environmental information, by NNB GenCo in consultation with stakeholders through the Evidence Plan Working Group.

5.1.2 This work has culminated in the development of a set of LSE Scoping tables for the construction and operation phases of Sizewell C (**see Table A2.3a Scoping Likely Significant Effects – Construction Phase** and **Table A2.3b Scoping Likely Significant Effects – Operation Phase** in **Appendix 2.3**).

5.1.3 These tables represent an agreed position with participating stakeholders on areas of Likely Significant Effect pertaining to European sites, based on current information.

5.1.4 It should be noted that the LSE Scoping tables are for the Sizewell C Project alone and don't take account, at this stage, of other plans and projects (see **Section 7**).

5.1.5 The LSE Scoping tables have been informed by a number of 'case studies' (see **Appendix 3, Volume II**) developed to help enhance conceptual environmental understanding relating to potential cause-effect pathways in some key areas, as follows:

- operational cooling water system impacts on red-throated diver;
- construction disturbance effects on bittern and marsh harrier;
- groundwater effects conceptualisation and preliminary modelling;
- air quality effects conceptualisation and screening; and
- approach for assessing disturbance due to increases in recreational pressure.

5.1.6 As previously noted, the content of the example case studies is provisional as they represent work in progress which will be completed later in the Evidence Plan process. The example case studies illustrate the complex issues being explored and the types of data and methods being employed. At the end of each case study, preliminary comments from the stakeholders are presented.

5.1.7 The LSE Scoping tables are intended to provide a framework for further, more detailed discussions with technical stakeholders on evidence requirements. The case studies are intended to provide context for these discussions going forward.

5.1.8 This assessment will be developed and refined as the project progresses to facilitate full Shadow LSE Screening, and Shadow Appropriate Assessment, in due course.

5.1.9 This categorisation of impact strength has helped to provide a focus for defining evidence requirements. That is, where an impact pathway is considered to be weak, information will, in due course, be provided to demonstrate whether this constitutes no LSE but, in general, this effect is not considered to represent a priority for further detailed investigation. By contrast, where an impact pathway is considered to be moderate or strong, further information (including project details, survey information and/or assessment) will be undertaken to meet the higher evidence standards that apply. The principal agreed evidence requirements are set out at the end of **Tables A2.3a** and **A2.3b**. These relate primarily to those cause-effect impact pathways that are considered to be moderate or strong, as well as to cases where further evidence is required to prove (or disprove) the existence of a cause-effect impact pathway.

5.1.10 In the next phase of work, NNB GenCo will undertake Shadow LSE Screening with a focus on justifying all decisions taken (particularly where no LSE is determined for any particular site or designated feature); this will be set out in a Shadow LSE Screening report. It is expected that where no LSE has been concluded for a particular cause-effect pathway, that the relevant assessment would not be revisited, unless compelling new evidence is introduced.

5.1.11 Further detail on change management is provided in **Section 8**, but in summary it is proposed that evidence requirements should only change if it is agreed that:

- the data acquisition or assessment of NNB GenCo has identified new areas of concern;
- relevant evidence, information or research has come to light that has an impact on information requirements; and
- a material change to the NSIP proposal has arisen that could alter the potential impacts of the project and, therefore, the evidence requirements to address these.

5.2 Provision of technical information

5.2.1 NNB GenCo is required to provide "information as may reasonably be required for the purposes of the assessment". Data ultimately must be sufficient to enable an assessment of likely significant effects to be undertaken and effects on site integrity to be defined. However, it must also be proportionate in the context of both the likely significance of the effect under consideration and the point in the process.

5.2.2 To this end NNB GenCo intends to adopt a risk based approach to the assessment that characterises the nature of the evidence requirements for issues of substance. Best endeavours will be used both with respect to site specific data and other information required in order to characterise an area/species population.

5.2.3 Through preparation of this Evidence Plan, the scope of a number of technical environmental workstreams has been amended to deliver appropriate information for HRA purposes. The scope of work for assessing impacts from recreational pressure is a good example of this. The scope of the hydrological/hydrogeological studies has also been extended to include consideration of effects north of Minsmere New Cut.

5.2.4 A significant amount of survey and reporting effort has already been expended in evaluating environmental baseline conditions for Sizewell C in other areas. For example, NNB GenCo has made substantial investments in research of the coastal marine environment in the vicinity of Sizewell C for a number of years through the BEEMS programme (British EDF Estuarine and Marine Studies). A Sizewell C Marine Technical Forum (MTF) has recently also been established which provides the principal forum for technical consultation on marine issues with the regulators (notably the MMO, Environment Agency and SCDC and key statutory advisers, notably Natural England). It is acknowledged that it is important that the work associated with the release of BEEMS reports for review through the MTF is coordinated with the Evidence Plan process, as appropriate.

5.2.5 The information that will be relied upon in the HRA will largely be drawn from the EIA workstream. It is important that these two workstreams have a consistent evidence base. Where the HRA overlaps with other technical workstreams, e.g. with the EIA or the WFD Compliance Assessment, technical meetings will be co-ordinated to help ensure that the meetings fulfil all project requirements (where possible).

5.2.6 If more data for a particular topic are requested by a Topic Group/the Steering Group, beyond that agreed within the Evidence Plan, consideration must be given to any cost and/or time considerations and the overall benefit to the assessment (i.e. would extra data significantly change an assessment outcome?).

5.2.7 It should also be noted that while additional data may be necessary to develop a baseline for compliance monitoring post-consent, this is separate from the data requirements for HRA assessment, i.e. to characterise the baseline environment.

5.3 Data analysis and impact assessment

5.3.1 As part of the HRA Evidence Plan process the following, amongst others, will be discussed:

- study areas (spatial and temporal);
- reference populations; and
- methodologies, analysis techniques and statistical analysis tools to be used.

5.3.2 Effort will be made throughout the process to determine:

- thresholds and criteria for screening (in/out) with respect to relevant European sites and designated features; and
- where appropriate, thresholds for likely significant effect, as well as 'adverse effect on site integrity'.

5.3.3 Survey and assessment methodologies will be shared and discussed for each topic/element of a topic (if appropriate). In this way each assessment will have a clear audit trail and these steps can be referred back to in Statement(s) of Common Ground.

5.3.4 The approach proposed to be adopted for in-combination assessment is described in detail in **Section 7**.

5.4 Approach to mitigation

5.4.1 Where significant adverse impacts are identified, NNB GenCo will apply the mitigation hierarchy, i.e. avoid – reduce – mitigate – compensate – enhance. Mitigation will be embedded into the design of the Sizewell C Project as far as is possible.

5.4.2 It is important that for mitigation to be effective the expectation of what can be achieved reflects the timeline for actual construction and operation and is sufficiently flexible to allow for changes in understanding over time. In some cases it may be that detail of the design or process can be specified, in other cases it may be that specific mitigation techniques cannot reasonably be specified but the desired outcome can.

5.4.3 NNB GenCo considers that mitigation for weak cause-effect relationships (i.e. low likelihood) can, in some circumstances, be delivered through control measures set out, for example, in Construction Environmental Management Plans (CEMPs) enforced through the DCO requirements and obligations or environmental permit conditions.

6. DETERMINATION OF LSE

6.1 Introduction

6.1.1 This section sets out the background to the determination of LSE in respect of the test set out in the Habitats Regulations and the proposed approach to this aspect of the HRA process for the Sizewell C Project.

6.1.2 The section provides information on the likely significant effect test, including definitions of what constitutes likely significant effect as determined through case law. It then highlights how the project will approach the determination of likely significant effect, taking into account the various requirements set out in guidance and previous practice. Appended to the Evidence Plan is an analysis of the Hinkley Point C Project's HRAs and the approach they took to determining LSE (**Appendix 4**).

6.1.3 **Section 6.5** herein sets out the list of questions that NNB GenCo asked the participants in the Evidence Plan process to consider in the context of the determination of LSE, as well as the responses received.

6.2 The likely significant effect test

6.2.1 Regulation 61 of the Habitats Regulations defines the procedure for the assessment of the implications of plans or projects on European sites. Under this Regulation, if a proposed development is unconnected with site management and is likely to significantly affect the designated site, the competent authority must undertake an appropriate assessment (Regulation 61(1)); this process is also identified in Regulation 25(1) of the Offshore Habitats Regulations.

6.2.2 Guidance (EC, 2001; Planning Inspectorate, 2013) on undertaking assessment of plans or projects that may impact upon designated European sites recommends a four-staged approach to the assessment process, of which the determination of likely significant effect, is Step 1:

- Screening (Step 1): The process of identifying potentially relevant European sites and the likely impacts of a project upon the designated features of a European site, either alone or in combination with other plans and projects, and considering whether the impacts are likely to be significant.

6.2.3 The remaining steps are:

- Step 2 – Appropriate Assessment.
- Step 3 – Assessment of alternative solutions.
- Step 4 – Assessment of imperative reasons of overriding public interest (IROPI); where IROPI can be shown then compensatory measures are required.

6.2.4 In relation to Step 1, the 'significance' test is designed to act as a coarse filter for all proposed plans and projects which are not directly connected with or necessary to management of the site (whether or not the effect is likely to be adverse or beneficial) so directing attention to those plans or projects which require further assessment.

6.3 Definition of likely significant effect

6.3.1 Likely significant effect has been defined as "*any effect that may reasonably be predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated,* ***but excluding trivial or inconsequential effects***" (English Nature, 1999).

6.3.2 Where a project has the potential to compromise the site's conservation objectives, it is considered likely to have a significant effect on the site. The assessment of that potential risk (in this context) needs to be made in the light, amongst other things, of the characteristics and specific environmental conditions of the site concerned. Thus, an effect that has the potential to undermine the site's conservation objectives would be a significant effect and the likelihood of it occurring should be a case-by-case judgement, taking account of the precautionary principle and the local circumstances of the site (e.g. is the sensitivity of the site/feature of a nature that could be negatively affected by the potential change or not); this is the basis for the LSE decision.

6.3.3 The European Court Waddenzee judgement provides further clarification on this aspect, in that it concludes that "*any plan or project not directly connected with or necessary to the management of the site is to be* ***subject to an appropriate assessment*** *of its implications for the site* ***in view of the site's conservation objectives*** *if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects*". Furthermore, the same judgement adds "***where a plan or project*** *not directly connected with or necessary to the management of a site* ***is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site****. The assessment of that risk must be made in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by such a plan or project*". The impact pathway tables presented as part of the Evidence Plan are the first step in this process (i.e. could a cause and effect relationship be established, what is the likelihood of this (green-amber-red) and, subsequently, could it be significant, as distinct from trivial or inconsequential).

6.3.4 Similarly, clarification has also been provided through case law on the meaning of 'a likely significant effect' (*Bagmoor Wind Ltd v The Scottish Ministers (2012*)). In this case, it was ruled that the word 'likely' in the Habitats Regulations should not be interpreted as referring to the probability of a significant effect but rather as a description of the existence of a risk of a significant effect (i.e. the possibility). Consequently, **if the possibility of a significant effect cannot be excluded on the basis of objective information, an appropriate assessment will be required**.

6.3.5 In the *Bagmoor Wind* case it was also suggested that, where the absence of a risk of a likely significant effect can only be established after detailed investigation or expert opinion, it is an indicator that there is an existence of a risk and the competent authority must move from screening to appropriate assessment.

6.3.6 Although not the topic of this section, it is important to note that the existence of a risk to achieving the conservation objectives of a site as a result of project related effects does not automatically equate to an adverse effect on the integrity of the site. The risk needs to be examined in detail to the point that no reasonable scientific doubt remains as to the absence of an adverse effect.

Information requirements

6.3.7 The test for likelihood of significant effect requires that consideration is given to potential causes and potential effects (i.e. any potential impact pathways). Information on the project is needed to identify the potential causes of effects and information on the European site or sites is needed to identify any potential implications related to these effects. In the absence of a potential impact pathway it can be concluded that no likely significant effect would arise. In respect of this aspect it is also important to ensure that the potential for a risk is **credible** rather than **hypothetical**.

6.3.8 The judgement as to whether a significant effect is likely needs to be based on the best readily available information. Sources of information may include evidence from project where similar operations have affected sites with similar conservation objectives and the judgement of relevant specialists that an effect is likely.

6.3.9 The information required for determining whether a likely significant effect could arise will vary from project to project, but it is the subsequent appropriate assessment (would an adverse effect on site integrity arise) stage that will form the more in depth assessment (in most cases).

6.3.10 Relevant aspects (effects) of the project should be checked against all features of the relevant sites (i.e. screened) in order to determine whether a likely significant effect may arise (the impact pathway tables facilitate this process). In line with the precautionary principle, where there is uncertainty and / or information is lacking in relation to the capacity of the effect to undermine the site's conservation objectives it must be assumed that there will be an effect, unless further information can be made available to eliminate any areas of doubt.

Mitigation

6.3.11 Where the potential for a likely significant effect may be highlighted, it is possible that the effect can be completely avoided by the application of one or more avoidance measures. An avoidance measure will, by definition, completely eliminate the likelihood of a significant effect arising.

6.3.12 It has been affirmed through case law that if relying on mitigation to conclude that there is no possibility of significant effect, then there should be confidence as to the effectiveness of the mitigation measures. In order to be capable of ensuring that significant effects are not likely, mitigation measures must meet the following conditions:

- They must avoid or remove any likelihood of a significant effect. If measures only serve to reduce, rather than eliminate, the effect, then LSE may still arise and further assessment would still be required.

- They must be an integral part of the project, as proposed (i.e. embedded mitigation), so it is concluded that the project as a whole, including its mitigation measures, is unlikely to have an effect on the designated site. Possible or potential additional measures, such as conditions that might be applied later on, cannot be relied upon at this stage to determine that significant effects are not likely.

In-combination

6.3.13 The in-combination component of the likely significant effect test needs to focus only on those plans or projects that potentially could interact with the project under consideration. In this respect the in-combination check must consider whether:

- The effects of the plans and projects, in combination, would make effects more likely to occur, or more likely to occur at significant levels, that alone would be unlikely to either occur or be significant.
- The effects of the plans and projects, in combination, would make insignificant effects significant.
- The effects of the plans and projects, in combination, would generate new or different effects that would not occur if the plans and projects proceeded alone.

6.3.14 The proposed approach to undertaking the in-combination assessment for the Sizewell C Project, including the selection of appropriate plans and projects for consideration in the assessment process, is set out in **Section 7**.

6.4 Application of the principles applying to the determination of LSE to Sizewell C

6.4.1 Taking into account the main principles and points regarding the determination of likely significant effect as set out above, the project is adopting the following approaches and methods to the provision of information that will enable robust screening at the LSE Screening stage of the HRA process to be undertaken:

- Identify and provide information on those activities and components of the project and their phasing that have the potential to have an effect on designated European sites and their features (see **Section 8**).
- Provide full information on the European sites, their designated features and applicable conservation objectives. The content and completeness of the information will be agreed with Natural England in its capacity as lead SNCB.
- The LSE Scoping tables produced for the project (**Appendix 2.3**) will be developed as part of the Evidence Plan process, as required. These matrices provide a cross check of the potential for the project effects to cause effects on the designated features of the European sites screened into the HRA process.
- Where it is determined that there is no credible evidence for an impact pathway then it will be concluded that no likely significant effect with respect to that pathway would arise. An example of such a situation is provided in **Table 4**, the information for which is drawn from **Appendix 4**: **Analysis of HPC Project HRA (see Volume II)**.

- In respect of impact pathways that are 'weak' and/or for which impact significance is assessed as being negligible/minor, it is considered that the evidence base needed to undertake the LSE test will either be readily available from other studies / project assessment information or that project-specific requirements will be broad scale (e.g. spatial relationships) or non-intensive. Examples of such situations are provided in **Table 4**, the information for which is drawn from **Appendix 4 in Volume II**.
- In respect of impact pathways that are 'strong' and/or for which impact significance is assessed as being moderate/major, detailed investigation may be required. Examples of such situations are also provided in **Table 4**.
- Project information used at the screening stage in judging whether or not a likely significant effect could arise with respect to a specific European site / feature will be made available prior to or at the screening stage in order to enable full scrutiny of the judgement made.
- Where avoidance measures incorporated into the project (i.e. embedded mitigation) are integral to making a determination on likely significant effect, then the scope and effectiveness of these measures will be set out.
- At the point at which full screening for likely significant effect is undertaken, if information is not fully available on which to make an effective determination of the potential for likely significant effect then the assumption will be that such an effect could arise.
- The list of plans and projects for inclusion in the in-combination component of the test will be agreed through the Evidence Plan process (see **Section 7** herein).

Table 4 HPC impact pathway examples – outcome of LSE determination

European site and feature	Project activity	Effect	Relevant conservation objective	Nature of impact pathway and outcome of LSE determination
Somerset Levels and Moors Ramsar Invertebrate assemblage	Construction activities within the Development Site	Habitat loss, changes in surface hydrology and groundwater	Maintain the feature and its supporting habitats in favourable condition	No impact pathway The invertebrate assemblage is confined to the designated site (10km to the east of the Development Site) and the project effects would be confined to a spatially separate hydrological system. No LSE determined
Severn Estuary SPA Annex I Bewick's swan population	Construction of the Temporary Jetty, Sea Wall, cooling water infrastructure and FRR system	Disturbance from construction activities and loss of foraging habitat	Maintain the Bewick's swan population and its supporting habitats in favourable condition.	Weak impact pathway No potential for impact, as the Bewick's swan population and the habitats it utilises are located approximately 25km from the vicinity of the main site and the influence of its potential effects on estuarine habitats. No LSE determined

European site and feature	Project activity	Effect	Relevant conservation objective	Nature of impact pathway and outcome of LSE determination
Severn Estuary SAC Atlantic saltmeadows	Dredging for the Temporary Jetty and construction of the cooling water infrastructure	Changes in water quality (suspended sediment concentrations) and sediment disturbance.	Maintain the feature in favourable condition.	Weak impact pathway The natural sediment loadings in the estuary are high, the proposed dredging is relatively small-scale and the distance between the works and the nearest area of saltmarsh is approximately 2.6km. No potential for impacts, as the physical and biological attributes of the feature would be unlikely to be influenced by the planned works. No LSE determined
Exmoor and Quantock Oakwoods SAC Old sessile oakwoods	Emissions to air (including from diesel generators) during construction	Changes in air quality and influence on flora of woodlands	Maintain, subject to natural change, in favourable condition, the habitats for the old sessile oakwoods with Ilex and Blechnum in the British Isles	Weak impact pathway Any emissions at the construction site would be negligible compared to background levels at the SAC due to the distance between the two areas (>5km); the Environment Agency determined that the operation of the diesel generators was not likely to have a significant effect on the interest features of relevant designated sites No LSE determined
Hestercombe House SAC Lesser horseshoe bat	Site construction, including increased lighting and habitat loss	Loss of foraging habitat and influence on commuting behaviour	To maintain, in favourable condition, the habitats for the population of: lesser horseshoe bat. Attributes (among others) contributing to this include flight lines from roost in surrounding habitat and feeding habitat	Weak impact pathway Lesser horseshoe bats have been recorded from the main site but are highly unlikely to have ventured from this SAC which is over 16km away. A published radio tracking study found the average foraging radius from the roost site for this species was 2km, maximum 4km, which is significantly less that the distance between the SAC and the Development Site No LSE determined
River Wye SAC Migratory fish populations	Potential effects of Combwich Wharf construction on SAC fish; site shares migratory fish populations with Severn Estuary SAC	Disturbance due to an increase in underwater noise and artificial lighting levels; and a change in water quality	To maintain, in favourable condition, the habitats of the designated interest features.	Weak impact pathway While the populations of two species are shared between the Severn Estuary SAC and River Wye SAC, the localised nature of the development footprint and its effects suggest that the inclusion of these sites was highly precautionary; the potential effect was trivial. LSE determined
Severn Estuary SAC Estuaries feature and other habitats, including *Sabellaria* reef	Accidental or emergency discharges during construction	Effects on the estuaries and other habitats through changes in water quality	To maintain, subject to natural change, the feature in favourable condition.	Weak impact pathway Although very low likelihood of LSE due to mitigation at the design phase, it was determined to be necessary to consider the issue of potential discharges in the AA. LSE determined
Severn Estuary SPA Internationally important bird populations, wintering populations and bird assemblage	Construction of Temporary Jetty including approach bridge, jetty head, berthing pocket and jetty root	Loss of or alteration to supporting habitat	To maintain, subject to natural change, the feature's supporting habitats in favourable condition	Strong impact pathway Construction footprint and associated disturbance effects within the SPA boundary LSE determined

6.5 Questions and responses

6.5.1 In the context of the determination of LSE the questions that NNB GenCo asked the participants in the Evidence Plan process to consider were:

1. In principle, do you agree with the definitions provided and approach proposed? If you have any concerns, could these please be explained.
2. What in your view would constitute a trivial or inconsequential effect?
3. Are you content with the presumption that if a LSE on a designated feature of a given European site is not predicted to occur then generally the same conclusion will hold in relation to more distant sites (dependent, of course, on the nature of the effect)?

6.5.2 Responses received are set out in the table that follows (except where the comment related to proposed changes to the text that have been actioned above or did not need to be recorded):

Consultee	Comment	Response
EA	**1. In principle, do you agree with the definitions provided and approach proposed?** We agree with the definitions, as they are largely in line with those in the Defra guidance. Generally speaking we agree with the approach, and the RAG status colour scheme now proposed, but it will be fundamentally important to ensure that you consider all the potential effects - temporary, permanent, direct and indirect. An important point to note here is that assessment will also need to consider off-site impacts, because protected species are protected wherever they occur. Any potential effects on the SPA species outside of the SPA will need to be assessed, provided - that is - that they are the same features as those that use the SPA, and contribute to site integrity. This was discussed during the recent meeting. We understand that the RAG status assigned to a potential pathway will drive the amount of effort that is then put into assessing LSE and this seems a reasonable risk-based approach. That said, for those pathways highlighted green, we shall expect to see sufficient evidence to show that this impact may be ruled out and for those impacts highlighted amber, will shall need to be assured that the pathway is sufficiently weak, or the impact sufficiently trivial / inconsequential, for it to be ruled out from any further assessment for LSE. This was also covered at the recent Evidence Plan meeting.	Noted
EA	**2. What in your view would constitute a trivial or inconsequential effect?** There is no clear guidance on what constitutes 'trivial' or 'inconsequential' under the Habitats Regulations, however it is considered to be an activity that would not undermine the site's Conservation Objectives. We have screening thresholds for the purposes of permitting (for example H1 screening thresholds), below which we do not believe there will be a likely significant effect alone and/or in combination. Natural England will be able to advise on trivial or inconsequential for activities outside of our permitting regime.	Noted
EA	**3. Are you content with the presumption that if a LSE on a designated feature of a given European site is not predicted to occur then generally the same conclusion will hold in relation to more distant sites (dependent, of course, on the nature of the effect)?** No, but we might agree that this could be true for a like for like situation i.e. same impact, on an identical feature, at a more distant location. Although Natural	Noted

Consultee	Comment	Response
	England did raise concerns about this assumption due to mobile species. That said, we believe that it may be reasonable to assess impacts on features within the European sites closest to the sites, and apply that approach to more distant sites. But only when considering identical species and impacts, and we would still need to see justification for the conclusions at these more distant sites. There may well be instances where this approach isn't applicable.	
NE	**1. In principle, do you agree with the definitions provided and approach proposed?** Yes, we broadly agree with the definitions provided and approach proposed. We would re-emphasise, however, the need for all conclusions (impact pathways/LSE) to be evidence based and fully justified. We are content with how the 'LSE scoping' stage is progressing and the RAG status colour scheme now proposed. Note that sufficient evidence will be required to scope out pathways (green) as well as to scope them in (amber and red).	Noted
NE	**2. What in your view would constitute a trivial or inconsequential effect?** There is no single answer to this question as the definition of a 'trivial' or 'inconsequential' effect will vary according to the type/nature of features, impacts and the state of the baseline environment. It also depends on the frequency with which the effect occurs. A trivial effect might be deemed to be one that has no effect on the long term survival and reproduction of an individual and/or a population in a particular area but this would need to be thoroughly evaluated on a case by case basis, taking all likely pathways into consideration. Considering whether the effect of an activity would undermine the N2K site's Conservation Objectives should be the main focus for any assessment, however the determination of significant versus trivial/inconsequential should be feature lead and informed by objective evidence. It is expected that determination of a trivial or inconsequential effect will take place at the LSE scoping stage – where impact pathways are being identified and 'strength tested'.	Noted
NE	**3. Are you content with the presumption that if a LSE on a designated feature of a given European site is not predicted to occur then generally the same conclusion will hold in relation to more distant sites (dependent, of course, on the nature of the effect)?** We are not content with this presumption as it carries with it much risk – both features and effects can be influenced by a number of environmental factors such as weather, topography, hydrological regimes/drainage and tides. Furthermore, there is the consideration of mobile N2K species such as bats and birds which are obviously not confined to site boundaries. The use of habitat outside of the N2K site boundary and direction of their travel outside site boundaries means that there is the potential for the project to more significantly impact N2K features from further afield. We would prefer an evidence based assessment of all potential impact pathways identified. We do however accept that each assessment should be reasonable and proportionate based on the distances of sites/features and the strength of the impact pathway.	Noted
RSPB	**1. In principle, do you agree with the definitions provided and approach proposed?** In general we agree with the definitions proposed…. We note the discussion around the potential to screen out some impacts at the LSE stage following experience with the Hinkley Point C Project. We consider that para 5.3.5 represents useful guidance as to whether this is appropriate on a case-by-case basis.	Noted
RSPB	**2. What in your view would constitute a trivial or inconsequential effect?** Our view is that this should be determined on a case-by-case basis, but in general, that the decision to consider an effect as trivial or inconsequential	Noted

Consultee	Comment	Response
	should be shown to be clearly justifiable based on unambiguous evidence and/or expert opinion. Should credible evidence sources or expert opinions offer differing views on an effect, we consider that this would require further investigation and hence should not be regarded as a trivial or inconsequential effect. As referenced above, para 5.3.5 indicates that should an effect require further investigation, this should be considered LSE.	
RSPB	**3. Are you content with the presumption that if a LSE on a designated feature of a given European site is not predicted to occur then generally the same conclusion will hold in relation to more distant sites (dependent, of course, on the nature of the effect)?** The RSPB do not agree with this as a general presumption; instead we consider that these conclusions should be drawn on a case-by-case basis, as some impacts (e.g. related to sediment transport, deposition of air-borne pollutants, recreational impacts) may not follow this rule.	Noted
SWT	**1. In principle, do you agree with the definitions provided and approach proposed?** In principle we agree with the definitions provided and the approach proposed.	Noted
SWT	**2. What in your view would constitute a trivial or inconsequential effect?** We would consider that such an effect would be one that, on its own, wouldn't affect the favourable conservation status/conservation objectives of the site in questions (i.e. an effect that isn't significant). The significance of an effect may vary when considered in combination with other impacts.	Noted
SWT	**3. Are you content with the presumption that if a LSE on a designated feature of a given European site is not predicted to occur then generally the same conclusion will hold in relation to more distant sites (dependent, of course, on the nature of the effect)?** No, we are not content with this presumption as there may be situations where the type of impact or the nature of the site designation means that this is not the case. For example impacts from changes in recreational patterns may be more pronounced at sites further from the development (i.e. people travel further afield for recreation to avoid construction activities).	Noted
PINS	The Examining Authority may wish to see all supporting information/evidence as to how the conclusions have been reached, including sites and features screened out of the HRA at the screening stage and beyond, as required. Therefore, PINS recommends that evidence and robust justifications be provided.	Noted
PINS	PINS recognise that, inter alia, the Evidence Plan process seeks to ensure that sufficient information is supplied with an application to enable an appropriate assessment to be carried out (if necessary) or to enable the competent authority to determine that one is not required. The aspiration to reduce the number of separate HRA documents produced through the application, examination, and determination period is welcomed; however, the relevant Secretary of State as the competent authority will need to undertake their own HRA to fulfil the requirements under the Habitats Regulations. PINS directs the applicant to its Advice Note 10 (on HRA), which provides advice on what information PINS expects to be provided by the applicant within the applicant's HRA report submitted with the DCO application, including the screening and integrity matrices (if applicable).	Noted

7. METHODOLOGY FOR IN-COMBINATION ASSESSMENT

7.1 Introduction

7.1.1 Section 61 of the Conservation of Species and Habitats Regulations 2010 (as amended) (the 'Habitats Regulations') requires that, as part of an Appropriate Assessment (AA), an in-combination assessment with other plans and projects is undertaken on any plan or project not connected with the management of a European site[6] and which is likely to have an effect on the site. In line with the Habitats Regulations the term 'in-combination' is used herein to describe the potential for the Sizewell C Project (as a whole) to interact with other (non-NNB GenCo) plans and projects. This equates to the use of 'cumulative effects' in the EIA Directive (2011/92/EU) and Infrastructure Planning (EIA) Regulations 2009.

7.1.2 The Infrastructure Planning (EIA) Regulations 2009 SI No. 2263 require that the likely cumulative impacts of proposed development(s) are assessed as part of an EIA. In their Guidelines for EIA (2004), the Institute of Environmental Management and Assessment (IEMA) defines cumulative impacts (in this case transposed to in-combination impacts in the context of the Habitats Regulations) as:

> *"…the impacts on the environment which result from incremental impacts of the action when added to other **past**, **present** and **reasonably foreseeable future actions** …"*

7.1.3 There is no legislation that outlines how in-combination or cumulative impact assessments should be undertaken. However the Habitats and EIA Directives, and their associated regulations, require consideration of direct impacts and any indirect, secondary and cumulative effects of a project[7]. Government guidance states that: *"cumulative effects could refer to the combined effects of different development activities within the vicinity"* (Department of Environment, 1999).

7.1.4 The relevant regulations do not define 'in-combination' or 'cumulative' but guidance on cumulative effects assessment is provided in a number of good practice documents (e.g. the European Commission, 1999). This guidance is not prescriptive, but rather suggests various approaches which may be used, depending on their

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[6] European sites comprise Special Protection Areas (SPAs), as classified under Council Directive 2009/147/EC (the Wild Birds Directive) and Special Areas of Conservation (SACs), as designated under Council Directive 92/43/EEC (the Habitats Directive). AA is also required as a matter of government policy for potential SPAs (pSPAs), candidate SACs (cSACs) and listed Ramsar sites for the purpose of considering development proposals affecting them (DCLG, 2012).

[7] The Marine Works (EIA) Regulations (amongst others) list the information that must be included in an ES, which includes: *"A description…of the likely significant effects of the project and the regulated activity on the environment resulting from....the following categories of effect - (a) direct and indirect effects; (b) secondary effects; (c) cumulative effects; (d) short-term, medium-term and long-term effects; (e) permanent and temporary effects; and (f) positive and negative effects."*

suitability to the project (for example the use of matrices, expert opinion, consultation, spatial analysis and carrying capacity analysis).

7.1.5 This note sets out our proposed approach for undertaking the in-combination assessment for the Sizewell C (SZC) Project. It has been produced using our knowledge and experience of undertaking in-combination assessments for projects of a similar size and nature, and is based on the approach adopted for the Shadow Habitats Regulations Assessment (HRA) Report prepared for the Hinkley Point C (HPC) Project.

7.1.6 In addition to the HRA Report produced by NNB GenCo for HPC, the Environment Agency produced its own HRA as competent authority for the applications for Environmental Permits (it is important for the Environment Agency to undertake a robust and independent AA as part of the permitting determination) and the Secretary of State subsequently produced the HPC Project HRA as the competent authority for the Development Consent Order (DCO), and these HRAs included the consideration of in-combination effects. While these HRAs adopted different formats to the format adopted for the Shadow HRA (and for the Environmental Permits had a different focus)[8], ultimately their outcomes/ conclusions were the same[9]. The approach proposed below also draws lessons from these HRAs.

7.1.7 In due course, as for HPC, there will be an interaction between the cumulative impact assessment (CIA) undertaken for the Sizewell C Project Environmental Impact Assessment (EIA) and the in-combination assessment undertaken for the Shadow HRA. In particular, derivation of the shortlist of other relevant plans and projects is likely to be led by the CIA process, and the HRA will draw on this ahead of the detailed scoping phase.

7.1.8 Section 7.2 below provides details on the proposed approach in-combination assessment for the Sizewell C Project. The approach presented meets the requirements of the Habitats Directive. A preliminary review (to be agreed subsequently during the Evidence Plan process) of other plans and projects that could potentially interact with Sizewell C has been carried out. The Section concludes with a list of questions that NNB GenCo asked the Evidence Plan Working Group to consider and provides a record of the written responses that were received.

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[8] The main areas of potential concern to the Environment Agency – toxic contamination, thermal impacts, entrainment and impingement of fish and planktonic organisms, and impacts on birds due to water temperature increases on their food source – were assessed in respect of the HPC Project itself and the combined impact of the HPC project with other on-going activities and planned projects in the area. However, the Agency's main concerns with respect to the combined effects of the activities within the HPC Project and those combined with all other current activities and planned future projects were the combined HPC construction activities and the effects of the overlap period between HPC and HPB.

[9] For example, in line with the approach taken by NNB GenCo, the Secretary of State adopted a two tier approach (see below) and took cumulative effects to be the summation of all the sub-projects (main site + associated development) which made up the HPC DCO application; and in-combination effects to be the interaction between the whole HPC project (the DCO application) and other relevant plans and projects. In addition, the Secretary of State screened the same plans and projects into (and out of) the HRA as those screened into (and out of) the Shadow HRA Report; and considered the same European sites at the AA stage.

7.2 General approach

7.2.1 A tiered approach will be undertaken to the in-combination assessment, based upon the following definitions[10]:

- **Site-specific in-combination effects** which arise from each of the SZC Project elements individually. Different aspects of each of the development elements may themselves have additive or interactive effects (e.g. the additive impact of construction noise, traffic and other disturbance effects on waterbirds). Assessment of such site-specific in-combination effects will be documented, in the first instance, within the section of the Appropriate Assessment concerned with the "alone effects" of the topic in question (e.g. waterbird disturbance) for each project element; but the outcomes will be taken through to the in-combination assessment.
- **Project-wide in-combination effects** which arise from the combined effects (additive or interactive (see Table 5)) of the whole SZC Project; that is, the in-combination impacts of any part of the SZC Project with all other elements and associated developments (where they have the potential to affect the same receptor(s)). These effects will be considered in the first section/tier of the in-combination assessment.
- **Wider in-combination effects** which are the combined impacts (additive or interactive) that may occur between any element of the SZC Project and any other 'non SZC' plans and projects. These effects will be considered in the second section/tier of the in-combination assessment.

7.2.2 The in-combination assessment will take account of effects that are discrete as well as over-lapping (i.e. a spatial interaction exists). In-combination effects could include effects on the same habitat/species, at different locations within the European site. The different types of in-combination effects to be considered are described in **Table 5**.

Table 5 – Description of different types of in-combination effects (source: Environment Agency)

Type	Designation
Additive effects	Where the total effect of a number of effects is equal to the sum of the individual effects
Synergistic effects	Where the effect of the interaction of a number of effects is greater than the sum of the individual effects
Neutralistic effects	Where the effects counteract each other, thereby reducing the overall effect
Overlapping effects	That effect the same spatial area of a feature and/or the same attributes of the feature (e.g. the mixing zones of two separate discharges overlap)

[10] This approach differs from the approach adopted for HPC, by not referring to cumulative effect but rather to project wide in-combination effects and wider in-combination effects.

Type	Designation
Discrete effects	That effect different areas and different attributes of the same feature (e.g. two separate discharges affect geographically discrete areas of a habitat within a site).

7.2.3 In simple terms, the approach to be taken will be to consider the designated features of the European sites under consideration (the receptors) and determine how the various effects of relevant plans and projects would affect these receptors, with specific reference to the assessed effects of the Sizewell C Project.

7.2.4 In certain instances there will be a spatial and temporal overlap of effects between the Sizewell C Project and other projects on the identified receptors. Spatially, such effects are generally confined to the immediate vicinity of the project unless effects are far field (e.g. significant changes in hydrodynamic processes). In other instances there may be no spatial interaction but the receptor is nonetheless affected cumulatively by the effects of the projects in-combination (e.g. habitat loss from the same feature at disparate locations).

7.2.5 In respect of temporal effects, some of these may be of a short-term nature and would, from an ecological perspective, represent 'pulse' type disturbances that have no long-term affect (e.g. disturbance effects on birds during construction work). However, it is possible that such short-term effects could be significant and they will be considered and assessed accordingly. Other effects may be of a long-term nature and even when the activity causing the identified impact ceases the ecological response may still be manifest in the system (e.g. recovery of some species communities from disturbance/damage).

7.2.6 Ultimately, any project effects have both a spatial and temporal component and consideration in the assessment has to focus on how the receptor is affected by the totality of effects. With regard to the Sizewell C Project three key assumptions are proposed to be adopted (in principle) for the in-combination assessment:

- Identified effects during the construction of an infrastructure element generally are considered to either be of a short term nature or confined to the construction period. However, as stated above, it is recognised that short-term effects could have a longer term influence and they will be assessed accordingly. In addition, given the relatively long duration of the construction phase, from an ecological perspective some effects may be viewed as long term (in comparison with species longevity, life cycles etc.); the potential for such effects will also be considered.

- Apart from the operational effect of the cooling water system (abstraction and discharge) and potential changes in recreational use, all other potential effects are likely to be relatively local to the immediate vicinity of the project infrastructure.

- The scale of the coastal system in the vicinity of Sizewell and many of the designated interest features is of relevance in the assessment. Local, temporary project related effects are, at the scale of the wider coastal and offshore environment, likely to be of a negligible nature and (as such) their contribution to any in-combination impacts is also likely to be negligible. This is a general statement that is considered to hold unless impacts are of a very significant magnitude or numerous in occurrence (i.e. affecting the same resource at several

locations), or affect a small resource (e.g. some bird or fish populations) such that the function of the system or the viability of species populations could be adversely affected. Where a local, temporary effect is screened out of the assessment, specific justification will be provided to explain the basis for this.

7.2.7 To facilitate the assessment, effects will be broadly defined under several categories (e.g. habitat loss/change, change in water quality parameters etc.) so that interactions between plans and projects and the overall effect of them on the defined receptors (i.e. the designated features) can be better defined.

7.2.8 Once assessment of any interaction of effects that may occur between projects has been undertaken, re-assessment of the relevant impacts will be undertaken against the applicable conservation objective(s) for the European site and feature under consideration.

7.3 Identification of relevant non SZC Project plans and projects

7.3.1 The approach to be taken to identify non SZC Project plans and projects to be included in the in-combination assessment will be based upon the advice provided by the Department of Communities and Local Government (DCLG) in the consultation paper, Environmental Impact Assessment: A Guide to Good Procedures published in 2006, which states:

"In most cases, detailed consideration of the combined effects of the development proposed together with other developments will be limited to those others that are already begun or constructed [present and past] *or those that have not been commenced but have a valid planning permission* [reasonably foreseeable]*.*

Often, future developments in the vicinity of a project site will be included in the baseline scenario as 'committed development'. But in the context of EIA the term 'committed development' conventionally refers to development for which consent has been granted."

7.3.2 In terms of defining "other plans or projects" for the in-combination test, guidance (EC, 2000; English Nature, 2001; PINS, tbc[11]) indicates that consideration should be limited to:

- permitted ongoing activities (e.g. discharge consents or abstraction licences);
- 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

[11] To be confirmed by PINS in due course.

- 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.

7.3.3 With respect to 'past' projects, a useful ground rule in in-combination assessment is that the environmental impacts of schemes that have been completed should be included within the environmental baseline; as such, these impacts will be taken into account in the HRA process for each relevant project element. Consequently, generally, completed projects can be excluded from the scope of in-combination assessment. However, the environmental impacts of recently completed projects may not be fully manifested and, therefore, the potential impacts of such projects should be taken into account in the assessment.

7.3.4 In the event that 'past' projects refer to past consents not yet implemented (for example), these will be considered as part of the in-combination assessment.

7.3.5 For the purposes of this in-combination assessment, Sizewell A will be included within the environmental baseline.

7.3.6 With respect to Sizewell B (SZB), a stand-alone in-combination assessment will be undertaken of the predicted effects of the operation of SZC with SZB; where the operation of SZB, in effect, represents the baseline condition. However, the effects of SZC in isolation will also be predicted, given that the operation of SZB will cease in the future. Both of these scenarios will be assessed in the context of other plans and projects.

7.3.7 The decommissioning of Sizewell B will not be considered as part of the baseline, as the B station is currently operational.

7.3.8 Projects that are currently being constructed ('present' projects) or that are in the planning process (where sufficient information is publically available), as well as on-going activities that have the potential to influence the same environmental parameters as the proposed development, are the focus of in-combination assessment. Where such data are available, quantitative assessment of potential effects and their environmental significance can be provided. More weight will be given to those projects that are at a more advanced stage in planning, as more confidence will accompany the assessment of potential combined effects.

7.3.9 Future plans or projects for which sufficient information is available (i.e. 'reasonably foreseeable' projects), including those projects that a demand will be created for by the SZC development (where this is understood), will be considered as part of the in-combination assessment. Future plans or projects for which sufficient information is not available on which to base a reliable assessment, which are unlikely to be submitted or receive consent until after the proposed development has been completed, cannot reasonably be assessed as part of an in-combination assessment. However, the applicants for such projects will be required to take the effect of the SZC Project into account in their own application (should it be in the consenting phase or have received consent). These projects will be listed in the assessment to highlight this requirement for the competent authorities and the relevant applicants.

7.3.10 In the absence of publicly available data, it is not possible to undertake a detailed in-combination assessment but it is possible to make judgements regarding potential impacts on the basis of the characteristics of the other projects being considered (where these are known) and whether there is the potential for the effects of the various projects to interact spatially and temporally. For the purposes of this assessment it is proposed that consideration is given to the likely generic environmental effects of relevant projects on the basis of the types of activities that would be undertaken. It is not appropriate to consider worst case scenarios in this context, as this would introduce the risk that the assessment would become over precautionary and unrealistic.

7.3.11 Should further information become available on projects that were not originally foreseeable as the project assessment develops, then the in-combination assessment will be expanded to take account of these.

7.4 Defining the Zones of Influence (spatial interactions)

7.4.1 To inform the in-combination assessment, the maximum geographical area around the SZC Project where there is the potential for impacts to occur will be identified. This is termed the impact Zone of Influence (ZOI). The ZOI will differ for each topic and potentially for different types of impact associated with the same topic. Where necessary, assumptions for topic areas will need to be made to define the ZOI.

7.4.2 ZOIs will be produced for each of the SZC Project elements. This approach allows for the identification of where 'project wide' and 'wider' in-combination impacts could arise.

7.4.3 If helpful, each of the ZOIs could be mapped using a Geographical Information System (GIS) specifically designed to allow the evaluation of the potential spatial interactions between the SZC Project and other relevant plans and projects (see below). By overlaying the ZOI for each topic, the maximum extent of the geographical area that could be impacted by the SZC Project will be determined. Broadly, this amalgamated ZOI will form the search area for non SZC plans and projects to be included within the assessment (however also see **Section 7.6**).

7.5 Identifying non SZC Project plans and projects

7.5.1 A review of relevant Development Plans (and emerging Development Plans - with an appropriate weighting being given as they move closer to adoption) will be undertaken to identify a 'long list' of proposals that should be included within the assessment. However, it will only be possible to assess proposals where there is sufficient available information to undertake an in-combination assessment. Therefore, the assessment will consider proposals for which a planning application has been made and which is valid, or for which there is a proposal with a current planning permission. An exception to this will be any proposals identified during pre-application consultation, for which publically available information is available prior to a planning application being made.

7.5.2 The planning search will extend over a five year period. This approach takes into account developments that received planning consent over three years ago and which have been implemented, thereby ensuring that the consent remains valid after the three year expiry date, however are not yet complete.

7.6 Scoping of non SZC Project plans and projects

7.6.1 Not all of the projects identified from the planning search will have in-combination effects with the SZC Project. Therefore a scoping exercise will be undertaken to scope plans and projects 'in' or 'out' of the detailed in-combination assessment. This scoping exercise will involve the following stages:

1. Initial high level scoping-out of non SZC Project developments which do not have the potential to result in in-combination effects.
2. Information gathering.
3. A detailed technical scoping-out of non SZC Project developments.

High level scoping-out of non SZC Project developments

7.6.2 There are certain types of development that are considered to be insignificant in nature and scale (e.g. change of use or conversions to existing buildings and erection of agricultural buildings), and as such are unlikely to have the potential to contribute to significant in-combination effects. Criteria will be developed to scope out such developments from the detailed assessment. The outcome of this exercise will be the master list of non SZC Project developments to be taken forward to be considered further in the assessment.

Information gathering

7.6.3 An information gathering exercise will be undertaken to collect relevant details of all the non SZC Project developments included within the master list. The information will be used to further inform the scoping process and, if appropriate, detailed in-combination assessment to be undertaken. Data will be gathered from the following sources:

- the planning search;
- the Evidence Plan Working Group; and,
- direct liaison with agents/applicants.

7.6.4 This exercise will provide the following:

- information on the design and location of each development;
- an understanding of the temporal aspects of each development, for both the construction and operational phases (developments that are found to be built will be scoped out of the assessment as any impacts they cause will have been taken into account within the baseline description); and,
- relevant environmental information to inform the in-combination assessment.

7.6.5 This process has been initiated for the initial list of plans and projects to be considered in the HRA in-combination assessment.

Detailed technical scoping-out of non SZC Project developments

7.6.6 This exercise will be undertaken by the HRA/EIA technical experts, using the information from the data gathering exercise, to further scope-out relevant non SZC Project developments on a topic by topic basis and provide a 'short list' of plans and projects to be considered in the assessment. The following criteria will be used to guide this process:

- temporal overlaps;
- specificity of impacts (i.e. does the potential exist for the same receptors to be affected); and
- the availability of data that allows a valid assessment to be undertaken.

7.6.7 With respect to spatial overlaps, **Section 7.4** refers. In addition, however, it is acknowledged that some projects may cause effects at a significant distance from the source of the impact because some ecological receptors are highly mobile (e.g. a coastal bird colony within an SPA within SZC ZOI may experience effects from projects outside this ZOI). Hence plans and projects will be considered for inclusion in the in-combination assessment where they have the potential to impact the same features of European sites, irrespective of the distances between the sources of such impacts.

7.6.8 Expert judgement will be used to determine the potential for likely significant in-combination effects to arise based on whether the plans and projects will overlap in space and time with the Sizewell C Project and whether they have the potential to influence the same environmental receptors (if they do not, even though they may be spatially and temporally adjacent, an in-combination effect will not arise).

7.7 Detailed CIA

7.7.1 Following the scoping exercise, the remaining developments that have been scoped 'in' will be those that are considered to have the potential result in significant in-combination effects with the SZC Project and which will be the subject of the detailed assessment. This will be undertaken on a topic by topic basis to determine the potential significance of 'project wide' and 'wider' in-combination effects.

7.8 Other plans and projects: potential for interactions

7.8.1 **Table 6** (located after **Section 7.9**) provides a summary of the plans and projects for which the potential for interaction with the proposed development of SZC has been identified, at this early stage in the process. The matrix considers potential spatial and temporal interaction between the other plans and projects and Sizewell C, and the interest features of European sites that could be subject to in-combination effects.

7.8.2 The decommissioning of Sizewell A and B (as well as any reasonably foreseeable changes) will also need to be considered (as far as it can be at this stage) in the in-combination assessment. In addition, the relevant Local Authority Development Plans (e.g. SCDC, Waveney District Council, Ipswich Borough Council and Babergh Borough Council) will also be considered.

7.8.3 For the purposes of this exercise it is assumed that the construction phase of the Sizewell C Project will commence in 2018 and have a duration of approximately ten years. It is emphasised that this is an assumption for the purpose of this study, and does not constitute the project schedule.

7.9 Questions and responses

7.9.1 In the context of the proposed approach to be taken to the in-combination assessment for SZC questions that NNB GenCo asked the participants in the Evidence Plan process to consider were:

1. In principle, do you agree with the approach proposed? If you have any concerns, could these please be explained.
2. Do you agree that 'past' projects can be assumed to form part of the baseline and, specifically, with the proposed approach with respect to Sizewell A and Sizewell B?
3. Do you agree with the proposed approach with regard to 'future' projects, i.e. projects will be assessed to a level of detail commensurate with the availability of project information and the likelihood of significant environmental effects arising in-combination? For projects that are not 'reasonably foreseeable' consideration will be given to their likely generic environmental effects of relevant projects.
4. Do you agree with the preliminary list of plans and projects considered in **Section 7.9**? If you believe that other plans and projects are also relevant could you please identify them and explain why they think they should be considered.
5. Do you agree with the conclusions reached on the likelihood of a significant in-combination effect arising set out in the matrix?

7.9.2 Responses received are set out in the table that follows (except where the comment related to proposed changes to the text that have been actioned above or did not need to be recorded):

Consultee	Comment	Response
EA	*Comment in relation to Section 7.2.6, bullet 2 'Apart from the operational effect of the cooling water system (abstraction and discharge) all other potential effects are likely to be relatively local to the immediate vicinity of the project infrastructure.* We would need to see the outcome of air quality emission and radioactive emission assessments associated with the combustion activity and the RSR permit applications, before we could agree with this remark.	Noted
EA	*Comment in relation to Section 7.2.6 bullet 3'The scale of the coastal system in the vicinity of Sizewell and many of the designated interest features is of relevance in the assessment. Local, temporary project related effects are, at the scale of the wider coastal and offshore environment, likely to be of a negligible nature and (as such) their contribution to any in-combination impacts is also likely to be negligible. This is a general statement that is considered to hold unless impacts are of a very significant magnitude or numerous in occurrence (i.e. affecting the same resource at several locations), or affect a small resource (e.g. some bird or fish populations) such that the function of the system or the viability of species populations could be adversely affected.* ...and as such, we reserve the right to challenge such an assumption, should assessment indicate otherwise.	Noted

Consultee	Comment	Response
EA	**1. In principle, do you agree with the approach proposed?** In general terms we are happy with the approach set out. However we would like to reiterate that the assessment of potential adverse effect on integrity - as an alone and in-combination assessment (the Appropriate Assessment) - required by us as a competent authority, will be undertaken entirely separately from the Evidence Plan process in our role as an independent regulator.	Noted
EA	**2. Do you agree that 'past' projects can be assumed to form part of the baseline and, specifically, with the proposed approach with respect to Sizewell A and Sizewell B?** The residual effect of a past project on the site's conservation objectives will need to be considered. We agree that these can form part of background, or prevailing environmental conditions. But, as noted in the document, you shall need to ensure that the effects are part of background. Where they are not (for example a newly completed or permitted activity), these projects will need to considered individually in the assessment. We are content that SZA shall be considered baseline, and for SZB and SZC to be considered in combination, and SZC alone.	Noted
EA	**3. Do you agree with the proposed approach with regard to 'future' projects, i.e. projects will be assessed to a level of detail commensurate with the availability of project information and the likelihood of significant environmental effects arising in-combination?** Again, in the absence of any more specific data, this approach seems logical. Of course, should better data become available, then we would expect this to be taken into account.	Noted
NE	**1. In principle, do you agree with the approach proposed?** Yes, NE has already reviewed this document and provided feedback to NNB GenCo.	Noted
NE	**2. Do you agree that 'past' projects can be assumed to form part of the baseline and, specifically, with the proposed approach with respect to Sizewell A and Sizewell B?** We agree that 'past' and currently operational projects should form part of the baseline. If the starting baseline conditions are expected to change throughout the operational life of Sizewell C, then this should be specifically included as a separate assessment, i.e. the decommissioning of Sizewell B. Any foreseeable change to Sizewell A should also be included in the assessment.	Noted and addressed above
NE	**3. Do you agree with the proposed approach with regard to 'future' projects, i.e. projects will be assessed to a level of detail commensurate with the availability of project information and the likelihood of significant environmental effects arising in-combination?** Yes, this approach seems reasonable.	Noted
NE	**4. Do you agree with the preliminary list of plans and projects considered in Section 7.3? If you have believe that other plans and projects are also relevant could you please identify them and explain why they think they should be considered.** Suffolk County Council, Suffolk Coastal District Council and other 'local stakeholders' are best placed to advise.	Noted

Consultee	Comment	Response
NE	**5. Do you agree with the conclusions reached on the likelihood of a significant in combination effect arising set out in the matrix?** Suffolk County Council, Suffolk Coastal District Council and other 'local stakeholders' are best placed to advise.	Noted
RSPB	**1. Do you agree with the approach proposed?** In principle, we agree with the approach proposed, but have the following comments relating to section 7.2 'General Approach'. The RSPB's view is that a 10 year construction period cannot be considered a 'pulse type' event (para. 7.2.5) and that it cannot be assumed that construction will only result in short term effects. We consider that there is potential for long-term effects to result from the construction period, given the lifespans of some ecological receptors, and the potential for behavioural changes (e.g. avoidance of the area) occurring over this timescale to become entrenched. The assumption that the scale of coastal systems means that effects are likely to be local, temporary and of negligible nature will need to be carefully justified on a case by case basis, rather than used as a general approach.	Noted and addressed above where appropriate
RSPB	**2. Do you agree that 'past' projects can be assumed to form part of the baseline and, specifically, with the proposed approach with respect to Sizewell A and Sizewell B?** We agree that operation of Sizewell B would typically form part of the baseline conditions as a consented, constructed and established operation. Our view however, is that the decommissioning of Sizewell B may not be considered part of the baseline, as this has yet to be commenced and because details of the proposals for decommissioning and any additional consents may not yet be available. We have not found any mention of Sizewell A within the document, but consider that all fully consented activities at the time of the Sizewell C application can also be considered to form part of the baseline conditions.	Noted and addressed above
RSPB	**3. Do you agree with the proposed approach to 'future' projects, i.e. projects will be assessed to a level of detail commensurate with the availability of project information and the likelihood of significant environmental effects arising?** The RSPB broadly agree that the level of detail within assessments should be in line with availability of project information, and that a more qualitative assessment may be required where data availability is limited. We consider that the 'tiered approach' proposed recently by NE and JNCC during the Examination of the East Anglia ONE offshore windfarm (and used by subsequent projects) could provide a useful framework for this assessment, and that assessments should cover projects up to and including Tier 5, and Tier 6 where information is available.	Noted
RSPB	**5. Do you agree with the conclusions reached on the likelihood of a significant in-combination effect arising set out in the matrix?** Overall, we consider that plans or projects should not necessarily be screened out due to a lack of spatial overlap with Sizewell C. The assessment should consider whether the plans or projects have potential to impact the same features of European Sites, irrespective of the distances between sources of such impacts. Further details of specific instances are given below. We consider that any projects with potential impacts on red-throated divers of the Outer Thames SPA should be	Noted

Consultee	Comment	Response
	taken forward for further assessment. In-combination impacts may occur, even without spatial overlap between the plans/projects, due to the potential for population level impacts as a result of disturbance and displacement of divers across the SPA. Offshore windfarms in the East Anglia Zone have potential impacts on similar coastal SPAs as Sizewell C (such as the Alde-Ore Estuary SPA) and as such, should also be considered in combination with Sizewell C, despite the lack of spatial overlap between the projects. The Sandlings Forest Recreation Strategy may need to be screened in depending on the results of the investigations into potential changes in recreational use of the wider area as a result of the Sizewell C project.	
RSPB	**6. Any other questions (e.g. to what extent do we take account of realignment)?** The RSPB agree that an in-combination assessment should include consideration of the Shoreline Management Plan policies for this stretch of coastline. For avoidance of doubt, we also state here that impacts of the project both alone and in-combination must be assessed against the features of European Sites (such as those of Minsmere-Walberswick) as designated at the time of the application for the Development Consent Order.	Noted and for future discussion
RSPB (following initial comments set out above)	Section 7.4 sets out the ZOI for in-combination impacts. We are concerned that searching solely for other plans or projects located within the maximum extent of impacts from Sizewell C may miss some more distant projects where effects may overlap with those of SZC. For example, some projects may cause effects at a significant distance, e.g. a coastal bird colony within an SPA that is within SZC's ZOI may also experience effects from projects outside this ZOI, such as offshore windfarms, due to the ecological receptors being highly mobile.	Noted. **Section 7.4** has been updated in response.
SWT	**1. In principle, do you agree with the approach proposed?** We broadly agree with the principle of the approach set out for assessing in-combination effects. However, we disagree with paragraph 7.2.6 (bullet 2) which states that "apart from the operational effect of the cooling water system (abstraction and discharge) all other potential effects are likely to be relatively local to the immediate vicinity of the project infrastructure". The impacts associated with displaced recreational activities are likely to be dispersed over a relatively wide area and need to be fully assessed to determine whether they are likely to result in a significant adverse impact on any European designated sites.	Noted and addressed above
SWT	**2. Do you agree that 'past' projects can be assumed to form part of the baseline and, specifically, with the proposed approach with respect to Sizewell A and Sizewell B?** It would appear appropriate to consider 'past' projects as part of the baseline if they are currently operating or are being decommissioned. With regard to Sizewell B, it should be ensured that any assessment of in-combination impacts is not restricted just to Sizewell B and Sizewell C together but also includes other projects which are likely to be operating at the same time as the two stations.	Noted and addressed above

Consultee	Comment	Response
SWT	**3. Do you agree with the proposed approach with regard to 'future' projects, i.e. projects will be assessed to a level of detail commensurate with the availability of project information and the likelihood of significant environmental effects arising in-combination?** This question has been considered as part of the examination of other recent Nationally Significant Infrastructure Projects, including the recent East Anglia One offshore wind farm examination. The findings of the inspector and decision of the Secretary of State will be available in June 2014 and may contain useful guidance on considering in-combination effects. This project is a further example of where impacts are not likely to be confined to the local area (see question 1 above).	Noted
SWT	**5. Do you agree with the conclusions reached on the likelihood of a significant in combination effect arising set out in the matrix?** No, a number of the conclusions of the 'likelihood of in-combination effects' appear to lack justification or are based solely on the lack of spatial overlap between projects. We do not consider that this robustly demonstrates that there is no likelihood of a significant in combination effect. For example 'likelihood of in-combination effect' with the Sandlings Forest Recreational Strategy is considered "highly unlikely due to absence of spatial overlap". However, this fails to take account of the potential for displacement of recreational activities from the Sizewell area in to the Sandlings Forest Special Protection Area (SPA) and the subsequent adverse impacts on the designated site.	Noted
SWT (following initial comments set out above)	We note that our responses to the previous version of the Evidence Plan, submitted after Workshop 2, have been reported in this version of the plan. In addition to those comments, and our response of 19th August, we query the methodology proposed in the evidence plan for defining the Zones of Influence (ZoI) (Section 7.4). Whilst we agree that identifying ZoI will form a useful part of the process of assessing in-combination effects, we are concerned that such assessment will only focus on scenarios where SZC ZOI and other plans and projects ZOI spatially overlap. This approach could result in potential LSE being missed from the assessment. For example whilst SZC and offshore windfarms may not have spatially overlapping ZOI they may both exert an impact on a marine SPA which would result in an in-combination LSE. We therefore consider that assessment of in-combination effects should not be limited to plans or projects which have ZOI which spatially overlap with SZC ZOI.	The approach to be taken to the assessment of in-combination effects set out herein is not limited to plans or projects that have ZOI which overlap spatially with the SZC ZOI. See **Section 7.6** and paragraphs 7.6.6, 7.6.7 and 7.6.8 in particular.
SCC/SCDC	We believe NE still have an important role to play regarding advising on in-combination projects that lie further afield than Suffolk. At the first evidence plan meeting, we discussed a number of off-shore wind projects further south, that local councils would not be best placed to advise on. This point refers specifically to NE's response to Questions 4&5.	Noted
PINS	PINS has previously provided feedback to NNB GenCo regarding other projects we recommend be considered for the in-combination assessment and note that these have been included in the table at Section 7.9. PINS draws to your attention the list of projects and plans that PINS advises applicants to consider within their in-combination assessment, which are set out in our Advice Notes 9 and 10.	Noted

Consultee	Comment	Response
PINS	PINS is unclear as to what is intended by the term 'past projects'. PINS would agree that projects that are built and operational, including Sizewell A and B should be considered as part of the baseline. Although PINS agree that Sizewell A and B can be considered as part of the baseline, PINS also recommends that consideration be given to any potential in-combination effects as a result of reasonably foreseeable changes to Sizewell A and B (or any other potential in-combination projects or plan), such as decommissioning activities.	Noted and addressed above

Table 6 – Preliminary screening of other plans and projects

Project	Description	Level of project information available	Status	Potential for temporal overlap?	Potential for spatial overlap?	Sites or interest features in common that could be affected by both plans/projects?	Likelihood of in-combination effects
Adastral Park (housing development)	Proposed redevelopment of Adastral Park by BP. Proposals include a major housing development (2000 houses) the creation of an Innovation Park, new community facilities and changes to local road network.	Adastral Park Revised Outline Planning Application (BT, 2009) Adastral Vision website (BT, 2014)	Outline planning application submitted in 2009.	Yes - temporal overlap cannot be ruled out. Adastral Park start date unknown.	No - Adastral Park is located approximately 30km to the south west of Sizewell.	None identified.	Not applicable.
Greater Gabbard extension (Galloper Offshore Wind Farm)	Expansion of the Greater Gabbard Offshore Wind Farm to create the UK's biggest offshore wind farm. Galloper is located 27km off the Suffolk coast and would have up to 140 wind turbines. The cable route landfall is planned at Sizewell, adjacent to the Greater Gabbard landfall site.	Planning application submitted in February 2014 (GWFL, 2014). Environmental Statement (ES) submitted in 2011 (GWFL, 2011)	Consented.	Yes - offshore construction is expected to start in 2015 and last for three years.	Yes - potential for spatial overlap of construction footprints in the coastal, intertidal and marine environments.	**Orfordness - Shingle Street SAC** Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks **Minsmere to Walberswick Heaths and Marshes SAC** Annual vegetation of drift lines European dry heaths Perennial vegetation of stony banks **Alde, Ore and Butley Estuaries SAC** Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Alde–Ore Estuary SPA** A seabird assemblage of international importance A wetland of international importance Annex I species: Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Sandwich Tern *Sterna sandvicensis,* Lesser Black-backed Gull *Larus fuscus,* Redshank *Tringa totanus* **Minsmere – Walberswick SPA** Annex I species: Avocet *Recurvirostra avosetta*, Bittern *Botaurus stellaris,* Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea,* Hen Harrier *Circus cyaneus* **Sandlings SPA** Annex I species: Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea* **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Unlikely due to limited temporal overlap.
London Array Offshore Wind Farm	Currently the world's largest offshore wind farm. Located in the outer Thames Estuary 20km offshore. The onshore components are located in Cleve Hill near Graveney on the north coast of Kent.	London Array ES Non Technical Summary (London Array Ltd, 2005) London Array project website (London Array Ltd, 2014)	Major construction of Phase One is complete and operational. Cable burial and commissioning is ongoing.	Yes - due to ongoing work on cable burial and commissioning.	No - cable routes are not located near Sizewell and impacts associated with cable burial would be highly localised.	**Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Highly unlikely due to limited extent of works remaining on London Array Phase One (cable burial and commissioning) and limited temporal overlap.

Project	Description	Level of project information available	Status	Potential for temporal overlap?	Potential for spatial overlap?	Sites or interest features in common that could be affected by both plans/projects?	Likelihood of in-combination effects
Kentish Flats Extension Offshore Wind Farm	A 30 wind turbine extension to the Kentish Flats Offshore Wind Farm located 8.5 to 13km north of Herne Bay and Whitstable in Kent.	Kentish Flats Extension draft ES (Vattenfall, 2011) Kentish Flats Extension webpage (Vattenfall, 2014)	Consented.	Yes - onshore works due to start in Autumn 2014. Offshore works will commence in mid-2015.	No - not directly, although shipping during construction may be a consideration for CIA.	**Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Unlikely due to limited spatial overlap.
East Anglia One, Three and Four Offshore Wind Farms	The East Anglia Round 3 Zone is located off the coast of East Anglia. The closest point is 14km from the shore. East Anglia One will be the first project within the zone to be developed, followed by Three and Four. Onshore grid connections for all three projects likely to be at Bramford substation.	East Anglia One Offshore Wind Farm ES (EAOW, 2012a) East Anglia Four Offshore Wind Farm EIA Scoping Report (EAOW, 2012b)	Applications not yet submitted.	Yes - construction dates dependant on consent. East Anglia One expected to commence onshore construction in 2016 and offshore construction in 2017.	No - not directly, although shipping and offshore construction traffic may be a consideration for CIA.	**Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Unlikely due to limited spatial overlap.
Bathside Bay Container Port, Harwich	Development of a new container terminal at Bathside Bay in Harwich to be known as Harwich International Container Terminal. The terminal would be connected to the rail network and will include 1,400 metres of quayside with a depth of 15m, and storage capacity for 52,000 TEUs (twenty foot equivalent units).	Bathside Bay Container Port ES (Hutchison Ports Ltd, 2003a) Supplementary Environmental Report (Hutchison Ports Ltd, 2010)	Consent was issued in 2006, but pending approval to upgrade the road network.	Yes - depending on the outcome of the road upgrade application.	No - not directly, although shipping and offshore/onshore construction traffic may be a consideration for CIA.	**Stour and Orwell Estuaries SPA and Ramsar site** Overwintering bird assemblage	Unlikely due to limited potential for spatial interaction; and likely very low use of the Stour and Orwell Estuaries (if at all) for the SZC Project.
Felixstowe South reconfiguration	Additional work to be undertaken to the Felixstowe South container terminal. Berths 8 and 9 were opened in 2009 however further depending and expansion is planned. Berth 9 quay expansion is proposed involving the construction of a 190m of deep water quay to the south of the existing Berth 9	Felixstowe South Reconfiguration ES (Hutchison Ports Ltd, 2003b) Berth 9 Quay Extension ES (Hutchison Ports Ltd, 2013)	Works commenced April 2014	No – works planned to be completed by August 2015.	No - Felixstowe South is located over 35km to the south of Sizewell.	**Stour and Orwell Estuaries SPA and Ramsar site** Overwintering bird assemblage	Unlikely due to limited potential for spatial interaction; and likely very low use of the Stour and Orwell Estuaries (if at all) for the SZC Project.
Harwich approach channel dredging project	Dredging of the approach channel to the Haven Ports in the Stour and Orwell Estuaries to improve accessibility to the ports by increasing the maximum draft that can be accommodated, increasing the draft that will be unrestricted by the tides, and widening the tidal window for all vessels with drafts between the two extremes.	Harwich Approach Channel Deepening EIA Scoping Report (HHA, 2014)	Planning stage – ES not yet submitted.	No - EIA due to be submitted in 2015 and work likely to be undertaken in 2016.	No - Harwich approach channel is located over 35km to the south of Sizewell.	None identified.	Not applicable.
Proposed new disposal sites in the study area (i.e. between Lowestoft and Ipswich)	Proposal to create a new offshore disposal site for the Harwich Ports. The site would be located approximately 25km offshore from the mouth of the Stour and Orwell Estuaries in the Inner Gabbard area.	Harwich Approach Channel Deepening EIA Scoping Report (HHA, 2014)	Planning – site characterisation report and EIA submitted.	Yes - if consented, the ongoing use of the disposal site would overlap with Sizewell construction and operation.	No - disposal site located to the south and offshore from Sizewell.	**Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Highly unlikely due to absence of spatial overlap.
Proposed aggregate extraction sites in the study area (i.e. between Lowestoft and Ipswich)	A number of aggregate extraction sites are under planning in the Southern North Sea area.	The Crown Estate Marine Aggregate Portfolio online resources (TCE, 2014)	Various.	Yes - potential for aggregate extraction at sites between Lowestoft and Ipswich during Sizewell C construction period.	No - review of application areas (and actively dredged and licensed sites) on The Crown Estate website does not show any potential for spatial overlap.	**Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Highly unlikely due to absence of spatial overlap.

Project	Description	Level of project information available	Status	Potential for temporal overlap?	Potential for spatial overlap?	Sites or interest features in common that could be affected by both plans/projects?	Likelihood of in-combination effects
Suffolk Shoreline Management Plan (SMP)	The Lowestoft Ness to Felixstowe Landguard Point SMP was adopted in spring 2012. The SMP looks at the management policies for the coastline, balancing the scale of the risks with social, environmental and financial costs and avoiding adverse impacts on the adjacent coastal areas.	Suffolk Shoreline Management Plan (Suffolk Coastal District Council, 2010)	Approved and under implementation	Yes – the SMP is on-going.	Yes – the Sizewell shoreline is within the SMP area (Policy Development Zone 4 - Dunwich Cliffs to Thorpeness) and the management policies will need to be considered.	**Orfordness - Shingle Street SAC** Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks **Minsmere to Walberswick Heaths and Marshes SAC** Annual vegetation of drift lines European dry heaths Perennial vegetation of stony banks **Alde, Ore and Butley Estuaries SAC** Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Alde–Ore Estuary SPA** A seabird assemblage of international importance A wetland of international importance Annex I species: Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Sandwich Tern *Sterna sandvicensis,* Lesser Black-backed Gull *Larus fuscus,* Redshank *Tringa totanus* **Minsmere – Walberswick SPA** Annex I species: Avocet *Recurvirostra avosetta*, Bittern *Botaurus stellaris,* Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea,* Hen Harrier *Circus cyaneus* **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Investigation of SMP policies required to determine likelihood.
River Basin Management Plans (RBMPs)	RBMP's are a requirement of the Water Framework Directive (WFD) and are a means of achieving the protection, improvement and sustainable use of the water environment across Europe. The RBMP for the Anglian River Basin District covers the Sizewell area and details management plans for the area.	Anglian River Basin Management Plan (Environment Agency, 2009a)	Approved and being implemented.	Yes – the RBMP is on-going.	Yes – the Sizewell coastline is within the Suffolk coastal water body (C4 - GB650503520002).	**Orfordness - Shingle Street SAC** Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks **Minsmere to Walberswick Heaths and Marshes SAC** Annual vegetation of drift lines European dry heaths Perennial vegetation of stony banks **Alde, Ore and Butley Estuaries SAC** Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Alde–Ore Estuary SPA** A seabird assemblage of international importance A wetland of international importance Annex I species: Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Sandwich Tern *Sterna sandvicensis,* Lesser Black-	The Anglian RBMP records the following status objectives for the Suffolk coastal water body: Good Overall Status by 2027; Good Ecological Potential by 2027; and Good Chemical Status by 2015. Review of RBMP Annex C – Actions to Deliver Objectives has not identified RBMP actions that could act in-combination with the effects of the SZC Project. Therefore in-combination effects are considered to be highly unlikely.

Project	Description	Level of project information available	Status	Potential for temporal overlap?	Potential for spatial overlap?	Sites or interest features in common that could be affected by both plans/projects?	Likelihood of in-combination effects
						backed Gull *Larus fuscus,* Redshank *Tringa totanus* **Minsmere – Walberswick SPA** Annex I species: Avocet *Recurvirostra avosetta*, Bittern *Botaurus stellaris,* Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea,* Hen Harrier *Circus cyaneus* **Sandlings SPA** Annex I species: Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea* **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	
Estuarine flood management strategies (Alde – Ore)	The Alde & Ore Estuary Partnership was formed in May 2012 to take on the responsibility for managing river defences within the Alde & Ore Estuary. A strategy was agreed for the estuary in 2012/2013. Currently defence upgrades are in design and funding is being sought for areas of slating restoration.	Strategy and other partnership documents are available online (Suffolk Coast and Heaths AONB, 2014)	In progress.	Yes – ongoing management strategies for this area.	No - the River Alde follows the Suffolk coastline approximately 8km to the south of Sizewell.	**Alde, Ore and Butley Estuaries SAC** Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows (Glauco-Puccinellietalia maritimae) **Alde–Ore Estuary SPA** A seabird assemblage of international importance A wetland of international importance Annex I species: Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Sandwich Tern *Sterna sandvicensis,* Lesser Black-backed Gull *Larus fuscus,* Redshank *Tringa totanus* **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Highly unlikely due to absence of spatial overlap.
Flood Study of Minsmere River, Suffolk	Minsmere Flood Risk Management Study 2009. Report looking at the management of the area, the long-term risk of flooding, the SMP and the current land use. Provides sustainable solutions for management of the area. Prepared by the Environment Agency. Study identifies extent of Minsmere frontage and tidal floodplain.	Minsmere Flood Risk Management Study (Environment Agency, 2009b)	In progress?	Yes – ongoing management strategies for this area.	Yes – the Minsmere frontage overlaps with the Sizewell C main development site boundary. The tidal floodplain overlaps with the Sizewell C main development site boundary.	**Minsmere – Walberswick SPA** Annex I species: Avocet *Recurvirostra avosetta*, Bittern *Botaurus stellaris,* Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Nightjar *Caprimulgus europaeus*, Woodlark *Lullula arborea,* Hen Harrier *Circus cyaneus* **Sandlings SPA** Annex I species: Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea* **Minsmere to Walberswick Heaths and Marshes SAC** Annual vegetation of drift lines European dry heaths Perennial vegetation of stony banks **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Investigation of Flood Risk Management Study required to determine likelihood.

Project	Description	Level of project information available	Status	Potential for temporal overlap?	Potential for spatial overlap?	Sites or interest features in common that could be affected by both plans/projects?	Likelihood of in-combination effects
Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) Management Plan	The 2013-2018 Management Plan was published in 2013. It sets out the management objectives for the AONB and the policies for the area.	Suffolk Coast and Heaths AONB Management Plan 2013-2018 (Suffolk Coast & Heaths AONB Partnership, 2013)	Approved and being implemented	Yes – ongoing until 2018 when it is assumed a further management plan would be produced.	Yes – Sizewell is included within the AONB	**Orfordness - Shingle Street SAC** Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks **Alde, Ore and Butley Estuaries SAC** Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Alde–Ore Estuary SPA** A seabird assemblage of international importance A wetland of international importance Annex I species: Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons,* Marsh Harrier *Circus aeruginosus,* Sandwich Tern *Sterna sandvicensis,* Lesser Black-backed Gull *Larus fuscus,* Redshank *Tringa totanus* **Sandlings SPA** Annex I species: Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea* **Outer Thames Estuary SPA (with marine components)** Annex I species: Red-throated diver *Gavia stellata*	Detailed investigation of AONB Management Plan required to determine likelihood.
Sandlings Forest Recreation Strategy	Recreational strategy for the Sandlings Forests which includes the five Sandlings forests located within the Suffolk Coast and Heaths AONB. Published by the Forestry Commission.	Sandlings Forest Recreation Strategy (Forestry Commission England, 2006)	Approved and adopted in March 2006.	Yes – ongoing.	No – Sizewell is located between Dunwich and Tunstall forests	**Sandlings SPA** Annex I species: Nightjar *Caprimulgus europaeus,* Woodlark *Lullula arborea*	Highly unlikely due to absence of spatial overlap.

8. CHANGE MANAGEMENT

8.1 Objective

8.1.1 This section sets out a proposed approach for change management in relation to the evidence requirements for the Sizewell C Project as the project develops. The project is currently evolving, and will continue to do so, to the point of submission of the DCO and Environmental Permit applications. This evolution of the project is driven by a number of factors, including:

- on-going design work;
- technical investigations;
- environmental assessment;
- consultation responses; and
- cost-benefit analysis.

8.1.2 Given that the project information is likely to change over time, a strategy to provide some design flexibility, in certain respects and within certain limits, would be beneficial as part of the Evidence Plan process. A means of determining when a change is significant (and is likely to have consequences that differ from those previously predicted) will also be important, in order to avoid the need for all decisions and judgements to be constantly revisited and to enable the Evidence Plan process to move forward. A parameter-based approach is proposed in accordance with the 'Rochdale Envelope' (IPC, 2011).

8.1.3 The section considers how such a strategy could be achieved, as well as considering the use of 'change thresholds', where possible, and criteria to determine when decisions/judgements previously made in respect of evidence need to be revisited.

8.1.4 The final section provides a list of questions that NNB GenCo asked the participants in the Evidence Plan process to consider and the responses received.

8.2 Background

8.2.1 As set out in the draft Evidence Plan (February 2014), through the development of the plan, the potential for a LSE to arise will be examined in order that agreement can be reached on:

- which combinations of sites/interest features and effects should be taken forward for further assessment;
- which combinations do not warrant further investigation; and
- evidence requirements.

8.2.2 Where an effect is determined to be likely, this will be examined in detail as part of the Shadow HRA process (and evidence requirements will be established). Where an effect is determined to be unlikely, and subject to LSE screening, NNB GenCo may wish to make a risk based judgement not to investigate the potential effect in any

detail (and to rely on desk-based information only, for example) unless further information becomes available that changes that view. It is expected that once no LSE or LSE has been established, that this assessment would not be revisited, unless compelling new evidence is introduced (that meets relevant criteria).

8.2.3 As the project evolves, greater certainty will be obtained. For example, the DCO Stage 2 Consultation exercise will refine the options presented in the DCO Stage 1 Consultation, and confirm preferred options with respect to associated development and certain elements of the design at the main site. It will also include details of the proposals for embedded mitigation. The Evidence Plan process will continue to evolve through Stage 3 (evidence gathering, topic group meetings and **LSE screening**/AA scoping) and Stage 4 (agree effects and determine significance as the basis for the **HRA** and, eventually, Statements of Common Ground).

8.2.4 LSE screening will not occur until Stage 3, once the Evidence Plan is agreed and following the publication of the Stage 2 DCO Consultation document; thus providing the screening exercise with more certainty regarding the likely project outcomes (which will be reflected in the need for less precaution). If LSE screening is undertaken any earlier, the Evidence Plan process and Shadow HRA would not benefit fully from the increased clarify and focus (in Stage 4).

8.3 Next steps

8.3.1 As set out above, it is important that initial decisions taken as part of the Evidence Plan process regarding the existence of impact pathways, LSE and evidence needs are robust but at the same time sufficiently flexibility to accommodate a degree of change. In order to achieve this, a parameter based approach is proposed. That is, in the context of different projects elements (around which a degree of design uncertainty may exist), for each environmental parameter relevant to the HRA process, a range of acceptability could be defined which provides 'headroom' for design change. This will be more straightforward in some areas than in others (e.g. it is possible that the level of uncertainty appropriate to decision making in respect of environmental permitting is likely to be considerably less than that which may exist within the planning remit).

8.3.2 For example, with respect to the jetty, how much wider or longer would the structure need to be before changing the assessment outcome regarding loss of habitat function for red-throated diver? Or, in relation to the cooling water discharge, how much wider or deeper would the thermal plume have to be to change the assessment outcome as regards the displacement of prey species? Or, in relation to disturbance effects on marsh harrier, how much of a given habitat would need to be made unsuitable for foraging in order to change the assessment outcome? Or, in relation to the surface water drainage strategy, by how much would mean infiltration across the construction area need to be reduced to cause a reduction in groundwater levels beneath Minsmere South Levels that could affect habitat functioning for bittern?

8.3.3 It is, therefore, proposed that the next steps to be taken in developing a strategy for change management for adoption in the Evidence Plan process are as follows (this approach has been adapted from PINS Advice Note 9: Using the Rochdale Envelope (Planning Inspectorate, 2012) for the purposes of change management):

1. Review the key project design elements/project assumptions and identify those around which uncertainty exists or change could potentially occur, that have the potential to cause significant adverse environmental effects without mitigation.

2. For these projects elements, define relevant environmental parameters/ sensitivities with respect to the designated European sites/features that they could affect; that is, the key issues with respect to the Evidence Plan.

3. Based on this, determine the acceptable range of change for relevant project parameters (i.e. within which effects are not expected to be significantly different).

4. In line with the objectives of the Evidence Plan, the evidence required to establish each environmental parameters range of acceptability could then be defined.

8.3.4 However, it should be reiterated that a realistic 'worst case scenario' (in terms of project parameters) approach will be adopted in the HRA (and the EIA) where appropriate. It is noted that the Rochdale Envelope approach will not be applicable to all potential impacts, and the range of flexibility that different consenting regimes can accommodate will vary.

8.3.5 Potential project elements where change management may be appropriate are set out below (note that this is an indicative list only).

Construction

- Jetty, with respect to the method of construction, approach to piling (number of piles, method etc.), dredging requirements for the berthing pockets and the navigation routes.
- BLF, with respect to its precise location and detailed design.
- Platform, with respect to potential changes in height (main site and construction area – Goose Hill).
- Surface water drainage, with respect to final arrangements – location of discharge points, means of discharge, infiltration rates etc.
- Wastewater treatment and discharge plant and arrangements to sea.
- Earthwork balance / materials management, with respect to the source of aggregates, materials quality, stock pile locations and heights etc.
- Construction area, with respect to its detailed configuration and layout.

Operation

- Small combustion plant (probably less than 3MW), with respect to details of their potential size, number and location.
- UDGs and CDGs (back-up diesel generators) – commissioning and testing scenarios.
- Cooling water discharge – cold commissioning tests (including high velocity flushing).
- Chlorination strategy – detailed dosing arrangements.

- Nitrogenous discharges from the secondary circuit (i.e. the turbines) – the chemical strategy for water treatment (e.g. with ethanol, ammonia etc.).
- Permanent drainage arrangements, with respect to its detailed configuration.

8.4 Thresholds

8.4.1 Once evidence requirements and/or LSE assessments have been defined it is proposed that they are deemed to be fixed (in order to avoid subsequent surprises) unless certain criteria are met. That is (and as set out in the Evidence Plan):

- a material change in project assumptions that could result in an effect previously screened out becoming relevant or a change in the nature or scope of an impact such that there could be implications for evidence gathering;
- the data acquisition or assessment of NNB GenCo identifies new potential areas of concern; or
- relevant evidence, information or research has come to light that has a material impact on information requirements.

8.4.2 With respect to the first bullet point above it is proposed that if the extent or degree of the effect predicted due to a design change or refinement is within the agreed range of acceptability for the environmental parameter in question, then no action would need to be taken. However, if the effect predicted is out with the agreed range of acceptability, then it would need to be re-examined and the sufficiency of the evidence requirements reconsidered.

8.4.3 An example is provided below for disturbance effects to red-throated diver associated with use of the jetty. This is based on the case study presented at Workshop 1 and has been further developed on consideration of the available documentation and the most appropriate benchmarks against which similar assessment decisions relating to displacement effects have been made. The assessment undertaken for Workshop 1 suggested that:

- The displacement effect of the jetty would be small, potentially affecting 12 to 24 birds, dependant on the % increase in mortality used. Such a displacement effect would represent around 0.18 to 0.36% of the SPA population for the duration of the presence of the jetty (up to 10 years).
- The total bird days lost due the displacement effect of vessel movements, for use of the northern route (import), would be 420 days or 0.04%; for use of the northern route (export), would 1800 days or 0.15%; and for use of the southern/eastern route, would be 2400 days or 0.2%.

8.4.4 For the purpose of defining a threshold, it is presumed that a 1% increase in background population mortality would indicate that further investigation is required. BTO Birdfacts gives the adult survival rate for red-throated diver as 0.84, indicating a mortality rate of 16%. Based on the SPA population of 6,466 birds, a 1% increase in the mortality rate would approximate to seven birds, suggesting that the predicted loss of 12 to 24 birds as a result of displacement would require further assessment.

8.4.5 Previous consenting decisions, where displacement effects on red-throated diver have been a key consideration in the HRA process, provide an indication of the thresholds at which it has been determined that a significant impact could arise (i.e. one that could have an adverse effect on site integrity). For the Kentish Flats wind farm extension, the predicted displacement of 0.5% of the SPA population was considered to be a very small effect when considered in the context of the recorded spatial and temporal fluctuations in the wintering SPA population and no adverse effect on integrity was determined (DECC, 2013). Similarly, no adverse effect on integrity was concluded for the London Array I wind farm, where displacement of up to 7.3% of the red-throated diver population of the SPA was predicted. These decisions indicate that in order for a significant impact to arise (i.e. one that could lead to an adverse effect on integrity) it has been accepted that the displacement effect of the jetty would need to be substantially greater than that predicted.

8.4.6 Similarly, on the basis of the predicted low number of bird days lost per winter period due to vessel movements, it is concluded that the proposed number of vessels using the jetty would also need to increase substantially beyond those that are currently expected in order for the effect on the Outer Thames Estuary SPA red-throated diver population to be significant.

8.4.7 Further comment on the paragraphs 8.4.3 to 8.4.6 above is provided in **Section 8.6** below.

8.5 Process

8.5.1 It is proposed that once a change such as that identified above occurs, this should be brought to the attention of the Evidence Plan Steering Group. This could be undertaken by any of the participants in the process, and raised as an issue for discussion via a standing agenda item for all Steering Group and Topic Group meetings.

8.5.2 Where a material change to the project occurs or new areas of concern or relevant evidence come to light (that could push an effect beyond the agreed range of acceptability), the need (or otherwise) to alter the scope of evidence gathering or the LSE/integrity determination will need to be determined and the outcome recorded in the Decision Log. The scope of the change required should also be discussed. It is noteworthy that a change to the project might not require a change in evidence gathering and/or the LSE determination if it does not make a difference in the context of the significant effect threshold. If no changes have occurred, this should also be recorded.

8.6 Questions and responses

8.6.1 In the context of change management questions that NNB GenCo asked the participants in the Evidence Plan process to consider were:

1. In principle, do you agree with the approach proposed? If you have any concerns, could these please be explained.
2. In particular do you agree with the next steps proposed in Section 8.3?
3. Are you content with the conclusion reached in Section 8.4 relating to disturbance effects on red-throated diver?

8.6.2 Responses received are set out in the table that follows (except where the comment related to proposed changes to the text that have been actioned above or did not need to be recorded):

Consultee	Comment	Response
EA	*Comment in relation to Section 8.2.2 'NNB GenCo may wish to make a risk based judgement not to investigate the potential effect in any detail'* We agreed at the meeting on 14/05 that this decision would need to be accompanied by evidence sufficient to allow all parties to agree that LSE is unlikely and that the potential impact can be ruled out.	Noted
EA	**1. In principle, do you agree with the approach proposed?** In general terms, and in the planning workstream, such an approach would seem useful - however it must be remembered that the evidence necessary to support our appropriate assessment for environmental permits is likely to have to be far more 'bound', as the issues/impacts that we shall be assessing will tend to be far more precise in nature. Flexibility is likely to be less appropriate, and the need for certainty seen as far more necessary. We can discuss where these instances arise within the expert sub-groups, when they begin to consider the evidence needs of particular impacts.	Noted
NE	**2. In particular do you agree with the next steps proposed in Section 8.3?** In principle, we agree with this approach.	Noted
NE	**3. Are you content with the conclusion reached in Section 8.4 relating to disturbance effects on red-throated diver?** We are unable to advise on these conclusions without all the necessary data/evidence to assess the potential for significant impact (alone and in-combination) on this marine bird.	Noted
RSPB	**1. Do you agree with the approach proposed in principle?** The RSPB disagree with this approach as it appears to represent a departure from the typical application of the Rochdale Envelope, in that the focus is on the range of tolerance of the receptor, rather than the range of parameters for the source of the impact (i.e. project parameters). We consider that the proposed approach must meet the requirements set out in PINS' Advice Note 9: Using the Rochdale Envelope and Advice Note 10: Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects, in particular that sufficient information regarding the proposed scheme parameters must be available to ensure clarity for consultation and assessment purposes. The RSPB are concerned about the use of thresholds representing a line in the sand at which an impact can be said to occur. This assumes that an effect will result in a step-change	Noted

Consultee	Comment	Response
	response, and that an effect up to this point will not generate a significant impact. We consider that impacts are more likely to increase proportionately to the project parameter under consideration and that the predicted level of impacts should be clearly demonstrated within any assessment. The assessment must also be comparable with those of other projects in order to enable in combination assessments to be undertaken, both for this project, and for subsequent projects which may need to use environmental information from this project. As such, we recommend that, impacts resulting from the worst case scenario drawn from a range of realistic project parameters should be clearly presented (the 'typical' approach), rather than solely presenting an upper level of impacts that could be deemed acceptable. We note that the range of project parameters should include the worst case scenario and 'should not be so wide ranging as to represent effectively different schemes'. As proposed, should a change occur such that a component of the project was likely to fall outside the assessed parameter range, this assessment would need to be revisited.	
RSPB (following initial comments)	With regard to paras. 8.4.3 – 8.4.6 on red-throated diver displacement, we consider that there is a need to clarify these paragraphs through explanation of the derivation of the displacement and mortality figures presented. If variable percentage displacement buffers and density dependent mortality rates have been used, values for these should be stated. Conclusions should clearly state whether they relate to the effects of displacement only or displacement induced mortality, and all such results should also be expressed as a percentage of the SPA population affected. The RSPB may raise further comments on this issue once further details become available. We also note that where discussions relate to impact significance, wording relating to Adverse Effects on Integrity should reflect that the requirement is to establish that no reasonable scientific doubt remains as to the absence of an adverse effect.	The figures presented in paragraphs 8.4.3-8.4.6 are derived from the case study presented at Workshop 1. The numbers of birds that potentially could be displaced were calculated using potential sensitivities and density data for the area in which the MOLF is to be located. It was stated in the case study presentation that the method for calculating displacement could utilise the approaches used for offshore wind farms in the Thames Estuary; i.e. varying distances (buffers/halos) of displacement effects with associated variable percentage displacement effects, up to 3km from the structure (e.g. 0-500 m buffer 87%; 0.5-1 km buffer 76%; 1-2 km, buffer 61%; and 2-3 km buffer 63%). The conclusions set out in these paragraphs relate to assumed mortality using density dependent mortality rates of 2.5% or 5% (as has been adopted for recent assessment of offshore wind farms within the boundaries of the Outer Thames Estuary SPA). Details of the parameters and full methodology that will be used for the HRA will be set out and agreed as part of the ongoing Evidence Plan process.

Consultee	Comment	Response
SWT	**1. In principle, do you agree with the approach proposed?** We agree that an approach to change management is required and consider that, in principle, the approach proposed is satisfactory.	Noted
SWT	**2. In particular do you agree with the next steps proposed in Section 8.3?** In principle we agree with the approach set out.	Noted
SWT	**3. Are you content with the conclusion reached in Section 8.4 relating to disturbance effects on red-throated diver?** We are not content with the conclusions relating to red-throated diver as no evidence is provided relating to the figures used to calculate the displacement effect of either the jetty or the predicted vessel movements. It is also unclear as to whether any consideration of the cumulative impacts of the jetty and vessel movements has been considered in this assessment. We believe that further detail is required to demonstrate that the conclusions presented in the report are accurate.	Noted
PINS	We refer the applicant to PINS Advice Note 9 in relation to the use of a Rochdale Envelope approach. Should the Rochdale Envelope approach be applied to the project, PINS would expect the parameters of the project to be clearly defined and a realistic, worst-case scenario applied to the assessment of effects. We are unclear at present whether the proposed approach of testing the maximum parameters of changes will be carried forward to the project application parameters and how these will be assessed. The approach adopted by the applicant should be clearly explained within the applicant's HRA Report and PINS recommends that agreement is sought with the relevant SNCBs, that the approach selected is appropriate to enable the applicant to undertake a robust HRA. We would also recommend that any significance criteria/thresholds applied to the HRA be discussed and agreed with the relevant SNCBs, for example, defining thresholds based on a percentage of an SPA bird species population. All meetings and agreed ways forward should be clearly documented.	Noted
PINS	With reference to paragraph 8.2.2, the Examining Authority may wish to see all supporting information/evidence as to how the conclusions have been reached, including European sites and/or qualifying features screened out of the HRA at the screening stage.	Noted

9. ROUTE MAP

9.1 Introduction

9.1.1 This section sets out the proposed way forward for the HRA process for Sizewell C, following finalisation (and publication) of this Evidence Plan.

9.1.2 More precision is able to be provided regarding tasks to be undertaken in the forthcoming months than for the period further ahead, and the Route Map is expected to evolve as more evidence and project details become available.

9.1.3 However, the figures below set out the proposed next steps of the process (in terms of evidence deliverables and topic group meetings) as it is currently envisaged which would extend through Stage 3 and into Stage 4 of NNB GenCo's Evidence Plan process.

9.1.4 Stage 3, which will follow publication of the Evidence Plan, will include:

- Evidence gathering and assessment.
- Topic Group meetings to discuss above.
- Formal Shadow LSE screening.

9.1.5 In Stage 3 it is proposed that the Evidence Plan Working Group will operate through the Topic Groups and provide feedback to the Steering Group, as set out in **Section 3**. Stage 4 then represents the final stage of the HRA process, that is, the agreement of effects and determination of significance as the basis for the Shadow Appropriate Assessment and, in due course, finalisation of Statements of Common Ground.

9.1.6 As noted in **Section 3.3**, it is envisaged that further meetings of the HRA Evidence Plan Working Group will be convened at key milestones throughout the Evidence Plan process e.g. to discuss the results of Shadow LSE screening and Shadow AA.

9.2 Evidence provision

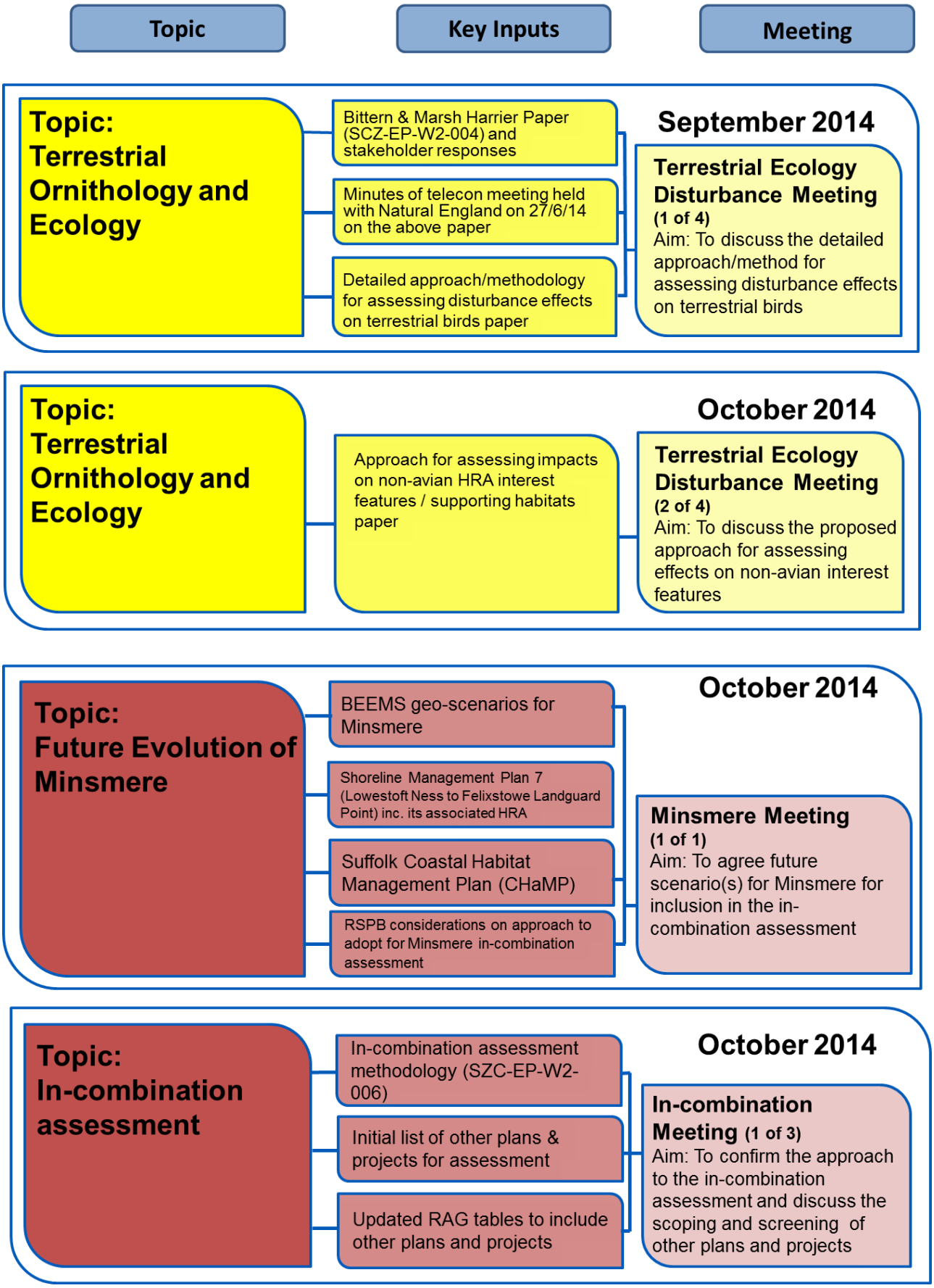
9.2.1 Based on **Tables A2.3a** and **A2.3b** (**Appendix 2.3**), and an analysis of what evidence will be produced when (thereby enabling a topic meeting to be held), the figures below set out envisaged topics for discussion (in the first column) through Topic Group Meetings; the relevant evidence streams (inputs) that will be available for consideration (in the second column); and the month in which it is currently envisaged that a topic group meeting could be held, as well as a proposed aim for the meeting (the third column). As set out above, that these dates are provisional and may be subject to change. Further meetings are also likely to be required.

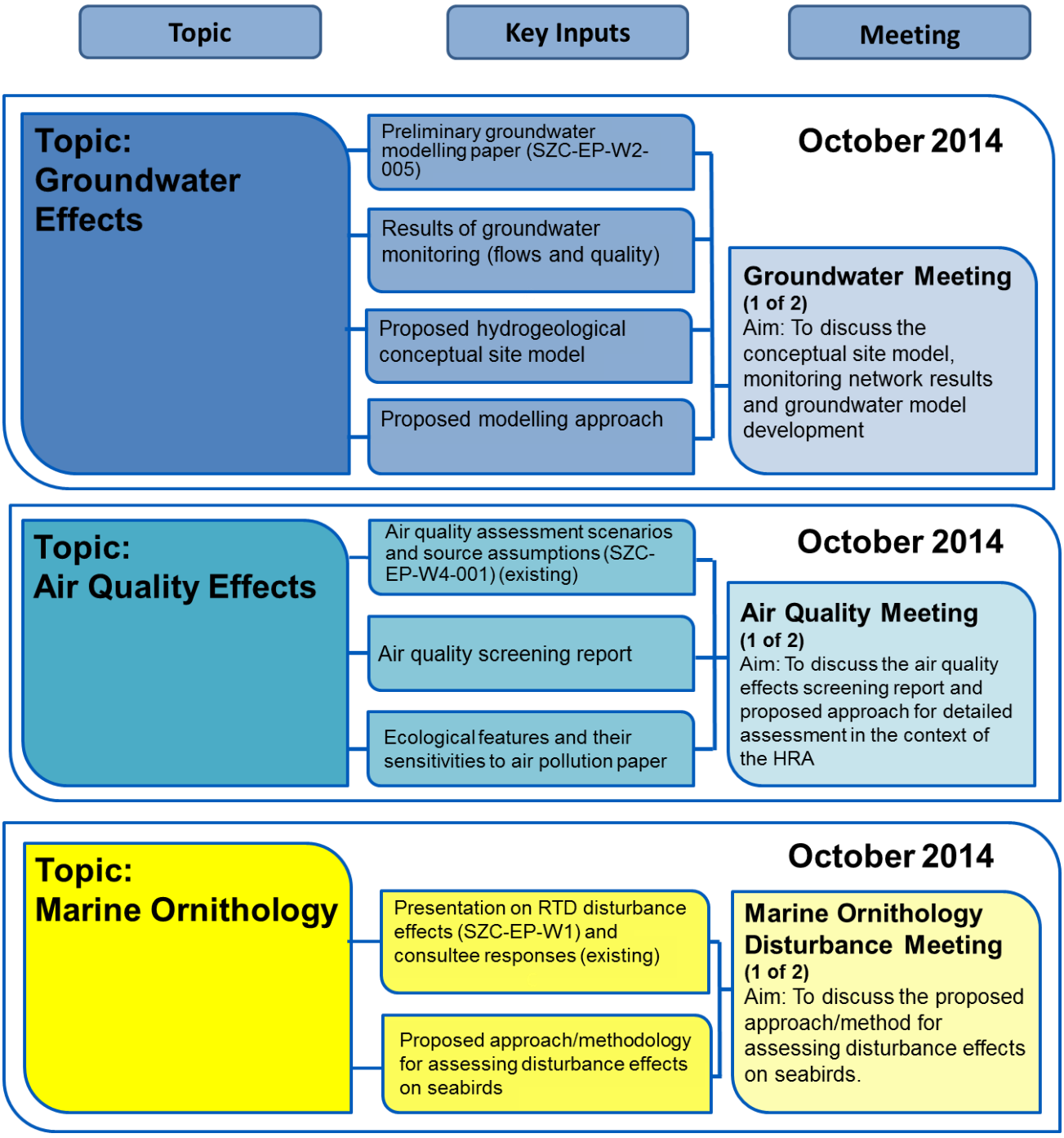
9.2.2 Note that not every 'evidence requirement' identified in **Tables A2.3a** and **A2.3b** is expressly covered by a Topic Group Meeting; i.e. meetings have been proposed on a themed basis ahead of the production of the draft Shadow HRA. In addition, not all of the meetings proposed will be HRA led meetings (although most are); some meetings will "piggy back" on EIA workstream meetings (e.g. groundwater effects).

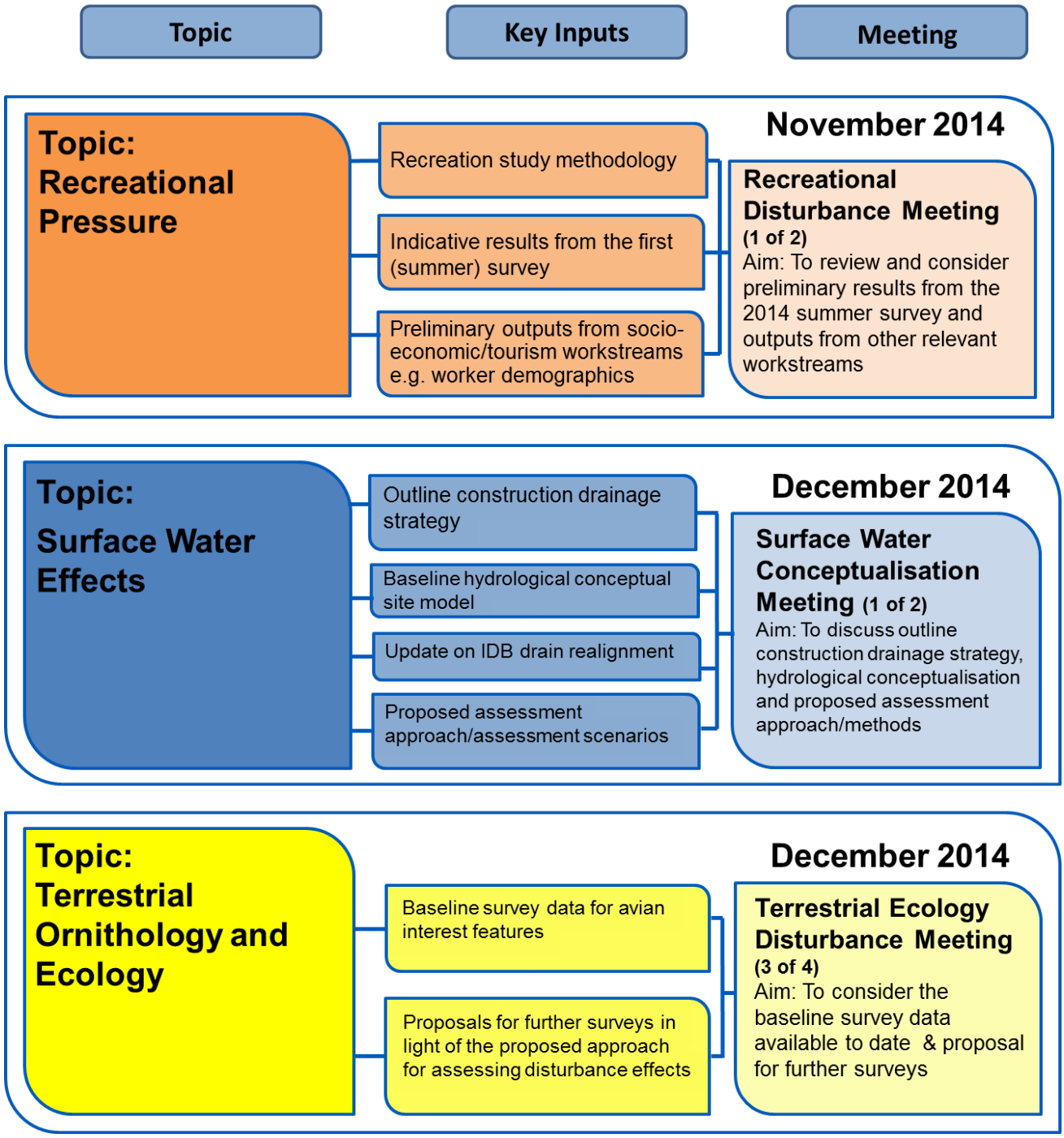
9.2.3 The membership of these Topic Group Meetings is to be agreed.

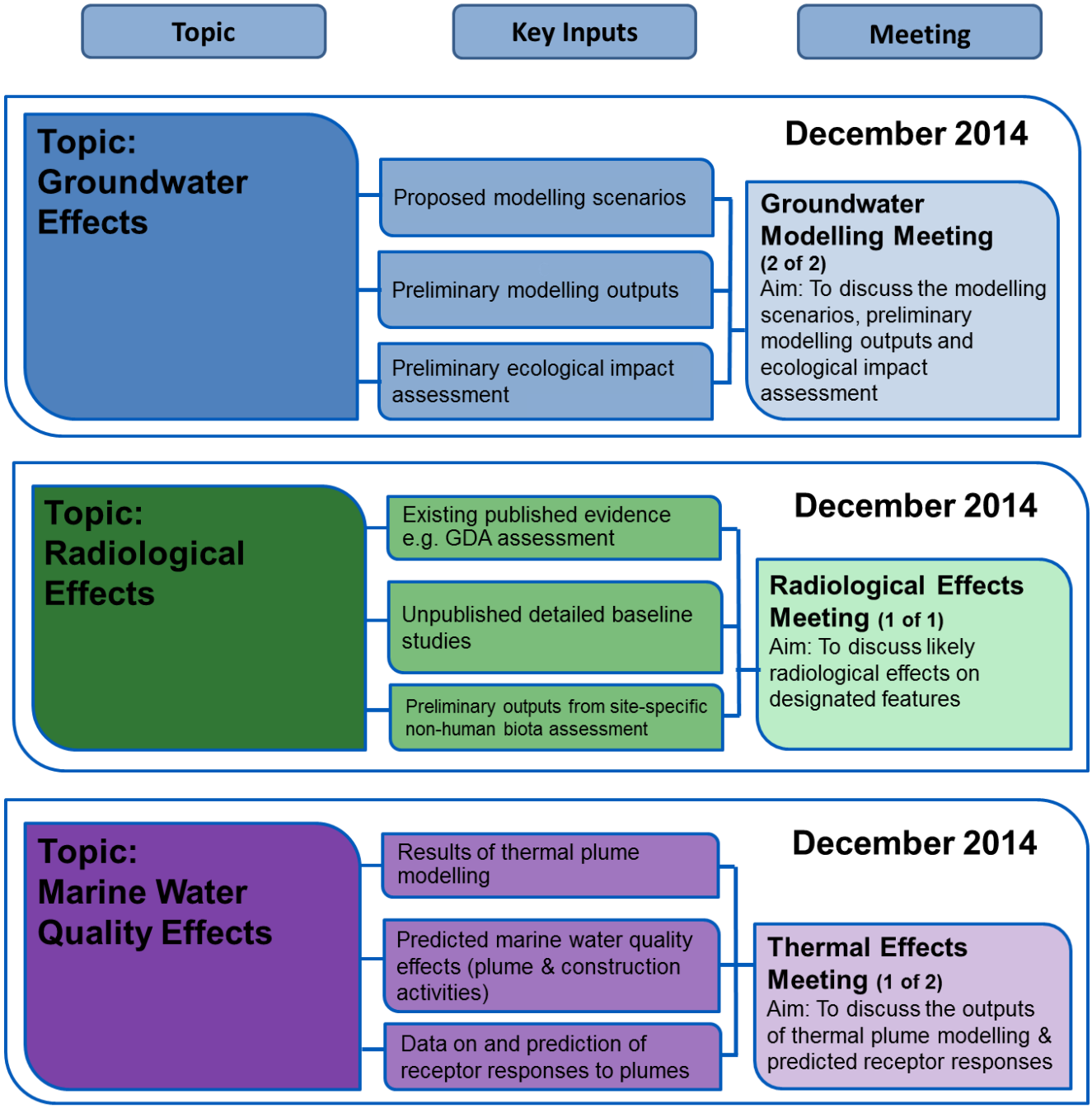
9.2.4 The figures below split the Topic Groups by colour, using the following colour codings:

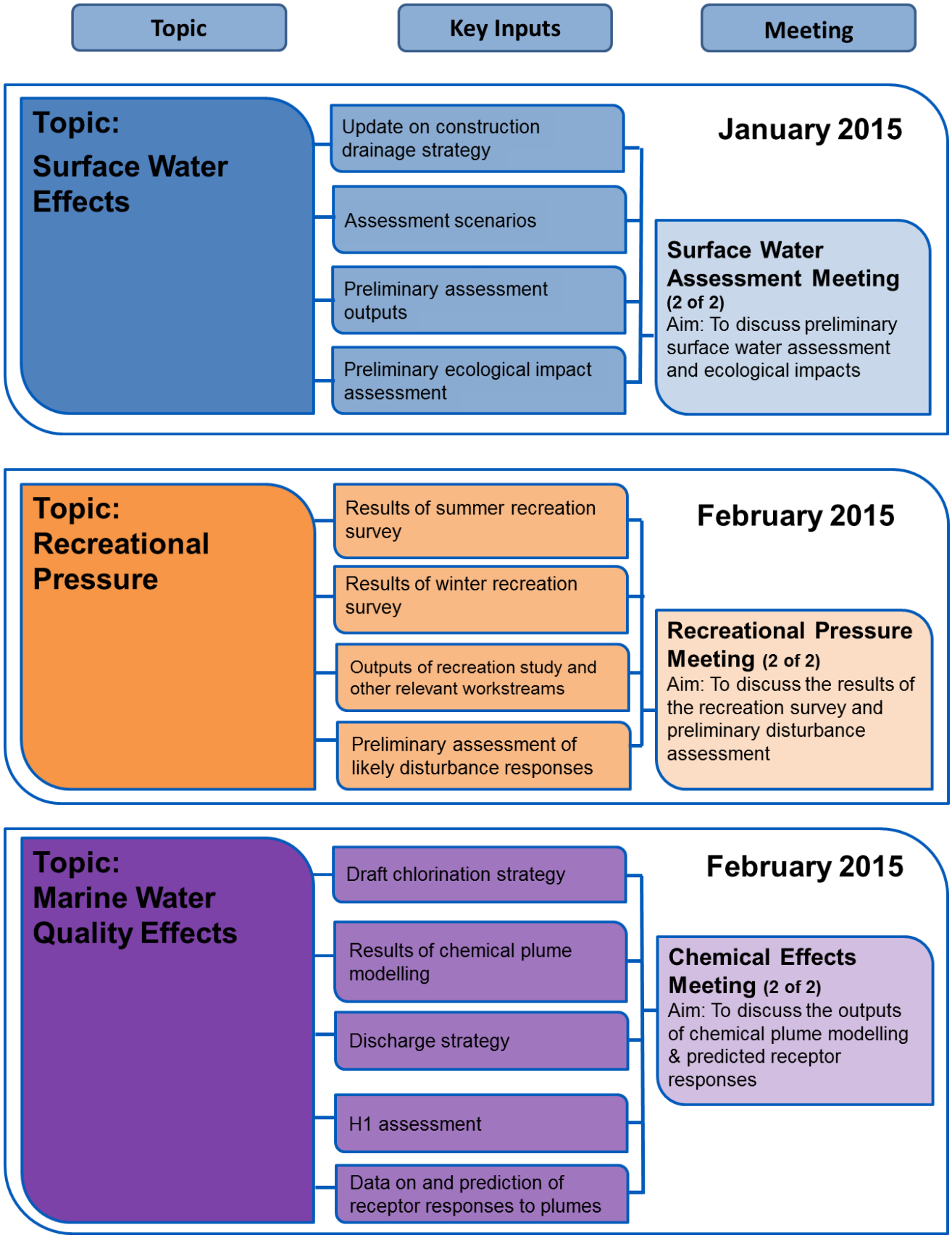
Terrestrial Ornithology and Ecology & Marine Ornithology	
Future Evolution of Minsmere & In-combination assessment	
Groundwater & Surface Water Effects	
Radiological Effects	
Air Quality Effects	
Recreational Pressure	
Coastal Geomorphology	
Marine Water Quality Effects	
Effects on Fish	
Marine Noise Effects	

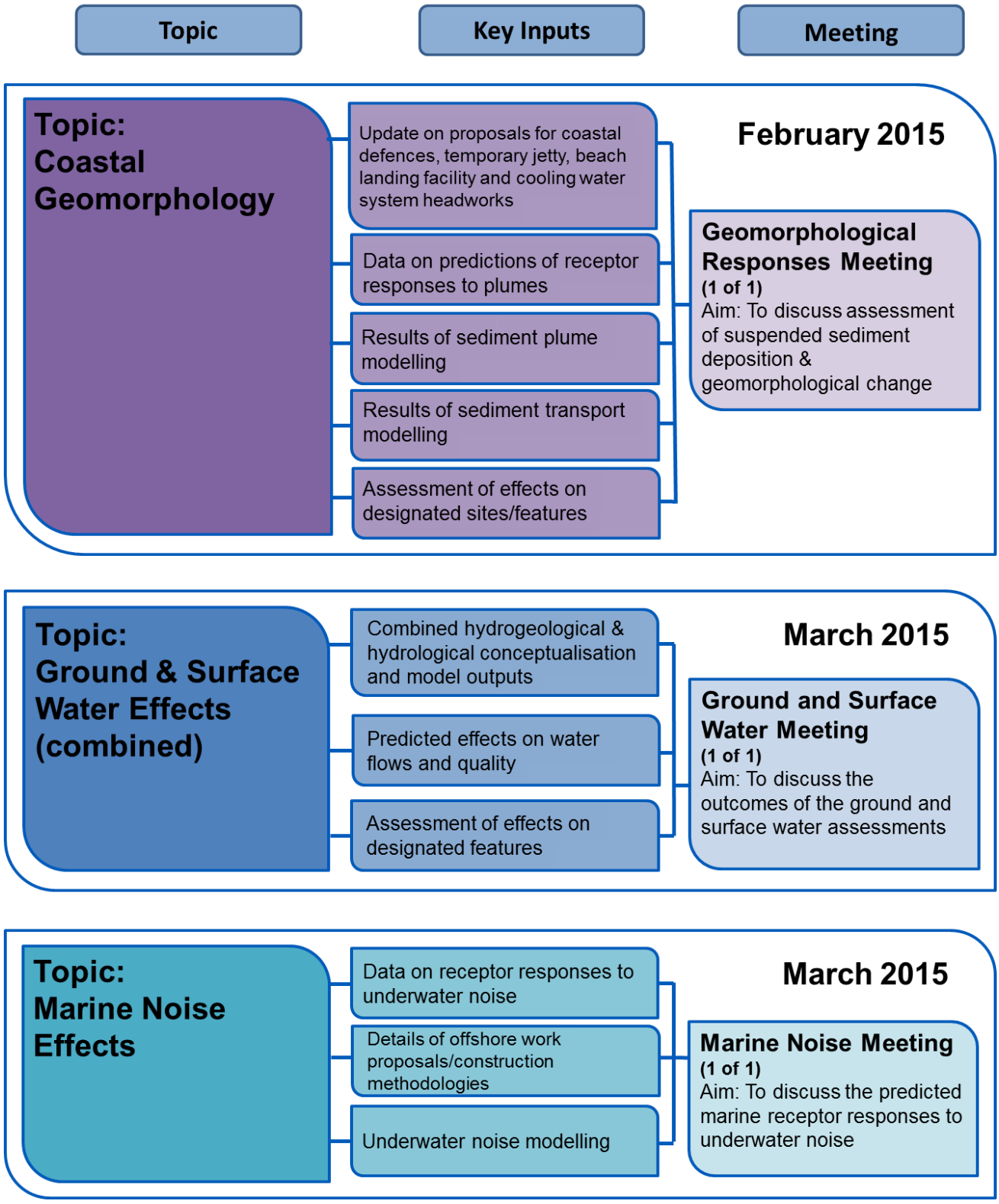

Topic
Key Inputs
Meeting
Topic: Terrestrial Ornithology and Ecology
Bittern & Marsh Harrier Paper (SCZ-EP-W2-004) and stakeholder responses
Minutes of telecon meeting held with Natural England on 27/6/14 on the above paper
Detailed approach/methodology for assessing disturbance effects on terrestrial birds paper
September 2014
Terrestrial Ecology Disturbance Meeting (1 of 4)
Aim: To discuss the detailed approach/method for assessing disturbance effects on terrestrial birds
Topic: Terrestrial Ornithology and Ecology
Approach for assessing impacts on non-avian HRA interest features / supporting habitats paper
October 2014
Terrestrial Ecology Disturbance Meeting (2 of 4)
Aim: To discuss the proposed approach for assessing effects on non-avian interest features
Topic: Future Evolution of Minsmere
BEEMS geo-scenarios for Minsmere
Shoreline Management Plan 7 (Lowestoft Ness to Felixstowe Landguard Point) inc. its associated HRA
Suffolk Coastal Habitat Management Plan (CHaMP)
RSPB considerations on approach to adopt for Minsmere in-combination assessment
October 2014
Minsmere Meeting (1 of 1)
Aim: To agree future scenario(s) for Minsmere for inclusion in the in-combination assessment
Topic: In-combination assessment
In-combination assessment methodology (SZC-EP-W2-006)
Initial list of other plans & projects for assessment
Updated RAG tables to include other plans and projects
October 2014
In-combination Meeting (1 of 3)
Aim: To confirm the approach to the in-combination assessment and discuss the scoping and screening of other plans and projects

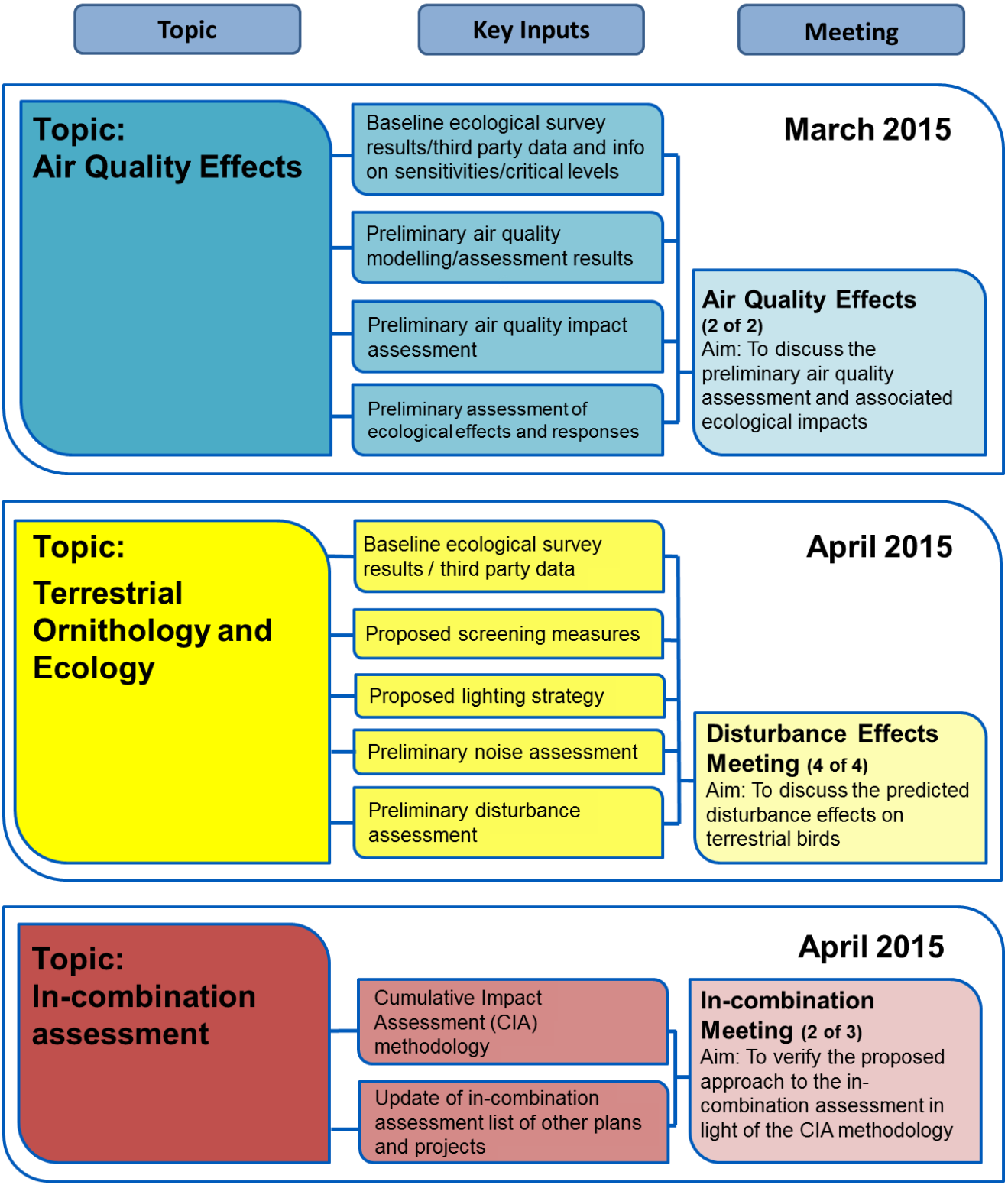

Topic
Key Inputs
Meeting
Topic: Groundwater Effects
Preliminary groundwater modelling paper (SZC-EP-W2-005)
Results of groundwater monitoring (flows and quality)
Proposed hydrogeological conceptual site model
Proposed modelling approach
October 2014
Groundwater Meeting
(1 of 2)
Aim: To discuss the conceptual site model, monitoring network results and groundwater model development
Topic: Air Quality Effects
Air quality assessment scenarios and source assumptions (SZC-EP-W4-001) (existing)
Air quality screening report
Ecological features and their sensitivities to air pollution paper
October 2014
Air Quality Meeting
(1 of 2)
Aim: To discuss the air quality effects screening report and proposed approach for detailed assessment in the context of the HRA
Topic: Marine Ornithology
Presentation on RTD disturbance effects (SZC-EP-W1) and consultee responses (existing)
Proposed approach/methodology for assessing disturbance effects on seabirds
October 2014
Marine Ornithology Disturbance Meeting
(1 of 2)
Aim: To discuss the proposed approach/method for assessing disturbance effects on seabirds.

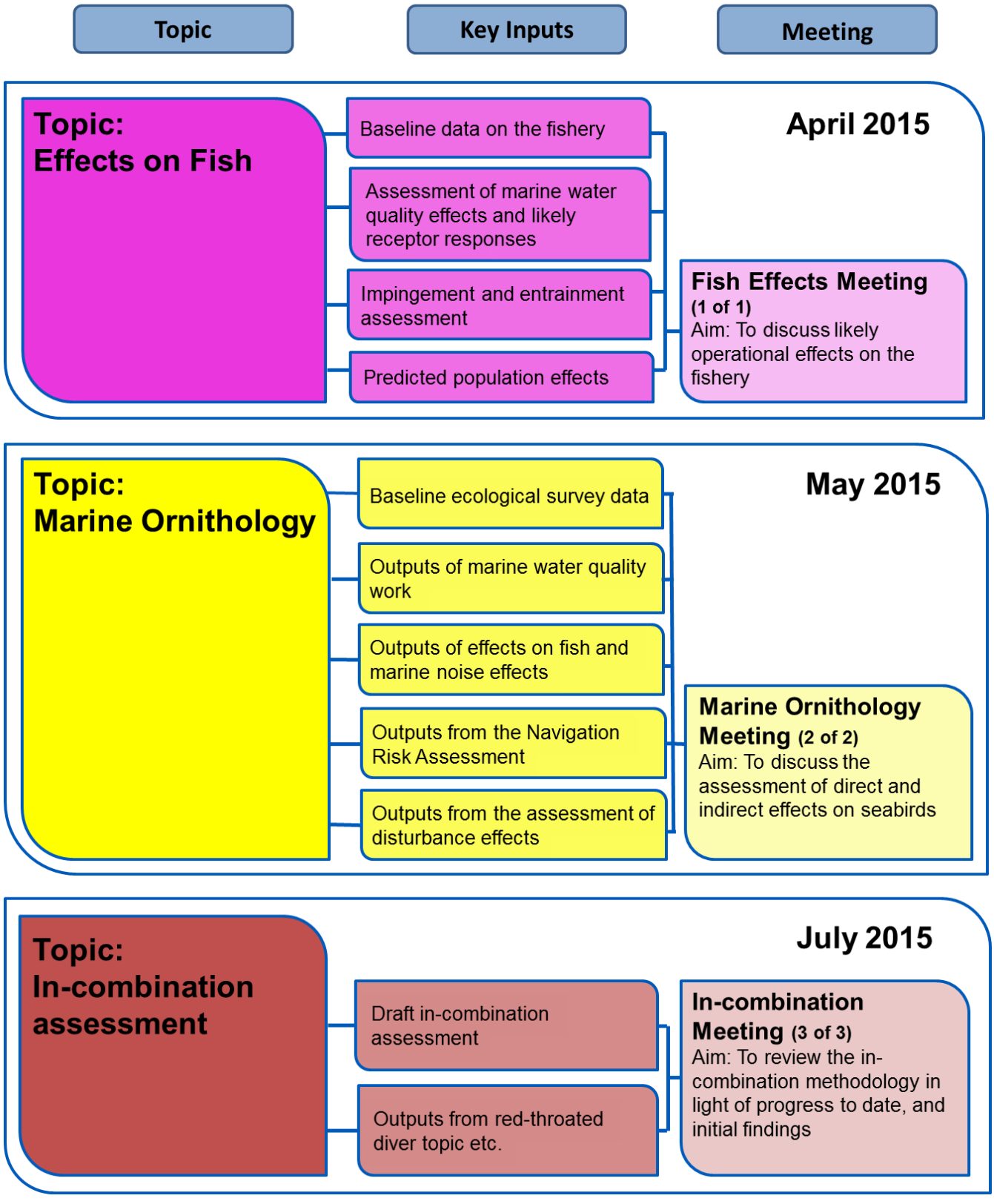

Topic
Key Inputs
Meeting
Topic: Recreational Pressure
Recreation study methodology
Indicative results from the first (summer) survey
Preliminary outputs from socio-economic/tourism workstreams e.g. worker demographics
November 2014
Recreational Disturbance Meeting (1 of 2)
Aim: To review and consider preliminary results from the 2014 summer survey and outputs from other relevant workstreams
Topic: Surface Water Effects
Outline construction drainage strategy
Baseline hydrological conceptual site model
Update on IDB drain realignment
Proposed assessment approach/assessment scenarios
December 2014
Surface Water Conceptualisation Meeting (1 of 2)
Aim: To discuss outline construction drainage strategy, hydrological conceptualisation and proposed assessment approach/methods
Topic: Terrestrial Ornithology and Ecology
Baseline survey data for avian interest features
Proposals for further surveys in light of the proposed approach for assessing disturbance effects
December 2014
Terrestrial Ecology Disturbance Meeting (3 of 4)
Aim: To consider the baseline survey data available to date & proposal for further surveys


Topic
Key Inputs
Meeting
Topic: Groundwater Effects
Proposed modelling scenarios
Preliminary modelling outputs
Preliminary ecological impact assessment
December 2014
Groundwater Modelling Meeting (2 of 2)
Aim: To discuss the modelling scenarios, preliminary modelling outputs and ecological impact assessment
Topic: Radiological Effects
Existing published evidence e.g. GDA assessment
Unpublished detailed baseline studies
Preliminary outputs from site-specific non-human biota assessment
December 2014
Radiological Effects Meeting (1 of 1)
Aim: To discuss likely radiological effects on designated features
Topic: Marine Water Quality Effects
Results of thermal plume modelling
Predicted marine water quality effects (plume & construction activities)
Data on and prediction of receptor responses to plumes
December 2014
Thermal Effects Meeting (1 of 2)
Aim: To discuss the outputs of thermal plume modelling & predicted receptor responses


Topic
Key Inputs
Meeting
Topic: Surface Water Effects
Update on construction drainage strategy
Assessment scenarios
Preliminary assessment outputs
Preliminary ecological impact assessment
January 2015
Surface Water Assessment Meeting (2 of 2)
Aim: To discuss preliminary surface water assessment and ecological impacts
Topic: Recreational Pressure
Results of summer recreation survey
Results of winter recreation survey
Outputs of recreation study and other relevant workstreams
Preliminary assessment of likely disturbance responses
February 2015
Recreational Pressure Meeting (2 of 2)
Aim: To discuss the results of the recreation survey and preliminary disturbance assessment
Topic: Marine Water Quality Effects
Draft chlorination strategy
Results of chemical plume modelling
Discharge strategy
H1 assessment
Data on and prediction of receptor responses to plumes
February 2015
Chemical Effects Meeting (2 of 2)
Aim: To discuss the outputs of chemical plume modelling & predicted receptor responses


Topic
Key Inputs
Meeting
Topic: Coastal Geomorphology
Update on proposals for coastal defences, temporary jetty, beach landing facility and cooling water system headworks
Data on predictions of receptor responses to plumes
Results of sediment plume modelling
Results of sediment transport modelling
Assessment of effects on designated sites/features
February 2015
Geomorphological Responses Meeting
(1 of 1)
Aim: To discuss assessment of suspended sediment deposition & geomorphological change
Topic: Ground & Surface Water Effects (combined)
Combined hydrogeological & hydrological conceptualisation and model outputs
Predicted effects on water flows and quality
Assessment of effects on designated features
March 2015
Ground and Surface Water Meeting
(1 of 1)
Aim: To discuss the outcomes of the ground and surface water assessments
Topic: Marine Noise Effects
Data on receptor responses to underwater noise
Details of offshore work proposals/construction methodologies
Underwater noise modelling
March 2015
Marine Noise Meeting
(1 of 1)
Aim: To discuss the predicted marine receptor responses to underwater noise


Topic
Key Inputs
Meeting
Topic:
Air Quality Effects
Baseline ecological survey results/third party data and info on sensitivities/critical levels
Preliminary air quality modelling/assessment results
Preliminary air quality impact assessment
Preliminary assessment of ecological effects and responses
March 2015
Air Quality Effects
(2 of 2)
Aim: To discuss the preliminary air quality assessment and associated ecological impacts
Topic:
Terrestrial Ornithology and Ecology
Baseline ecological survey results / third party data
Proposed screening measures
Proposed lighting strategy
Preliminary noise assessment
Preliminary disturbance assessment
April 2015
Disturbance Effects Meeting (4 of 4)
Aim: To discuss the predicted disturbance effects on terrestrial birds
Topic:
In-combination assessment
Cumulative Impact Assessment (CIA) methodology
Update of in-combination assessment list of other plans and projects
April 2015
In-combination Meeting (2 of 3)
Aim: To verify the proposed approach to the in-combination assessment in light of the CIA methodology


Topic
Key Inputs
Meeting
Topic: Effects on Fish
Baseline data on the fishery
Assessment of marine water quality effects and likely receptor responses
Impingement and entrainment assessment
Predicted population effects
April 2015
Fish Effects Meeting (1 of 1)
Aim: To discuss likely operational effects on the fishery
Topic: Marine Ornithology
Baseline ecological survey data
Outputs of marine water quality work
Outputs of effects on fish and marine noise effects
Outputs from the Navigation Risk Assessment
Outputs from the assessment of disturbance effects
May 2015
Marine Ornithology Meeting (2 of 2)
Aim: To discuss the assessment of direct and indirect effects on seabirds
Topic: In-combination assessment
Draft in-combination assessment
Outputs from red-throated diver topic etc.
July 2015
In-combination Meeting (3 of 3)
Aim: To review the in-combination methodology in light of progress to date, and initial findings

9.3 Proposed meetings

9.3.1 Based on the figures above, as well as suggestions for other topic group meetings that have arisen through the Evidence Plan process, the table below summarises the proposed topic group meetings into Quarter 2 2015. The proposed dates are indicative at this stage, but NNB GenCo will use best endeavours to meet this programme.

9.3.2 The table below also identifies when it might be sensible to hold Steering Group Meetings; based on key decision making points.

Topic Group Meeting	Jul 2014	Aug 2014	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Q1 2015	Q2 2015	Q3 2015
Terrestrial Ornithology and Ecology (1)			◆						
Terrestrial Ornithology and Ecology (2)				◆					
Future Evolution of Minsmere				◆					
In-combination assessment				◆					
Groundwater Effects (1)				◆					
Air Quality Effects (1)				◆					
Marine Ornithology (1)				◆					
Recreational Pressure (1)					◆				
Surface Water Effects (1)						◆			
Terrestrial Ornithology and Ecology (3)						◆			
Groundwater Effects (2)						◆			
Radiological Effects						◆			
Marine Water Quality Effects (1)						◆			
Surface Water Effects (2)							◆		
Marine Water Quality Effects (2)							◆		
Recreational Pressure (2)							◆		
Coastal Geomorphology							◆		
Ground and Surface Water Effects							◆		
Marine Noise Effects							◆		
Air Quality Effects (2)							◆		

Topic Group Meeting	Jul 2014	Aug 2014	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Q1 2015	Q2 2015	Q3 2015
Terrestrial Ornithology and Ecology (4)								◆	
In-combination assessment (2)								◆	
Effects on Fish								◆	
Marine Ornithology								◆	
In-combination assessment (3)									◆

Other activities	Jul 2014	Aug 2014	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Q1 2015	Q2 2015	Q3 2015
Steering Group Meetings							◆	◆	◆
Shadow LSE Screening							◆		
Statement of Common Ground				←	—	—	—	—	→

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APPENDIX 1 FIGURES

INTERNAL BUSINESS COLLABORATOR REFERENCE
NOT APPLICABLE FOR ALL FIGURES

NOTES:

KEY

- INDICATIVE MAIN DEVELOPMENT SITE
- 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)

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION/COMMENTS	APPROVED

SIZEWELL C

DOCUMENT:
SIZEWELL C PROJECT
HRA EVIDENCE PLAN

DRAWING TITLE:
MAIN DEVELOPMENT SITE

DRAWING NO: FIGURE 1
REVISION: 0
DATE: OCT 2014
DRAWN: J.W.
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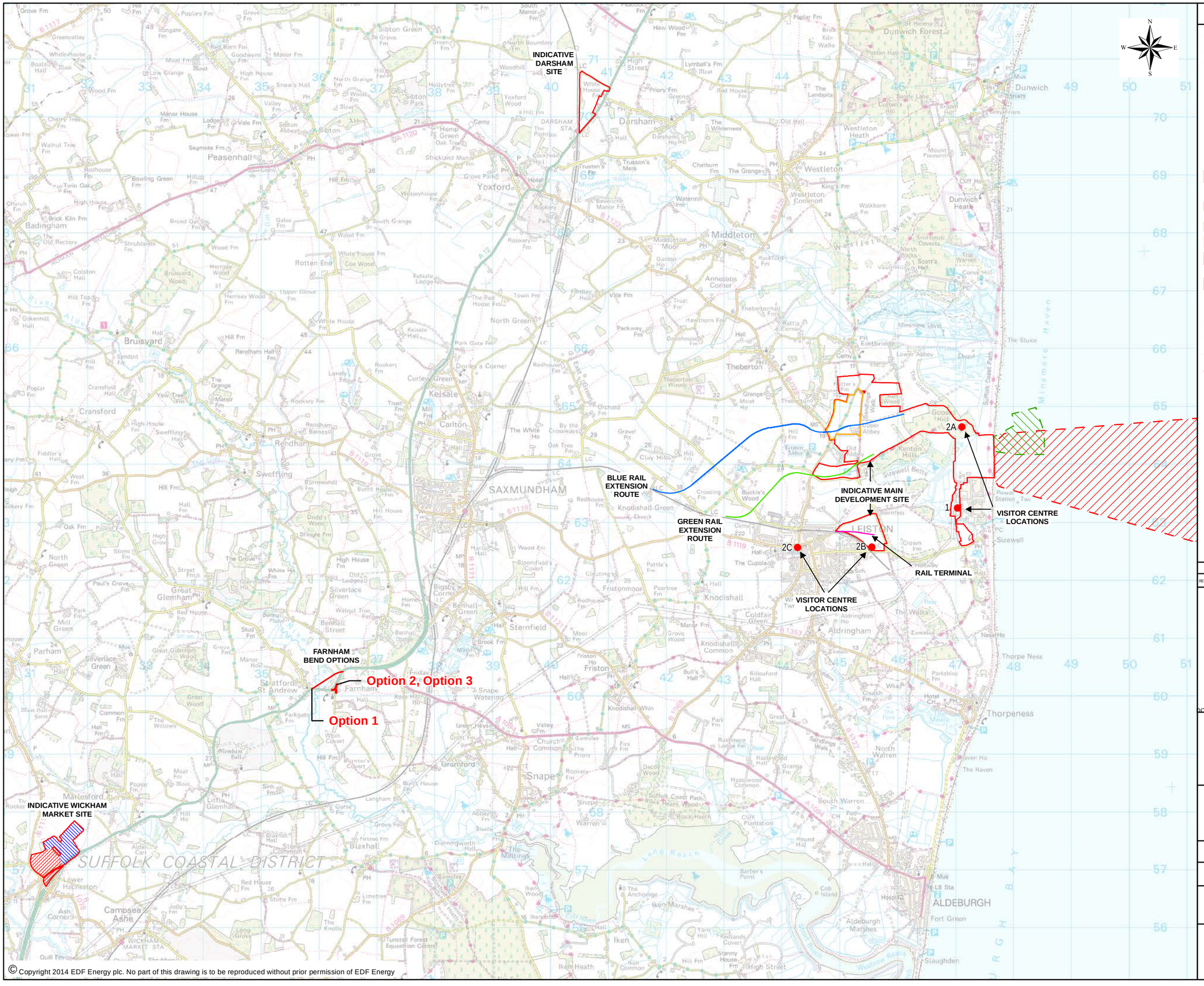

INTERNAL BUSINESS COLLABORATOR REFERENCE
NOT APPLICABLE FOR ALL FIGURES

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

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)

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION/COMMENTS	APPROVED

SIZEWELL C

DOCUMENT:

SIZEWELL C PROJECT
HRA EVIDENCE PLAN

DRAWING TITLE:
MAIN DEVELOPMENT SITE AND OFF-SITE ASSOCIATED DEVELOPMENT SITES LOCATION PLAN

DRAWING NO: FIGURE 2
REVISION: 0
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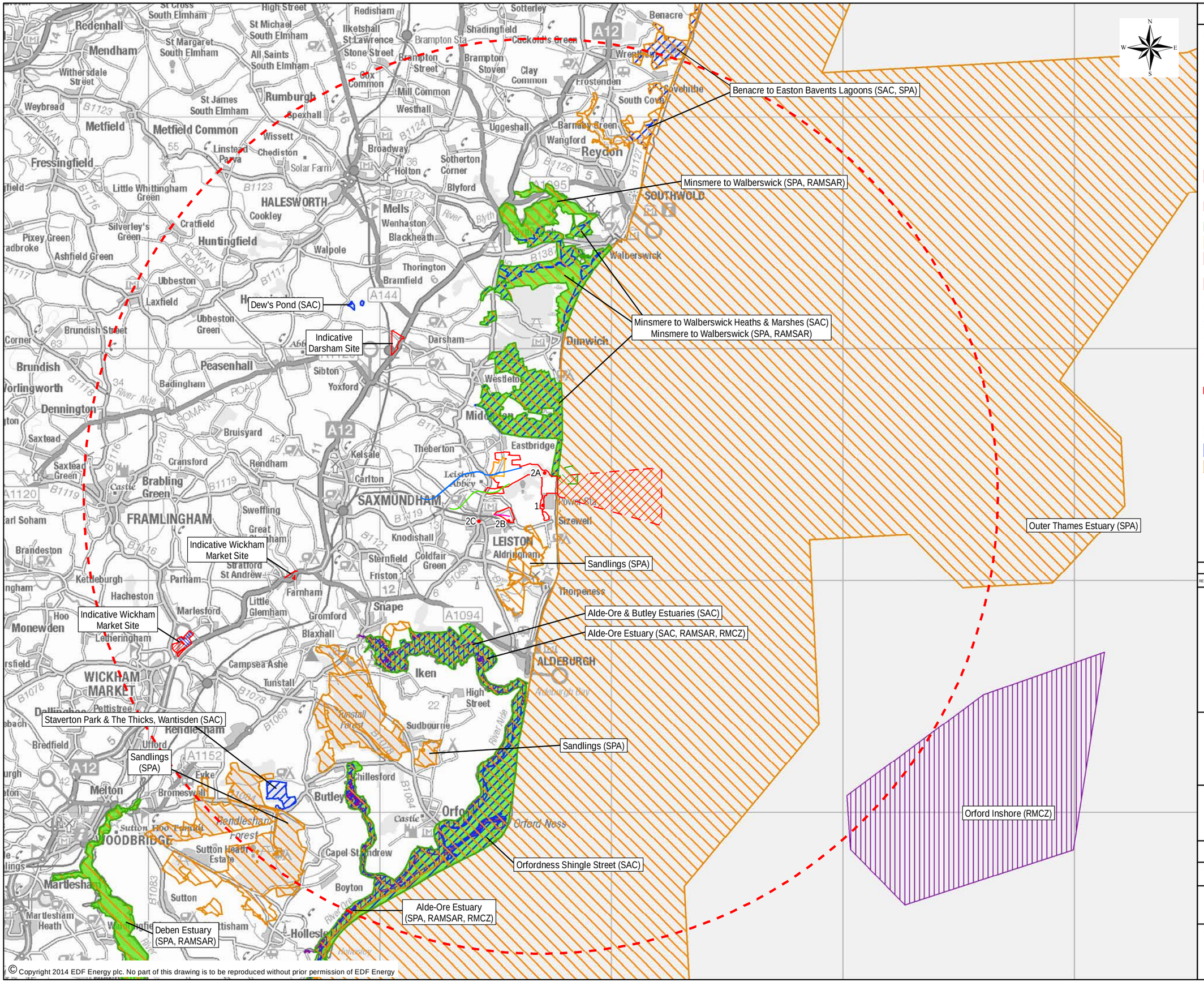

INTERNAL BUSINESS COLLABORATOR REFERENCE
NOT APPLICABLE FOR ALL FIGURES

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
- VISITOR CENTRE LOCATION OPTIONS
- STUDY AREA (20KM) - SITE CENTRED

CONSTRAINTS

- RECOMMENDED MARINE CONSERVATION ZONE (RMCZ)
- SPECIAL AREA OF CONSERVATION
- SPECIAL PROTECTION AREA
- RAMSAR SITE

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION/COMMENTS	APPROVED

EDF ENERGY
SIZEWELL C

DOCUMENT:

SIZEWELL C PROJECT
HRA EVIDENCE PLAN

DRAWING TITLE:

EUROPEAN & INTERNATIONALLY DESIGNATED ECOLOGICAL SITES WITHIN 20KM RADIUS OF SIZEWELL C

DRAWING NO:	REVISION:
FIGURE 3	0

DATE:	DRAWN:	SCALE:
OCT 2014	J.W.	1:150,000@A3

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DRAWING SECURITY CLASSIFICATION:

☐ PROTECTIVE MARKING REQUIRED
☒ NOT PROTECTIVELY MARKED

APPENDIX 2 SITE SELECTION AND IMPACT PATHWAY TABLES

Table A2.1a – NPS HRA Summary for Sizewell C – Construction

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Alde-Ore and Butley Estuaries SAC 5km	There is a weak southerly net drift of coastal sediments. As such there is the potential for this weak net movement to provide a potential pathway through which discharges (including spillages from pollution events) could impact upon the estuaries, mudflats and salt marsh habitats within the SAC.	Potential localised nutrient loading and particulates deposition in respect of saltmarsh and coastal shingle vegetation.	Potential interruption to and alteration of coastal sediment transport along the coast. The qualifying features for this SAC are dependent on the protection conferred by Orfordness. Any breach of this shingle bank could lead to habitat loss / modification within the SAC.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.
Alde-Ore Estuary SPA / Ramsar 5km	Weak southerly drift of coastal sediment may provide a pathway by which discharges and pollution incidents could impact upon supporting habitats. The designated bird species are potentially vulnerable to the effects of bioaccumulation.	Potential localised nutrient loading and particulates deposition in respect of saltmarsh and coastal shingle vegetation.	Potential interruption to and alteration of coastal sediment transport along the coast. The supporting habitats of the SPA are dependent on the protection conferred by Orfordness. Any breach of this shingle bank could lead to habitat loss / modification within the SPA.	Disturbance to designated bird populations due to visual, noise and lighting effects.
Benacre to Easton Bavents Lagoons SAC 15.5km	Given the distance of the SAC from the nominated site (15.5km) as well as the direction (the SAC is located north along the coastline from the nominated site and studies show that there is a net movement of sediments in a north – south direction) it is considered that there are no potential 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site.			
Benacre to Easton Bavents Lagoons SPA 15km	Given the distance and direction of the SPA from the nominated site (15km to the north) it is considered that there are no potential 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site.			

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Dew's Ponds SAC 9km	There are no identified 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site. The nominated site is 9km away from the SAC (beyond the dispersal distance for Great Crested Newts) and falls within a different water catchment and as such there is no hydrological connectivity between the two areas which could potentially result in any impacts on water quality within the SAC. *Note that the above assessment relates to the Main Site only and not to any proposed Associated Development*			
Minsmere to Walberswick Heaths and Marshes SAC Adjacent	Localised effects on water quality and drainage from earthworks / excavations and infrastructure provision (sedimentation, pollution incidents through water courses and cycles) which could affect the composition of annual vegetation associated with drift lines.	Localised nutrient loading on heathland communities and smothering of coastal shingle by particulates.	Tidal regime and natural erosional forces are critical to maintenance of SAC features. Any coastal defence or marine landing structures which impede sediment flows along the coastline could change erosion / depositional patterns affecting SAC features. Loss of 'buffer' area adjacent to the SAC and potential shading of adjacent plant communities within SAC from construction of reactor buildings.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Minsmere to Walberswick SPA / Ramsar Adjacent	Localised effects on water quality and drainage from earthworks / excavations and infrastructure provision (sedimentation, pollution incidents through water courses and cycles) which could potentially lead to bioaccumulation in the food chain changing the palatability and abundance of prey species.	Localised nutrient loading on heathland communities and smothering of coastal shingle by particulates.	Changes to the vegetation structure and species composition within the vegetated shingle communities as a result of nutrient loading, smothering etc., impacting upon, for example, the colony of nesting Little Terns. Other impacts could include loss of buffer habitats which may occasionally be used for feeding and roosting by qualifying interest features such as marsh harriers, Nightjar and Woodlark.	Disturbance to designated populations due to visual, noise and lighting effects
Orfordness to Shingle Street SAC 8km	Weak southerly drift of coastal sediment may provide a pathway by which discharges and pollution incidents could impact upon designated habitats. Shingle may be prone to nutrient enrichment. Overtopping of and percolation through the shingle ridge could act as a pathway for pollutants to enter coastal lagoon system.	Localised nutrient loading on coastal shingle communities.	Potential interruption to and alteration of coastal sediment transport along the coast could affect the morphological development of the change the Orfordness spit complex and the habitats that it supports.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Outer Thames Estuary SPA Within and adjacent	Potential effects on water quality and drainage from earthworks / excavations and infrastructure provision (for example, increased run-off and sedimentation, pollution incidents through water courses and cycles). There may be a requirement for cooling water culverts and a marine landing facility extending into the coastal zone. Potential works associated with construction of structures in the marine environment, for example, dredging, tunnelling or burying, could impact on water quality. Red-throated divers may be sensitive to toxic contamination and can also be directly affected through the accidental release of pollutants (e.g. oils).	Localised nutrient loading and release of particulates may affect species composition and abundance of prey items of red-throated divers.	Construction of cooling water culverts, marine landing facility and infrastructure, upgraded coastal protection and any dredging works may result in loss of and damage to supporting habitat (shallow coastal waters and areas in the vicinity of sub-tidal sandbanks). These habitats are likely to play a functional role in supporting the prey species of red-throated diver.	Any significant increase in noise, lighting and visual intrusion during the construction period may result in the generation of disturbance effects on red-throated diver. This species is known to be particularly sensitive to disturbance and could be displaced from coastal foraging grounds during marine-based works.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Sandlings SPA 0.7km	Potential effects on water quality and drainage from earthworks / excavations, infrastructure provision (sedimentation, pollution incidents) could impact upon key supporting habitats (heathland and coniferous woodland) for Nightjar and Woodlark.	Potential local impacts from increased development/ traffic growth. Heathland which supports Nightjar and Woodlark is vulnerable to nitrogen deposition as it can lead to increased competition from plants with a high demand for nitrogen, such as coarse grasses.	Direct impacts on designated habitats as a result of infrastructure improvements. Loss or fragmentation of habitats outside of the nominated site that may be utilised by the designated populations.	Disturbance to designated populations due to visual, noise and lighting effects
Staverton Park and the Thicks SAC 15.5km	Given the high level of regulatory control regarding emissions, it is considered that the SAC is sufficiently far enough away (15.5km to the south west of the nominated site) for any of the predicted localised air quality impacts arising as a result of the construction of the proposed nuclear development to have dispersed sufficiently to not result in a significant effect on the integrity of the site.			

Table A2.1b – NPS HRA Summary for Sizewell C - Operation

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Alde-Ore and Butley Estuaries SAC 5km	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. The weak north-south long-shore drift movement has the potential to transfer radioactive and non-radioactive discharges / spillages which could potentially accumulate within the fine sediments found within the mouth of the estuary.	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide). These changes in air quality may impact upon saltmarsh plant communities, from nutrient loading in particular. It was noted that effects were considered unlikely due to distance of site from Sizewell.	Construction of cooling water infrastructure, extension of site into 'buffer' habitats, possible development at the coastal fringes. A reduction in the volume of sediment reaching Orfordness could lead to erosion of the shingle feature and subsequent loss / modification of qualifying habitats it protects within this SAC.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Alde-Ore Estuary SPA / Ramsar 5km	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. The weak north-south long-shore drift movement has the potential to transfer radioactive and non-radioactive discharges / spillages. As such there is the potential for this movement to provide a pathway between the Main Site and supporting habitats within the SPA. The designated bird species may be vulnerable to the bioaccumulation of toxins through the food chain.	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide). These changes in air quality may impact upon saltmarsh plant communities, from nutrient loading in particular. It was noted that effects were considered unlikely due to distance of site from Sizewell.	Construction of cooling water infrastructure, extension of site into 'buffer' habitats, possible development at the coastal fringes. A reduction in the volume of sediment reaching Orfordness could lead to erosion of the shingle feature and subsequent loss / modification of qualifying habitats it protects within this SAC.	No operational impact pathways considered in the NPS HRA.
Benacre to Easton Bavents Lagoons SAC 15.5km	Given the distance of the SAC from the nominated site (15.5km) as well as the direction (the SAC is located north along the coastline from the nominated site and studies show that there is a net movement of sediments in a north – south direction) it is considered that there are no potential 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site.			

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Benacre to Easton Bavents Lagoons SPA 15km	Given the distance and direction of the SPA from the nominated site (15km to the north) it is considered that there are no potential 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site.			
Dew's Ponds SAC 9km	There are no identified 'cause-effect' pathways between the identified impacts arising from the proposed development and the known environmental conditions (and vulnerabilities) at this site which could lead to an impact on the integrity of the site. The nominated site is 9km away from the SAC (beyond the dispersal distance for Great Crested Newts) and falls within a different water catchment and as such there is no hydrological connectivity between the two areas which could potentially result in any impacts on water quality within the SAC. *Note that the above assessment relates to the Main Site only and not to any permanent Associated Development*			
Minsmere to Walberswick Heaths and Marshes SAC Adjacent	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. Changes to water quality and of water temperature may impact species composition / encourage excessive algal growth. The latter could result in smothering of the vegetated shingle plant communities.	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide). Potential impacts from planned and accidental radioactive emissions. These changes in air quality may impact upon heathland and coastal shingle plant communities.	The NPS HRA refers to changes in the footprint of site through operation, for example to accommodate waste storage, develop infrastructure may lead to the loss of supporting or buffer habitats. Potential for fragmentation of habitat through further loss of buffer habitats (land between designated areas) that will be accommodated by the proposed site, access road and off-site facilities. Further changes to coastal habitats could result from long term sea defence structures.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Minsmere to Walberswick SPA / Ramsar Adjacent	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. Changes to water quality and of water temperature may impact species composition / encourage excessive algal growth. Waterfowl are subject to accumulation of toxins through the food chain, and vulnerable to changes in palatability and abundance of prey caused by toxic contamination.	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide, particulates). These changes in air quality may impact upon heathland habitats that support SPA designated populations.	Maintenance of permanent infrastructure such as roads, compound sites and waste storage facilities may result in fragmentation of habitats and reduce / alter available corridors for the movement of species across habitats and resources. Particular issues include the loss of sightlines between feeding and roosting sites for bird species as noted in conservation objectives for all SPA interest features. Other impacts could include loss of buffer habitats which may occasionally be used for feeding and roosting by qualifying interest features such as marsh harriers, Nightjar and Woodlark.	Not considered relevant to the operation phase of Sizewell C in the NPS HRA.
Orfordness to Shingle Street SAC 8km	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. The weak north-south long-shore drift movement has the potential to transfer radioactive and non-radioactive discharges /	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide). These changes in air quality may impact upon shingle plant communities.	Presence of cooling water infrastructure, extension of site into 'buffer' habitats, possible development at the coastal fringes. A reduction in the volume of sediment reaching Orfordness could lead to erosion of the shingle feature and lagoons supported by it.	Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
	spillages which could potentially accumulate within the fine sediments found within the mouth of the estuary.			
Outer Thames Estuary SPA Within and adjacent	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. Non-toxic water contamination (for example, changes to temperature and nutrient loading) can impact upon composition of prey specie. Red-throated divers may be sensitive to toxic contamination and can also be directly affected through the accidental release of pollutants (e.g. oils).	Localised nutrient loading and release of particulates may affect species composition and abundance of prey items of red-throated divers.	The presence of the cooling water discharge into the North Sea could lead to loss / damage to benthic habitats as a result of scour at the outfall. Benthic habitats are likely to play a functional role in supporting the prey species of red-throated diver.	Increased workforce on site could lead to increased human pressure and disturbance (for example through increased recreational activity), as well as any routine maintenance required on coastal defences / infrastructure. There may also be additional shipping movements within the SPA and any lighting used on the power station buildings could result in some light spill onto adjacent coastal waters. The main impacts of noise, visual and light disturbance on the SPA would most likely be disturbance of red-throated divers if they use habitats in close proximity to the Main Site. The species is known to have a high sensitivity to non-physical disturbance during the winter, which can result in displacement from feeding grounds.

Site Name and Distance from Main Site	Water Quality Effects	Air Quality Effects	Habitat Loss and Fragmentation	Noise / Light / Visual Disturbance
Sandlings SPA 0.7km	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling. Changes to supporting habitats for Woodlark and Nightjar as a result of abstraction or accidental pollution could result in areas of habitat (both within and outside the SPA) becoming unsuitable.	Potential local impacts from increased development / traffic growth (nitrogen oxides, sulphur dioxide, particulates). These changes in air quality may impact upon heathland habitats that support SPA designated populations.	The maintenance of permanent infrastructure such as roads, compound sites and waste storage facilities may result in fragmentation of habitats and reduce/alter available corridors for the movement of species across habitats and resources. Loss of buffer habitats which may occasionally be used for feeding and roosting by qualifying interest features such as Nightjar and Woodlark.	No operational impact pathways considered in the NPS HRA.
Staverton Park and the Thicks SAC 15.5km	Given the high level of regulatory control regarding emissions, it is considered that the SAC is sufficiently far enough away (15.5km to the south west of the nominated site) for any of the predicted localised air quality impacts arising as a result of the construction, operation and decommissioning of the proposed nuclear development to have dispersed sufficiently to not result in a significant effect on the integrity of the site			

Table A2.2 – Description of European sites and qualifying features considered for screening in relation to the proposed Sizewell C new nuclear development and indication of the influence of project-related effects (2012 Sizewell C HRA Working Group Findings)

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
Alde-Ore and Butley Estuaries SAC	This estuary, made up of three rivers, is the only bar-built estuary in the UK with a shingle bar. This bar has been extending rapidly along the coast since 1530, pushing the mouth of the estuary progressively south-westwards. The eastwards-running Alde River originally entered the sea at Aldeburgh, but now turns south along the inner side of the Orfordness shingle spit. It is relatively wide and shallow, with extensive intertidal mudflats on both sides of the channel in its upper reaches and saltmarsh accreting along its fringes. The Alde subsequently becomes the south-west flowing River Ore, which is narrower and deeper with stronger currents. The smaller Butley River, which has extensive areas of saltmarsh and a reedbed community bordering intertidal mudflats, flows into the Ore shortly after the latter divides around Havergate Island. The mouth of the River Ore is still moving south as the Orfordness shingle spit continues to grow through longshore drift from the north. There is a range of littoral sediment and rock biotopes (the latter on sea defences) that are of high diversity and species richness for estuaries in eastern England. Water quality is excellent throughout. The area is relatively natural, being largely undeveloped by man and with very limited industrial activity. The estuary contains large areas of shallow water over subtidal sediments, and extensive mudflats and saltmarshes exposed at low water. Its diverse and species-rich intertidal sand and mudflat biotopes grade naturally along many lengths of the shore into vegetated or dynamic shingle habitat, saltmarsh, grassland and reedbed. Annex I habitats that are a primary reason for selection of this site: **1130** – Estuaries Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: **1140** Mudflats and sandflats not covered by seawater at low tide **1330** Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	***Construction*** Construction phase interruption to / alteration of coastal processes and sediment transport process as a result of the influence of temporary marine infrastructure Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment Discharges to the marine environment, including potential pollution incidents. Localised changes in air quality and influence on saltmarsh vegetation through increase in nutrient loading. ***Operation*** Permanent / long-term interruption to / alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure Change in nearshore and estuarine water quality as a result of thermal and chemical properties of the cooling water discharge Localised changes in air quality and influence on saltmarsh vegetation through increase in nutrient loading. Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
		therefore these features are not vulnerable to non-physical disturbance.
Alde-Ore Estuary SPA	The Alde-Ore Estuary is located on the Suffolk coast in eastern England. It comprises the estuarine complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness. There is a variety of habitats including intertidal mud-flats, saltmarsh, vegetated shingle (including the second largest and best-preserved area in Britain at Orfordness), saline lagoons and semi-intensified grazing marsh. The Orfordness / Shingle Street land form is geomorphologically unique within the UK in combining a shingle spit with a cuspate foreland. The diversity of wetland habitat types present is of particular significance to the birds occurring on the site as these provide a range of opportunities for feeding, roosting and nesting within the site complex. At different times of the year, the site supports notable assemblages of wetland birds including seabirds, wildfowl and waders. As well as being an important wintering area for waterbirds, the Alde-Ore Estuary provides important breeding habitat for several species of seabird, wader and raptor. During the breeding season, gulls and terns feed substantially outside the SPA. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season; **Avocet** *Recurvirostra avosetta*, 104 pairs representing at least 17.6% of the breeding population in Great Britain (5 year mean, 1990-1994) **Little Tern** *Sterna albifrons*, 48 pairs representing at least 2.0% of the breeding population in Great Britain (5 count mean, 1993-4,1996-8) **Marsh Harrier** *Circus aeruginosus*, 3 pairs representing at least 1.9% of the breeding population in Great Britain (5 year mean,	***Construction*** Disturbance as a result of construction activities and effects (visual, noise and lighting) to little tern, sandwich tern and lesser black-backed gull (and their prey species) that may be foraging in coastal waters in the vicinity of the Main Site works Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment. Discharges to the marine environment, including potential pollution incidents. Localised changes in air quality and influence on saltmarsh vegetation through increase in nutrient loading. Potential increase in disturbance effects as a result of increase in pressure from recreational activities (construction workers and potential displacement of tourists/workers due to the works) ***Operation*** The impact of any potential reduction / change in prey availability (little tern, sandwich tern and lesser black-backed gull) that may occur as a result of increased fish mortality due to impingement and entrainment losses associated with the cooling water infrastructure

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	1993-1997) **Sandwich Tern** *Sterna sandvicensis*, 169 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean 1991-1995) Over winter; **Avocet** *Recurvirostra avosetta*, 766 individuals representing at least 60.3% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6) This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: During the breeding season; **Lesser black-backed gull** *Larus fuscus*, 21,700 pairs representing at least 17.5% of the breeding Western Europe/Mediterranean/Western Africa population (Count as at 1998) Over winter; **Redshank** *Tringa totanus*, 1,919 individuals representing at least 1.3% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6). Assemblage qualification: A seabird assemblage of international importance The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 seabirds. During the breeding season, the area regularly supports 59,118 individual seabirds (Count period ongoing) including: Herring Gull *Larus argentatus*, Black-headed Gull *Larus ridibundus*, Lesser Black-backed Gull *Larus fuscus*, Little Tern *Sterna albifrons* and Sandwich Tern *Sterna sandvicensis*.	Impacts on water quality (including thermal properties) and any consequential ecological effects resulting from discharges to the marine environment from the Sizewell C site and treated sewage effluent. Localised changes in air quality and influence on saltmarsh vegetation through increase in nutrient loading.

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	Assemblage qualification: A wetland of international importance. The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 24,962 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Black-tailed Godwit *Limosa limosa islandica*, Dunlin *Calidris alpina alpina*, Lapwing *Vanellus vanellus*, Shoveler *Anas clypeata*, Teal *Anas crecca*, Wigeon *Anas penelope*, Shelduck *Tadorna tadorna*, White-fronted Goose *Anser albifrons albifrons*, Redshank *Tringa totanus* and Avocet *Recurvirostra avosetta*.	
Alde-Ore Estuary Ramsar	The site comprises the estuary complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness. There are a variety of habitats including, intertidal mudflats, saltmarsh, vegetated shingle (including the second-largest and best-preserved area in Britain at Orfordness), saline lagoons and grazing marsh. The Orfordness/Shingle Street landform is unique within Britain in combining a shingle spit with a cuspate foreland. The site supports nationally-scarce plants, British Red Data Book invertebrates, and notable assemblages of breeding and wintering wetland birds. **Ramsar criterion 2** The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates. **Ramsar criterion 3** The site supports a notable assemblage of breeding and wintering wetland birds. **Ramsar criterion 6** Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation):	***Construction and Operation*** As for the Alde-Ore and Butley Estuaries SAC and the Alde-Ore SPA

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	Species regularly supported during the breeding season: **Lesser Black-backed Gull**, *Larus fuscus graellsii*,: W Europe/Mediterranean/W Africa 5790 apparently occupied nests, representing an average of 3.9% of the breeding population (Seabird 2000 Census) Species with peak counts in winter: **Avocet**, *Recurvirostra avosetta*, Europe/Northwest Africa 1187 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3) **Common Redshank**, *Tringa totanus totanus*, 2368 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3	
Benacre to Easton Bavents Lagoons SAC	Benacre to Easton Bavents Lagoons is 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. Sea water enters the lagoons by percolation through the barriers, or by overtopping them during storms and high spring tides. The lagoons show a wide range of salinities, from nearly fully saline in South Pool, the Denes, to extremely low salinity at Easton Broad. This range of salinity has resulted in a series of lagoonal vegetation types, including beds of narrow-leaved Eelgrass *Zostera angustifolia* in fully saline or hypersaline conditions, beds of spiral tasselweed *Ruppia cirrhosa* in brackish water, and dense beds of common reed *Phragmites australis* in freshwater. The site supports a number of specialist lagoonal species. Annex I habitats that are a primary reason for selection of this site: **1150** Coastal lagoons * Priority feature	***Construction*** Construction phase interruption to / alteration of coastal processes and sediment transport process as a result of the influence of temporary marine infrastructure Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment Discharges to the marine environment, including potential pollution incidents. ***Operation*** Construction phase interruption to / alteration of coastal processes and sediment transport process as a result of the

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
		influence of temporary marine infrastructure Discharges to the marine environment, including potential pollution incidents. Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance. **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis.**
Benacre to Easton Bavents Lagoons SPA	Benacre to Easton Bavents is located on the North Sea coast of East Suffolk, between the coastal towns of Kessingland (to the north) and Southwold (to the south). The coast here is low-lying and consists of shingle beach in the northern part and low cliffs around Easton Bavents and Covehithe. Benacre Broad is a natural brackish lagoon separated from the sea by a shingle bar, reed-fringed on the landward side and then grading into deciduous woodland on the rising ground behind. The smaller Covehithe and Easton Broads have developed similarly, with fringing reedbeds. Elsewhere, grazing marsh fields include unimproved meadows, which are separated by ditches rich in water plants and invertebrates. The area supports important populations of breeding birds, which are particularly associated with reedbed and shingle beach habitats. The reedbeds also support important numbers of bittern *Botaurus stellaris* in winter. Little terns *Sterna albifrons* feed substantially outside the SPA in adjacent marine waters. This site qualifies under **Article 4.1** of the Directive (79 / 409 / EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season; **Bittern** *Botaurus stellaris*, 1 individuals representing at least 5.0%	***Construction*** Construction phase interruption to / alteration of coastal processes and sediment transport process as a result of the influence of temporary marine infrastructure Potential disturbance to foraging little terns in coastal waters adjacent to the SPA due to an increase in vessel traffic transporting materials to Sizewell Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment Discharges to the marine environment, including potential pollution incidents. Potential increase in disturbance effects as a result of increase in pressure from recreational activities ***Operation***

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	of the breeding population in Great Britain (Count as at 1998) **Little Tern** *Sterna albifrons*, 53 pairs representing at least 2.2% of the breeding population in Great Britain (Count as at 1997) **Marsh Harrier** *Circus aeruginosus*, 6 pairs representing at least 3.8% of the breeding population in Great Britain (5 year mean 1993-1997) Over winter; **Bittern** *Botaurus stellaris*, 2 individuals representing at least 2.0% of the wintering population in Great Britain (Count, as at 1998.	Interruption to/alteration of coastal processes and sediment transport process as a result of the influence of temporary marine infrastructure The impact of any potential reduction in prey availability (little tern only) that may occur as a result of increased fish mortality due to impingement and entrainment losses associated with the cooling water infrastructure Impacts on water quality (thermal properties) and any consequential ecological effects resulting from discharges to the marine environment from the Sizewell C site and treated sewage effluent. **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis.**
Deben Estuary SPA	The Deben Estuary is located on the coast of Suffolk in eastern England. It extends south-eastwards for over 12 km from the town of Woodbridge to the sea just north of Felixstowe. It is relatively narrow and sheltered, and has limited amounts of freshwater input. The estuary mouth is the narrowest section and is protected by the presence of shifting sandbanks. The intertidal areas are constrained by sea walls. The saltmarsh and intertidal mud-flats that occupy the majority of the site, however, display the most complete range of saltmarsh community types in Suffolk. The estuary holds a range of swamp communities that fringe the estuary, and occasionally form larger stands. In general, these are dominated by Common Reed *Phragmites australis*. The estuary is of importance for its wintering waterbirds, especially Avocet *Recurvirostra avosetta*. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following	***Construction*** *(Associated Development sites only)* The distance of potential Associated Development sites from the Deben Estuary indicates that disturbance effects on waterbirds during the construction and operation of the facilities (both during the construction phase of Sizewell C) would be unlikely to occur. Discharge of run-off from areas of hard-standing may affect local water quality within the catchment of the Deben Estuary. **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis on account of proximity to potential associated development.**

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	species listed on Annex I of the Directive: Over winter; **Avocet** *Recurvirostra avosetta*, 95 individuals representing at least 7.5% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6 **Dark-bellied brent goose**, *Branta bernicla bernicla*	
Deben Estuary Ramsar	The Deben Estuary is a relatively narrow and sheltered estuary with limited amounts of freshwater input. The site supports nationally and internationally important flora and fauna under the following criteria. **Ramsar criterion 2** Supports a population of the mollusc *Vertigo angustior* (Habitats Directive Annex II (S1014); British Red Data Book Endangered). **Ramsar criterion 6** Species/populations occurring at levels of international importance. Qualifying Species / populations (as identified at designation): **Dark-bellied brent goose**, *Branta bernicla bernicla*, 1953 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3).	***Construction*** *(Associated Development sites only)* As for the Deben Estuary SPA **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis on account of proximity to potential associated development.**

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
Dew's Ponds SAC	This site in rural East Suffolk comprises a series of 12 ponds set in an area of formerly predominantly arable land. The ponds range from old field ponds created for agricultural purposes to some constructed in recent years specifically for wildlife. Some of the land has been converted from arable to grassland, with a variety of grassland types present; other habitats include hedges and ditches. Great crested newts *Triturus cristatus* have been found in all ponds on site, though the presence of fish seems to have affected newt numbers in recent years in two ponds. Annex II species that are a primary reason for selection of this site: **1166** Great crested newt *Triturus cristatus*	***Construction and Operation*** Project related impacts on this SAC are unlikely as no direct / indirect hydrological linkage / impact pathway via effects linked with the Sizewell C development site or possible associated development sites. **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis on account of proximity to potential associated development.**
Minsmere to Walberswick Heaths and Marshes SAC	This site is one of two representatives of Annual vegetation of drift lines on the east coast of England. It occurs on a well-developed beach strandline of mixed sand and shingle and is the best and most extensive example of this restricted geographical type. Species include those typical of sandy shores, such as sea sandwort *Honckenya peploides* and shingle plants such as sea beet *Beta vulgaris* ssp. maritima. Lowland European dry heaths occupy an extensive area of this site on the east coast of England, which is at the extreme easterly range of heath development in the UK. The heathland is predominantly NVC type H8 *Calluna vulgaris – Ulex gallii* heath, usually more characteristic of western parts of the UK. This type is dominated by heather *Calluna vulgaris*, western gorse *Ulex gallii* and bell heather *Erica cinerea*. Annex I habitats that are a primary reason for selection of this site: **1210** Annual vegetation of drift lines **4030** European dry heaths Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	***Construction*** Interruption to / alteration of coastal processes and sediment transport process as a result of the influence of temporary marine infrastructure Impacts from the Main Site works on hydrology/groundwater levels and any implications that this may have on habitats and species Impacts on water quality and any consequential ecological effects resulting from discharges to the marine environment from Main Site construction areas and treated sewage effluent Localised changes in air quality resulting from Main Site construction equipment/activities and implications of any such changes on sensitive biota Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	1220 Perennial vegetation of stony banks	therefore these features are not vulnerable to non-physical disturbance. ***Operation*** Permanent / long-term interruption to / alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure and hydraulic effect of the cooling water discharge Ecological effects of change in nearshore and estuarine water quality as a result of thermal and chemical properties of the cooling water discharge Permanent / long term impacts on hydrology / groundwater levels and any implications that this may have on habitats and species Impacts on water quality and any consequential ecological effects resulting from discharges (surface-water run-off and treated sewage effluent) to the marine environment from the Sizewell C site Localised changes in air quality resulting from operational activities and the implications of any such changes on sensitive biota
Minsmere to Walberswick SPA	Minsmere – Walberswick is located on the Suffolk coast south of Southwold in eastern England. It comprises two large marshes, the tidal Blyth estuary and associated habitats. This composite coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mud-flats, lagoons, shingle, woodland and areas of lowland heath. It supports the largest continuous stand of common reed *Phragmites australis* in England and Wales and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh	***Construction*** Interruption to / alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure and any impact that this may have on the habitat and prey species of designated bird populations

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	water. There are nationally important numbers of breeding and wintering birds. In particular, the reedbeds are of major importance for breeding bittern *Botaurus stellaris* and marsh harrier *Circus aeruginosus*. A range of breeding waders (for example, avocets *Recurvirostra avosetta*) and heathland birds occur in other areas of the SPA. The shingle beaches support important numbers of breeding little tern *Sterna albifrons*, which feed substantially outside the SPA in adjacent marine waters. The site is also important for wintering bittern and raptors. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season; **Avocet** *Recurvirostra avosetta*, 91 pairs representing at least 15.4% of the breeding population in Great Britain (RSBP 1996) **Bittern** *Botaurus stellaris*, 7 individuals representing at least 35.0% of the breeding population in Great Britain (5 year mean, 1993-1997) **Little Tern** *Sterna albifrons*, 28 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean, 1992-1996) **Marsh Harrier** *Circus aeruginosus*, 16 pairs representing at least 10.0% of the breeding population in Great Britain (5 year mean, 1993-1997) **Nightjar** *Caprimulgus europaeus*, 24 pairs representing at least 0.7% of the breeding population in Great Britain (Count, as at 1990) **Shovelor** *Anas clypeata* **Teal** *Anas crecca* **Woodlark** *Lullula arborea*, 20 pairs representing at least 1.3% of the breeding population in Great Britain (RSPB, 5 year mean 95-99) Over winter; **Avocet** *Recurvirostra avosetta*, 278 individuals representing at	Impacts on water quality and any consequential ecological effects resulting from discharges to the marine and terrestrial environments from Main Site construction areas and treated sewage effluent Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment Impacts from the Main Site works on hydrology / groundwater levels and any implications that this may have on supporting habitats Localised changes in air quality resulting from Main Site construction equipment/activities and the implications of any such changes on sensitive biota Habitat loss and fragmentation within the Main Site and any implications of this on the use of areas (e.g. foraging) outside of the designated SPA boundary of the SPA. Would affect all species except avocet (which utilises coastal lagoons and shallow estuarine waters) and little tern (shingle and shallow coastal waters) Disturbance to designated bird populations (and prey species) as a result of Main Site construction activities, including presence of personnel, traffic, noise and movement of shipping to and from marine off-loading facility Potential increase in disturbance effects as a result of increase in pressure from recreational activities ***Operation*** Permanent / long-term interruption to / alteration of coastal

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	least 21.9% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6) **Bittern** *Botaurus stellaris*, 14 individuals representing at least 14.0% of the wintering population in Great Britain (Count as at 1998) **Gadwall** *Anas strepera* **Hen Harrier** *Circus cyaneus*, 15 individuals representing at least 2.0% of the wintering population in Great Britain (5 year peak mean, 1985/6-1989/90) **Shovelor** *Anas clypeata* **White Fronted Goose** *Anser albifrons albifrons*	processes and sediment transport process as a result of the influence of permanent marine infrastructure and any impact that this may have on the habitat and prey species of designated bird populations The impact of any potential reduction in prey availability that may occur as a result of increased fish mortality due to impingement and entrainment losses associated with the cooling water infrastructure. Affects little tern only. Impacts on water quality and any consequential ecological effects resulting from discharges to the marine environment from the Sizewell C site and treated sewage effluent Localised changes in air quality resulting from operational activities and the implications of any such changes on sensitive biota Habitat loss and fragmentation within the Main Site and any implications of this on the use of areas (e.g. foraging) outside of the designated SPA boundary of the SPA. Would affect all species except avocet (which utilises coastal lagoons and shallow estuarine waters) and little tern (shingle and shallow coastal waters) Potential increase in disturbance effects as a result of increase in pressure from recreational activities (during the period of combined operation of Sizewell B and Sizewell C)
Minsmere to Walberswick Ramsar	This composite, Suffolk coastal site contains a complex mosaic of habitats, notably, areas of marsh with dykes, extensive reedbeds, mudflats, lagoons, shingle and driftline, woodland and areas of lowland heath. The site supports the largest continuous stand of reed in England and Wales and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water. The combination of habitats create an exceptional area of scientific interest supporting nationally scarce plants, British Red Data Book invertebrates and nationally important numbers of	***Construction and Operation*** As for Minsmere to Walberswick SAC and SPA. In addition, during operation, the potential for long term impacts on hydrology/groundwater levels and any implications that this may have on wetland vegetation and invertebrates

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	breeding and wintering birds. **Ramsar criterion 1** The site contains a mosaic of marine, freshwater, marshland and associated habitats complete with transition areas in between. Contains the largest continuous stand of reedbed in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water. **Ramsar criterion 2** This site supports nine nationally scarce plants and at least 26 red data book invertebrates. Supports a population of the mollusc narrow-mouthed whorl snail *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered), recently discovered on the Blyth estuary river walls. An important assemblage of rare breeding birds associated with marshland and reedbeds including: Bittern *Botaurus stellaris*, gadwall *Anas strepera*, teal *Anas crecca*, shoveler *Anas clypeata*, marsh harrier *Circus aeruginosus*, avocet *Recurvirostra avosetta* and bearded tit *Panurus biarmicus*	
Orfordness to Shingle Street SAC	Orfordness is an extensive shingle structure on the east coast of England and consists of a foreland, a 15 km-long spit and a series of recurves running from north to south on the Suffolk coast. This spit has been selected as it supports some of the largest and most natural sequences in the UK of shingle vegetation affected by salt spray. The southern end of the spit has a particularly fine series of undisturbed ridges, with zonation of communities determined by the ridge pattern. Pioneer communities with sea pea *Lathyrus japonicus* and false oat-grass *Arrhenatherum elatius* grassland occur. Locally these are nutrient-enriched by the presence of a gull colony, elsewhere they support rich lichen communities. Orfordness is one of two sites representing annual vegetation of drift lines on the east coast of England. In contrast to Minsmere to Walberswick Heaths and Marshes, drift-line vegetation occurs on the sheltered, western side of the spit, at the transition from shingle to saltmarsh, as well as on the exposed eastern coast.	***Construction*** Construction phase interruption to / alteration of coastal processes and sediment transport as a result of the influence of temporary marine infrastructure (i.e. material quantity and sediment type/range) Impacts on water quality and any consequential ecological effects resulting from discharges to the marine environment from Main Site construction areas and treated sewage effluent Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	The driftline community is widespread on the site and comprises sea beet *Beta vulgaris* ssp. *maritima* and orache *Atriplex* spp. in a strip 2-5 m wide. A series of percolation lagoons have developed in the shingle bank adjacent to the shore at the mouth of the Ore estuary. The salinity of the lagoons is maintained by percolation through the shingle, although at high tides sea water can overtop the shingle bank. The fauna of these lagoons includes typical lagoon species, such as the cockle *Cerastoderma glaucum*, the ostracod *Cyprideis torosa* and the gastropods *Littorina saxatilis tenebrosa* and *Hydrobia ventrosa*. The nationally rare starlet sea anemone *Nematostella vectensis* is also found at the site. Annex I habitats primary reason for selection: **1150** Coastal lagoons * Priority feature **1210** Annual vegetation of drift lines Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: **1220** Perennial vegetation of stony banks	Localised changes in air quality resulting from Main Site construction equipment / activities and the implications of any such changes on sensitive biota Disturbance effects are not considered relevant, as the SAC is designated for its habitats rather than species and therefore these features are not vulnerable to non-physical disturbance. ***Operation*** Permanent / long-term interruption to / alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure Change in nearshore and estuarine water quality as a result of the thermal and chemical properties of the cooling water discharge Localised changes in air quality resulting from operational activities and the implications of any such changes on sensitive biota
Outer Thames Estuary SPA	The Outer Thames Estuary SPA consists of areas of shallow and deeper water, high tidal current streams and a range of mobile sediments. Large areas of mud, silt and gravelly sediments form the deeper water channels, the main ones of which form the approach route to the ports of London and as such are continually disturbed by shipping and maintenance dredging. Sand in the form of sandbanks separated by troughs predominates in the remaining areas and the crests of some of the banks are exposed at mean low water. In the northern part of the site the main sandbanks are (north to south) Middle Cross Sand, Scroby Sands, Helm Sand, Newcombe Sand, Aldeburgh Napes,	***Construction*** Disturbance to birds (and prey species) as a result of Main Site construction activities, including presence of personnel, traffic, noise and movement of shipping to and from marine off-loading facility Interruption to / alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure and any impact that this

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	Aldeburgh Ridge, North Ship Head and Bawdsey Bank; in the southern part of the site the main sandbanks are Red Sand, Kentish Flats, West and East Barrow, Sunk Sand, Shingles, Long Sand, Margate Sand and Kentish Knock. The seabed along the coast of Norfolk and Suffolk coast is of a similar composition to that in the main estuary with large shallow areas of mud, sand, silt and gravely sediments but, in the absence of main port areas within this area, there is less disturbance through shipping or dredging. The main sandbanks in this area are (from north to south) Dunwich Bank, Sizewell Bank, Aldeburgh Napes, Aldeburgh Ridge and Whiting Ridge. The seabed and waters of the site provide an important habitat in the non-breeding season for red-throated divers *Gavia stellata* which visit the area to feed on the fish populations. The site qualifies under **Article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of the following species listed in Annex I in any season: **Red-throated diver** *Gavia stellata*, 6,466 individuals representing 38% of the GB population (1989 – 2006/07). During the breeding season; **Little Tern** *Sterna albifrons* **Common Tern** *Sterna hirundo* Over winter; **Cormorant** *Phalacrocorax carbo*	may have on the habitat and prey species of designated bird populations Impacts on water quality and any consequential ecological effects resulting from discharges to the marine environment from Main Site construction areas and treated sewage effluent Impacts on water quality (suspended sediment concentrations) and any consequential ecological effects resulting from construction in the marine environment ***Operation*** Disturbance to birds as a result of operational activities, including presence of personnel, traffic, noise and movement of vessels Long-term interruption to/alteration of coastal processes and sediment transport process as a result of the influence of permanent marine infrastructure and any impact that this may have on the habitat and prey species of designated bird populations The impact of any potential reduction in prey availability that may occur as a result of increased fish mortality due to impingement and entrainment losses associated with the cooling water infrastructure Impacts on water quality (including thermal properties) and any consequential ecological effects resulting from discharges to the marine environment from the Sizewell C site and treated sewage effluent
Sandlings SPA	The Sandlings SPA lies near the Suffolk coast between the Deben Estuary and Leiston. In the 19th century, the area was dominated	***Construction***

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	by heathland developed on glacial sandy soils. During the 20th century, large areas of heath were planted with blocks of commercial conifer forest and others were converted to arable agriculture. Lack of traditional management has resulted in the remnant areas of heath which have survived successional changes and the consequent spread of bracken *Pteridium aquilinum*, shrubs and trees. The recent conservation management work, however, is resulting in their restoration. The heaths support both acid grassland and heather-dominated plant communities with dependent invertebrate and bird communities of conservation value. Woodlark *Lullula arborea* and Nightjar *Caprimulgus europaeus* have also adapted to breeding in the large blocks of conifer forest, using areas that have recently been felled and recent plantation, as well as areas managed as open ground. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season; **Nightjar** *Caprimulgus europaeus*, 109 pairs representing at least 3.2% of the breeding population in Great Britain (Count as at 1992) **Woodlark** *Lullula arborea*, 154 pairs representing at least 10.3% of the breeding population in Great Britain (Count as at 1997)	Impacts on water quality and any consequential ecological effects resulting from discharges to the marine and terrestrial environments from Main Site construction areas Localised changes in air quality resulting from Main Site construction equipment/activities and the implications of any such changes on the quality of supporting habitat (in particular heathland) Disturbance to birds as a result of construction activities associated with the Main Site and Associated Development sites, including presence of personnel, traffic and noise Potential increase in disturbance effects as a result of increase in pressure from recreational activities ***Operation*** Localised changes in air quality resulting from operational activities and implications of any such changes on sensitive biota Habitat loss and fragmentation within the Sizewell C Main Site that may act as supporting habitat for SPA designated populations Disturbance to birds as a result of operational activities, including presence of personnel, traffic and noise Potential increase in disturbance effects as a result of increase in pressure from recreational activities (during the period of combined operation of Sizewell B and Sizewell C)

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
Staverton Park and the Thicks SAC	This site is representative of old acidophilous oak woods in the eastern part of its range, and its ancient oaks Quercus spp. have rich invertebrate and epiphytic lichen assemblages. Despite being in the most 'continental' part of southern Britain, the epiphytic lichen flora of this site includes rare and Atlantic species, such as *Haemotomma elatinum*, *Lecidea cinnabarina*, *Thelotrema lepadinum*, *Graphis elegans* and *Stenocybe septata*. Part of the site includes an area of old holly *Ilex aquifolium* trees that are probably the largest in Britain. The site has a very well-documented history and good conservation of woodland structure and function. Annex I habitats that are a primary reason for selection of this site: **9190** Old acidophilous oak woods with *Quercus robur* on sandy plains	***Construction*** Specific influence from project effects considered unlikely although the potential for effects linked to changes in air quality during construction cannot be discounted ***Operation*** Specific influence from project effects considered unlikely, although the potential for effects linked to changes in air quality as a result of some operational activities cannot be discounted **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis.**
Stour and Orwell Estuaries SPA	The Stour and Orwell estuaries straddle the eastern part of the Essex/Suffolk border in eastern England. The estuaries include extensive mud-flats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. The mud-flats hold *Enteromorpha*, *Zostera* and *Salicornia* spp. The site also includes an area of low-lying grazing marsh at Shotley Marshes on the south side of the Orwell. In summer, the site supports important numbers of breeding Avocet *Recurvirostra avosetta*, while in winter they hold major concentrations of waterbirds, especially geese, ducks and waders. The geese also feed, and waders roost, in surrounding areas of agricultural land outside the SPA. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:	***Construction*** Potential disturbance to waterbirds on the Orwell Estuary due to increased vessel traffic operating from Ipswich ***Operation*** No identified effects **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis on account of proximity to potential associated development.**

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	Breeding: **Avocet** *Recurvirostra avosetta* Passage: **Redshank** *Tringa totanus* Over winter; **Hen Harrier** *Circus cyaneus*, 10 individuals representing at least 1.3% of the wintering population in Great Britain (Count as at 1996/7) This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: Over winter; **Black-tailed Godwit** *Limosa limosa islandica*, 2,475 individuals representing at least 3.5% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6) **Dark bellied Brent goose** *Branta bernicla bernicla* **Dunlin** *Calidris alpina alpina*, 23,940 individuals representing at least 1.7% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6) **Grey Plover** *Pluvialis squatarola*, 3,660 individuals representing at least 2.4% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6) **Pintail** *Anas acuta*, 878 individuals representing at least 1.5% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6) **Redshank** *Tringa totanus*, 3,545 individuals representing at least 2.4% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6) **Ringed Plover** *Charadrius hiaticula*, 578 individuals representing at least 1.2% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)	

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	Sanderling *Calidris canutus* **Shelduck** *Tadorna tadorna*, 3,672 individuals representing at least 1.2% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6) **Turnstone** *Arenaria interpres*, 836 individuals representing at least 1.2% of the wintering Western Palearctic - wintering population (5 year peak mean 1991/2 - 1995/6) Assemblage qualification: A wetland of international importance The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 64,768 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Cormorant *Phalacrocorax carbo*, Pintail *Anas acuta*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Dunlin *Calidris alpina alpina*, Black-tailed Godwit *Limosa limosa islandica*, Redshank *Tringa totanus*, Shelduck *Tadorna tadorna*, Great Crested Grebe *Podiceps cristatus*, Curlew *Numenius arquata*, Dark-bellied Brent Goose *Branta bernicla bernicla*, Wigeon *Anas penelope*, Goldeneye *Bucephala clangula*, Oystercatcher *Haematopus ostralegus*, Lapwing *Vanellus vanellus*, Knot *Calidris canutus*, Turnstone *Arenaria interpres*.	
Stour and Orwell Estuaries Ramsar	The Stour and Orwell Estuaries is a wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. It provides habitats for an important assemblage of wetland birds in the non-breeding season and supports internationally important numbers of wintering and passage wildfowl and waders. The site also holds several nationally scarce plants and British Red Data Book invertebrates. **Ramsar criterion 2** Contains seven nationally scarce plants: stiff saltmarsh-grass *Puccinellia rupestris*; small cord-grass, *Spartina maritima*;	***Construction and Operation*** As for the Stour and Orwell Estuaries SPA **Note: The 2012 Sizewell C HRA Working Group considered this site should be screened in on a precautionary basis on account of proximity to potential associated development.**

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	perennial glasswort *Sarcocornia perennis*; lax-flowered sea lavender *Limonium, humile*; and the eelgrasses *Zostera angustifolia*, *Z. marina* and *Z. noltei*. Contains five British Red Data Book invertebrates: the muscid fly *Phaonia fusca*; the horsefly *Haematopota grandis*; two spiders, *Arctosa fulvolineata* and *Baryphema duffeyi*; and the Endangered swollen spire snail *Mercuria confusa*. **Ramsar criterion 5** Assemblages of international importance:Species with peak counts in winter: 63017 waterfowl (5 year peak mean 1998/99-2002/2003) **Ramsar criterion 6** Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation): Species with peak counts in spring/autumn; **Common redshank**, *Tringa totanus totanus*, 2588 individuals, representing an average of 2% of the population (5-year peak mean 1995/96-1999/2000) Species with peak counts in winter; **Dark-bellied brent goose**, *Branta bernicla bernicla*, 2627 individuals, representing an average of 1.2% of the population (5-year peak mean 1995/96-1999/2000) **Northern pintail**, *Anas acuta*, NW Europe 741 individuals, representing an average of 1.2% of the population (5-year peak mean 1995/96-1999/2000) **Grey plover**, *Pluvialis squatarola*, E Atlantic/W Africa –wintering 3261 individuals, representing an average of 1.3% of the population (5-year peak mean 1995/96-1999/2000) **Red knot**, *Calidris canutus islandica*, W & Southern Africa	

Site Name	Site Description and Qualifying Features	Potential Influence of Project Effects
	(wintering) 5970 individuals, representing an average of 1.3% of the population (5-year peak mean 1995/96-1999/2000) **Dunlin**, *Calidris alpina alpina*, W Siberia/W Europe 19114 individuals, representing an average of 1.4% of the population (5-year peak mean 1995/96-1999/2000) **Black-tailed godwit**, *Limosa limosa islandica*, Iceland/W Europe 2559 individuals, representing an average of 7.3% of the population (5-year peak mean 1995/96-1999/2000) **Common redshank**, *Tringa totanus totanus*, 3687 individuals, representing an average of 2.8% of the population (5-year peak mean 1995/96-1999/2000)	

Table A2.3a – Scoping Likely Significant Effects / Evidence Requirements – Construction

Key 1: Definition of colour-coding and symbols used in the table

Colour	Definition
Green	No impact pathway / no impact. The justification for this determination will be detailed in the Shadow Likely Significant Effect (LSE) Screening assessment, but no further evidence is to be provided in these cases.
Amber	Weak impact pathway / trivial or inconsequential impact; evidence required to demonstrate whether this constitutes no LSE. ✓* = identified impact pathway [*1 to 16 – justification and proposed evidence requirements provided below table].
Red	Moderate or strong impact pathway / LSE. ✓* = identified impact pathway [*1 to 16 – justification and proposed evidence requirements provided below table].

Key 2: Definition of environmental effect categories given at the head of the columns in the table[1]

Effects	Definition
Alteration of coastal processes / sediment transport	This includes the potential for erosion, accretion and sedimentation (short and long term). The focus is largely on indirect effects (rather than direct effects which are covered under 'Direct habitat loss and fragmentation'). This distinction has been made to avoid the double counting of effects.
Water quality effects – marine environment	This covers potential thermal and chemical (non-radiological and radiological) effects on water quality and indirect effects on habitats and species (including prey species), as well as water quality effects due to change in suspended sediment concentrations (SSC) (it does not include sedimentation, which is covered as part of 'Alteration of coastal processes / sediment transport').
Water quality effects – terrestrial environment	This covers potential supporting parameters and chemical effects on freshwater (surface and groundwater) – such as SSC and nutrient concentrations in addition to chemical status – as well as any potential indirect effects on habitats and species. Any foul water flows will also be treated to ensure water quality effects are controlled.
Alteration of local hydrology and hydrogeology	This covers potential physical effects on freshwater (including surface and groundwater resources), i.e. effects on flows and water levels, as well as any consequential indirect effects on habitats and species.

[1] Note: For the sake of clarity these definitions also apply to mobile designated features (e.g. birds) and their supporting habitats that exist outside of the designation.

Effects	Definition
Changes in air quality	Change in air quality through emissions to air and any consequential direct or indirect effects on habitats and species (e.g. lichens). Potential non-radiological air quality effects have been 'scoped in' where the site is within 10km of the Main Development Site (and scoped out beyond this distance). Note: the Zone of Influence (ZOI) for particulate (dust) emissions is generally much smaller than this (<200m from the emission source).
Radiological effects	This relates to the direct and indirect effects of any radiological emissions to soils, water and/or air. See Note 16 below the table for further details. Note that commissioning impacts are covered under 'Operations', since fuelling of the nuclear power station marks the start of the operational phase.
Direct habitat loss and direct and indirect fragmentation	This effect is limited to direct effects on habitats (not species). Indirect effects are covered in elsewhere, as noted above.
Disturbance effects on species populations	This effect is limited to potential disturbance effects on target species (not habitats), e.g. noise, light and human activity, and includes species displacement. Potential recreational effects are covered separately below.
Disturbance due to increased recreational pressure	Potential effects due to increased recreational pressure have been 'scoped in' where the site in question is within the ZOI for potential recreational effects (as set out in the Recreation Paper **SZC-EP-W4-002**). Potential effects include trampling of supporting habitat, as well as disturbance effects to species and populations.

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Alde-Ore and Butley Estuaries SAC (5km away from the Main Development Site)									
1130 – Estuaries	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	No discernable impact pathway
1140 Mudflats and sandflats not covered by seawater at low tide	✓1	✓3	No discernable impact pathway	No discernable impact pathway	Receptor not sensitive to the effect	No discernable impact pathway	No direct impact	N/A	No discernable impact pathway
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	No discernable impact pathway
Alde-Ore Estuary SPA (5km away from the Main Development Site)									
Supporting habitat to SPA designated interests	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Breeding **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	N/A	✓13
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	N/A	✓13
Breeding **Little Tern** *Sterna albifrons*	✓1	✓3 Increased SSC	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓10	✓13
Breeding **Sandwich Tern** *Sterna sandvicensis*	✓1	✓3 Increased SSC	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓10	✓13
Breeding **Lesser black-backed gull** *Larus fuscus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	No discernable impact pathway	✓13
Over winter **Avocet**	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	N/A	✓13
Over winter **Redshank** *Tringa totanus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	N/A	✓13
Assemblage qualification: A seabird assemblage of international importance	✓1	✓3 Increased SSC	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓10	✓13
Waterbird assemblage	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	No discernable impact pathway	✓13

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Alde-Ore Estuary Ramsar (5km away from the Main Development Site)									
Ramsar criterion 2 Nationally-scarce plant species and British Red Data Book invertebrates	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	✓14 Limited trampling risk
Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds	✓1	✓3 Increased SSC	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	✓10 As for SPA designated species	✓13
Ramsar criterion 6 Species / populations occurring at levels of international importance	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	No discernable impact pathway; see note 15 below	✓13
Benacre to Easton Bavents Lagoons SAC (15km away from the Main Development Site) – site screened out									
1150 Coastal lagoons * Priority feature	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Benacre to Easton Bavents Lagoons SPA (15km away from the Main Development Site) – site screened out									
Supporting habitat to SPA designated interests	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Breeding **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Breeding **Little Tern** *Sterna albifrons*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Wintering **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Deben Estuary SPA (>20km away from the Main Development Site) – site screened out									
Supporting habitat to SPA designated interests	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Wintering **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Wintering **Dark-bellied brent goose** *Branta bernicla bernicla*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Deben Estuary Ramsar (>20km away from the Main Development Site) – site screened out									
Ramsar criterion 2 Supports a population of the mollusc *Vertigo angustior*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Ramsar criterion 6 Species / populations occurring at levels of international importance - **Dark-bellied brent goose**	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Dew's Ponds SAC (9km away from the Main Development Site) – site screened out									
1166 Great crested newt *Triturus cristatus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Minsmere to Walberswick Heaths and Marshes SAC (adjacent to the Main Development Site)									
1210 Annual vegetation of drift lines	✓2	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	✓2 Potential for erosion	N/A	✓14 Trampling
4030 European dry heaths	N/A	N/A	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	N/A	N/A	✓14 Well used and managed site
1220 Perennial vegetation of stony banks	✓2	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	✓2 Potential for erosion	N/A	✓14 Trampling
Minsmere to Walberswick SPA (adjacent to the Main Development Site)									
Supporting habitat to SPA designated interests	✓2	✓3	✓4, 6	✓6	✓7	No discernable impact pathway	No direct impact	N/A	✓14
Breeding **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6 potential change in surface water levels	No direct impact	No discernable impact pathway	No direct impact	✓	✓13
Breeding **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6 potential change in surface water levels	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Breeding **Little Tern** *Sterna albifrons*	✓2 Nesting on shingle beach	✓3 Effects on prey species	✓4, 6 (in Minsmere not on beach)	✓6 (in Minsmere not on beach)	No direct impact	No discernable impact pathway	✓9 Weak southerly net drift	✓8,12	✓13
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6 potential change in surface water levels	No direct impact	No discernable impact pathway	✓9, 5 Limited foraging range	✓12	✓13

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Breeding **Nightjar** *Caprimulgus europaeus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Breeding **Shovelor** *Anas clypeata*	No discernable impact pathway	No discernable impact pathway	✓4	✓6	No direct impact	No discernable impact pathway	No discernable impact pathway	✓12	✓13
Breeding **Teal** *Anas crecca*	No discernable impact pathway	No discernable impact pathway	✓4	✓6	No direct impact	No discernable impact pathway	No discernable impact pathway	✓12	✓13
Breeding **Woodlark** *Lullula arborea*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Wintering **Avocet**	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6 reliant on scrape features	No direct impact	No discernable impact pathway	No discernable impact pathway	✓12	✓13
Wintering **Bittern**	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Wintering **Gadwall** *Anas strepera*	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Wintering **Hen Harrier** *Circus cyaneus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Wintering **Shovelor**	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Wintering **White Fronted Goose** *Anser albifrons albifrons*	No discernable impact pathway	No discernable impact pathway	✓4, 6	✓6	No direct impact	No discernable impact pathway	No discernable impact pathway	✓12	✓13
Minsmere to Walberswick Ramsar (adjacent to the Main Development Site)									
Ramsar criterion 1 Mosaic of marine, freshwater, marshland and associated habitats	✓2	✓3	✓4, 6	✓6	✓7	No discernable impact pathway	No direct impact	N/A	✓14

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Ramsar criterion 2 Supports nine nationally scarce plants and at least 26 red data book invertebrates	✓2	✓3	✓4, 6	✓6	✓7	No discernable impact pathway	No direct impact	N/A	✓14
Ramsar criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds	✓2 Supporting habitats	No discernable impact pathway	✓4, 6 Supporting habitats	✓6 Supporting habitats	No direct impact	No discernable impact pathway	✓9	✓12	✓13
Orfordness to Shingle Street SAC (8km away from the Main Development Site)									
1150 Coastal lagoons * Priority feature	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	✓13 Site relatively resilient and isolated
1210 Annual vegetation of drift lines	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	✓13 Site relatively resilient and isolated
1220 Perennial vegetation of stony banks	✓1	✓3	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	No direct impact	N/A	✓13 Site relatively resilient and isolated
Outer Thames Estuary SPA (Main Development Site within and adjacent to SPA)									
Supporting habitat to SPA designated interests	✓1	✓3	No discernable impact pathway	No discernable impact pathway	Receptor not sensitive to the effect	No discernable impact pathway	✓1 Dredging and piling etc.	N/A	No discernable impact pathway
Wintering / passage **Red-throated diver** *Gavia stellata*	No discernable impact pathway	✓3 Effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓8, 10 Direct effects & underwater noise effects on prey	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Wintering **Cormorant** *Phalacrocorax carbo*	No discernable impact pathway	✓3 Effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓8, 10 Direct effects & underwater noise effects on prey	No discernable impact pathway
Breeding **Little Tern** *Sterna albifrons*	No discernable impact pathway	✓ 3 Effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓8, 10 Direct effects & underwater noise effects on prey	No discernable impact pathway
Breeding **Common Tern** *Sterna hirundo*	No discernable impact pathway	✓3 Effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	N/A	✓8, 10 Direct effects & underwater noise effects on prey	No discernable impact pathway
Sandlings SPA (<1km away from the Main Development Site)									
Supporting habitat to SPA designated interests	N/A	N/A	No discernable impact pathway	No discernable impact pathway	✓7	No discernable impact pathway	✓9	N/A	✓14
Breeding **Nightjar** *Caprimulgus europaeus*	N/A	N/A	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓12	✓13
Breeding **Woodlark** *Lullula arborea*	N/A	N/A	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓12 Limited number of birds foraging outside SPA	✓13

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Staverton Park and the Thicks SAC (15.5km away from the Main Development Site) – site screened out									
9190 Old acidophilous oak woods with *Quercus robur* on sandy plains	N/A	N/A	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway
Stour and Orwell Estuaries SPA (>20km from the Main Development Site)									
Breeding **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway
Passage **Redshank** *Tringa totanus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway
Wintering: **Hen Harrier** *Circus cyaneus*, **Black-tailed Godwit** *Limosa limosa islandica*, **Dark bellied Brent goose** *Branta bernicla bernicla,* **Dunlin** *Calidris alpina alpina*, **Grey Plover** *Pluvialis squatarola*, **Pintail** *Anas acuta*, **Redshank** *Tringa totanus*, **Ringed Plover** *Charadrius hiaticula,* **Sanderling** *Calidris canutus*, **Shelduck** *Tadorna tadorna* and **Turnstone** *Arenaria interpres*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway
Internationally important waterbird assemblage	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway
Stour and Orwell Estuaries Ramsar (>20km from the Main Development Site)									
Ramsar criterion 2 Supports seven nationally scarce plants and five British Red Data Book invertebrates	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	No discernable impact pathway	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects 16	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Ramsar criterion 5 Waterbird assemblage of international importance	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway
Ramsar criterion 6 Waterbird species / populations occurring at levels of international importance	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	No discernable impact pathway	No direct impact	✓11	No discernable impact pathway

Notes

1 – Potential interruption to / alteration of **coastal hydrodynamics and sediment transport processes** as a result of the influence of marine infrastructure are likely to be confined to the vicinity of the works. The jetty would be an open piled structure designed to minimise impacts on coastal processes and potential morphological change. Far-field propagation of hydrodynamic change (and the influence of this on sediment transport processes) is, therefore, considered to be unlikely. This particularly applies to sections of the coast located to the north of the Sizewell frontage, as the net direction of sediment transport is weakly to the south.

Evidence requirements: Results of sediment transport modelling (erosion and accretion).

2 – Any interruption to / alteration of coastal hydrodynamics and sediment transport processes is likely to be confined to the vicinity of the works. However, given that the Minsmere-Walberswick frontage is contiguous with that of the Main Development Site, changes in hydrodynamics and sediment transport processes could impinge upon the frontage and affect the structure and function of coastal habitats.

Evidence requirements: Results of sediment transport modelling (erosion and accretion).

3 – Any uncontrolled **discharges to the marine environment** in the vicinity of Sizewell (including dredged plumes) could affect water quality, leading to indirect effects on designated habitats along the Minsmere-Walberswick frontage. There is a weak southerly *net* drift of coastal sediments. As such there is the potential for this weak net movement to provide a potential pathway through which discharges (including spillages from pollution events) from the construction area could impact upon water quality within designated sites to the south of Sizewell. However, dilution of any suspended sediments or potential pollutants would be substantial and resultant concentrations would be unlikely to be significant. For designated sites lying beyond the tidal extent to the north of the development area (e.g. Benacre to Easton Bavents Lagoons), any water quality effects is unlikely given the substantial distance from Sizewell over which effects would have to propagate.

Evidence requirements: Results of sediment plume modelling during the construction phase, data on natural suspended sediment variability and evidence regarding the likely response of ecological receptors.

4 – There are direct **hydrological connections** between the Sizewell development area and Minsmere–Walberswick (south of the Minsmere New Cut). In addition, any increase in water levels at Minsmere sluice could potentially affect surface water levels to the north (although this is considered unlikely). As such, discharges into watercourses within the development area, or changes in water levels / flow / ditch alignment / sedimentation rates within the watercourses, could have a direct effect upon water quality in Minsmere south or Minsmere north levels. Note: it is assumed for the purpose of this assessment that all foul wastewater would be treated in package sewage works and discharged to sea. All other wastewater streams would be treated in water management zones and discharged at greenfield rates to ground or surface water (details to be provided). Runoff from areas that present a hydrocarbon risk would be passed through an interceptor, as necessary, before discharge.

Evidence requirements: Baseline hydrology / hydrogeological conceptualisation study (inc. results of groundwater and surface water quality monitoring); details of the proposed drainage strategy and water management principles; an understanding of how this may affect the hydrology of the study area (i.e. details of the expected changes in surface water levels, flows and quality, including from wind blown sources); and an understanding of how this might affect designated features.

5 – See Paper **SZC-EP-WS2-004**: Sizewell C Project HRA Evidence Plan: Construction disturbance effects on bittern and marsh harrier interests of the Minsmere to Walberswick SPA. The species to which this classification has been applied potentially make use of the Minsmere South levels and Sizewell Marshes for foraging.

Evidence requirements: Detailed information on interest feature (species) use of the study area.

6 – Any development that interrupts or alters the baseline **groundwater** regime (e.g. the presence of the proposed cut-off wall around the main site excavations, or reduced rainfall infiltration rates into the soil within the construction area due to the development) could potentially change the hydrological or hydrogeological properties of the site and adjacent land and, in turn, the conditions that support wetland habitat. See **Paper SZC-EP-WS2-004**: Sizewell C Project HRA Evidence Plan: Groundwater conceptualisation.

Evidence requirements: Baseline hydrology / hydrogeological conceptualisation study (inc. results of groundwater and surface water flow monitoring); details of the proposed drainage strategy and water management principles and an understanding of how this may affect the hydrology of the study area; the results of the detailed groundwater modelling (linked in particular to the influence of the cut-off wall and infiltration rates); and an understanding of the hydrological linkages between groundwater and the annual and perennial vegetation in the south levels.

7 – Localised **nutrient loading** on vegetation communities (e.g. coastal, heathland) may arise as a result of construction activities (e.g. due to wind blown soil). Some species / vegetation types are sensitive to relatively small changes in air quality (e.g. lichens). During the construction phase, the main potential emissions will be from road traffic, dust from construction activities and combustion emissions from the diesel generators (which will extend to commissioning). Any significant change in air quality is likely to be confined to the immediate vicinity of the nuclear power station as concentrations of potential pollutants would rapidly diminish away from the source. Far-field effects are therefore considered very unlikely to arise. However, on a precautionary basis, potential changes in air quality from combustion sources have been considered for sites within 10km of Sizewell C.

Evidence requirements: Constraints plans, further screening against road traffic criteria (e.g. Highways Agency Criteria) once traffic data are available, qualitative dust assessment, dust management and monitoring plan, and point source air emissions dispersion modelling.

8 – **Construction activities** (e.g. piling and vessel traffic) in the **marine environment** may lead to disturbance and displacement of key prey species, such as small fish, from near shore waters that are utilised as a foraging area by seabirds from nearby breeding colonies or resident species (e.g. red-throated diver).

Evidence requirements: Results of underwater noise studies; and information on receptor responses.

9 – **Loss of habitats** within the footprint of the Sizewell C Main Development Site may affect the overall habitat resource available to mobile populations, e.g. birds from adjacent designated sites, notably Minsmere-Walberswick SPA / Ramsar and potentially Sandlings SPA. While there may not be any direct impact on habitat extent within designated sites, the loss and fragmentation of supporting habitats off-site may adversely affect designated populations.

Evidence requirements: Detail regarding the development footprint of the proposed works; proposals for habitat creation / enhancement; and consolidated ecological survey data to determine the presence / absence of key species (and the relative importance of affected habitats).

10 – **Construction activity** (e.g. movement, light, noise, people and vessel traffic) in or near the **marine environment** may cause disturbance to seabirds foraging in the near shore environment leading to displacement.

Evidence requirements: Details of proposed working patterns and ship movements; details of the proposed lighting strategy; review of available published information relating to disturbance responses of the main bird species (or similar) of interest; and the results of the noise contour mapping.

11 – Increased **vessel traffic** passing through foraging areas used by little tern may lead to disturbance and displacement. Note: there is significant shipping activity along the Suffolk coast and the Stour and Orwell Estuaries and therefore any additional vessel traffic associated with the construction phase for Sizewell C would be unlikely to lead to a discernable increase in baseline shipping activity.

Evidence requirements: Details of proposed navigation routes, existing use levels and SZC's expected contribution, and review of available published information relating to disturbance responses of little terns.

12 – Within the **terrestrial environment construction activities** may have a direct disturbance effect on birds utilising habitats within the vicinity of the works, potentially leading to displacement. The likelihood of effects arising will diminish with distance away from the construction site and, therefore, impacts will be more likely to arise for those bird species that utilise habitats in relative proximity to the development site (e.g. within Minsmere south levels).

Evidence requirements: Review of available published information relating to disturbance effects on birds; details of the screening measures to be built into the design; the results of the noise contour mapping; details of working patterns; and details of the proposed lighting strategy.

13 – The influx of workers to Sizewell during the construction phase potentially could lead to an increase in the number of people undertaking **recreational activities** in the surrounding countryside. In addition, existing recreational users in the vicinity of the development (e.g. dog walkers on Sizewell beach) could be displaced, increasing the recreational pressure on European sites (or any associated mobile features / supporting habitats that exist off-site). Based on the Recreational Pressure Paper, **SZC-EP-W4-002**, a ZOI of 16km around Sizewell C is assumed. Sites located inside this ZOI are screened in for recreational assessment. Sites located outside are screened out. Note: if designated features of a site located outside of the ZOI occur within it, the designated site will be screened in in its entirety.

Evidence requirements: The outputs from the Recreation Study (evidence from relevant studies, visitor survey, ZOI definition), a Recreation Management Plan and a review of available published information relating to disturbance responses of the relevant SPA species.

14 – Given that the receptor is a habitat feature rather than a species the only foreseeable impact pathway is trampling.

Evidence requirements: Published evidence for disturbance (trampling) effects on vegetation communities / species of interest and recovery periods.

15 – The only species that could be affected is **lesser black-backed gull**, which could forage in the construction area and, therefore, be subject to disturbance. However, they are relatively tolerant of disturbance and have a reasonable foraging range, so are unlikely to be affected. The other international species (wintering avocet and redshank) would remain within the bounds of the SPA and, therefore, not be affected by construction disturbance as the distance from the disturbance from the SPA is too great.

16 – Potential **radiological effects** resulting from construction activities relate to the disturbance of potential existing (baseline) radiological contamination associated with soils, sediment and water. Detailed radiological analysis has confirmed that background levels around the Sizewell C main development site are negligible and consistent with the results of long-term operator monitoring which is subject to Environment Agency surveillance. The results are also consistent with other monitoring programmes such as the annual Radiation in Food and the Environment (RIFE) surveys compiled from monitoring undertaken around all nuclear sites in the UK by the Food Standards Agency and national environmental agencies. In addition, there is no evidence from desk studies to suggest that associated development sites are contaminated. Therefore any disturbance associated with construction would not give rise to a LSE. Note that commissioning impacts are covered under 'Operations', since fuelling of the nuclear power station marks the start of the operational phase.

Evidence available: Existing baseline radiological contamination survey reports.

Table A3.2b – Scoping Likely Significant Effects / Evidence Requirements – Operation[1]

Key 1: Definition of colour-coding and symbols used in the table

Colour	Definition
Green	No impact pathway / no impact. The justification for this determination will be detailed in the Shadow Likely Significant Effect (LSE) Screening assessment, but no further evidence is to be provided in these cases.
Amber	Weak impact pathway / trivial or inconsequential impact; evidence required to demonstrate whether this constitutes no LSE. ✓* = identified impact pathway [*1 to 14 – justification and proposed evidence requirements provided below table].
Red	Moderate or strong impact pathway probable / Likely Significant Effect. ✓* = identified impact pathway [*1 to 14 – justification and proposed evidence requirements provided below table].

Note: No consideration has been given at this stage as to project specific management measures or mitigation to avoid or reduce potential impact likelihood.

Key 2: Definition of environmental effect categories given at the head of the columns in the table[2]

Effects	Definition
Alteration of coastal processes / sediment transport	This includes the potential for erosion, accretion and sedimentation (short and long term). The focus is largely on indirect effects (rather than direct effects which are covered under 'direct habitat loss and fragmentation'). This distinction has been made to avoid the double counting of effects.
Water quality effects – marine environment	This covers potential thermal, chemical (non-radiological and radiological) effects on water quality and indirect effects on habitats and species (including prey species), as well as water quality effects due to change in suspended sediment concentrations (SSC) (it does not include sedimentation, which is covered as part of 'Alteration of coastal processes / sediment transport'). It also includes water quality (chlorination) effects associated with the entrainment and impingement of organisms in cooling water intake.
Water quality effects – terrestrial environment	This covers potential changes in supporting parameters (e.g. long term flow changes associated with the cut-off wall and realignment of ditches), as well as any consequential indirect effects on habitats and species. No chemical effects are predicted during the operational phase in this context (as all discharge would be via the cooling water system).

[1] Assumptions: Jetty removed; beach landing facility (BLF) in place above high water; outfalls and intakes in place; discharge to sea.

[2] Note: For the sake of clarity these definitions also apply to mobile designated features (e.g. birds) and their supporting habitats that exist outside of the designation.

Effects	Definition
Alteration of local hydrology and hydrogeology	This covers potential physical effects on freshwater (including surface and groundwater resources), i.e. effects on flows and water levels, as well as any consequential indirect effects on habitats and species.
Changes in air quality	Change in air quality through radioactive and non-radioactive emissions to air and any consequential direct or indirect effects on habitats and species (e.g. lichens). Potential air quality effects have been 'scoped in' where the site is within 10km of the Main Development Site (and scoped out beyond this distance). Note: the Zone of Influence (ZOI) for particulate (dust) emissions is generally much smaller than this (<200m from the emission source).
Radiological effects	This relates to the direct and indirect effects of radiological emissions to air and the marine environment. These emissions will be regulated by the Environment Agency under Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2010 (as amended). Note that commissioning impacts are covered under 'Operations', since fuelling of the nuclear power station marks the start of the operational phase.
Direct habitat loss and direct and indirect fragmentation	This effect is limited to direct effects on habitats (not species). Indirect effects are covered in elsewhere, as noted above.
Disturbance effects on species populations	This effect is limited to potential disturbance effects on target species (not habitats), e.g. noise, light and human activity, and includes species displacement. Potential recreational effects are covered separately below.
Disturbance due to increased recreational pressure	Potential effects due to increased recreational pressure have been 'scoped in' where the site in question is within the ZOI for potential recreational effects (as set out in the Recreation Paper **SZC-EP-W4-002**). Potential effects include trampling of supporting habitat, as well as disturbance effects to species and populations.

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Alde-Ore and Butley Estuaries SAC (5km away from the Main Development Site)									
1130 Estuaries	No discernable impact pathway due to distance	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	No discernable impact pathway
1140 Mudflats and sandflats not covered by seawater at low tide	No discernable impact pathway due to distance	✓3	No discernable impact pathway	No discernable impact pathway	Receptor not sensitive to the effect	✓14	No direct impact	N/A	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	No discernable impact pathway due to distance	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	No discernable impact pathway
Alde-Ore Estuary SPA (5km away from the Main Development Site)									
Supporting habitat to SPA designated interests	No discernable impact pathway	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	No discernable impact pathway
Breeding **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Breeding **Little Tern** *Sterna albifrons*	No discernable impact pathway	✓3, 8 effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Breeding **Sandwich Tern** *Sterna sandvicensis*	No discernable impact pathway	✓3, 8 effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Breeding **Lesser black-backed gull** *Larus fuscus*	No discernable impact pathway	✓3, 8 effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Over winter **Avocet**	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Over winter **Redshank** *Tringa totanus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Assemblage qualification: A seabird assemblage of international importance	No discernable impact pathway	✓3, 8 effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Waterbird assemblage	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	No discernable impact pathway	✓11
Alde-Ore Estuary Ramsar (5km away from the Main Development Site)									
Ramsar criterion 2 Nationally-scarce plant species and British Red Data Book invertebrates	No discernable impact pathway	✓3 Some coastal shingle specialists	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds	No discernable impact pathway	✓3, 8 prey species for little tern, sandwich tern and lesser black-backed gull	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	No discernable impact pathway	✓11
Ramsar criterion 6 Species / populations occurring at levels of international importance	No discernable impact pathway	✓3, 8 prey species for lesser black-backed gull	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	No discernable impact pathway	✓11
Benacre to Easton Bavents Lagoons SAC (15km away from the Main Development Site)									
1150 Coastal lagoons * Priority feature	No discernable impact pathway	✓3	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No direct impact	N/A	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Benacre to Easton Bavents Lagoons SPA (15km away from the Main Development Site)									
Supporting habitat to SPA designated interests	No discernable impact pathway	✓3, 8	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No direct impact	N/A	No discernable impact pathway
Breeding **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Breeding **Little Tern** *Sterna albifrons*	No discernable impact pathway	✓3 Potential effects on prey species	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Wintering **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Deben Estuary SPA (>20km away from the Main Development Site)									
Supporting habitat to SPA designated interests	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No direct impact	N/A	No discernable impact pathway
Wintering **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Wintering **Dark-bellied brent goose** *Branta bernicla bernicla*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Deben Estuary Ramsar (>20km away from the Main Development Site)									
Ramsar criterion 2 Supports a population of the mollusc *Vertigo angustior*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Ramsar criterion 6 Species / populations occurring at levels of international importance - **Dark-bellied brent goose**	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Dew's Ponds SAC (9km away from the Main Development Site)									
1166 Great crested newt *Triturus cristatus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	N/A	No discernable impact pathway	No discernable impact pathway
Minsmere to Walberswick Heaths and Marshes SAC (adjacent to the Main Development Site)									
1210 Annual vegetation of drift lines	✓2	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
4030 European dry heaths	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
1220 Perennial vegetation of stony banks	✓2	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
Minsmere to Walberswick SPA (adjacent to the Main Development Site)									
Supporting habitat to SPA designated interests	✓2	✓3	✓4	✓5, 6	✓7	✓14	✓13	N/A	✓12
Breeding **Avocet** *Recurvirostra avosetta*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Breeding **Bittern** *Botaurus stellaris*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Breeding **Little Tern** *Sterna albifrons*	✓2 Nests	✓3, 8 Prey species	✓4 (in Minsmere not on beach)	✓5, 6 (in Minsmere not on beach)	No direct impact	✓14	No direct impact	✓10	✓11

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Breeding **Marsh Harrier** *Circus aeruginosus*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	✓ 9, 10	✓10	✓11
Breeding **Nightjar** *Caprimulgus europaeus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No direct impact	No discernable impact pathway	✓11
Breeding **Shovelor** *Anas clypeata*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Breeding **Teal** *Anas crecca*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Breeding **Woodlark** *Lullula arborea*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No direct impact	No discernable impact pathway	✓11
Wintering **Avocet**	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Wintering **Bittern**	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	✓ 9, 10	✓10	✓11
Wintering **Gadwall** *Anas strepera*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	✓10	✓10	✓11
Wintering **Hen Harrier** *Circus cyaneus*	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No direct impact	✓14	No direct impact	✓10	✓11
Wintering **Shovelor**	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	✓ 10	✓10	✓11
Wintering **White Fronted Goose** *Anser albifrons albifrons*	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	No direct impact	✓10	✓11
Minsmere to Walberswick Ramsar (adjacent to the Main Development Site)									
Ramsar criterion 1 Mosaic of marine, freshwater, marshland and associated habitats	✓2	✓3	✓4	✓5, 6	✓7	✓14	✓13	N/A	✓12

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Ramsar criterion 2 Supports nine nationally scarce plants and at least 26 red data book invertebrates	✓2	✓3	✓4	✓5, 6	✓7	✓14	No direct impact	No discernable impact pathway	✓12
Ramsar criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds	No discernable impact pathway	No discernable impact pathway	✓4	✓5, 6	No direct impact	✓14	✓10	✓10	✓11
Orfordness to Shingle Street SAC (8km away from the Main Development Site)									
1150 Coastal lagoons * Priority feature	No discernable impact pathway	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	No discernable impact pathway
1210 Annual vegetation of drift lines	No discernable impact pathway	✓3	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
1220 Perennial vegetation of stony banks	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
Outer Thames Estuary SPA (Main Development Site within and adjacent to SPA)									
Supporting habitat to SPA designated interests	✓1	✓3 Effects on prey species	N/A	N/A	Receptor not sensitive to the effect	✓14	✓10	N/A	No discernable impact pathway
Wintering / passage **Red-throated diver** *Gavia stellata*	N/A	✓3, 8 Effects on prey species	N/A	N/A	No direct impact	✓14	N/A	✓10	No discernable impact pathway
Wintering **Cormorant** *Phalacrocorax carbo*	N/A	✓3, 8 Effects on prey species	N/A	N/A	No direct impact	✓14	N/A	✓10	No discernable impact pathway
Breeding **Little Tern** *Sterna albifrons*	N/A	✓3, 8 Effects on prey species	N/A	N/A	No direct impact	✓14	N/A	✓10	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Breeding **Common Tern** *Sterna hirundo*	N/A	✓3, 8 Effects on prey species	N/A	N/A	No direct impact	✓14	N/A	✓10	No discernable impact pathway
Sandlings SPA (0.7km away from the Main Development Site)									
Supporting habitat to SPA designated interests	N/A	N/A	No discernable impact pathway	No discernable impact pathway	✓7	✓14	No direct impact	N/A	✓12
Breeding **Nightjar** *Caprimulgus europaeus*	N/A	N/A	N/A	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	✓10 SPA designated birds possibly displaced by habitat creation within / around development	✓11
Breeding **Woodlark** *Lullula arborea*	N/A	N/A	N/A	No discernable impact pathway	No direct impact	✓14	No discernable impact pathway	✓10 SPA designated birds possibly displaced by habitat creation within / around development	✓11
Staverton Park and the Thicks SAC (16.5km away from the Main Development Site)									
9190 Old acidophilous oak woods with *Quercus robur* on sandy plains	N/A	N/A	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No direct impact	No discernable impact pathway	No discernable impact pathway

Site Name and Features	Alteration of coastal processes / sediment transport	Water quality effects – marine environment	Water quality effects – terrestrial environment	Alteration of local hydrology and hydrogeology	Changes in air quality	Radiological effects	Direct habitat loss and direct / indirect habitat fragmentation	Disturbance effects on species populations	Disturbance due to increase in recreational pressure
Stour and Orwell Estuaries SPA (>20km from the Main Development Site)[3]									
All features	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway
Stour and Orwell Estuaries Ramsar (>20km from the Main Development Site)[3]									
All criteria	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway	✓14	No discernable impact pathway	No discernable impact pathway	No discernable impact pathway

Notes

1 – **Potential interruption to / alteration of coastal hydrodynamics and sediment transport processes** as a result of the influence of marine infrastructure is likely to be confined to the vicinity of the works. Any required coastal defence structures and the proposed Beach Landing Facility (above high water) would be designed to minimise effects on coastal hydrodynamics and, therefore, limit the potential for change to sediment transport and coastal morphology. Far-field propagation of hydrodynamic change (and the influence of this on sediment transport processes) is unlikely. This particularly applies to sections of the coast located to the north of the Sizewell frontage, as the net direction of sediment transport is weakly to the south.

Evidence requirements: Results of sediment transport modelling (erosion and accretion) – operational phase.

2 - Any interruption to / alteration of coastal hydrodynamics and sediment transport processes is likely to be confined to the vicinity of the works. However, given that the Minsmere-Walberswick frontage is contiguous with that of the Main Development Site, changes in hydrodynamics and sediment transport processes potentially could impinge upon the frontage and affect the structure and function of coastal habitats.

Evidence requirements: Results of sediment transport modelling (erosion and accretion) – operational phase.

[3] Site is located outside the ZOI for recreation; refer to Recreation paper SZC-EP-WS4-002.

3 – The **cooling water discharge** would raise ambient water temperature and introduce potential pollutants into the water column (including radionuclides, see note 14 below). Given the tidal extent at the site, the plume associated with the discharge potentially could impinge upon coastal waters and the coastline at some distance from the point of discharge. This is more likely to arise for locations in the immediate vicinity of the frontage or to the south, as there is a weak southerly *net* drift of coastal sediments. This weak net movement could provide a potential pathway through which discharges (including spillages from pollution events) could impact upon water quality within designated sites to the south of Sizewell. However, dilution of any potential pollutants or suspended sediments would be substantial and resultant concentrations would be unlikely to be significant. In additional, drainage controls would be in place. Nevertheless any uncontrolled discharges to the marine environment in the vicinity of Sizewell could affect water quality leading to indirect effects on designated habitats along the Minsmere-Walberswick frontage.

For designated sites lying to the north of the development area (e.g. Benacre to Easton Bavents Lagoons), the potential for any water quality effects on designated interests to arise is unlikely given the significant distance from Sizewell over which effects would have to propagate and the prevailing hydrodynamic and coastal process conditions (nevertheless this potential will be investigated).

The thermal and chemical plumes associated with the discharge may alter water quality properties such that small-scale behavioural effects on local fish communities may occur, altering the spatial distribution of the fish assemblage; including changes to the availability of potential prey species for seabirds. The water quality assessment will consider chlorination of the intake tunnels in accordance with the proposed chlorination strategy for Sizewell C. This will cause the discharge from the **Fish Recovery and Return (FRR) system** to contain chlorination products (TROs and CBPs). This discharge would be at a different location than the cooling water outfall but the discharge rate would be small in comparison with the cooling water plume (approx. 1 cumec compared to 125 cumecs) and it is expected that the effects of this discharge would be only discernable over a very short range. The FRR discharge would also return fish that have been exposed to chlorination products in the cooling water system. Some of these fish will be prey species for SPA designated birds. The fish would only be exposed to chlorination for a short period as they transit through the system and are not expected to accumulate detectable levels of chlorination products before discharge to sea. The discharge and any potential environmental effects (including any potential effects on seabirds) will be subject to a separate assessment.

Evidence requirements: Results of thermal and chemical plume modelling from the cooling water outfall and the FRR (i.e. chlorination), and evidence regarding the likely response of ecological receptors.

4 – There are **hydrological connections** between the Sizewell development area and Minsmere-Walberswick (south of Minsmere New Cut). In addition, any change in water levels at Minsmere sluice may have the potential to affect surface water levels to the north (this is thought unlikely but requires investigation given the sensitivity of some of the habitats north of Minsmere New Cut to water levels). Therefore, changes in water levels/flow/ditch alignment / sedimentation rates within the watercourses potentially could affect water quality in Minsmere south levels (or Minsmere north levels, although this is thought unlikely). Note: it is assumed that all waste water streams during the operational phase would be treated and discharged to sea.

Evidence requirements: Results of the detailed groundwater and surface water studies; and an understanding of effects on designated features.

5 – See Paper **SZC-EP-WS2-005** Sizewell C Project HRA Evidence Plan: Groundwater conceptualisation (i.e. the effect of the cut off wall on groundwater is very localised to the north of the site).

Evidence requirements: Evidence available now – subject to detailed groundwater studies (see Note 6 below).

6 – Any permanent development that interrupts or alters the **baseline hydrological or hydrogeological regime** (e.g. the presence of the proposed cut-off wall around the nuclear and conventional islands) potentially could change the hydrological or hydrogeological properties of the site and adjacent land and, in turn, the conditions that support wetland habitat. However, the groundwater conceptualisation study, which has been carried out on a precautionary, 'without mitigation' basis (other than use of the cut-off wall itself), indicates that there is only localised and limited potential for effects on groundwater levels in the vicinity of the site.

Evidence requirements: Results of baseline surface water and groundwater monitoring, groundwater and surface water conceptualisation studies, detailed modelling, scheme details (notably the design of the cut-off wall / presence of other structures that could act to impede groundwater flow), mitigation measures (including secondary mitigation to reduce the effects of the cut-off wall on groundwater flow) and the operational drainage strategy.

7 – Localised **nutrient loading** on vegetation communities may arise as a result of increased traffic flows and use of diesel generators for testing or as required. Radioactive discharges to air would also occur (see note 14 below). Some species / vegetation types are sensitive to relatively small changes in air quality (e.g. lichens). Any significant change in air quality is likely to be confined to the immediate vicinity of the nuclear power station as concentrations of potential pollutants would rapidly diminish away from the source. Far-field effects are therefore considered very unlikely to arise. However, on a precautionary basis, potential changes in air quality resulting from combustion emissions have been considered for designated sites within a radius of 10km of Sizewell C.

Evidence requirements: Constraints plans, further screening against road traffic criteria (e.g. Highways Agency Criteria), further screening against EA and NE criteria, and the results of air quality modelling and radiological investigations.

8 – Operation of the cooling water system could lead, via **impingement and entrainment**, to a localised loss in small fish species (and their prey) that are utilised by foraging seabirds. The impingement assessment will consider potential effects of chlorination of the intake tunnels on fish survival from the FRR discharge.

Evidence requirements: Impingement and entrainment assessments; and prediction of any potential population level effects.

9 – See **Paper SZC-EP-WS2-004** Sizewell C Project HRA Evidence Plan: **Construction disturbance effects** on bittern and marsh harrier interests of the Minsmere to Walberswick SPA. Limited foraging use is made of the Sizewell Marshes.

Evidence requirements: Detailed information on interest feature (species) use of the study area (and thus the relative importance of affected habitats).

10 – The effects of operational activities (e.g. noise, lighting, traffic) may have a direct disturbance effect on birds utilising habitats within the vicinity of the power station, potentially leading to displacement. Habitat fragmentation effects may also still be present. The likelihood of effects arising will diminish with distance from the development and therefore impacts will be more likely to arise for those bird species that utilise habitats in proximity to the site.

Evidence requirements: Details of the operational phase infrastructure and proposed operations (including working patterns); review of available published information relating to disturbance effects on birds; the results of the noise contour mapping; and details of the proposed lighting strategy.

11 – Operational staffing levels will be considerably reduced in comparison to numbers during construction, and the re-opening of any affected PRoW and implementation of the landscape strategy should reduce any recreational disturbance on designated sites. Additional disturbance pressure on habitats (and, in particular, breeding and wintering bird populations) through increased **recreational activities** is, therefore, much less likely to arise in the operational phase. In addition, once operational displacement of use from the Sizewell beach frontage would not arise. Any effects, if they were to occur, would be more likely to materialise in close proximity to Sizewell. However, concern has been expressed about the potential for long-term behavioural change in use of the wider area by local residents/tourists through the 10 year construction phase that continues to manifest afterwards. This impact, therefore, will be considered within the recreational assessment (see **SZC-EP-W4-002**) taking account of available evidence and professional judgment.

Evidence requirements: The outputs from the Recreation Study (visitor survey, ZOI definition etc.), assessment of location and sensitivity of relevant designated features, a Recreation Management Plan, and a review of available published information relating to disturbance responses of designated features (or agreed proxies).

12 – Given that the receptor is a habitat feature rather than a species, the only foreseeable impact pathway is trampling.

Evidence requirements: Published evidence for disturbance (trampling) effects on vegetation communities / species of interest and recovery periods.

13 – Preparation of the **BLF** may require limited sediment clearance onshore and dredging along navigational access routes. While this activity is only expected to be short term and to occur very occasionally (such as once every five to ten years) throughout the operational period, it could temporarily disturb supporting habitat. It is noted that the dredged channels will be reinstated as soon as their short term use is complete.

Evidence requirements: Confirmation of BLF operations; and detailed information on habitat presence / interest feature use of the study area.

14 – The commissioning and operation of SZC would result in limited **radioactive discharges** to air and the marine environment. These discharges will be regulated by the Environment Agency under Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2010 (as amended). The impacts of liquid and gaseous radiological discharges into the environment on non-human biota are considered to be trivial. This is based on three primary existing sources of evidence:

- The assessment carried out under the Generic Design Assessment (GDA) process for the UK EPR showed that for a generic single-reactor site the impact of radioactive discharges on non-human species was well below the Environment Agency's screening levels. This was validated by the Environment Agency's own assessment concluding that "the maximum predicted gaseous releases and aqueous discharges for a UK EPR at the generic site are unlikely to pose a risk to non-human species. We consider that the assessment is suitably conservative". EDF Energy would expect the site-specific assessment for the proposed twin reactor development at Sizewell C not to exceed relevant screening levels.
- The Environment Agency's Appropriate Assessment undertaken for EDF Energy's development at Hinkley Point C in Somerset concluded that "the assessed dose rates to all reference organisms from discharges from all three power stations at Hinkley Point were over 4000 times below the levels that would trigger further consideration of total impact on the Severn Estuary habitats and species" and the "the impact of radionuclide discharges from the proposed Hinkley Point C power station alone and cumulatively with similar discharges from the other power stations at Hinkley Point can be regarded as trivial". This assessment, which was for a twin reactor as is proposed at Sizewell C, builds confidence to the GDA generic site assessment providing a reasonable envelope for the other sites, although it is acknowledged that the receiving environments are different.
- The Environment Agency's habitats assessment of radiological substances to all Natura 2000 sites, undertaken in 2009, calculated dose rates for organisms in coastal, freshwater and terrestrial environments. These radioactive substance habitats assessments considered the combined impact of discharges from current permitted disposals and have cautiously assumed that discharges occur at the permit limits. For those Natura 2000 sites assessed in the vicinity of the proposed development (i.e. all apart from the Outer Thames Estuary SPA which was not designated until 2010) all were well below the regulatory screening level. It is recognised that the new proposed development will add marginally to the in-combination impact, as such the site specific assessment will consider such combined effects from Sizewell B nuclear power station.

Evidence available:

1. EDF / AREVA, UK EPR Pre-Construction Environment Report – Chapter 12 – Non radiological impact assessment – UKEPR-0003-120 Issue 04, 2012.
2. Environment Agency, Generic Design Assessment - UK EPR nuclear power plant design AREVA NP SAS and Electricité de France SA - Final assessment report Radiological impacts on nonhuman species, 2011.
3. Environment Agency, Decision document for the Generic Design Assessment of EDF and AREVA's UK EPR, December 2011.
4. Environment Agency, Supplement to the decision document for the Generic Design Assessment of EDF and AREVA's UK EPR, December 2012.
5. Environment Agency, Hinkley Point C Appropriate Assessment for related Environment Agency permissions, Final version, July 2012.
6. Environment Agency, Habitats assessment for radioactive substances, Science report: SC060083/SR1, 2009.

In addition, a site-specific non-human biota assessment of representative habitats and species will be undertaken as part of EDF Energy's application under the Radioactive Substances Regulations, Schedule 23 of the Environmental Permitting (England and Wales) Regulations, 2010 (as amended).