Department for
Business, Energy
& Industrial Strategy

1 Victoria Street
London
SW1H 0ET

Web: www.gov.uk/beis

To:

Our Ref: EN010012

Natural England
The Royal Society for the Protection of Birds
Suffolk Wildlife Trust

Date: 16 May 2022

Dear Sir or Madam,

Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010

Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development")

1. Following the completion of the Examination on 14 October 2021, the Examining Authority ("ExA") submitted a Report and Recommendation in respect of its findings and conclusions on the application for the proposed Development (the "Application") to the Secretary of State for Business, Energy & Industrial Strategy ("the Secretary of State") on 25 February 2022.

2. The statutory deadline for determining the Application has been extended by the Secretary of State from the original deadline of 25 May 2022 to a new deadline of 8 July 2022.

Marsh Harrier

3. The Secretary of State received information on 5 May 2022 from the Applicant regarding a pair of breeding marsh harriers recently located within the Sizewell Marshes SSSI.

4. The Secretary of State now invites **Natural England,** the **Royal Society for the Protection of Birds**, and **Suffolk Wildlife Trust** to comment on the information submitted by the Applicant.

5. The information submitted by the Applicant has been uploaded to the Planning Inspectorate's project page for the proposed Development, and can also be found at **Annex A** of this letter.

Habitat Regulations Assessment: Air Quality

6. With regards to the Applicant's updated air quality assessment (see **Annex B**), which presents the results of modelling the combined emissions from diesel generators for the temporary desalination plant and other sources[1], **Natural England** is invited to provide advice on whether an adverse effect on site integrity due to the impacts of changes in air quality can be excluded for the qualifying features of the following sites:

    - Sandlings SPA; and
    - Minsmere-Walberswick SPA, SAC and Ramsar.

7. **Comments in respect of paragraphs 3, 4, 5 and 6 should be submitted by email only to:** sizewellc@planninginspectorate.gov.uk **by 23.59 on 14 June 2022.**

8. Comments will be published on the Sizewell C Nuclear Power Station project page of the National Infrastructure Planning website as soon as possible after **14 June 2022**: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/

Habitat Regulations Assessment: Physical Interactions

9. Following the Applicant's updates to the Terrestrial Ecology Monitoring and Mitigation Plan at deadline 10 [REP10-090], **Natural England** is invited to provide advice on whether an adverse effect on site integrity due to physical interaction between birds and project infrastructure – pylons and powerlines - can be excluded for the following sites:

    - Alde-Ore Estuary SPA; and
    - Minsmere-Walberswick SPA.

Protected Species Licences

10. Paragraph 8.1 of the Secretary of State's letter of 31 March 2022 requested an update from Natural England in relation to the progress of its review of the Applicant's draft protected species licences and its views on the prospect of it being able to issue Letters of No Impediment ("LONI"). Natural England responded on 14 April 2022 advising that, with reference to LONI for badger, Deptford pink and bats:

[1] Sizewell C (April 2022): The Sizewell C Project: SZC Co.'s Response to the Secretary of State's Request for Further Information dated 18 March 2022. Revision 1.0. Appendix 7 – Project Air Quality Assessment.

We continue to assess the draft licence application for badger and are awaiting amendments from the Applicant for the Deptford pink draft licence applications. We advise that a LONI for bats may take longer, as we continue to work with the Applicant to resolve issues.

11. The Secretary of State therefore requests that **Natural England** provide a further update on this matter, specifically the prospect of it being able to issue LONI for badger, Deptford pink and bats before the new statutory deadline for determining the Application of 8 July 2022.

12. **Comments in respect of paragraphs 9, 10 and 11 should be submitted by email only to:** sizewellc@planninginspectorate.gov.uk **by 23.59 on 30 May 2022.**

13. Comments will be published on the Sizewell C Nuclear Power Station project page of the National Infrastructure Planning website as soon as possible after **30 May 2022**: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/

Yours faithfully

Gareth Leigh

Gareth Leigh

Head of Energy Infrastructure Planning

ANNEX A

Mr Leigh
Department for Business, Energy and Industrial Strategy
1 Victoria Street
London.
SW 1H 0ET

5th May 2022

Dear Mr Leigh,

Application EN010012 for The Sizewell C Project by NNB Generation Company (SZC) Limited (SZC Co.) – Supplementary information in relation to breeding marsh harriers within the EDF Sizewell Estate

I write on behalf of NNB Generation Company (SZC) Limited ("the Applicant") to advise you of a recent factual development of relevance to the forthcoming determination of its application for a development consent order to authorise the construction and operation of a new nuclear power station at Sizewell in Suffolk.

As you will be aware, one of the issues that is addressed in the application material and was considered during the examination of the application is the potential for impacts on marsh harriers. Surveys carried out by the Applicant this spring have recorded a pair of marsh harriers nesting in an area of Sizewell Marshes SSSI that would be permanently lost to construct Sizewell C, if consented. This is the first time breeding marsh harriers have been recorded in Sizewell Marshes SSSI since annual surveys of the site began 25 years ago.

In addition, breeding marsh harriers have been recorded within the replacement reedbed habitat that the Applicant has created at Aldhurst Farm, as they have done over the past few years.

Breeding marsh harrier are a qualifying feature of the adjacent Minsmere – Walberwick Special Protection Area (SPA) and Ramsar site.

In view of the absence of breeding marsh harrier from Sizewell Marshes SSSI until now and only very recent nesting activity at Aldhurst Farm, the Shadow Habitats Regulations Assessment (HRA) [APP-145] and Shadow HRA Addendum [AA-173] do not assess potential direct impacts on marsh harriers nesting outside of the SPA and Ramsar site. Rather, their focus is to assess disturbance from construction activities to breeding marsh harriers that forage over the functionally-linked Minsmere South Levels and Sizewell Marshes SSSI, but nest within the SPA and Ramsar site. This distinction is important and the assumption to date that nesting is effectively confined to the SPA and Ramsar site has not been challenged by Interested Parties, in particular Natural England and the RSPB.

However, in response to the recent breeding activity outside of the SPA and Ramsar site, we have prepared a further Shadow HRA Addendum (May 2022) to address this additional impact pathway that now exists, that is to say direct impacts due to habitat loss and/or disturbance on marsh harriers nesting within the main development site, the retained parts of Sizewell Marshes SSSI and/or Aldhurst farm. This document is submitted as "Attachment A". The updated assessment concludes that the recent breeding activity does not change the outcome of the Shadow HRA, that is to say that it remains the case that the potential for adverse effects is limited to the potential displacement of birds from functionally linked foraging

habitat, these effects being addressed via the creation of compensatory foraging habitat on former arable land.

The Applicant has also considered whether there are any implications for assessment of likely significant environmental impacts in the Environmental Statement [APP-224]. Whilst for the same reasons as set out above the Environmental Statement does not specifically contemplate marsh harriers breeding within Sizewell Marshes SSSI, it was noted in Table 14.23 that there was evidence of breeding within Aldhurst Farm. The assessment considered impacts on breeding birds for example at Paragraph 14.12.20 of [APP-224] which states " … habitat suitable for foraging ***and breeding*** birds would be lost within the site as a result of the proposed development. Loss of habitat can affect birds directly ***by removing habitat required for nesting*** and for foraging (leading to a reduction in breeding populations and breeding success); ***and indirectly through habitat fragmentation*** potentially making the remaining habitat patches too small to support viable **breeding** or wintering populations (requiring bird populations to travel further afield to find resources such as food and nesting sites). (***Emboldened text for emphasis***).

The ecological impact assessment was undertaken separately for each receptor, including breeding marsh harrier, for which it was concluded that impacts would be **significant** (**moderate adverse**), due primarily to potential noise, visual and recreational disturbance to foraging marsh harriers within Sizewell Marshes SSSI. The Applicant does not consider that the assessment, or the conclusions reached, are sensitive to occasional breeding of marsh harriers within Sizewell Marshes SSSI.

It is noted that the Environmental Statement [APP-224] also states at paragraph 14.12.22 that "To mitigate for the loss of habitat within Sizewell Marshes SSSI (and provide alternative wetland habitat), primary mitigation measures to create replacement 2km of ditches and 5.4ha of reedbed and open water habitat have already been implemented at Aldhurst Farm". The recent survey record of marsh harriers breeding there every year since 2019 serves to demonstrate the effectiveness of this mitigation.

As part of this same exercise, the Applicant has also considered whether the mitigation and control measures that have already been proposed under the draft DCO (having regard to the environmental information) would remain appropriate and adequate in circumstances where marsh harrier continue to breed within Sizewell Marshes SSSI, or indeed Aldhurst farm, during the construction phase of the Project.

In relation to land within the main development site, paragraph 1.4.4 of the Code of Construction Practice [REP10-072] secured by draft DCO Requirement 2 commits the Applicant to the following controls:

- All vegetation removal must be supervised by (the) ECoW and must have regard to the breeding birds and any additional measures that may be defined in a relevant protected species licence or mitigation strategy; and
- If a protected species or signs of a protected species are found within the active construction site, the ECoW must be contacted immediately to advise on the appropriate course of action.

In addition, the Terrestrial Ecology Monitoring & Mitigation Plan (TEMMP) secured under Draft DCO Requirement 4 commits the Applicant to carry out annual breeding bird surveys on land in the vicinity of the main development site. Details are provided in Table 3.1 'Sizewell Marshes SSSI – Monitoring of Retained Areas', which specifically include a requirement for surveys of Sizewell Marshes SSSI and Aldhurst Farm. These measures would ensure that any Marsh Harriers nesting within the relevant areas would be identified and appropriate adaptive measures taken in response. The survey results and adaptive measures would need to be agreed with the Ecology Working Group and Environmental Review Group established under Schedule 11 of the Deed of Obligation.

Marsh harrier are also protected under the Wildlife and Countryside Act 1981 (as amended) making it an offence to intentionally take, damage or destroy a nest whilst in use or being built. They are also listed under Schedule 1 of the Act, making it an offence to intentionally or recklessly disturb the birds whilst nest building or at a nest containing eggs or young, or to disturb the dependent young. One of the main purposes of the measures identified above is to ensure that no such offence is committed, and this would apply equally in relation to Marsh harriers.

For those reasons, the Applicant considers that the mitigation and control mechanisms that have already been proposed and secured remain appropriate and adequate to address the potential impact.

Yours sincerely,

Carly Vince
Chief Planning Officer, SZC Co.

Encl. Attachment A

c.c. Siân Evans – Planning Inspectorate

ATTACHMENT A

The Sizewell C Project

5.10 Shadow Habitats Regulations Assessment Addendum (May 2022)

Revision: 1.0
Applicable Regulation: Regulation 5(2)(e)
PINS Reference Number: EN010012

May 2022

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CONTENTS

1 ASSESSMENT OF EFFECTS OF THE SIZEWELL C PROJECT ON THE MINSMERE-WALBERSWICK SPA AND RAMSAR SITE BREEDING MARSH HARRIER POPULATION: IMPLICATIONS OF RECENT NESTING ON FUNCTIONALLY LINKED LAND

1.1 Background

a) Assessment and nesting occurrence as determined in the shadow Habitats Regulations Assessment

1.1.1 The potential effects of the construction and operation of the Sizewell C Project (subsequently referred to as 'the Project') on European designated sites have been assessed in the shadow Habitats Regulations Assessment (HRA) [APP-145] and shadow HRA Addendum [AS-173]. This includes consideration of the potential effects on the breeding marsh harrier population which is a qualifying feature of the Minsmere-Walberswick Special Protection Area (SPA) and Ramsar site, as assessed at sections 8.8d) and 8.9 for the SPA and Ramsar site, respectively. Further consideration of the potential effects on this SPA population is presented in paragraphs 4.3.52 – 4.3.69 of the Report on the Implications for European Sites [PD-053].

1.1.2 The Minsmere-Walberswick SPA (and Ramsar site) lies to the north of the main development site for the Project. Along most of its length, the northern boundary of the main development site is separated from the SPA by distances of between several hundred metres to more than a kilometre, although the eastern part of the SPA is adjacent to this boundary for a short distance (Figure 4.1 in the shadow HRA [APP-145]). The shadow HRA [APP-145] focussed the assessment on the known marsh harrier nest sites in the Minsmere reedbed, which is within the SPA and beyond the distance at which most potential effects from the Project are considered likely to occur[1]. While the ES acknowledged that a breeding territory had been established within the new reedbed creation area at Aldhurst Farm, this was not deemed relevant to the shadow HRA given its location outside the SPA and Ramsar site and given that it was (at the time) a single breeding occurrence. Thus, in terms of the potential for effects on the SPA marsh

[1] Noting that for the increased recreational disturbance effect pathway, which has the potential to manifest at greater distances from the main development site, other factors (notably the management and control of visitors) meant that effects on nesting birds are highly unlikely.

harrier population, attention was focussed on the use of functionally linked habitat outside the SPA (and in closer proximity to the main development site) for foraging and the extent to which the Project could (potentially) affect this. This focus is apparent from the Report on the Implications for European Sites [PD-053], which does not refer to the potential for effects to occur at the marsh harrier nest sites.

1.1.3 The shadow HRA [APP-145] concluded that noise and visual disturbance associated with construction of the main development site could result in the displacement of marsh harriers from functionally linked foraging habitat in the Sizewell Marshes and, to a lesser extent, the Minsmere South Levels. On the basis of a number of highly precautionary assumptions, such displacement was considered to have the potential to lead to an adverse effect on the SPA marsh harrier population, with this being addressed through the creation of compensatory foraging habitat on former arable land within the EDF Sizewell estate to the north of the main development site, adjacent to the SPA. This compensatory habitat includes both terrestrial and wetland components. The terrestrial habitat creation has already been substantially completed and is described in SZC **On-site Marsh Harrier Compensatory Habitat Strategy** (September, 2021) [REP10-128]. The additional wetland habitat is to be created between mid-August 2022 and February 2023 as outlined in SZC Co.'s response to the Secretary of State's letter of 18th March 2022. Requirement 27 of the dDCO requires a marsh harrier implementation plan in general accordance with [REP10-128] to be agreed with East Suffolk Council, following consultation with Natural England, before commencement.

b) The occurrence of nesting marsh harriers outside the SPA

1.1.4 It has recently become apparent that marsh harriers have started to nest in reedbed habitats which are outside the Minsmere-Walberswick SPA (and Ramsar site) and within, and in the vicinity of, the main development site for the Project. Since 2019 nesting activity has been recorded in the new reedbeds created by SZC Co. at Aldhurst Farm to help compensate for the unavoidable permanent loss of 5.74ha of Sizewell Marshes SSSI needed to build Sizewell C. Nesting activity has, for the first time, also been recorded within Sizewell Marshes SSSI in the current (2022) breeding season. While there is also reedbed habitat within the SSSI that is

potentially suitable to support nesting marsh harrier, to date there is no other known breeding activity in the SSSI based on 25 years' monitoring[2].

1.1.5 The locations of the above nesting areas are approximately 3.5km (at Aldhurst Farm) and 2.5km (at Sizewell Marshes SSSI) from the marsh harrier nesting area in the Minsmere reedbeds within the SPA and, as such, are sufficiently close to be regarded as having the potential to be functionally linked with the SPA population. Given the pattern of regular use of the Aldhurst Farm reedbed by nesting marsh harrier as observed over recent years (see below), including the current (2022) breeding season, and the occurrence of a breeding pair in 2022 in Sizewell Marshes SSSI, this is therefore SZC Co's revised assumption for the purposes of the sHRA.

1.1.6 The first nesting activity in Aldhurst Farm reedbeds was recorded in 2019, with observations suggesting that a single pair was nesting there. Subsequently, two females (believed to be associated with the same male[3]) were considered likely to have nested at Aldhurst Farm in 2020, with anecdotal evidence suggesting two pairs also nested there in 2021. In the current breeding season (2022) it appears that single females have established nests in Aldhurst Farm and Sizewell Marshes SSSI. The nesting activity in the current breeding season has been established during breeding bird surveys that are being undertaken by the Project. As in 2020, it appears that both of the current nesting attempts are associated with a single male.

1.1.7 The occurrence of this recent nesting activity on functionally linked land means that there is potential for direct habitat loss and disturbance associated with the Project to have effects on nesting marsh harrier, which represents a change to the conclusions reached in the shadow HRA [APP-145] in this regard (see above). Therefore, it is necessary to also consider whether the activities associated with the Project could result in adverse effects on the SPA population via effects (direct habitat loss and visual, noise and recreational disturbance) on the birds nesting on the functionally linked land at Aldhurst Farm and Sizewell Marshes SSSI. This assessment (both alone and in-combination with other plans and projects) is set out below.

[2] Breeding bird surveys of Sizewell Marshes SSSI have been carried out by Suffolk Wildlife Trust on behalf of Nuclear Generation Limited (part of EDF) on an annual basis since 1997

[3] Marsh harriers can be polygynous with a single male mating with multiple females and contributing to provisioning these females and the subsequent broods.

1.2 The potential for adverse effects

1.2.1 Marsh harriers nesting at Aldhurst Farm and the Sizewell Marshes are vulnerable to potential effects from the Project activities which, for example, could; (i) cause the nesting attempts to fail; (ii) temporarily displace nesting pairs from the sites (e.g. noise and visual disturbance during construction - see Figure 8A.1 in the shadow HRA Addendum [AS-173]); or (iii) cause permanent loss of the nesting habitat (i.e. for the current nesting attempt within the Sizewell Marshes SSSI).

1.2.2 There is, however, no potential for adverse effects to occur on the SPA population as a consequence of the recent nesting activity on functionally linked land. This is because the SPA population and the associated conservation objectives are not dependent on such nesting activity. The reasons for this are set out below in terms of (i) the potential for effects to arise on the SPA population and (ii) the historical dependence of the SPA population on the provision of nesting habitat on functionally linked land.

- Effects on the population nesting within the designated land: As described above, the potential for direct effects on nesting birds is limited to those using sites on functionally linked land, which would not affect the population nesting within the designated land. Thus, potential effects on birds using functionally linked land for nesting contrasts with the situation in relation to birds which nest within the SPA but may be displaced from foraging habitat on functionally linked land (because the latter situation could affect the population nesting within the SPA).

  This aligns with the guidance on functionally linked land commissioned by Natural England, which recognises that assessments have to determine how critical the functional linkage is to the designated population and whether it is necessary to maintain or restore favourable conservation status of the qualifying feature[4]. This is particularly important where, as here, the SPA population is regarded as being in favourable condition (having a 'maintain' objective), with the most recently available estimate of 17 nests in 2018 (as detailed in Table 6.6 in the shadow HRA [APP-145]) being

[4] Chapman, C. and Tyldesley, D. (2016) Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – a review of authoritative decisions. Natural England Commissioned Reports, No. 207.

slightly above the citation population size of 15 females (recorded pre-1991)[5].

Furthermore, the SPA population has fluctuated in size over the years (e.g. up to 31 nests were recorded in 2007 - Table 6.6 in the shadow HRA [APP-145]) and the extent of reedbed nesting habitat within the SPA has not declined, with much of it being actively managed to ensure its suitability for key nesting species, such as marsh harrier[5]. This further demonstrates that the designated land provides sufficient nesting habitat to maintain the population at or above the citation level and avoid deterioration from its current level, and that the SPA population is not dependent on functionally linked land for nesting.

- Absence of historical dependence of the designated population on functionally linked land for nesting: As described above, the records of nesting activity at Aldhurst Farm and the Sizewell Marshes derive from recent years only (i.e. 2019 - 2022). Aldhurst Farm has been subject to a wetland habitat creation scheme, which was completed in 2015/16 [REP5-126]. Prior to this it was arable farmland. Whilst the recent marsh harrier nesting activity is testament to the success of the habitat creation, and the speed at which it has matured, it is clear that prior to the wetland habitat creation scheme at Aldhurst Farm, the land had little or no potential to provide supporting nesting habitat for the SPA population (noting that the SPA has been designated since 1991). The current breeding activity in Sizewell Marshes SSSI is the first that has been recorded in the SSSI in 25 years of monitoring.

  As explained above, it is self-evident that land within the SPA provides sufficient nesting habitat to maintain the population at or above the citation level and avoid deterioration from its current level, so that the SPA population is not considered to be dependent on nesting habitat on functionally linked land outside the designated site. This assessment is further supported by the fact that such nesting activity is almost entirely limited to recently created nesting habitat.

1.2.3 These conclusions apply equally to ‘Project alone’ and the ‘Project in-combination’ assessments because the SPA population and associated conservation objectives are not dependent on the nesting activity within the functionally linked land.

[5]https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009101&SiteName=minsmere&SiteNameDisplay=Minsmere-Walberswick+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

1.3 Conclusions

1.3.1 The assessment of the potential effects of the Project on the Minsmere-Walberwick SPA (and Ramsar site) breeding marsh harrier population was undertaken on the basis that nesting by marsh harrier was limited to the reedbed habitats within the designated site. Recent nesting activity by marsh harriers on land which is outside, but functionally linked to, the SPA (and Ramsar site) means that it is necessary to also consider whether the conclusions reached in the shadow HRA [APP-145] of no effect on site integrity in respect of breeding marsh harrier remain valid.

1.3.2 The SPA population is not dependent on the nesting habitat on functionally linked land and such nesting habitat has only been created recently or has never previously been recorded being used (in 25 years of monitoring). It is therefore evident that this recent nesting activity by marsh harriers does not affect the conclusions of the shadow HRA [APP-145]. This is the case for both the 'Project alone' and the 'Project in-combination' assessments.

1.3.3 Thus, in relation to the Minsmere-Walberswick SPA (and Ramsar site) breeding marsh harrier qualifying feature, it remains the case that the potential for adverse effects is limited to the potential displacement of birds from functionally linked foraging habitat due to noise and visual disturbance during construction (with this effect being addressed via the creation of compensatory foraging habitat on former arable land within the EDF Sizewell estate to the north of the main development site, adjacent to the SPA). Therefore, the conclusions reached in the shadow HRA [APP-145] are unaffected by the recent nesting activity on functionally linked land.

ANNEX B

The Sizewell C Project

SZC Co.'s Response to the Secretary of State's Request for Further Information dated 18 March 2022: Appendix 7 – Project Air Quality Assessment

Revision: 1.0

April 2022

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CONTENTS

FIGURES

TABLES

1 PROJECT AIR QUALITY ASSESSMENT

1.1 Introduction

1.1.1 SZC Co. has continued to engage with the relevant authorities for the shadow Habitats Regulations Assessment (sHRA).To support that process this document collates data on the Sizewell C Project's contributions of air pollutants to ecological receptor locations during the construction phases 1, 2 and 3, from:

- Diesel generators for the desalination plant as previously reported[1]
- The CHP facility as previously reported[2];
- Haul Route/ Non-road mobile machinery (NRMM) as previously reported[3]; and
- Data for other mobile generators.

1.1.2 For Phase 1, when the early works are being undertaken at the main development site, the power supply will be provided by mobile generators. However, before the start of Phase 2, the power from the main development site supply will become available following completion of a new 132/11kV Substation.

1.1.3 The scenarios include all plant that are scheduled to be used at any time within each phase, as if they were all present at the same time. In practice, demand for plant will vary with activity decreasing progressively during the later years of Phase 3 as elements of the construction works are completed. The levels of emissions will be minimal by later stages of Phase 3. This assessment of construction phase emissions does not consider Phase 4 emissions from the testing of back-up diesel generators, which are an operational phase activity.

1.1.4 Regulation of emissions from the diesel generators will be through an Environmental Permit required from the Environment Agency. The application for a permit will be made by the operator and will include an

[1] Sizewell C Project Document 9.117, Sizewell C Desalination Plant Air Quality Impact Assessment [REP9-026]
[2] Sizewell C Project Document 6.3 Environmental Statement Main Development Site, Volume 2, Chapter 12 Air Quality [APP-212]
[3] Sizewell C Project Document 6.3 Environmental Statement Main Development Site, Volume 2, Chapter 12 Air Quality, Annex 12A.5 Non-road Mobile Machinery Exhaust Emissions [APP-213]

assessment of air quality effects based on knowledge of the detailed design as known at that time. In order for a permit to be granted, no significant effects must occur on any sensitive receptors, including human health and habitat receptors. Natural England are a consultee to the permit application determination, which is currently in proress.

1.1.5 The Code of Construction Practice[4] includes a number of commitments to minise the potential for emissions to air by the adoption of good practice measures, including:

- Non-Road Mobile Machinery (NRMM) engines should achieve Stage IV emissions standards where practicable and available. A formal exemptions process will be used to enable use of NRMM that are unable to achieve the target emissions standards for a range of operational reasons, with a target cap on the total percentage of exemptions. A registration scheme will be established requiring NRMM to be registered prior to being allowed access to the project sites;

- The totality of Stage IV exemptions will account for no more than 15% of individual plant on an annual basis; the use of mobile power plant including diesel or petrol powered mobile plant will be avoided where practicable and then limited to temporary functions (less than 6 months) and non-distribution functions in accordance with Environment Agency Regulatory Guidance Note 2 and the Medium Combustion Plant Directive; and

- Air pollution monitoring locations that are protective of ecological sites and public health have been proposed.

1.1.6 As the detailed schedule of works is further developed a range of measures could be applied to further control or reduce environmental effects,such as siting of specific generators further away from sensitive receptors for example.

1.1.7 An indicative air impact assessment has been undertaken to demonstrate an upper estimate of likely impacts at designated ecological sites. recognising that the final control measures to be applied will be determined and secured

[4] Sizewell C Project Document 8.11 Code of Construction Practice, Table 4.1 Control measures to mitigate air quality impacts, Section 4 Air Quality, [REP10-072].

through that process rather than via the DCO and will be based on a more detailed understanding of generator useage that is available at this time.

1.1.8 Emissions from the desalination plant generators have been included in the assessment for phase 1. During Phases 2 and 3 the facilities and plant at the main construction site will be serviced by the site power supply instead of being powered via the generators where it s practical to do so.

1.1.9 The CHP is constructed during Phase 1 and emissions have been included in the assessment for Phases 2 and 3 only.

1.1.10 Emissions from the Haul Route have been used as reported for the peak period, within all Phases, although this represents an overestimate of activity outside of the peak period.

1.1.11 The contribution of emissions from mobile generators is summarised in Section 2 of this report and reports values for the same receptors of relevance to the sHRA as reported previously for the other sources of emissions.

1.1.12 This report details the air impact assessment that has been carried out to demonstrate the likely effects of the use of mobile generators and other plant, in response to the consultation response provided by Natural England in their comments on the RIES[5]. The document presents results at locations representing likely impacts on Minsemere to Walberswick European Sites and also at site of special scientific interest and county wildlife sites.

2 QUANTIFYING EMISSIONS FROM MOBILE GENERATORS

2.1.1 The work areas containing sources of emissions considered in this report are illustrated in **Figure 2.1**, together with the key receptor locations of relevance to the sHRA.The names of the receptors locations are provided in **Table 1**.

2.1.2 Figure 2.2 provides an expanded in view of the area of the southern extremity of the Minsmere-Walberswick SPA and Ramsar designation adjacent to the main construction area.

[5] EN010012-008702-Pgs 30-35-Comments on the RIES.pdf at Section 2.7 Air Quality [REP10-199]

Figure 2-1 Work areas and Receptors

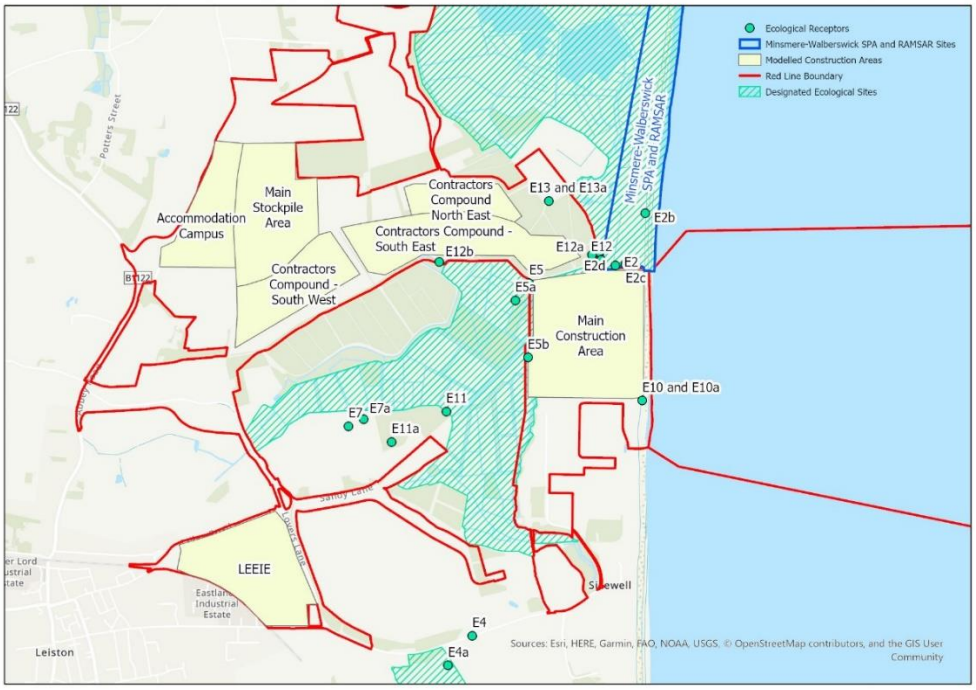

Figure 2-2. Receptors to north of Main Construction Area

2.1.3 The receptors used in this assessment at listed in **Table 1**.

Table 1 sHRA Receptor Locations

Receptor ID	Description
E1	Alde Ore SCA,SPA and Ramsar
E2	Minsmere-Walberswick SCA,SPA, SSSI and Ramsar
E3	Orfordness to Shingle Street SAC
E4	Sandlings SPA
E5	Sizewell Marshes SSSI
E6	Leiston and Aldeburgh SSSI
E7	Leiston Common CWS
E8	Aldringham to Aldeburgh Disused Railway Line CWS
E9	Dower House
E10	Suffolk Shingles CWS
E11	Reckham Pits Wood CWS
E12	Sizewell Levels CWS
E13	Minsmere South Levels CWS

2.1.4 Although the exact number, make or model of diesel generators have not been selected at this stage of the project, suitable emission parameters have been estimated for the units, based on similar sized units (where available), or scaled down from larger units, as appropriate.

2.1.5 For each item of plant, and indicative engine power rating (in Kilowatts (kW)) and an average engine load during use have been assigned. The factors used in this assessment are shown in **Table 2**.

Table 2. Engine Power Rating and Average Loads

Plant Category	Indicative Power Rating (kW)	Average Engine Loading (%)
Generator - Large	2000	0.7
Generator - small	400	0.7
Compressor	120	0.7
Concrete pump	250	0.7

2.1.6 The schedule of generators and other plant included in this assessment has been sourced from Chapter 11 Noise and Vibration, Appendix 11B/B – Construction Source Schedule (Document Ref. 6.3: Volume 2 Main

Development Site). This assessment has included generators, as well as items of plant that require a standalone power source (i.e. compressors and concrete pumps). Tower cranes have not been included, as it assumed that power requirements will be met by a mains supply during Phase 3. A list of the plant included in this assessment, and the construction area of use and phase, are shown in **Tables 3, 4** and **5**.

Table 3. Construction Plant Schedule for Phase 1

Phase	Sub-phase	Activity	Plant (as listed in Appendix 11B/B0	Indicative Plant Type	Power Rating	No. Plant within Construction Areas		
						Main Construction Area	LEEIE*	Accommodation Campus
Phase 1	P1-4b	Piling	Generator	Generator - small	400	4	0	0
Phase 1			Compressor	Compressor	120	4	0	0
Phase 1	P1-7a	Main Site Office - Piling	concrete pump	concrete pump	250	1	0	0
Phase 1	P1-7a		Compressor	Compressor	120	1	0	0
Phase 1	P1-7b	Entrance Plaza	Compressor	Compressor	120	3	0	0
Phase 1	P1-8b	Concrete Batching Ground Prep	Generator	Generator - small	400	4	0	0
Phase 1			Compressor	Compressor	120	3	0	0
Phase 1	P1-10c-i	Sea Defences - Ground Improvement as 5a	concrete pump	concrete pump	250	2	0	0
Phase 1	P1-10c-ii	Sea Defences – Peat Treatment under	Compressor	Compressor	120	4	0	0
Phase 1			Generator	Generator - Large	2000	4	0	0
Phase 1	P1-11b	Cut off Wall - Construction	Generator	Generator - small	400	8	0	0
Phase 1			Tracked Compressor	Compressor	120	8	0	0

** Land to the East of Eastlands Industrial Estate*

Table 4. Construction Plant Schedule for Phase 2

Phase	Sub-phase	Activity	Plant (as listed in Appendix 11B/B0	Indicative Plant Type	Power Rating	No. Plant within Construction Areas		
						Main Construction Area	LEEIE*	Accommodation Campus
Phase 2	P2-6b		Main Access Road Compressor	Compressor	120	4	0	0
Phase 2	P2-7b	Entrance Plaza	Compressor	Compressor	120	3	0	0
Phase 2	P2-7c	Main Site Office - Superstructure	Generator	Generator - small	400	4	0	0
Phase 2			Compressor	Compressor	120	8	0	0
Phase 2	P2-12b		Compressor	Compressor	120	2	0	0
Phase 2			concrete pump	concrete pump	250	2	0	0
Phase 2			Generator	Generator - small	400	2	0	0
Phase 2	P2-14a-i	Accom'd'n Campus - Grndworks	Accomodation Campus Compressor	Compressor	120	0	0	2
Phase 2	P2-14b-i	Accom'd'n Campus - Car Parks - opt 1	Compressor	Compressor	120	0	0	2
Phase 2	P2-14c-i	Accom'd'n Campus – Buildings – opt 1	Generator	Generator - Large	2000	0	0	4
Phase 2			Compressor	Compressor	120	0	0	8
Phase 2	P2-15a	Within Cut-off Wall - Excavation	Compressor	Compressor	120	6	0	0
Phase 2			Generator	Generator - small	400	6	0	0
Phase 2	P2-30	Main Works Yard	Compressor	Compressor	120	2	0	0

** Land to the East of Eastlands Industrial Estate*

Table 5. Construction Plant Schedule for Phase 3

Phase	Sub-phase	Activity	Plant (as listed in Appendix 11B/B0	Indicative Plant Type	Power Rating	No. Plant within Construction Areas		
						Main Construction Area	LEEIE*	Accommodation Campus
Phase 3	P3-30	Main Works Yard	Compressor	Compressor	120	12	0	0
Phase 3	P3-31	CRF Pipes	Compressor	Compressor	120	4	0	0
Phase 3	P3-32	Galleries	concrete pump	concrete pump	250	1	0	0
Phase 3			Compressor	Compressor	120	4	0	0
Phase 3	P3-33	CRF Backfill	concrete pump	concrete pump	250	2	0	0
Phase 3			Compressor	Compressor	120	4	0	0
Phase 3	P3-34	CRF Secondary Backfill	Compressor	Compressor	120	4	0	0
Phase 3	P3-35	1.0 Base slab & substructure	Compressor	Compressor	120	6	0	0
Phase 3			concrete pump	concrete pump	250	1	0	0
Phase 3			Tower Crane	Tower Crane	0	2	0	0
Phase 3	P3-36	Nuclear Island 1	Compressor	Compressor	120	10	0	0
Phase 3			concrete pump	concrete pump	250	3	0	0
Phase 3			Tower Crane	Tower Crane	0	10	0	0
Phase 3	P3-37	Nuclear Island 2	Compressor	Compressor	120	5	0	0
Phase 3			concrete pump	concrete pump	250	2	0	0
Phase 3			Tower Crane	Tower Crane	0	2	0	0
Phase 3	P3-38	Nuclear Island 3	Compressor	Compressor	120	5	0	0
Phase 3			concrete pump	concrete pump	250	2	0	0

Phase	Sub-phase	Activity	Plant (as listed in Appendix 11B/B0	Indicative Plant Type	Power Rating	No. Plant within Construction Areas		
						Main Construction Area	LEEIE*	Accommodation Campus
Phase 3			Tower Crane	Tower Crane	0	2	0	0
Phase 3	P3-39	Nuclear Island 4 (Secondary Backfill)	Compressor	Compressor	120	12	0	0
Phase 3	P3-40	Turbine Hall	Hall Compressor	Compressor	120	5	0	0
Phase 3			concrete pump	concrete pump	250	2	0	0
Phase 3			Tower Crane	Tower Crane	0	4	0	0
Phase 3	P3-41	SWBP Walls	Compressor	Compressor	120	5	0	0
Phase 3			Tower Crane	Tower Crane	0	4	0	0
Phase 3	P3-42	Forebay Base	Compressor	Compressor	120	5	0	0
Phase 3			concrete pump	concrete pump	250	2	0	0
Phase 1	P6-99b	Site Preparation	Big Field Compressor	Compressor	120	0	2	0
Phase 1			Big Field Generator	Generator - Large	2000	0	2	0
Phase 1	P6-99c	Railhead Construction	BIG FIELD CONCRETE PUMPS RH	concrete pump	250	0	2	0

** Land to the East of Eastlands Industrial Estate*

2.1.7 The main scenario that has been modelled is based on emission factors for each item of plant have been derived from the maximum permissible emission factors for Stage IV engines used for Non-road Mobile Machinery (NRMM). These emission factors do not contain an emission factor for sulphur dioxide (SO_2), and an emission factor has been derived from similar scaled plant published in the Environmental Permit Application for the Hinkley Point C (HPC) Construction Combustion Activity. Document: 100320216, Revision: 001. The emission factors used are shown in **Tables 6** and **7**.

Table 6. Stage IV Engine Emission Factors

Category	Net Power	Date	NOx (g/kWh)	PM (g/kWh)	Notes
	P > 560		0.4	0.025	Assume as 130-560
Q	130 <= P <= 560	2014	0.4	0.025	
R	75 <= P < 130	2014	0.4	0.025	
R	56 <= P < 75	2014	0.4	0.025	
	37 <= P < 56	2013	4.7	0.025	As Stage IIIB
	19 <= P < 37		4.7	0.025	Assume as 37-56
	8 <= P < 19		4.7	0.025	Assume as 37-56
	P < 8		4.7	0.025	Assume as 37-56

Table 7. Engine Emission Factors - SO_2

Power Rating (kW)	SO_2 Emission Rate (g/s)
120	0.008
250	0.0390
400	0.0390
2000	0.0480

2.1.8 The proposed working hours for the construction phase have been discussed in Chapter 11 Noise and Vibration. For this assessment, and as noted in Chapter 11, the main construction activities are likely to be limited to between the times of 7:00 and 23:00. For this reason, it has been assumed that emissions from some construction plant within the Main Construction Area are limited to these hours. For the LEEIE and Accommodation campus, it is assumed that power is required continuously, and no daily profile has been assumed for emissions from these areas.

2.2 Assessed Emission Scenarios

2.2.1 The Code of Construction Practice commitment to use Stage IV compliant plant with a limit on exemptions of 15%, is based on the emissions performance of each individual mobile generator. The emissions from generators vary depending on the size and use of the individual items of plant. The 15% exemption on individual items of plant does not equate to a 15% change in total emission rates.

2.2.2 For example, the plant schedules presented in Table 3 include 56 items of plant in Phase 1. The four large generators (2000 kW/h) represent 7% of the plant and 42% of the oxide of nitrogen (NOx) emissions, while the smallest plant (250 kW/h & 120kW/h) collectively represent 64% of the total items of plant and only 25% of the NOx emissions.

2.2.3 In addition, the Code of Construction Practice commitment is for exemptions to be temporary (less than 6 months). By the time works commence, new large genrators (>560Kw/h) sold in the UK will be required to achieve Stage V emissions standards, so it is reasonable to assume that Stage IV plant would be readily available for common construction plant. The exemptions limit is an annual tally but it is highly unlikely that all exempt plant would be onsite at the same time or that individual exempt items of plant would be present for an extended period.

2.2.4 To determine the potential impacts of the diesel generators on the nearby habitat sites, dispersion modelling has been undertaken for two assessment scenarios:

- The Main Scenario is based on 100% Stage IV compliant plant as a robust basis for the assessment of likely long term impacts;
- A Sensitivty Test based on all plant emissions (on a g/s basis) equivalent to 95% at Stage IV and 5% at Stage IIIB emission rates as a reasonable basis for an upper bound estimate of impacts.

2.2.5 Emission sources have been modelled as volume sources, representing indicative working and operational areas during the construction phases. The location and area of each source is described in **Table 8**. It is assume that the vertical extent of the volume source is 3m.

Table 8. Volume Source Parameters

Source ID	Coordinate of Centre Point		Width (m)	Length (m)
	X	Y		
Main Construction Area	647268.4	264120.1	221	221
Accommodation Camp	645250.8	264872.3	195	155
LEEIE	645387.6	262832.7	250	105

2.2.6 For each emission source, an emission rate has been derived based on the number and type of plant within each source, the average engine load and the phase within which the plant is expected to operate. Emission rates have been split into two categories based on permitted emission limit values for Stage IIIB and Stage IV engines. The emission rates used to calculate model inputs for each volume source used in this assessment are shown in **Table 9** to **Table 14**.

2.2.7 The main scenario is based on 100% emissions at Stage IV emission rates (**Tables 12** to **14**) and the additional sensitivity test is based on 95% of all plant emitting at Stage IV emission rates (**Tables 12** to **14**) and 5% of all plant emitting at Stage IIIB emission rates (**Tables 9** to **11**).

Table 9. Modelled Emission Rates - Phase 1 – total as Stage IIIB Compliant Plant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	7.66	0.09	0.13	5.2×10^{-5}	5.9×10^{-7}	9.1×10^{-7}
Accommodation Camp	92,112	-	-	-	-	-	-
LEEIE	78,534	1.904	0.023	0.041	2.4×10^{-5}	2.9×10^{-7}	5.3×10^{-7}

Table 10. Modelled Emission Rates - Phase 2 – total as Stage IIIB Compliant Plant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	3.99	0.040	0.045	2.7×10^{-5}	2.7×10^{-7}	3.1×10^{-7}
Accommodation Camp	92,112	4.04	0.046	0.077	4.4×10^{-5}	5.0×10^{-7}	8.3×10^{-7}
LEEIE	78,534	-	-	-	-	-	-

Table 11. Modelled Emission Rates - Phase 3 – total as Stage IIIB compliant Pant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	7.70	0.07	0.04	5.2×10^{-5}	4.5×10^{-7}	3.0×10^{-7}
Accommodation Camp	92,112	-	-	-	-	-	-
LEEIE	78,534	-	-	-	-	-	-

Table 12. Modelled Emission Rates - Phase 1 – total as Stage IV Compliant Plant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	1.39	0.09	0.13	9.5×10^{-6}	5.9×10^{-7}	9.1×10^{-7}
Accommodation Camp	92,112	-	-	-	-	-	-
LEEIE	78,534	0.37	0.023	0.041	4.7×10^{-6}	2.9×10^{-7}	5.3×10^{-7}

Table 13. Modelled Emission Rates - Phase 2 – total as Stage IV Compliant Plant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	0.65	0.04	0.04	4.4×10^{-6}	2.7×10^{-7}	3.1×10^{-7}
Accommodation Camp	92,112	0.73	0.046	0.077	8.0×10^{-6}	5.0×10^{-7}	8.3×10^{-7}
LEEIE	78,534	-	-	-	-	-	-

Table 14. Modelled Emission Rates - Phase 3 – total as Stage IV Compliant Plant

Source ID	Volume of Source (m^3)	Emission Rate (g/s)			Emission Rate ($g/m^3/s$)		
		NOx	PM_{10}	SO_2	NOx	PM_{10}	SO_2
Main Construction Area	146,913	1.05	0.065	0.044	7.1×10^{-6}	4.5×10^{-7}	3.0×10^{-7}
Accommodation Camp	92,112	-	-	-	-	-	-
LEEIE	78,534	-	-	-	-	-	-

3 PREDICTED IMPACTS OF THE SIZEWELL C PROJECT

3.1.1 This section reports predicted impacts as process contribution (PC) concentrations values, predicted environmental concentration (PEC) values and makes reference to critical level (CL) and critical load (CLd) criteria. Values reported previously have used to the same number of significant figures as when reported originally and only the Total PC values have been rounded.

3.1.2 Concentration or rate values of 0.0 should be read as less than 0.1 and concentration or rate values of 0.00 should be read as less than 0.01.

3.2 Annual Average NOx Impacts – Critical Levels

3.2.1 The predicted annual average ground level NOx concentrations at the relevant habitat sites are detailed in **Tables 15** to **17**.

Table 15. Predicted Annual Average PCs for NOx – Phase 1 Main Emissions Scenario

Receptor ID	Critical Level (µg/m3)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	30	10.0	0.0	0.0	0.0	0.0	0.0	3.3%	10.0	33%
E2	30	9.8	1.4	1.2	0.0	0.4	3.0	10.0%	12.8	43%
E3	30	9.2	0.0	0.0	0.0	0.0	0.0	0.0%	9.2	31%
E4	30	9.9	0.1	0.1	0.0	0.0	0.2	0.6%	10.1	34%
E5	30	9.7	1.4	0.3	0.0	0.0	1.7	5.8%	11.4	38%
E6	30	9.7	0.1	0.0	0.0	0.0	0.1	0.5%	9.8	33%
E7	30	10.0	0.3	0.1	0.0	0.0	0.4	1.3%	10.4	35%
E8	30	9.7	0.1	0.0	0.0	0.0	0.1	0.5%	9.8	33%
E9	30	9.7	0.1	0.0	0.0	0.0	0.1	0.5%	9.8	33%
E10	30	12.6	0.9	0.8	0.0	0.0	1.7	5.7%	14.3	48%
E11	30	9.9	0.7	0.2	0.0	0.0	0.9	2.8%	10.8	36%
E12	30	9.8	2.7	1.0	0.0	0.4	4.1	13.6%	13.9	46%
E13	30	9.8	0.5	0.3	0.0	0.0	0.8	2.6%	10.6	35%

Table 16. Predicted Annual Average PCs for NOx – Phase 2 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	30	10.0	0.0	0.0	0.0	0.0	0.0	0.0%	10.0	33%
E2	30	9.8	0.7	0.0	0.1	0.4	1.2	3.9%	11.0	37%
E3	30	9.2	0.0	0.0	0.0	0.0	0.0	0.0%	9.2	31%
E4	30	9.9	0.1	0.0	0.0	0.0	0.1	0.4%	10.0	33%
E5	30	9.7	0.7	0.0	0.0	0.0	0.7	2.5%	10.4	35%
E6	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E7	30	10.0	0.1	0.0	0.1	0.0	0.2	0.6%	10.2	34%
E8	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E9	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E10	30	12.6	0.4	0.0	0.0	0.0	0.4	1.4%	13.0	43%
E11	30	9.9	0.4	0.0	0.1	0.0	0.5	1.5%	10.4	35%
E12	30	9.8	1.3	0.0	0.1	0.4	1.8	5.8%	11.6	39%
E13	30	9.8	0.3	0.0	0.1	0.0	0.4	1.2%	10.2	34%

Table 17. Predicted Annual Average PCs for NOx – Phase 3 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	30	10.0	0.0	0.0	0.0	0.0	0.0	0.0%	10.0	33%
E2	30	9.8	1.1	0.0	0.1	0.4	1.6	5.3%	11.4	38%
E3	30	9.2	0.0	0.0	0.0	0.0	0.0	0.0%	9.2	31%
E4	30	9.9	0.0	0.0	0.0	0.0	0.0	0.1%	9.9	33%
E5	30	9.7	1.1	0.0	0.0	0.0	1.1	3.8%	10.8	36%
E6	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E7	30	10.0	0.1	0.0	0.1	0.0	0.2	0.6%	10.2	34%

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E8	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E9	30	9.7	0.0	0.0	0.0	0.0	0.0	0.1%	9.7	32%
E10	30	12.6	0.6	0.0	0.0	0.0	0.6	2.1%	13.2	44%
E11	30	9.9	0.4	0.0	0.1	0.0	0.5	1.5%	10.4	35%
E12	30	9.8	2.0	0.0	0.1	0.4	2.5	8.2%	12.3	41%
E13	30	9.8	0.3	0.0	0.1	0.0	0.4	1.2%	10.2	34%

3.2.2 The predicted concentrations during phases 1 and 2 are insignificant (<1% of the critical level) at all of the habitat sites. In Phase 3 only four sites have impacts over 1%, however when added to the background concentration, the PECs at these sites are all less than 70% of the critical level for annual NOx, and therefore, in accordance with the EA's Risk Assessment methodology can be considered not to be significant, and are very unlikely to lead to an exceedance at these sites.

3.3 Daily NO_x Impacts – Critical Levels

3.3.1 The predicted daily ground level NOx concentrations at the relevant habitat sites are detailed in **Tables 18** to **20**.

Table 18. Predicted Daily Average PCs for NOx – Phase 1 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	75	15.0	0.3	0.2	0.0	0.0	0.5	0.7%	15.5	21%
E2	75	14.7	30.9	11.5	0.0	6.6	49.0	65.3%	63.7	85%
E3	75	13.8	0.1	0.2	0.0	0.0	0.3	0.4%	14.1	19%
E4	75	14.8	2.2	1.4	0.0	0.1	3.7	4.9%	18.5	25%
E5	75	14.5	36.6	7.5	0.0	0.6	44.7	59.6%	59.2	79%
E6	75	14.6	1.4	1.1	0.0	0.1	2.6	3.5%	17.2	23%
E7	75	15.0	6.4	2.2	0.0	0.0	8.6	11.5%	23.6	31%

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E8	75	14.6	1.4	1.1	0.0	0.1	2.6	3.5%	17.2	23%
E9	75	14.6	1.4	1.1	0.0	0.1	2.6	3.5%	17.2	23%
E10	75	18.9	16.3	13.5	0.0	0.0	29.8	39.7%	48.7	65%
E11	75	14.9	14.4	3.6	0.0	0.0	18.0	24.0%	32.9	44%
E12	75	14.7	35.0	11.5	0.0	6.6	53.1	70.8%	67.8	90%
E13	75	14.7	6.7	5.1	0.0	0.0	11.8	15.7%	26.5	35%

Table 19. Predicted Daily Average PCs for NOx – Phase 2 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	75	15.0	0.2	0.0	0.1	0.0	0.3	0.4%	15.3	20%
E2	75	14.7	13.9	0.0	0.8	6.6	21.3	28.4%	36.0	48%
E3	75	13.8	0.1	0.0	0.1	0.0	0.2	0.3%	14.0	19%
E4	75	14.8	1.2	0.0	0.4	0.1	1.7	2.3%	16.5	22%
E5	75	14.5	17.0	0.0	0.5	0.6	18.1	24.1%	32.6	43%
E6	75	14.6	0.7	0.0	0.2	0.1	1.0	1.3%	15.6	21%
E7	75	15.0	2.9	0.0	1	0.0	3.9	5.2%	18.9	25%
E8	75	14.6	0.7	0.0	0.3	0.1	1.1	1.5%	15.7	21%
E9	75	14.6	0.7	0.0	0.2	0.1	1.0	1.3%	15.6	21%
E10	75	18.9	8.2	0.0	0.3	0.0	8.5	11.3%	27.4	37%
E11	75	14.9	6.7	0.0	0.6	0.0	7.3	9.7%	22.2	30%
E12	75	14.7	16.1	0.0	0.4	6.6	23.1	30.8%	37.8	50%
E13	75	14.7	3.1	0.0	0.7	0.0	3.8	5.1%	18.5	25%

Table 20. Predicted Daily Average PCs for NOx – Phase 3 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	75	15.0	0.1	0.0	0.1	0.0	0.2	0.3%	15.2	20%
E2	75	14.7	22.5	0.0	0.8	6.6	29.9	39.9%	44.6	59%
E3	75	13.8	0.1	0.0	0.1	0.0	0.2	0.3%	14.0	19%
E4	75	14.8	1.6	0.0	0.4	0.1	2.1	2.8%	16.9	23%
E5	75	14.5	27.5	0.0	0.5	0.6	28.6	38.1%	43.1	57%
E6	75	14.6	1.1	0.0	0.2	0.1	1.4	1.9%	16.0	21%
E7	75	15.0	4.8	0.0	1.0	0.0	5.8	7.7%	20.8	28%
E8	75	14.6	1.1	0.0	0.3	0.1	1.5	2.0%	16.1	21%
E9	75	14.6	1.1	0.0	0.2	0.1	1.4	1.9%	16.0	21%
E10	75	18.9	12.3	0.0	0.3	0.0	12.6	16.8%	31.5	42%
E11	75	14.9	10.8	0.0	0.6	0.0	11.4	15.2%	26.3	35%
E12	75	14.7	26.1	0.0	0.4	6.6	33.1	44.1%	47.8	64%
E13	75	14.7	5.0	0.0	0.7	0.0	5.7	7.6%	20.4	27%

3.3.2 The nearest receptors to the Main Construction Area (E2, E5, E10, E12 in all phases, E11 (phase 1 and 3 only), E12 and E13 (phase 1 only)) are predicted to experience maximum daily concentrations of more than 10% and at all of these site the PEC remains well below the daily critical level and an exceedance is considered unlikely. The predicted effect is therefore not considered to be significant on that basis.

3.3.3 At all other sites the predicted daily concentrations are less than 10% of the daily critical level and the impacts of the desalination plant diesel generators are considered to be insignificant for all Phases.

3.3.4 It is also of note that the short-term (24 hour) mean for NO_x is of less importance to habitat than the annual mean, as vegetation exposed to levels of NO_x above the Critical Level will be more likely to recover from that exposure if the exceedance is for a short duration. Authors from the Centre for Ecology and Hydrology in a recent book on nitrogen, NO_x concentrations and vegetation, states that *'UN/ECE Working Group on Effects strongly*

recommended the use of the annual mean value, as the long-term effects of NO_x are thought to be more significant than the short-term effects[6].

3.4 Annual Average SO_2 Impacts – Critical Levels

3.4.1 The predicted annual average ground level SO_2 concentrations at the relevant habitat sites are detailed in **Tables 21** to **23**.

Table 21. Predicted Annual Average PCs for SO_2 from Construction Generators – Phase 1 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	10	0.6	0.0	0.0	0.0	0.0	0.0	0.0%	0.6	6%
E2	10	0.7	0.1	0.0	0.0	0.0	0.2	1.6%	0.9	9%
E3	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E4	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E5	10	0.7	0.1	0.0	0.0	0.0	0.1	1.2%	0.8	8%
E6	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E7	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E8	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E9	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E10	10	0.7	0.1	0.0	0.0	0.0	0.1	1.4%	0.8	8%
E11	10	0.7	0.1	0.0	0.0	0.0	0.1	1.1%	0.8	8%
E12	10	0.7	0.3	0.0	0.0	0.0	0.4	3.5%	1.1	11%
E13	10	0.7	0	0.0	0.0	0.0	0.0	0.2%	0.7	7%

[6] Sutton MA, Howard CM, Erisman JW, Billen G, Bleeker A, Grennfelt P, van Grinsven H, Grizzetti B. 2013. The European Nitrogen Assessment: Sources, Effects and Policy Perspectives. Page 414. Cambridge University Press. 664pp. ISBN-10: 1107006120

Table 22. Predicted Annual Average PCs for SO_2 from Construction Generators – Phase 2 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	10	0.6	0.0	0.0	0.0	0.0	0.0	0.0%	0.6	6%
E2	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E3	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E4	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E5	10	0.7	0.1	0.0	0.0	0.0	0.1	1.0%	0.8	8%
E6	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E7	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E8	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E9	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E10	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E11	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E12	10	0.7	0.1	0.0	0.0	0.0	0.1	1.0%	0.8	8%
E13	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%

Table 23. Predicted Annual Average PCs for SO_2 from Construction Generators – Phase 3 – Main Emissions Scenario

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E1	10	0.6	0.0	0.0	0.0	0.0	0.0	0.0%	0.6	6%
E2	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E3	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E4	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E5	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E6	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E7	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E8	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%

Receptor ID	Critical Level (µg/m³)	Background (µg/m³)	Source Process Contributions (µg/m³)				Total PCs (µg/m³)	PC/CL (%)	PEC (µg/m³)	PEC/CL (%)
			Construction Generators	Desalination Plant	CHP	Haul Roads				
E9	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E10	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E11	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%
E12	10	0.7	0.1	0.0	0.0	0.0	0.1	1.0%	0.8	8%
E13	10	0.7	0.0	0.0	0.0	0.0	0.0	0.0%	0.7	7%

3.4.2 The predicted contribution of the Sizewell C Project to concentrations of SO_2 at the habitat sites are all 1% or less of the critical level for SO_2 and are considered to be insignificant.

3.5 Deposition Results

a) Nutrient Nitrogen Deposition

3.5.1 The nutrient nitrogen deposition impacts from the operation of the desal generators has also been considered, taking into account the nitrogen from both the NOx and NH_3 emissions. The results are shown in **Tables 24** to **27**.

Table 24. Predicted N-Deposition for Phase 1 – Main Scenario

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E1a	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%
E1c	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%
E1d	Rich fens	15 - 30	11.2	0.00	0%	11.20	75%
E2b	Coastal stable dunes	8 – 15	13.1	0.19	2%	13.29	166%
E2c	Dry heath	10 – 20	13.8	0.31	3%	14.11	141%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.25	2%	13.35	89%

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.02	0%	13.12	87%
E3a	Coastal stable dunes	8 – 15	8.3	0.00	0%	8.30	104%
E4a	Dry heath	10 – 20	15.0	0.02	0%	15.02	150%
E5a	Fen, marsh and swamp (fen meadow)	15 – 30	12.0	0.18	1%	12.18	81%
E5b	Fen, marsh and swamp (rush pasture etc…)	15 – 25	12.0	0.24	2%	12.24	82%
E6a	Dry heath	10 – 20	11.5	0.02	0%	11.52	115%
E7a	Dwarf shrub heath	10 – 20	12.0	0.04	0%	12.04	120%
E8a	Dwarf shrub heath	10 – 20	12.0	0.02	0%	12.02	120%
E10a	Coastal stable dunes – acid type	8 – 10	12.0	0.22	3%	12.22	153%
E11a	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.09	1%	21.49	215%
E12a	Coniferous woodland	5 – 15	21.4	0.47	9%	21.87	437%
E12b	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.10	1%	21.50	215%
E13a	Dwarf shrub heath	10 – 20	12.0	0.10	1%	12.10	121%

Notes: [1]The lower Critical Load from the range provided has been used in the assessment

Table 25. Predicted N-Deposition for Phase 2 – Main Scenario

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E1a	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E1c	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%
E1d	Rich fens	15 - 30	11.2	0.00	0%	11.20	75%
E2b	Coastal stable dunes	8 – 15	13.1	0.21	3%	13.31	166%
E2c	Dry heath	10 – 20	13.8	0.18	2%	13.98	140%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.18	1%	13.28	89%
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.13	1%	13.23	88%
E3a	Coastal stable dunes	8 – 15	8.3	0.00	0%	8.30	104%
E4a	Dry heath	10 – 20	15.0	0.02	0%	15.02	150%
E5a	Fen, marsh and swamp (fen meadow)	15 – 30	12.0	0.10	1%	12.10	81%
E5b	Fen, marsh and swamp (rush pasture etc…)	15 – 25	12.0	0.12	1%	12.12	81%
E6a	Dry heath	10 – 20	11.5	0.00	0%	11.50	115%
E7a	Dwarf shrub heath	10 – 20	12.0	0.02	0%	12.02	120%
E8a	Dwarf shrub heath	10 – 20	12.0	0.00	0%	12.00	120%
E10a	Coastal stable dunes – acid type	8 – 10	12.0	0.12	2%	12.12	152%
E11a	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.06	1%	21.46	215%
E12a	Coniferous woodland	5 – 15	21.4	0.32	6%	21.72	434%
E12b	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.25	3%	21.65	217%
E13a	Dwarf shrub heath	10 – 20	12.0	0.06	1%	12.06	121%

Notes: [1]The lower Critical Load from the range provided has been used in the assessment

Table 26. Predicted N-Deposition for Phase 3 – Main Scenario

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E1a	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%
E1c	Pioneer, low-mid, mid upper saltmarshes	20 – 30	12.9	0.00	0%	12.90	65%
E1d	Rich fens	15 - 30	11.2	0.00	0%	11.20	75%
E2b	Coastal stable dunes	8 – 15	13.1	0.22	3%	13.32	167%
E2c	Dry heath	10 – 20	13.8	0.21	2%	14.01	140%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.20	1%	13.30	89%
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.13	1%	13.23	88%
E3a	Coastal stable dunes	8 – 15	8.3	0.00	0%	8.30	104%
E4a	Dry heath	10 – 20	15.0	0.01	0%	15.01	150%
E5a	Fen, marsh and swamp (fen meadow)	15 – 30	12.0	0.13	1%	12.13	81%
E5b	Fen, marsh and swamp (rush pasture etc…)	15 – 25	12.0	0.16	1%	12.16	81%
E6a	Dry heath	10 – 20	11.5	0.00	0%	11.50	115%
E7a	Dwarf shrub heath	10 – 20	12.0	0.02	0%	12.02	120%
E8a	Dwarf shrub heath	10 – 20	12.0	0.00	0%	12.00	120%
E10a	Coastal stable dunes – acid type	8 – 10	12.0	0.14	2%	12.14	152%
E11a	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.05	1%	21.45	215%
E12a	Coniferous woodland	5 – 15	21.4	0.38	8%	21.78	436%

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E12b	Broadleaved, mixed and yew woodland	10 – 20	21.4	0.24	2%	21.64	216%
E13a	Dwarf shrub heath	10 – 20	12.0	0.06	1%	12.06	121%

Notes: [1]The lower Critical Load from the range provided has been used in the assessment

3.5.2 The background nitrogen deposition rate is above the lower critical load value at the county wildlife sites represented by receptors E10a, & E11a and at the woodland habitats within the Sizewell Levels CWS represented by E12a and E12b.

3.5.3 All the identified habitat sites except E12a would experience impacts that are just above (2% or 3%), at or less than 1% of the critical load and can therefore be considered to be minor to imperceptible based purely on numerical criteria. The impacts on the conifierous woodland at E12a are predicted to be 9% in Phase 1, less than 6 % in Phase 2 and 8% in Phase 3. At E12a (a CWS) the background contribution of 21.4 Kg N/ha/yr represents 430% of the lower critical load for coniferous woodland and the additional temporary process contributions of 9% in Phase 1 and of 8% in Phase 3 makes no material difference to the conditions on the ground and could not significantly interfere with the sites long term conservation objectives. In practice the deposition rates will be smaller in magnitude than the reported values as unlike the model scenario, all plant will not be present at the same time for the whole of each phase.

3.5.4 The critical load system assumes decades of continuous exposure[7]. Over the short term a slight elevation in nitrogen deposition is unlikely to result in changes in vegetation communities over the temporary period the plant emissions are proposed tooccur for taking into account the considerable variation in background nitrogen deposition that is likely to occur normally over short time periods (for example the UK Air Pollution Information System reports background nitrogen deposition for Minsmere-Walberswick Heaths and Marshes SAC which shows that between 2005 and 2010 background

[7] '*Typically, critical loads relate to the potential effects over periods of decades… critical loads provide the long-term deposition* [emphasis added] *below which we are sure that adverse ecosystem effects will not occur*', source: page 220, World Health Organization. 2000. Air Quality Guidelines for Europe. WHO Regional Publications, European Series, No. 91. Second Edition

nitrogen deposition to short vegetation varied annually by as much as 0.7 kgN/ha/yr). The largest predicted process contribution of 0.38 KgN/ha/yr at E12a, in Phase 3, is approximately half the magnitude of the natural year to year variation. Considering all of the above, effects from the construction phase activties of the Sizewell C Project are not considered to be significant at the habitat sites.

3.5.5 As plant is withdrawn from site in the later stages of Phase 3, as elements of the construction works are completed, the predicted nitrogen deposition rates become increasingly over estimated. In practice emission rates will reduce towards current background rates, prior to the start of Phase 4 and the introduction of back-up diesel generators.

b) Acid Deposition

3.5.6 The acid deposition impacts of the Sizewell C Project have been considered, taking into account the process contribution of both nitrogen and sulphur, with existing background deposition rates. The results are shown in **Tables 27** to **29** have been processed using the APIS Critical Loads Function Tool[8].

Table 27. Predicted Acid Deposition for Phase 1 – Main Scenario

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.06	0.00	10.6	197	208
E2c	0.99	0.13	0.13	0.02	12.1	90.5	103
E2d	0.99	0.13	0.12	0.02	24.6	197	222
E2e	0.96	0.12	0.01	0.00	1.8	190	192
E3a	1.11	0.12	0.00	0.00	0	28	28
E4a	0.99	0.13	0.01	0.00	0.7	82	82
E5a	0.99	0.13	0.12	0.01	18.2	157	175
E5b	0.99	0.13	0.18	0.01	26.6	157	184

[8] http://www.apis.ac.uk/critical-load-function-tool

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E6a	0.99	0.13	0.01	0.00	0.7	82	82
E7a	0.99	0.13	0.03	0.00	0.0	3	3
E8a	0.99	0.13	0.01	0.00	0.7	81	82
E10a	0.99	0.13	0.10	0.01	0.6	8	8
E11a	0.99	0.13	0.03	0.00	0.7	25	26
E12a	0.99	0.13	0.14	0.02	4.7	33	37
E12b	0.99	0.13	0.03	0.00	2.4	89	91
E13a	0.99	0.13	0.05	0.00	0.0	6	6

Table 28. Predicted Acid Deposition for Phase 2 – Main Scenario

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.03	0.00	5.3	197	203
E2c	0.99	0.13	0.05	0.00	4.0	91	95
E2d	0.99	0.13	0.05	0.00	8.8	197	206
E2e	0.96	0.12	0.02	0.00	3.5	190	194
E3a	1.11	0.12	0.00	0.00	0.0	28	28
E4a	0.99	0.13	0.00	0.00	0.0	82	82
E5a	0.99	0.13	0.05	0.00	7.0	157	164
E5b	0.99	0.13	0.06	0.01	9.8	157	167
E6a	0.99	0.13	0.00	0.00	0.0	82	82
E7a	0.99	0.13	0.01	0.00	0.0	3	3
E8a	0.99	0.13	0.00	0.00	0.0	81	81
E10a	0.99	0.13	0.04	0.00	0.6	8	8
E11a	0.99	0.13	0.01	0.00	0.2	25	25
E12a	0.99	0.13	0.05	0.01	1.8	35	35
E12b	0.99	0.13	0.03	0.00	2.4	89	91
E13a	0.99	0.13	0.02	0.00	0.0	6	6

Table 29. Predicted Acid Deposition for Phase 3 – Main Scenario

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.03	0.00	5.3	197	203
E2c	0.99	0.13	0.05	0.01	4.9	91	95
E2d	0.99	0.13	0.04	0.01	8.8	197	206
E2e	0.96	0.12	0.01	0.00	1.8	190	192
E3a	1.11	0.12	0.00	0.00	0.0	28	28
E4a	0.99	0.13	0.00	0.00	0.0	82	82
E5a	0.99	0.13	0.04	0.01	7.0	157	164
E5b	0.99	0.13	0.06	0.01	9.8	157	167
E6a	0.99	0.13	0.00	0.00	0.0	82	82
E7a	0.99	0.13	0.00	0.00	0.0	3	3
E8a	0.99	0.13	0.00	0.00	0.0	81	81
E10a	0.99	0.13	0.04	0.00	0.0	8	8
E11a	0.99	0.13	0.00	0.00	0.0	25	25
E12a	0.99	0.13	0.05	0.01	1.8	33	35
E12b	0.99	0.13	0.02	0.00	1.6	89	90
E13a	0.99	0.13	0.01	0.00	0.0	6	6

3.5.7 The background acid deposition load is above the critical load value at the county wildlife sites represented by receptors E12a and E12b, at the Sizewell Marshes SSSI represented by E5a and E5b and at the Minsmere-Walberswick Heaths and Marshes SAC represented by E2b, E2d and E2e. This is indicated in Tables 23 to 25 by the use of Tan shading on the relevant cells.

3.5.8 Natural England have been clear that it is not SZC's responsibility[9] to return sites to favourable condition. Through the careful location of plant and the introduction of a site power supply emissions have been controlled to ensure that predicted environmental concentrations would remain at a similar proportion of the critical loads at the Minsemere to Walberswick SAC and SPA as under baseline conditions, thereby not significantly interfering with the sites conservation objectives. The proposed monitoring location near the boundary of the Minsmere to Walberwick SAC and SPA provides a means to confirm that oxides of nitrogen concentrations during the construction works are as predicted by dispersion modelling.

3.5.9 The purpose of the site power supply is specifically to reduce the magnitude of emissions by removing the need to use generators where ever it is practical to do so. This is reflected in the marked reduction in the magnitude of impacts of the Sizewell C Project on acid deposition rates at all receptors including E5a, E5b, E2b, E2d and E2e once the site power supply is available as represented in results for Phase 2 and Phase 3.

3.5.10 As plant is withdrawn from site in the later stages of Phase 3, as elements of the construction works are completed, the predicted acid deposition rates become increasingly over estimated. In practice emission rates will reduce towards current background rates, prior to the start of Phase 4 and the introduction of back-up diesel generators.

3.5.11 At E2c, the contribution of the Sizewell C Project plus the background deposition, does not result in an exceedance of the critical load, and therefore the impacts can be considered to be not significant at this location.

3.5.12 E2d already has a background deposition that exceeds the critical load. The habitat at E2d is identified as fen, marsh and swamp. APIS[10] states regarding fen, marsh and swamp habitats that *'There is a paucity of data on acid deposition effects on this habitat type but it can be assumed that where non vascular plants are present these might be sensitive, especially to N enrichment.'*

3.5.13 The fen, marsh and swamp habitat type is dominated by reedbeds, grazing marsh and woodland, which are vascular plants. Given that the APIS website states that there no evidence of acid deposition effects on vascular plants in this habitat, other factors are far more likely to influence the botanical composition of the sward. In addition, as the critical load is already so far

[9] Natural England EN010012-008702-Pgs 30-35-comments on the RIES.pdf at para 2.7.4
[10] http://www.apis.ac.uk/acid-deposition-fen-marsh-and-swamp

exceeded, further acid deposition from the operation of the desalination generators is not considered to result in a significant effect.

3.5.14 At receptors E3a, E4a, E6a, E7a, E8a, E9a, E10a, E11a and E13a the likely impact on acid deposition rates is less than 1% of the critical load value during all construction phases and can be screened as being an effect that is not significant.

3.6 Sensitivity Test Results

3.6.1 The predicted impacts are reported for the sensitivity test scenario at the receptor locations within the southern extremity of the Minsmere to Walberswick Heaths and Marshes SAC (E2), as the impact at all other receptors has been demonstrated by the main scenario to be smaller in magnitude. The sensitivity test scenario includes additional emissions, but is otherwise the same as the main scenario and therefore reports the same spatial variation in impacts as the main scenario.

Table 30. Predicted N-Deposition for Phase 1 – Sensitivity Test

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E2b	Coastal stable dunes	8 – 15	13.1	0.20	2.5%	13.32	167%
E2c	Dry heath	10 – 20	13.8	0.34	3.4%	14.14	141%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.27	1.8%	13.47	90%
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.02	0.1%	13.12	87%

Notes: [1]The lower Critical Load from the range provided has been used in the assessment

Table 31. Predicted N-Deposition for Phase 2 – Sensitivity test

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E2b	Coastal stable dunes	8 – 15	13.1	0.22	2.8%	13.32	167%

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E2c	Dry heath	10 – 20	13.8	0.2	2.0%	14.00	140%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.19	1.3%	13.29	89%
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.13	0.9%	13.23	88%

Table 32. Predicted N-Depostion for Phase 3 – Sensitivity Test

	Critical Load Class	CLd Range (kg N/ha/yr)	BG N-Dep (kg N/ha/yr)	PC N-Dep (kg N/Ha/yr)	PC / CLd[1]	PEC N Dep (Kg N/Ha/yr)	PEC / CLd[1]
E2b	Coastal stable dunes	8 – 15	13.1	0.23	2.9%	13.33	167%
E2c	Dry heath	10 – 20	13.8	0.24	2.4%	14.04	140%
E2d	Fen, marsh and swamp (rush pasture etc…)	15 – 25	13.1	0.23	1.5%	13.33	89%
E2e	Fen, marsh and swamp (swamp and reedbeds)	15 – 30	13.1	0.13	0.9%	13.23	88%

3.6.2 The predicted impacts of the Sizewell C Project on acid deposition rates are reported for the sensitivity test scenario in **Tables 33** to **35** for the Minsmere to Walberswick Heaths and Marshes SAC (E2).

Table 33. Predicted Acid-Deposition for Phase 1 – Sensitivity Test

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.06	0.00	10.6	197	208
E2c	0.99	0.13	0.13	0.02	12.1	91	103
E2d	0.99	0.13	0.12	0.02	24.6	197	222

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2e	0.96	0.12	0.01	0.00	1.8	190	192

Table 34. Predicted Acid-Deposition for Phase 2 – Sensitivity Test

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.03	0.00	5.3	197	203
E2c	0.99	0.13	0.05	0.01	4.9	91	95
E2d	0.99	0.13	0.05	0.01	10.6	197	208
E2e	0.96	0.12	0.02	0.00	3.5	190	194

Table 35. Predicted Acid-Deposition for Phase 3 – Sensitivity Test

	CRITICAL LOAD FUNCTION						
	Back'gd N keq ha/yr	Back'gd S keq ha/yr	PC N keq ha/yr	PC S keq ha/yr	PC/CLd %	Back'gd/CLd %	PEC/CLd %
E2b	0.99	0.13	0.03	0.00	5.3	197	203
E2c	0.99	0.13	0.05	0.01	4.9	91	95
E2d	0.99	0.13	0.04	0.01	8.8	197	206
E2e	0.96	0.12	0.01	0.00	1.8	190	192

3.6.3 The consequence of exemptions equivalent to 5% of emissions at Stage IIIB emission rates and 95% at Stage IV emission rates, is to increase annual NOx and SO_2 concentrations by a fraction of a microgram per cubic metre at receptor locations in the Minsmere to Walberswick Heaths and Marshes SAC. This in turn results in changes of 0.01 keq ha/yr or less in the process contribution of nitrogen or sulphur. The acid deposition rate at the sensitive

receptors is relatively insensitive to changes in emissions that could be delivered under the proposed exemptions process for NRMM.

3.6.4 The nutrient nitrogen deposition rate is likewise relatively insensitive to the scale of emissions that could be delivered under the proposed exemptions process for NRMM and the predicted level of impact with the exemption process would not adversely affect the integrity of the Minsmere to Walberswick Heaths and Marshes SAC and SPA for the same reasons as described in **Section 3.5**.

4 SUMMARY

4.1.1 This project air quality assessment has brought together previously reported impacts from emissions from the temporary desalination plant, the CHP unit at the Campus site, Haul Road/NRMM use, plus new information on mobile generator emissions. It demonstrates an upper bound estimate of likely impacts on the Windsmere to Walberswick SAC and SPA and also reports impacts for sites of special scientific interest and county wildlife sites.

4.1.2 Based on the previously reported assessments, a package of measure have already been brought forward to provide effective control of the location, magnitude and duration of emissions during the construction works, including commitments in the Code of Construction Practice for:

- The early introduction (before Phase 2) of a site power supply to be used wherever practicable instead of using generators;
- A minimum emission standard for mobile generators of Stage IV and a minimum emissions standard for road going vehicles entering site of Euro V
- A formal exemptions process for non-compliant plant capped to 15% of plant on site, on a per item per year basis; and
- Monitoring of airborne concentrations of air pollutants at the boundary of Minsmere and Walberswick SAC and SPA for air pollutants including nitrogen dioxide.

4.1.3 The assessment is based on scenarios where emissions from all the plant scheduled for use at any time within a single phase of works, are modelled as being present at the same time. This provides an over estimate of likely impacts at all receptors, as the need for plant on site changes as work

progress and construction elements are completed. The assessment demonstrates that impacts of the Sizewell C Project on concentrations of oxides of nitrogen, sulphur dioxide, or deposition rates of nutrient nitrogen or acids from the proposed construction phase activities calculated on this conservative basis are not large enough to give rise to significant effects on any designated habitat site.

4.1.4 The mitigation benefit of the site power supply is demonstrated by the step reduction in the magnitude of impacts reported in Phase 2 compared to Phase 1 (early works).

4.1.5 Background nutrient nitrogen deposition rates and acid deposition rates at some sites, including the Minsmere to Walberswick SAC and SPA are above critical loads and currently demonstrate a level of year to year variarion that is considerably greater than the contribution of the Sizewell C Project during any phase of the construction works. The assessment demonstrates that through the implementation of the measures committed to in the Code of Construction Practice, emissions can controlled to ensure that predicted deposition rates would remain at a similar proportion of the critical loads at the Minsemere to Walberswick SAC and SPA as under baseline conditions, thereby not significantly interfering with the conservation objectives set out in The Minsmere to Walberswick SAC and SPA Site Improvement Plan.