The Sizewell C Project

6.8 Volume 7 Yoxford Roundabout and Other Highway Improvements

Chapter 5 Air Quality

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Contents

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None provided.

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5 Air Quality

5.1 Introduction

5.1.1 This chapter of **Volume 7** of the **Environmental Statement** (**ES**) presents an assessment of the air quality effects arising from the construction and operation of the proposed Yoxford roundabout and other highway improvements (referred to throughout this volume as the 'proposed development'). This includes an assessment of potential impacts, the significance of effects, the requirements for mitigation and the residual effects.

5.1.2 The proposed improvement works are as follows:

- a roundabout at the junction between the A12 and B1122 in Yoxford (referred to as the 'Yoxford roundabout');
- improvements at the A1094 and B1069 junction south of Knodishall;
- improvements at the A12 and A144 junction south of Bramfield; and
- improvements at the A12 and B1119 junction at Saxmundham.

5.1.3 Road safety analysis has also identified potential highway safety issues at two sites (the B1078 and B1079 junction east of Easton and Otley College and the A140 and B1078 junction west of Coddenham). Highway safety measures at these sites will be secured by an obligation in the Section 106 Agreement (see the **Section 106 Heads of Terms** appended to the **Planning Statement** (Doc. Ref. 8.4). This chapter includes an assessment of these highway safety measures.

5.1.4 Detailed descriptions of the proposed development sites (referred to throughout this volume as the 'site' as relevant to the location of each of the works), the proposed improvement works, safety measures and different construction and operation phases are provided in **Chapters 1** and **2** of this volume of the **ES**. A glossary of terms and list of abbreviations used in this chapter is provided in **Appendix 1A** of **Volume 1** of the **ES**.

5.1.5 This assessment has been informed by the **Transport Assessment** (Doc Ref. 8.5), in particular the road traffic data which has been modelled to assess the potential impacts from road traffic emissions in the vicinity of the highway improvement sites.

5.1.6 This assessment has also been informed by data presented in the following technical appendices:

- **Appendix 12B** of **Volume 2** of the **ES**: Transport Emissions Assessment; and
- **Appendix 5A** of this volume: Dust Risk Assessment for Yoxford Roundabout.

5.2 Legislation, policy and guidance

5.2.1 **Appendix 6H** of **Volume 1** of the **ES** identifies and describes legislation, policy and guidance of relevance to the assessment of the potential air quality impacts associated with the Sizewell C Project across all **ES** volumes.

5.2.2 This section provides an overview of the specific legislation, policy and guidance of relevance to the air quality assessment of the proposed development.

a) International

5.2.3 International legislation and policies relating to the air quality assessment include:

- European Ambient Air Quality Directive 2008 (2008/50/EC) (Ref. 5.1). and
- Fourth Air Quality Daughter Directive 2004 (2004/107/EC) (Ref. 5.2).

5.2.4 The requirements of these, as relevant to the air quality assessment, are set out in **Appendix 6H** of **Volume 1** of the **ES**.

b) National

5.2.5 National legislation and policies relating to the air quality assessment include:

- Air Quality Standards Regulations 2010 (Ref. 5.3).
- National Air Quality Strategy (Ref. 5.4).

5.2.6 The requirements of these, as relevant to the air quality assessment, are set out in **Appendix 6H** of **Volume 1** of the **ES**.

5.2.7 The Overarching National Policy Statement for Energy (NPS EN-1) (Ref. 5.5) and NPS for Nuclear Power Generation (NPS EN-6) (Ref. 5.6) set out requirements for air quality associated with the development of major energy infrastructures. These requirements are discussed in detail in **Appendix 6H** of **Volume 1** of the **ES**.

c) Regional

5.2.8 Regional legislation and policies relating to the air quality assessment include the Suffolk Local Transport Plan Parts 1 and 2 (Ref. 5.7).

5.2.9 The requirements of these, as relevant to the air quality assessment, are set out in **Appendix 6H** of **Volume 1** of the **ES**.

d) Local

5.2.10 Local policies relating to the air quality assessment include:

- Suffolk Coastal District Council (SCDC) Core Strategy and Development Management Policies (Ref. 5.8).
- SCDC Final Draft Local Plan (Ref. 5.9).

5.2.11 The requirements of these, as relevant to the air quality assessment, are set out in **Appendix 6H** of **Volume 1** of the **ES**.

e) Guidance

5.2.12 Guidance relating to the air quality assessment include:

- Highways England's Sustainability & Environment Appraisal LA 105 Air quality (Ref. 5.10).
- Institute of Air Quality Management (IAQM) and Environmental Protection UK Land Use Planning & Development Control: Planning for Air Quality (Ref. 5.11).
- IAQM Guidance on the Assessment of Dust from Demolition and Construction Sites (Ref. 5.12).
- IAQM A guide to the assessment of air quality impacts on designated nature conservation sites (Ref. 5.13).
- National Atmospheric Emissions Inventory emission factors (Ref. 5.14).

5.2.13 Further details of this guidance, as relevant to the air quality assessment, are set out in **Appendix 6H** of **Volume 1** of the **ES**.

5.3 Methodology

a) Scope of the assessment

5.3.1 The generic Environmental Impact Assessment (EIA) methodology is detailed in **Volume 1**, **Chapter 6** of the **ES**.

5.3.2 The full method of assessment for air quality that has been applied for the Sizewell C Project is included in **Appendix 6H** of **Volume 1** of the **ES**.

5.3.3 This section provides specific details of the air quality screening exercise, as detailed in the following sections, and methodology applied to the assessment of the proposed development.

5.3.4 The scope of assessment considers the impacts of the construction and operation use of the proposed highway improvement works and safety measures. Where the highway improvement work or safety measures proposed has the potential for likely significant effects to arise, this has been assessed in further detail. Consideration has been given to air quality effects arising from construction dust (arising from construction activities and Non-Road Mobile Machinery (NRMM)) and road traffic emissions.

5.3.5 The scope of this assessment has been established through a formal EIA scoping process undertaken with the Planning Inspectorate (PINS). A request for an EIA Scoping Opinion was initially issued to the PINS in 2014, with an updated request issued in 2019, see **Appendix 6A** of **Volume 1** of the **ES**.

5.3.6 Comments raised in the EIA Scoping Opinion received in 2014 and 2019 have been taken into account in the development of the assessment methodology. These are detailed in **Appendices 6A** to **6C** of **Volume 1** of the **ES**. Project-wide comments but no site-specific comments were raised.

b) Consultation

5.3.7 The scope of the assessment has also been informed by ongoing consultation and engagement with statutory consultees throughout the design and assessment process. Consultation on the assessment methodology and conclusions for the main development site and associated developments, including Yoxford roundabout and other highways improvements, has been undertaken with Suffolk County Council and East Suffolk Council. A summary of consultation relating to the air quality assessment is provided in **Appendix 6H** of **Volume 1** of the **ES**.

c) Environmental screening

5.3.8 An environmental screening exercise has been undertaken to identify which of the four highway improvement works and two highway safety measures proposed may give rise to environmental effects that have the potential to be significant. The screening exercise assesses the potential effects of the proposed highways improvements and safety measures based on Highways England (Ref. 5.10) and IAQM (Ref. 5.11) criteria set out in the **Appendix 12B** of **Volume 2** of the **ES**. The outcome of this environmental screening exercise concludes that the A12/B1122 Yoxford roundabout highway improvement works should be taken forward to the assessment of likely effects on air quality.

5.3.9 The remaining three highway improvement works and two highway safety measures have been screened out of the air quality assessment as they are not likely to give rise to significant environmental effects for the reasons set out in **Table 5.1**.

5.3.10 **Table 5.1** provides a summary of the environmental screening exercise.

Table 5.1: Summary of environmental screening exercise.

Proposed Highways Improvement / safety measures	Summary of Potential Effects.	Screened in or Out of the Assessment.
The A12 and B1122 Yoxford roundabout.	The realignment and introduction of a new roundabout may result in changes in traffic flow and the proximity to nearby receptors, which therefore has the potential to affect air quality at sensitive receptors.	Screened in.
Improvements at the A1094 and B1069 junction south of Knodishall.	No changes in traffic flow expected as no heavy duty vehicles (HDVs) required, and no realignment of roads, therefore the works are not anticipated to affect air quality at nearby receptors.	Screened out.
Improvements at the A12 and A144 junction south of Bramfield.	The construction works would require less than 100 HDV annual average daily traffic (AADT) movements required, and the road would be widened by less than 5 metres (m). The site is not within an air quality management area. Overall, the works are not expected to result in any significant effects on air quality at nearby receptors.	Screened out.
Improvements at the A12 and B1119 junction at Saxmundham.	Construction works would require less than 100 HDV and road alignment changes would be less than 5m, therefore the works are not expected to result in any significant effects on air quality at nearby receptors.	Screened out.

Proposed Highways Improvement / safety measures	Summary of Potential Effects.	Screened in or Out of the Assessment.
Safety measures at the B1078 and B1079 junction east of Easton and Otley College.	No changes in traffic flow expected as no HDVs required, and no realignment of roads, therefore the works are not anticipated to affect air quality at nearby receptors.	Screened out.
Safety measures at the A140 and B1078 junction west of Coddenham.	No changes in traffic flow expected as no HDVs required, and no realignment of roads, therefore the works are not anticipated to affect air quality at nearby receptors.	Screened out.

d) Study area

5.3.11 The geographical extent of the study area, determined using methodology set out in **Appendix 6H** of **Volume 1** of the **ES**, for the proposed Yoxford roundabout dust emissions assessment includes:

- the site; and
- the area within 350m from the site boundary, and up to 500m along public roads from the site entrance.

5.3.12 Additionally, the study area for road traffic emissions for the proposed Yoxford roundabout includes the A12, the A1120 and the B1122. The changes to air pollutant concentrations on the wider transport network are considered in the Transport Emissions Assessment provided in **Appendix 12B** of **Volume 2** of the **ES.**

5.3.13 The study area and the location of representative receptors for the proposed Yoxford roundabout site are illustrated on **Figure 5.1**.

e) Assessment scenarios

5.3.14 The assessment scenarios for the proposed highway improvement screened in to the assessment (i.e. the proposed Yoxford roundabout) comprise the construction phase and operational phase. The assessment scenarios are as follows:

- construction – consideration of ambient air quality and dust impacts during the construction of the proposed highway improvement in the

early years of the Sizewell C Project (2023). The construction programme is likely to take place over a duration of up to nine months. The assessment is divided into on-site emissions from construction activities and off-site emissions from road traffic movements; and

- operation – the proposed Yoxford roundabout would remain in place as a permanent improvement to the highway network. The assessment considers the emissions from road traffic using the proposed Yoxford roundabout in the peak construction year of the Sizewell C Project (2028), and 2034 during operation of the Sizewell C power station. The assessment for the operational phase of the proposed development scenarios also covers off-site emissions from road traffic movements.

5.3.15 The traffic composition and flow data come from the **Transport Assessment** (Doc Ref. 8.5) for the baseline, construction and operation scenarios. This information is inherently cumulative as it includes traffic flows associated with consented developments.

f) Assessment criteria

5.3.16 As described in **Appendix 6H** of **Volume 1** of the **ES**, the EIA methodology considers whether impacts of the proposed Yoxford roundabout would have an effect on any resources or receptors.

5.3.17 A detailed description of the assessment methodology used to assess the potential effects on the air quality arising from the proposed highway improvement works (for those highway improvement works screened in for detailed assessment) is provided in **Appendix 6H** of **Volume 1** of the **ES**. A summary of the approach and assessment criteria used in this assessment is presented in the following sub-sections.

i. Construction dust

5.3.18 The assessment of construction dust effects is determined by considering the magnitude of impacts and sensitivity of receptors that could be affected in order to classify effects.

5.3.19 The significance of effects for construction phase dust emissions (including use of NRMM) are determined using professional judgement based on the risk of dust impacts and the appropriateness of mitigation to control emissions of dust and exhaust emissions from NRMM identified within the **Code of Construction Practice** (**CoCP**) (Doc Ref. 8.11).

5.3.20 A detailed description of the assessment construction methodology used to assess the potential effects on air quality arising from construction dust and

emissions from NRMM is provided in **Appendix 6H** of **Volume 1** of the **ES**. A summary of the assessment criteria used in this assessment is presented in the following sub-sections.

Sensitivity

5.3.21 The assessment of assigning the levels of sensitivity to receptors is set out in **Table 5.2**.

Table 5.2: Assessment of the value or sensitivity of receptors for air quality.

Sensitivity	Human Perception of Dust Soiling Effects.	Particulate Matter (PM10) Health Effects.	Ecological Dust Deposition Effects.
High	Experience a high level of amenity; appearance, aesthetics or value of property would be diminished by soiling; and receptor expected to be present continuously or regularly for example residential, museums, car showrooms or commercial horticulture.	Public present for eight hours per day or more, for example residential, schools, care homes.	International/national designation and the designated feature is sensitive to dust soiling effects, for example special areas of conservation for acid heathlands, or lichens, vascular species on Red Data List (Joint Nature Conservation Committee).
Medium	Enjoy a reasonable level of amenity; appearance, aesthetics or value of property could be diminished by soiling; receptor not expected to be present continuously or regularly for example parks or places of work.	Only workforce present (no residential or high sensitivity receptors) eight hours per day or more.	Important plant species - unknown sensitivity to dust soiling; national designation which may be sensitive, for example site of special scientific interest with dust sensitive feature.
Low	Enjoyment of amenity not reasonably expected; appearance, aesthetics or value of property not diminished by soiling; receptors are transient or present for limited period of time for example playing fields, farmland, footpaths, short-term car parks and roads – *subject to typical usage, could be high sensitivity.	Transient human exposure, for example footpaths, playing fields, parks.	Local designation where feature may be sensitive to dust soiling, for example, local nature reserve.

**subject to typical usage, could be high sensitivity depending on the duration and frequency that cars would be expected to be parked there, and the level of amenity expected.*

Magnitude

5.3.22 The magnitude of risk to air quality from construction dust is based on IAQM (Ref. 5.12) suggested criteria.

5.3.23 The descriptors used to classify the potential magnitude of emissions from construction activities is the first step in establishing the risks to air quality using the classifications shown in **Table 5.3**.

Table 5.3: Dust emission magnitude classification.

Magnitude	Demolition	Earthworks	Construction	Trackout
High	Total building volume greater than 50,000m^3, potentially dusty construction material (for example concrete) on-site crushing and screening, demolition activities greater than 20m above ground.	Site area greater than 1 hectare (ha), potentially dusty soil type (for example clay), greater than ten heavy earth moving vehicles at once, bunds greater than 8m high, total material moved greater than 100,000 tonnes.	Total building volume greater than 100,000m^3, for example, on-site concrete batching, sandblasting.	Greater than 50 HDV (greater than 3.5 tonnes) peak outward movements per day, potentially dusty surface material (for example high clay content), unpaved road length greater than 100m.
Medium	Total building volume 20,000–50,000m^3, potentially dusty construction material, demolition activities 10–20m above ground.	Site area 0.25-1ha, moderately dusty soil type (for example silt), five to ten heavy earth moving vehicles at once, bunds 4-8m high, total material moved 20,000-100,000 tonnes.	Total building volume 25,000-100,000m^3, potentially dusty materials for example concrete, on-site concrete batching.	10 to 50 HDV (greater than 3.5 tonnes) peak outward movements per day, moderately dusty surface material (for example high clay content), unpaved road length 50-100m.
Low	Total building volume less than 20,000m^3, construction material with low potential for dust (for example metal/timber), demolition activities less than 10m above ground, demolition	Site area less than 0.25, large grain soil type (for example sand), less than five heavy earth moving vehicles at once, bunds less than 4m high, total material	Total building volume less than 25,000m^3, low dust potential construction materials for example metal/timber.	less than ten HDV (greater than 3.5 tonnes) peak outward movements per day, surface material low dust potential, unpaved

Magnitude	Demolition	Earthworks	Construction	Trackout
	during wetter months.	moved less than 20,000 tonnes.		road length less than 50m.

Effect definitions

5.3.24 The risk definitions for dust emissions during different activities are shown in **Table 5.4** to **Table 5.6**.

Table 5.4: Risk of dust impacts – demolition.

Sensitivity of Area.	Potential Dust Emission Magnitude without Mitigation.		
	Large	Medium	Small
High	High risk.	Medium risk.	Medium risk.
Medium	High risk.	Medium risk.	Low risk.
Low	Medium risk.	Low risk.	Negligible risk.

Table 5.5: Risk of dust impacts – earthworks, construction.

Sensitivity of Area.	Potential Dust Emission Magnitude Without Applied Mitigation.		
	Large	Medium	Small
High	High risk.	Medium risk.	Low risk.
Medium	Medium risk.	Medium risk.	Low risk.
Low	Low risk.	Low risk.	Negligible risk.

Table 5.6: Risk of dust impacts – trackout.

Sensitivity of Area.	Potential Dust Emission Magnitude Without Applied Mitigation.		
	Large	Medium	Small
High	High risk.	Medium risk.	Low risk.
Medium	Medium risk.	Low risk.	Negligible risk.
Low	Low risk.	Low risk	Negligible risk.

5.3.25 Based on the risk level of dust impacts, suitable mitigation should be applied to reduce the potential effects from dust emissions. The significance of dust effects is determined based on the mitigation proposed.

ii. Traffic emissions

5.3.26 A detailed description of the assessment methodology used to assess the potential effects on air quality arising from proposed Yoxford roundabout is provided in **Appendix 6H** of **Volume 1** of the **ES**.

5.3.27 A summary of the assessment descriptors used in the Transport Emissions Assessment, provided in **Appendix 12B** of **Volume 2** of this **ES**, is presented in the following sub-sections.

Magnitude

5.3.28 The magnitude of impact from transport emissions is based on IAQM (Ref. 5.11) suggested descriptors.

5.3.29 The descriptors for the assessment of magnitude are shown in **Table 5.7**.

Table 5.7: Assessment of transport emission magnitude of impact on air quality.

Magnitude of Change Descriptor.	Substance	Annual Mean Concentration (µg/m^3).	Justification
High	Nitrogen Dioxide (NO_2) and PM_{10}.	Increase/decrease greater than 4.	Change in concentration relative to air quality objective value of greater than 10%.
	$PM_{2.5}$	Increase/decrease greater than 2.5.	
Medium	NO_2 and PM_{10}.	Increase/decrease 2 to 4.	Change in concentration relative to air quality objective value of between 6% and 10%.
	$PM_{2.5}$	Increase/decrease 1.4 to 2.5.	
Low	NO_2 and PM_{10}.	Increase/decrease 0.8 to 1.9.	Change in concentration relative to air quality objective value of between 2% and 5%.
	$PM_{2.5}$	Increase/decrease 0.5 to 1.3.	
Very Low.	NO_2 and PM_{10}.	Increase/decrease 0.4 to 0.7.	Change in concentration relative to air quality objective value of 1%.
	$PM_{2.5}$	Increase/decrease 0.3 to 0.4.	
Imperceptible	NO_2 and PM_{10}.	Increase/decrease less than 0.4.	Change in concentration relative to air quality objective value of less than 1%.
	$PM_{2.5}$	Increase/decrease less than 0.3.	

Effect definition

5.3.30 The definitions of effect of road traffic emissions for air quality are shown in **Table 5.8** and **Table 5.9**.

Table 5.8: Effect descriptors for annual mean NO_2 and PM_{10}.

Annual Mean Pollutant Concentration at Receptor in Assessment Year (µg/m³).	Magnitude of Impact.				
	Imperceptible	Very Low.	Low	Medium	High
Less than or equal to 30.2.	Negligible	Negligible	Negligible	Minor	Moderate
Greater than 30.2 to 37.8.	Negligible	Negligible	Minor	Moderate	Moderate
Greater than 37.8 to 41.1.	Negligible	Minor	Moderate	Moderate	Major
Greater than 41.1 to less than 43.8.	Negligible	Moderate	Moderate	Major	Major
Greater than or equal to 43.8.	Negligible	Moderate	Major	Major	Major

Table 5.9: Effect descriptors for annual mean $PM_{2.5}$.

Annual Mean Pollutant Concentration at Receptor in Assessment Year (µg/m³).	Magnitude of Impact.				
	Imperceptible	Very Low.	Low	Medium	High
Less than or equal to 18.9.	Negligible	Negligible	Negligible	Minor	Moderate
Greater than 18.9 to 23.6.	Negligible	Negligible	Minor	Moderate	Moderate
Greater than 23.6 to 25.6.	Negligible	Minor	Moderate	Moderate	Major
Greater than 25.6 to less than 27.4.	Negligible	Moderate	Moderate	Major	Major
Greater than or equal to 27.4	Negligible	Moderate	Major	Major	Major

5.3.31 Following the classification of an effect as presented in **Table 5.8** and **Table 5.9**, a clear statement is made as to whether the effect is 'significant' or 'not

significant'. As a general rule, major and moderate effects are considered to be significant, and minor and negligible effects are considered to be not significant. However, professional judgement is also applied where appropriate. Where there is an increase in pollutant concentration resulting from the proposed development, the effect is adverse. Where there is a decrease in pollutant concentration, the effect is beneficial.

g) Assessment methodology

5.3.32 The methodology for the assessment of changes in air pollutant concentrations is set out in detail within **Appendix 6H** of **Volume 1** of the **ES**. The general approach is described in the following sections.

5.3.33 The change in air quality conditions are considered at receptors that are representative of changes that would occur at other sensitive receptors located nearby. The representative receptors (shown on **Figure 5.1**) are those located closest to the boundary of the proposed Yoxford roundabout site, and the affected road network within the study area.

5.3.34 The magnitude of change in air pollutant concentrations or construction dust deposition rates will be greatest at the representative receptor locations compared to other sensitive receptors further from the site boundary or affected road network. The sensitivity of individual representative receptors is set out in **Appendix 5A** of this chapter.

5.3.35 All receptors are considered to be of equal sensitivity to transport emissions as any member of the public could be present, including more sensitive members such as the young, elderly or unwell.

i. Construction dust

5.3.36 The assessment of likely changes in emissions of coarse particulate matter (PM_{10} and dust) has been considered at the nearest representative receptor in all directions from the site boundary. Coarse particulate matter has been assessed as these can have adverse effects to human health, amenity and ecology at levels exceeding their objective values, as set out in **Appendix 6H** of **Volume 1** of the **ES**.

5.3.37 Representative receptors may be located at distances where good practice guidance indicates their inclusion will not be necessary. However, in order to undertake a robust assessment and assess a worst-case scenario, all such receptors have been included in the assessment regardless of their distance from the boundary.

5.3.38 The assessment considers the risk of the following construction activities giving rise to perceptible changes in dust deposition rates and the changes in concentrations of PM_{10} in air:

- demolition (including breaking up of existing hardstanding road);
- earthworks (including vegetation and site clearance and stockpiling of soils);
- construction (including construction of new road, signage and landscaping); and
- trackout (heavy duty vehicle (HDV) movements on unpaved surfaces and mud transferred onto the highway, up to 500m from site exit).

5.3.39 Taking into account the sensitivity of receptors to these changes, the effectiveness of mitigation measures set out in the **CoCP** (Doc Ref. 8.11), is considered based on the professional judgement of a suitably qualified and experienced person.

5.3.40 Where the risk of a significant effect is identified, additional site-specific mitigation measures will be proposed so that there are no likely significant residual effects.

ii. Traffic emissions

5.3.41 The Transport Emissions Assessment, provided in **Appendix 12B** of **Volume 2** of the **ES** details the technical dispersion modelling method and predicted air pollutant concentrations resulting from HDVs, light duty vehicles and rail traffic for all scenarios of the Sizewell C Project on the wider transport network. NO_2, PM_{10} and $PM_{2.5}$ are assessed as these can cause adverse effects to human health and ecology at levels exceeding their objective values.

5.3.42 The traffic model included data for all associated developments and the Sizewell C main development site, therefore the study area extends from Lowestoft to Ipswich for the Sizewell C Project. However, for the purpose of this assessment, the roads likely to be affected by the proposed Yoxford roundabout within the study area include the A12, the A1120 and the B1122, and were modelled within the Transport Emissions Assessment provided in **Appendix 12B** of **Volume 2** of the **ES**. Traffic emissions are assessed for the representative years for early construction of the Sizewell C main development site (2023), the anticipated peak construction of the main

development site (2028) and operation of the Sizewell C main development site (2034).

5.3.43 The predicted impacts within the study area for the proposed Yoxford roundabout are considered in this chapter for the future baseline and with development scenarios for the early and peak construction years as well as the operational year. The future baselines for the representative years, informed by projected traffic data for these years, are used for comparison with the future construction and operation scenarios to assess how the proposed development is expected to have an effect on air quality.

5.3.44 Traffic data for the early construction year (2023) of the proposed development is based on traffic flow for an average day during the early years scenario for the Sizewell C Project. This includes construction workers and HDVs travelling to and from the proposed highway improvement sites, the main development site and other Sizewell C Project sites.

5.3.45 Traffic data for the peak construction year of the Sizewell C Project (2028) is based on two scenarios, an average day and a busy day. These include traffic using the proposed highway improvements and other associated developments, and construction traffic for the main development site. Busy day traffic data includes additional traffic expected if there is an outage at the Sizewell B power station.

5.3.46 Traffic data for the operational year is based on traffic flow for an average day during operation of the Sizewell C nuclear power station. This includes traffic using the proposed highway improvement and other permanent associated developments and also traffic travelling to the Sizewell C nuclear power station for operation.

h) Assumptions and limitations

5.3.47 Assumptions and limitations relevant to this assessment, for example emission rates, are described in **Appendix 6H** of **Volume 1** of the **ES**.

5.3.48 In the event the vertical or lateral alignment of the route of Yoxford roundabout shifted within the site parameters set out in **Chapter 2** of this volume, changes in air quality would be limited and unlikely to result in a material change in the conclusions of this assessment. There are no further site-specific assumptions or limitations.

5.4 Yoxford roundabout

a) Baseline environment

5.4.1 This section presents a description of the baseline environmental characteristics within the proposed Yoxford roundabout site and in the surrounding area.

i. Current baseline

5.4.2 The closest human receptors to the site are located around the junction at the A12 and B1122, as identified in **Figure 5.1** of this volume.

5.4.3 There is a Roadside Nature Reserve (RNR) 197 within the study area for the proposed development. RNR 197 is located adjacent to the site boundary on the southern side of the B1122 (Middleton Road) and is designated on account of the presence of the Sandy Stilt Puffball fungus (*Battarraea phalloides*). This is represented as receptor E22 on **Figure 5.1**. It is predicted to experience a total nitrogen deposition of 21.2 kgN/ha/Yr for the 2018 baseline year.

5.4.4 There are no air quality management areas within the study area.

5.4.5 NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) 2018 background concentrations in the area of the site are projected to be between 8.0 and 8.5µg/m^3 for NO_2, 14.6µg/m^3 for PM_{10} and between 8.9 and 9.0µg/m^3 for $PM_{2.5}$ (Ref. 5.15).

5.4.6 The overall predicted baseline concentrations, including nearby road traffic contributions, for pollutants NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors near the site are reported in **Table 5.10** to one decimal place. Further details on modelled 2018 baseline pollutant concentrations at receptors can be found in **Appendix 12B** of **Volume 2** of the **ES**.

Table 5.10: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2018 at nearby sensitive receptors.

Receptor	2018 NO_2 Concentration (µg/m^3).	2018 PM_{10} Concentration (µg/m^3).	2018 $PM_{2.5}$ Concentration (µg/m^3).
YX2	14.7	15.1	10.0
YX3	19.2	15.5	10.6
YX6	11.9	15.0	9.4
YX18	11.0	14.8	9.5
YX19	10.3	14.8	9.2

Receptor	2018 NO_2 Concentration ($\mu g/m^3$).	2018 PM_{10} Concentration ($\mu g/m^3$).	2018 $PM_{2.5}$ Concentration ($\mu g/m^3$).
YX20	14.1	15.7	10.0

5.4.7 Dust levels are related to the action of wind on exposed soils and arable fields in the area, long range transport of airborne particulate matter, and climatic conditions year to year, but existing levels are likely to be low given the arable nature of the existing land use.

ii. Future baseline

5.4.8 No notable changes are expected in land use in the surrounding area and it is expected that the future baseline rates of dust deposition are likely to be similar to current levels.

5.4.9 NO_2 and PM_{10} and $PM_{2.5}$ 2023 background concentrations in the area of the site are projected to be between 6.7 and 7.0$\mu g/m^3$ for NO_2, between 13.7 and 13.8$\mu g/m^3$ for PM_{10} and between 8.2 and 8.3$\mu g/m^3$ for $PM_{2.5}$ (Ref. 5.15).

5.4.10 NO_2 and PM_{10} and $PM_{2.5}$ 2028 background concentrations in the area of the site are projected to be between 6.0 and 6.2$\mu g/m^3$ for NO_2, between 13.4 and 13.5$\mu g/m^3$ for PM_{10} and 8.0 and 8.1$\mu g/m^3$ for $PM_{2.5}$ (Ref. 5.15).

5.4.11 NO_2 and PM_{10} and $PM_{2.5}$ 2030[1] background concentrations in the area of the site are projected to be between 5.8 and 6.1$\mu g/m^3$ for NO_2, between 13.4 and 13.5$\mu g/m^3$ for PM_{10} and 8.0 and 8.1$\mu g/m^3$ for $PM_{2.5}$ (Ref. 5.15).

5.4.12 There are a number of committed developments within the study area which have the potential to be future receptors, however due to their close proximity to other representative receptors, these are considered as part of those receptor groups. Specifically, the proposed dwellings at the scaffold yard east of the proposed development (application reference DC/14/3937/FUL) are represented by receptors YX6 and YX19, the proposed dwellings at Beaubell Westleton Road (application reference (DC/15/2846/OUT) are represented by receptor YX20 and the proposed dwelling at Cavan Cottage (application reference DC/16/2077/OUT) are represented by receptor YX3. Therefore, no additional receptors need to be included for the future scenarios.

[1] Defra backgrounds used are projected from a 2017 reference year and the furthest projected is 2030.

5.4.13 In addition, the traffic composition and flow data come from the **Transport Assessment** (Doc Ref. 8.5) for the baseline, construction and operation scenarios. This information is inherently cumulative as it includes traffic flows associated with consented developments.

5.4.14 The future baseline pollutant concentrations at nearby sensitive receptors for the years 2023, 2028 and 2034[2] are presented in **Table 5.11** to **Table 5.13** respectively, reported to one decimal place. Further details of modelled pollutant concentrations for the years 2023 and 2028 can be found in **Appendix 12B** of **Volume 2** of the **ES.**

Table 5.11: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2023 at nearby sensitive receptors.

Receptor	2023 NO_2 Concentration ($\mu g/m^3$).	2023 PM_{10} Concentration ($\mu g/m^3$).	2023 $PM_{2.5}$ Concentration ($\mu g/m^3$).
YX2	11.3	14.2	9.2
YX3	14.2	14.6	9.8
YX6	9.6	14.1	8.8
YX18	8.8	14.0	8.8
YX19	8.3	14.0	8.5
YX20	10.9	14.8	9.3

Table 5.12: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2028 at nearby sensitive receptors.

Receptor	2028 NO_2 Concentration ($\mu g/m^3$).	2028 PM_{10} Concentration ($\mu g/m^3$).	2028 $PM_{2.5}$ Concentration ($\mu g/m^3$).
YX2	9.1	13.9	9.0
YX3	11.1	14.3	9.6
YX6	7.9	13.8	8.5
YX18	7.4	13.6	8.5
YX19	7.1	13.7	8.3
YX20	8.8	14.5	9.1

[2] Predicted concentrations (modelled) are predicted for the year 2034 based on traffic flows for this year.

Table 5.13: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2034 at nearby sensitive receptors.

Receptor	2034 NO_2 Concentration ($\mu g/m^3$).	2034 PM_{10} Concentration ($\mu g/m^3$).	2034 $PM_{2.5}$ Concentration ($\mu g/m^3$).
YX2	8.7	14.0	9.0
YX3	10.5	14.3	9.6
YX6	7.6	13.8	8.5
YX18	7.1	13.7	8.5
YX19	6.9	13.7	8.3
YX20	8.5	14.6	9.1

5.4.15 RNR 197 is predicted to experience a total nitrogen deposition of 20.8 kgN/ha/Yr for the 2023 baseline year, 20.4 kgN/ha/Yr for the 2028 baseline year and 20.4 kgN/ha/Yr for the 2034 baseline year.

b) Environmental design and mitigation

5.4.16 As detailed in **Volume 1**, **Chapter 6** of the **ES**, a number of primary mitigation measures have been identified through the iterative EIA process, and have been incorporated into the design and construction planning of the proposed Yoxford roundabout. Tertiary mitigation measures are legal requirements or are standard practices that would be implemented as part of the proposed Yoxford roundabout.

5.4.17 The assessment of likely significant effects of the proposed Yoxford roundabout assumes that primary and tertiary mitigation measures are in place. For air quality, these measures are identified in the following section, with a summary provided on how the measures contribute to the mitigation and management of potentially significant environmental effects.

i. Primary mitigation

5.4.18 Primary mitigation is often referred to as ‘embedded mitigation’ and includes modifications to the location or design to mitigate impacts; these measures become an inherent part of the proposed development.

5.4.19 Primary mitigation for construction of the proposed Yoxford roundabout includes:

- Locating site boundary to avoid sensitive receptors as far as practicable, including avoidance of Roadside Nature Reserve 197.

5.4.20 Primary measures to minimise and manage additional traffic on the roads associated with the construction and operation of the Sizewell C Project are set out in **Volume 2, Chapter 10** of the **ES**.

ii. Tertiary mitigation

5.4.21 Tertiary mitigation will be required regardless of any EIA assessment, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

5.4.22 Air quality impacts arising from the construction phase would be managed through a range of control measures detailed in an **CoCP** (Doc Ref. 8.11), which will include measures as per the IAQM Guidance (Ref. 5.12), based on a 'high risk' site (though the risks at this site are not considered to be 'high'). These measures will be incorporated into construction working practices to reduce the likelihood of significant adverse dust impacts and would include measures, such as:

- site access would be located as far as reasonably practicable from sensitive receptors;
- locating any mobile crushing and screening plant as far as practicable from sensitive receptors;
- potentially dusty loads (loose earth, spoil, aggregates etc) to be covered in transit;
- avoid site run-off of water or mud;
- cover, seed or fence stockpiles to prevent wind whipping;
- ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary; and
- develop and implement dust management measures, in accordance with the **CoCP**.

5.4.23 The contractors will prepare Construction Environmental Management Plans including dust management measures, in accordance with the **CoCP.** An

Outline Dust Management Plan is also included in **Volume 2, Appendix 12A**.

5.4.24 During construction, a **Construction Traffic Management Plan** (Doc Ref. 8.7) and a **Construction Workforce Travel Plan** (Doc Ref. 8.8) would be implemented to reduce and manage the effects of traffic generated by the Sizewell C Project (see **Volume 2, Chapter 10** of the **ES**).

c) Assessment

i. Introduction

5.4.25 This section presents the findings of the air quality assessment for the construction and operation phases of the proposed Yoxford roundabout.

5.4.26 This section identifies any likely significant effects that are predicted to occur then identifies any secondary mitigation and monitoring measures that are proposed to minimise any adverse significant effects (if required).

ii. Construction

5.4.27 The potential impacts on sensitive receptors associated with the construction of the proposed highway improvement include fugitive emissions of dust, emissions from NRMM on the site, emissions from HDVs accessing the site and emissions from vehicles carrying workers to and from the site. There are a number of sensitive receptors potentially at risk from these factors.

Construction dust

5.4.28 A dust risk assessment has been undertaken for the proposed development, which also considers the risk from NRMM used to undertake works. A summary of the assessment is presented in **Table 5.14**, and full details of the assessment are provided in **Appendix 5A** of this volume.

Table 5.14: Potential risk of dust impacts from activities without any mitigation.

Potential Impact.	Risk			
	Earthworks: Medium Magnitude.	Construction: Medium Magnitude.	Trackout: Medium Magnitude.	Demolition: Medium Magnitiude.
Dust Soiling.	Medium risk.	Medium risk.	Low risk.	Medium risk.
Human Health.	Low risk.	Low risk.	Low risk.	Low risk.
Ecological	Low risk.	Low risk.	Low risk.	Low risk.

5.4.29 All residential receptors are considered to be high sensitivity receptors to health and dust soiling effects. The main risk is anticipated to be related to demolition, earthworks and construction phases, as these phases of construction can typically require a high volume of material to be moved. A high level of activity could potentially place the dust emissions category as 'medium' by IAQM classification (Ref. 5.12), with the likelihood of a 'medium' risk based on the number and sensitivity of local receptors. Each risk category has the potential to lead to proportional adverse, albeit temporary, impacts which have the potential to be significant without appropriate mitigation.

5.4.30 However, assuming all mitigation measures are effectively implemented and monitored through the **CoCP** (Doc Ref. 8.11), at the level recommended by the dust risk assessment, any construction dust risk would likely be negligible, and would therefore be **not significant** for any of the proposed construction activities at the site.

Construction traffic

5.4.31 It is expected that the number of HDV movements required to construct the proposed Yoxford roundabout will not exceed the IAQM screening threshold (Ref. 5.11) of more than 100 AADT required for a detailed dispersion modelling assessment. However, due to the number of developments undergoing construction during the early years construction phase of the Sizewell C Project in the wider study area (Lowestoft to Ipswich), a detailed assessment of transport emissions for the construction phase has been undertaken for completeness.

5.4.32 The predicted concentrations for NO_2, PM_{10} and $PM_{2.5}$ resulting from traffic emissions in the area of the proposed development during construction, based on the average day during the early years, and the magnitude of change from the predicted baseline conditions are shown in **Table 5.15** to **Table 5.17**, reported to one decimal place. Further details on modelled pollutant concentrations for the year 2023 can be found in **Appendix 12B** of **Volume 2** of the **ES**.

Table 5.15: NO_2 concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration.

Receptor	2023 average day.*		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	11.7	0.4	Very Low.	Negligible
YX3	14.9	0.7	Very Low.	Negligible
YX6	10.4	0.8	Low	Negligible

Receptor	2023 average day.*		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX18	9.0	0.3	Imperceptible	Negligible
YX19	8.8	0.4	Very Low.	Negligible
YX20	11.1	0.2	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place*

Table 5.16: PM_{10} concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration.

Receptor	2023 average day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	14.3	0.1	Imperceptible	Negligible
YX3	14.7	0.1	Imperceptible	Negligible
YX6	14.3	0.2	Imperceptible	Negligible
YX18	14.0	0.1	Imperceptible	Negligible
YX19	14.1	0.1	Imperceptible	Negligible
YX20	15.2	0.4	Very Low.	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.17: $PM_{2.5}$ concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration.

Receptor	2023 average day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	9.3	0.1	Imperceptible	Negligible
YX3	10.0	0.2	Imperceptible	Negligible
YX6	9.0	0.3	Very Low.	Negligible
YX18	8.8	0.1	Imperceptible	Negligible
YX19	8.7	0.1	Imperceptible	Negligible
YX20	9.0	-0.3	Very Low.	Negligible

** All values have been rounded to the nearest decimal place.*

5.4.33 The effects of NO_2 and PM_{10} and $PM_{2.5}$ at nearby sensitive receptors are considered to be negligible. The overall effects on air quality resulting from traffic-related construction of the proposed highway improvement are **not significant**.

5.4.34 RNR 197 is predicted to experience a total nitrogen deposition of 21.1 kgN/ha/Yr during the construction phase of the Sizewell C Project (2023).

Inter-relationship effects

5.4.35 There are potential inter-relationship effects on ecological and amenity and recreation receptors as a result of changes to air quality during the construction phase of the development. These potential impacts are considered within **Chapters 7** and **8** of this volume respectively. There is also the potential for impacts relating to soils management on site, as detailed in **Chapter 10** of this volume, to give rise to air quality effects from dust. Inter-relationship effects on human health receptors are considered further in **Volume 2**, **Chapter 28** and in **Volume 10**, **Chapter 2** of the **ES** (Doc. Ref. 6.11).

iii. Operation

Operation of the proposed development during the peak construction year of the main development site (2028)

5.4.36 The air quality assessment for operation of the proposed highway improvement covers the peak year (2028) during the construction of the main development site on its busiest days and on an average day.

5.4.37 The predicted concentrations for NO_2, PM_{10} and $PM_{2.5}$ resulting from road traffic in the study area for the proposed development for the operational year 2028 average day scenario and the magnitude of change from the predicted baseline conditions are shown in **Table 5.18** to **Table 5.20**, reported to one decimal place. Further details on modelled air pollutant concentrations at receptors for the 2028 average day scenario can be found in **Appendix 12B** of **Volume 2** of the **ES**.

Table 5.18: NO_2 concentration during operation of the proposed Yoxford roundabout during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	9.1	0.1	Imperceptible	Negligible
YX3	11.0	Less than -0.1.	Imperceptible	Negligible
YX6	8.1	0.2	Imperceptible	Negligible
YX18	7.2	-0.2	Imperceptible	Negligible
YX19	7.2	0.1	Imperceptible	Negligible

Receptor	2028 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX20	9.3	0.5	Very Low.	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.19: PM_{10} concentration during operation of the proposed Yoxford roundabout during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	13.9	Less than 0.1.	Imperceptible	Negligible
YX3	14.3	Less than -0.1.	Imperceptible	Negligible
YX6	13.9	0.1	Imperceptible	Negligible
YX18	13.6	Less than -0.1.	Imperceptible	Negligible
YX19	13.7	Less than 0.1.	Imperceptible	Negligible
YX20	14.6	0.1	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.20: $PM_{2.5}$ concentration during operation of the proposed Yoxford roundabout during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	9.0	Less than 0.1.	Imperceptible	Negligible
YX3	9.5	Less than -0.1.	Imperceptible	Negligible
YX6	8.6	0.1	Imperceptible	Negligible
YX18	8.4	-0.1	Imperceptible	Negligible
YX19	8.3	Less than 0.1.	Imperceptible	Negligible
YX20	9.2	Less than 0.1.	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

5.4.38 The predicted concentrations for NO_2, PM_{10} and $PM_{2.5}$ for the operational year 2028 busiest day scenario and the magnitude of change from the predicted baseline conditions are shown in **Table 5.21** to **Table 5.23**, reported to one decimal place. Further details on modelled pollutant concentrations for the 2028 busiest day scenario can be found in **Appendix 12B** of **Volume 2** of the **ES**.

Table 5.21: NO_2 concentration during operation of the proposed Yoxford roundabout during 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Busiest Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	9.1	0.1	Imperceptible	Negligible
YX3	11.0	-0.1	Imperceptible	Negligible
YX6	8.1	0.2	Imperceptible	Negligible
YX18	7.2	-0.2	Imperceptible	Negligible
YX19	7.2	0.1	Imperceptible	Negligible
YX20	9.3	0.5	Very Low.	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.22: PM_{10} concentration during operation of the proposed Yoxford roundabout during 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Busiest Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	13.9	Less than 0.1.	Imperceptible	Negligible
YX3	14.3	Less than -0.1.	Imperceptible	Negligible
YX6	13.9	0.1	Imperceptible	Negligible
YX18	13.6	Less than -0.1.	Imperceptible	Negligible
YX19	13.7	Less than 0.1.	Imperceptible	Negligible
YX20	14.6	0.1	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.23: $PM_{2.5}$ concentration during operation of the proposed Yoxford roundabout during 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 Busiest Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	9.0	Less than 0.1.	Imperceptible	Negligible
YX3	9.5	Less than -0.1.	Imperceptible	Negligible
YX6	8.6	0.1	Imperceptible	Negligible
YX18	8.4	-0.1	Imperceptible	Negligible

Receptor	2028 Busiest Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX19	8.3	0.1	Imperceptible	Negligible
YX20	9.2	0.1	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

5.4.39 Following the classification of effects of operational phase traffic, the effects of both average and busiest day traffic at all receptors are negligible. The effects on air quality resulting from traffic associated with the operation of the proposed development during the peak construction phase of the Sizewell C main development site are **not significant** at all sensitive receptors near the proposed development.

5.4.40 RNR 197 is predicted to experience a total nitrogen deposition of 20.0 kgN/ha/Yr during both the 2028 average day and busiest day scenarios. The effect of total nitrogen deposition on RNR197 is considered further in **Chapter 7** of this volume.

Operation of the proposed development during operation of the Sizewell C power station (2034)

5.4.41 The predicted concentrations for NO_2, PM_{10} and $PM_{2.5}$ for the operational year 2034 scenario and the magnitude of change from the predicted baseline conditions are shown in **Table 5.24** to **Table 5.26**, reported to one decimal place. Further details on modelled pollutant concentrations for the 2028 busiest day scenario can be found in **Appendix 12B** of **Volume 2** of the **ES**.

Table 5.24: NO_2 concentration during operation of the proposed development once Sizewell C power station is operational (2034) and the magnitude of change compared to the 2034 baseline concentration.

Receptor	2034 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
YX2	8.6	-0.1	Imperceptible	Negligible
YX3	10.3	-0.2	Imperceptible	Negligible
YX6	7.5	-0.2	Imperceptible	Negligible
YX18	6.9	-0.2	Imperceptible	Negligible
YX19	6.8	-0.1	Imperceptible	Negligible
YX20	8.7	0.2	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.25: PM_{10} concentration during operation of the proposed development once Sizewell C power station is operational (2034) and the magnitude of change compared to the 2030 baseline concentration.

Receptor	2034 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	13.9	Less than -0.1.	Imperceptible	Negligible
YX3	14.3	Less than -0.1.	Imperceptible	Negligible
YX6	13.8	Less than -0.1.	Imperceptible	Negligible
YX18	13.6	Less than -0.1.	Imperceptible	Negligible
YX19	13.7	Less than -0.1.	Imperceptible	Negligible
YX20	14.6	Less than 0.1.	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place.*

Table 5.26: $PM_{2.5}$ concentration during operation of the proposed development once Sizewell C power station is operational (2034) and the magnitude of change compared to the 2030 baseline concentration.

Receptor	2034 Average Day.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
YX2	9.0	Less than -0.1.	Imperceptible	Negligible
YX3	9.6	-0.1	Imperceptible	Negligible
YX6	8.5	-0.1	Imperceptible	Negligible
YX18	8.5	-0.1	Imperceptible	Negligible
YX19	8.3	Less than -0.1.	Imperceptible	Negligible
YX20	9.0	Less than -0.1.	Imperceptible	Negligible

** All values have been rounded to the nearest decimal place*

5.4.42 Following the classification of effects of operational phase traffic, the effects at all representative receptors are negligible. The effects on air quality resulting from traffic associated with the operation of the proposed development during operational years of the Sizewell C power station are **not significant** at all sensitive receptors near the proposed development.

5.4.43 RNR 197 is predicted to experience a total nitrogen deposition of 19.9 kgN/ha/Yr during the operational scenario of the Sizewell C Project (2034). The effect of total nitrogen deposition on RNR197 is considered further in **Chapter 7** of this volume.

Inter-relationship effects

5.4.44 There are potential inter-relationship effects on ecological and amenity and recreation receptors as a result of changes to air quality during the operational phase of development. These potential impacts are considered within **Chapters 7** and **8** of this volume respectively. Inter-relationship effects on human health receptors are considered further in **Volume 2**, **Chapter 28** and **Volume 10**, **Chapter 2** of the **ES**.

d) Mitigation and monitoring

5.4.45 Primary and tertiary mitigation measures, which have been accounted for as part of the assessment for the proposed Yoxford roundabout are summarised in **section 5.4b** of this chapter.

5.4.46 No further mitigation or monitoring measures for the air quality assessment are required to reduce or avoid an adverse significant effect. In addition, no monitoring of air pollutant concentrations or dust deposition rates is proposed, given that no significant effects are predicted.

5.4.47 The residual effects will be reported in the final section, **section 5.6** of this chapter.

5.5 Other highway improvements

5.5.1 As identified in **section 5.3** of this chapter, the other highway improvement works and safety measures proposed are not considered to have the potential to result in significant effects on air quality at sensitive receptors close to the sites. Therefore, the other highway improvement works are not considered further.

5.6 Residual Effects

5.6.1 The following tables (**Tables 5.27** to **5.29**) present a summary of the air quality assessment. They identify the receptor/s likely to be impacted, the level of effect and, where the effect is deemed to be significant, the tables include the mitigation proposed and the resulting residual effect.

Table 5.27: Summary of effects for the construction phase.

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of Effects.	Additional Mitigation.	Residual Effects.
Residential Properties.	Potential amenity or health impacts from generation of particulate matter from construction activities, including exhaust emissions from NRMM.	As recommended in **CoCP** (Doc Ref. 8.11) based on risk assessment.	Negligible	None required.	Negligible (**not significant**).
Residential Properties.	Emissions from road vehicle movements.	Site selection and layout.	Negligible	None required.	Negligible (**not significant**).

Table 5.28: Summary of effects for both 2028 operational phase.

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of Effects.	Additional Mitigation.	Residual Effects.
Residential Properties.	Emissions from road vehicle movements.	Site selection and layout.	Negligible	None required.	Negligible (**not significant**).

Table 5.29: Summary of effects for the 2034 operational phase.

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of Effects.	Additional Mitigation.	Residual Effects.
Residential Properties.	Emissions from road vehicle movements.	Site selection and layout.	Negligible	None required.	Negligible (**not significant**).

References

5.1. The European Commission, Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (2008)

5.2. The European Commission, Directive 2004/107/EC of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (European Fourth Daughter Directive on Ambient Air Quality) (2004)

5.3. The Air Quality Standards Regulations (2010). Statutory Instrument No. 1001. The Stationary Office, 2011

5.4. Great Britain. Department for Environment, Food & Rural Affairs (DEFRA). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (National Air Quality Strategy). London: The Stationery Office, 2007. (Online) Available from: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1 (Accessed 05/08/2019)

5.5. Department of Energy and Climate Change (2011) Overarching National Policy Statement for Energy (EN-1)

5.6. Department of Energy and Climate Change (2011) National Policy Statement for Nuclear Power Generation (EN-6)

5.7. Suffolk County Council. Suffolk Local Transport Plan 2011 – 2031. (Online) Available from: https://www.suffolk.gov.uk/roads-and-transport/transport-planning/transport-planning-strategy-and-plans/ (Accessed July 2019)

5.8. ESC. Suffolk Coastal District Council Core Strategy and Development Management Policies. 2013. (Online) Available from: https://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-local-plan/existing-local-plan/core-strategy-and-development-management-policies/ (Accessed July 2019)

5.9. East Suffolk Council. Suffolk Coastal Final Draft Local Plan. Suffolk. 2019. (Online) Available from: https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/Final-Draft-Local-Plan/Final-Draft-Local-Plan.pdf (Accessed October 2019)

5.10. Highways England, Sustainability & Environment Appraisal LA 105 Air Quality. 2019. Available from: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/LA%20105%20Air%20quality-web.pdf (Accessed January 2020)

5.11. Institute of Air Quality Management, Land-use planning and development control: Planning for air quality, (2017)

5.12. IAQM. Guidance on the Assessment of Dust from Demolition and Construction. 2016. (Online) Available from: https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf (Accessed April 2019)

5.13. IAQM. A guide to the assessment of air quality impacts on designated nature conservation sites. 2019. (Online) Available from: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf (Accessed July 2019)

5.14. National Atmospheric Emissions Inventory (NAEI). Available from: https://naei.beis.gov.uk/ (Accessed October 2019)

5.15. Defra (2019) Background Mapping data for local authorities, Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015