The Sizewell C Project

6.9 Volume 8 Freight Management Facility

Chapter 5 Air Quality

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Contents

5. Air Quality 1
5.1 Introduction 1
5.2 Legislation, policy and guidance 1
5.3 Methodology 3
5.4 Baseline environment 14
5.5 Environmental design and mitigation 16
5.6 Assessment 18
5.7 Mitigation and monitoring 24
5.8 Residual effects 24
References 26

Tables

Table 5.1: Assessment of the value or sensitivity of receptors for air quality. 6
Table 5.2: Dust emission magnitude classifications 7
Table 5.3: Risk of dust impacts – demolition. 8
Table 5.4: Risk of dust impacts – earthworks, construction. 8
Table 5.5: Risk of dust impacts - trackout. 9
Table 5.6: Assessment of transport emission magnitude of impact on air quality. 10
Table 5.7: Effect descriptors for annual mean NO_2 and PM_{10} 11
Table 5.8: Effect descriptors for annual mean $PM_{2.5}$ 11
Table 5.9: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2018 at nearby sensitive receptors 14
Table 5.10: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2023 at nearby sensitive receptors. 15
Table 5.11: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2028 at nearby sensitive receptors. 16
Table 5.12: Potential risk of dust impacts from activities without applied mitigation. 18
Table 5.13: NO_2 concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration. 19
Table 5.14: PM_{10} concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration. 20

Table 5.15: $PM_{2.5}$ concentration for construction phase year 2023 and the magnitude of change compared to the 2023 baseline concentration. 20

Table 5.16: NO_2 concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration..21

Table 5.17: PM_{10} concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.....21

Table 5.18: $PM_{2.5}$ concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.....22

Table 5.19: NO_2 concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration. ..22

Table 5.20: PM_{10} concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration. 22

Table 5.21: $PM_{2.5}$ concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration. 23

Table 5.22: Summary of effects for the construction phase. 25

Table 5.23: Summary of effects for both typical and busiest day operational phase.....25

Table 5.24: Summary of effects for the removal and reinstatement phase. 25

Figures

Figure 5.1: Freight Management Facility development site boundary and representative receptors

Plates

None provided.

Appendices

Appendix 5A: Dust Risk Assessment for the Freight Management Facility

5. Air Quality

5.1 Introduction

5.1.1 This chapter of **Volume 8** of the **Environmental Statement (ES)** presents an assessment of the air quality effects arising from the construction, operation and removal, and reinstatement of the Freight Management Facility (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 Detailed descriptions of the freight management facility site (referred to throughout this volume as the 'site', the proposed development and the different phases of development 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 **Volume 1, Appendix 1A** of the **ES**.

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 proposed development.

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

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

5.2 Legislation, policy and guidance

5.2.1 **Volume 1, Appendix 6H** 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 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 **Volume 1**, **Appendix 6H**.

b) National

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

- Air Quality Standards Regulations 2010 (Ref. 5.3); and
- 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 **Volume 1, Appendix 6H**.

5.2.7 The Overarching National Policy Statement for Energy (EN-1) (Ref. 5.5) and the National Policy Statement for Nuclear Power Generation (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 **Volume 1, Appendix 6H**.

c) Regional

5.2.8 Regional policy relating to the air quality assessment includes the Suffolk Local Transport Plan (LTP) Parts 1 and 2 (Ref. 5.7).

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

d) Local

5.2.10 Local policies relating to the air quality assessment include:

- Suffolk Coastal District Council Core Strategy and Development Management Policies (Ref. 5.8) and
- Suffolk Coastal District Council 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 **Volume 1**, **Appendix 6H**.

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 (EPUK) 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); and
- National Atmospheric Emissions Inventory emission factors (Ref. 5.14).

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

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**.

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

5.3.3 This section provides specific details of the air quality methodology applied to the assessment of the proposed development and a summary of the general approach to provide appropriate context for the assessment that follows. The scope of assessment considers the impacts of the construction, operation and removal, and reinstatement of the proposed development. Consideration has been given to air quality effects arising from construction dust (arising from construction activities and Non-Road Mobile Machinery (NRMM) during both the construction and removal and reinstatement phases) and road traffic emissions (for all phases).

5.3.4 The scope of the 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 **Volume 1, Appendix 6A**.

5.3.5 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 **Volume 1, Appendices 6A** to **6C**. Project-wide comments but no site-specific comments were raised.

b) Consultation

5.3.6 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 the freight management facility, has been undertaken with Suffolk County Council (SCC), and East Suffolk Council (ESC). A summary of consultation relating to the air quality assessment is provided in **Volume 1**, **Appendix 6H**.

c) Study area

5.3.7 The geographical extent of the study area, determined using methodology set out in **Volume 1**, **Appendix 6H**, for dust emissions includes:

- the proposed development site; and
- the area within 350 metre (m) from the site boundary and 350m from public roads up to 500m from the site entrance.

5.3.8 Additionally, the study area for road traffic emissions includes the A14 north of the proposed development, the A1156 and Felixstowe Road within 500m of the site boundary. The changes to air pollutant concentrations on the wider transport network are considered in **Volume 2, Appendix 12B** (Transport Emissions Assessment).

5.3.9 The combined study area and the location of representative receptors considered in this assessment are illustrated on **Figure 5.1** of this volume.

d) Assessment scenarios

5.3.10 The assessment scenarios for the proposed development comprise the construction phase, operational phase, and the removal and reinstatement phase of the site. The assessment scenarios are as follows:

- Construction - consideration of ambient air quality and dust impacts during the construction of the proposed development during the early years of construction of the Sizewell C Project (2023). The construction programme is likely to take place over a number of phases over a total duration of up to 18 months. The assessment is divided into on-site emissions from construction activities and off-site emissions from road traffic movements.

- Operation - the proposed development would only be operational during the construction phase of the Sizewell C Project. The assessment considers the emissions from road traffic using the proposed development in (2028) which is the peak construction year of the Sizewell C Project. The assessment for the operational phase of the proposed development considers off-site emissions from road traffic movements.

- Removal and reinstatement - consideration of ambient air quality and dust impacts during the removal of the proposed development and the reinstatement of site to agricultural use. The assessment considers on-site emissions from demolition activities and off-site emissions from road traffic movements.

5.3.11 The traffic composition and flow data come from the **Transport Assessment** (Doc Ref. 8.5) for the baseline, construction (2023) and operation (2028) scenarios. This information is inherently cumulative as it includes traffic flows associated with consented developments. Separate modelling for the removal and reinstatement has not been completed. However, the number of additional traffic movements associated with the removal and reinstatement of the site is not anticipated to be greater than the construction phase (2023) therefore a qualitative assessment is presented on this basis.

e) Assessment criteria

5.3.12 As described in **Volume 1**, **Appendix 6**, the EIA methodology considers whether impacts of the proposed development would have an effect on any resources or receptors

5.3.13 A detailed description of the assessment methodology used to assess the potential effects on the air quality arising from the proposed development is provided in **Volume 1, Appendix 6H**. A summary of the assessment criteria used in this assessment is presented in the following sub-sections.

i. Construction dust

5.3.14 The assessment of construction dust effects (also considered in the removal and reinstatement phase) is determined by considering the magnitude of impacts and sensitivity of receptors that could be affected in order to classify effects.

5.3.15 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).

5.3.16 A detailed description of the assessment methodology used to assess the potential effects on air quality arising from construction dust and exhaust emissions from NRMM is provided in **Volume 1, Appendix 6H**. A summary of the criteria used in the construction dust assessment is presented in the following sub-sections.

Sensitivity

5.3.17 The assessment of assigning the levels of sensitivity to receptors is set out in **Table 5.1**.

Table 5.1: Assessment of the value or sensitivity of receptors for air quality.

Sensitivity	Human Perception of Dust Soiling Effects.	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 Area of Conversation (SAC) for acid heathlands, or lichens, vascular species on Red Data List (Joint Nature Conservation Committee (JNCC)).
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	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 (SSSI) with dust sensitive feature.

Sensitivity	Human Perception of Dust Soiling Effects.	PM10 Health Effects.	Ecological Dust Deposition Effects.
	regularly; for example parks or places of work.		
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.	Transient human exposure, for example footpaths, playing fields, parks.	Local designation where feature may be sensitive to dust soiling, for example local nature reserves.

**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

5.3.18 The magnitude of risk to air quality from construction dust is based on the IAQM suggested criteria.

5.3.19 The descriptors used to classify the potential magnitude of emissions from construction and removal and reinstatement activities is the first step in establishing the risks to air quality using the classifications shown in **Table 5.2**.

Table 5.2: Dust emission magnitude classifications.

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 1ha, potentially dusty soil type (for example clay), greater than 10 heavy earth moving vehicles at once, bunds greater than 8m high, total material moved greater than 100,000t.	Total building volume greater than 100,000m^3, on-site concrete batching, sandblasting.	Greater than 50 HDV[1] (greater than 3.5t) peak outward movements per day, potentially dusty surface material (for example high clay content), unpaved road length greater than 100m.

[1] The term heavy duty vehicles (HDV) is used as an extension of heavy good vehicles (HGVs) to include consideration of other heavy vehicles, for examples buses and/or coaches

Magnitude	Demolition	Earthworks	Construction	Trackout
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), 5-10 heavy earth moving vehicles at once, bunds 4-8m high, total material moved 20,000-100,000t.	Total building volume 25,000-100,000m^3, potentially dusty materials eg concrete, on-site concrete batching.	10-50 HDV (>3.5t) 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 during wetter months.	Site area less than 0.25, large grain soil type (for example sand), less than 5 heavy earth moving vehicles at once, bunds less than 4m high, total material moved less than 20,000t.	Total building volume less than 25,000m^3, low dust potential construction materials eg metal/timber.	Less than 10 HDV (less than 3.5t) peak outward movements per day, surface material low dust potential, unpaved road length less than 50m.

Effect definitions

5.3.20 The risk definitions for dust emissions from different activities are shown in **Table 5.3** to **Table 5.5**.

Table 5.3: 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 5.4: Risk of dust impacts – earthworks, construction.

Sensitivity of Area	Potential Dust Emission Magnitude Without 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 5.5: Risk of dust impacts - trackout.

Sensitivity of Area	Potential Dust Emission Magnitude Without 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.

5.3.21 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

5.3.22 A detailed description of the assessment methodology used to assess the potential effects on air quality arising from the proposed development is provided in **Volume 1, Appendix 6H**. A summary of the assessment descriptors used in the Transport Emissions Assessment (**Volume 2, Appendix 12B**) is presented in the following sub-sections.

Magnitude

5.3.23 The magnitude of impact from transport emissions is based on IAQM suggested descriptors.

5.3.24 The descriptors for the assessment of magnitude are shown in **Table 5.6**.

Table 5.6: Assessment of transport emission magnitude of impact on air quality.

Magnitude of Change Descriptor.	Substance	Annual Mean Concentration (µg/m3).	Justification
High	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

5.3.25 The definitions of effect of road traffic emissions for air quality are shown in **Table 5.7** and **Table 5.8**.

Table 5.7: 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 5.8: 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

5.3.26 Following the classification of an effect as presented in **Table 5.7** and **Table 5.8**, 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.

f) Assessment methodology

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

5.3.28 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 in **Figure 5.1**) are those closest to the site boundary and the affected road network within the study area.

5.3.29 The magnitude of change in air pollutant concentrations of construction dust deposition rates would be greatest at these representative locations. Assessment of the representative receptors therefore represents a worst-case assessment of the potential construction dust effects. The sensitivity of individual representative receptors to construction dust is set out in **Appendix 5A** of this chapter.

5.3.30 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. Assessment of the representative receptors therefore represents a worst-case assessment of the potential transport emission effects.

i. Construction dust

5.3.31 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 this can have adverse effects on human health, amenity and ecology where levels exceeding their objective values, as set out in **Volume 1, Appendix 6H**. Representative receptors may be located at distances where good practice guidance indicates their inclusion in this assessment would not be necessary. However, in order to undertake a robust assessment and assess a worst-case scenario, all such representative receptors have been included in this assessment regardless of their distance from the boundary.

5.3.32 There is a risk of proposed construction activities, (demolition and earthworks (including vegetation and site clearance and stockpiling of soils), construction works (including construction of new road, signage and landscaping) and the potential track-out of dusty material onto public roads (heavy duty vehicle (HDV) movements on unpaved surfaces and mud transferred onto the highway, up to 500m from site exit) giving rise to perceptible changes in dust deposition rates and to changes in concentrations of PM_{10} in air. Taking into account the sensitivity of receptors to these changes, the effectiveness of mitigation measures, as set out in the **CoCP** (Doc Ref. 8.11) and detailed in **section 5.5**, are considered based on the professional judgement of a suitably qualified and experience person.

5.3.33 Where the risk of a significant effect is identified, additional site-specific mitigation measures will be proposed in **section 5.7** so that there are no likely significant residual effects.

ii. Traffic emissions

5.3.34 The Transport Emissions Assessment (refer to **Volume 2, Appendix 12B**) details the technical dispersion modelling method and predicted air pollutant concentrations resulting from HDVs, light duty vehicles (LDVs), and rail traffic for all scenarios for 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.

5.3.35 The traffic model included data for all associated developments and the Sizewell C main development site, therefore the study area for the Transport Emissions Assessment (**Volume 2, Appendix 12B**) extends from Lowestoft to Ipswich for the Sizewell C Project. However, for the purpose of this assessment, the only roads likely to be affected by the proposed development include the A12, the A14 and the A1156, and were modelled within the Transport Emissions Assessment (**Volume 2, Appendix 12B**). Traffic emissions are assessed for the representative year for early construction of the Sizewell C main development site (2023) and for the anticipated peak construction of the Sizewell C main development site (2028).

5.3.36 The assessment of potential impacts presented in this chapter consider the future baseline and with development scenarios for 2023 and 2028. The future baselines for the representative years 2023 and 2028, 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.

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

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

g) Assumptions and limitations

5.3.39 Assumptions and limitations relevant to this assessment, for example emission rates and engine specifications, are described in **Volume 1, Appendix 6H**. There are no site-specific assumptions or limitations.

5.4 Baseline environment

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

a) Current baseline

5.4.2 The closest human receptors to the site are located along Felixstowe Road (BK4 to BK8), as identified in **Figure 5.1**, of this volume.

5.4.3 There are no sites of nature conservation interest (i.e. international, European and nationally designated sites of ecological interest) within the study area, and therefore no such sites are included in the construction or operational phase air quality assessment presented within this chapter.

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 within the site are projected to be between 11.9 and 13.0µg/m^3 for NO_2, between 15.9 and 17.6µg/m^3 for PM_{10} and between 9.8 and 10.5µg/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 proposed development are reported in **Table 5.9** to one decimal place. Further details on modelled 2018 baseline pollutant concentrations at receptors can be found in **Volume 2**, **Appendix 12B**.

Table 5.9: 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).
BK4	17.7	18.3	11.4
BK5	20.9	18.6	11.8
BK6	14.3	15.2	9.9
BK7	13.4	17.9	10.7
BK8	15.0	17.9	11.0

5.4.7 Dust levels are related to the action of wind on exposed soils on 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.

b) Future baseline

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

5.4.9 NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) 2023 background concentrations within the site are projected to be between 10.1 to 10.8µg/m^3 for NO_2, between 15.1 and 16.7µg/m^3 for PM_{10}, and between 9.1 and 9.8µg/m^3 for $PM_{2.5}$.

5.4.10 NO_2 and particulate matter 2028 background concentrations within the site are projected to be between 9.0 and 9.5µg/m^3 for NO_2, between 14.8 and 16.4µg/m^3 for PM_{10} and between 8.8 and 9.5µg/m^3 for $PM_{2.5}$.

5.4.11 There are no committed developments in the study area that would be affected by changes to air quality resulting from the construction and operation of the proposed development.

5.4.12 The future baseline pollutant concentrations at nearby sensitive receptors for the years 2023 and 2028 are presented in **Table 5.10** and **Table 5.11**, respectively, reported to one decimal place. Further details of modelled pollutant concentrations for the years 2023 and 2028 can be found in **Volume 2, Appendix 12B**.

Table 5.10: NO_2, PM_{10} and $PM_{2.5}$ concentrations for the baseline year 2023 at nearby sensitive receptors.

Receptor	2023 NO_2 Concentration (µg/m^3).	2023 PM_{10} Concentration (µg/m^3).	2023 $PM_{2.5}$ Concentration (µg/m^3).
BK4	14.1	17.5	10.7
BK5	16.0	17.7	11.0
BK6	11.7	14.4	9.2
BK7	11.0	17.0	10.0
BK8	12.1	17.0	10.3

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

Table 5.11: 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 ($\mu g/m^3$).
BK4	11.8	17.2	10.4
BK5	13.1	17.4	10.7
BK6	9.9	14.1	8.9
BK7	9.5	16.7	9.8
BK8	10.2	16.7	10.0

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

5.5 Environmental design and mitigation

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

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

a) Primary mitigation

5.5.3 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.

5.5.4 Primary mitigation for the proposed development includes:

- site access would be located at least 10m, from receptors; and
- re-use of soils on-site to form landscape bunds instead of transporting them for off-site storage.

5.5.5 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**.

b) Tertiary mitigation

5.5.6 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.

5.5.7 Air quality impacts arising from the construction and removal and reinstatement phases would be managed through a range of control measures detailed in the **CoCP** (Doc Ref. 8.11), which will include measures as per the IAQM Guidance based on a 'high risk' site. These measures will be incorporated into construction working practices to reduce the likelihood of significant adverse dust impacts and would include measures such as the requirement to:

- use of surface covering (such as seeding of earthworks and hardstanding surface/permeable paving for parking areas) to minimise extent of exposed soils and minimise potential resuspension of dust and to prevent wind whipping;
- avoid site run-off of water or mud;
- 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**.

5.5.8 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**.

5.5.9 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**).

5.5.10 Mitigation measures applied during the construction phase will also be applied during the removal and reinstatement works as construction dust impacts are likely to be similar.

5.6 Assessment

a) Introduction

5.6.1 This section presents the findings of the air quality assessment for the construction, operation and removal and reinstatement phases of the proposed development.

5.6.2 This section identifies any likely significant effects that are predicted to occur and **section 5.7** of this chapter then highlights any secondary mitigation and monitoring measures that are proposed to minimise any adverse significant effects (if required).

b) Construction

5.6.3 The potential impacts on sensitive receptors associated with the construction of the proposed development 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.

i. Construction dust

5.6.4 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 below in **Table 5.12** and full details of the assessment are provided in **Appendix 5A**.

Table 5.12: Potential risk of dust impacts from activities without applied mitigation.

Potential Impact	Risk			
	Earthworks: Large Magnitude.	Construction: Large Magnitude.	Trackout: Large Magnitude.	Demolition: Large Magnitude.
Dust Soiling	Low risk.	Low risk.	Low risk.	Low risk.
Human Health	Low risk.	Low risk.	Low risk.	Low risk.
Ecological	Screened out.			

5.6.5 All residential receptors are considered to be high sensitivity receptors to health and dust soiling effects. The principal risk is anticipated to be related to earthworks, as this phase 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 'large' by IAQM classification, with the likelihood of a 'low' 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.

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

ii. Construction traffic

5.6.7 It is expected that the number of HDV[2] movements required to construct the proposed development would not exceed the IAQM screening threshold of more than 100 Annual Average Daily Traffic required for a detailed dispersion modelling assessment. However, due to the number of Sizewell C Project developments undergoing construction during the early years construction phase of the Sizewell C Project (2023) in the wider study area (Lowestoft to Ipswich), a detailed assessment of transport emissions for the construction phase scenario has been undertaken.

5.6.8 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 construction year 2023 and the magnitude of change from the predicted baseline conditions are shown in **Table 5.13** to **Table 5.15**, reported to one decimal place. Further details on modelled pollutant concentrations for the year 2023 can be found in **Volume 1, Appendix 12B**.

Table 5.13: 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).		
BK4	13.9	-0.3	Imperceptible	Negligible
BK5	16.0	Less than 0.1.	Imperceptible	Negligible
BK6	11.0	-0.6	Very Low.	Negligible
BK7	11.0	Less than 0.1.	Imperceptible	Negligible
BK8	12.1	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

[2] HDVs include buses >3.5 tonnes in weight

Table 5.14: 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/m³).	Magnitude of Change (µg/m³).		
BK4	17.5	Less than -0.1.	Imperceptible	Negligible
BK5	17.7	Less than 0.1.	Imperceptible	Negligible
BK6	14.3	-0.1	Imperceptible	Negligible
BK7	17.0	Less than 0.1.	Imperceptible	Negligible
BK8	17.0	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

Table 5.15: $PM_{2.5}$ 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/m³).	Magnitude of Change (µg/m³).		
BK4	10.6	Less than -0.1.	Imperceptible	Negligible
BK5	11.0	Less than 0.1.	Imperceptible	Negligible
BK6	9.1	-0.1	Imperceptible	Negligible
BK7	10.0	Less than 0.1.	Imperceptible	Negligible
BK8	10.3	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

5.6.9 Following the classification of effects of construction phase traffic, the effects of NO_2 and particulate matter (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 to construction of the proposed development are **not significant**.

iii. Inter-relationship effects

5.6.10 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 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**, 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**.

c) Operation

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

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

5.6.12 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 scenarios and the magnitude of change from the predicted baseline conditions are shown in **Table 5.16** to **Table 5.18**.

5.6.13 Further details on modelled air pollutant concentrations at receptors for the 2028 average day scenario can be found in **Volume 2, Appendix 12B**.

Table 5.16: NO_2 concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 average day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK4	11.7	-0.1	Imperceptible	Negligible
BK5	13.2	0.1	Imperceptible	Negligible
BK6	9.5	-0.4	Very low.	Negligible
BK7	9.5	Less than 0.1.	Imperceptible	Negligible
BK8	10.2	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

Table 5.17: PM_{10} concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 average day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK4	17.2	Less than -0.1.	Imperceptible	Negligible
BK5	17.4	Less than 0.1.	Imperceptible	Negligible
BK6	14.0	-0.1	Imperceptible	Negligible
BK7	16.8	Less than 0.1.	Imperceptible	Negligible
BK8	16.7	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

Table 5.18: $PM_{2.5}$ concentration during operation of the proposed development during the 2028 average day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 average day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK4	10.4	Less than -0.1.	Imperceptible	Negligible
BK5	10.8	Less than 0.1.	Imperceptible	Negligible
BK6	8.8	-0.1	Imperceptible	Negligible
BK7	9.8	Less than 0.1.	Imperceptible	Negligible
BK8	10.0	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

5.6.14 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 5.19** to **Table 5.21**, reported to one decimal place. Further details on modelled pollutant concentrations for the 2028 busiest day scenario can be found in **Volume 2, Appendix 12B**.

Table 5.19: NO_2 concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 busiest day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK4	11.7	-0.1	Imperceptible	Negligible
BK5	13.2	0.1	Imperceptible	Moderate
BK6	9.5	-0.4	Very low.	Negligible
BK7	9.5	Less than 0.1.	Imperceptible	Negligible
BK8	10.2	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

Table 5.20: PM_{10} concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 busiest day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK4	17.2	Less than -0.1.	Imperceptible	Negligible

Receptor	2028 busiest day.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
BK5	17.4	Less than 0.1.	Imperceptible	Negligible
BK6	14.0	Less than -0.1.	Imperceptible	Negligible
BK7	16.8	Less than 0.1.	Imperceptible	Negligible
BK8	16.7	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

Table 5.21: $PM_{2.5}$ concentration during operation of the proposed development during the 2028 busiest day and the magnitude of change compared to the 2028 baseline concentration.

Receptor	2028 busiest day		Magnitude of Change Descriptor	Effect Descriptor
	Concentration (µg/m³)	Magnitude of Change (µg/m³)		
BK4	10.4	Less than -0.1.	Imperceptible	Negligible
BK5	10.8	Less than 0.1.	Imperceptible	Negligible
BK6	8.8	-0.1	Imperceptible	Negligible
BK7	9.8	Less than 0.1.	Imperceptible	Negligible
BK8	10.0	Less than 0.1.	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

5.6.15 Following the classification of effects of operational phase traffic, the effects of both average and busiest day traffic at representative receptors are negligible. The effects on air quality resulting from traffic associated with the operation of the proposed development are **not significant** at all sensitive receptors near the proposed development.

ii. Inter-relationship effects

5.6.16 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. The 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 in **Volume 10**, **Chapter 2**.

d) Removal and Reinstatement

5.6.17 The removal and reinstatement phase of the proposed development would include breaking and clearance of hardstanding and removal of buildings. Overall, the scale and nature of demolition earthwork activities expected to

be undertaken are similar to the scale and nature of these activities in the construction phase.

5.6.18 The likely scale of works would generate a similar level of traffic to the construction phase. Therefore, the air quality effects are expected to negligible at all sensitive receptors.

5.6.19 As the dust and traffic associated with the removal and reinstatement phase is not expected to be worse than the air quality effects associated with the construction phase (and the assessed early years (2023)), the impacts of NO_2 and particulate matter resulting from the removal and reinstatement phase would be **not significant**.

i. Inter-relationship effects

5.6.20 There are potential inter-relationship effects on ecological and amenity and recreation receptors as a result of changes to air quality during the removal and reinstatement phase of 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**, 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**.

5.7 Mitigation and monitoring

a) Introduction

5.7.1 Primary and tertiary mitigation measures which have already been incorporated within the design of the proposed development are detailed in **section 5.5**. Where other mitigation is required to reduce, or avoid a significant effect, this is referred to as secondary mitigation

5.7.2 No further mitigation measures for the air quality are required to reduce or avoid a significant adverse effect. In addition, no monitoring of air pollutant concentrations or dust deposition rates is proposed, given the location of the nearest sensitive receptors relative to the proposed development, the routing of traffic using the proposed development and that no significant effects are predicted.

5.8 Residual effects

5.8.1 The following tables (**Table 5.22** to **Table 5.24**) 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.

No significant adverse residual air quality effects are predicted during the construction, operation or removal and reinstatement phases of the proposed development.

Table 5.22: 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.	As recommended in **CoCP** based on risk assessment.	Negligible	None required.	Negligible (**not significant**).
Residential Properties.	Emissions from additional road vehicle movements.	Final site location and indicative arrangement.	Negligible	None required.	Negligible (**not significant**).

Table 5.23: Summary of effects for both typical and busiest day operational phase.

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

Table 5.24: Summary of effects for the removal and reinstatement 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.	As recommended in **CoCP** based on risk assessment.	Negligible	None required.	Negligible (**not significant**).
Residential Properties.	Emissions from additional road vehicle movements.	Site selection and road improvement measures.	Negligible	None required.	Negligible (**not significant**).

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