The Sizewell C Project

6.5 Volume 4 Southern Park and Ride

Chapter 5 Air Quality

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5 Air Quality

5.1 Introduction

5.1.1 This chapter of **Volume 4** of the **Environmental Statement** (**ES**) presents an assessment of the air quality effects arising from the construction, operation and removal and reinstatement of the southern park and ride at Wickham Market (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 southern park and ride 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** (Doc Ref. 6.2).

5.1.3 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 emission in the vicinity of the proposed development.

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

- **Volume 2, Appendix 12B** (Doc Ref. 6.3): Transport Emissions Assessment; and
- **Appendix 5A:** Dust Risk Assessment for Southern Park and Ride at Wickham Market.

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 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 (NPS EN-1) (Ref. 5.5), and the National Policy Statement 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 **Volume 1, Appendix 6H**.

c) Regional

5.2.8 Regional policy relating to the Air Quality Assessment includes 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 **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's Land-Use Planning & Development Control: Planning for Air Quality (Ref. 5.11);
- IAQM's Guidance on the assessment of dust from demolition and construction (Ref. 5.12);
- IAQM's 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 southern park and ride, 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 site; and
- the area within 350 metres (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 B1078 and the access corridor from the A12 to the proposed development within 500m of the site boundary. The changes to air pollutant concentrations on the wider transport network are considered in the **Volume 2, Appendix 12B: Transport Emissions Assessment**.

5.3.9 The study combined area and the location of representative receptors are illustrated on **Figure 5.1**.

d) Assessment scenarios

5.3.10 The assessment scenarios for the proposed development comprise the construction phase, operational phase, and the removal and reinstatement 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 during the peak construction year of the Sizewell C Project (2028). 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 the land. 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**, **Chapter 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 this 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.	Particulate Matter (PM_{10}) 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; and 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.

Sensitivity	Human Perception of Dust Soiling Effects.	Particulate Matter (PM_{10}) Health Effects.	Ecological Dust Deposition Effects.
Low	Enjoyment of amenity not reasonably expected; appearance, aesthetics or value of property not diminished by soiling; receptors are transient or present for a 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 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

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

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

Table 5.2: 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 1h 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, on-site concrete batching, sandblasting.	Greater than 50 heavy duty vehicles (HDV)[1] (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.

[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 20,000–100,000 tonnes.	Total building volume 25,000–100,000m^3, potentially dusty materials for example concrete, on-site concrete batching.	10-50 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 during wetter months.	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 moved less than 20,000 tonnes.	Total building volume less than 25,000m^3, low dust potential construction materials e.g. metal/timber.	Less than ten HDV (greater than 3.5 tonnes) peak outward movements per day, surface material low dust potential, unpaved road length less than 50m.

Effect definition

5.3.20 The risk definitions for dust emissions during 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.

Sensitivity of area.	Potential Dust Emission Magnitude Without Mitigation.		
	Large	Medium	Small
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** provided in **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 (Ref. 5.11) 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	Nitrogen Dioxide (NO2) and PM10.	Increase/decrease greater than 4.	Change in concentration relative to air quality objective value of greater than 10%.
	PM2.5	Increase/decrease greater than 2.5.	

Magnitude of change descriptor.	Substance	Annual Mean Concentration. (µg/m3)	Justification
Medium	NO2 and PM10.	Increase/decrease 2 to 4.	Change in concentration relative to air quality objective value of between 6% and 10%.
	PM2.5	Increase/decrease 1.4 to 2.5.	
Low	NO2 and PM10.	Increase/decrease 0.8 to 1.9.	Change in concentration relative to air quality objective value of between 2% and 5%.
	PM2.5	Increase/decrease 0.5 to 1.3.	
Very Low.	NO2 and PM10.	Increase/decrease 0.4 to 0.7.	Change in concentration relative to air quality objective value of 1%.
	PM2.5	Increase/decrease 0.3 to 0.4.	
Imperceptible	NO2 and PM10.	Increase/decrease less than 0.4.	Change in concentration relative to air quality objective value of less than 1%.
	PM2.5	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/m^3).	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 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 section.

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 on **Figure 5.1**) are those located closest to the site boundary, or the affected road network, and therefore.

5.3.29 The magnitude of change in air pollutant concentrations of construction dust deposition rates would be greatest at these representative locations. c 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 (WM13 and WM14) 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 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), are considered based on the professional judgement of a suitably qualified and experience person. 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. Transport emissions

5.3.33 The **Transport Emissions Assessment**, provided in **Volume 2, Appendix 12B**, details the technical dispersion modelling method and predicted air pollutant concentrations resulting from HDVs, light duty vehicles, 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.

5.3.34 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 roads likely to be affected by the proposed development includes the A12, the B1078 and the B1116, and were modelled in the **Transport Emissions Assessment** (**Volume 2, Appendix 12B**). Traffic emissions are assessed for the representative year for early construction of the Sizewell C Project (2023), and for the anticipated peak construction year of the Sizewell C Project (2028).

5.3.35 Construction of the proposed development is not anticipated generate as much traffic as either the early construction year (2023) or the peak construction year of the Sizewell C Project (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 year (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 site and other Sizewell C Project sites.

5.3.38 Traffic data for the operational phase year, 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 in the event 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 Ash View (WM11), located at the eastern end of main road (approximately 270m west), Bottle and Glass Cottages (WM12) on the opposite side of the A12 and other properties in Lower Hacheston (WM6) and Hacheston (WM13 and WM14) to the south and north respectively, 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 for the proposed development, and therefore no such sites are included in the air quality assessment for the proposed development.

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 9.1 and 9.7µg/m^3 for NO_2, between 15.3 and 16.3µg/m^3 for PM_{10} and between 9.4 and 9.6µg/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 5.9** 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).
WM6	11.3	15.5	9.7
WM11	12.3	15.5	9.8
WM12	10.1	15.4	9.5
WM13	11.1	15.4	9.6
WM14	9.2	15.3	9.3

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

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 dust 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 7.6, and 8.1µg/m^3 for NO_2, between 14.4 and 15.4µg/m^3 for PM_{10} and between 8.7 and 8.9µg/m^3 for $PM_{2.5}$ (Ref. 5.15).

5.4.10 NO_2 and particulate matter 2028 background concentrations within the site are projected to be between 6.7 and 7.1µg/m^3 for NO_2, between 14.1 and 15.1µg/m^3 for PM_{10}, and between 8.1 and 8.6µg/m^3 for $PM_{2.5}$; an overall reduction in all three pollutants (Ref. 5.15).

5.4.11 The effects resulting from the proposed development at potential future receptors from committed developments in the study area are represented by effects at receptors already included in the assessment. For example, proposed dwellings along High Street west of the proposed development (application reference DC/16/4923/FUL) are represented by receptor WM11. Therefore, no additional receptors need to be included for the future scenarios. 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.

5.4.12 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).
WM6	9.1	14.6	9.0
WM11	9.9	14.7	9.1
WM12	8.3	14.5	8.8
WM13	9.1	14.6	8.9
WM14	7.6	14.4	8.6

* 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 ($\mu g/m^3$).
WM6	7.8	14.3	8.7
WM11	8.3	14.4	8.8
WM12	7.2	14.2	8.6
WM13	7.6	14.2	8.6
WM14	6.7	14.1	8.4

* 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 in the following section, 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 selection to minimise distance of park and ride facility from A12;
- site access would be located at least 10m, from residential receptors; and
- re-use of soils on-site to form bunds instead of transporting them for off-site storage.

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

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

5.5.6 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 (Ref. 5.12) based on '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 the requirement to:

- avoid site run-off of water or mud;
- use of surface covering (seeding of earthworks, hardstanding surface for car park) to minimise extent of exposed soils and minimise potential resuspension of dust and to prevent wind whipping;
- covering potentially dusty loads (loose earth, spoil, aggregates etc) in transit;
- 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**.

5.5.7 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**.

5.5.8 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**).

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, operational 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 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: Medium magnitude.	Trackout: Medium magnitude.	Demolition: Medium 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 (Ref. 5.12), however, there is a 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 primary and tertiary mitigation measures (as detailed in **section 5.5**) are effectively implemented and monitored through the **CoCP** (Doc Ref. 8.11), at the level recommended by the dust risk assessment, any construction dust 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 movements required to construct the proposed development would not exceed the IAQM screening threshold (Ref. 5.11) of more than 100 annual average daily traffic 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 (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 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 2, 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/m^3).	Magnitude of Change (µg/m^3).		
WM6	9.2	0.1	Imperceptible	Negligible
WM11	9.9	0.1	Imperceptible	Negligible
WM12	8.3	0.1	Imperceptible	Negligible

Receptor	2023 average day*.		Magnitude of Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
WM13	9.1	Less than 0.1	Imperceptible	Negligible
WM14	7.6	Less than 0.1	Imperceptible	Negligible

* All values have been rounded to the nearest decimal place

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/m^3).	Magnitude of Change (µg/m^3).		
WM6	14.6	Less than 0.1	Imperceptible	Negligible
WM11	14.7	Less than 0.1	Imperceptible	Negligible
WM12	14.5	Less than 0.1	Imperceptible	Negligible
WM13	14.6	Less than 0.1	Imperceptible	Negligible
WM14	14.4	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/m^3).	Magnitude of Change (µg/m^3).		
WM6	9.0	Less than 0.1	Imperceptible	Negligible
WM11	9.1	Less than 0.1	Imperceptible	Negligible
WM12	8.8	Less than 0.1	Imperceptible	Negligible
WM13	8.9	Less than 0.1	Imperceptible	Negligible
WM14	8.6	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** (Doc Ref. 6.11).

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 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 scenario, 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**, reported to one decimal place.

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*.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m^3).	Magnitude of Change (µg/m^3).		
WM6	7.8	0.1	Imperceptible	Negligible
WM11	8.5	0.2	Imperceptible	Negligible
WM12	7.3	0.1	Imperceptible	Negligible
WM13	7.7	Less than 0.1	Imperceptible	Negligible
WM14	6.7	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*.		Change Descriptor.	Effect Descriptor.
	Concentration ($\mu g/m^3$).	Magnitude of Change ($\mu g/m^3$).		
WM6	14.3	Less than 0.1	Imperceptible	Negligible
WM11	14.4	Less than 0.1	Imperceptible	Negligible
WM12	14.2	Less than 0.1	Imperceptible	Negligible
WM13	14.3	Less than 0.1	Imperceptible	Negligible
WM14	14.1	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*.		Change Descriptor.	Effect Descriptor.
	Concentration ($\mu g/m^3$).	Magnitude of Change ($\mu g/m^3$).		
WM6	8.7	Less than 0.1	Imperceptible	Negligible
WM11	8.9	Less than 0.1	Imperceptible	Negligible
WM12	8.6	Less than 0.1	Imperceptible	Negligible
WM13	8.6	Less than 0.1	Imperceptible	Negligible
WM14	8.4	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*.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
WM6	7.8	0.1	Imperceptible	Negligible
WM11	8.5	0.2	Imperceptible	Negligible
WM12	7.2	Less than 0.1	Imperceptible	Negligible
WM13	7.7	Less than 0.1	Imperceptible	Negligible
WM14	6.7	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*.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
WM6	14.3	Less than 0.1	Imperceptible	Negligible
WM11	14.4	Less than 0.1	Imperceptible	Negligible
WM12	14.2	Less than 0.1	Imperceptible	Negligible
WM13	14.3	Less than 0.1	Imperceptible	Negligible
WM14	14.1	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*.		Change Descriptor.	Effect Descriptor.
	Concentration (µg/m³).	Magnitude of Change (µg/m³).		
WM6	8.7	Less than 0.1	Imperceptible	Negligible
WM11	8.9	0.1	Imperceptible	Negligible
WM12	8.6	Less than 0.1	Imperceptible	Negligible
WM13	8.6	Less than 0.1	Imperceptible	Negligible
WM14	8.4	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 all 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. 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 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 and 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 emissions effects associated with the removal and reinstatement phase is not expected to be worse than the construction phase (and the assessed early years (2023) construction traffic), the impacts of NO_2 and particulate matter resulting from 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

5.7.1 Primary and tertiary mitigation measures which have been accounted for as part of the assessment, are summarised 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 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.

5.8.2 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.	Site location and layout.	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 location and layout.	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	As recommended in **CoCP** based on risk assessment.	Negligible	None required.	Negligible (**Not significant**).

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of Effects.	Additional Mitigation.	Residual Effects.
	particulate matter from construction activities.				
Residential Properties.	Emissions from additional road vehicle movements.	Site location and layout.	Negligible	None required.	Negligible (**Not significant**).

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