

## **Project**

Area 8, Rendlesham  
Air Quality Assessment

## **Prepared for**

Capital Community Developments

## **By**

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## Summary

SRL Technical Services Limited has been commissioned to assess air quality for the proposed development of land known as Area 8, Rendlesham, hereafter referred to as the 'Proposed Development' or 'Site'. The proposals are for the construction of 75 residential dwellings.

The Site lies within the Suffolk Coastal District Council (SCDC) administrative area. SCDC have declared two Air Quality Management Areas (AQMAs) in Woodbridge and in Stratford St Andrew, both for exceedances of the annual mean nitrogen dioxide (NO<sub>2</sub>). The Proposed Development is located over 6km from both of these areas.

The air quality that future residents of the Site will be exposed to has been considered on this basis and found to be acceptable.

This report also considers the potential air quality impacts associated with both the construction and operation of the Proposed Development:

Construction phase impacts can be effectively managed through the implementation of best practice mitigation measures. Appropriate measures are recommended based on the identified level of risk.

The Proposed Development will not generate a significant amount of additional traffic once operational, so the impact on local air quality will not be significant.

Based on the results of the assessment, the Proposed Development complies with local and national policy and no air quality constraints have been identified.

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## 1.0 Introduction

A residential development is proposed for land known as Area 8, Rendlesham (**Figure I**). The potential air quality impacts associated with the Proposed Development relate to:

- Dust and particulate matter generated by construction activities; and
- Increased concentrations of NO<sub>2</sub> and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) due to emissions generated by the Proposed Development once operational.

The potential exposure of future users to poor air quality has also been considered.

This report looks at the existing air quality conditions around the Site, the potential impacts on local air quality at existing sensitive receptors, and the likelihood of significant impacts. Mitigation measures are recommended where the assessment identifies potentially adverse effects.

The assessment takes account of relevant local and national policy and guidance. A glossary of terms used in this report is provided in **Appendix A**.

**Figure I - Site Location**



## 2.0 Relevant Policy and Guidance

### The Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland<sup>1</sup> sets out air quality objectives (**Table 1**) and policy options to improve air quality in the UK. The main aim of the Strategy is to ensure that ambient air quality is of an acceptable level to protect human health and the environment. It takes account of the Limit Values set out in EU legislation.

**Table 1: Air Quality Objectives**

Pollutant	Objective	Averaging Period
Nitrogen dioxide (NO <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
	200µg/m <sup>3</sup> not to be exceeded more than 18 times per year	Hourly mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
	50µg/m <sup>3</sup> not to be exceeded more than 35 times per year	Daily mean
Particulate Matter (PM <sub>2.5</sub> )	25µg/m <sup>3</sup>	Annual mean

### Local Air Quality Management (LAQM)

The Environment Act 1995 introduced the LAQM system, whereby local authorities have a duty to review and assess air quality within their areas against the air quality objectives defined in the Air Quality Strategy. Where exceedances of the objectives are identified, the authority must then declare an Air Quality Management Area (AQMA) and define the measures which will be implemented to improve air quality.

### National Planning Policy Framework

The National Planning Policy Framework (2012)<sup>2</sup> sets out the Government's planning policies for England and outlines how they are expected to be applied to achieve the Government's aim of sustainable development. The NPPF states that:

*"To prevent unacceptable risks from pollution..... planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the*

<sup>1</sup> Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)

<sup>2</sup> Department for Communities and Local Government (2012). National Planning Policy Framework.

*natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account."*

## Suffolk Coastal District Council Core Strategy and Development Management Policies 2013

The Suffolk Coastal District Council Core Strategy and Development Management Policies document<sup>3</sup> sets out the vision and strategy for development in the district to 2027. Included in the Core Strategy is development management policy DM23 - Residential Amenity, which states:

*"When considering the impact of new development on residential amenity, the Council will have regard to the following:*

- f) *...air quality and other forms of pollution...*

*Development will be acceptable where it would not cause an unacceptable loss of amenity to adjoining or future occupiers of the developments".*

## Guidance

The following guidance documents have also been used where appropriate, in this assessment:

- Local Air Quality Management Technical Guidance (LAQM.TG(16))<sup>4</sup>
- Land-Use Planning and Development Control: Planning for Air Quality. v1.2<sup>5</sup>
- Guidance on the Assessment of Dust from Demolition and Construction<sup>6</sup>
- National Planning Practice Guidance - Air Quality<sup>7</sup>
- Suffolk Local Authorities Air Quality Management and New Development 2011 Supplementary Planning Guidance<sup>8</sup>

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<sup>3</sup> Suffolk Coastal District Council (2013) Suffolk Coastal District Local Plan Core Strategy and Development Management Policies

<sup>4</sup> Defra (2016). Part IV of the Environment Act 1995 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance (TG16)

<sup>5</sup> Environmental Protection UK (EPUK) / Institute of Air Quality Management (IAQM) (2017).

<sup>6</sup> Institute of Air Quality Management (2014).

<sup>7</sup> Department of Communities and Local Government (DCLG) (2014).

<sup>8</sup> Suffolk Local Authorities (2011)

### 3.0 Assessment

#### 3.1 Existing Conditions

Existing air quality conditions near to the Site have been defined based on a review of the following sources of data:

- SCDC's Review and Assessment reports and monitoring data;
- Defra's Local Air Quality Management (LAQM) Support Pages, including background maps;
- Environment Agency website; and
- Maps and plans of the Site and surrounding area.

SCDC has declared two AQMAs for exceedances of the annual mean NO<sub>2</sub> objective in Woodbridge and Stratford St Andrew. The Site is located at least 6km from these AQMAs.

Review of the data provided by the Environment Agency indicate that there are no industrial pollution sources in the immediate vicinity of the Site that will significantly influence local air quality.

Defra provide maps of background pollutant concentrations at a grid resolution of 1x1 km. **Table 2** presents the 2018 background pollutant concentrations of NO<sub>2</sub> and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) for the grid square within which the Site lies. The background concentrations are significantly lower than the relevant objectives.

**Table 2: Background Pollutant Concentrations (µg/m<sup>3</sup>)**

Grid Square	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
633500, 253500	7.6	14.6	9.7
Objectives	40.0	40.0	25.0

SCDC monitor concentrations of NO<sub>2</sub> using diffusion tubes across the district, however none are located close to the Site. The closest monitoring locations are in Melton, approximately 6.5km southwest of the Proposed Development. Monitoring data from these two roadside / kerbside sites are presented in **Table 3**.

**Table 3: Monitoring Data**

Site ID	Site Type	Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )				
		2012	2013	2014	2015	2016
MEL 5	Roadside	31	29	28	27	24
MEL 7	Kerbside	-	-	-	25	25



The annual mean NO<sub>2</sub> concentrations measured at these sites were well below the annual mean objective in 2016, indicating that air quality in the area is currently good. The five years of data for the MEL 5 monitoring site indicate that air quality is improving, with a consistent reduction in concentrations since 2012.

SCDC do not monitor PM<sub>10</sub> or PM<sub>2.5</sub> concentrations.

### 3.2 Construction Impacts

During the construction phase, activities may generate dust and particulate matter, which could result in complaints of nuisance and human health effects. Additionally, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the Site and near the Site itself.

The likely level of risk has therefore been assessed following guidance published by the Institute of Air Quality Management (IAQM). The assessment considers the nature and scale of the activities undertaken and the sensitivity of the surrounding area. Mitigation measures proportionate to the level of risk identified are then identified.

As information on the number of vehicles and plant associated with each part of the construction phase was not available at the time of writing, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:

- The likely number and type of construction traffic and plant;
- The number and proximity of sensitive receptors to the Site;
- The likely duration of the construction period; and
- The nature of the activities undertaken.

The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM<sub>10</sub> sources: demolition; earthworks; construction; and trackout.

#### Demolition

- No demolition activities are required as part of the Proposed Development and therefore, this has not been considered further.

#### Earthworks

- The total area of the Site is greater than 10,000m<sup>2</sup>, therefore the potential dust emission magnitude is judged to be **large** for earthwork activities.

## Construction

- The total volume of buildings to be constructed on Site will fall within the range 25,000m<sup>3</sup> - 100,000m<sup>3</sup>, and therefore, the potential dust emission magnitude is judged to be **medium** for construction activities.

## Trackout

- Based on the size of the Site and the development proposals, it is estimated that there will be less than 10 Heavy Duty Vehicle (HDV) movements per day, with the potential to travel over an unpaved road length of between 50m and 100m. Therefore, as a worst-case, it is judged that the potential dust emission magnitude is **medium** for trackout.

## Sensitivity of the Study Area

A windrose generated using meteorological data from Wattisham is provided in **Appendix B**. This shows the prevailing wind direction is from the southwest. Therefore, receptors located to the northeast of the Site are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.

Most dust will be deposited in the area immediately surrounding the source. The area surrounding the Site is predominantly a mix of residential properties to the south and east, and woodland / agricultural land to the north and west. There are approximately 20 existing residential dwellings within 20m of the Site; residential receptors are judged to be of high sensitivity to dust soiling and human health effects.

Overall, the sensitivity of the local area is judged to be:

- High for dust soiling due to the number and proximity of sensitive receptors; and
- Low sensitivity to human health due to the low background PM<sub>10</sub> concentrations.

There are no nationally or internationally designated ecological sites located within 50m of the Site boundary nor within 50m of roads potentially affected by trackout (the closest being the Sandlings Forest Site of Special Scientific Interest (SSSI)/Special Protection Area (SPA) approximately 1.5km south of the Site), therefore, in line with the IAQM guidance, an assessment of the impact of the construction phase on ecological sites is not required.

## Impact Assessment

The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 4** provides a summary of the risk of construction phase impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

**Table 4: Dust Risk Summary to Define Site Specific Mitigation**

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High Risk	Medium Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk

### Construction Vehicles and Plant

Based on the size of the Site, it is estimated that less than 10 HDV movements will be generated per day. This is well below the thresholds defined in the Environmental Protection UK (EPUK) / IAQM guidance. Based on this, the impacts of construction traffic emissions on local air quality are judged to be **negligible**.

In summary, therefore, the risk of potential construction phase impacts is medium to high risk for dust soiling, and low risk for human health effects. **Appendix C** presents the mitigation measures recommended to reduce the risk of air quality impacts during the construction phase of the Proposed Development.

### 3.3 Operational Road Traffic Impacts

During the operational phase, local air quality could be affected by emissions from road traffic generated by the Proposed Development. Data provided by the project Transport Consultant (The HTTC Ltd) indicates that the development, once operational, will generate a total of 300 vehicle movements per day, which is below the threshold set out in IAQM / EPUK guidance of 500 Light Duty Vehicles (LDV) outside of an AQMA.

Consideration has also been given to the potential for impacts of additional traffic at the Melton junction (at the request of SCDC) and within the Woodbridge AQMA. Of the 300 vehicle movements generated by the development, 135 are predicted to travel along Wilford Bridge Road (A1152) towards the Melton junction; 30% of these (40 vehicles) are predicted to turn left on to the B1438 Melton Road, and travel towards the Woodbridge AQMA. The threshold set out in IAQM / EPUK guidance for impacts within an AQMA is 100 LDV.

Below these thresholds, the guidance states that "*impacts can be considered insignificant*". Based on this, and the fact that measured NO<sub>2</sub> concentrations at the Melton junction (**Table 3**) and within the Woodbridge AQMA have been below the annual mean objective for at least three years, a detailed assessment of road traffic impacts has been scoped out of the assessment, and the impact of the Proposed Development is judged to be insignificant.

### 3.4 Impact of Existing Air Quality on Proposed Development

The Proposed Development is not located in an AQMA and does not propose any residential properties closer to the road network than existing residential properties.

Measured NO<sub>2</sub> concentrations at the closest monitoring locations show that concentrations are well below the annual mean objective (of 40µg/m<sup>3</sup>) in 2016; measured concentrations at most monitoring sites within the SCDC area measure concentrations which are below the annual mean objective, with many of the measured values well below the annual mean objective (less than 75% of the objective).

Consequently, it has been judged that future residents are likely to be exposed to air of an acceptable quality and no mitigation measures are considered necessary.

## 4.0 Discussion

A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for the Proposed Development. This assessment identified that the Proposed Development is a medium to high risk for dust soiling, and low risk for human health effects. Through good site practice and the implementation of suitable mitigation measures, these effects will be reduced; the residual effects are therefore considered to be negligible.

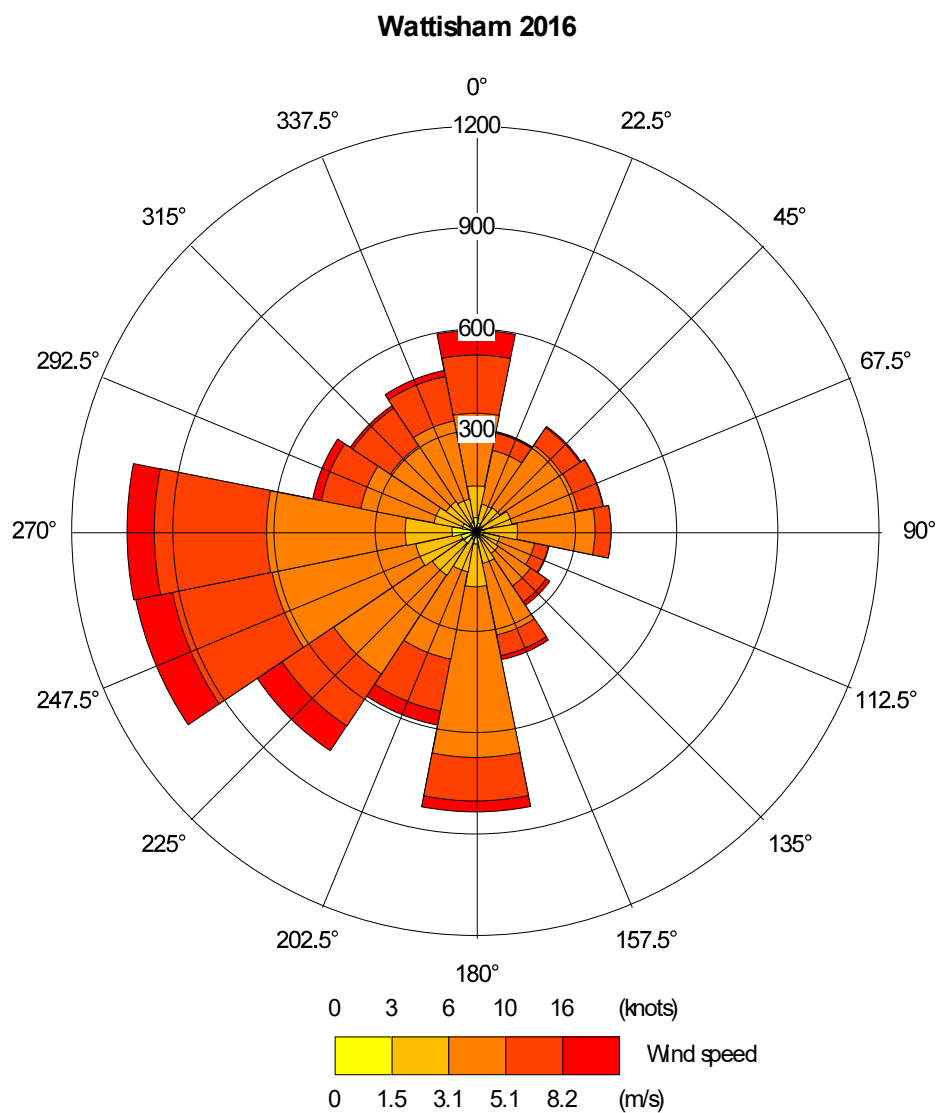
The Proposed Development will not significantly increase traffic once operational and therefore there will be no significant air quality impacts. Future residents are unlikely to be exposed to poor air quality. No specific mitigation is required for air quality.

Based on the results of the assessment, it is considered that with appropriate construction phase mitigation, the Proposed Development is unlikely to have any significant impacts on local air quality.

## Appendix A - Glossary

Term	Definition
Annual mean	The average of the hourly mean concentrations measured for one year.
AQMA	Air Quality Management Area.
Defra	Department for Environment, Food and Rural Affairs.
Exceedance	Where the concentration of a pollutant is greater than the appropriate air quality objective.
EPUK	Environmental Protection UK.
HDV / HGV	Heavy Duty Vehicle / Heavy Goods Vehicle.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicle.
NO <sub>2</sub>	Nitrogen dioxide.
NO <sub>x</sub>	Oxides of nitrogen.
PM <sub>10</sub>	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM <sub>2.5</sub>	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
SCDC	Suffolk Coastal District Council.

## Appendix B - Windrose



## Appendix C - IAQM Construction Phase Mitigation Measures

The following mitigation measures are recommended to reduce the identified risk associated with dust soiling and human health effects during the construction phase.

### Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary, as well as the head or regional office contact information.
- Develop and implement a Dust Management Plan, which may include measures to control other emissions, approved by the Local Authority.

### Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or emissions to air, either on or off-site and the action taken to resolve the situation in the log book.

### Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

### Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff water or mud.



- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site, cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

## **Operating vehicle / machinery and sustainable travel**

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use main electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

## **Operations**

- Only use cutting, grinding or sawing equipment fitted with, or alongside, suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors, and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

## **Waste Management**

- Avoid bonfires and burning of waste materials.

## **Earthworks**

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

## **Construction**

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

## **Trackout**

- Use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system, with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable.
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

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