

Oldlands Farm, Newlands Road, Bognor Regis, PO22 9FJ



Air Quality Dust Management Plan

784-B027957

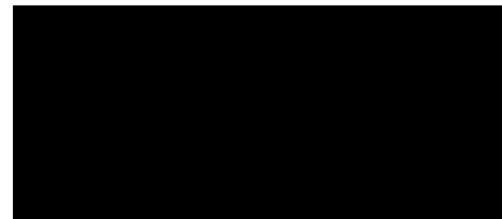
1st September 2021

PRESENTED TO

c/o Frederic Johnson
Lysander

PRESENTED BY

NALO, Tetra Tech
Executive Park,
Avalon Way,
Anstey,
Leicester,
LE7 7GR



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Prepared by: Lee Rawson-Gill Environmental Consultant	Checked by Matthew Smith Principal Environmental Consultant		Approved By: Nigel Mann Director

EXECUTIVE SUMMARY

Tetra Tech Limited have prepared a dust management plan to accompany an application for the erection of a warehouse (Use Class B8) with ancillary office, associated vehicle parking, van storage, plant, ancillary structures, lighting, landscaping and infrastructure works including earthworks to facilitate flood compensation area at land at Oldlands Farm, Newlands Road, Bognor Regis.

The potential effects during the preparation work include fugitive dust emissions from site activities, such as earthworks, construction and trackout. The assessment has been undertaken in accordance with guidance in the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction'.

During the preparation works, it is anticipated that dust sensitive receptors will potentially experience increased levels of dust and particulate matter before using any mitigation and control measures. However, these are predicted to be short term and temporary impacts. Throughout this period, the potential impacts from construction on air quality will be managed through site specific mitigation measures detailed within this assessment. With these mitigation measures in place, the effects from the preparation work are not predicted to be significant.

This document gives appropriate measures to be put in place during the work to control dust emissions from the site.

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1.0 INTRODUCTION

Tetra Tech Limited have prepared a dust management plan to accompany an application for the erection of a warehouse (Use Class B8) with ancillary office, associated vehicle parking, van storage, plant, ancillary structures, lighting, landscaping and infrastructure works including earthworks to facilitate flood compensation area at land at Oldlands Farm, Newlands Road, Bognor Regis.

1.1 SITE LOCATION

The central Grid Reference is approximately 494557, 101831. The application site is bounded to the north by bare land next to the A259, bounded to the east and west by open farmland and to the south by a warehouse.

Reference should be made to **Figure 1-1** for a map of the application site and surrounding area.

Figure 1-1. Satellite Image of Site and Surrounding Area



Google Imagery (2021)

1.2 CONTEXT

The following assessment stages have been undertaken as part of this assessment:

- Baseline evaluation;
- Assessment of potential air quality impacts during the works;
- Identification of mitigation measures (as required).

The results of the assessment are detailed in the following sections of this report.

The assessment considers the potential effects of dust and particulate emissions from site activities and materials movement based on a qualitative risk assessment method based on the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction' document, published in 2014.

2.0 POLICY AND LEGISLATIVE CONTEXT

2.1 DOCUMENTS CONSULTED

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, Revised July 2021;
- Planning Practice Guidance: Air Quality, Ministry for Housing, Communities and Local Government, November 2019;
- The Air Quality Standards Regulations (Amendments), 2016,
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, 2007;
- The Environment Act, 1995;
- Local Air Quality Management Technical Guidance LAQM.TG16, Defra, 2021;
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, LA 105 Air quality, Highways England, November 2019
- Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, 2017;
- Guidance on the Assessment of Dust from Demolition and Construction, IAQM, 2014;
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1), IAQM, May 2020.
- Ecological Assessment of Air Quality Impacts, CIEEM, January 2021.

Websites Consulted

- Google maps (maps.google.co.uk);
- The UK National Air Quality Archive (www.airquality.co.uk);
- emapsite.com;
- Multi-Agency Geographic Information for the Countryside (<http://magic.defra.gov.uk/>);
- Planning Practice Guidance (<http://planningguidance.planningportal.gov.uk/>); and,
- Arun District Council (<https://www.arun.gov.uk/>).

Site Specific Reference Documents

- Arun District Council, Air Quality Annual Status Report 2020; and,
- Arun District Council, Adoption Arun Local Plan 2011-2031 (Adopted July 2018).

3.0 BACKGROUND

3.1 POLLUTANT SOURCES

The main emissions during the construction phase works are likely to be dust and particulate matter generated during earth moving (particularly during dry months) or from on-site materials. The main potential effects of dust and particulate matter are:

- Visual - dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Site activities can give rise to short-term elevated dust/PM₁₀ concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

3.2 PARTICULATE MATTER (PM₁₀)

The UK Air Quality Standards seek to control the health implications of respirable PM₁₀. However, the majority of particles released from the works will be greater than this in size.

Works on site have the potential to elevate localised PM₁₀ concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

3.3 DUST

Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. There are no formal standards or criteria for nuisance caused by deposited particles, however, a deposition rate of 200mg/m²/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

On site activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures will be taken to minimise the emissions of dust as part of good site practice. Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential dust impacts is derived following the determination of a

dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst case impacts.

3.4 ECOLOGICAL RECEPTORS

Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The Conservation of Habitats and Species Regulations (2019) require competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas). The IAQM 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites' (2020) was utilised within the assessment.

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Northern Ireland Environment Agency Natural Environment Map Viewer, which draws together information on key environmental schemes and designations. Following a search within a 2km radius of the site boundary, the following ecological receptor has been identified:

- The Brooks Local Nature Reserve (LNR) approximately 0.5km south west of the site boundary

For the dust risk assessment, due to the distance from the site being over 50m, any impact on the ecological sites mentioned above will be considered negligible.

3.5 POTENTIAL MAGNITUDE OF DUST EFFECTS

As outlined in section 4 of this report, the potential impact significance of dust emissions associated with the construction phase of the development have been assessed as 'medium' risk at the worst effected receptors without mitigation. Therefore, measures considered within the dust management plans are tailored to manage this risk.

The risk of dust emissions during the operational phase, from site activities has been considered based on:

- The activities being undertaken;
- The duration of each activity;
- The size of the site;
- The meteorological conditions; and,
- The sensitivity and proximity of receptors.

3.6 SOURCES, RELEASES AND IMPACTS

Dust may be released during the following activities:

- Storage of materials awaiting transport offsite;
- Drop chutes;
- Loading materials;
- Vehicle movements;
- Demolition; and,

- Piling.

Once released into the atmosphere, dust can be transported through the air to nearby receptors. Sensitive receptors include humans living within close proximity of the proposed site.

3.7 METHODOLOGY

The construction phase assessment utilises the guidance in the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' document, published in 2014.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst-case impacts.

4.0 DUST RISK ASSESSMENT

4.1 WORKS PROGRAMME

The dust risk assessment is considered to represent a worst-case scenario, assuming the potential maximum dust impacts on surrounding receptor locations in accordance with 'The Control of Dust and Emission during Construction and Demolition, Supplementary Planning Guidance'.

4.2 ASSESSMENT RESULTS

Based on the methodology detailed within 'The Control of Dust and Emission during Construction and Demolition, Supplementary Planning Guidance', the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the **Table 4-1** below.

Table 4-1. Dust Emission Magnitude

Construction Process	Site Criteria	Dust Emission Magnitude
Demolition	No demolition required	N/A
Earthworks	Total Site Area: >2,500m ² – 10,00m ²	Medium
Construction	Total Building Volume 25,00m ³ - 100,000 m ³	Medium
Trackout	~10-50 HDV Outward Movements	Medium

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the **Table 4-2**.

The sensitivity of the ecological receptors is considered not applicable within the construction phase assessment due to the distance the affected road network is greater than 50m, within 500m of the application site. This is in accordance with Table 4 of the IAQM Guidance. As such, Camley Street Nature Park and Barnsbury Wood LNR are scoped out of the construction phase assessment. This is in accordance with Table 4 of the IAQM Guidance.

Table 4-2. Sensitivity of the Area

Source	Area Sensitivity					
	Dust Soiling	Site Sensitivity Criteria	Health Effects of PM ₁₀	Site Sensitivity Criteria	Ecological	Site Sensitivity Criteria
Demolition	N/A	No demolition required	N/A	No demolition required	N/A	No demolition required
Earthworks	Medium	10-100 Highly Sensitive Receptors within 50m	Low	Annual Mean of <24 ug/m ³ for PM ₁₀	N/A	>50 m from site boundary
Construction	Medium		Low	10-100 Highly Sensitive Receptors within 50m	N/A	
Trackout	Medium	10-100 Highly Sensitive Receptors within 50m of roads within 500m of site	Low	Annual Mean of <24 ug/m ³ for PM ₁₀ 10-100 Highly Sensitive Receptors within	N/A	>50 m from affected roads within 500 m from site boundary

				50m of roads within 500m of site		
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The dust emission magnitude determined in **Table 4-1** has been combined with the sensitivity of the area determined in **Table 4-2**, to determine the risk of impacts prior to the implementation of appropriate mitigation measures. The potential impact significance of dust emissions associated with the development, without mitigation, is presented in **Table 4-3**.

Table 4-3. Impact Description of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM ₁₀	Ecological
Demolition	N/A	N/A	N/A
Earthworks	Medium	Low	N/A
Construction	Medium	Low	N/A
Trackout	Low	Low	N/A

Appropriate mitigation measures are detailed and presented in Section 7. Following the adoption of these measures, the subsequent impact significance of the construction phase is not predicted to be significant.

5.0 DUST MANAGEMENT PLAN

The purpose of this document is to ensure that:

- Dust effects are considered as part of routine inspections;
- Dust is primarily controlled at source by good operational practices, including physical and management control measures; and
- All appropriate measures are taken to prevent or, where that is not reasonably practicable, to reduce emissions to air from the site at nearby receptors.

5.1 DEFINITION OF DUST MANAGEMENT PLAN

The definition and the main purpose of the dust management plan are summarised below:

- A management plan is a live working document that formalises and describes how dust issues will be managed on site. The plan forms part of the operational management system (indeed it may form part of a site's wider Environmental Management System or Integrated Management System);
- The plan shows how dust will be managed and controlled so as to prevent or minimise impacts. As well as covering normal operations, it should anticipate and plan for abnormal events and foreseeable accidents and incidents;
- It is not an impact assessment; it is a mitigation/control measure; and
- It should not be complex; simple plans are needed, that can be easily actioned by the site operatives.

The dust risk categories have been determined in Section 4 for each of the four construction phase activities. The assessment has determined that the potential impact significance of dust emissions associated with the construction phase of the proposed development is 'medium' risk at the worst affected receptors without mitigation measures in place.

Appropriate site-specific mitigation measures associated with the determined level of risk have been identified from Section 8 of the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction'. With implementation of the following mitigation measures the impact significance of dust emissions associated with the construction phase of the proposed development is considered to be 'negligible'.

5.2 DUST MANAGEMENT MEASURES

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. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

General Dust Management Measures

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real time PM₁₀ continuous monitoring and/or visual inspections.
- 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 air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Carry out regular site 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.
- Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is 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 of 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.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- 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.
- Avoid bonfires and burning of waste materials.
- 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 100m of site boundary, with cleaning to be provided if necessary.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced 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).
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Earthworks Specific Measures

- 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 Specific Measures

- 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.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Trackout Specific Measures

- Use water-assisted dust sweeper(s) 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 during transport.
- 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 bowzers 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 10m from receptors where possible.

6.0 CONCLUSIONS

Tetra Tech Limited have prepared a dust management plan to accompany an application for the erection of a warehouse (Use Class B8) with ancillary office, associated vehicle parking, van storage, plant, ancillary structures, lighting, landscaping and infrastructure works including earthworks to facilitate flood compensation area at land at Oldlands Farm, Newlands Road, Bognor Regis.

Prior to the implementation of appropriate mitigation measures, the potential impact significance of dust emissions associated with the preparation works of the proposed development has potential as 'medium risk' at some worst affected receptors without mitigation.

Appropriate site-specific mitigation measures have been proposed based on Section 8 of the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction', 2014. It is anticipated that with these appropriate mitigation measures in place, the risk of adverse effects due to emissions from the preparation works will not be significant.

Following the adoption of the recommended mitigation measures during the preparation work, the development is not considered to be contrary to any of the national, regional or local planning policies.

APPENDIX A - DAILY REPORT SHEET

Table A-1. Daily Report Sheet

Site Manager	Date			Completed by
	Location 1	Location 2	Location 3	Location 4
Start Time				
Wind Speed (m/s)				
Wind Direction				
Visible Dust Soiling (Y/N)				
Additional notes including site operations				
Actions Required?				

APPENDIX B - REPORT TERMS & CONDITIONS

This Report has been prepared using reasonable skill and care for the sole benefit of Lysander ("the Client") for the proposed uses stated in the report by [Tetra Tech Limited] ("Tetra Tech"). Tetra Tech exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder's permission.

No liability is accepted, or warranty given for; unconfirmed data, third party documents and information supplied to Tetra Tech or for the performance, reliability, standing etc. of any products, services, organisations or companies referred to in this report. Tetra Tech does not purport to provide specialist legal, tax or accounting advice.

The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The "shelf life" of the Report will be determined by a number of factors including; its original purpose, the Client's instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.