Project

20 Kelloe Street
Air Quality Screening and Dust Risk Assessment

Prepared for

Cleckheaton Carpets Ltd
11 Roberttown Lane
Liversedge
WF15 7NR

By

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Summary

The proposal is for the demolition of an existing working men's club and the erection of an apartment block in Cleckheaton.

The site is not within an Air Quality Management Area (AQMA). The nearest AQMA is Kirklees AQMA 4 approximately 1.8m northeast of the site next to the M62 and was defined by Kirklees Council for annual mean exceedances of NO_2.

This air quality screening assessment has shown that:

- the IAQM threshold for construction HDVs is not expected to be exceeded
- the IAQM threshold for development-generated LDVs is not expected to be exceeded
- Construction activity associated with the proposed development is assessed to be:
  - medium risk for dust soiling
  - negligible risk for human health effects
  - negligible risk for ecological effects

  Through good site practice and by adopting suitable mitigation measures, the residual effects are likely to be low. Recommended mitigation measures can be found in **Section 6.1**.
- Occupants of the development will likely be exposed to acceptable concentrations of NO_2, PM_{10}, and $PM_{2.5}$.
- Although the IAQM/EPUK thresholds for construction and operational traffic are not likely to be exceeded, the measures in **Section 6.2** must be adhered to where practicable.
- A detailed air quality assessment is not necessary according to IAQM guidance.

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1.0 Introduction

The potential air quality impacts associated with the proposed development relate to:

- dust and particulate matter generated by construction activities
- increase in concentrations of nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) due to emissions from construction traffic and additional road traffic once operational.

This initial assessment looks at the existing air quality conditions around the site, considers the local and national policy context, and describes the proposed assessment methodology.

Figure 1. Site area

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2.0 Relevant Policy and Guidance

The Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland[1] sets out air quality objectives 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.

Local Air Quality Management (LAQM)

The Environment Act 1995 introduced the LAQM system, whereby local authorities must 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 during this process, 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 (NPPF)

The NPPF (2021)[2] 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 in paragraph 185 that:

> *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."*

And at paragraph 186:

> *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement…… Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."*

[1] 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)

[2] Ministry of Housing, Communities and Local Government (July 2021).

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Kirklees Local Plan: Strategies and Policies

In Policy LP15 of the Kirklees Local Plan[3], Kirklees Metropolitan Borough Council (KMBC) states:

> *"Proposals for residential uses (including student accommodation) within the defined town centres as set out on the Policies Map will be supported subject to:*
>
> > *d. the protection of the amenity of existing residents and future occupiers of the proposed residential use in accordance with amenity and design policies within the plan, and will in particular consider matters such as privacy, noise and air quality"*

In Policy LP51, KMBC state:

> *"1. Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air pollution which would have an unacceptable impact on the natural and built environment or to people.*
>
> *2. Proposals that have the potential to increase local air pollution either individually or cumulatively must be accompanied by evidence to show that the impact of the development has been assessed in accordance with the relevant guidance. Development which has the potential to cause levels of local air pollution to increase must incorporate sustainable mitigation measures that reduce the level of this impact. If sustainable measures cannot be introduced the development will not be permitted.*
>
> *3. Where the development introduces new receptors into Air Quality Management Areas or Areas of Concern or near other areas of relatively poor air quality, for example near roads or junctions, the development must incorporate sustainable mitigation measures that protect the new receptors from unacceptable levels of air pollution. Where sustainable mitigation measures cannot be introduced which prevent receptors from being exposed to unsafe levels of air pollution, development will not be permitted."*

Guidance

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

- Local Air Quality Management Technical Guidance (LAQM.TG(16))[4]
- Land-Use Planning and Development Control: Planning for Air Quality. V1.2[5]
- National Planning Practice Guidance - Air Quality[6]
- Guidance on the Assessment of Dust from Demolition and Construction[7]

[3] Kirklees Metropolitan Borough Council (2019). Kirkless Local Plan: Strategies and Policies.

[4] DEFRA (2018). Part IV of the Environment Act 1995 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance (TG16).

[5] Environmental Protection UK / Institute of Air Quality Management (2017).

[6] Department of Communities and Local Government (DCLG) (2014).

[7] Institute of Air Quality Management (2014)

3.0 Existing Conditions

Existing air quality conditions near the site have been defined after reviewing the following:

- KMBC Review and Assessment reports and monitoring data;
- National Atmospheric Emissions Inventory (NAEI) data and maps;
- DEFRA's Local Air Quality Management (LAQM) Support Pages, including background maps; and
- Maps and plans of the site and surrounding area.

3.1 AQMAs

The site is not within an Air Quality Management Area (AQMA). The nearest AQMA is Kirklees AQMA 4 approximately 1.8m northeast of the site next to the M62 and was defined by Kirklees Council for annual mean exceedances of NO_2.

3.2 Wind Direction

The nearest meteorological monitoring station to the site is Bingley No.2 13.5km northwest[8]. This station has a westerly prevailing wind direction, and this is likely to be similar at the site.

3.3 Industrial Point Sources

The NAEI point source inventory[9] shows the nearest industrial point sources to the site are approximately 2km northwest of the site. Given the prevailing wind direction in the area is likely to be westerly, emissions from these industrial sources are likely to be predominantly transported away from the site.

3.4 Background Pollutant Concentrations

Table 1 summarises the background pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$ used in the assessment for the area encompassing the proposed development. Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been taken from the most recent version of DEFRA's background maps. 2020 represents the base year because 2020 is the most recently reported monitoring dataset for the KMBC area; DEFRA background data has not been affected by the Covid-19 pandemic as it is predictive data. 2024 represents the first year of operation. In each assessment year, the DEFRA annual mean background concentrations are well below the relevant objectives.

Table 1. Background Pollutant Concentrations (µg/m^3)

Grid Square	NO_2		PM_{10}		$PM_{2.5}$	
	2020	2024	2020	2024	2020	2024
418500, 425500 (Site)	16.8	14.3	13.0	12.5	8.9	8.6
417500, 426500	18.1	14.8	13.5	13.1	8.7	8.4

[8] ADM Ltd (2022). Accessed via https://www.aboutair.com/met-data-search/.

[9] NAEI (2022). Accessed via https://naei.beis.gov.uk/emissionsapp/.

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3.5 NO_2 Monitoring

Figure 2 shows the most relevant NO_2 monitoring locations to the site. Data for these monitors are shown in **Table 2**.

Figure 2. Most relevant NO_2 monitors to the site

Table 2. NO_2 Monitoring Data

Monitoring Site ID	Site Type	OS Grid Ref.	Height (m)	Annual Mean NO_2 Concentrations (µg/m³)				
				2016	2017	2018	2019	2020
Diffusion Tube								
K41	Roadside	418285, 426630	2.0	**43.50**	39.83	36.40	34.00	26.68
K69	Roadside	418237, 426555	2.0	-	31.70	35.27	28.40	21.13
Objective								
40µg/m³								

Annual average NO_2 concentrations exceeding the NO_2 objective are shown in bold. NO_2 annual means exceeding 60µg/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in bold and underlined.

KMBC monitors NO_2 at two locations within its administrative area. However, given their distance from the site, they aren't considered for understanding the NO_2 concentration at the site.

2020 data aren't representative of typical NO_2 concentrations as pollutant concentrations were affected by the Covid-19 pandemic, which can be seen in **Table 2** with the decrease in NO_2 concentrations from 2019 to 2020. Therefore, 2019 data is used to assess the NO_2 concentration at the site.

Neither K41 nor K69 can be considered representative of the NO_2 concentration at the site as they are close to the M62 roundabout, meaning they will likely experience more road traffic than the site. However, conclusions can be drawn from this data. Both locations show an annual mean NO_2 concentration of less than 40µg/m³ in 2019. Given that the site will likely be exposed to less road traffic than these monitors, it can be assumed the NO_2 concentration at the site will be lower than the monitors and therefore lower than the annual mean objective of 40µg/m³.

3.6 PM_{10} Monitoring

KMBC doesn't monitor PM_{10} within its administrative area. Therefore, the DEFRA background data in **Table 1** are used to assess the likely PM_{10} concentration at the site.

The DEFRA data in **Table 1** show the background PM_{10} concentration in 2020 was 13.0µg/m³, which is below the annual mean objective limit of 40µg/m³.

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3.7 $PM_{2.5}$ Monitoring

KMBC monitors $PM_{2.5}$ at two locations within its administrative area (**Figure 3**). Data from these monitors are in **Table 3**.

Figure 3. Most relevant $PM_{2.5}$ monitors to the site

Table 3. $PM_{2.5}$ Monitoring Data

Monitoring Site ID	Site Type	OS Grid Ref.	Height (m)	Annual Mean $PM_{2.5}$ Concentrations (µg/m³)				
				2016	2017	2018	2019	2020
Automatic								
Roadside 3	Roadside	417255, 420761	2.0	-	-	-	-	12.18
Roadside 6	Roadside	411739, 419007	2.0	-	-	-	-	9.28
Objective								
25µg/m³								

2020 monitoring data aren't representative of typical NO_2 concentrations as pollutant concentrations were affected by the Covid-19 pandemic, as described in **Section 3.5**.

The DEFRA data in **Table 1** show the background $PM_{2.5}$ concentration in 2020 was 8.9µg/m³, which is below the annual mean objective limit of 25µg/m³. Although they are not representative of the $PM_{2.5}$ concentration at the site, the data in **Table 3** are higher than the background concentration but still below the annual mean objective limit.

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4.0 Dust Risk Assessment

4.1 Dust Emission Magnitude

During the construction phase, activities may generate dust and particulate matter, as well as exhaust emissions from construction vehicles and plant, which could result in complaints of nuisance and human health effects. The likely level of risk has been assessed following Institute of Air Quality Management (IAQM) guidance. 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 set out. 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 IAQM assessment methodology has been used to determine the potential dust emission magnitude for demolition, earthworks, construction, and trackout.

4.1.1 Demolition

The existing single storey club will be demolished. Based on maps and an estimation of the building's height, it is likely the total demolition volume is less than 25,000m^3. The main materials being demolished will likely be brickwork and concrete. The potential dust emission magnitude from demolition is judged to be small based on this and following IAQM guidance.

4.1.2 Earthworks

The total site area is less than 2,500m^2. The site is on clayey loam to sandy loam[10]. Clay is more prone to suspension in the air when dry than sand due to its finer particle size. There will be minor excavation works. It is unlikely there will be more than 5 earth-moving vehicles operating at once on site, based on the size of the site. The potential dust emission magnitude from earthworks is judged to be small based on this and following IAQM guidance.

4.1.3 Construction

The total construction volume will be less than 25,000m^3 based on floor plans and elevations. The construction period will be approximately 1 year. The main construction activities include the erection of a steel frame, cladding, and finishes with external works. The main construction materials will likely be steel framework, brickwork, and concrete. The potential dust emission magnitude from construction is judged to be small based on this and following IAQM guidance.

4.1.4 Trackout

There will typically be 2 HDVs visiting site per day, but this will vary throughout the works. It is unlikely these HDVs will travel over an unpaved road length of more than 50m given the size of the site. Based on this, and following IAQM guidance, the potential dust emission magnitude from trackout is judged to be small.

[10] UK Soil Observatory (2022). Accessed via https://mapapps2.bgs.ac.uk/ukso/home.html.

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4.1.5 Summary of Dust Emission Magnitude

Table 4 summarises the dust emissions magnitude for each activity.

Table 4. Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Trackout	Small

4.2 Sensitivity of the Study Area

4.2.1 Dust Soiling Effects

There are residential dwellings around the site, which are considered highly sensitive to dust soiling effects. There are also some commercial receptors, including Milly's Café, which are considered as having medium sensitivity to dust soiling effects.

With the prevailing wind direction in the area likely being westerly, receptors to the east of the site will likely be the most affected by dust generated by the site.

1) Demolition

There are approximately 10 residential receptors within 20m of the demolition area. There are approximately 25 more residential receptors within 50m, as well as 2 commercial receptors. The sensitivity of the local area to dust soiling effects to due to demolition is high.

Figure 4. Demolition boundary with 20m and 50m buffers

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2) Earthworks and Construction

Earthworks and construction are likely to occur across the whole site so are considered together.

There are approximately 15 residential dwellings within 20m of the earthworks and construction boundary, as well as some commercial receptors. There are approximately 20 more residential receptors within 50m. The sensitivity of the local area to dust soiling due to earthworks and construction is judged to be high.

Figure 5. Earthworks and construction boundary with 20m and 50m buffers

3) Trackout

The site is considered small based on the site area, following IAQM guidance. The guidance states trackout should be considered for the section of public road within 50m of the site exit.

Construction traffic will likely travel north on Bradford Road towards the M62 (**Figure 6**). There are approximately 8 residential receptors within 20m of this trackout route, as well as 2 commercial receptors. There are approximately 20 more residential receptors within 50m. The sensitivity of the local area to dust soiling due to trackout is judged to be medium.

Figure 6. Assumed trackout route with 20m and 50m buffers

4.2.2 Health Effects of PM_{10}

The receptors identified in the previous section for the effect of dust soiling are relevant here, as there are health implications for sensitive receptors due to the dispersion and deposition of PM_{10}.

The DEFRA background PM_{10} data in **Table 1** show the concentration was 13.0µg/m³ in 2020, which is below the annual mean objective of 40µg/m³, as well as the 24µg/m³ regime defined in the IAQM guidance.

1) Demolition

There are approximately 10 residential receptors within 20m of the demolition area. There are approximately 25 more residential receptors within 50m, as well as 2 commercial receptors. The health effects due to demolition are judged to be low with receptors likely exposed to 13.0µg/m³ of PM_{10}.

2) Earthworks and Construction

There are approximately 15 residential dwellings within 20m of the earthworks and construction boundary, as well as some commercial receptors. There are approximately 20 more residential receptors within 50m. The health effects due to earthworks and construction are judged to be low with these receptors likely exposed to 13.0µg/m³ of PM_{10}.

3) Trackout

Construction traffic will likely travel north on Bradford Road towards the M62 (**Figure 5**). There are approximately 8 residential receptors within 20m of this trackout route, as well as 2 commercial receptors. There are approximately 20 more residential receptors within 50m. The health effects due to trackout are judged to be low with these receptors likely exposed to 13.0µg/m³ of PM_{10}.

4.2.3 Ecological Effects

The nearest ecological receptor to the site is Elland Bypass Cutting Site of Special Scientific Interest (SSSI) approximately 9km southwest. SSSIs have medium sensitivity to dust effects. The dust generated by the site will likely be transported away from the SSSI given the prevailing wind direction in the area is likely to be westerly. The sensitivity of ecological receptors to dust is judged to be low.

4.2.4 Summary of Sensitivity to Dust Effects

Table 5 summarises the sensitivities assessed for the area.

Table 5. Sensitivity of Area

Potential Impact	Sensitivity of Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

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4.3 Overall Dust Impact Risk

The predicted dust emission magnitude (**Table 4**) has been combined with the sensitivity of the area (**Table 5**) to determine the risk of impacts during the construction phase, prior to mitigation. **Table 6** summarises the risk of dust impacts for the proposed development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 6. Summary of Dust Risk Impacts

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Low Risk	Low Risk	Negligible Risk
Human Health	Negligible Risk	Negligible Risk	Negligible Risk	Negligible Risk
Ecological	Negligible Risk	Negligible Risk	Negligible Risk	Negligible Risk

5.0 Construction and Operational Phase Impacts

5.1 Construction Vehicles and Plant

There will typically be 2 HDVs visiting site per day, but this will vary throughout the works. Based on the size of the site, it is unlikely the number of HDVs visiting site per day will vary so much that the IAQM/EPUK threshold of 100 HDVs per day (as the site is outside of an AQMA) will be exceeded.

5.2 Operational Road Traffic

The development will generate 25 LDV movements per day once operational. This is below the IAQM/EPUK threshold of 500 LDV movements per day for developments outside of an AQMA.

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6.0 Mitigation

6.1 Construction Phase Mitigation

The following mitigation measures are recommended by IAQM to reduce the risk of dust soiling and human health effects during the construction phase of medium risk sites.

Table 7. Mitigation measures for all sites

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.
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.
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 air emissions, either on- or off site, and the action taken to resolve the situation in the logbook.
Monitoring
Undertake daily on-site and off-site inspections, 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 windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
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.

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Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks, and construction.
Preparing and Maintaining the Site
Plan site layout so machinery and dust causing activities are located away from receptors, where possible.
Erect screens or barriers around dusty activities or the site boundary that are at least as high as stockpiles.
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 the 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 use of diesel or petrol generators and use mains electricity or battery powered equipment.
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph 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).
Implement a Travel Plan that supports and encourages sustainable travel.
Operations
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.

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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.

Table 8. Mitigation measures specific to Demolition

Measures Specific to Earthworks
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
Avoid explosive blasting, using appropriate manual or mechanical alternatives.
Bag and remove any biological debris or damp down such material before demolition

Table 9. Mitigation measures specific to Earthworks

Measures Specific to 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.

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Table 10. Mitigation measures specific to Construction

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

Table 11. Mitigation measures specific to Trackout

Measures Specific to Trackout
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 the escape of materials during transport.
Record all inspections of haul routes and any subsequent action in a site logbook.
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

6.2 Good Practice Measures

In Section 5.10 of the IAQM/EPUK guidance, the following examples of good practice principles are listed:

"Design Phase:

- *The provision of at least 1 Electric Vehicle (EV) "fast charge" point per 10 residential dwellings and/or 1000m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made*
- *New developments should not contravene the Council's AQAP, or render any of the measures unworkable*
- *Wherever possible, new developments should not create a new "street canyon", or a building configuration that inhibits effective pollution dispersion*
- *Delivering sustainable development should be the key theme of any application*
- *New development should be designed to minimise exposure to pollution sources, eg. by locating habitable rooms away from busy roads or directing combustion generated pollutants through well sited vents or chimney stacks.*

Operational Phase:

- *Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measures its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety*
- *All gas-fired boilers to meet a minimum standard of <40mgNO_x/kWh*
- *All gas-fired CHP plant to meet a minimum emission standard of:*
  - *Spark ignition engine: 250mgNO_x/Nm^3*
  - *Compression ignition engine: 400mgNO_x/Nm^3*
  - *Gas turbine: 50mgNO_x/Nm^3*
- *A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of:*
  - *Solid biomass boiler: 275mgNO_x/Nm^3 and 25mgPM/Nm^3"*

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7.0 Conclusions

7.1 Existing Air Quality

7.1.1 NO_2

This assessment has shown that future occupants of the development will likely be exposed to acceptable levels of NO_2.

7.1.2 PM_{10}

This assessment has shown that the PM_{10} concentration at the site is likely to be below the annual mean objective limit of 40µg/m³. Future occupants of the development will therefore likely be exposed to acceptable levels of PM_{10}.

7.1.3 $PM_{2.5}$

This assessment has shown that the $PM_{2.5}$ concentration at the site is likely to be below the annual mean objective limit of 25µg/m³. Future occupants of the development will therefore likely be exposed to acceptable levels of $PM_{2.5}$.

7.2 Construction Phase

The assessment of potential construction phase impacts has found that the proposed development is medium risk for dust soiling, negligible risk for human health effects, and negligible risk for ecological effects. **Section 6.1** presents mitigation measures that could be used to reduce the risk of air quality impacts during the construction phase of the proposed development.

The IAQM/EPUK threshold for HDVs is not expected to be exceeded; therefore, this does not need to be assessed further in a detailed air quality assessment.

7.3 Operational Phase

The IAQM/EPUK threshold for LDVs is not expected to be exceeded; therefore, this does not need to be assessed further in a detailed air quality assessment.

7.4 Mitigation

This assessment has shown the overall dust risk to be medium. The mitigation measures in **Section 6.1** are recommended by the IAQM for medium-risk sites and must be followed to reduce dust risk.

Although the IAQM/EPUK thresholds for construction and operational traffic are not expected to be exceeded, the measures in **Section 6.2** must be followed where practicable.

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