Air Quality and Dust Assessment

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Project:	**Grenfell Tower**
Client:	**MHCLG**

AMENDMENT HISTORY			
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ABREVIATIONS	Meaning of abbreviations / Terminology used in this document
Ambient Air Quality	The overall condition of the air in the surrounding environment, measured by the concentration of pollutants such as particulate matter, nitrogen oxides, and other contaminants. It reflects the typical air people are exposed to outdoors.
Fugitive Dust	Airborne particulate matter that escapes from sources other than a controlled exhaust point. It commonly arises from construction sites, unpaved roads, stockpiles, and material handling activities.
Nuisance Dust	Dust that does not necessarily pose a significant health risk but can cause annoyance, reduced visibility, or soiling of surfaces. It is often associated with localised activities such as construction or demolition.
BPM	Best Practicable Means
CoCP	Code of Construction Practice
CoPA	Control of Pollution Act 1974
PM_{10}	Particulate matter with an aerodynamic diameter of **10 micrometres or less**. These particles can be inhaled and may cause respiratory irritation and other health effects.
$PM_{2.5}$	Fine particulate matter with an aerodynamic diameter of **2.5 micrometres or less**. These particles can penetrate deep into the lungs and are associated with more serious health impacts.
NO_x (Nitrogen Oxides)	A group of gases, primarily nitric oxide (NO) and nitrogen dioxide (NO_2), produced mainly from combustion processes such as vehicle engines and industrial activities. NO_x contributes to smog formation and respiratory problems.
EA	Environment Agency
EHO	Environmental Health Officer
HDV	Heavy Duty Vehicles defined as vehicles with a weight greater than 3.5 tonnes.
LA	Local Authority (Royal Borough of Kensington & Chelsea)
Prevailing Wind	The most common wind direction in a particular area over a defined period. Prevailing winds influence how air pollutants disperse and where they may accumulate.
DEFRA	The UK **Department for Environment, Food & Rural Affairs**, responsible for environmental protection, air quality policy, and national monitoring frameworks.
Air Quality Management Area (AQMA)	A designated area where air pollutant concentrations exceed, or are likely to exceed, national air quality objectives. Local authorities must develop an Air Quality Action Plan to improve conditions within an AQMA.
NRMM	Non-Road Mobile Machinery
Section 60 notice	Issued under the Control of Pollution Act 1974 to control noise pollution and nuisance. If issued the conditions must be complied with until revoked or successfully appealed against.
Sensitive Receptors / Noise Sensitive Premises (NSPs)	Receptors that are potentially sensitive to noise, vibration or dust. Examples include dwellings (including gardens), hospitals, schools, community facilities, designated areas (e.g. AONB, National Park, SAC, SPA, SSSI, SAM) and public rights of way, or any other property likely to be adversely affected.
Sustainable development	Bruntland Report: “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.
MHCLG (Client)	Ministry of Housing, Communities and Local Government
RBKC	Royal Borough of Kensington and Chelsea

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1 Introduction

1.1 Document Purpose

1.1.1 This Air Quality and Dust Assessment has been prepared for the Deconstruction Phase of works at Grenfell Tower, London (hereafter referred to as the 'Site').

1.1.2 The site is located in the Royal Borough of Kensington and Chelsea (RBKC).

1.1.3 The project works will be undertaken for a period of 23 months from August 2025 to May 2027. See Appendix 4 for the programme of works.

1.1.4 The scope of works for the deconstruction phase include the following:

- Establishing site welfare in garages and removal of cabins.
- Enabling and piling works for Tower Crane erection.
- Temporary services installation to accommodate deconstruction.
- Hoarding lines and exclusion zones to be re-established.
- Completion of hard standing area.
- Enabling works to machine routes.
- Tower Crane tie back at level 9 and concrete base including piling.
- Investigation works to inform temporary works design.
- Scaffolding to be adapted to suit deconstruction & installation of additional fan.
- UKPN update / additional 200amp supply.
- Lift deconstruction plant on to roof of Grenfell Tower.
- Deconstruction from plantroom to ground floor slab.
- Concurrent removal of scaffold and hoist.
- Once deconstruction is down at level 11, the crane will be stripped down, tie backs and monarflex removed.
- Clearance of Site.

1.1.5 Project hours on site are:

- Monday to Friday
  Site Opening Hours – 07:00 to 18:00
  Working Hours – 08:30 to 17:00
- Saturday
  No working hours - i*n exceptional circumstances occasional weekend work may be necessary.*

1.1.6 The client have commissioned European Environmental Monitoring and Consultancy EEMC to prepare an Air Quality and Dust Assessment for this phase of the project.

1.1.7 EEMC Limited has extensive experience in providing noise, vibration and air quality monitoring and consultancy services to major construction and infrastructure projects and has worked on some challenging developments in London and the UK.

1.1.8 The main pollutants of concern from site activities are fine particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2), and these have been explored in this report.

1.2 Site Location

1.2.1 The Site is located in London and the address is Grenfell Tower, Grenfell Road, London, W11 1TQ. Site location is shown in Figure 1.0.

1.2.2 The Site is in the north area of the Royal Borough of Kensington and Chelsea (RBKC), to the south of the A40 highway, close to the Latimer Road underground station and Kensington Aldridge Academy secondary school.

1.2.1 The London Underground viaduct is 70m to the west and Latimer Road Tube station is 200m from the project.

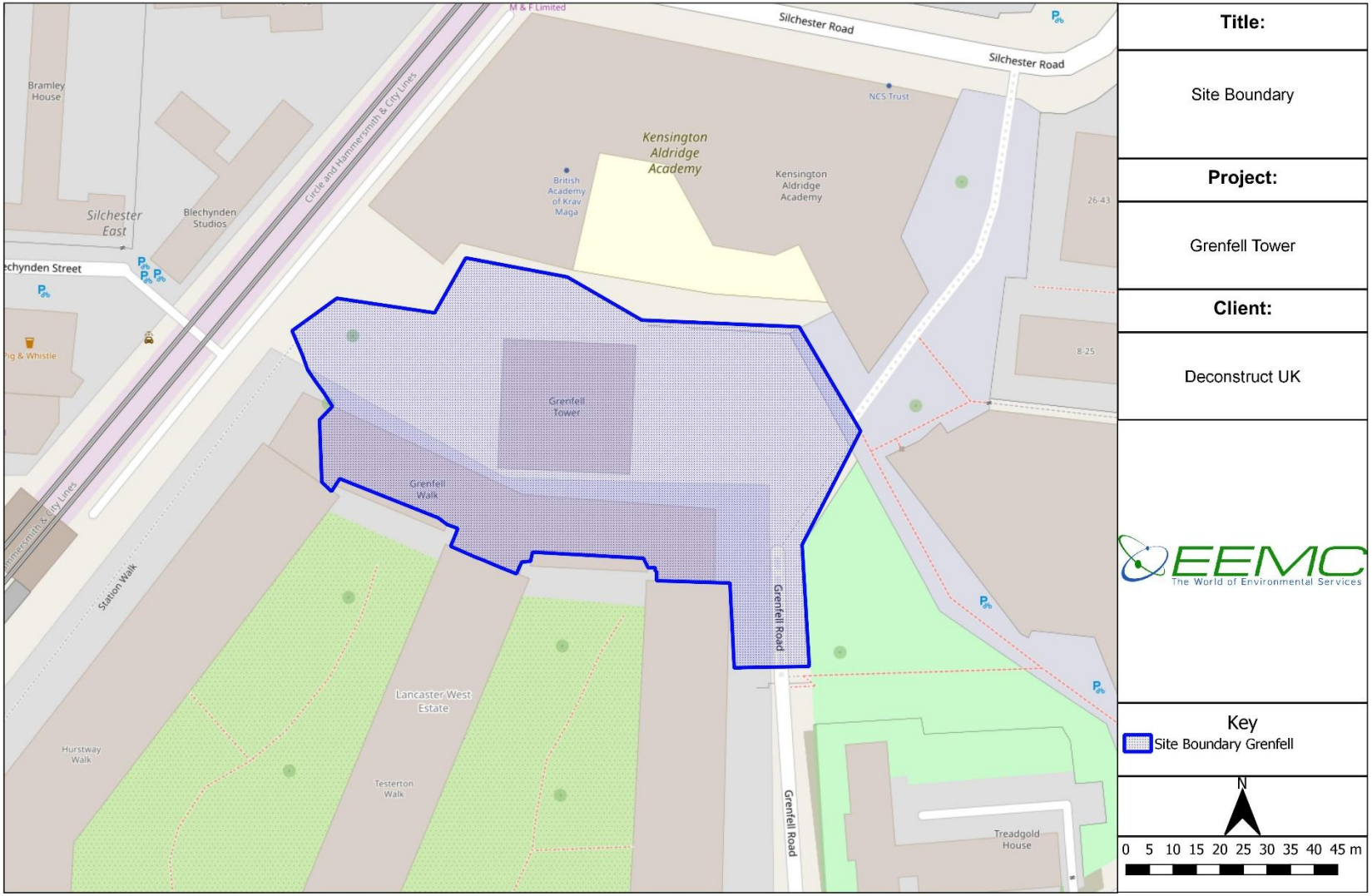


Figure 1.0 – Site Layout

2 Legislation and Guidance

2.1 UK Legislation

2.1.1 The Air Quality Standards Regulations (England) (2010, amended in 2016) provides the regulatory framework for air quality limit values in ambient air. PM_{10} is one of the pollutants outlined, which has a limit value of 40 µg/m^3 as an annual mean and 50 µg/m^3 as a 24 hour mean (not to be exceeded more than 35 times a year). NO_2 has limit value of 40 µg/m^3 as an annual mean and 200 µg/m^3 as a 1-hour mean (not to be exceeded more than 18 times a year).

2.1.2 The Environment Act (1995) requires the Secretary of State for the Environment to develop and implement an Air Quality Strategy, to reduce atmospheric emissions and improve air quality. The Air Quality Strategy provides the framework for ensuring compliance with the air quality limit values and requires that local authorities carry out local air quality management duties. Where a local authority identifies an area where ambient pollutant concentrations exceed the limit values, they are required to declare an Air Quality Management Area (AQMA) and produce an Air Quality Action Plan (AQAP) to improve air quality in that area.

2.1.3 The Environment Act (2021) outlined the requirement for at least two new air quality targets to be set for $PM_{2.5}$.The proposed targets are:

"Annual Mean Concentration Target-a maximum concentration of 10µg/m^3 to be met across England by 2040; and

Population Exposure Reduction Target-a 35% reduction in population exposure by 2040 (compared to a base year of 2018)."

2.2 Local Authority

2.2.1 The Royal Borough of Kensington and Chelsea (RBKC) is the geographic local authority for the Site.

2.2.2 RBKC declared the entire borough as an Air Quality Management Area (AQMA) in 2000 for exceedances of the annual mean and 1-hour mean NO_2 objectives, and the annual mean and 24-hour mean PM_{10} objectives.

2.2.3 The RBKC new Local Plan (July 2024) sets out the future development of the borough and contains planning policies. In terms of air quality, there is a strategic objective and a specific policy outlined in the document.

2.2.4 Policy GB6: Air Quality outlines the following:

"A. All development is required to meet the air quality neutral benchmarks in accordance with the London Plan.

B. The following developments are required to undertake and submit an Air Quality Assessment:

1. All major development.

2. All development introducing new population or receptors in Air Quality Focus Areas (AQFAs).

3. Development that introduces sensitive receptors into the location.

4. Developments that include potentially polluting sources, uses or combustion-based technologies.

5. Development that is located within close proximity to known pollution sources and introduces new population or sensitive receptors.

6. Development which involves significant demolition (total volume of building to be demolished 20,000m^3 or more) or construction.

C. Major developments located in AQFAs, masterplans, development briefs and large-scale development proposals (that are subject to Environmental Impact Assessments) are required to deliver an "Air Quality Positive" approach.

D. Applicants will be required to install non-combustion energy technology where available. Where this technology is not available combustion plant must be ultra-low NOx emitting.

E. Emissions of particles and NOx must be minimised and controlled during demolition and construction activities. Dust Risk Assessments (DRA's) must be produced to identify potential impacts and corresponding mitigation measures, including on site monitoring, if required by the Council. All impacts must be addressed within any submitted Air Quality Assessment.

F. All major development and minor development that involves potentially "dusty works", such as basement excavation, soil removal or import, are required to produce a Dust Risk Assessment to identify potential impacts and appropriate corresponding mitigation measures to protect local sensitive receptors from the impact of dust.

G. Measures to improve air quality should be implemented onsite, however, where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated.

H. Air intake points should be located away from existing and potential pollution sources. Whilst fossil fuel systems are not supported, where they are utilised for back up emergency systems, all combustion flues should terminate at least 1 m above the roof height of the tallest part of the development and ensure maximum dispersion of pollutants by having a sufficient efflux velocity."

2.2.5 This policy has been considered in this assessment.

2.2.6 Policy GB7: Construction Management, from the RBKC new Local Plan (July 2024) outlines the following: *"A. Relevant developments as specified in the RBKC Code of Construction Practice (the Code) must not create unacceptable impact on local residential amenity including neighbouring properties as a result of demolition and construction impacts by complying with the Code."*

2.2.7 RBKC produced a Code of Construction Practice (CoCP) in April 2019, which aims to reduce the impact of construction sites on residents, by providing guidance on how sites should be managed. The CoCP has been referenced in this document where relevant.

2.3 Guidance

2.3.1 Construction sites can lead to a release of pollutants to air. To help assess the likely impact and therefore determine appropriate mitigation measures, the Institute of Air Quality Management (IAQM) produced the 'Guidance on the assessment of dust from demolition and construction (v1.1 2016)' document. This was subsequently updated, and the latest version of the guidance was issued in 2024, titled: 'Assessment of dust from demolition and construction 2024 V2.2'.

2.3.2 The Greater London Authority produced 'The Control of Dust and Emissions During Construction and Demolition (2014)' Supplementary Planning Guidance (SPG) document which follows the same method as the IAQM guidance. This outlines a methodology for assessing the likely impact of a construction site in London, based on carrying out a Dust Risk Assessment, outlining appropriate mitigation and a proposed monitoring strategy. Since the IAQM guidance document was updated, the GLA website states that: "*The Institute of Air Quality Management's (IAQM) guidance 'Assessment of Dust from Demolition and Construction' is considered best practice and is recommended to be used when assessing and managing the impacts from demolition and construction. Please follow the latest version of the guidance…"*

2.3.3 Therefore, the latest version of the IAQM guidance (2024) has been used in this assessment to determine the likely impact and dust risk from each phase of the project (see Section 5).

2.3.4 The IAQM document and the GLA Practice Note also provide guidance on mitigation measures, dependent on the risk categories. These have been determined for this project and are outlined in Table 5.3 in Section 5.

2.3.5 In addition to the assessment guidance, the IAQM produced the 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites (v1.1 2018)' document. This provides further guidance on monitoring and advises on appropriate PM_{10} Action Levels for construction sites. The document states that:

> "*The Site Action Levels set out below are recommended. These will be reviewed in the future as additional information becomes available.*
>
> *PM_{10} Concentrations: 190 µg/m^3 averaged over a 1-hour period."*

2.3.6 It is noted that the IAQM guidance was updated and the previous 2012 document provided the following guidance on Action Levels:

> "*The Site Action Levels set out below are recommended. These will be reviewed in the future as additional information becomes available.*
>
> *PM_{10} Concentrations: 250 µg/m^3 averaged over a 15-minute period."*

2.3.7 With regards to NO_2 the 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites (v1.1 2018)' states:

> *"No consideration is given to measurement of concentrations of other pollutants, such as nitrogen dioxide, around construction sites, although emissions of NOx from these sites may represent an important source in urban areas."*

2.3.8 The IAQM have also produced the document "Land-Use Planning & Development Control: Planning for Air Quality 2017" (v1.2). This provides key guidance for local authorities and developers on how to assess development impacts on air quality, outlining when assessments are needed, the scope of these assessments (construction, operation), what mitigation measures to consider (like green infrastructure, EV charging), and how to integrate air quality into planning decisions, especially near Air Quality Management Areas (AQMAs). It emphasises proportionate assessments, considering both local policies and national strategies, and linking air quality with other factors like transport and climate change.

3 Baseline Monitoring

3.1 Baseline Monitoring

3.1.1 To understand the existing air quality in the vicinity of the Site, baseline information has been obtained from the nearest automatic monitoring site in North Kensington (using the *London Air* website), and from RBKC's *Annual Status Report* and local diffusion tube monitoring network.

3.2 Local Authority Monitoring

3.2.1 There is one automatic monitor and four passive monitoring sites within 1km of the Site. Details of the monitoring sites are outlined in Table 3.1.

3.2.2 The Site is considered to be in an 'urban background' location. Therefore pollutant concentrations measured at the North Kensington monitoring station are considered to be representative of the Site.

Table 3.1 – RBKC monitoring locations within 1km of Site

Location	Monitoring Position	Classification	Approx Distance to Site (km)	Orientation from Site	Pollutants Measured
KC1 - North Kensington	Automatic	Urban background	800m	North of Site	NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, O_3
KC31 - Ladbroke Grove/North Kensington Library	Diffusion tube	Roadside	500m	North East of Site	NO_2
KC41 - Ladbroke Crescent	Diffusion tube	Urban background	400m	North East of Site	NO_2
KC53 - Walmer House	Diffusion tube	Urban background	300m	North of Site	NO_2
KC69 - Darfield Way	Diffusion tube	Urban background	300m	West of Site	NO_2

3.2.3 Table 3.2 below shows the measured NO_2 concentrations at these locations between 2019 and 2024.

3.2.4 Between 2020 and 2024, NO_2 concentrations at nearby monitoring locations were below the annual mean air quality objective.

3.2.5 It is considered that NO_2 concentrations at the Site would be similar to those measured at the urban background monitoring locations, and would likely be below the annual mean NO_2 objective.

Table 3.2 – Measured concentrations of NO_2

Monitoring Position	Monitoring Site Classification	Annual Mean Objective	Annual Mean NO_2 Concentration (µg/m³)					
			2019	2020	2021	2022	2023	2024
KC1	Urban background	40 µg/m³	27.4	21	20	18	18	14
KC31	Roadside		**43.1**	33.2	27.3	25.7	25.5	-
KC41	Urban background		30.8	23.2	20.9	20.2	19.4	-
KC53	Urban background		38.4	29.7	24.9	22.5	21.0	-
KC69	Urban background		37.3	25.6	29.2	19.5	19.0	-

*Note: Exceedances of the objective are shown in **bold** text. "-" Data not available yet.*

3.2.6 Monitoring at the KC1 site includes automatic monitoring of PM_{10}, Table 3.3 below shows the measured concentrations at this location between 2019 and 2023.

3.2.7 Table 3.3 shows that the annual mean PM_{10} objective was not exceeded for any year between 2019-2023.

3.2.8 It is considered likely that PM_{10} concentrations at the Site would be similar to those measured at KC1, and would be below the annual mean objective.

Table 3.3 – Measured Concentrations of PM_{10}

Monitoring Position	Monitoring Site Classification	Annual Mean Objective	Annual Mean PM_{10} Concentration (µg/m³)				
			2019	2020	2021	2022	2023
KC1	Urban background	40 µg/m³	15	13	14	15	12

*Note: Exceedances of the objectives are shown in **bold** text. "-" Denotes period of no data.*

3.2.9 Monitoring at the KC1 site includes automatic monitoring of $PM_{2.5}$, Table 3.4 below shows the measured concentrations at this location between 2019 and 2023.

3.2.10 Table 3.4 shows that the annual mean target level for $PM_{2.5}$ was not exceeded for any year between 2019-2023.

3.2.11 It is considered likely that $PM_{2.5}$ concentrations at the Site would be similar to those measured at KC1, and would be below the annual mean target level.

Table 3.4 – Measured Concentrations of $PM_{2.5}$

Monitoring Position	Monitoring Site Classification	Annual Mean Target Level	Annual Mean $PM_{2.5}$ Concentration (µg/m³)				
			2019	2020	2021	2022	2023
KC1	Urban background	20 µg/m³	10	8	9	9	8

*Note: Exceedances of the objectives are shown in **bold** text. "-" Denotes period of no data.*

3.3 On Site Monitoring by UKHSA

3.3.1 Monitoring on site for PM has taken place on behalf of UKHSA. Monitoring was carried out using Osiris indicative instruments and took place at three locations: Station Walk/Old Playground area, Kensington Aldridge Academy, and Kensington Leisure Centre.

3.3.2 Data was provided to EEMC by UKHSA for 2024, and a summary of the annual mean concentrations is shown in Table 3.5.

3.3.3 Monitoring on Site shows that in 2024, there were no exceedances of the annual mean PM_{10} objective or the $PM_{2.5}$ annual mean target level.

Table 3.5 – Measured PM Concentrations on Site

Monitoring Position	Annual Mean Objective/ Target Level	Monitoring Period	Annual Mean Concentration for 2024	
			PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
Station Walk/ Old Playground	PM_{10}: 40 $\mu g/m^3$ $PM_{2.5}$: 20 $\mu g/m^3$	01 Jan - 13 Aug and 13 Aug - 31 Dec (1)	10.6	7.5
Kensington Aldridge Academy		01 Jan-31 Dec	13.1	7.0
Kensington Leisure Centre		01 Jan - 11 Dec (2)	19.2	9.3

Notes from data provider:

(1) Instrument TNO2908 (at Station Walk/Old Playground area) had intermittent data collection faults, which became more prevalent in June 2024, meaning there were data gaps in the summer of 2024.

(2) Calibration of the instrument expired on 12/12/2024. There is no data after this date, as contractors were not able to access the instrument, due to access issues at the Leisure Centre.

3.4 On Site Baseline Monitoring

3.4.1 On site 3 months of baseline monitoring was undertaken between 19th May 2025 and 31st August 2025 by EEMC at the monitoring locations outlined in Figure 1.0.

3.4.2 An overall site period mean concentration of 20.3 $\mu g/m^3$ was determined for PM_{10} for this baseline period, which is well below the UK air quality objective of 40 $\mu g/m^3$ (however, the objective strictly applies to a full year of data).

3.4.3 For $PM_{2.5}$ an overall site period mean of 8.4 $\mu g/m^3$ was determined for the baseline monitoring period, which is well below the UK air quality objective of 20 $\mu g/m^3$ (however, the objective strictly applies to a full year of data).

4 Sensitive Receptors

4.1 Sensitive Receptors

4.1.1 The area surrounding the Site is a mixture of residential dwellings, a secondary school and commercial properties. The Site location and receptors are shown in Figure 4.0 and Table 4.0.

4.1.2 It is understood that all residential receptors directly overlooking the site, have been vacated. Our assessment has been undertaken on the basis that these properties are not occupied.

4.1.3 Nearby sensitive receptors include:

- Kensington Aldridge Academy;
- 8-25 Verity Close (residential)
- Kensington Leisure Centre;
- Lancaster Green and memorial;
- Hurstway Walk (residential);
- Testerton Walk (residential); and
- Grenfell Road (residential).

4.1.4 Since the AQDMP was issued 8-25 Verity Close has been added as a sensitive receptor for completeness. This was not included as an original sensitive receptor given Kensington Aldridge Academy (Receptor A) and Kensington Leisure Centre (Receptor C) are closer than 8-25 Verity Close meaning that if Receptors A & C were compliant then 8-25 Verity Close would also be compliant due to how dust naturally dissipates with distance.

4.1.5 The buildings on the far side of the railway to the west of site have not been counted as sensitive receptors due to the railway itself being the sensitive receptor, compliance for railways and stations are agreed through discussions with TfL. As with 8-25 Verity Close these buildings were not included as in the original list of sensitive receptors because compliance with the railway would indicate compliance for these buildings as dust naturally dissipates with distance.

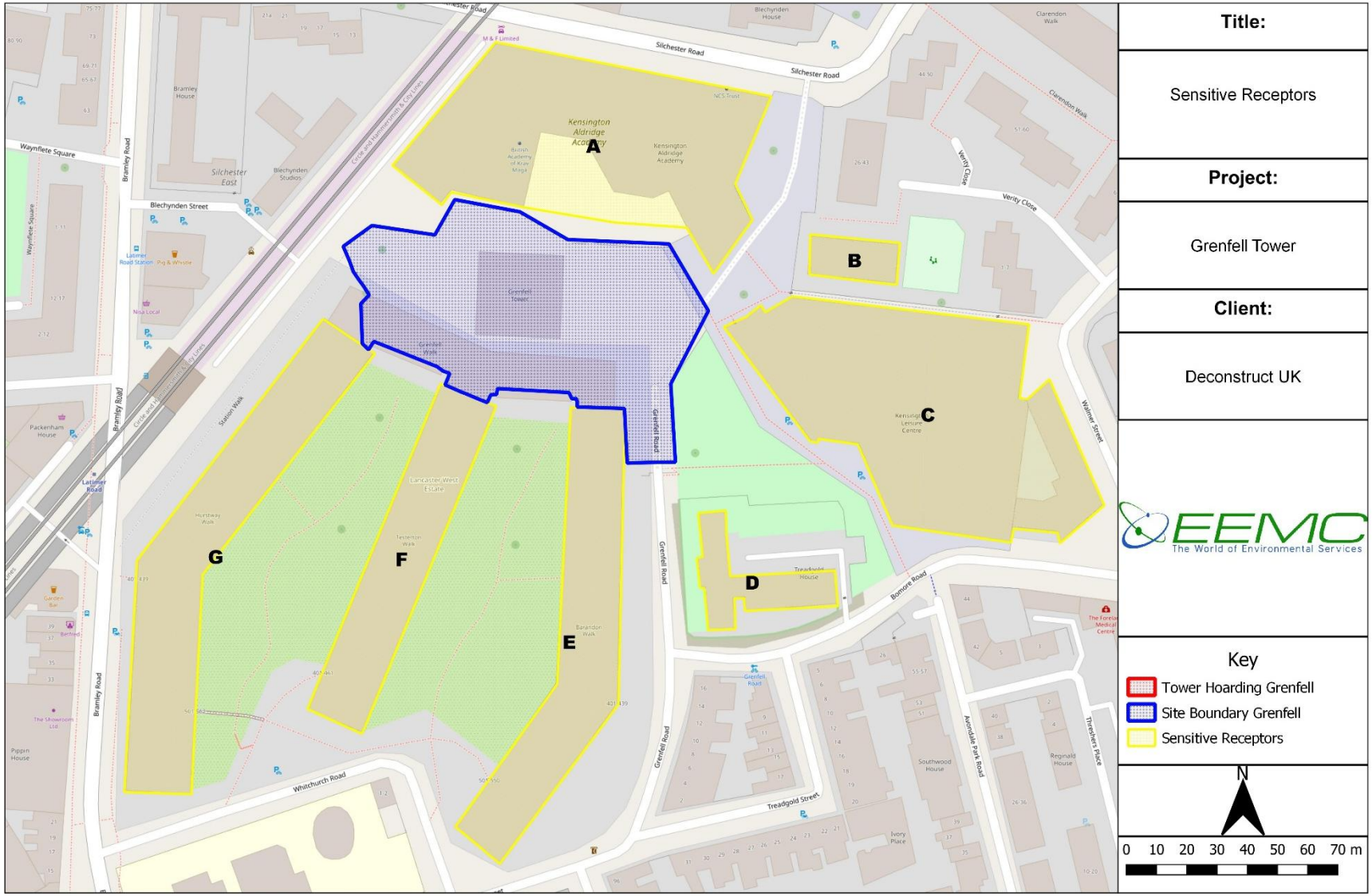
4.1.6 A review of the Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) map shows that there are no ecological receptors within 50m of the Site, therefore these are not considered further.

4.1.7 Pedestrians, cyclists and road users within proximity of the Site have also been recognised as potential short-term sensitive receptors to the works.

Table 4.0 – Sensitive Receptors

ID	Sensitive Receptors	Property Type
A	Kensington Aldridge Academy	School
B	8-25 Verity Close	Residential
C	Kensington Leisure Centre	Leisure Centre
D	Treadgold House	Residential
E	Barandon Walk	Residential
F	Testerton Walk	Residential
G	Hurstway Walk	Residential

Figure 4.0 – Site Location and Sensitive Receptors



5 Dust Risk Assessment

5.1 Overview

5.1.1 The potential air quality impacts from work at Grenfell Tower have been assessed using the risk assessment approach from the IAQM *Assessment of dust from demolition and construction 2024 V2.2* guidance document.

5.2 Step 1

5.2.1 Several sensitive human receptors have been identified near the site and therefore a detailed assessment of potential dust impacts is required.

5.2.2 No ecological receptors have been identified within a 50m radius of the site, or the Trackout route, therefore ecological factors will not be explored further.

5.3 Step 2A

5.3.1 The Air Quality Risk Assessment has been considered for the work being undertaken in each phase of development.

5.3.2 The potential dust emission magnitude for each phase is summarised in Table 5.0. There are no construction phase activities, and therefore this is not included.

5.3.3 Site works between September 2025 and May 2027 have been considered; these include:

- Roof deconstruction.
- Level 23 deconstruction.
- Deconstruction of levels 22 to 12, and 11 to 1.

5.3.4 In terms of Site access, this is either by foot or vehicle via Grenfell Road and the Main Gates. There will be parking on Site for operatives, members of the project team, subcontractors and visitors, and the use of electric vehicles for visitors and staff will be encouraged. MHCLG will request all visitors to site use public transport as far as practicable and will actively encourage cycling to work, with secure cycle storage being provided.

5.3.5 All traffic movements will be controlled by Traffic Marshals as per the logistics Plan.

5.3.6 Deliveries throughout the duration of the project will be consolidated to minimise the volume of traffic attending Site. Vehicles will not be allowed to wait in the adjoining roads and the engines should be turned off when a vehicle has arrived.

5.3.7 In terms of dust suppression, Dust Boss (water mist cannon) and water hoses will be used to dampen down the deconstruction areas, preventing dust migration from site.

Table 5.0 – The Dust Emission Magnitudes

Phase	Magnitude	Criteria
Deconstruction	Large	Deconstruction of Roof and Levels 23 to 1. Total building volume >75,000 m^3.
Earthworks	Small	Minimal earthworks are anticipated on site.
Construction	-	None
Trackout	Medium	It is anticipated that that there will be less than 20 heavy goods vehicles (HGV) movements per day. The exception being during the erection and dismantling of the crane, therefore 'Medium' has been determined here, as a precautionary assumption. The maximum speed limit within the Site is 5mph.

5.4 Step 2B

5.4.1 The sensitivity of the area takes account of several factors including:

- Specific sensitivities of receptors in the area;
- Proximity and number of these receptors;
- Local background PM_{10} concentrations.

5.4.2 The sensitivity of the area in relation to dust soiling effects and effects to human health as a result of PM_{10} have been considered, and are shown in Table 5.1 below.

Table 5.1 – The Sensitivity of the Area

Impact	Sensitivity	Criteria
Dust Soiling	High	The site is surrounded by a number of sensitive receptors, as outlined in Section 4.
Human Health	Medium	The annual mean PM_{10} on Site is considered likely to be similar to that measured by UKHSA in 2024 (between 10.6 to 19.2 µg/m^3)

5.5 Step 2C

5.5.1 The sensitivity of the area for both dust soiling and human health impacts are compared against the dust emission magnitude to achieve a risk category for each phase. The risk categories are summarised in Table 5.2 below. This identifies a maximum category of *High Risk*.

Table 5.2 – Summary of Unmitigated Dust Risk Categories for Each Phase

Phase	Risk	
	Dust Soiling	Human Health
Deconstruction	High	High
Earthworks	Low	Low
Trackout	Medium	Medium

5.6 Dust Mitigation Measures

5.6.1 The GLA and IAQM guidance provide potential mitigation measures to reduce impacts during works. Table 5.3 below summarises the mitigation measures required for the site based on the maximum ***High Risk*** category identified by the Dust Risk Assessment, and includes mitigation outlined in the RBKC CoCP.

5.6.2 If the mitigation measures in Table 5.3 are implemented then it is likely that the risk of Dust Soiling and Human Health will be **much lower** and **should not be cause for concern.**

Table 5.3 – Highly Recommended Fugitive Dust (Pollution) Mitigation Measures

Phase	Control Measure
Site Management	Develop and implement a stakeholder communications plan with the Ministry of Housing, Communities and Local Government (MHCLG), that includes community engagement before work commences on site.
	Develop a Dust Management Plan
	Record and respond to all dust and air quality pollutant emissions complaints.
	Make the complaint and air quality incident log available to the relevant authority when asked.
	Carry out regular site inspections to monitor compliance with air quality and dust control procedures (at least once daily), record inspection results, and make an inspection results, and make an inspection log available to RBKC when asked.
	Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out, and during prolonged dry or windy conditions.
	For immediate works, hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.
	Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.
Monitoring	Carry out regular dust soiling checks on and off-site (within 100m of the site boundary) and provide cleaning 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.

Phase	Control Measure
	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.
	Where possible, commence baseline monitoring at least three months before works begin.
	Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.
	Agree monitoring locations with the local authority.
Preparing and Maintaining the Site	Plan site layout: machinery and dust causing activities should be located away from receptors.
	Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
	Fully enclosed 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.
	Adopt and implement good housekeeping measures (i.e. regular wet sweeping, cleaning, vacuuming etc.).
	Regularly clean hoardings, fencing, barriers and scaffolding using wet methods, where practicable, to prevent re-suspension of particulates and dust.
	Remove materials from site as soon as possible.
	Cover, seed or fence stockpiles to prevent wind whipping, where possible and practicable.
Operating Vehicle/Machinery and Sustainable Travel	Ensure that all on-road vehicles comply with the Low Emission Zone (LEZ) and Ultra Low Emission Zone (ULEZ).
	All commercial road vehicles attending the site must meet European Emission Standards pursuant to the EC Directive 98/69/EC of Euro 4 for petrol vehicles and Euro 6 for diesel vehicles and Euro VI for all lorries and specialist heavy goods vehicles.
	Ensure all non-road mobile machinery (NRMM) for all engines with a 37 kW - 560 kW power rating (such as generators, excavators, piling machines) to comply with the standards set by the Mayor of London: From 1 of January 2025, NRMM on all sites within Greater London is required to meet Stage IV as a minimum. The requirement for generators will continue to be Stage V. See Figure 5.1, replicated from the London Non-Road Mobile Machinery (NRMM) Practical Guide v.6 January 2024. (https://www.london.gov.uk/programmes-and-strategies/environment-and-climate-change/pollution-and-air-quality/nrmm?ac-226887=226876).
	Locate NRMM, machinery, haulage routes, site entrances and any dust generating activities away from receptors, where possible, particularly schools, hospitals and homes.
	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 possible.
	Impose and signpost a maximum-speed-limit of 5 mph on surfaced haul routes 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).

Phase	Control Measure
Operations	Avoid cutting, grinding and sawing on-site and use pre-fabricated material and modules where practicable.
	Only use cutting, grinding or sawing equipment fitting or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Make sure there is an adequate water supply on the site for effective dust/ particulate matter mitigation (using recycled water where possible).
	Prohibit any surface water runoff.
	Skips, chutes and conveyors must be completely covered and, if necessary, completely enclosed to ensure that dust does not escape. Skips must be located where this is possible.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Cover stockpiles/arisings of sand, earth or similar dust-generating materials when not in use to prevent wind whipping.
	Make sure 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.
	Dust boss (water mist cannon) and water hoses will be utilised to dampen down the deconstruction areas, preventing dust migration from site
	Dust will be contained at source by the use of screens and fine mist dampening during dusty operations including loading within the site confines at ground floor level.
	The Site will be protected by a 2.4m high timber hoarding installed on temporary concrete blocks. Hoarding will be constructed and lit in line with the Council's Code of Practice.
Waste Management	Reuse and recycle waste to reduce dust from waste materials.
	Do not allow any on-site bonfires/incineration/burning of waste materials.
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or tackifiers 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.
Deconstruction	Soft strip inside buildings before deconstruction (retaining the walls and windows in the rest of the building where possible, to provide a screen against dust).
	Ensure water suppression is used during operations.
	Avoid explosive blasting, use appropriate manual or mechanical alternatives.
	Bag and remove any biological debris or damp down such materials before deconstruction.
	Skidsteer loaders will collect arisings and deposit within lift shaft to transport down to ground floor.
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 escape of materials during transport.

Phase	Control Measure
	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.
	Access gates to be located at least 10m from receptors where possible.
	A road sweeper will visit (minimum) weekly to ensure roads are kept clean or as and when necessary.
	Inspection of adjacent roads will take place, to further ensure that neighbouring roads and environment are kept clean. The area for vehicles to exit will be jet washed to create a clean environment.

6 HGV Routes and Logistics

6.1 Vehicle Movement and Material Deliveries

6.1.1 A traffic marshal will greet each delivery and ensure its safe passage into the project. Care will be taken to ensure all vehicles are safely segregated from the public and footpath and access ways are kept clear. Vehicles will not be allowed to wait in the adjoining roads and the engine will be turned off when a vehicle has arrived onsite to minimise noise and disruption in this sensitive area. This ensures no idling or further disturbance to residents.

6.1.2 Any large vehicle or off-loading of materials within the site will be subject to the same commercial/operational restrictions as the vehicles on site eg RAMS, Hiab/Lifting assessments, competency checks, PPE etc and are to be notified at least 1 week beforehand to allow sufficient time to review and approve the Risk Assessments.

6.1.3 A traffic marshal will greet each delivery/vehicle movement and ensure its safe passage into and through the project by escorting the movement through its entire journey passing the vehicle from one traffic marshal to the next until the vehicle has exited the site or entered the compound. Utmost care will be taken to ensure all vehicles are safely segregated from the public and footpath (physical barriers, signage and traffic marshalling) and all access ways are kept clear.

6.1.4 Vehicles will not be allowed to wait in the adjoining roads and the engine will be turned off when a vehicle has arrived onsite to minimise noise and disruption in this sensitive area.

6.2 Access, Egress and Swept Path

Figure 6.0 – Access and Egress Route

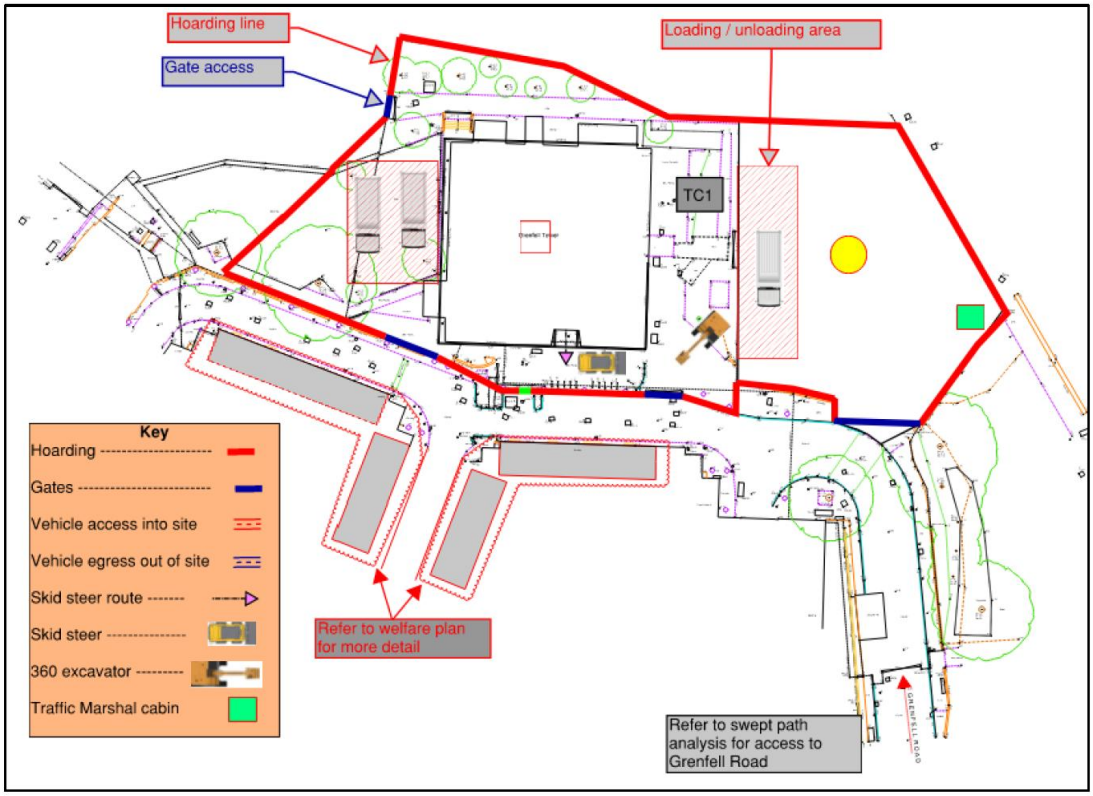


Figure 6.1 - Swept Path Analysis Example

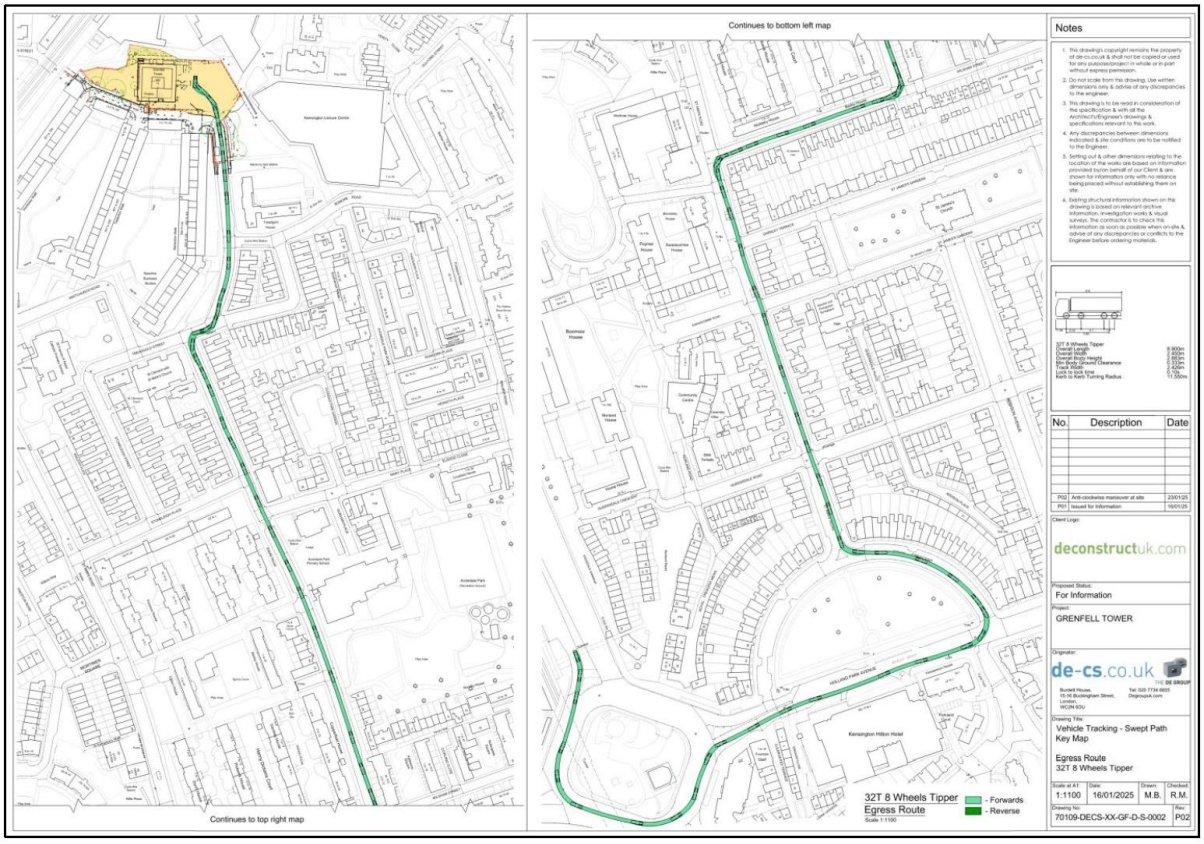
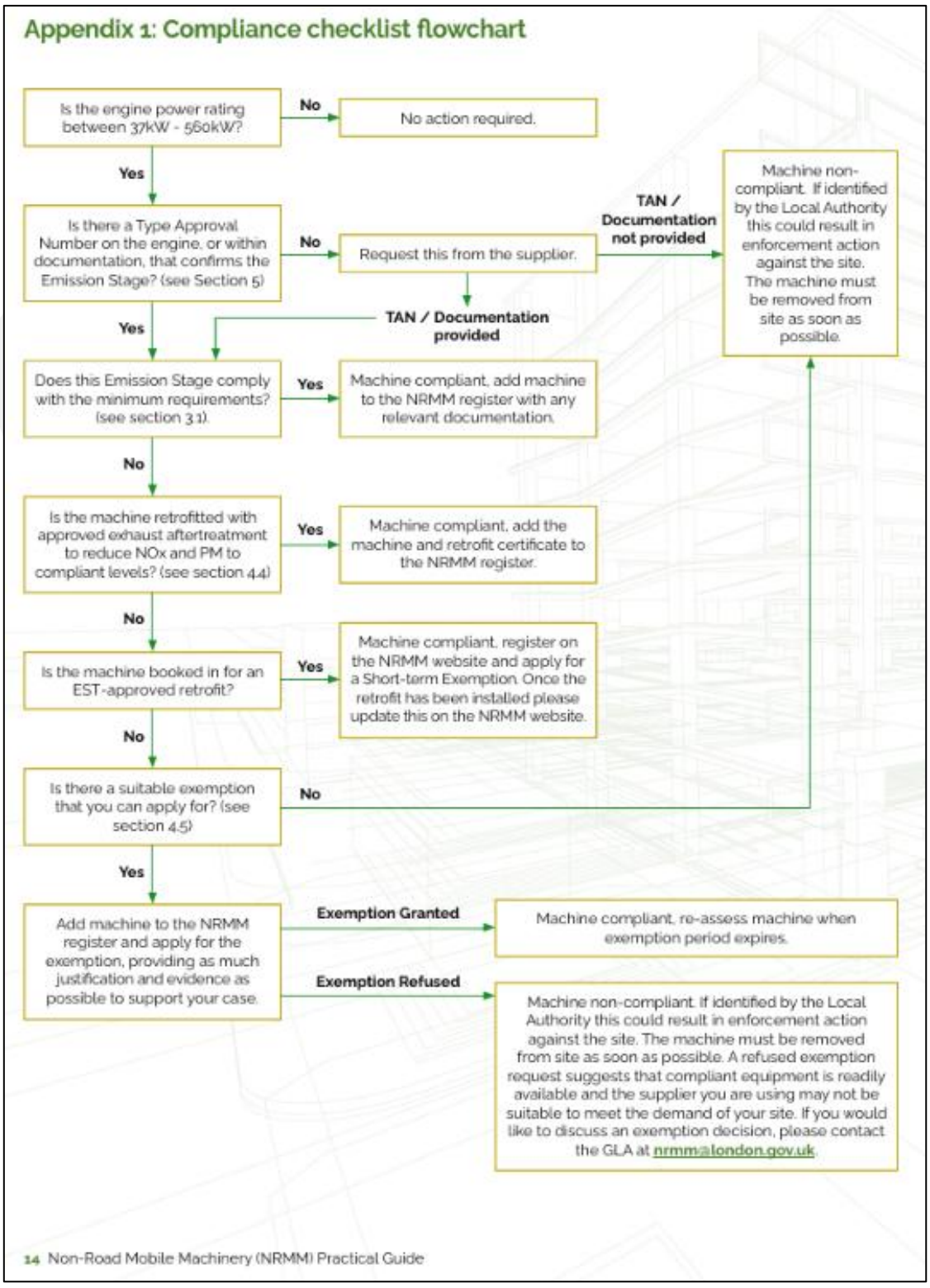


Figure 6.2 – NRMM Emission Requirements



6.2.1 With the relevant mitigation measures outlined in Table 5.3 and above implemented, the residual effect from all dust generating activities is predicted to be ***not significant***, in accordance with the IAQM and GLA guidance.

6.3 Qualitative review of construction traffic

6.3.1 The assessment has considered potential air quality impacts and likely effects during the deconstruction phase of the project. In addition to dust and fugitive emissions, a qualitative review of emissions from construction traffic has been carried out.

6.3.2 The EPUK/IAQM Planning Guidance *(Land-Use Planning & Development Control: Planning For Air Quality July 2027)* provides the following indicative criteria for when a detailed air quality assessment may be required:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) or more than 500 AADT elsewhere; and
- A change of Heavy-Duty Vehicle (HDV) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere.

6.3.3 Following a review of the work schedule and programme, it is anticipated that there would be *less than 20 HDV vehicle movements per day.*

6.3.4 Based on the estimated maximum HDV flows, and a review of the planning guidance criteria, it is not considered that a quantitative assessment is required for construction traffic emissions.

6.4 Roles and Responsibilities

6.4.1 Clear definition and communication of environmental roles and responsibilities are required to facilitate effective environmental management.

6.4.2 The contact details for the person accountable for air quality and dust issues will be displayed at the site boundary.

6.4.3 Responsibilities will include:

- Stakeholder communication and community engagement before work commences on site.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Keep a complaint log and make it available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust procedures, record the results of the inspection and make an inspection log available to local authority when asked.
- Increase frequency of site inspections when activities on site have high potential to produce increased dust emissions and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality emissions on or off site and take action to resolve the situation and record in log book.
- Make sure all required mitigation measures noted in Table 5.3 are implemented.

7 Monitoring Plan

7.1 Dust (PM_{10}) Monitoring

7.1.1 Real-time monitoring for dust (PM_{10} and $PM_{2.5}$) during works on site is being undertaken, to make sure the recommended mitigation measures are effective and appropriate.

7.1.2 The Dust (PM_{10} and $PM_{2.5}$) monitors that are installed are MCerts compliant instruments meeting the requirements for Indicative Ambient Particulate Monitors. They will sample PM_{10} and $PM_{2.5}$ concentrations in air in real-time and provide average readings over 1 to 15-minute measurement periods (as required).

7.1.3 The monitors are housed in secure environmental enclosures. Each monitor is fitted with a modem to allow data-streaming to an online web portal.

7.1.4 The monitoring system is configured with trigger levels that send automatic email alerts when the trigger levels are reached or exceeded at each of the monitoring positions. The site management team can then review site activities and identify any available practicable mitigation measures that can be implemented.

7.1.5 The dust monitors require periodic on-site maintenance as required, typically once every 3-6 months. Noise and vibration monitoring will also be undertaken concurrently on site, as required.

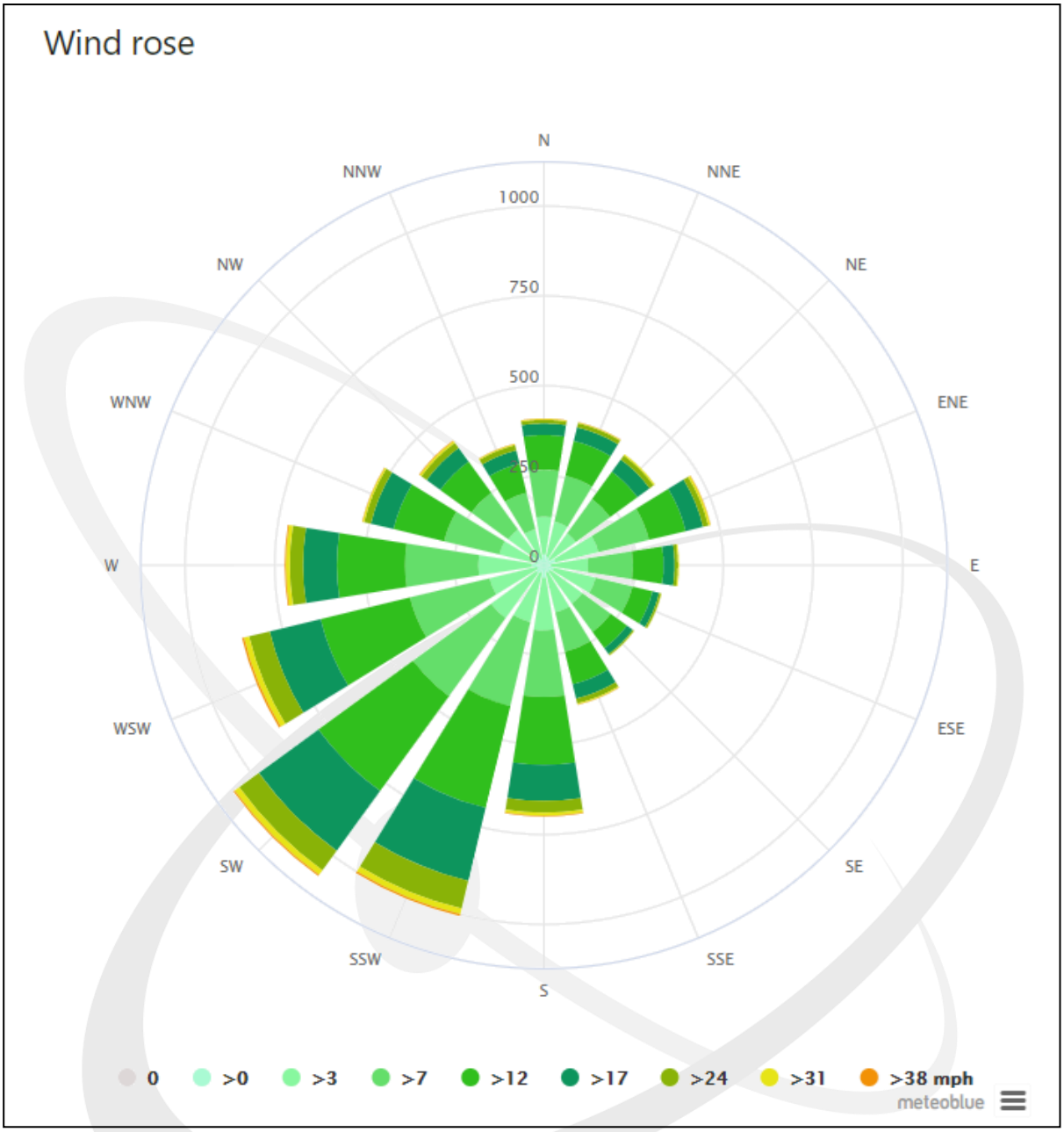
7.2 Dust Monitors

7.2.1 Due to the site being in an AQMA, close to sensitive receptors and high risk for dust emissions, it was recommended that there should be a minimum of three dust monitoring locations on site. There are five (5) HIVE-AQ™ dust monitors installed on site.

7.2.2 The monitors are installed in appropriate locations, as shown in Figure 7.1, and these are in-line with the prevailing wind direction (south-westerly) across the site, and close to sensitive receptors.

7.2.3 Figure 7.0 shows the prevailing wind direction (south-westerly) for London. Information is taken from Meteoblue and is based on 30 years of hourly historical weather data.

Figure 7.0 – Prevailing Wind for London



7.3 Monitoring Locations

7.3.1 Current monitoring locations are shown in Figure 6.1 and the reasoning for their selection are detailed below:

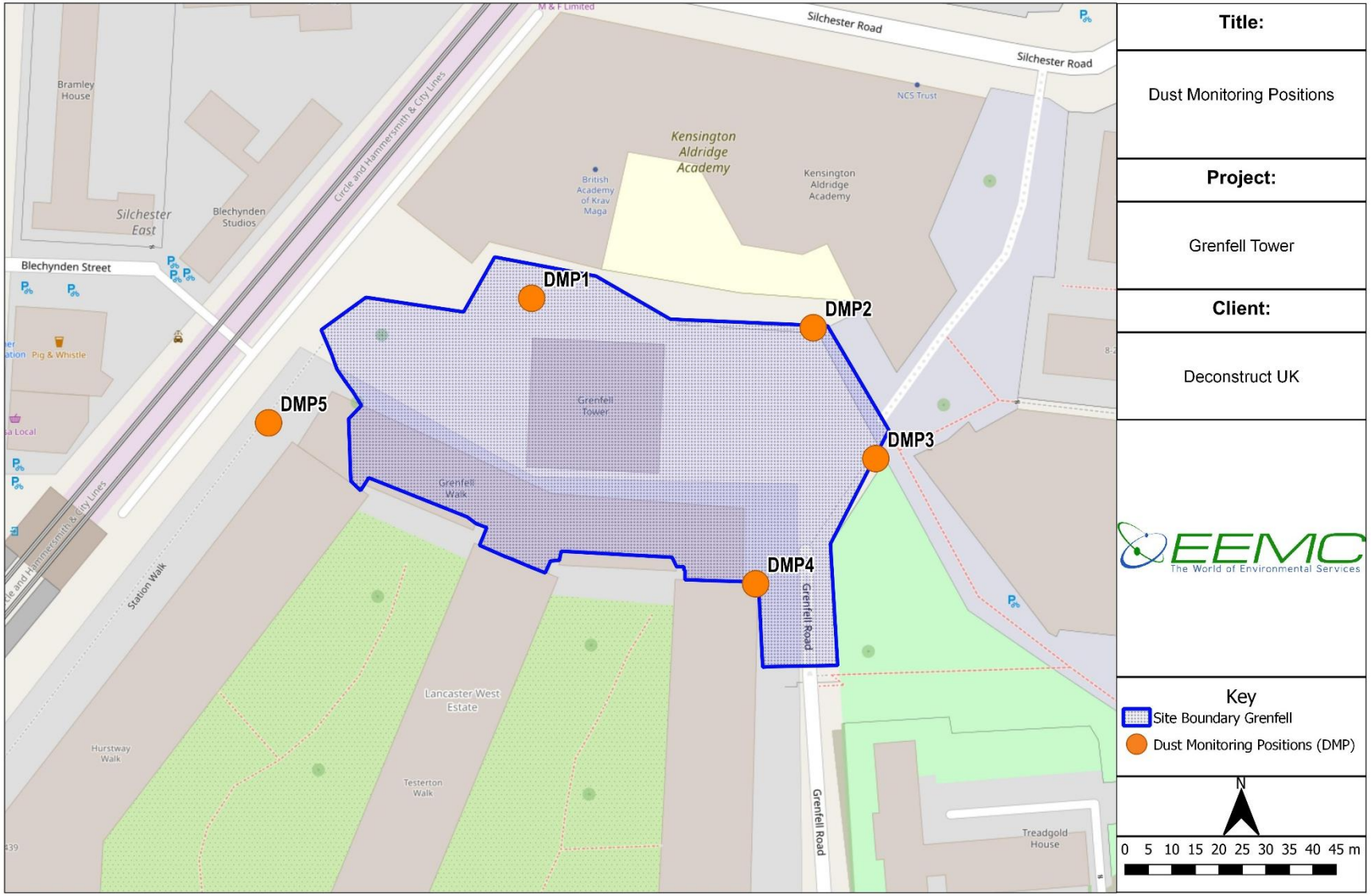
- DMP1 – Located on the site boundary, and close to Kensington Aldridge Academy receptors.
- DMP2 – Located downwind of the prevailing wind direction, on the site boundary, and close to Kensington Aldridge Academy receptors.
- DMP3 – Located on the site boundary, close to Grenfell Tower Memorial Wall and Kensington Leisure Centre.
- DMP4 – Located close to residential receptors and near to access road into Site.
- DMP5 – Located upwind of the prevailing wind direction, on the site boundary, and close to residential receptors.

7.3.2 Where possible, monitoring positions will remain throughout the planned works. Where movements are required these will be within 10m of the existing locations and at comparable installation heights.

7.3.3 As far as is reasonably practicable the dust (PM_{10} and $PM_{2.5}$) monitors are installed in line with the IAQM Guidance on '*Air Quality Monitoring in the Vicinity of Demolition and Construction Sites'*. This guidance states the following:

"Sampler inlets should be located in a clear, unobstructed position, and some meters away from any large structures (such as walls of buildings) that might interrupt airflow; immediately above should be open to the sky (free in an arc of at least 270°), with no overhanging trees or other structures. To measure airborne dust concentrations, the sampler head should ideally be located between 1.5 to 4m above ground level as suggested in the 2008 Ambient Air Quality Directive (2008/50/EC)."

Figure 7.1 – Dust Monitoring Locations



7.4 Trigger levels

7.4.1 The action and trigger levels for PM_{10} and $PM_{2.5}$ are as those outlined in the Air Quality Monitoring Guideline Review (ref: *EEMC-RVW-DCN-201_ Grenfell Tower AQ Limits Rev00*) created for this project given the lack of widely accepted short-term trigger level for $PM_{2.5}$:

7.4.2 Trigger Levels:

- 150µg/m^3 (PM_{10} 15-minute mean)
- 54µg/m^3 ($PM_{2.5}$ 15-minute mean)

7.4.3 Action Levels:

- 190µg/m^3 (PM_{10} 1-hour mean)
- 70µg/m^3 ($PM_{2.5}$ 1-hour mean)

7.4.4 Should PM_{10} or $PM_{2.5}$ concentrations on site exceed the trigger and action levels an automated email will be sent to designated site personnel to investigate and/or action additional mitigation measures as needed.

7.4.5 The trigger level has been set as a warning level. If this is exceeded, site personnel will investigate the cause of the alert and implement additional mitigation measures where appropriate.

7.4.6 Should the action levels be exceeded, site personnel should cease work and investigate the cause and assess if there are any further mitigation measures that can be implemented.

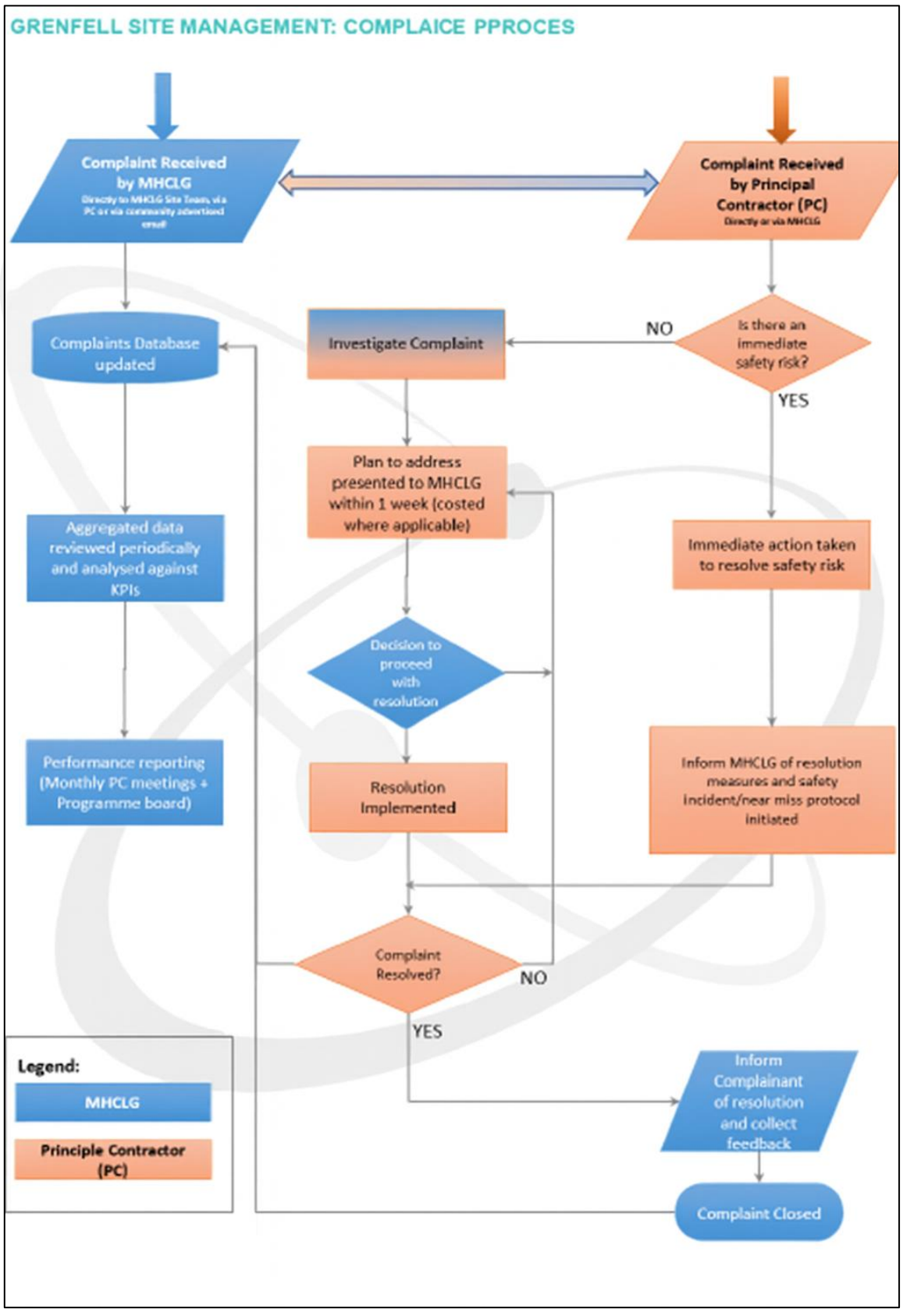
7.5 Reporting

7.5.1 Reports shall be prepared on a monthly basis and issued as PDF documents to the project team for submission to the Ministry of Housing, Communities and Local Government (MHCLG).

7.5.2 These reports can present the previous months monitoring data, plus a summary of activities that have taken place on site. The report will show the measured PM_{10} and $PM_{2.5}$ data against the trigger and action levels and will refer to any exceedances of these alert levels.

7.5.3 In the event of a dust incident or complaint, the form in Appendix 2 will be completed by the site team for submission to RBKC when requested.

Appendix 1 - Grenfell site Management Complaints Procedure



Appendix 2 - Exceedance/ Complaint Recording Form

Exceedance/ Complaints Form					
Exceedance/Complaint Reference No :		**Date:**		**Time:**	
YES/NO	**Noise :**				
	Monitor Location:				
	Trigger Level: dB(A) ($L_{eq\ 1\ Hour}$):				
	Action Level: dB(A) ($L_{eq\ 10\ Hour}$):				
	Level of Exceedance:				
YES/NO	**Vibration:**				
	Monitor Location:				
	Trigger Level: PPV mm/s				
	Action Level: PPV mm/s				
	Level of Exceedance:				
YES/NO	**Dust:**				
	Monitor Location:				
	Trigger Level: µg/m^3 15 min				
	Action Level: µg/m^3 15 min				
	Action Level µg/m^3 1 hour				
	Level of Exceedance:				

Complaint Notification			
Contract/Project Name:		Contract/Project Number:	
Date:	Time:	Received by:	
Complainants Name:		Telephone Number:	
Complainants Address:		Weather Conditions:	

Type of Complaint (Tick Appropriate Box)							
Noise		Dust		Highways		Vibration	
Other (Specify)							

Description of Complaint:
Action Taken:

Site Assistance/Advice Requested?		(If Yes Who?)					
Is the Complaint considered:	Justified		Unsubstantiated		Unfounded		

Signed:		Print Name		Date	
Copy to:	Project Director		EHO		Client	

Appendix 3- Monitoring Equipment Specifications

Parameters

Sensor		ID	Range	Resolution	Min. Detection	Drift	Working Principle	Expected Sensor Life
Suspended Particulate Matters with size less than 2.5µ ($PM_{2.5}$)		OIZPM_1*	Upto 5000 µg/m^3	0.1 µg/m^3	1 µg/m^3	N.A.	Optical Particle Counter	18 Months
Suspended Particulate Matters with size less than 10µ (PM_{10})								
Ultra Fine Particulate Matters with size less than 1µ (PM1)								
Total Suspended Particulates (TSP) (PM_{total})			Upto 30 mg/m^3					
Carbon Monoxide (CO)		OIZCD_1*	0-5 ppm	0.01 ppm	0.01 ppm	< 1ppm / year	Electrochemical	2 years
		OIZCD_4	0-50 ppm	0.05 ppm	0.05 ppm	< 2% / Month		
		OIZCD_2	0-100 ppm	0.1 ppm	0.1 ppm	< 2% / Month		
		OIZCD_3	0-1000 ppm	0.75 ppm	0.75 ppm	< 2% / Month		
Carbon Dioxide (CO2)		OIZCD2_1*	0-5000 ppm	1 ppm	400 ppm	±5 ppm / Year	Non Dispersive Infrared	
Nitric Oxide (NO)		OIZNO_1*	0-5 ppm	0.001 ppm	0.01 ppm	< 2% / Month	Electrochemical	
		OIZNO_2	0-100 ppm	0.5 ppm	0.5 ppm	±50 ppb / Year		
Nitrogen Dioxide (NO2)		OIZNO2_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
		OIZNO2_2	0-100 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OIZNO2_3	0-500 ppm	0.5 ppm	0.5 ppm	< 2% / Month		
Ozone (O3)		OIZO3_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
Oxygen (O2)		OIZO2_1	[0-25] %VOL	0.1 %VOL	0.1 %VOL	< 2% / Month		
Hydrogen Sulfide (H2S)		OIZH2S_1*	0-1.5 ppm	0.001 ppm	0.01 ppm	±100 ppb / Year		
		OIZH2S_2	0-50 ppm	0.05 ppm	0.05 ppm	< 2% / Month		
		OIZH2S_3	0-200 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OIZH2S_4	0-2000 ppm	2 ppm	2 ppm	< 2% / Month		
Sulfur Dioxide (SO2)		OIZSO2_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
		OIZSO2_2	0-100 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OIZSO2_3	0-2000 ppm	5 ppm	5 ppm	< 2% / Month		
Ambient Noise		OIZN_1*	Upto 140 dB	1 dB	0.5 dB	N.A.	Capacitive	
Temperature		OIZTEMP_1*	-40 to 125°C	0.01°C ppm	-40 °C	N.A.	Solid State Semiconductor Sensing	
Humidity		OIZHUM_1*	100% Rh	0.10% ppm	0.10%	N.A.		
Barometric Pressure		OIZPRES_1*	300-1100 hPa	0.18 Pa	300 hPa	N.A.		
Solar Radiation 300 - 1100 nm	Light Intensity	OIZUV_1	Up to 1,00,000 Lux	1 Lux	1 Lux	N.A.	Photoconductivity	3 Years
	Visible Light		Upto 5000 Lux	0.1 Lux	0.1 Lux	N.A.		
	UV Radiation		0.1-100,000 uW/cm2	0.1 uW/cm2	0.1 uW/cm2	N.A.		
	UV Index		0-12	-	-	N.A.		

External Modules

Anemometer
OIZWSD_1*

Wind Speed: 0-40 m/s
Wind Direction: 0-359°
Working Principle: Ultrasonic

Rain Gauge
OIZRAIN_1*

Resolution: 0.25 mm
Working Principle: Tipping Bucket

Specifications

Mechanical

Size	360mm (H) x 328mm (W) x 200mm (D)
Weight	7.2 Kg (instrument weight)
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE, FCC, NEMA 4X, IP66, RoHS

Electrical

Avg. Power Consumption	5 Watt (Actual consumption depends upon the number of parameters)
Power Input Options	AC : External 110-240V AC, 50-60Hz DC : Uninterrupted 24V DC, 2 Ampere 60 Watt 24V Solar Panel
SMPS Specs	24V, 2Amps output UL-62368 & CAN/CSA C22.2 Certified
Battery Backup Time	Upto 12 Hours
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Technical

Processor	Quad Core ARM Cortex
Memory	2GB RAM / 8GB eMMC ROM
Device Interface	On-device Software / API / Cloud Platform
Internal Data Storage	Upto 8 GB or 90 days

Environmental

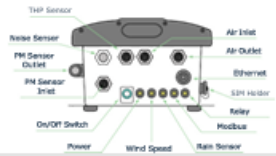
Operating Temperature	-20 °C to 60 °C
Operating Humidity	0-93% RH
Recommended Humidity	15-90% RH
Storage Conditions	10 - 40°C

Sensing

Gas Measurement Principle	Active Sampling with Sampling rate of 325 mL/Sample
Dust Measurement Principle	Active Sampling with Sampling rate of 1 L / min
Warm up time	< 48 hours for data stabilisation

Communication

Data Interval	5-30 (configurable) minutes
Data-push Protocol	HTTP post request to host server
Data-pull	HTTP request on device IP
Firmware Updates	Over-The-Air Firmware Update
Standby Connectivity	GSM (2G/3G/4G) for remote diagnosis, FOTA updates, and cloud calibration
Certification	PTCRB, CE, FCC, RoHS, ICASA, GCF



Connectivity Options		Specification
Wireless	GSM	Global 2G / 3G / 4G
	LoRa	868 MHz / 915 MHz
	LTE	CAT-M1
	NB-IoT	CAT-NB1
		868 to 869 MHz, 902 to 928 MHz
		AP Mode and Station Mode
Wired		Static / DHCP Configuration
	Modbus	RS485 RTU / TCP
	Relay	2 Channel Relay