Construction Management Plan

pro forma

Camden

Contents

Revisions & additional material

Please list all iterations here:

Date	Version	Produced by
17/04/2023	Rev A	Knowles Construction
23/05/2023	Rev B	Knowles Construction
25/05/2023	Rev C	Knowles Construction
06/07/2023	Rev D	Knowles Construction

Additional sheets

Please note – the review process will be quicker if these are submitted as Word documents or searchable PDFs.

Date	Version	Produced by

Introduction

The purpose of the **Construction Management Plan (CMP)** is to help developers to minimise construction impacts, and relates to all construction activity both on and off site that impacts on the wider environment.

It is intended to be a live document whereby different stages will be completed and submitted for application as the development progresses.

The completed and signed CMP must address the way in which any impacts associated with the proposed works, and any cumulative impacts of other nearby construction sites, will be mitigated and managed. The level of detail required in a CMP will depend on the scale and nature of development. Further policy guidance is set out in Camden Planning Guidance **(CPG)** 6: Amenity and **(CPG)** 8: Planning Obligations.

This CMP follows the best practice guidelines as described in the Construction Logistics and Community Safety (**CLOCS**) Standard and the Guide for Contractors Working in Camden.

Camden charges a fee for the review and ongoing monitoring of CMPs. This is calculated on an individual basis according to the predicted officer time required to manage this process for a given site.

CMP development sites will be inspected by Camden's Site Planning Inspectors or nominated officers to assess compliance with the CMP. These inspections will be planned and unplanned site visits for the duration of the works. Developers/contractors are required to provide access to sites for inspection and cooperate fully throughout the inspection process ensuring compliance with the CMP.

The approved contents of this CMP must be complied with unless otherwise agreed with the Council in writing. The project manager shall work with the Council to review this CMP if problems arise during construction. Any future revised plan must also be approved by the Council and complied with thereafter.

It should be noted that any agreed CMP does not prejudice or override the need to obtain any separate consents or approvals such as road closures or hoarding licences.

If your scheme involves any demolition, you need to make an application to the Council's Building Control Service. Please complete the "**Demolition Notice.**"

Please complete the questions below with additional sheets, drawings and plans as required. The boxes will expand to accommodate the information provided, so please provide as much information as is necessary. It is preferable if this document, and all additional documents, are completed electronically and submitted as Word files to allow comments to be easily documented. These should be clearly referenced/linked to from the CMP. Please only provide the information requested that is relevant to a particular section.

(Note the term 'vehicles' used in this document refers to all vehicles associated with the implementation of the development, e.g. demolition, site clearance, delivery of plant & materials, construction etc.)

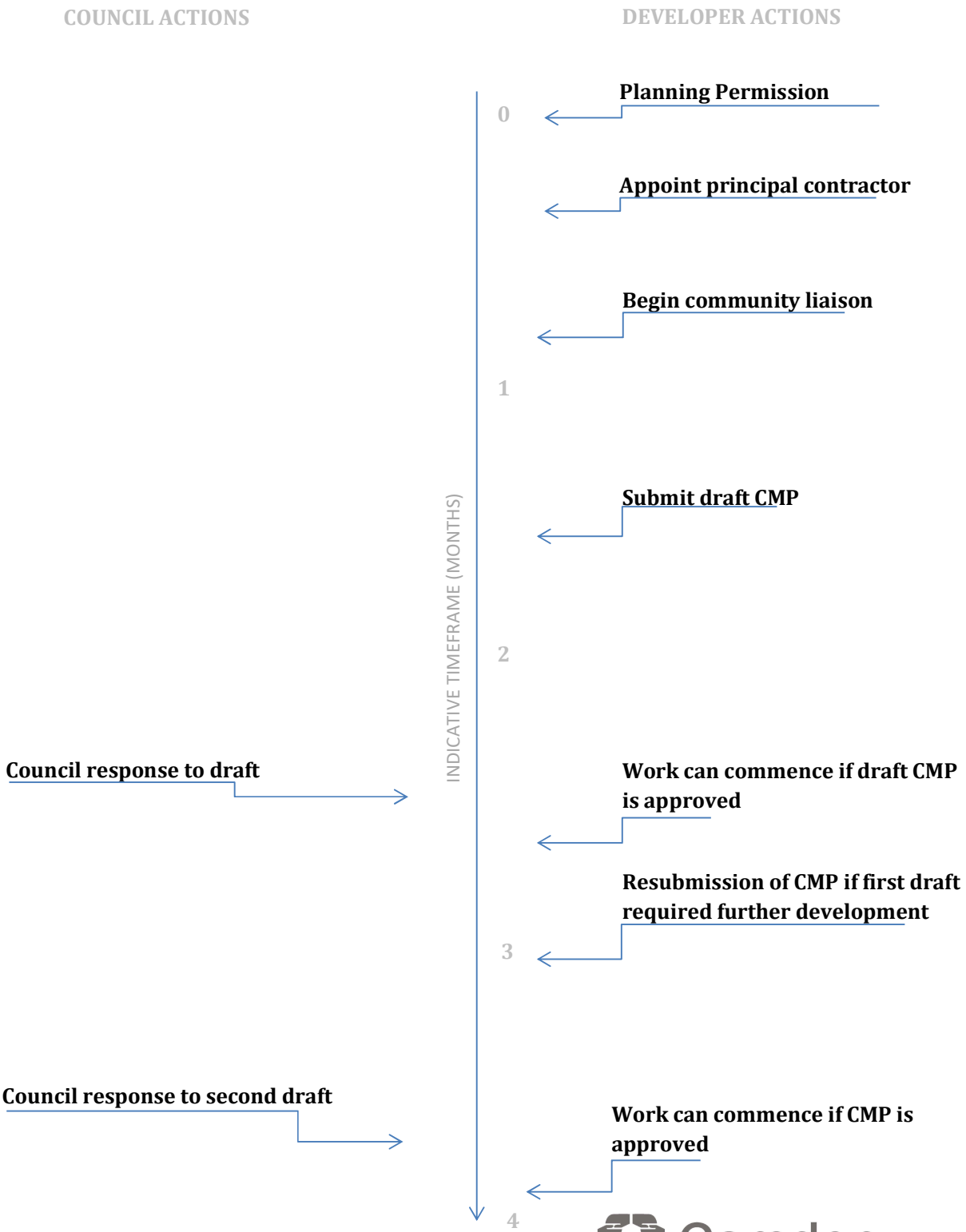
Revisions to this document may take place periodically.

IMPORTANT NOTICE: If your site falls within a Cumulative Impact Area (CIA) you are required to complete the CIA Checklist and circulate as an appendix to the CMP and included as part of any public consultation – a CMP submission will not be accepted until evidence of this has been supplied.

The CIA Checklist (editable pdf) can be found at https://www.camden.gov.uk/about-construction-management-plans

Camden

Timeframe


COUNCIL ACTIONS
DEVELOPER ACTIONS
Planning Permission
0
Appoint principal contractor
Begin community liaison
1
Submit draft CMP
INDICATIVE TIMEFRAME (MONTHS)
2
Council response to draft
Work can commence if draft CMP is approved
Resubmission of CMP if first draft required further development
3
Council response to second draft
Work can commence if CMP is approved
4

Contact

1. Please provide the full postal address of the site and the planning reference relating to the construction works.

Address: 52-54 Avenue Road, London, NW8 6HP

Planning reference number to which the CMP applies: 2022/1863/P

2. Please provide contact details for the person responsible for submitting the CMP.

Name: Jerry Fahy

Address: 2nd Floor, 32 Queensway, London, W2 3RX

Email: info@knowles.uk.com

Phone: 0207 313 4169

3. Please provide full contact details of the site project manager responsible for day-to-day management of the works and dealing with any complaints from local residents and businesses.

Name: Tony Trapani

Address:2nd Floor, 32 Queensway, London. W2 3RX

Email: info@knowles.uk.com

Phone: 0207 313 4169

4. Please provide full contact details of the person responsible for community liaison and dealing with any complaints from local residents and businesses if different from question 3. In the case of the Community Investment Programme (CIP), please provide the contact details of the Camden officer responsible.

Please see question 3.

5. Please provide full contact details including the address where the main contractor accepts receipt of legal documents for the person responsible for the implementation of the CMP.

Name: Jerry Fahy

Address: 2nd Floor, 32 Queensway, London, W2 3RX

Email: info@knowles.uk.com

Phone: 0207 313 4169

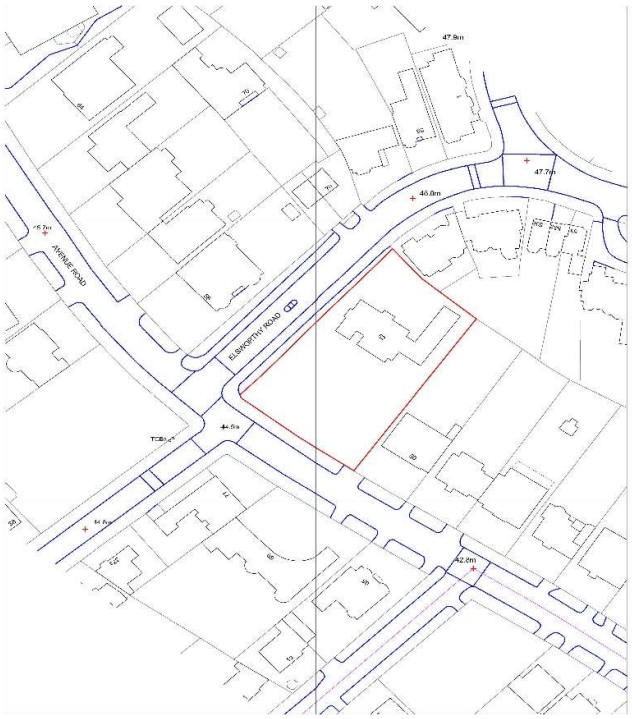
Site

6. Please provide a site location plan and a brief description of the site, surrounding area and development proposals for which the CMP applies. Please fill up Cumulative Impact Area (CIA) checklist form if site fall within the CIA zone (Central London)

The site is located in the London Borough of Camden on Avenue Road and can be located by the National Grid reference 527010,1183845 or approximately by the postcode NW8 6HS. The site is approximately 0.6km south southeast of Swiss Cottage Underground station and approximately 0.5km northeast of St Johns Wood Underground Station.

The immediate local area is entirely residential, with large, detached properties two or three storeys above street level, similar to the development. Regents Park and Primrose Hill are to the south and east of the property respectively.

The site sits on the corner of Avenue Road and Elsworthy Road with the existing structure recessed from the roadside to Avenue Road to sit in the north-east corner of the site. Access to the site is possible from both Avenue Road to the South-west of the site, with the main access to the site being Elsworthy Road to the North of the site.



BLOCK PLAN 1:500

7. Please provide a very brief description of the construction works including the size and nature of the development and details of the main issues and challenges (e.g. narrow streets, close proximity to residential dwellings etc).

Demolition of existing dwelling and erection of three, 3 storey buildings over part lower ground/basement, comprising total of 12 townhouses (12 x 3 bed), together with associated landscaping and installation of new access gate onto Avenue Road. There will be no onsite parking. There will be a provision for cycle storage.

The new basement perimeter walls will be formed using a 450mm dia. secant piled wall with a reinforced concrete liner wall internally (approx. nominal 440mm thickness). It is anticipated that the piled walls will be temporarily propped to allow for the basement excavation to take place down to formation level. The new superstructure will be constructed as an RC frame. The floor structure is to consist of RC flat slabs spanning onto RC walls and columns.

Avenue Road is a busy thoroughfare; however, the site is also bound by Elsworthy road which provides a useful alternative. The site is in proximity to 48 Avenue Road & 57 Elsworthy Road, care must be taken to mitigate disruption to these proximate neighbours.

8. Please provide the proposed start and end dates for each phase of construction as well as an overall programme timescale.

Demolition: June 23 – July 23 (4wks)

Groundworks (incl. piling): July 23 – Dec 23 (26wks)

Substructure: Dec 23 – June 24 (24wks)

Superstructure: June 24 – Oct 24 (22wks)

Envelope: August 24 – Dec 24 (20wks)

Fit Out: Oct 24 – Aug 25 (48wks)

Overall Estimated Duration: June 23 – Aug 25 (112wks)

9. Please confirm the standard working hours for the site, noting that the standard working hours for construction sites in Camden are as follows:

- 8.00am to 6pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays

This is Camden's standard times. However, the times operated should be specific to the site and related to the type of work being carried out, and the proposed working hours will be considered on a case-by-case basis.

If the site is within the Cumulative Impact Area (CIA), then Saturday working is not permitted, unless agreed with Camden.

Standard working hours for the Project will be in accordance with Camden's standards:

- 8.00am to 6pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays
- No impact driven piling or percussion breaking to be undertaken on Saturdays

Community Liaison

A neighbourhood consultation process must have been undertaken prior to submission of the CMP first draft.

This consultation must relate to construction impacts, and should take place following the granting of planning permission in the lead up to the submission of the CMP. A consultation process specifically relating to construction impacts must take place regardless of any prior consultations relating to planning matters. This consultation must include all of those individuals that stand to be affected by the proposed construction works. These individuals should be provided with a copy of the draft CMP, or a link to an online document. They should be given adequate time with which to respond to the draft CMP, and any subsequent amended drafts. Contact details which include a phone number and email address of the site manager should also be provided.

Significant time savings can be made by running an effective neighbourhood consultation process. This must be undertaken in the spirit of cooperation rather than one that is dictatorial and unsympathetic to the wellbeing of local residents and businesses.

These are most effective when initiated as early as possible and conducted in a manner that involves the local community. Involving locals in the discussion and decision making process helps with their understanding of what is being proposed in terms of the development process. **The consultation and discussion process should have already started, with the results incorporated into the CMP first draft submitted to the Council for discussion and sign off.** This communication should then be ongoing during the works, with neighbours and any community liaison groups being regularly updated with programmed works and any changes that may occur due to unforeseen circumstances through newsletters, emails and meetings.

Please note that for larger sites, details of a construction working group may be required as a separate S106 obligation. If this is necessary, it will be set out in the S106 Agreement as a separate requirement on the developer.

Cumulative impact

Sites located within high concentrations of construction activity that will attract large numbers of vehicle movements and/or generate significant sustained noise levels should consider establishing contact with other sites in the vicinity in order to manage these impacts.

The Council can advise on this if necessary.

10. Sensitive/affected receptors

Please identify the nearest potential receptors (dwellings, business, etc.) likely to be affected by the activities on site (i.e. noise, vibration, dust, fumes, lighting etc.).

• 46 Avenue Road • 48 Avenue Road • 50 Avenue Road • 56 Avenue Road • 58 Avenue Road • 60 Avenue Road • 69 Avenue Road	• 71 Avenue Road • 67 Avenue Road • 75 Avenue Road • 56 Avenue Road • 70 Elsworthy Road • 72 Elsworthy Road • 57 Elsworthy Road	• 66 Elsworthy Road • 68 Elsworthy Road • 55 Elsworthy Road • 38 Queens Grove • 39 Queens Grove • 40 Queens Grove • 37 Queens Grove

11. Consultation

The Council expects meaningful consultation. For large sites, this may mean two or more meetings with local residents **prior to submission of the first draft CMP**. Please ensure that any changes to parking and loading on the public highway are reflected in the consultation. Please agree highways set up plans in advance with Camden if there is any uncertainty with this.

Evidence of who was consulted, how the consultation was conducted and a summary of the comments received in response to the consultation should be included. Details of meetings including minutes, lists of attendees etc. should be appended.

In response to the comments received, the CMP should then be amended where appropriate and, where not appropriate, a reason given. The revised CMP should also include a list of all the comments received. Developers are advised to check proposed approaches to consultation with the Council before carrying them out. If your site is on the boundary between boroughs then we would recommend contacting the relevant neighbouring planning authority.

Please provide details of consultation of the draft CMP with local residents, businesses, local groups (e.g. residents/tenants and business associations) and Ward Councillors.

Information regarding the nature of the redevelopment together with indicative programme information and possible logistics strategies will be shared with the residents of the addresses outlined previous including additional addresses within prioximity on both Avenue Road and Elsworthy Road that could experience the works as they traverse their local area. This will be distributed via a newsletter. As part of the newsletter, a link will be provided to the residents which allowed them access to the draft CMP. A copy of the newsletter, and outline map of residents affected and the list of properties identified for consultation are listed in the appendix A of this document.

12. Construction Working Group

For particularly sensitive/contentious sites, or sites located in areas where there are high levels of construction activity, it may be necessary to set up a construction working group.

If so, please provide details of the group that will be set up, the contact details of the person responsible for community liaison and how this will be advertised to the local community, and how the community will be updated on the upcoming works i.e. in the form of a newsletter/letter drop, or weekly drop in sessions for residents.

No major adjacent construction works ongoing at the time of writing, however it is noted there are various projects and live planning applications across the Avenue Road.

Our site Project Manager, Cathal Glynn, will be the Knowles Neighbour Liaison representative.

As part of our stakeholder management, we will initially issued a newsletter to identified stakeholders that may be affected by the works. This initial newsletter introduced the team and in particular our initial stakeholder engagement forum that we are proposing in order that our neighbours can meet our team and voice any concerns. We will as the project progresses, address details of upcoming events notified on the regular monthly newsletters. Regular updates will also be posted on the external notice boards of the project.

13. Schemes

Please provide details of your Considerate Constructors Scheme (CCS) registration. Please note that Camden requires CCS site registration for the full duration of your project including additional CLOCS visits for the full duration of your project. Please provide the CCS site ID number that is specific to the above site. A company registration will not be accepted, the site must be registered with CCS.

Be advised that Camden is a Client Partner with the Considerate Constructors Scheme and has access to all CCS inspection and CLOCS monitoring reports undertaken by CCS.

Contractors will also be required to follow the Guide for Contractors Working in Camden. Please confirm that you have read and understood this, and that you agree to abide by it.

We note that we are committed to undertaking this project in accordance with the Code of Considerate Practice, and to meet or exceed the CCS requirements. Upon commencement this site will be registered with the CCS scheme, it will be subject to all regular inspections as per CCS requirements and the score will be available for viewing on the site notice board. CCS provided banners will be affixed to ensure local populace are aware of its registration.

14. Neighbouring sites

Please provide a plan of existing or anticipated construction sites in the local area and please state how your CMP takes into consideration and mitigates the cumulative impacts of construction in the vicinity of the site. The council can advise on this if necessary.

Please see above plan of neighbouring buildings. There are no immediate construction works taking place within the immediate vicinity of the proposed development. However there is construction works progressing at 46 Avenue Road. All reasonable efforts will be made to coordinate the scheduling of construction traffic movement with this development or any others as directed by the council. Knowles see the proximity of Elsworthy road access for the early stages of the development as a useful buttress to mitigate the impact of cumulative construction traffic to Avenue Road.

Transport

This section must be completed in conjunction with your principal contractor. If one is not yet assigned, please leave the relevant sections blank until such time when one has been appointed.

Camden is a CLOCS Champion, and is committed to maximising road safety for Vulnerable Road Users (VRUs) as well as minimising negative environmental impacts created by motorised road traffic. As such, all vehicles and their drivers servicing construction sites within the borough are bound by the conditions laid out in the CLOCS Standard.

This section requires details of the way in which you intend to manage traffic servicing your site, including your road safety obligations with regard to VRU safety. It is your responsibility to ensure that your principal contractor is fully compliant with the terms laid out in the CLOCS Standard. It is your principal contractor's responsibility to ensure that all contractors and sub-contractors attending site are compliant with the terms laid out in the CLOCS Standard.

Checks of the proposed measures will be carried out by CCS monitors as part of your CLOCS monitoring visits through CCS and possibly council officers, to ensure compliance. Please refer to the CLOCS Standard when completing this section.

Please contact CLOCS@camden.gov.uk for further advice or guidance on any aspect of this section.

Please note that this section may also be referred to as a Construction Logistics Plan in the context of the CLOCS Standard.

CLOCS Contractual Considerations

15. Name of Principal contractor:

Knowles Construction

16. Please submit the proposed method for checking operational, vehicle and driver compliance with the CLOCS Standard throughout the duration of the contract.

As part of our robust pre-qualification procedure, all approved suppliers are required to confirm their accreditation to CLOCS standards prior to being accepted on to our approved supply list. CLOCS approved operators only will be selected for the 52 Avenue Road Project. Beyond our approved supply chain, at the point of order placement for 52 Avenue Road, up to date CLOCS accreditation certificates will be requested for storage on site. All vehicles and supplier's vehicles are minimum FORS Silver accredited for vehicles over 3.5t. All drivers of vehicles over 3.5t have undertaken a Safe Urban Driving training and vehicles will be fitted with blind spot minimization equipment and audible left turn alerts.

17. Please confirm that you as the client/developer and your principal contractor have read and understood the CLOCS Standard and included it in your contracts.

I confirm that I have included the requirement to abide by the CLOCS Standard in my contracts to my contractors and suppliers:

We (Knowles Construction) confirm that we have included the requirement to abide by the CLOCS Standard in my contracts to my contractors and supplier.

Please contact CLOCS@camden.gov.uk for further advice or guidance on any aspect of this section.

Site Traffic

Sections below shown in blue directly reference the CLOCS Standard requirements. The CLOCS Standard should be read in conjunction with this section.

18. Traffic routing: *"Clients shall ensure that a suitable, risk assessed vehicle route to the site is specified and that the route is communicated to all contractors and drivers. Clients shall make contractors and any other service suppliers aware that they are to use these routes at all times unless unavoidable diversions occur."* (P19, 3.4.5)

Routes should be carefully considered and risk assessed, taking into account the need to avoid where possible any major cycle routes and trip generators such as schools, offices, stations, public buildings, museums etc.

Consideration should also be given to weight restrictions, low bridges and cumulative impacts of construction (including neighbouring construction sites) on the public highway network. The route(s) to and from the site should be suitable for the size of vehicles that are to be used.

a. Please show vehicle approach and departure routes between the site and the Transport for London Road Network (TLRN). Please note that routes may differ for articulated and rigid HGVs.

Routes should be shown clearly on a map, with approach and departure routes clearly marked. If this is attached, use the following space to reference its location in the appendices.

Please refer to appendix B Vehicle Route Plan.

Prior to commencement of works, all transport and delivery companies will be issued with a Vehicle Route Plan specific to the development. All vehicles which are servicing the development will travel north to south on Avenue Road and enter site through the site entrance gates, this will be via the Elsworthy Road for project commencement, and Avenue Road for the main construction works.

Elsworthy Road is not to have vehicles waiting for delivery at any time. All vehicles are to be called in on a just in time basis. Overall gate and delivery management will be via the logistic manager, the logistic manager will be responsible for all gates and ensure deliveries are booked minimum of 5 working days in advance on an hourly slot basis. The logistic manager will have radio access to both holding areas and traffic marshalls at each gate. Any vehicles found idling on surrounding roads will be sent away and not allowed to delivery or offload materials.

As soon as practicable after commencement deliveries will be undertaken solely from Avenue Road so as to ensure minimal disruption to Elsworthy Road. Please see appendix I for early works Elsworthy Road gates details.

Site will be notified 30 minutes prior to the arrival of the delivery and the Traffic Management team will assume their positions to ensure there is no disruption of traffic as a result of the delivery.

Once the delivery has been completed, the vehicle will leave site through the exit gates and travel in a north to south direction towards Prince Albert Road.

b. Please confirm how contractors and delivery companies will be made aware of the route (to and from the site) and of any on-site restrictions, prior to undertaking journeys.

As part of the project procurement process, a delivery plan with advisable routes and contact numbers for our traffic management team will be created for issue to suppliers. At the point of order and purchase order creation, the delivery plan will be attached and sent to suppliers for sharing with all drivers planned to visit our site. We have used this method on previous projects within central London and found it to be extremely effective. The traffic management team will be provided with a swathe of leaflets containing the delivery route, these will be reissued to drivers leaving the project as well.

19. Control of site traffic, particularly at peak hours: "*Clients shall consider other options to plan and control vehicles and reduce peak hour deliveries"* (P20, 3.4.6)

Construction vehicle movements should be restricted to the hours of 9.30am to 4.30pm on weekdays and between 8.00am and 1.00pm on Saturdays. If there is a school in the vicinity of the site or on the proposed access and/or egress routes, then deliveries must be restricted to the hours of 9.30am and 3pm on weekdays during term time.

Vehicles may be permitted to arrive at site at 8.00am if they can be accommodated on site. Where this is the case they must then wait with their engines switched off.

A delivery plan should ensure that deliveries arrive at the correct part of site at the correct time. Instructions explaining such a plan should be sent to all suppliers and contractors**.**

a. Please provide details of the types of vehicles required to service the site and the approximate number of deliveries per day for each vehicle type during the various phases of the project.

For Example:
32t Tipper: 10 deliveries/day during first 4 weeks
Skip loader: 2 deliveries/week during first 10 weeks
Artic: plant and tower crane delivery at start of project, 1 delivery/day during main construction phase project
18t flatbed: 2 deliveries/week for duration of project
3.5t van: 2 deliveries/day for duration of project

52 Avenue Road – Wherever possible deliveries during peak hours will be kept to a minimum.

40yd skips:

- deliveries/week in weeks 2-3.

8 Wheel tipper lorries:

- 10 deliveries/ collections per week in weeks 2-8.
- 15 deliveries/ collections per day in weeks 8-28.

Concrete lorries:

- 12 deliveries/ week in week 4 - 52.

Flatbeds:

- 1 deliveries/ week in weeks 9-18.

Artic lorries:

- 1 deliveries/ week in weeks 6 - 52

3.5t van:

- 1 deliveries/ week for duration of project

8yd skips:

- 3 deliveries/ week from week 14 for duration of project

b. Please specify the permitted delivery times.

As the site is located adjacent to a cycle route and in close proximity to various schools all construction traffic will be scheduled between:

0930 – 1530 on Monday to Friday 0800-1300 on Saturdays

c. Cumulative affects of construction traffic servicing multiple sites should be minimised where possible. Please provide details of other developments in the local area or on the route that might require deliveries coordination between two or more sites. This is particularly relevant for sites in very constrained locations.

Knowles are currently aware of only one development in proximity to 52 Avenue Road. This development is located at 46 Avenue Road. This development is approximately 200metres South of 52 Avenue Road and we do not envisage that this development will affect any deliveries to 52 Avenue Road.

Prior to the commencement of works, Knowles will organize a meeting with the developers on 46 Avenue Road to discuss logistics and this site will be included in the weekly newsletter to ensure close communication is maintained at all times throughout the project.

d. Please provide swept path analyses for constrained manoeuvres along the proposed route.

Please refer to Appendix C Swept Path Analysis.

e. Consideration should be given to the location of any necessary holding areas/waiting points for sites that can only accommodate one vehicle at a time/sites that are expected to receive large numbers of deliveries. Vehicles must not queue or circulate on the public highway. Whilst deliveries should be given set times to arrive, dwell and depart, no undue time pressures should be placed upon the driver at any time.

Please identify the locations of any off-site holding areas or waiting points. This can be a section of single yellow line that will allow the vehicle to wait to phone the site to check that the delivery can be accommodated.

Please refer to question 24 if any parking bay suspensions will be required to provide a holding area.

No holding area or parking suspensions required for this development.

f. Delivery numbers should be minimised where possible. Please investigate the use of construction material consolidation centres, and/or delivery by water/rail if appropriate.

Deliveries will be carefully considered by our Project Manager and Traffic management teams, in particular to minimise the use of “part loads” which will in turn increase unnecessary vehicle attendance to the project. Knowles will make beneficial use of our own consolidation facility in Wokingham, Berkshire, so that wherever appropriate we are able to manage effectively large deliveries where large loads, likely to be delivered on a flat bed or arctic lorry can be split into manageable deliveries.

g. Emissions from engine idling should be minimised where possible. Please provide details of measures that will be taken to reduce delivery vehicle engine idling, both on and off site (this does not apply to concrete mixers).

As part of Knowles site rules, vehicles attending and waiting on site will be requested to turn off their engine to prevent idling. This information is included within our standard site rules for deliveries which are issued alongside purchase orders.

Traffic Marshals that facilitate the safe maneuvering of vehicles at the site and will be instructed to ensure that attending drivers turn off their engines at any possible opportunity.

20. Site entry/exit: *“Clients shall ensure that access to and egress from the site is appropriately managed, clearly marked, understood and clear of obstacles.”* (P18, 3.4.3)

This section is only relevant where vehicles will be entering the site. Where vehicles are to load from the highway, please leave this section blank and refer to Q21. Where loading is to take place from a dedicated pit lane located on the public highway, please use this section to describe how vehicle entry/departure will be managed.

Vehicles entering and leaving the site should be carefully managed, using gates that are clearly marked and free from obstacles. Traffic marshals must ensure the safe passage of all traffic on the public highway, in particular pedestrians and cyclists, when vehicles are entering and leaving site, particularly if reversing.

Traffic marshals, or site staff acting as traffic marshals, should hold the relevant qualifications required for directing large vehicles when reversing. Marshals should be equipped with ‘STOP – WORKS’ signs (not STOP/GO signs) if control of traffic on the public highway is required. Marshals should have radio contact with one another where necessary.

a. Please detail the proposed site entry and exit points on a map or diagram. If this is attached, use the following space to reference its location in the appendices.

Please refer to Appendix D Construction Vehicle Access/Egress logistics

b. Please describe how the entry and exit arrangements for construction vehicles in and out of the site will be managed, including the number and location of traffic marshals where applicable. If this is shown in an attached drawing, use the following space to reference its location in the appendices.

Access and egress for construction vehicles will be managed by our trained Knowles Traffic Marshals. Chapter 8 barriers/ concertina barriers will be utilised to protect the public during vehicle access and egress. All vehicle movements from within the site will be managed by Banksmen. Please refer to appendix D. 2No Traffic Marshals will be present at each gate to manage the construction vehicles and pedestrians.

c. Please provide tracking/swept path drawings for vehicles entering/exiting the site if necessary. If these are attached, use the following space to reference their location in the appendices.

Please refer to appendix C Swept Path Analysis. The swept path for concrete vehicles, waste skips and a 12m flatbed lorry.

d. Provision of wheel washing facilities should be considered if necessary. If so, please provide details of how this will be managed and any run-off controlled. Please note that wheel washing should only be used where strictly necessary, and that a clean, stable surface for loading should be used where possible.

At 52 Avenue Road, Jet washing facilities will be available and Traffic Marshals will be under instruction to conduct cleaning of visiting vehicle wheels where necessary. We are proposing to construct a ramp into the project from clean, crushed material this will also provide a clean and easily treatable surface to maintain and prevent spoil from the site being tracked into the highway.

21. Vehicle loading and unloading: *"Clients shall ensure that vehicles are loaded and unloaded on-site as far as is practicable."* (P19, 3.4.4)

This section is only relevant if loading/unloading is due to take on the public highway and it has been agreed with Camden that a dedicated pit lane is not viable/necessary. If loading is taking place on site, or in a dedicated pit lane, please skip this section.

a. Please provide the location where vehicles will stop to unload. If this is attached, use the following space to reference its location in the appendices. Please outline in question 24 if any parking bay suspensions will be required.

All vehicles will be offloaded from within site, please see appendix C swept path and appendix D site traffic management plan.

b. Where necessary, Traffic Marshalls must ensure the safe passage of pedestrians, cyclists and motor traffic in the street when vehicles are being loaded or unloaded. Please provide detail of the way in which marshals will assist with this process. Please note that deliveries should pause where possible to allow passage to pedestrians.

Traffic Marshalls will be at both the front and rear of vehicles to assist in vehicles access the stie. Where vehicles cross the public footpath via temp crossovers, barriers will be placed prior to the vehicle movement to ensure segregation of vehicle and pedestrian.

Please see appendix D for site plan and indicative traffic marshal locations.

Site set up

Full justification must be provided for proposed use of the public highway to facilitate works. Camden expects all options to minimise the impact on the public highway to have been fully considered prior to the submission of any proposal to occupy the highway for vehicle pit lanes, materials unloading/crane pick points, site welfare etc.

Please note that Temporary Traffic Restrictions (TTRs) and hoarding/scaffolding licenses may be applied for prior to CMP submission but won't be granted until the CMP is signed-off.

Please note that there is a four week period required for the application processing and statutory consultation as part of the TTR process. This is in addition to the CMP review period.

If the site is on or adjacent to the TLRN (red route), please provide details of preliminary discussions with Transport for London (TfL) in the relevant sections below. Please note that TfL are the highways authority for such routes and all permits will be issued by them.

Consultation with TfL will be necessary if the site requires the use of temporary signals on the Strategic Road Network (SRN), or impacts on bus movement, then TfL will need to be consulted.

Consultation with TfL will be necessary if the site directly conflicts with a bus lane or bus stop.

22. Site set-up and occupation of the public highway

Please provide detail drawings of the site up on the public highway. This should be presented as a scaled plan detailing the local highway network layout in the vicinity of the site. This should include details of on-street parking bay locations, cycle lanes, footway extents, relevant street furniture, and all relevant key dimensions. Please note that lighting column removal/relocation may be subject to UKPN lead times and is outside of our control. Any gantries will require a structural assessment and separate agreement with the structures team.

a. Please provide details of any measures and/or structures that need to be placed on the highway. This includes dedicated pit lanes, temporary vehicle access points/temporary enlargement of existing crossovers, occupied parking bays, hoarding lines, gantries, crane locations, crane oversail, scaffolding, scaffolding oversail, ramps, barriers etc. Please use this space to justify the use of the highway, and to state how the impacts have been minimised.

Please provide drawings separately in the appendices and reference their location below. Please provide further details of any changes to parking and loading in section 23.

Please refer to logistics drawings in appendix D to outline project interface with the existing highway.

No parking bay suspensions will be required, and all vehicles will be offloaded from within site boundaries. Hoarding and gantries will narrow the footpath, but all gantries will comply with minimum footway widths and height clearance.

b. Please provide details and associated drawings/diagrams showing any temporary traffic management measures needed as part of the above site set up. Alternatively this can be shown as part of the above drawings if preferred. Please note that this must conform to the Safety at Street Works and Road Works Code of Practice.

Please refer to logistics drawings as mentioned above.

23. Parking bay suspensions and temporary traffic orders

Parking bay suspensions should only be requested where absolutely necessary and these are allowed for a maximum period of 6 months only. Information regarding parking suspensions can be found here. For periods greater than 6 months, or for any other changes to the parking/loading/restrictions on the highway, a Temporary Traffic Restriction (TTR) will be required for which there is a separate cost. Please note that any temporary changes to parking and loading to be delivered using a TTR need to be consulted upon as part of our legal obligations as a highways authority. Camden may require separate consultation to take place specifically around such changes if these have not been adequately reflected in any prior consultation as part of the CMP process.

A space cannot be suspended for convenience parking, a trade permit is available for trade vehicle parking. Building materials and equipment must not cause obstructions on the highway. Building materials may only be stored on the public highway if permitted by the Street Works team.

Please provide details of any proposed such changes on the public highway which are necessary to facilitate the construction works. Where these changes apply to parking bays, please specify the type of bays that are to be impacted and the anticipated timeframes.

No parking bays will require suspension for the works.

The project will require a one day road closure to for the erection of a luffing jib tower crane and one day for dismantle, these road closures would be to Elsworthy road and suitable traffic management in place to safely divert traffic to alternative routes as required.

24. Motor vehicle/cyclist diversions/pedestrian diversions

Pedestrians safety must be maintained if diversions are put in place. Vulnerable footway users must be considered as part of this. These include wheelchair users, the elderly, those with walking difficulties, young children, those with prams, the blind/partially sighted. Appropriate ramps must be used if cables, hoses, etc. are run across the footway.

Please note that footway closures are not permitted unless there is no alternative. Footway access must be maintained using a gantry or temporary walkway in the carriageway unless this is not possible. Where this is not possible, safe crossing points must be provided to ensure that pedestrian access is maintained. Where formal or controlled crossing points are to be suspended, similar temporary facilities must be provided. Camden reserves the right to require temporary controlled crossing points in the event of any footway closures.

Please provide details of any diversion, disruption or other anticipated use of the public highway during the construction period. Please show locations of diversion signs on drawings or diagrams and provide these in the appendices. Please use the following space to outline these changes to and to reference the location of any associated drawings in the appendices. Please show diversions and associated signage separately for pedestrians/cyclists/motor traffic.

Please see attached logistics drawings including gantry plan. The footway is not envisaged to close at any point and a minimum width will be maintained at all times.

One no. diversion would be required during tower crane erection and dismantle. The extent of this requirement and the traffic management required would be agreed and developed with Camden and the specialist tower crane erector.

25. Services

Please indicate if any changes to services are proposed to be carried out that would be linked to the site during the works (i.e. connections to public utilities and/or statutory undertakers' plant). Larger developments may require new utility services. If so, a strategy and programme for coordinating the connection of services will be required. If new utility services are required, please confirm which utility companies have been contacted (e.g. Thames Water, National Grid, EDF Energy, BT etc.) You must explore options for the utility

companies to share the same excavations and traffic management proposals. Please supply details of your discussions.

Due to the nature of the development, It is envisaged the site will require new incoming electrical, water, Fibre & Gas supplies. Once specified all effort will be made to coordinate these works, the construction programme as developed will include an allowance for these services to be installed in tandem thus reducing the total duration of any disruption.

Environment

To answer these sections please refer to the relevant sections of **Camden's Minimum Requirements for Building Construction (CMRBC).**

28. Please list all noisy operation and the construction methods used, and provide details of the times that each of these are due to be carried out.

Please refer to appendix E for the programme of works. A summary of noisy operations can be found in appendix F Noise/Dust monitoring plan

All noisy works will be undertaken during the following times:

- Noisy works will be subject to 2hours on and 2 hours off:

- Monday to Friday, 8.00am - 10.00am, 12.00pm – 14.00pm, 16.00pm – 18.00pm.

- Saturday, 08.00am – 13.00pm.

29. Please confirm when the most recent pre-construction noise survey was carried out and provide a copy. If a noise survey has not taken place, and it has been requested by the local authority, please indicate the date (before any works are being carried out) that the noise survey will be taking place, and agree to provide a copy.

Noise Impact survey carried out and appended in appendix J

30. Please provide predictions for noise levels throughout the proposed works.

Noise modelling and noise predictions are attached in appendix J Noise Modelling Report document. Example noise monitoring report in appendix G.

Vibration magnitudes are difficult to predict with any accuracy in a complicated transmission route. Vibration monitoring will be undertaken as required with set trigger and action levels

31. Please provide details describing mitigation measures to be incorporated during the construction/demolition works to prevent noise and vibration disturbances from the activities on the site, including the actions to be taken in cases where these exceed the predicted levels.

Mitigation measures will include, but not be limited to the following:

- Arrange main electricity supply as early as possible to avoid generator use. Avoid percussive techniques if alternatives are available.
- Stationary plant such as temporary generators will be located as far as practicably away from the nearest sensitive receptor;
- Plant will be used in accordance with the manufacturers' recommendations;
- Plant such as mobile cranes which may be used intermittently will be shut down between work periods or throttled down to a minimum;
- Acoustic covers to engines will be kept closed when engines are in use; Appropriate screens or enclosures will be provided where required;
- Continuous monitoring will be undertaken thought the works, breaking and other noisy
- operations will be monitored closely.
- Site personnel will be instructed in environmental matters and BPM to reduce noise and vibration. They will be informed in the site induction into the surrounding environment. Loading of material into vehicles within designated bays only
- Sensitive location of drop zones and loading areas and arrange full loads where possible at off-peak times.
- All deliveries to be scheduled to occur during daytime hours only and engines to be switched off when waiting
- All plant to comply with relevant national or international standards, directives and recommendations.
- Crushed concrete mats utilised to absorb energy from demolition arisings Hydraulic powered Pulverisers and shears will be used when practicable (in lieu of pneumatic hammers)
- Dedicated deliveries holding area established within the site boundary
- For necessary works to be carried outside agreed hours, optimise sequencing to minimise duration, seek dispensation or variation from the Local Authority and inform neighbours as early as possible.

Electrical or LPG powered plant will be used, where practicable, rather than plant powered by combustion engine;

Noise and vibration monitoring stations will be installed and set up to provide trigger alert and action alert emails. The project team will maintain a diary record log of all site activities and on receipt of email alerts for any noise/vibration exceedances will inspect the works activities on the site at the time of the alert and review the methodology being used and investigate any further practicable B.P.M measures that may be available. A complete record log of all exceedances will be maintained detailing responses and actions taken.

In the event of a noise, vibration or dust incident or complaint the attached form will be completed as a record for issue to LB Camden.

32. Please provide evidence that staff have been trained on BS 5228:2009

We have appointed European Environmental Monitoring and Consultancy (EEMC) as our acoustic consultant and will train and instruct a designated member of staff on the relevant requirements of BS5228:2009. The designated member of staff will carry out all noise and vibration monitoring with EEMC to provide ongoing technical advice.

33. Please provide specific details on how air pollution and dust nuisance arising from dusty activities on site will be prevented. This should be relevant and proportionate to activities due to take place, with a focus on both preventative and reactive mitigation measures.

A copy of the Air Quality Risk Assessment (AQRA) for this project is attached as appendix 33.a The AQRA has determined this site is a “low” risk site for Dust/Air Quality. The “Highly Recommended” mitigation measures for low risk sites are stated in the AQRA.

As far as practicable construction techniques will be adopted that minimise dust emissions. The highly recommended mitigation methods for high risk sites, as detailed in the SPG guidance will be adopted – see a summary below and attached.

34. Please provide details describing how any significant amounts of dirt or dust that may be spread onto the public highway will be prevented and/or cleaned.

Vehicles departing the project will be fully sheeted (where applicable) prior to leaving, this will prevent the likelihood of spoil leaving the back of tipper lorries during departure.

Traffic marshals will be under instruction to inspect vehicle wheels prior to departure and where required, jet wash significant amounts of dirt or dust.

In the event of particularly wet weather, it is proposed that a visiting road sweeper will be utilized to provide additional support to keeping the highway clean. Typically, traffic marshals will maintain the cleanliness of the roadway as part of our maintenance regime around the site.

35. For medium or high impact risk level sites, please provide details describing arrangements for monitoring of noise, vibration and dust levels, including instrumentation, locations of monitors and trigger levels where appropriate.

The site will be monitored for noise and vibration as required. It is anticipated that the quantity and location of monitoring instruments can be determined in liaison with the local authority.

Noise monitoring equipment will be IEC61672 Class 1 compliant; and vibration monitors will comply with applicable standards (typically DIN45669).

If continuous automated monitors are to be used these will be configured to send email alerts in the event of exceedance events.

Noise Trigger and Action alert levels will be set as per predictions and following the +5dB Assessment Methodology of BS5228.

The following trigger and action levels will be set for vibration for potential disturbance of residential and commercial receptors, appropriately rebased to the monitoring position as necessary.

Vibration	Trigger Level	Action Level
Residential	1mms^{-1} PPV	3mms^{-1} PPV
Commercial	3mms^{-1} PPV	5mms^{-1} PPV

36. Please confirm that an Air Quality Assessment and/or Dust Risk Assessment has been undertaken at planning application stage in line with the GLA policy The Control of Dust and Emissions During Demolition and Construction 2014 (SPG) (document access at bottom of webpage), and that the summary dust impact risk level (without mitigation) has been identified. The risk assessment must take account of proximity to all human receptors and sensitive receptors (e.g. schools, care homes etc.), as detailed in the SPG. **Please attach the risk assessment and mitigation checklist as an appendix**.

A copy of the Air Quality Assessment for the project is attached as appendix G The AQA details the risk assessment undertaken and the approach to dust mitigation and monitoring. The AQA determines the site to be low risk.

37. Please confirm that all of the GLA's 'highly recommended' measures from the SPG document relative to the level of dust impact risk identified in question 36 have been addressed by completing the GLA mitigation measures checklist. (See Appendix 7 of the SPG document.)

Knowles will employ the relevant recommended mitigation measures for the site as listed in Appendix G of the Air Quaility analysis in Appendix H of this document. In line with the risk assessment any phase specific mitigation will also be adopted.

38. Please confirm the number of real-time dust monitors to be used on-site.

Note: **real-time dust (PM_{10}) monitoring with MCERTS 'Indicative' monitoring equipment will be required for all sites with a high OR medium dust impact risk level**. If the site is a 'high impact' site, 4 real time dust monitors will be required. If the site is a 'medium impact' site', 2 real time dust monitors will be required.

The dust monitoring must be in accordance with the SPG and IAQM guidance, and **the proposed dust monitoring regime (including number of monitors, locations, equipment specification, and trigger levels) must be submitted to the Council for approval**. Dust monitoring is required for the entire duration of the development and must be in place and operational **at least three months prior to the commencement of works on-site**. Monthly dust monitoring reports must be provided to the Council detailing activities during each monthly period, dust mitigation measures in place, monitoring data coverage, graphs of measured dust (PM_{10}) concentrations, any exceedances of the trigger levels, and an explanation on the causes of any and all exceedances in addition to additional mitigation measures implemented to rectify these.

In accordance with Camden's Clean Air Action Plan, the monthly dust monitoring reports must also be made readily available and accessible online to members of the public soon after publication. Information on how to access the monthly dust monitoring reports should be advertised to the local community (e.g. presented on the site boundaries in full public view).

Inadequate dust monitoring or reporting, or failure to limit trigger level exceedances, will be indicative of poor air quality and dust management and will lead to enforcement action.

Please see Appendix H for proposed 2no. dust monitor locations. Dust monitoring reports will be made available on site notice boards and appended to resident letters.

39. Please provide details about how rodents, including rats, will be prevented from spreading out from the site. You are required to provide information about site inspections carried out and present copies of receipts (if work undertaken).

Site is overgrown at present. As such it is expected works on site will reduce rodent risk. No food waste or similar will be left out and welfare areas will have dedicated rodent subcontractors to instigate management plan to ensure no risk.

40. Please confirm when an asbestos survey was carried out at the site and include the key findings.

The building is currently in an unsafe condition, further surveying will be actioned with the assistance of a specialist demolition contractor.

41. Complaints often arise from the conduct of builders in an area. Please confirm steps being taken to minimise this e.g. provision of a suitable smoking area, tackling bad language and unnecessary shouting.

The conduct of operatives and staff members on the project will be addressed as part of our induction procedure, with the repercussions of poor behavior made abundantly clear. The following topics will be covered within our induction process:

- Congregation outside of the project perimeter
- Arrival and departure from the project
- Allocated smoking areas
- Requirements for removing PPE before leaving the project
- Interaction with the public
- Respect of the community
- Supporting local establishments
- Effective communication

As part of the induction process, it will be made clear that in the event a member of staff is in breach of our policies for any of the above items there will be an escalation process which can ultimately result in permanent dismissal from the project.

42. If you will be using non-road mobile machinery (NRMM) on site with net power between 37kW and 560kW it will be required to meet the standards set out below. The standards are applicable to both variable and constant speed engines and apply for both PM and NOx emissions. See the Mayor of London webpage 'Non-Road Mobile Machinery (NRMM)' for more information, a map of the Central Activity Zone, and for links to the NRMM Register and the NRMM Practical guide (V4):

https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/nrmm

Direct link to NRMM Practical Guide (V4):

https://www.london.gov.uk/sites/default/files/nrmm_practical_guide_v4_sept20.pdf

From 1st September 2015

(i) Major Development Sites – NRMM used on the site of any major development will be required to meet Stage IIIA of EU Directive 97/68/EC

(ii) Any development site within the Central Activity Zone - NRMM used on any site within the Central Activity Zone will be required to meet Stage IIIB of EU Directive 97/68/EC

From 1st September 2020

(iii) Any development site - NRMM used on any site within Greater London will be required to meet Stage IIIB of EU Directive 97/68/EC

(iv) Any development site within the Central Activity Zone - NRMM used on any site within the Central Activity Zone will be required to meet Stage IV of EU Directive 97/68/EC

Please provide evidence demonstrating the above requirements will be met by answering the following questions:

a) Construction time period (mm/yy - mm/yy): 06/2023 – 09/25

b) Is the development within the CAZ? (Y/N): No

c) Will the NRMM with net power between 37kW and 560kW meet the standards outlined above? (Y/N): Yes

d) Please confirm that all relevant machinery will be registered on the NRMM Register, including the site name under which it has been registered: Upon commencement of works the site will register, under the name: '52 Avenue Road'

e) Please confirm that an inventory of all NRMM will be kept on site and that all machinery will be regularly serviced and service logs kept on site for inspection: Yes

f) Please confirm that records will be kept on site which details proof of emission limits, including legible photographs of individual engine plates for all equipment, and that this documentation will be made available to local authority officers as required: Yes

43. Vehicle engine idling (leaving engines running whilst parked or not in traffic) produces avoidable air pollution and can damage the health of drivers and local communities. Camden Council and the City of London Corporation lead the London **Idling Action Project** to educate drivers about the health impacts of air pollution and the importance of switching off engines as a simple action to help protect the health of all Londoners.

Idling Action calls for businesses and fleet operators to take the **Engines Off pledge** to reduce emissions and improve air quality by asking fleet drivers, employees and subcontractors to avoid idling their engines wherever possible. Free driver training materials are available from the website: https://idlingaction.london/business/

Please provide details about how you will reduce avoidable air pollution from engine idling, including whether your organisation has committed to the Engines Off pledge and the number of staff or subcontractors who have been provided with free training materials.

There is no requirement for idle engines as all material offloads will be within site boundaries.

Mental Health Training

44. Poor mental health is inextricably linked to physical health, which in turn impacts performance and quality, and ultimately affects productivity, creativity and morale. Workers in the construction industry are six times more likely to take their own life than be killed in a fall from height.

We strongly recommend signing up to the "Building Mental Health" charter, an industry-wide framework and charter to tackle the poor mental health in the construction industry, or joining Mates In Mind, which providing the skills, clarity and confidence to construction industry employers on how to raise awareness, improve understanding and address the stigma that surrounds mental health.

The Council can support by providing free Mental Health First Aid training, publicity resources and signposting to local support services.

Please state whether you are or will be signed up to the Building Mental Health charter (or similar scheme), and that and appropriate number of trained Mental Health First Aiders will be available on site.

Knowles commit to robust mental health training and will ensure that a metal health first aid will have trained individuals for the durations of works.

SYMBOL IS FOR INTERNAL USE

Agreement

The agreed contents of this Construction Management Plan must be complied with unless otherwise agreed in writing by the Council. This may require the CMP to be revised by the Developer and reapproved by the Council. The project manager shall work with the Council to review this Construction Management Plan if problems arise in relation to the construction of the development. Any future revised plan must be approved by the Council in writing and complied with thereafter.

It should be noted that any agreed Construction Management Plan does not prejudice further agreements that may be required such as road closures or hoarding licences.

Signed: 

Date: 06/07/23

Print Name: Jerry Fahy

Position: Head of Structures

Please submit to: planningobligations@camden.gov.uk

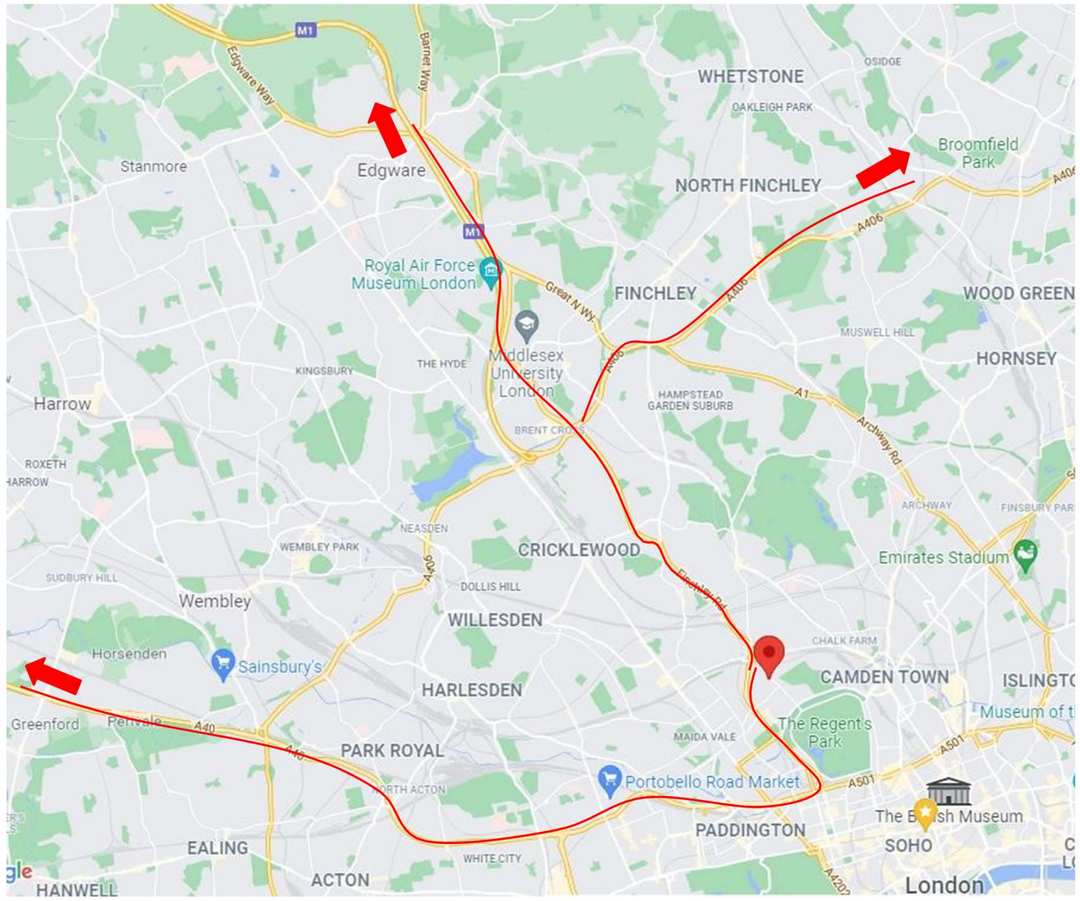
End of form.

V2.9

Appendix A – List of Affected Properties

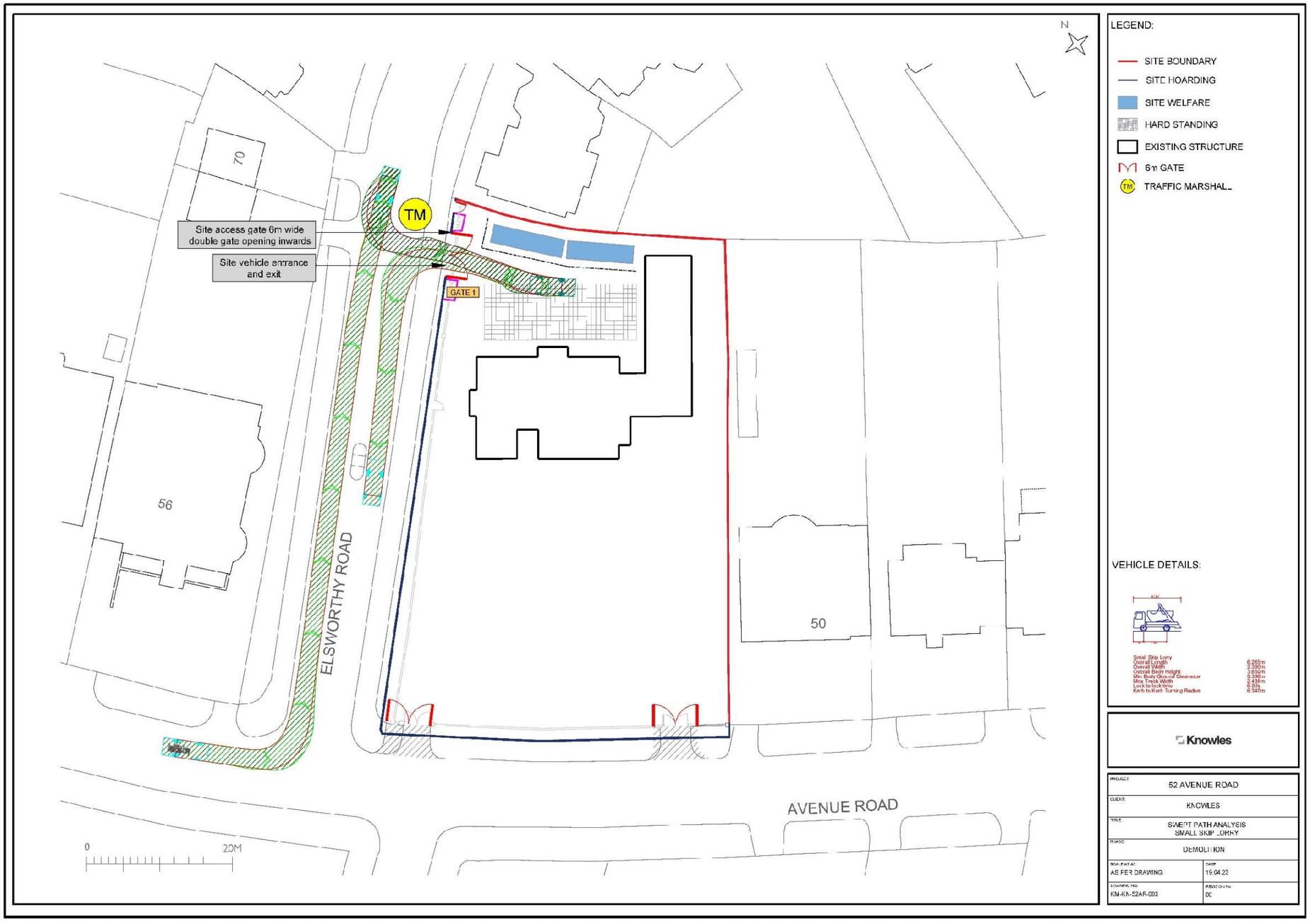
- 46 Avenue Road
- 48 Avenue Road
- 50 Avenue Road
- 56 Avenue Road
- 58 Avenue Road
- 60 Avenue Road
- 69 Avenue Road
- 71 Avenue Road
- 67 Avenue Road
- 75 Avenue Road
- 56 Avenue Road
- 70 Elsworthy Road
- 72 Elsworthy Road
- 57 Elsworthy Road
- 66 Elsworthy Road
- 68 Elsworthy Road
- 55 Elsworthy Road
- 38 Queens Grove
- 39 Queens Grove
- 40 Queens Grove
- 37 Queens Grove
- 36 Queens Grove

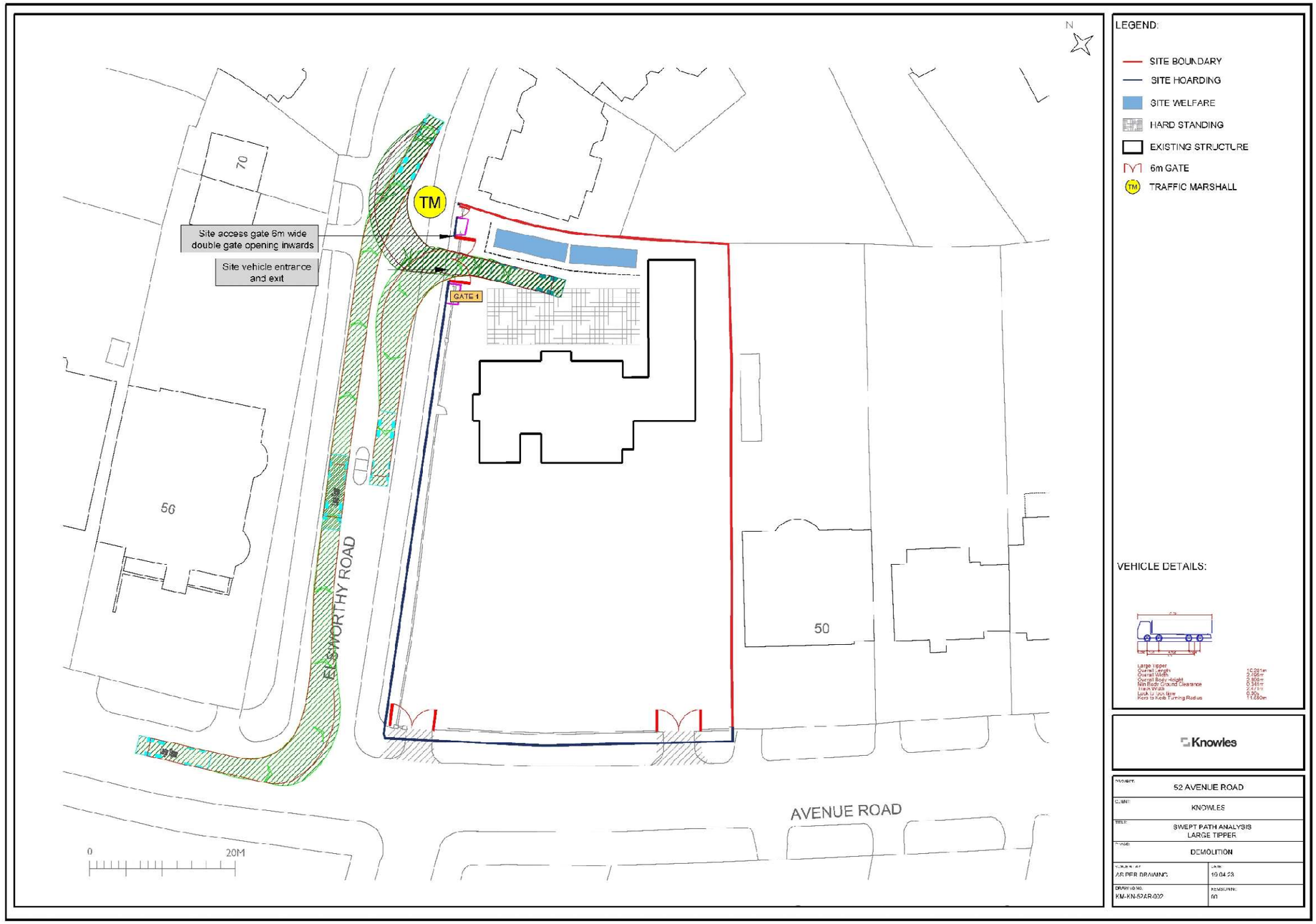
Appendix B – Vehicle Routing



Camden

Appendix C – Swept Path Analysis





LEGEND:

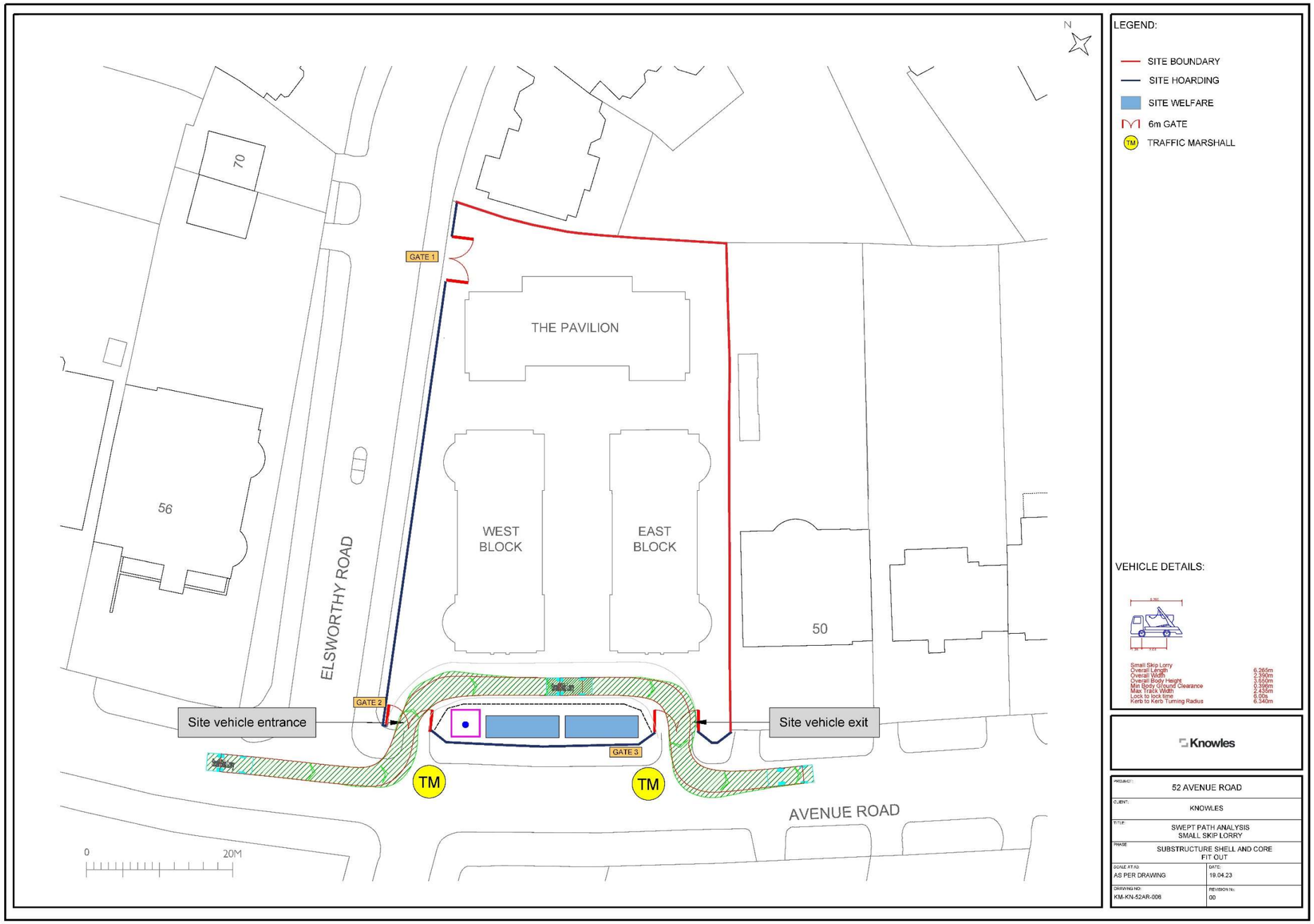
- SITE BOUNDARY
- SITE HOARDING
- SITE WELFARE
- HARD STANDING
- EXISTING STRUCTURE
- 6m GATE
- TRAFFIC MARSHALL

VEHICLE DETAILS:

Large tipper	
Overall Length	10.261m
Overall Width	2.496m
Overall Body Height	3.466m
Min Body Ground Clearance	0.531m
Track Width	2.441m
Lock to Lock time	6.00s
Kerb to Kerb Turning Radius	11.680m

Knowles

PROJECT: 52 AVENUE ROAD	
CLIENT: KNOWLES	
TITLE: SWEPT PATH ANALYSIS LARGE TIPPER	
STAGE: DEMOLITION	
SCALE @ A1: AS PER DRAWING	DATE: 19.04.23
DRAWING NO.: KM-KN-52AR-002	REVISION: 00



LEGEND:

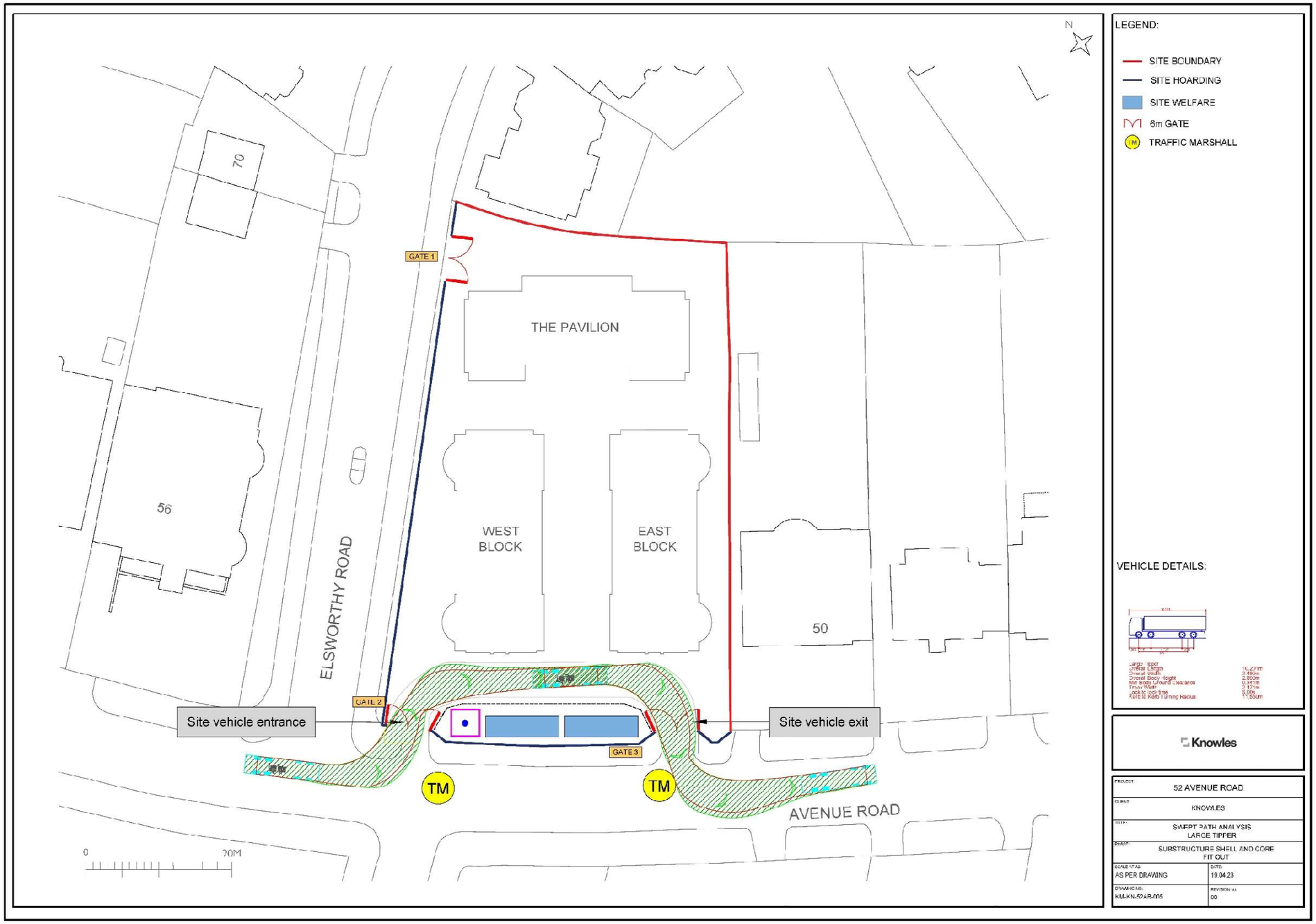
- SITE BOUNDARY
- SITE HOARDING
- SITE WELFARE
- 6m GATE
- TM TRAFFIC MARSHALL

VEHICLE DETAILS:

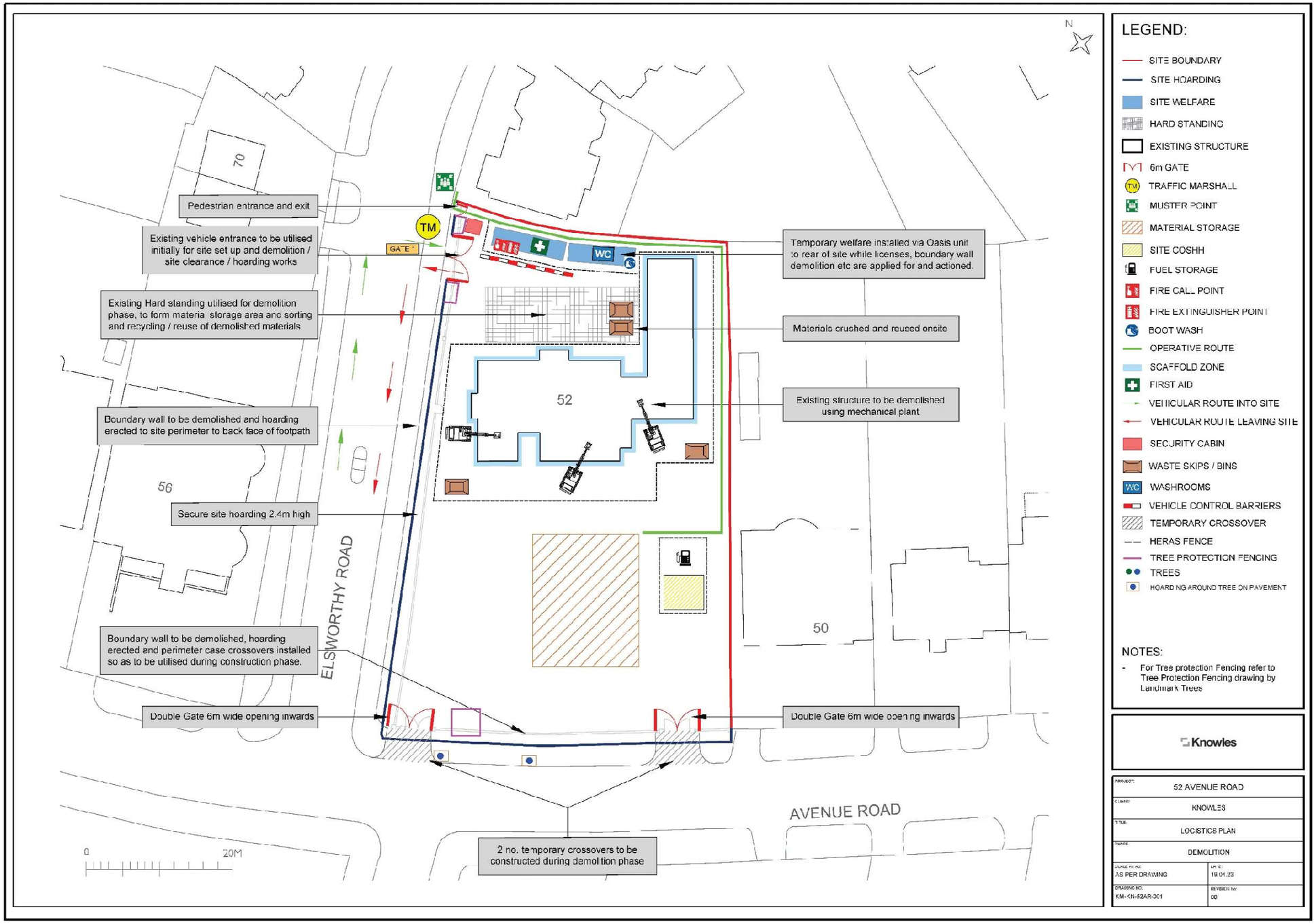
Small Skip Lorry	
Overall Length	6.265m
Overall Width	2.390m
Overall Body Height	3.650m
Min Body Ground Clearance	0.396m
Max Track Width	2.435m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.340m

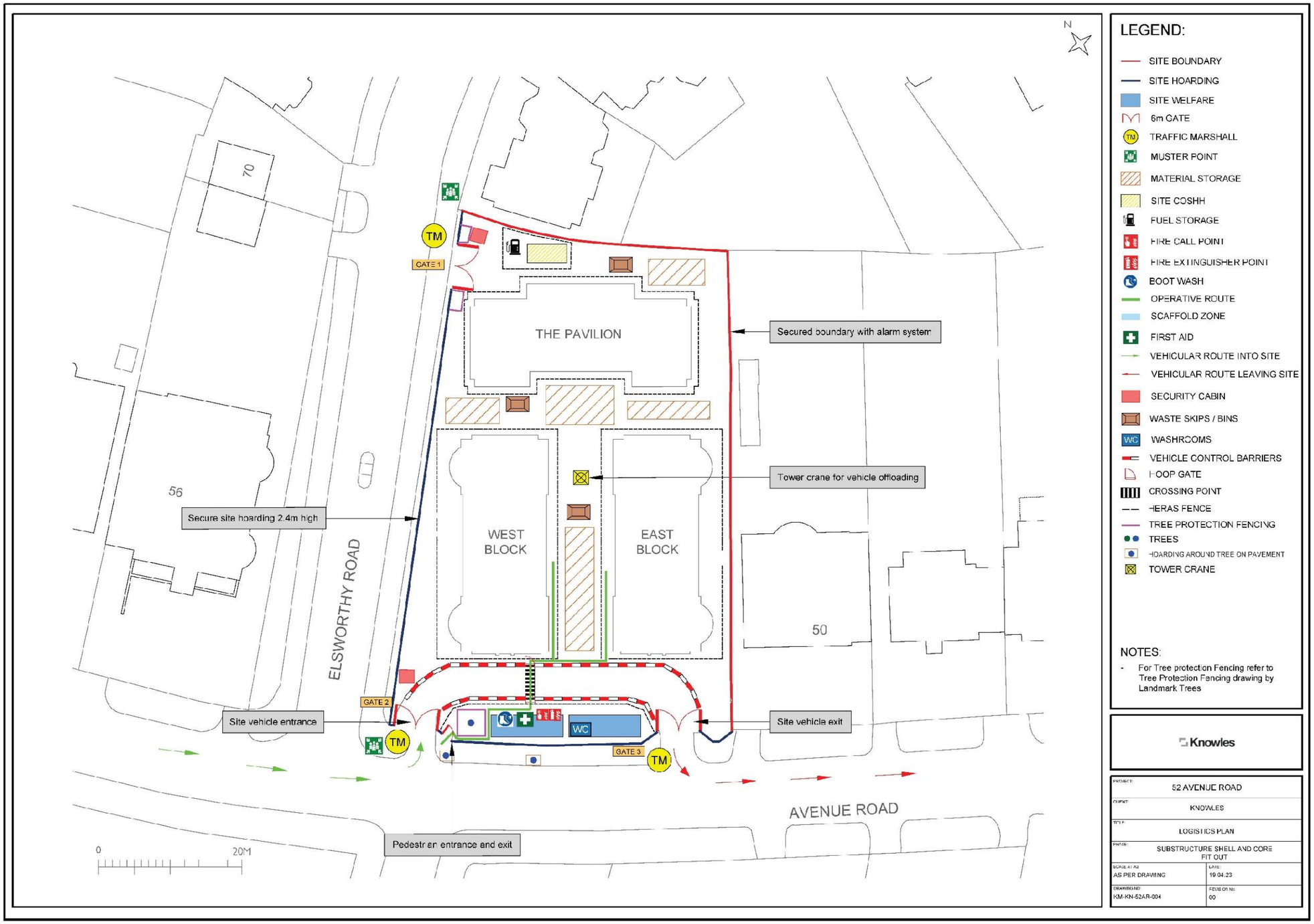
Knowles

PROJECT:	52 AVENUE ROAD
CLIENT:	KNOWLES
TITLE:	SWEPT PATH ANALYSIS SMALL SKIP LORRY
PHASE	SUBSTRUCTURE SHELL AND CORE FIT OUT
SCALE AT A3: AS PER DRAWING	DATE: 19.04.23
DRAWING NO: KM-KN-52AR-006	REVISION No: 00


N
LEGEND:
SITE BOUNDARY
SITE HOARDING
SITE WELFARE
8m GATE
TRAFFIC MARSHALL
70
56
GATE 1
THE PAVILION
WEST BLOCK
EAST BLOCK
50
ELSWORTHY ROAD
GATE 2
GATE 3
Site vehicle entrance
Site vehicle exit
TM
TM
AVENUE ROAD
0
20M
VEHICLE DETAILS:
Knowles
52 AVENUE ROAD
KNOWLES
SWEPT PATH ANALYSIS
LARGE TIPPER
SUBSTRUCTURE SHELL AND CORE
FIT OUT
AS PER DRAWING
19.04.23
KNUKN-52AR-005
00

Appendix D – Site Access/Egress & traffic management measures




N
70
56
50
TM
GATE 1
THE PAVILION
Secured boundary with alarm system
Tower crane for vehicle offloading
Secure site hoarding 2.4m high
WEST BLOCK
EAST BLOCK
ELSWORTHY ROAD
GATE 2
Site vehicle entrance
WC
GATE 3
Site vehicle exit
AVENUE ROAD
Pedestrian entrance and exit
0
20M
LEGEND:
SITE BOUNDARY
SITE HOARDING
SITE WELFARE
6m GATE
TRAFFIC MARSHALL
MUSTER POINT
MATERIAL STORAGE
SITE COSHH
FUEL STORAGE
FIRE CALL POINT
FIRE EXTINGUISHER POINT
BOOT WASH
OPERATIVE ROUTE
SCAFFOLD ZONE
FIRST AID
VEHICULAR ROUTE INTO SITE
VEHICULAR ROUTE LEAVING SITE
SECURITY CABIN
WASTE SKIPS / BINS
WASHROOMS
VEHICLE CONTROL BARRIERS
HOOP GATE
CROSSING POINT
HERAS FENCE
TREE PROTECTION FENCING
TREES
HOARDING AROUND TREE ON PAVEMENT
TOWER CRANE
NOTES:
- For Tree protection Fencing refer to Tree Protection Fencing drawing by Landmark Trees
Knowles
PROJECT: 52 AVENUE ROAD
CLIENT: KNOWLES
TITLE: LOGISTICS PLAN
PHASE: SUBSTRUCTURE SHELL AND CORE FIT OUT
SCALE AT A3: AS PER DRAWING
DATE: 19.04.23
DRAWING NO: KM-KN-52AR-004
REVISION NO: 00

Appendix E – Outline Programme of Works

52-54 Avenue Road - Summary Programme

Knowles

17/04/2023

Knowles

Line	Name	Duration	Start	Finish
1	52Av Road - Construction Programme	110w 4d	05/06/2023	01/09/2025
2	Project Commencement		05/06/2023	05/06/2023
3	Key Project Phases	110w 4d	05/06/2023	29/08/2025
4	Demoltion	4w	05/06/2023	30/06/2023
5	Groundworks (incl. Piling)	26w	19/06/2023	18/12/2023
6	SubStructure	24w	04/12/2023	06/06/2024
7	SuperStructure	22w	20/05/2024	22/10/2024
8	Envelope	20w	01/08/2024	19/12/2024
9	Fit Out	44w	07/10/2024	29/08/2025
10	Project Complete		01/09/2025	01/09/2025

Trades Contractor,Procurement Stages,Build Stages

Demolition | Groundworks | Substructure | Milestone | Superstructure | Envelope | Fit Out | Summary Bar

Milestone Appearances

Start Milestone

Drawn by: JF	Dwg No. 001	Revision No. Rev B	Notes: Summary Programme

Appendix F – Knowles Noise/Dust monitoring Plan

52/54 Avenue road

Noise & Dust monitoring proposal

Issued 17/04/2023

Rev A

KNOWLES

1. INTRODUCTION

The purpose of this proposal is to put forward a monitoring system that will measure the effects that the excavation and basement construction activity may have on the neighbouring structures.

The monitoring will consist of the following items:

- Dust Monitoring
- Noise Monitoring

The monitoring regime of the above systems is to be outlined in this document and be site specific for 52/54 Avenue Road.

2. INSTALLATION

2.1 Control

Dust control units will be installed at the location shown

NOISE control units will be installed at locations shown

Installed and maintained throughout the works.

Figure1.

Dust

Air Mite- real time air quality monitor

unique low cost real time dust and gas monitor. Pm10, Pm2.5 plus chose from:
CO, NO2, NO, SO2, CO2, H2S,
plus relative humidity and temperature
with remote data logging included

A robust and flexible real time air quality/ indoor air quality monitor.
It is designed to monitor respirable dust and up to 4 gases from any single unit
The special case is designed for both indoor and outdoor use.
The systems was developed with the UN and has had vigorous field testing to ensure cell stability and low maintenance.
There is an option for the provision of solar power

3. FREQUENCY AND DURATION OF READINGS

The monitoring frequency is set to:

- Daily – during excavation and basement works (up to and including casting of the ground floor slab)*
- Monthly – after completion of the ground works and basement construction

* During the critical excavation and basement works monitoring readings shall be taken twice weekly if Amber trigger alarm reached

4. Trigger levels

Dust

Magnitude of Dust Emissions Demolition

The existing ground floor and basement wall predominantly comprises brickwork and timber. Materials will be broken up using handheld breakers. The total building volume is less than 20,000 m3 with the demolition activities being carried out at ground level and within the enclosed basement. Therefore, site is considered to have a ‘Medium’ dust emission magnitude for demolition. Earthworks

The site covers less than 2,500 m2 and the total material moved is anticipated to be less than 20,000 tonnes. London Clay Formation (clay, silt and sand) and the Kempton Park Gravel Member (sand and gravel) [10] with a high potential for dust release. It is estimated there will be less than 5 heavy earth moving vehicles active at any one time. Spoil will be stored on-site and then transferred via an overhead conveyor and chuted into a waiting tipper lorry within the suspended on-street loading bay at the front of the property. The conveyor will be hoarded over the footway. The site is considered to have a ‘Medium’ dust emission magnitude for earthworks. Construction

The total building volume is estimated to be less than 20,000 m3 . For the formation of the new basement slab, concrete will be delivered to site ready-mixed and pumped over the hoarding and on to site. For smaller pours, the concrete may be mixed on site. The perimeter of the basement will be underpinned in reinforced concrete. Brickwork and timber will be used to construct and finish the remaining sections. The site is considered to have a “Medium” dust emission magnitude for construction.

The number of heavy-duty vehicles (HDV) outward is predicted to be less than 30per day and vehicles will remain on paved roads along Avenue Road as there will be no on-site haul route. In light of this, the site is considered to have a ‘Small’ dust emission magnitude for track out.

The dust emission magnitudes for all activities is summarised in Table. Activity Dust Emission

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

There are between 5 and 20 receptors with a high sensitivity to dust soiling and health effects within 20 m of the site boundary, as can be seen in Figures' A6 and A7 of Appendix A. Nearby receptors are predominantly residential properties, which have a high sensitivity to dust soiling and health effects.

The sensitivity of the area to dust soiling for demolition, earthworks, construction and track out activities is assessed as 'High' and the sensitivity of the area to human health impacts from on-site and track out activities is assessed as 'High' due to the number and proximity of sensitive receptors and a background annual mean PM10 concentration of between 28 and 32 µgm-3 in the vicinity of the site

Sensitivity of the Area	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	High	High	High	High

TABLE 5.2: SENSITIVITY OF THE AREA ASSESSMENT

Dust Risk

The likely risk of dust effects, based on the contents of Table 5.1 and 5.2, at nearby sensitive receptors without mitigation in place is summarised in Table 5.3. There is a 'Medium' risk from demolition, earthworks and construction activities and a 'Low' risk from track out activities causing dust soiling effects at local receptors. There is a 'Medium' risk of health effects from demolition, earthworks and construction activities and a 'Low' risk from track out activities

Summary	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Low Risk
Human Health	Medium Risk	Medium Risk	Medium Risk	Low Risk

TABLE 5.3: SUMMARY DUST RISK CATEGORY

The Air Mite- real time air quality monitor is recommended

4.2 Noise

Attending noise examples

Outdoor Measurement Kits

Where there is a need to measure noise levels outdoor or over long periods the sonitus sound level meters can be used with the EM2030 measurement kits. These kits comprise of a weather proof case which contains the instrument and battery packs along with an interface to external power and USB data management access. The kit also includes the MK: 170 Microphone which provides weather protection for the microphone capsule and connects via a 10mm cable to the main enclosure. The EM2030 also contains a 4g / GPRS modem and GPS location receiver which allows noise measurement data to be downloaded remotely to the noise tools software via the Sonitus Cloud system subject to connectivity

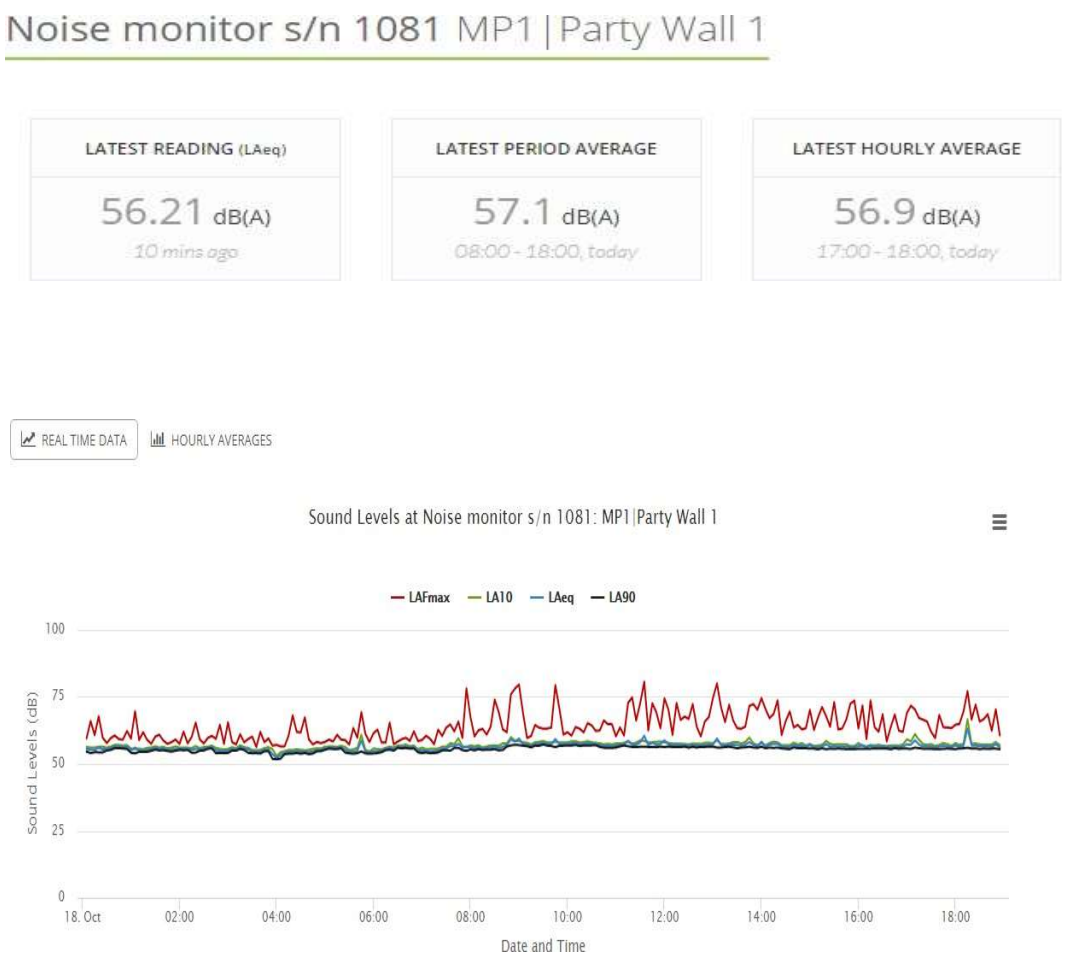
Sonitus Cloud enables you to access all your environmental monitoring data in one location from any internet enabled device. Check real time data, generate reports and configure your systems to manage your projects efficiently. The simple interface means anyone can run the projects with simple calendar overviews, detailed daily data and user definable alerts. Sonitus Cloud also allows you to set user and access rights for projects to ensure everyone can see exactly what they need.

- **Connect from any internet enabled device**
- **User permission rights**
- **Safe and secure**
- **SMS and email alerts**
- **Simple reports**
- **Calendar view**
- **Plot data or see in real time**

From top to bottom : data plotted over a day, calendar overview, user right permissions

Presenting Noise Monitoring Results

The monthly overview displays the noise monitoring results based on a LAeq,10h from 8AM to 6PM, Monday to Friday. The calendar shows the average sound levels of the measured readings and highlights any exceedances. These are calculated based on the limits set on each monitor. More detailed data can be requested via the online web interface.



The Equipment

SONITUS SYSTEMS EM2030 | NOISE MONITOR

- IEC 61672 Class 1 measurement system;
- Automatic upload of data to the cloud;
- SMS and email alerts;
- Very compact requires 110v or 240v mains power;
- Battery or solar panel option Not included in proposal;
- Download data directly from the website for reporting – Sonitus Cloud.

Calibration Certificates

SONITUS EM2030

METHOD

Calibration has been performed as set out in Campbell Associates Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification set out in BS EN IEC 61672-3:2006.

Results and conformance statement are detailed results which are reported in a certificate which can be shown upon request.

FREQUENCY AND DURATION OF READINGS

The monitoring frequency is set to:

- Hourly Average – during excavation and basement works (up to and including casting of the ground floor slab)*
- Daily Average – after completion of the ground works and basement construction

* During the critical excavation and basement works monitoring readings shall be taken twice weekly if Amber trigger alarm reached

5. Trigger levels

Dust

Monitoring Dust

The dust units have been configured to record Particulate Matter (PM) size data continuously at given intervals (see installation details) with a flow rate of 1 litre per minute. The graph contains data of the PM10 µg/m^3 values, where µg/m^3 is the micrograms per cubic meter, which is a measure of particle size. The PM10 values depict the dust level in µg/m^3 over pre-set time period.

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometres in diameter pose the greatest problems, because they can affect the lungs and heart. Larger particles are of less concern, although they can irritate the eyes, nose, and throat.

- **Fine particles (PM2.5).** Particles less than 2.5 micrometres in diameter are called "fine" particles. Sources of fine particles include all types of combustion, also motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. PM2.5 contains more toxic heavy metals and hazardous organic pollutants and can go directly to the lungs. It is more easily attached to bacteria and viruses in the environment, so the particles have greater impact on ecology and human health.
- **Coarse dust particles.** Particles between 2.5 and 10 micrometres in diameter are referred to as "coarse." Sources of coarse particles include crushing or grinding operations, and dust stirred up by vehicles traveling on roads.

How can particles affect your health?

Long-term exposure, is associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death.

Short-term exposure to particles (hours or days) can aggravate lung disease, cause asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposure is linked to heart attacks and arrhythmias. Healthy children and adults may experience temporary minor irritation when particle levels are elevated.

Noise

The noise monitoring shall be set to provide data which can be used to compare with the summary of noise level predictions for the site and data for the implementation of the First and Second Action Levels (a) and (b):

a. The First Action Level alert at all noise monitoring positions shall be **75 dB LAeq,1hr**

b. The Second Action Level alert at all noise monitoring positions shall be **80 dB LAeq,1hr**

6. REPORTS

The measurements are to be taken as per the proposed frequency at regular intervals and the results will be issued to the main contractor every Month.
They will also be issued to anyone on the site distribution list

The readings are to be put into a table format with graphical data;
In addition to monthly reports, monitoring data will be remotely accessible to enable on-demand interrogation; however, this will only be possible if the site conditions allow a suitable signal to be achieved. Furthermore, instant email alerts will be sent to relevant site personnel when Site Action Levels are exceeded. System checks will be competed on the first working day of the week to ensure the monitors are functioning correctly and logging data.

If a trigger value is reached in the report the following is to happen

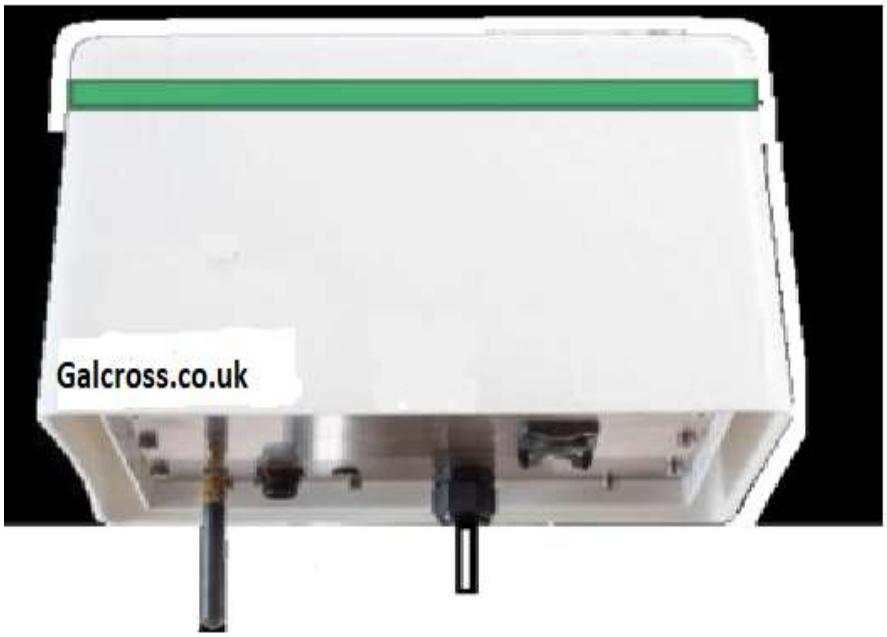
Dust
Site made aware and procedures for keeping dust down to be adhered to.

Noise:
First action– if the first action level of 75db is reached the site team will be notified and the works reviewed

Second action – if the second action of 80db is reached the site team will be notified and the work's temporarily stopped and the consideration of other forms of construction to be reviewed at this time

Machine specifications

DUST



Air mite

A unique sampling system.
This system provides real time monitoring for dust (pm10, pm2.5) and gases (choose from NO2, NO, O3, SO2, H2S, CO and CO2 by NDIR or VOC's by pid.
The system can support up to 4 cells and CO2 or 3 cell with a VOC detector plus CO2.
Data logging. This unit can sample at any frequency down to one sample per second. Data can be obtained remotely or data log locally.
Connectivity Wired (Ethernet) or wireless attachment
Power powered options 90 to 240v AC or 7- 24v DC ask about external power options- back up battery provides 2hours of power
Weight less than 1.5kg
Power for the site in question is 110 constant power required

Appendix G – Example Noise Monitoring & Example Dust Monitoring Report

Noise Monitoring Results

SATURDAY, NOVEMBER 26, 2022

Galcross Engineering
Location: Lancelot Place
Authored by: Michael O'Dwyer

GALCROSS ENGINEERING
MOVEMENT MONITORING SURVEYS

Executive Summary

Environmental Monitoring

This report is an objective assessment, made by Galcross engineering to monitor and control the environmental in impact of the works for noise at Lancelot Place, London.

The report includes;

"The environmental monitoring result of and November 2022"

Contents

1. Monitoring Procedure

1.1 Used Equipment

The monitoring equipment is accredited and approved equipment. See appendix 1.

1.2 Setup Procedure

All equipment is installed on site boundaries according to the BS 5228-1.

1.3 Limit & Action Levels

To control the environmental parameters alert levels have been set up as per below

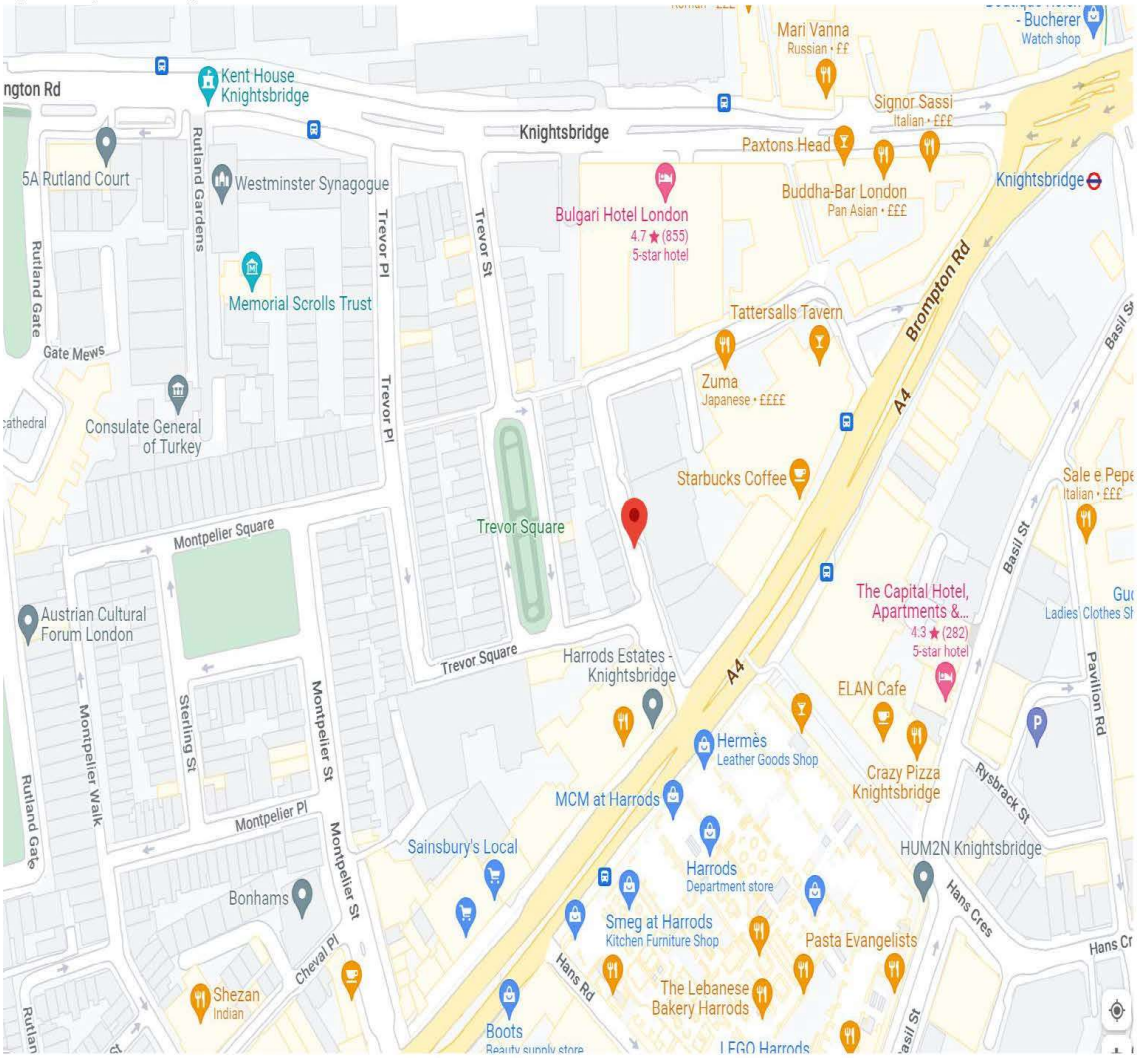
Table 1.1 | LAeq,t Noise limits

LIMIT LEVEL (LA_{eq})	START TIME	END TIME	WEEKDAYS	SATURDAYS	SUNDAYS	SEND ALERTS AFTER END	SEND HOURLY ALERTS
75 dB(A)	08:00	13:00	✗	✓	✗	✓	✓
75 dB(A)	08:00	18:00	✗	✗	✓	✓	✓
75 dB(A)	08:00	18:00	✓	✗	✗	✓	✓

1.4 Monitoring Locations

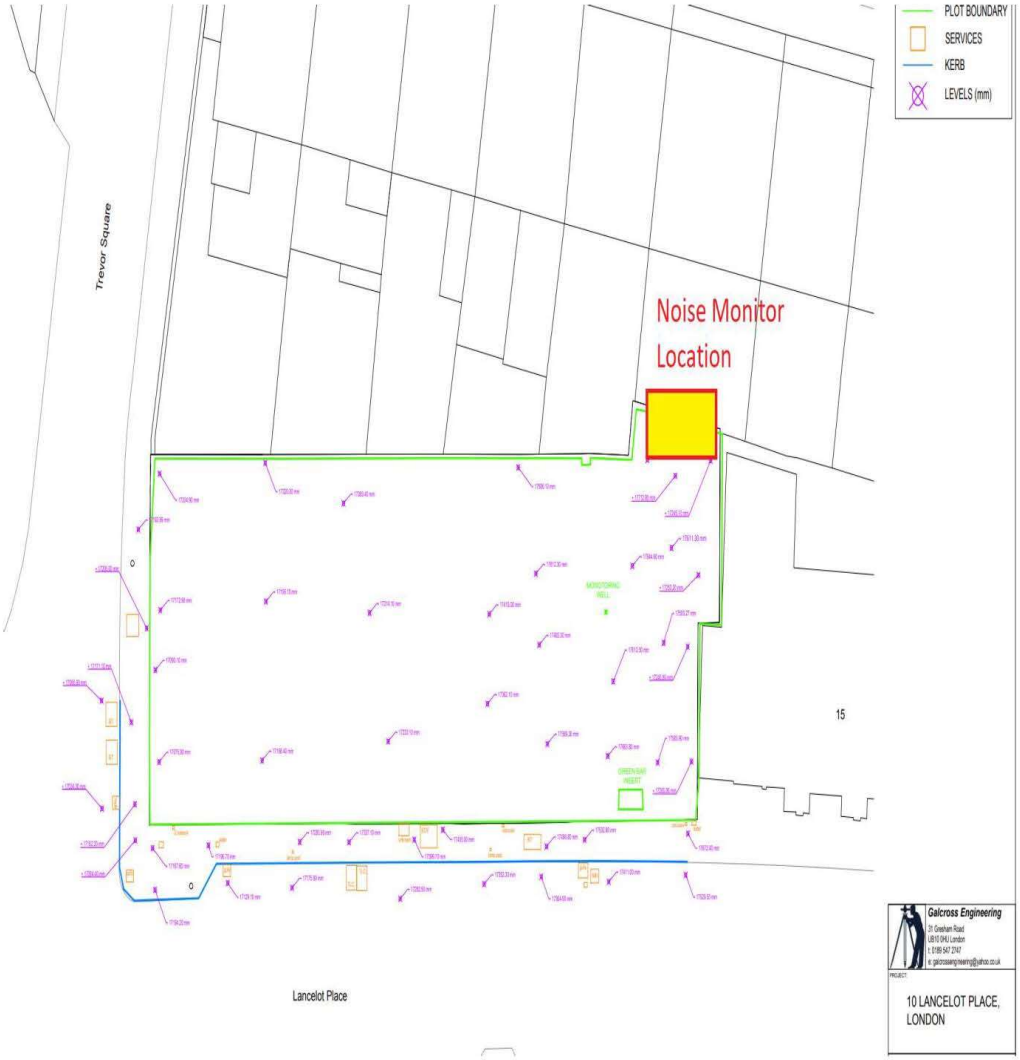
In the figure below the monitoring points are shown. The monitoring point are according to agreed locations and per best practical mean (BPM).

Figure 1.1 | Monitoring Locations



GALCROSS ENGINEERING
MOVEMENT MONITORING SURVEYS

2.



GALCROSS ENGINEERING
MOVEMENT MONITORING SURVEYS

Monitoring Web-interface

Sonitus Cloud enables you to access all your environmental monitoring data in one location from any internet enabled device. Check real time data, generate reports and configure your systems to manage your projects efficiently. The simple interface means anyone can run the projects with simple calendar overviews, detailed daily data and user definable alerts. Sonitus Cloud also allows you to set user and access rights for projects to ensure everyone can see exactly what they need.

Figure 2.1 | Sonitus Web-interface

- Connect from any internet enabled device
- User permission rights
- Safe and secure
- SMS and email alerts
- Simple reports
- Calendar view
- Plot data or see in real time

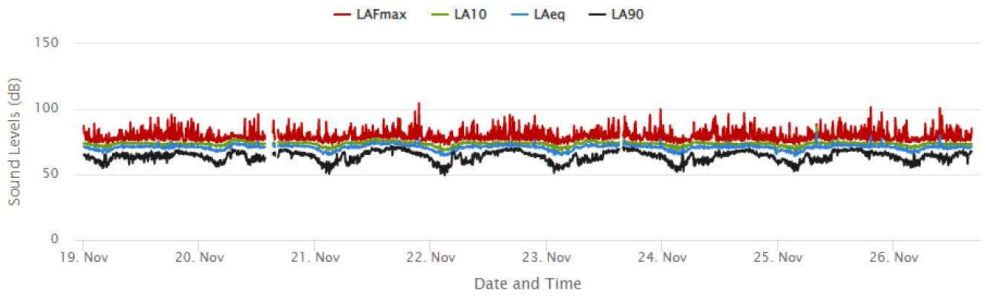
From top to bottom : data plotted over a day, calendar overview, user right permissions

3. Noise Monitoring Results

3.1 Measurement Point 1 Offsite Offices

The monthly overview displays the noise monitoring results based on a LAeq,10h from 8AM to 6PM, Monday to Friday. The calendar shows the average sound levels of the measured readings and highlights any exceedances. These are calculated based on the limits set on each monitor. More detailed data can be requested via the online web interface.

Table 3.1 | Noise



Noise monitor s/n 1100 Lancelot place

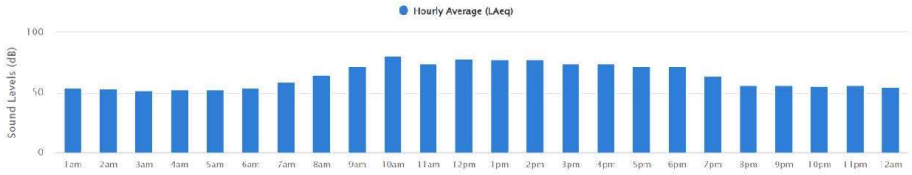
LATEST READING (LAeq)	LATEST PERIOD AVERAGE	LATEST HOURLY AVERAGE	LATEST BATTERY LEVEL
60.1 dB(A)	69.5 dB(A)	70.4 dB(A)	Mains
15 mins ago	08:00 - 17:00, today	09:00 - 10:00, today	10:21, today

GALCROSS ENGINEERING
MOVEMENT MONITORING SURVEYS

SUN	MON	TUE	WED	THU	FRI	SAT
		1 71.9 dB(A)	2 70.3 dB(A)	3 72.7 dB(A)	4 72.3 dB(A)	5 71.5 dB(A)
6 71.8 dB(A)	7 71.5 dB(A)	8 71.5 dB(A)	9 71.9 dB(A)	10 70.9 dB(A)	11 70.8 dB(A)	12 71.1 dB(A)
13 71.4 dB(A)	14 71.5 dB(A)	15 72.0 dB(A)	16 71.8 dB(A)	17 72.0 dB(A)	18 71.6 dB(A)	19 71.0 dB(A)
20 71.6 dB(A)	21 72.8 dB(A)	22 71.6 dB(A)	23 72.0 dB(A)	24 70.9 dB(A)	25 71.7 dB(A)	26 71.0 dB(A)
27	28	29	30			

Hourly Averages at Noise monitor s/n 1100: Lancelot place

Average sound levels (LAeq) for each hour of the day. If multiple days are selected, then readings for the timeframe are averaged.



GALCROSS ENGINEERING
MOVEMENT MONITORING SURVEYS

4. Final word

4.1 Exceedances

Based on the daily measurement results a per chapter 3, trigger levels have not been exceeded.

Appendix 1

The Equipment

Sonitus Systems EM2030 | Noise Monitor

- IEC 61672 Class 1 measurement system;
- Automatic upload of data to the cloud;
- SMS and email alerts;
- Very compact requires 110v or 240v mains power;
- Battery or solar panel option Not included in proposal;
- Download data directly from the website for reporting – Sonitus Cloud.

Appendix 2

Calibration Certificates

Sonitus EM2030

Method

Calibration has been performed as set out in Campbell Associates Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification set out in BS EN IEC 61672-3:2006.

Results and conformance statement are detailed results which are reported in a certificate which can be shown upon request.

GALCROSS ENGINEERING LTD
Monitoring report

Air Quality

Monitoring readings

UP TO 20/09/2021

16 Avenue Road

INDUCTION

The site is located at 16 Avenue Road, As a result of neighbouring properties in close proximity, it becomes important to measure the Dust levels on the surrounding structures and its inhabitants that are caused by the construction activities.

Monitoring Dust

The dust units have been configured to record Particulate Matter (PM) size data continuously at given intervals (see installation details) with a flow rate of 1 litre per minute. The graph contains data of the PM10 µg/m^3 values, where µg/m^3 is the micrograms per cubic meter, which is a measure of particle size. The PM10 values depict the dust level in µg/m^3 over pre-set time period.

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometres in diameter pose the greatest problems, because they can affect the lungs and heart. Larger particles are of less concern, although they can irritate the eyes, nose, and throat.

- **Fine particles (PM2.5).** Particles less than 2.5 micrometres in diameter are called "fine" particles. Sources of fine particles include all types of combustion, also motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. PM2.5 contains more toxic heavy metals and hazardous organic pollutants and can go directly to the lungs. It is more easily attached to bacteria and viruses in the environment, so the particles have greater impact on ecology and human health.
- **Coarse dust particles.** Particles between 2.5 and 10 micrometres in diameter are referred to as "coarse." Sources of coarse particles include crushing or grinding operations, and dust stirred up by vehicles traveling on roads.

How can particles affect your health?

Long-term exposure, is associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death.

Short-term exposure to particles (hours or days) can aggravate lung disease, cause asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposure is linked to heart attacks and arrhythmias. Healthy children and adults may experience temporary minor irritation when particle levels are elevated.

Reporting

The graphical data for each unit will be issued in PDF reports. The graphs will include trigger levels where applicable. A backup copy of all data is kept on the Galcross servers in our main office. If applicable, all data from the monitors will be uploaded to a dedicated website, where it will be displayed in a graphical and numerical format. The data will be automatically or manually uploaded to our SQL database on a regular basis depending on the instruments used (see instrumentation). The web interface is then used to view the latest and historical data.

Alarming

If applicable and once there is a constant uninterrupted power supply, the monitors will be configured to send out an email alert in the event of a breach of the trigger level to the relevant parties on site.

Trigger Levels

Informing all on the alert list is the first action

The actions to be taken should then comprise a method review to see if the operation cannot realistically be modified under the 'best practicable means' principle. If this level is unavoidable using BPM the next action should include contacting a named person within neighbouring affected property to inform them of the activities and resulting risk and its likely duration.

Trigger levels are set as follow

Dust 250 particles (µg/m^3)

Vibration 3MM/S Amber 6MM/S Red

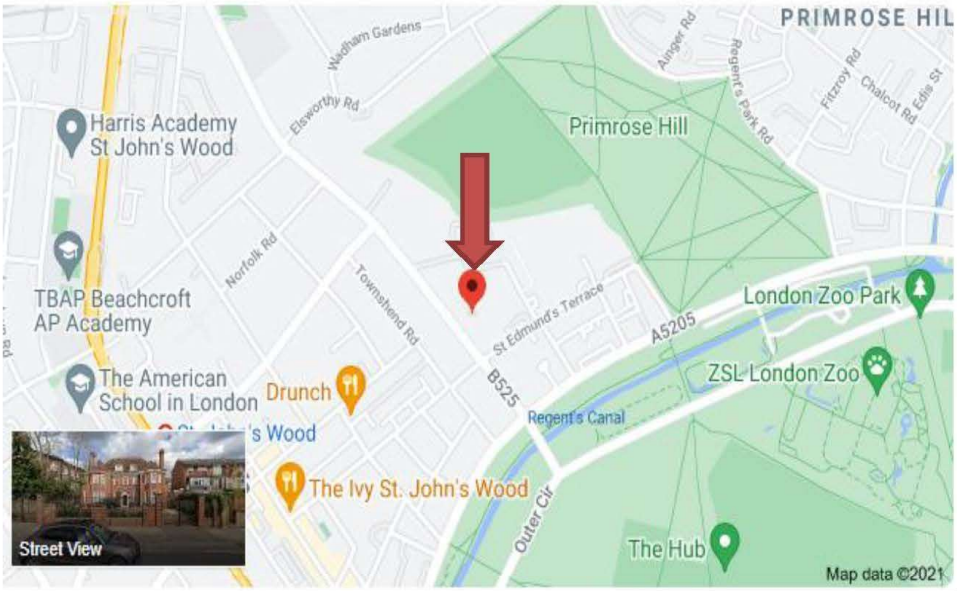
min)

DUST

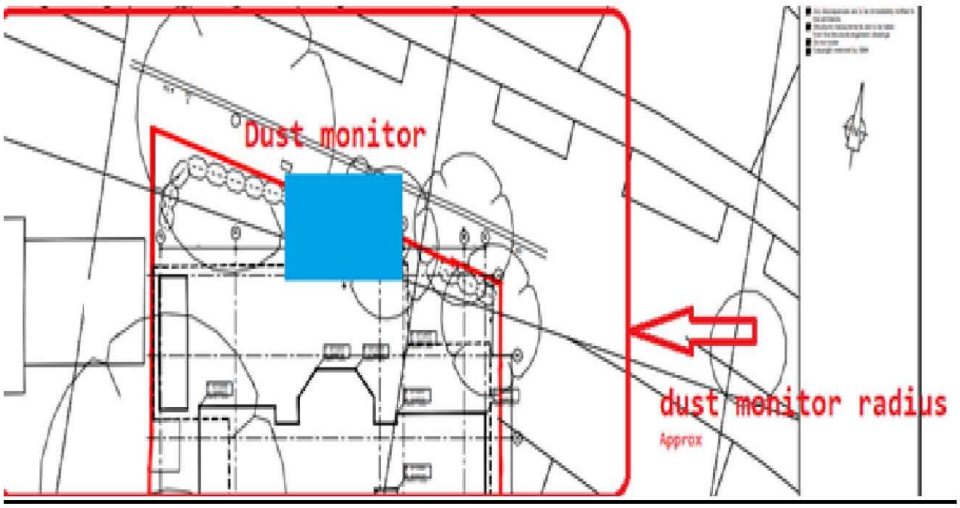
Air mite

A unique sampling system.
This system provides real time monitoring for dust (pm10, pm2.5) and gases (choose from NO2, NO, O3, SO2, H2S, CO and CO2 by NDIR or VOC's by pid.
The system can support up to 4 cells and CO2 or 3 cell with a VOC detector plus CO2.
Data logging. This unit can sample at any frequency down to one sample per second. Data can be obtained remotely or data log locally.
Connectivity Wired (Ethernet) or wireless attachment
Power powered options 90 to 240v AC or 7- 24v DC ask about external power options- back up battery provides 2hours of power
Weight less than 1.5kg
Power for the site in question is 110 constant power required

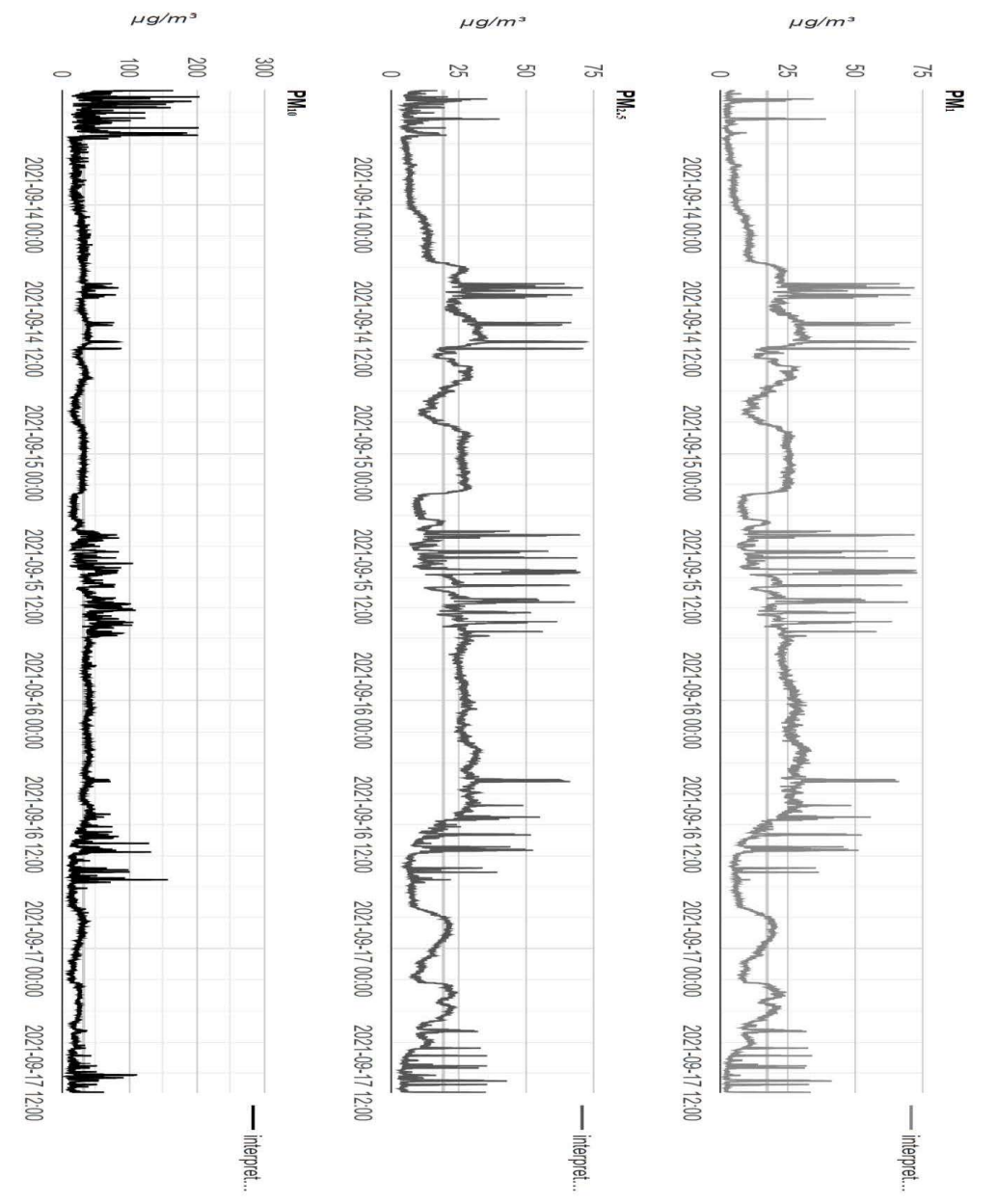
Site Location



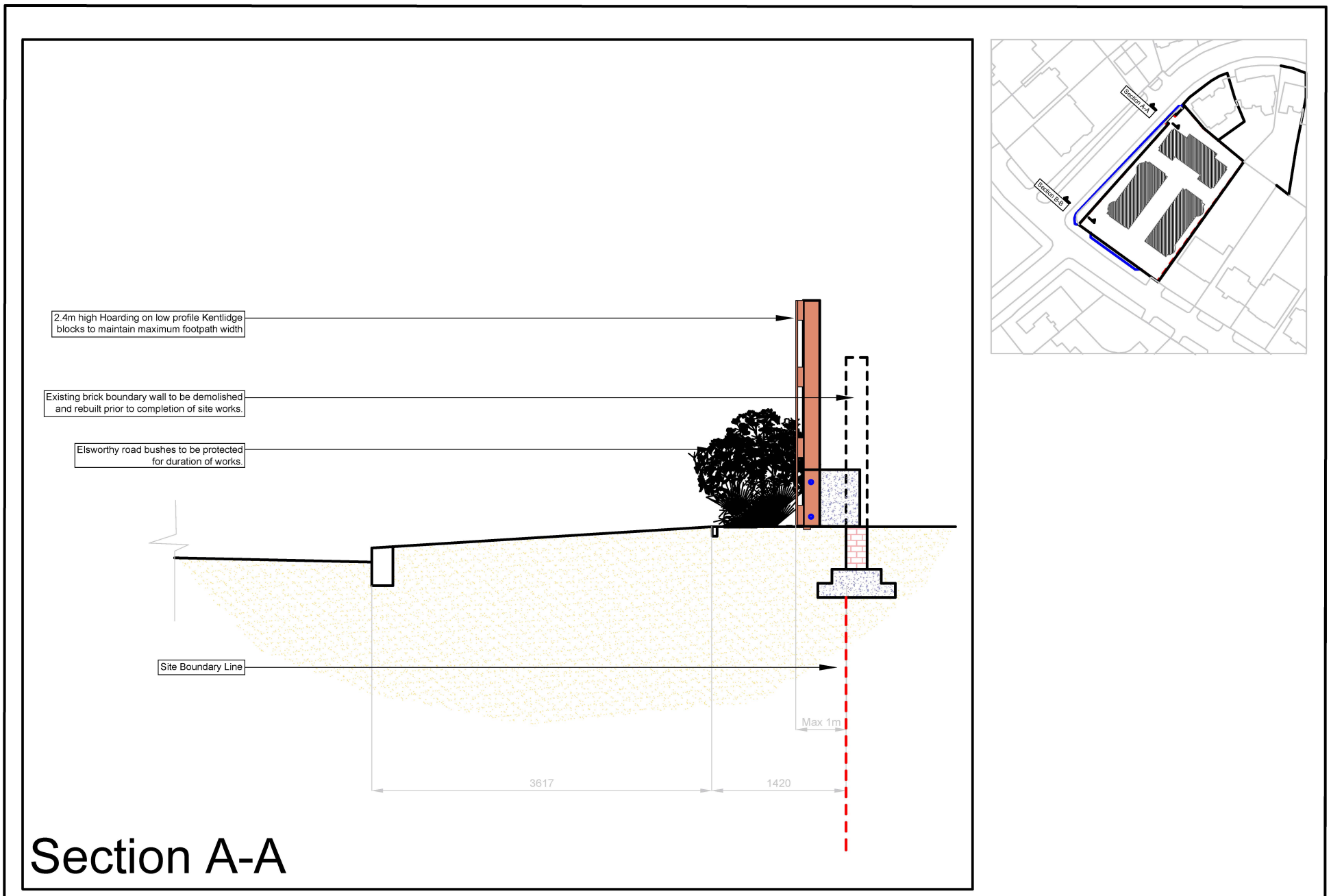
Dust monitor locations



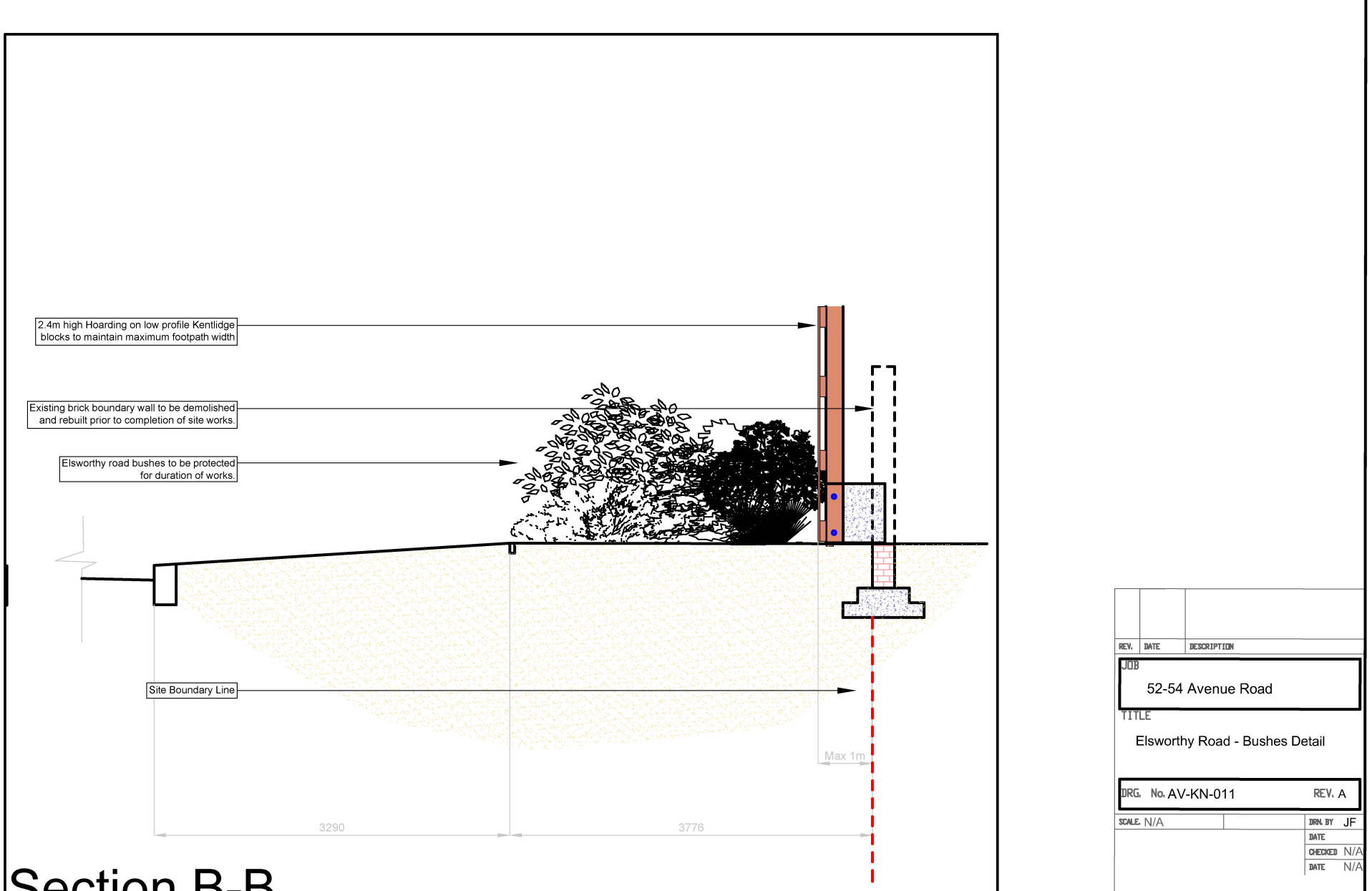
DUST BOX 1


PM1
µg/m³
0
25
50
75
2021-09-14 00:00
2021-09-14 12:00
2021-09-15 00:00
2021-09-15 12:00
2021-09-16 00:00
2021-09-16 12:00
2021-09-17 00:00
2021-09-17 12:00
interpret...
PM2.5
µg/m³
0
25
50
75
2021-09-14 00:00
2021-09-14 12:00
2021-09-15 00:00
2021-09-15 12:00
2021-09-16 00:00
2021-09-16 12:00
2021-09-17 00:00
2021-09-17 12:00
interpret...
PM10
µg/m³
0
100
200
300
2021-09-14 00:00
2021-09-14 12:00
2021-09-15 00:00
2021-09-15 12:00
2021-09-16 00:00
2021-09-16 12:00
2021-09-17 00:00
2021-09-17 12:00
interpret...

Appendix H – Protection Detail to Elsworthy Road green space



Section A-A



Section B-B

REV.	DATE	DESCRIPTION

JOB: 52-54 Avenue Road

TITLE: Elsworthy Road - Bushes Detail

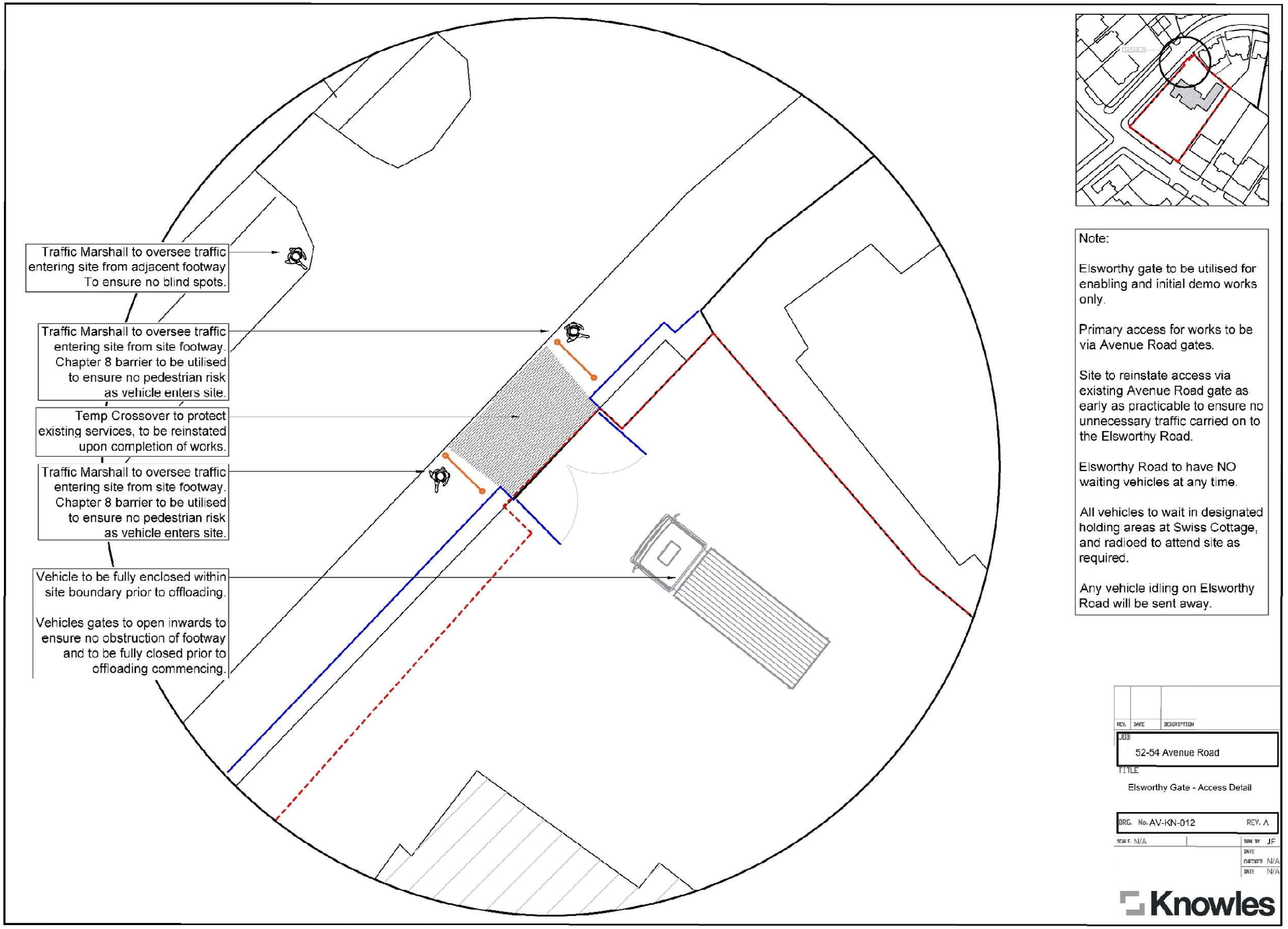
DRG. No. AV-KN-011 REV. A

SCALE. N/A

DRN. BY JF
DATE
CHECKED N/A
DATE N/A

Knowles

Appendix I – Detailed Elsworthy Road Gate Access Drawing



Appendix J – Noise Impact & Air Quality Assessment

KP Monitoring Ltd.
info@kpacoustics.com
1 Galena Road, W6 0LT London, UK
+44 (0) 208 222 8778
www.kpacoustics.com

Part of the KP Acoustics Group

52 Avenue Road, London NW8 6HP

Air Quality Monitoring Report

Report 26019.2

Saturday 25 February 2023 to Friday 24 March 2023

Domvs London (Global Holdings) Ltd
22 Wycombe End,
Beaconsfield,
Buckinghamshire,
United Kingdom HP9 1NB

KP monitoring
Part of the KP Acoustics Group

Report 26019.2 Revision History			
First Issue Date: 27/03/2023			
A		D	
B		E	
C		F	
Written by:		**Checked by:**	
Mohamed Salim Environmental Monitoring Project Engineer BEng(Hons), MIET		Richard P Booth Environmental Monitoring Manager MSc, BSc(Hons), MIOA, AMIEnvSc, AMIAQM	

KP monitoring
Part of the KP Acoustics Group

Contents

List of Attachments

EXECUTIVE SUMMARY

KP Monitoring Ltd has been commissioned to monitor the air quality levels at the 52 Avenue Road site, 52 Avenue Road, St Johns Wood, London NW8 6HP.

Air quality levels have been measured at 4No. positions around the development site. The measured parameters include PM2.5 particulate, PM10 particulate.

The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	0	0	79%
Position 2	0	0	100%
Position 3	0	0	100%
Position 4	0	0	100%

Table 1 Recorded exceedance events at the development site

The results are presented herein.

1.0 INTRODUCTION

KP Monitoring Ltd have been appointed by Domvs London (Global Holdings) Ltd to monitor the ongoing air quality levels from the site at 52 Avenue Road, and to present the results within baseline monthly reports.

This report details the procedures employed and the data obtained during the monitoring period spanning Saturday 25 February 2023 to Friday 24 March 2023.

2.0 SITE DESCRIPTION

The monitoring site is located within the London Borough of Camden's jurisdiction. It is bounded by Elsworthy Road to the north, Elsworthy Road to the west, residential properties to the south, and large residential landscapes to the east.

3.0 SITE WORKING HOURS

It is our understanding that no works are currently taking place at the development site. Once work commence, however, we understand that works shall take place between the following hours. These daytime periods shall hereby be referred to as the 'Working Day'.

Day	Start time	End Time
Monday	08:00	18:00
Tuesday	08:00	18:00
Wednesday	08:00	18:00
Thursday	08:00	18:00
Friday	08:00	18:00
Saturday	08:00	13:00
Sunday	No Work	No Work

Table 2 Site working hours referred to as 'Working Day'

4.0 INSTALLED EQUIPMENT

Air quality monitoring equipment was installed at the 52 Avenue Road site, and has been continuously serviced, calibrated, and maintained, since Wednesday, 25 January 2023. The following equipment is currently installed:

Position	Manufacturer	Model	Serial
Position 1	Earthsense	Zephyr	1149
Position 2	Earthsense	Zephyr	1169
Position 3	Earthsense	Zephyr	948
Position 4	Earthsense	Zephyr	1043

Table 3 Installed sensor details

Each of the installed air quality monitoring sensors is equipped with a data logger and modem, and is protected from the elements with an environmental kit.

5.0 MONITORING POSITIONS

Air quality monitoring sensors have been installed at 4No. positions around the development site. See site plan in Appendix D. The following table describes these positions.

Position	Monitoring Position
Position 1	The monitor is situated adjacent to Elsworthy Road at an approximate height of 2.5 metres.
Position 2	The monitor is situated adjacent to Elsworthy Road on the north western area of site and is at an approximate height of 2.5 metres.
Position 3	The monitor is situated on the south eastern area of site and is at an approximate height of 1 metre.
Position 4	The monitor is situated on the north eastern area of site and is at an approximate height of 1 metre.

Table 4 Description of monitoring positions

The above positions were recommended and approved by Camden Council as demonstrated in the attached email chain.

6.0 METHODOLOGY

Fully automated air quality monitoring has been undertaken at the 52 Avenue Road site, from Saturday 25 February 2023 to Friday 24 March 2023.

The air quality monitors are sensitive to airborne particle concentrations down to a fraction of a microgram per cubic metre and provide detailed air quality measurements in real-time. A dedicated microprocessor analyses individual particles even if there are millions per litre.

7.0 AIR PARTICULATE (DUST)

7.1 Measured Particulates

Fully automated dust monitoring has been undertaken to measure PM2.5, and PM10 particulate at the 52 Avenue Road site.

7.2 Project Trigger & Action Levels

It is our understanding that there are currently no defined air particulate Trigger and Action levels for this project.

Position	Trigger Level (PM10, µg/m³, 15min)	Action Level (PM10, µg/m³, 15min)
Position 1	N/A	N/A
Position 2	N/A	N/A
Position 3	N/A	N/A
Position 4	N/A	N/A

Table 5 Defined Trigger and Action levels at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 6 Trigger and Action alert recipients

7.3 Air Particulate Monitoring Results

The measured dust levels are shown in Appendix B and the associated graphs. The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	N/A	N/A	79%
Position 2	N/A	N/A	100%
Position 3	N/A	N/A	100%
Position 4	N/A	N/A	100%

Table 7 Recorded exceedance events at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 8 Trigger and Action alert recipients

8.0 DISCUSSION

Environmental air quality monitoring has been undertaken at the 52 Avenue Road site, during the period spanning Saturday 25 February 2023 to Friday 24 March 2023.

The results are presented herein.

Unfortunately, we are unable to present data for Position 1 from Wednesday 08 March 2023 at approximately 1030 hours to Tuesday 14 March 2023 at approximately 1115 hours.

This instance of data loss was caused by a software error with regards to the manufacturers data portal. An engineer contacted the manufacturer and they were able to resolve the issue remotely.

APPENDIX A – AIR QUALITY TERMINOLOGY

PMx Particulate Matter

Used as a measurement of air particles where x is the size of the particle measured in micrometres (or µm). PM10 describes inhalable particles, with diameters that are 10 micrometres and smaller. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM2.5 describes fine particles that are 2.5 micrometres or smaller in diameter and can only be seen with an electron microscope and are able to penetrate to the lungs. Typical sources include all types of combustion, including motor vehicles, power plants and agricultural burning. PM1 describes particles that are 1 micrometre or smaller in diameter.

TSP Total Suspended Particles

Used as a measure of the mass concentration of particulate matter in the air. TSP covers the full range of particle sizes and is commonly measured alongside PM10 and PM2.5.

Nephelometer

Sometimes referred to as a turbidimeter, these devices are used to measure the concentration of particulates suspended in a fluid. Suspended particulates are measured by employing a light beam and a light detector set to one side (often 90°) of the source beam. Particle density is then a function of the light reflected into the detector from the particles.

APPENDIX B – MAXIMUM P2.5/PM10 LEVELS

The following table presents the maximum PM2.5 levels measured during the period Saturday 25 February 2023 to Friday 24 March 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/02/2023	5	8	5	4
26/02/2023	No Work	No Work	No Work	No Work
27/02/2023	4	7	4	4
28/02/2023	6	9	6	5
01/03/2023	4	7	4	4
02/03/2023	23	36	63	21
03/03/2023	6	10	6	6
04/03/2023	6	9	5	5
05/03/2023	No Work	No Work	No Work	No Work
06/03/2023	21	38	18	16
07/03/2023	11	18	10	9
08/03/2023	10	16	10	9
09/03/2023	-	27	16	16
10/03/2023	-	7	3	3
11/03/2023	-	21	12	12
12/03/2023	No Work	No Work	No Work	No Work
13/03/2023	-	12	6	5

Date	Position 1	Position 2	Position 3	Position 4
14/03/2023	4	8	4	4
15/03/2023	11	20	12	11
16/03/2023	5	8	4	4
17/03/2023	8	16	8	7
18/03/2023	7	10	6	6
19/03/2023	No Work	No Work	No Work	No Work
20/03/2023	7	13	7	7
21/03/2023	4	7	4	3
22/03/2023	4	7	4	3
23/03/2023	6	11	6	8
24/03/2023	4	7	3	3

Table 9 Measured maximum PM2.5 levels at the development site

The following table presents the 24-hour mean average PM2.5 levels measured during the period Saturday 25 February 2023 to Friday 24 March 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/02/2023	3	6	3	3
26/02/2023	No Work	No Work	No Work	No Work
27/02/2023	3	6	3	3
28/02/2023	4	7	4	4
01/03/2023	3	6	3	3
02/03/2023	13	20	13	11
03/03/2023	5	9	5	5
04/03/2023	5	10	5	5
05/03/2023	No Work	No Work	No Work	No Work
06/03/2023	11	18	10	10
07/03/2023	9	15	9	8
08/03/2023	16	20	13	12
09/03/2023	-	17	10	9
10/03/2023	-	6	3	3
11/03/2023	-	13	7	7
12/03/2023	No Work	No Work	No Work	No Work
13/03/2023	-	8	4	4

Date	Position 1	Position 2	Position 3	Position 4
14/03/2023	3	6	2	2
15/03/2023	4	8	4	5
16/03/2023	4	8	4	4
17/03/2023	5	9	5	5
18/03/2023	5	10	5	5
19/03/2023	No Work	No Work	No Work	No Work
20/03/2023	5	8	5	5
21/03/2023	4	7	4	3
22/03/2023	3	6	3	2
23/03/2023	4	7	4	3
24/03/2023	2	6	2	2

Table 10 Measured 24-hour mean average PM2.5 levels at the development site

The following table presents the maximum PM10 levels measured during the period Saturday 25 February 2023 to Friday 24 March 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/02/2023	7	9	9	8
26/02/2023	No Work	No Work	No Work	No Work
27/02/2023	6	8	7	7
28/02/2023	10	10	10	9
01/03/2023	5	8	6	6
02/03/2023	38	43	108	35
03/03/2023	9	11	10	9
04/03/2023	8	10	9	8
05/03/2023	No Work	No Work	No Work	No Work
06/03/2023	32	41	28	24
07/03/2023	16	19	15	14
08/03/2023	14	18	14	14
09/03/2023	-	29	26	23
10/03/2023	-	7	5	6
11/03/2023	-	23	18	18
12/03/2023	No Work	No Work	No Work	No Work
13/03/2023	-	13	16	13
14/03/2023	4	9	6	6

Date	Position 1	Position 2	Position 3	Position 4
15/03/2023	17	22	18	17
16/03/2023	7	9	7	6
17/03/2023	12	17	13	12
18/03/2023	10	11	11	10
19/03/2023	No Work	No Work	No Work	No Work
20/03/2023	11	15	12	12
21/03/2023	7	7	8	8
22/03/2023	7	8	8	7
23/03/2023	10	12	13	13
24/03/2023	7	8	8	8

Table 11 Measured maximum PM10 levels at the development site

The following table presents the 24-hour mean average PM10 levels measured during the period Saturday 25 February 2023 to Friday 24 March 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/02/2023	5	7	6	6
26/02/2023	No Work	No Work	No Work	No Work
27/02/2023	5	7	5	5
28/02/2023	6	7	7	7
01/03/2023	4	7	5	5
02/03/2023	21	26	24	20
03/03/2023	7	10	8	8
04/03/2023	5	7	6	5
05/03/2023	No Work	No Work	No Work	No Work
06/03/2023	18	22	17	17
07/03/2023	10	13	11	11
08/03/2023	25	20	19	18
09/03/2023	-	21	18	17
10/03/2023	-	6	5	5
11/03/2023	-	14	12	11
12/03/2023	No Work	No Work	No Work	No Work
13/03/2023	-	10	11	10
14/03/2023	4	7	4	4

Date	Position 1	Position 2	Position 3	Position 4
15/03/2023	7	9	7	8
16/03/2023	7	8	7	7
17/03/2023	7	9	8	8
18/03/2023	10	13	11	10
19/03/2023	No Work	No Work	No Work	No Work
20/03/2023	7	8	8	7
21/03/2023	7	9	8	7
22/03/2023	5	6	6	5
23/03/2023	7	9	9	8
24/03/2023	5	6	6	5

Table 12 Measured 24-hour mean average PM10 levels at the development

APPENDIX C – PM10 Air Particulate Level Statistics for Saturday 25 February 2023 to Friday 24 March 2023

The tables below present the PM10 monitoring statistics for working hours and non-working hours during the monitoring period.

Position	Mean Average PM10 Dust Level ($\mu g/m^3$)	Minimum PM10 Dust Level ($\mu g/m^3$)	Maximum PM0 Dust Level ($\mu g/m^3$)	Data Capture Rate
Position 1	8	2	38	79%
Position 2	11	5	43	100%
Position 3	9	2	108	100%
Position 4	9	3	35	100%

Table 13 Working Day PM10 dust level statistics

Position	Mean Average PM10 Dust Level ($\mu g/m^3$)	Minimum PM10 Dust Level ($\mu g/m^3$)	Maximum PM0 Dust Level ($\mu g/m^3$)
Position 1	9	3	41
Position 2	12	5	44
Position 3	10	3	38
Position 4	10	3	37

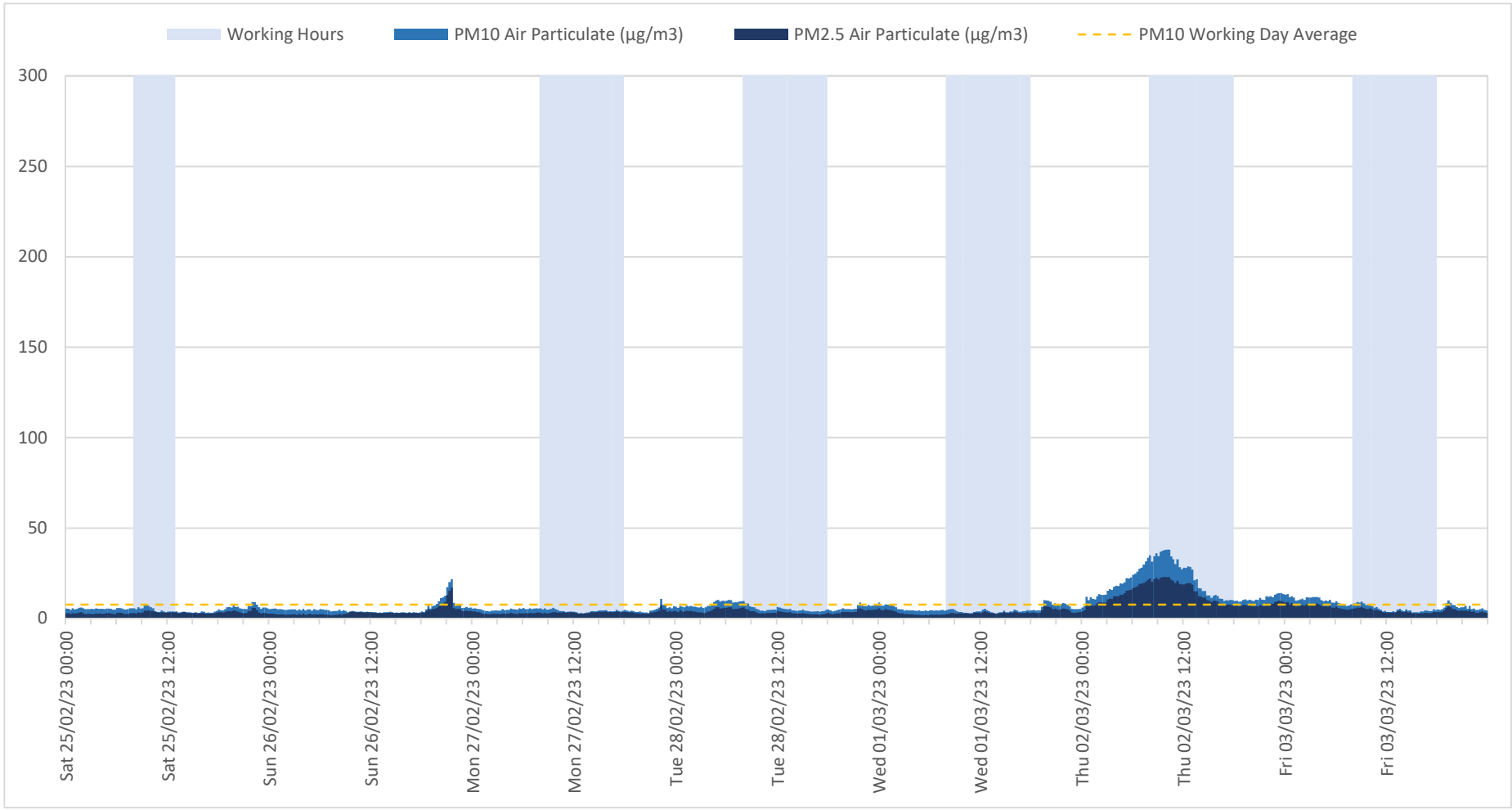
APPENDIX D – Environmental Monitoring Site Plan

Environmental Monitoring Positions	52 Avenue Road	Revision: -	Not to Scale	KP monitoring Part of the KP Acoustics Group

52 Avenue Road

Position 1

Saturday 25/02/2023 to Friday 03/03/2023

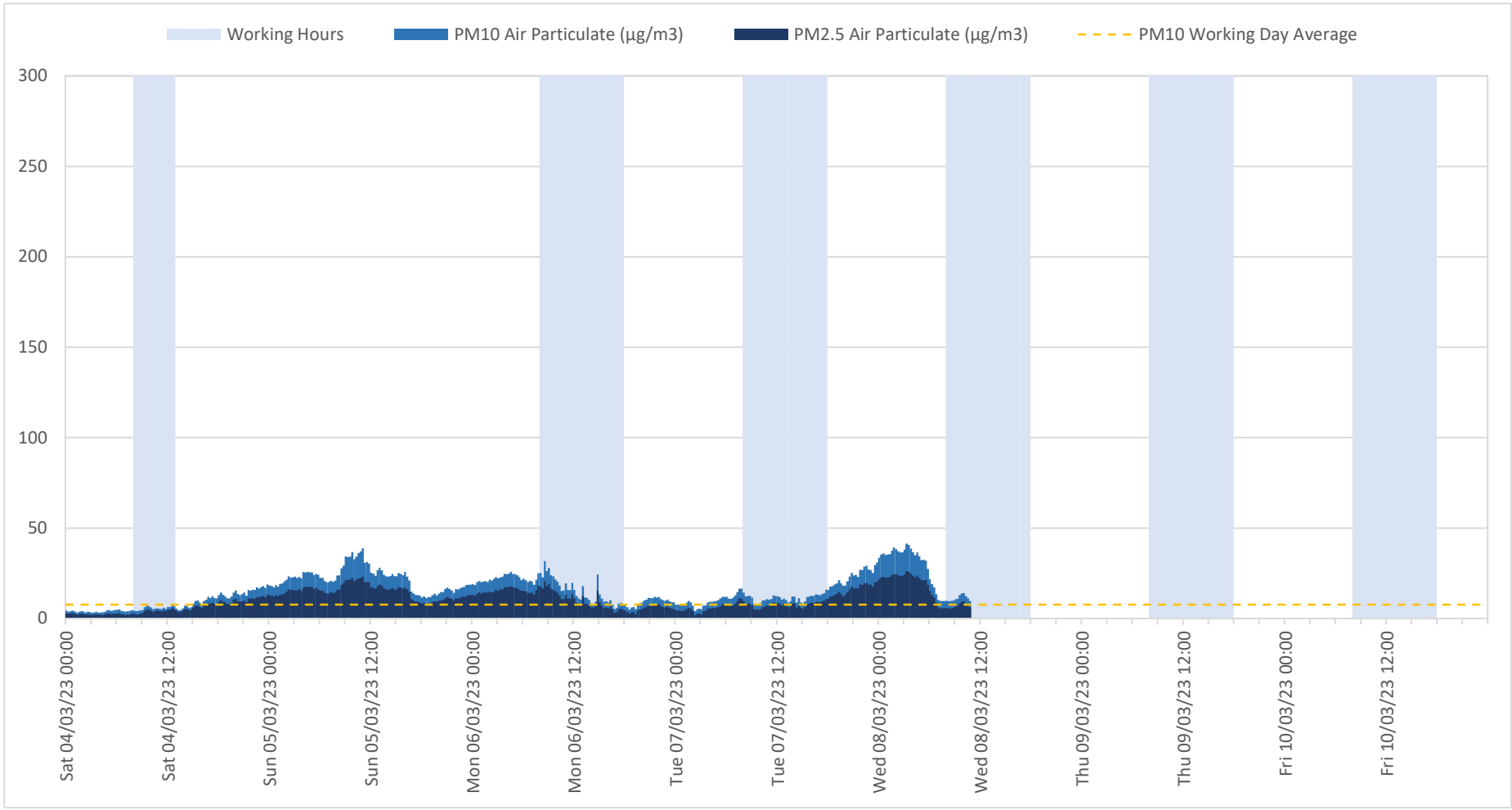


KPM-AP:26019-2.1-1

52 Avenue Road

Position 1

Saturday 04/03/2023 to Friday 10/03/2023

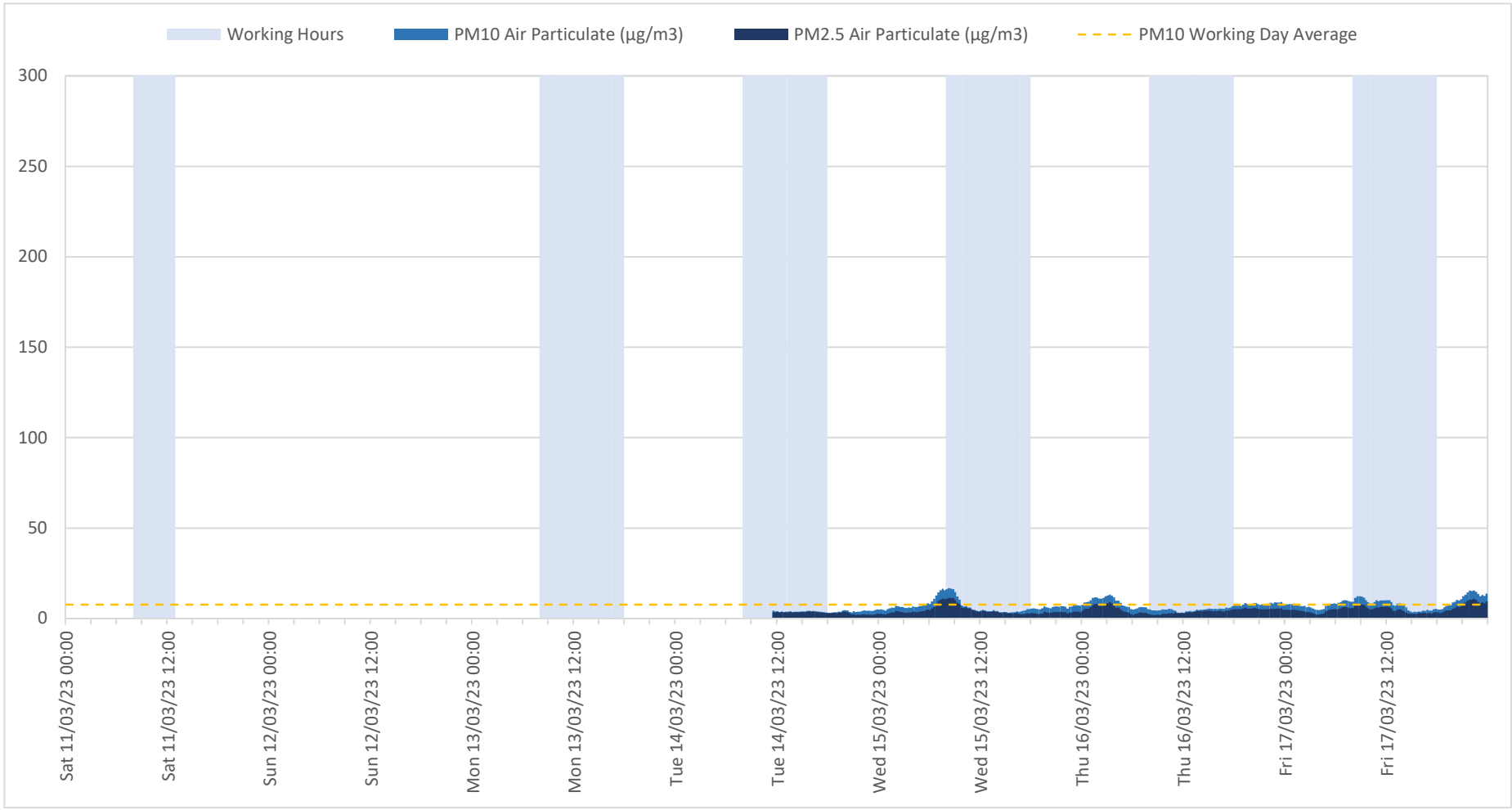


KPM-AP:26019-2.1-2

52 Avenue Road

Position 1

Saturday 11/03/2023 to Friday 17/03/2023

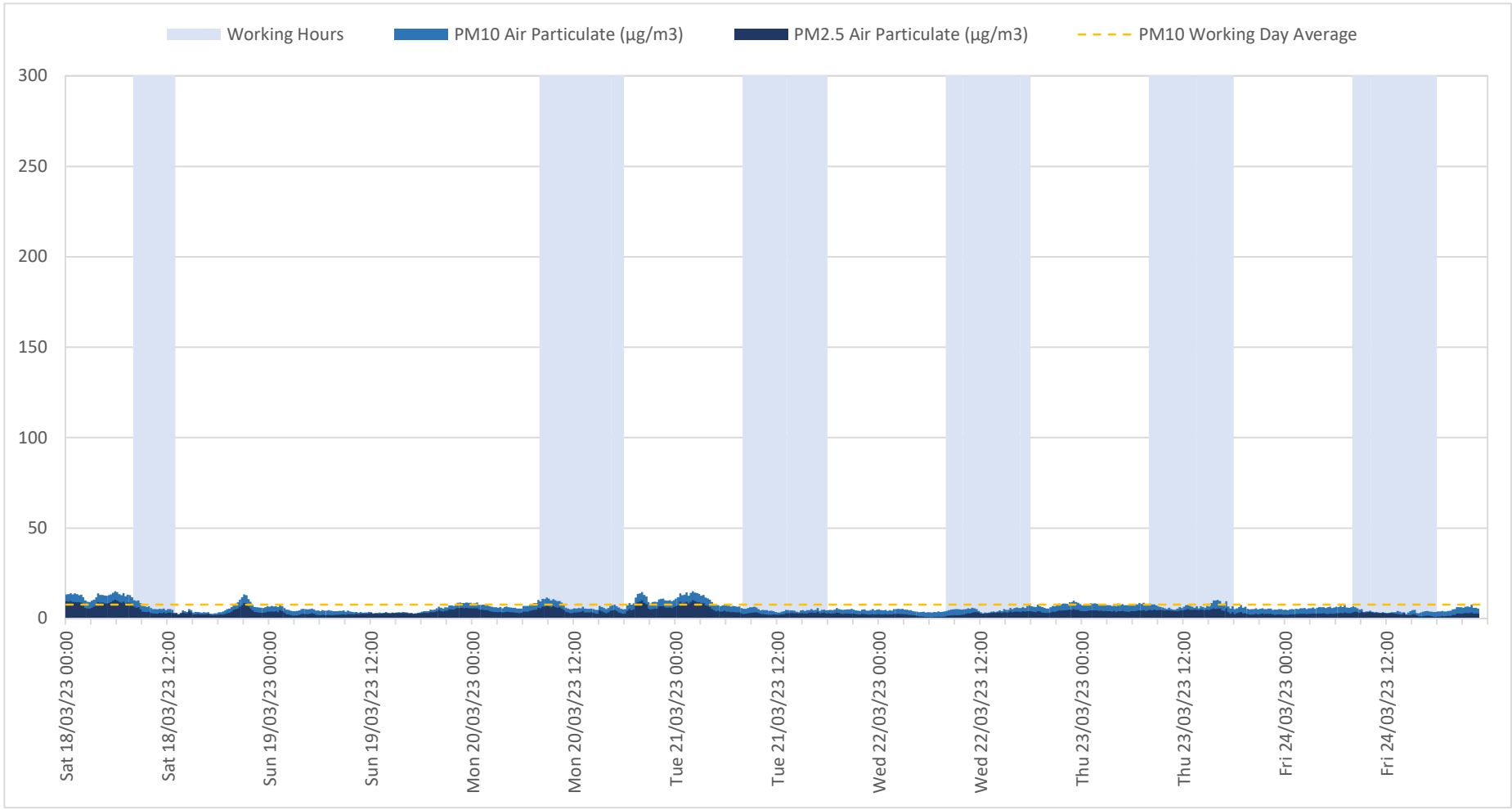


KPM-AP:26019-2.1-3

52 Avenue Road

Position 1

Saturday 18/03/2023 to Friday 24/03/2023

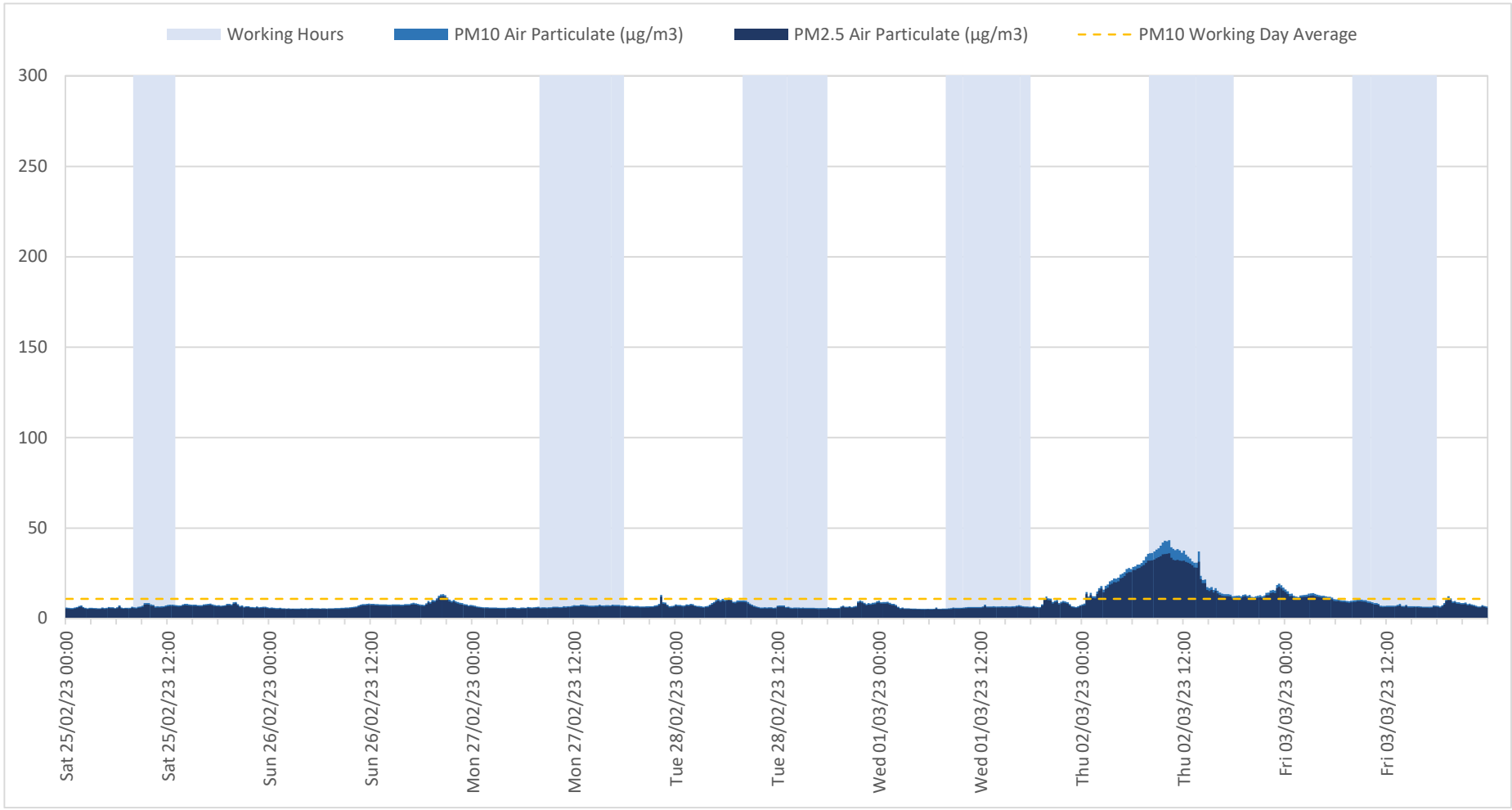


KPM-AP:26019-2.1-4

52 Avenue Road

Position 2

Saturday 25/02/2023 to Friday 03/03/2023

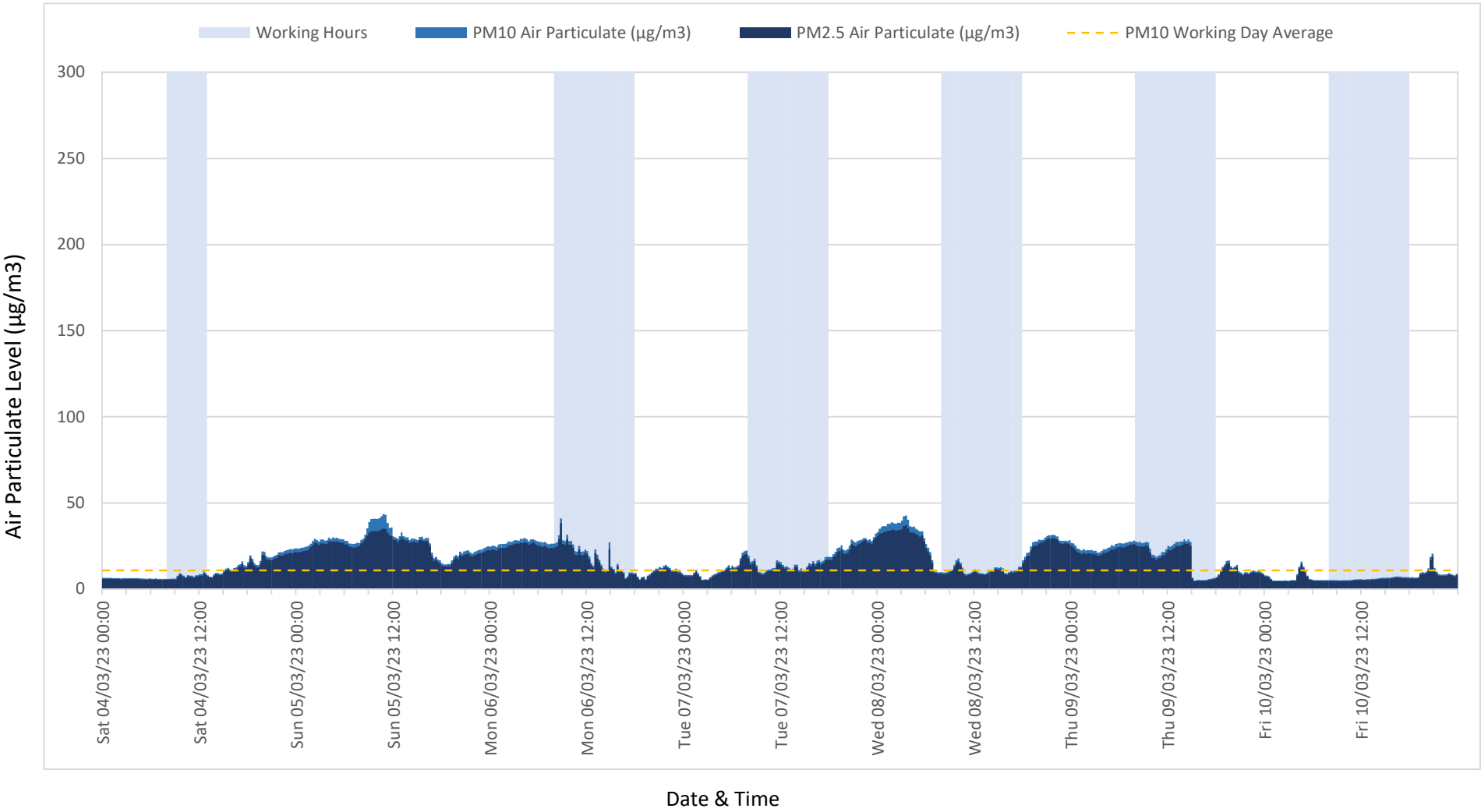


KPM-AP:26019-2.2-1

52 Avenue Road

Position 2

Saturday 04/03/2023 to Friday 10/03/2023

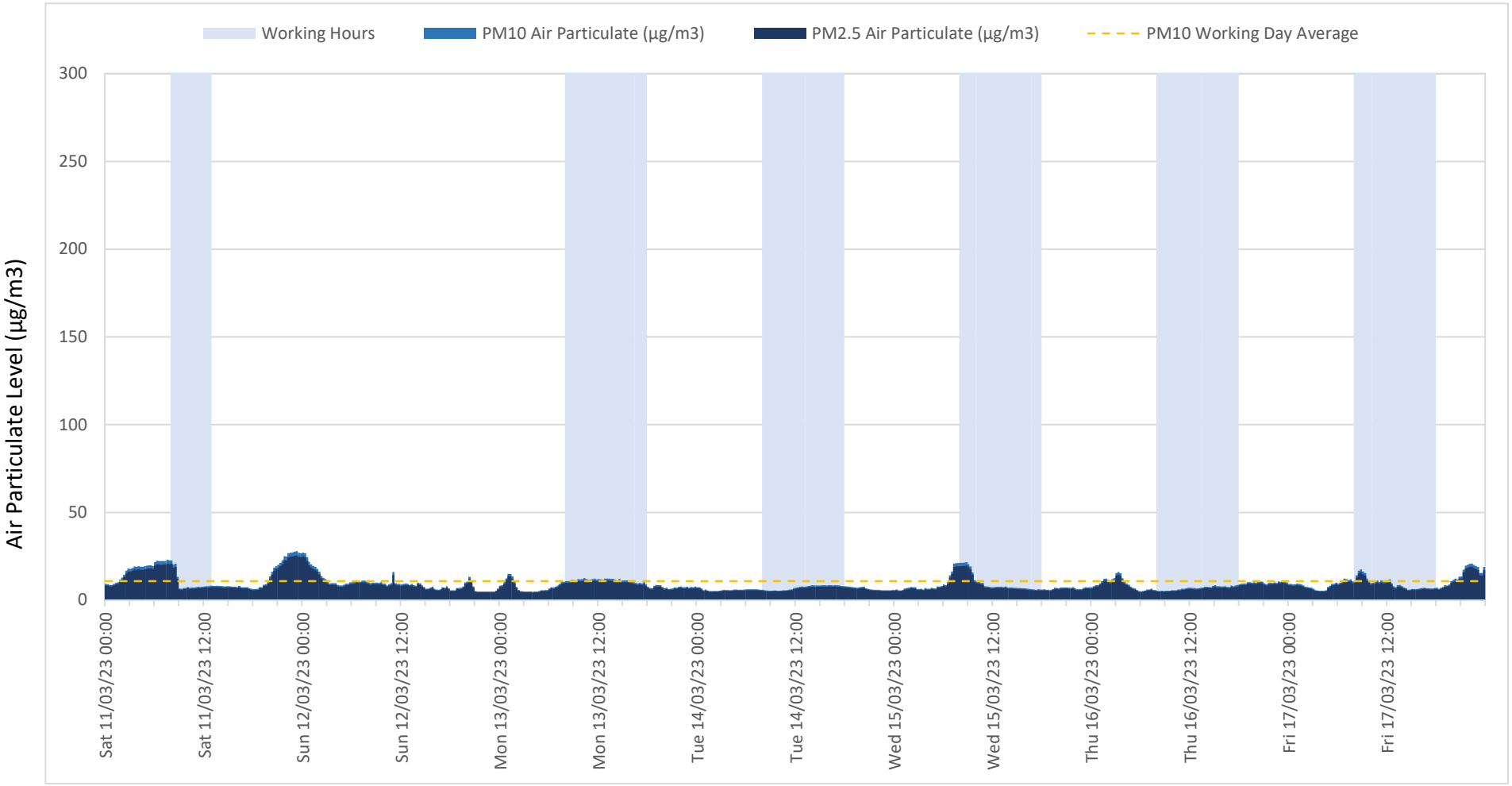


KPM-AP:26019-2.2-2

52 Avenue Road

Position 2

Saturday 11/03/2023 to Friday 17/03/2023

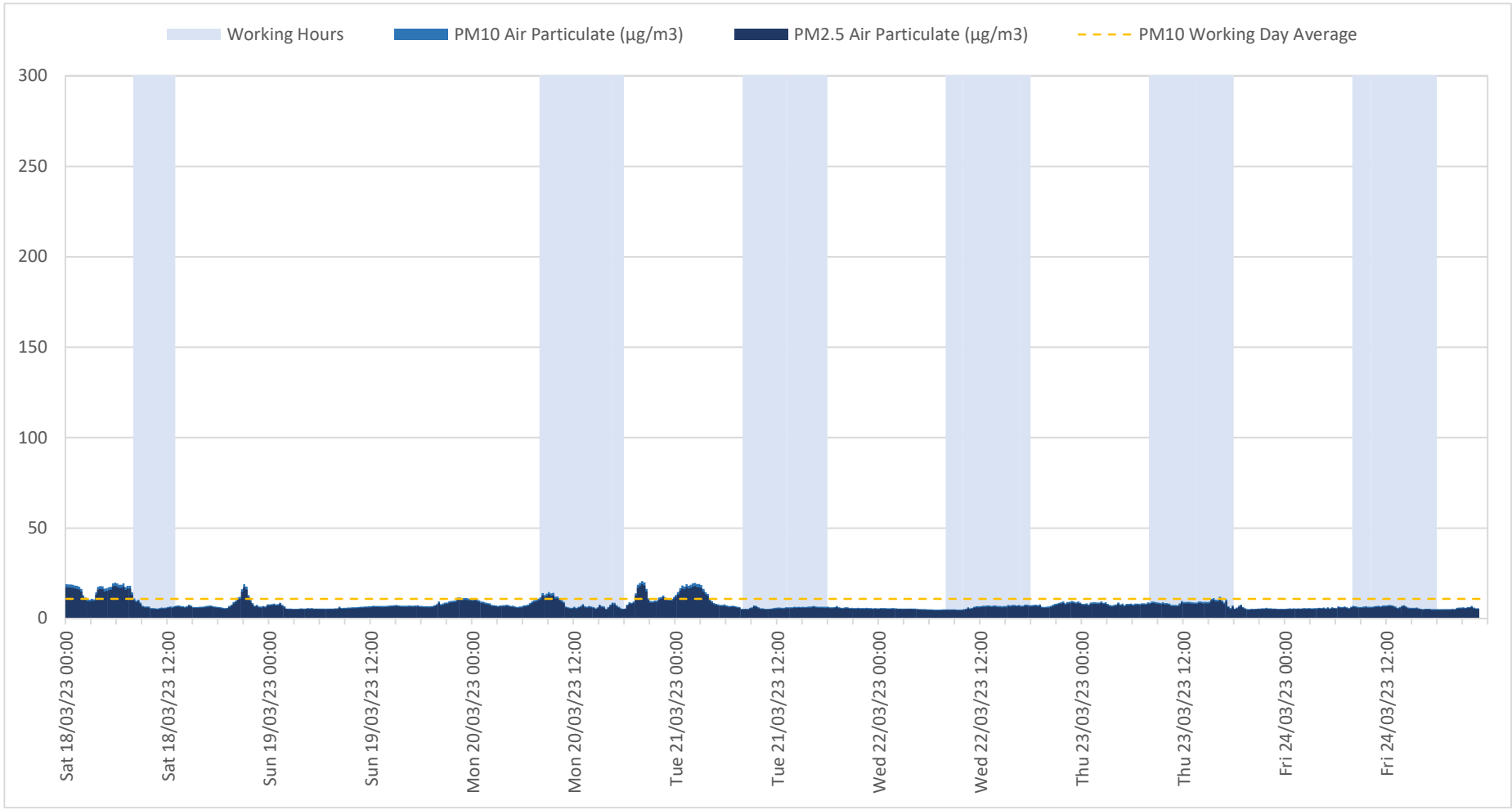


KPM-AP:26019-2.2-3

52 Avenue Road

Position 2

Saturday 18/03/2023 to Friday 24/03/2023

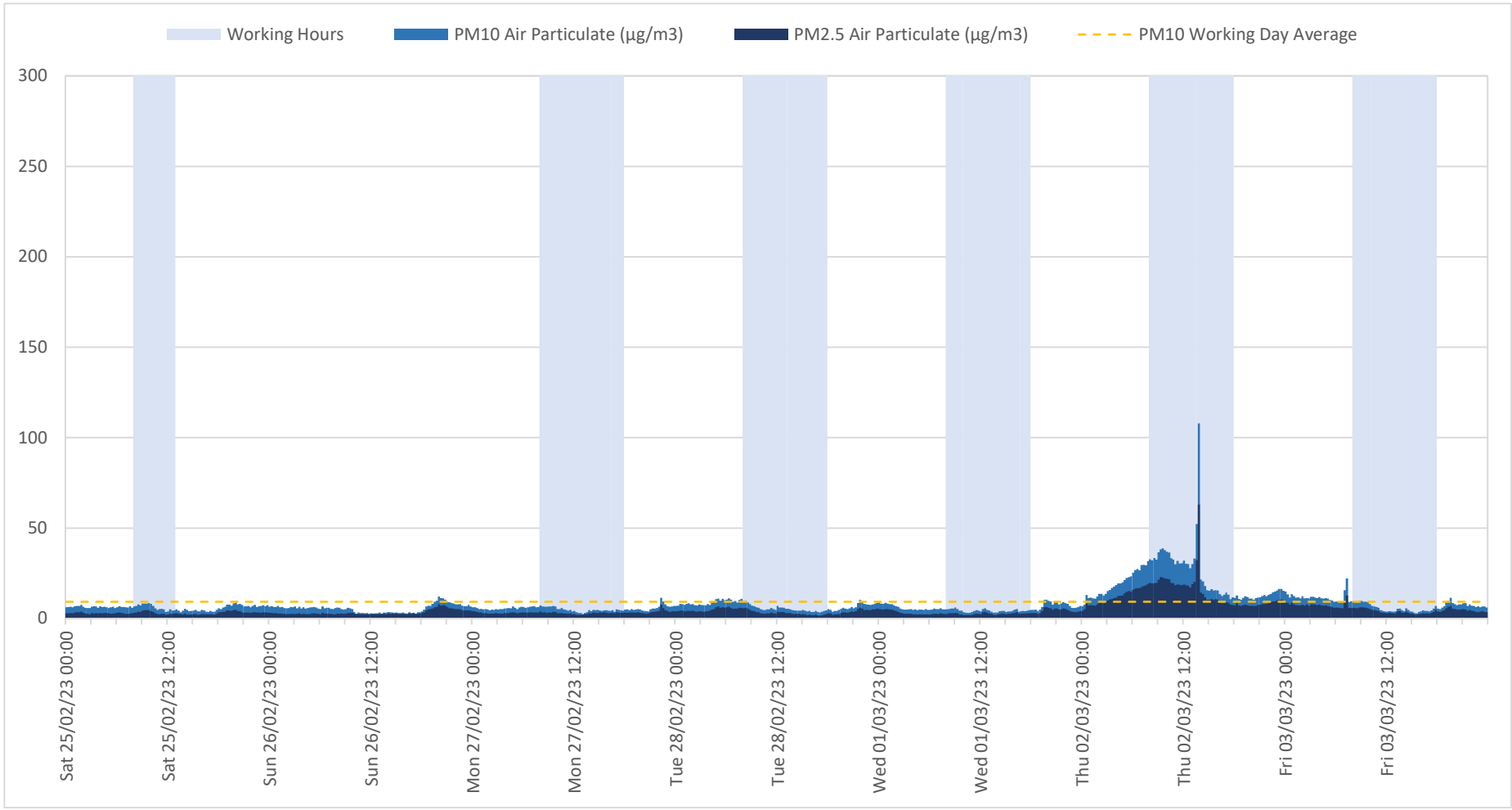


KPM-AP:26019-2.2-4

52 Avenue Road

Position 3

Saturday 25/02/2023 to Friday 03/03/2023

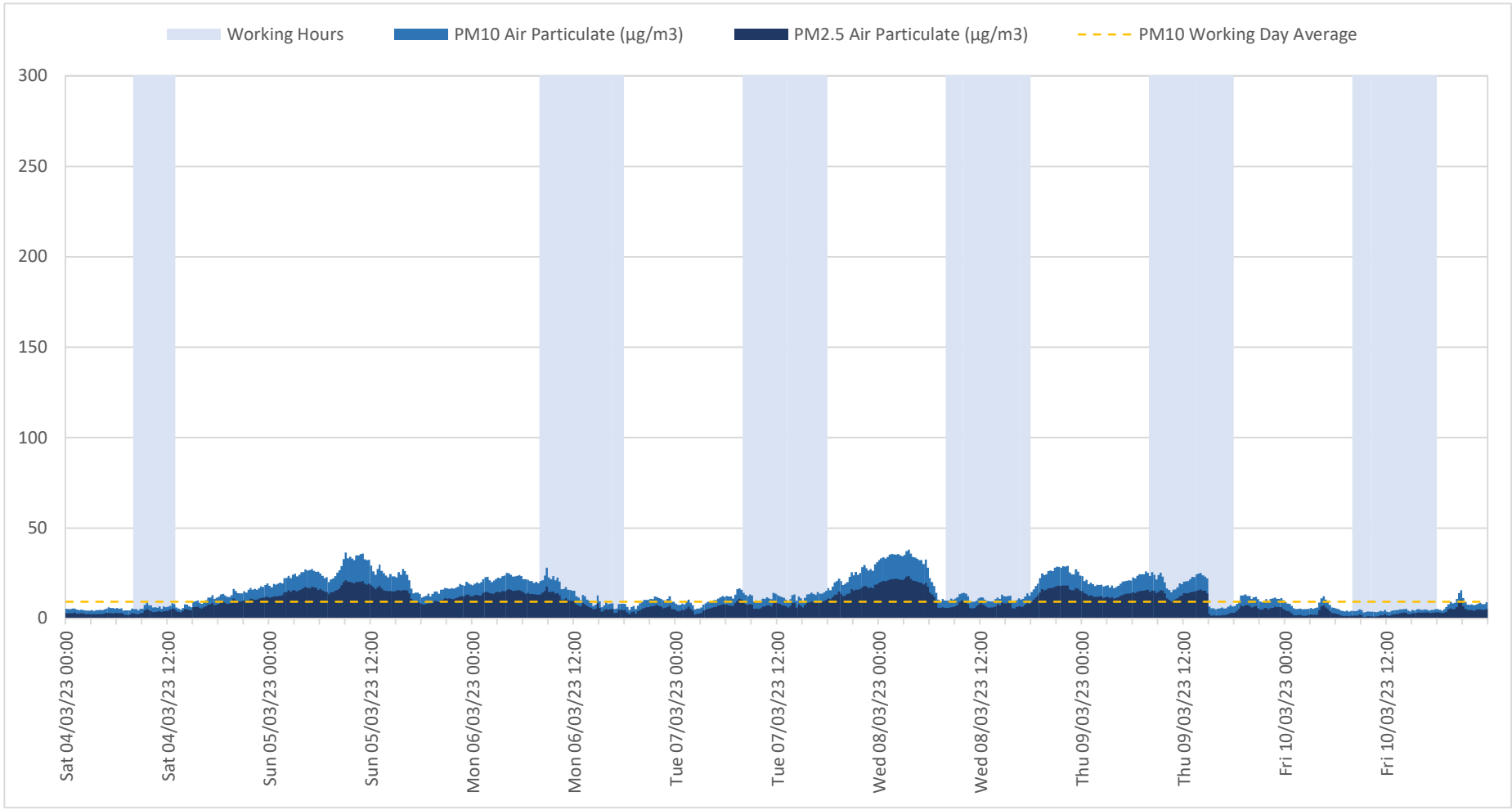


KPM-AP:26019-2.3-1

52 Avenue Road

Position 3

Saturday 04/03/2023 to Friday 10/03/2023

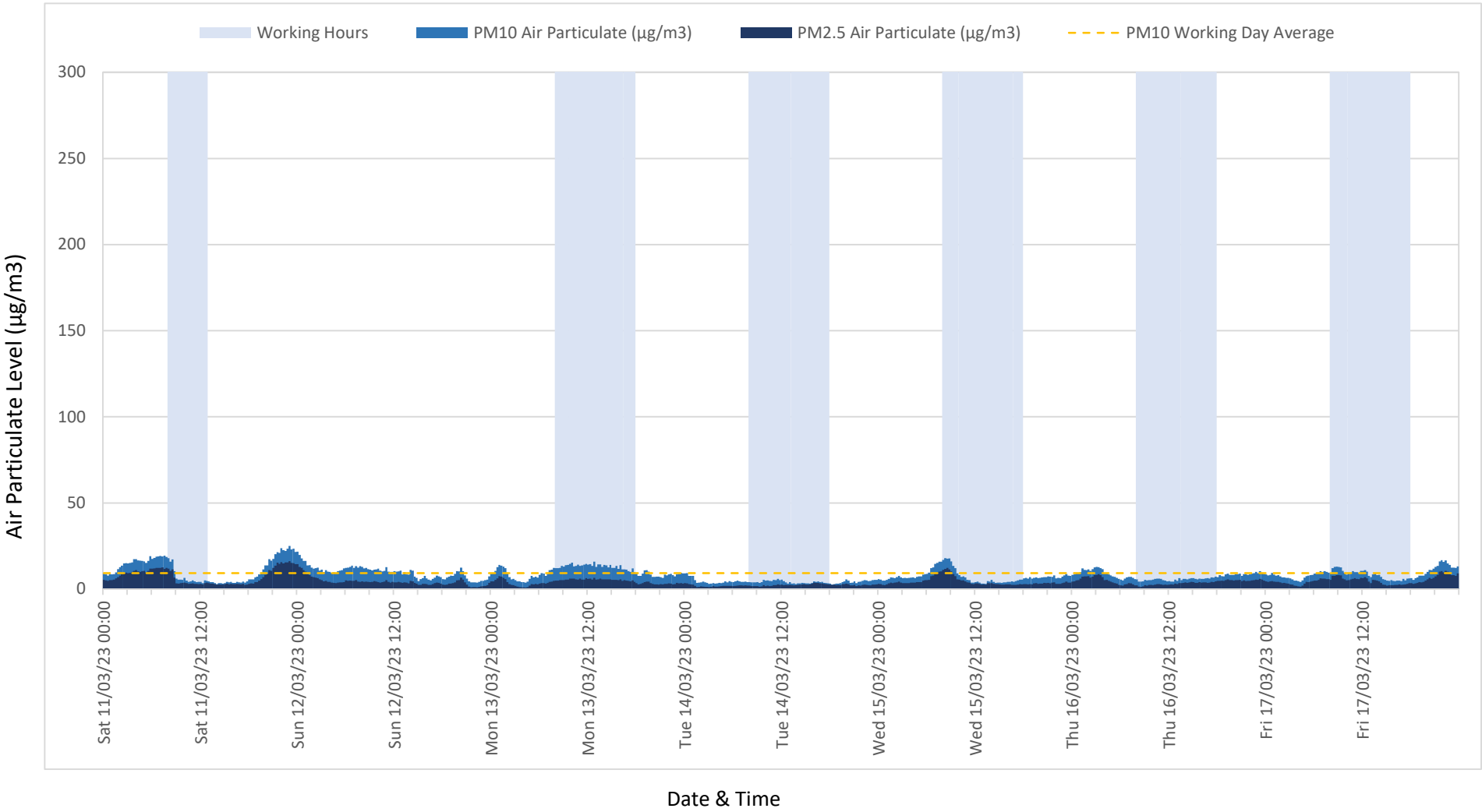


KPM-AP:26019-2.3-2

52 Avenue Road

Position 3

Saturday 11/03/2023 to Friday 17/03/2023

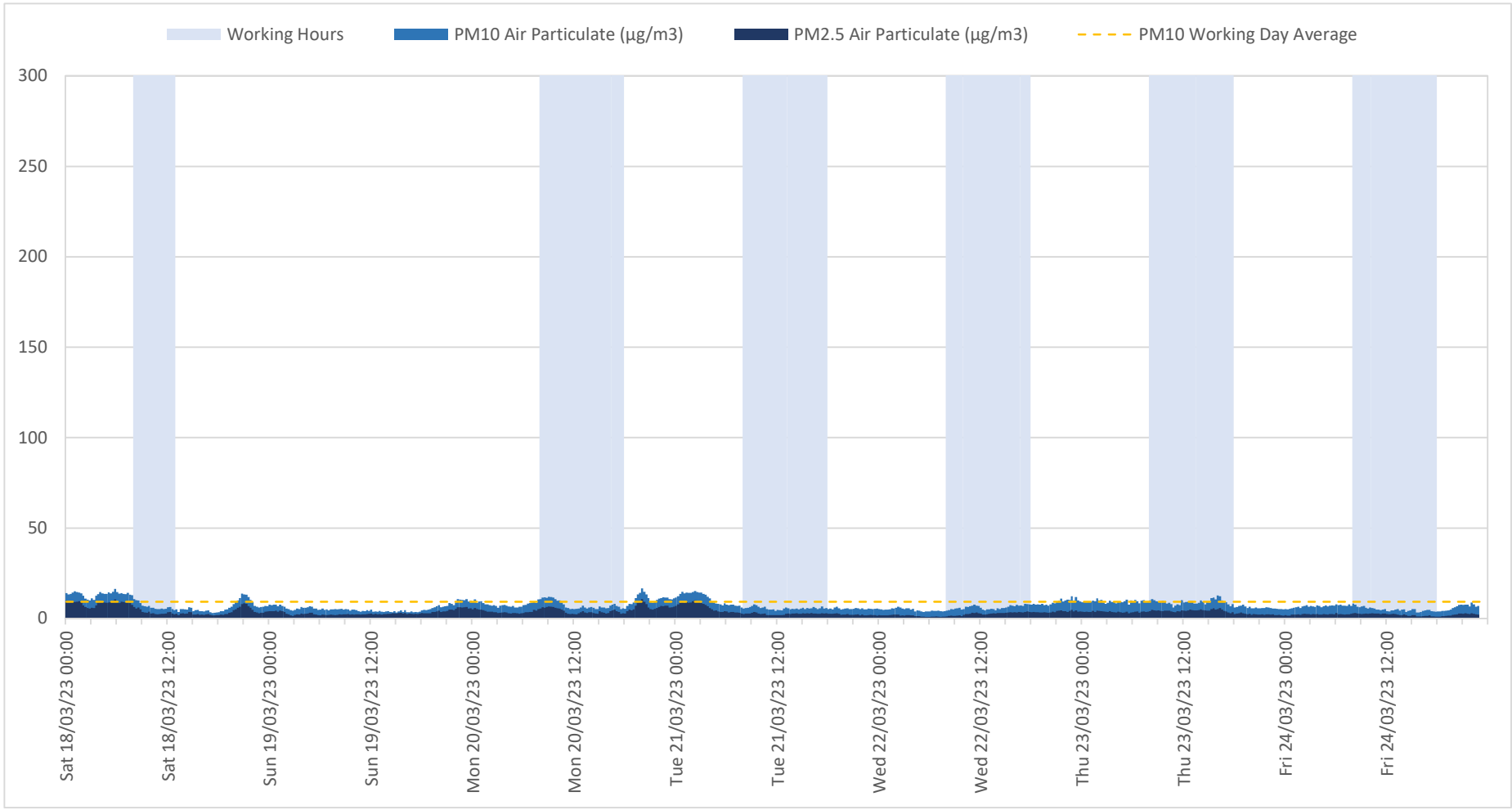


KPM-AP:26019-2.3-3

52 Avenue Road

Position 3

Saturday 18/03/2023 to Friday 24/03/2023

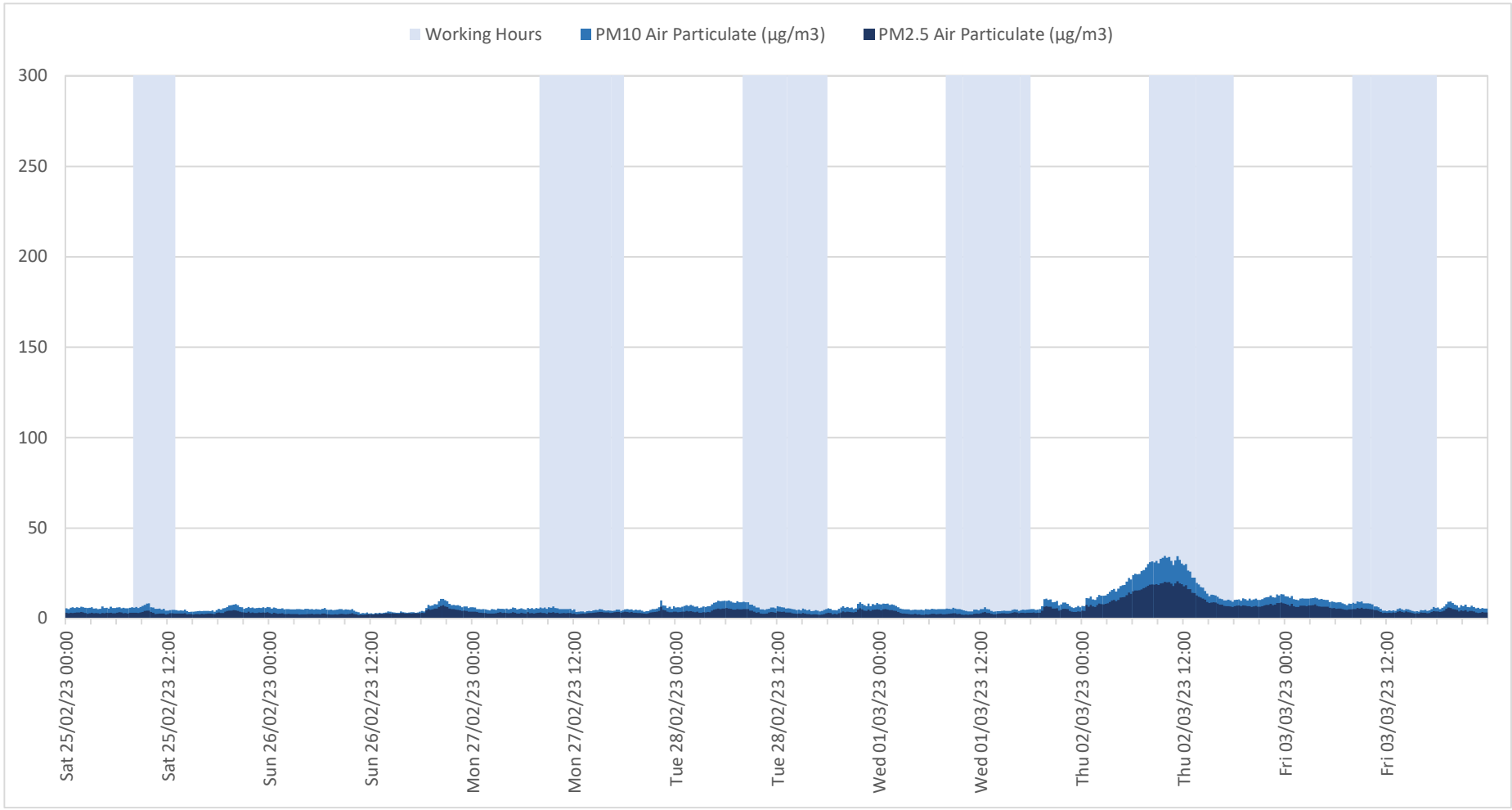


KPM-AP:26019-2.3-4

52 Avenue Road

Position 4

Saturday 25/02/2023 to Friday 03/03/2023

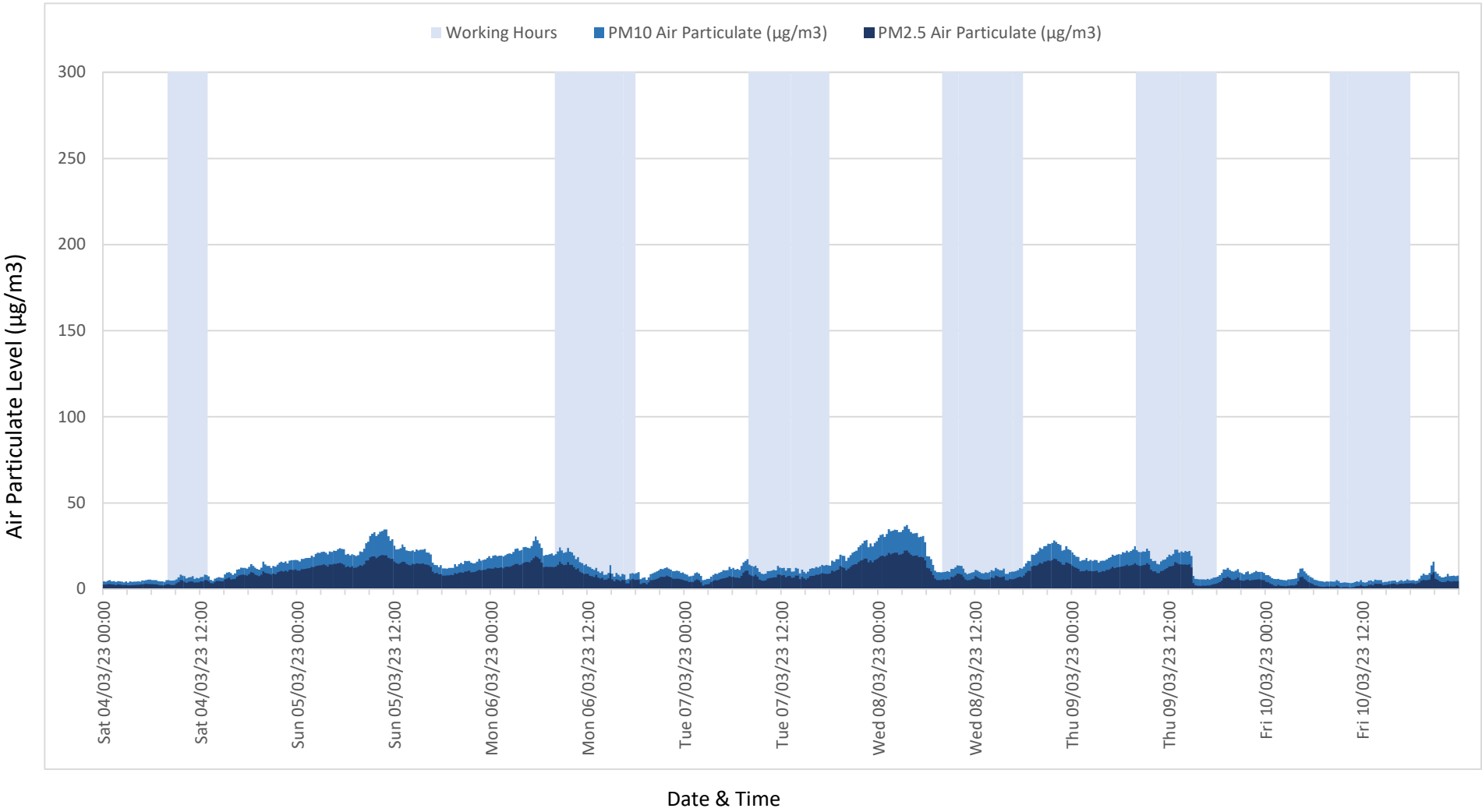


KPM-AP:26019-2.4-1

52 Avenue Road

Position 4

Saturday 04/03/2023 to Friday 10/03/2023

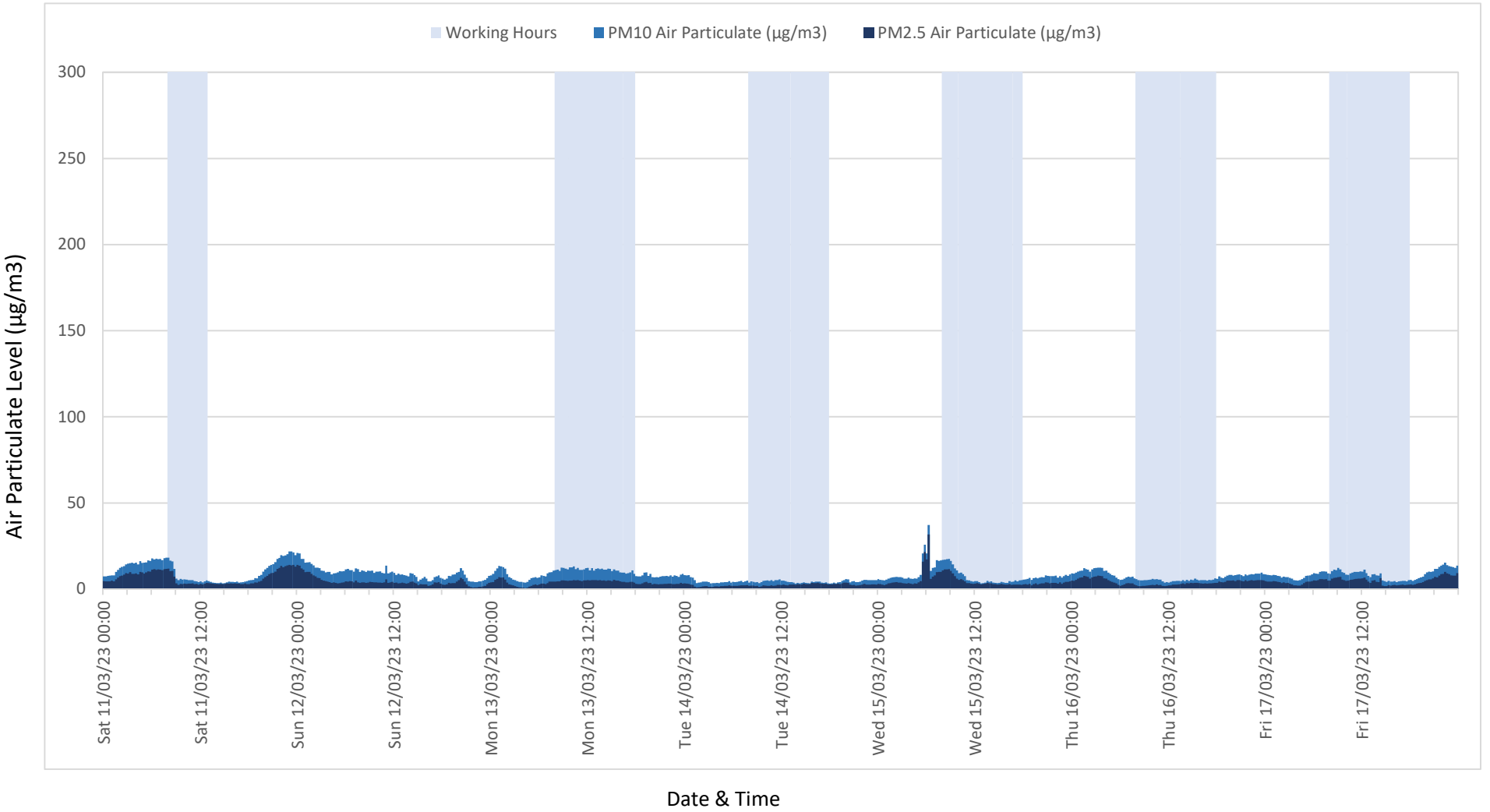


KPM-AP:26019-2.4-2

52 Avenue Road

Position 4

Saturday 11/03/2023 to Friday 17/03/2023

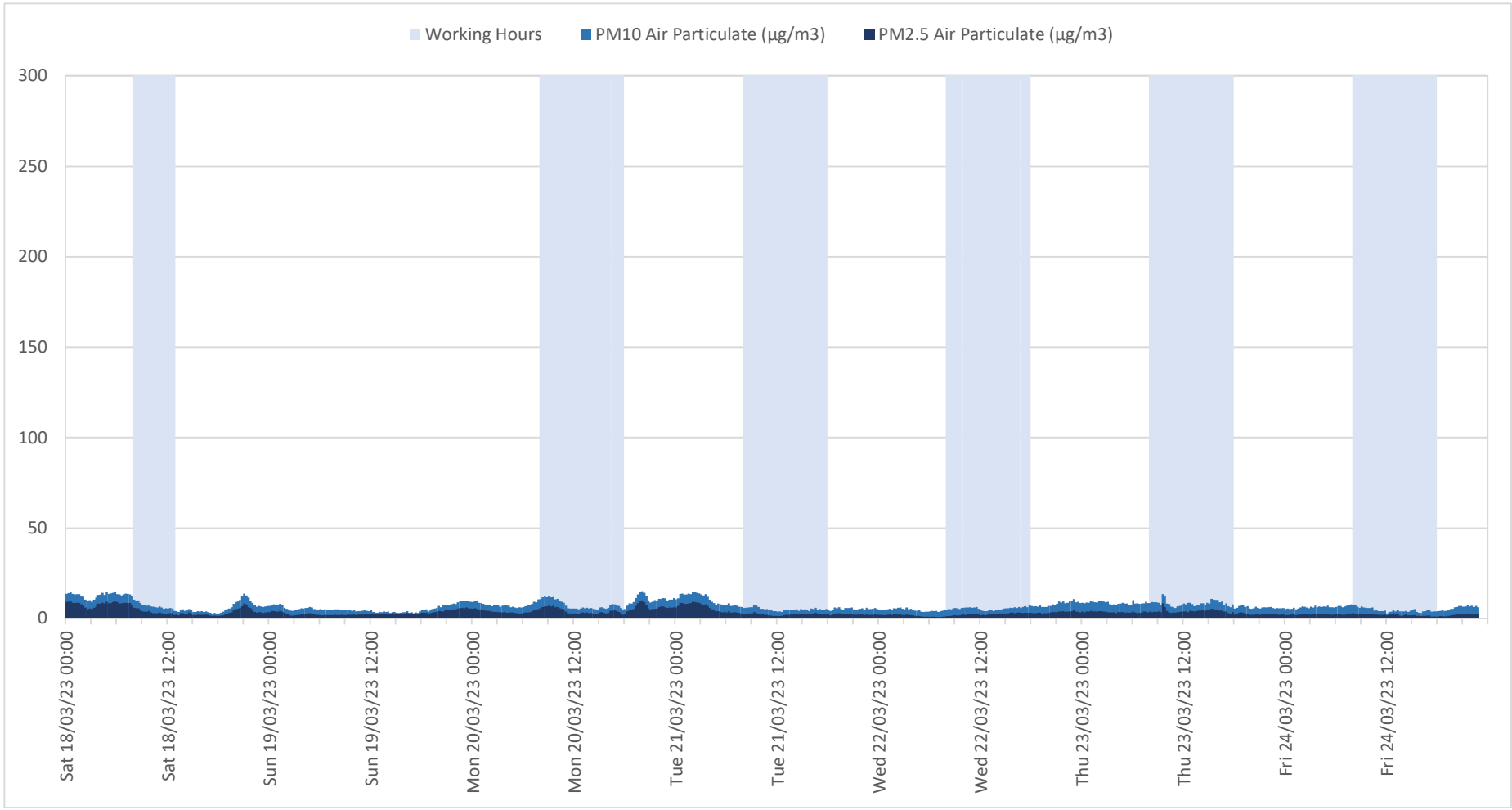


KPM-AP:26019-2.4-3

52 Avenue Road

Position 4

Saturday 18/03/2023 to Friday 24/03/2023



KPM-AP:26019-2.4-4

From: Max O'Brien <max.obrien@domvslondon.com>
Subject: Re: 52 Avenue Road - 2022/1863/P
Date: 19 January 2023 at 18:04:22 GMT
To: Mandip Sahota <ms@ntaplanning.co.uk>
Cc: Jon O'Brien <jon.obrien@domvslondon.com>, Gary Wait <gary.wait@domvslondon.com>

Hi Mandip,

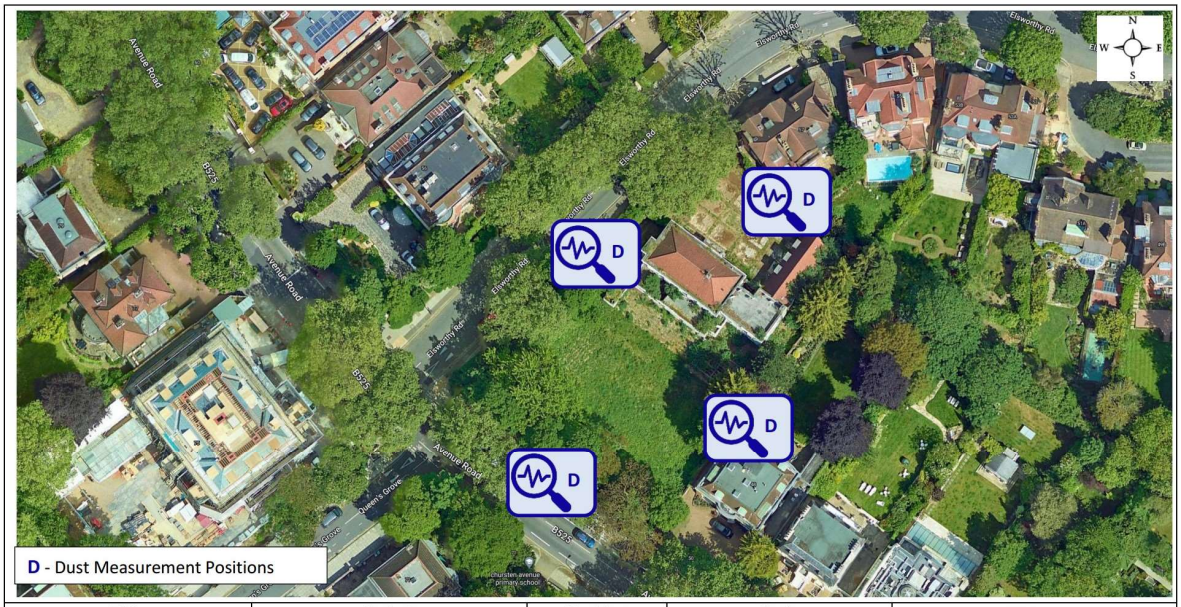
We have tentatively agreed a 4 unit proposal from KP Monitoring who can arrange installation for Tuesday.

They have proposed locations as per the attached plan, covering Elsworthy Road, 57 Elsworthy Road, Avenue Road & 50 Avenue Road.

Can you push on Sofie to agree these locations as soon as possible and that they are happy with Monthly written reports for the monitors (PM10 and PM2.5 Mcerts air particle (dust)) so we can confirm with KP and commence our baseline readings from next week.

Thank you

KP monitoring — Environmental Monitoring Services Proposal – Proposed Site Layout — 19 January 2023



Title	Project	Revision	Scale	
Proposed Environmental Monitoring Positions	KPM 26019: St Johns Wood, 52 Avenue Road, NW8	-	Not to Scale	KP monitoring

From: **Mandip Sahota** ms@ntaplanning.co.uk
Subject: Fwd: 52 Avenue Road - 2022/1863/P
Date: 16 February 2023 at 10:39
To: Max O'Brien max.obrien@domvslondon.com
Cc: Jon O'Brien jon.obrien@domvslondon.com

MS

Morning Max,

Please see below.

Kind regards,

MANDIP SINGH SAHOTA
PARTNER

NTA PLANNING LLP

Begin forwarded message:

From: Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
Date: 16 February 2023 at 09:43:48 GMT
To: Mandip Sahota <ms@ntaplanning.co.uk>
Cc: Richard Limbrick <Richard.Limbrick@camden.gov.uk>
Subject: RE: 52 Avenue Road - 2022/1863/P

Mandip,

Due to the large volume of emails you are sending about this site, can you label what it regards in each email's subject title going forward ie. This one AQ monitor query or S106 query?

See response from AQ officer below:

Assuming that the four sensors have been positioned at each corner of the site area, these locations look to be okay.

Can you please request specifications of the AQ sensors that the applicants are planning on using (so we can ensure they are of MCERTs indicative quality)?

Can you also ask for more detail on how the sensors will be installed? - It is best practice to install the monitors 2-3m high, 1m away from the building's façade and with a 270 degree angle of exposure for the inlet head (I've attached a best practice example). Also attached is the Camden Council requirements for real-time AQ monitoring which contains all relevant information for the applicants, including the reporting requirements.

Regards,

--
Sofie Fieldsend
Senior Planner

Telephone: 02079744607

From: Mandip Sahota <ms@ntaplanning.co.uk>
Sent: 16 February 2023 07:56
To: Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
Cc: Richard Limbrick <Richard.Limbrick@camden.gov.uk>

From: **Max O'Brien** max.obrien@domvslondon.com
Subject: Re: 52 Avenue Road - 2022/1863/P
Date: 17 February 2023 at 09:48
To: Mandip Sahota ms@ntaplanning.co.uk
Cc: Gary Wait gary.wait@domvslondon.com

MO

Morning Mandip,

Please see the attached from KP Acoustics. Hopefully this confirms all matters for Camden

Best,

PDF

EarthSense Zephyr...22.pdf

On 16 Feb 2023, at 10:39, Mandip Sahota <ms@ntaplanning.co.uk> wrote:

Morning Max,

Please see below.

Kind regards,

MANDIP SINGH SAHOTA
PARTNER

NTA PLANNING LLP

Begin forwarded message:

> **From:** Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
> **Date:** 16 February 2023 at 09:43:48 GMT
> **To:** Mandip Sahota <ms@ntaplanning.co.uk>
> **Cc:** Richard Limbrick <Richard.Limbrick@camden.gov.uk>
> **Subject: RE: 52 Avenue Road - 2022/1863/P**
>
> Mandip,
>
> Due to the large volume of emails you are sending about this site, can you label what it regards in each email's subject title going forward ie. This one AQ monitor query or S106 query?
>
> See response from AQ officer below:

KP Monitoring Ltd.
info@kpacoustics.com
1 Galena Road, W6 0LT London, UK
+44 (0) 208 222 8778
www.kpacoustics.com

Part of the KP Acoustics Group

52 Avenue Road, London NW8 6HP

Air Quality Monitoring Report

Report 26019.3

Saturday 25 March 2023 to Monday 24 April 2023

Domvs London (Global Holdings) Ltd
22 Wycombe End,
Beaconsfield,
Buckinghamshire,
United Kingdom HP9 1NB

KP monitoring
Part of the KP Acoustics Group

Report 26019.3 Revision History			
First Issue Date: 26/04/2023			
A		D	
B		E	
C		F	
Written by:		**Checked by:**	
Mohamad Salim Environmental Monitoring Project Engineer BSc(Hons), MIET		Richard P Booth Environmental Monitoring Manager MSc, BSc(Hons), MIOA, AMIEnvSc, AMIAQM	

KP monitoring
Part of the KP Acoustics Group

Contents

List of Attachments

EXECUTIVE SUMMARY

KP Monitoring Ltd has been commissioned to monitor the air quality levels at the 52 Avenue Road site, 52 Avenue Road, St Johns Wood, London NW8 6HP.

Air quality levels have been measured at 4No. positions around the development site. The measured parameters include PM2.5 particulate, PM10 particulate.

The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	0	0	100%
Position 2	0	0	100%
Position 3	0	0	83%
Position 4	0	0	89%

Table 1 Recorded exceedance events at the development site

The results are presented herein.

1.0 INTRODUCTION

KP Monitoring Ltd have been appointed by Domvs London (Global Holdings) Ltd to monitor the ongoing air quality levels from the site at 52 Avenue Road, and to present the results within baseline monthly reports.

This report details the procedures employed and the data obtained during the monitoring period spanning Saturday 25 March 2023 to Monday 24 April 2023.

2.0 SITE DESCRIPTION

The monitoring site is located within the London Borough of Camden's jurisdiction. It is bounded by Elsworthy Road to the north, Elsworthy Road to the west, residential properties to the south, and large residential landscapes to the east.

3.0 SITE WORKING HOURS

It is our understanding that no works are currently taking place at the development site. Once work commence, however, we understand that works shall take place between the following hours. These daytime periods shall hereby be referred to as the 'Working Day'.

Day	Start time	End Time
Monday	08:00	18:00
Tuesday	08:00	18:00
Wednesday	08:00	18:00
Thursday	08:00	18:00
Friday	08:00	18:00
Saturday	08:00	13:00
Sunday	No Work	No Work

Table 2 Site working hours referred to as 'Working Day'

4.0 INSTALLED EQUIPMENT

Air quality monitoring equipment was installed at the 52 Avenue Road site, and has been continuously serviced, calibrated, and maintained, since Wednesday, 25 January 2023. The following equipment is currently installed:

Position	Manufacturer	Model	Serial
Position 1	Earthsense	Zephyr	1149
Position 2	Earthsense	Zephyr	1169
Position 3	Earthsense	Zephyr	948
Position 4	Earthsense	Zephyr	1043

Table 3 Installed sensor details

Each of the installed air quality monitoring sensors is equipped with a data logger and modem, and is protected from the elements with an environmental kit.

5.0 MONITORING POSITIONS

Air quality monitoring sensors have been installed at 4No. positions around the development site. See site plan in Appendix D. The following table describes these positions.

Position	Monitoring Position
Position 1	The monitor is situated adjacent to Elsworthy Road at an approximate height of 2.5 metres.
Position 2	The monitor is situated adjacent to Elsworthy Road on the north western area of site and is at an approximate height of 2.5 metres.
Position 3	The monitor is situated on the south eastern area of site and is at an approximate height of 1 metre.
Position 4	The monitor is situated on the north eastern area of site and is at an approximate height of 1 metre.

Table 4 Description of monitoring positions

The above positions were recommended and approved by Camden Council as demonstrated in the attached email chain.

6.0 METHODOLOGY

Fully automated air quality monitoring has been undertaken at the 52 Avenue Road site, from Saturday 25 March 2023 to Monday 24 April 2023.

The air quality monitors are sensitive to airborne particle concentrations down to a fraction of a microgram per cubic metre and provide detailed air quality measurements in real-time. A dedicated microprocessor analyses individual particles even if there are millions per litre.

7.0 AIR PARTICULATE (DUST)

7.1 Measured Particulates

Fully automated dust monitoring has been undertaken to measure PM2.5, and PM10 particulate at the 52 Avenue Road site.

7.2 Project Trigger & Action Levels

It is our understanding that there are currently no defined air particulate Trigger and Action levels for this project.

Position	Trigger Level (PM10, µg/m^3, 15min)	Action Level (PM10, µg/m^3, 15min)
Position 1	N/A	N/A
Position 2	N/A	N/A
Position 3	N/A	N/A
Position 4	N/A	N/A

Table 5 Defined Trigger and Action levels at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 6 Trigger and Action alert recipients

7.3 Air Particulate Monitoring Results

The measured dust levels are shown in Appendix B and the associated graphs. The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	N/A	N/A	100%
Position 2	N/A	N/A	100%
Position 3	N/A	N/A	83%
Position 4	N/A	N/A	89%

Table 7 Recorded exceedance events at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 8 Trigger and Action alert recipients

During the monitoring period of 25 March 2023 to Monday 24 April 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 1.

During the monitoring period of 25 March 2023 to Monday 24 April 2023, there were 15No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 2. 0No. of these days exceeded an average PM10 particulate matter level of 50µg/m^3 over 24-hours.

During the monitoring period of 25 March 2023 to Monday 24 April 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 3.

During the monitoring period of 25 March 2023 to Monday 24 April 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 4.

Using the data collected from the beginning of the project on 23 January 2023, we have estimated the Annual Mean PM10 particulate matter for each monitoring location. This Annual Mean has been seasonally corrected to allow for the short-term monitoring period, and is presented below.

Background Site	Annual Mean 2022 (Am)	Period Mean 2022 (Pm)	Ratio (Am/Pm)
London Bloomsbury	17.3	14.6	1.2
Euston Road, Camden	20.6	22.0	0.9
Coopers Lane, Camden	16.5	15.6	1.1
		Average (Ra)	1.1

Table 9 Annualised Continuous Monitoring Data for 23 January 2023 to 24 April 2023

The Period Mean PM 10 particulate matter at Position 1 was 11.04µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 12.14µg/m^3. The total data capture rate at this location was 92% for the monitoring period of 23 January 2023 to 24 April 2023.

The Period Mean PM 10 particulate matter at Position 2 was 14.21µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 15.63µg/m^3. The total data capture rate at this location was 97% for the monitoring period of 23 January 2023 to 24 April 2023.

The Period Mean PM 10 particulate matter at Position 3 was 11.67µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 12.84µg/m^3. The total data capture rate at this location was 85% for the monitoring period of 23 January 2023 to 24 April 2023.

The Period Mean PM 10 particulate matter at Position 4 was 11.84µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 13.02µg/m^3. The total data capture rate at this location was 95% for the monitoring period of 23 January 2023 to 24 April 2023.

8.0 DISCUSSION

Environmental air quality monitoring has been undertaken at the 52 Avenue Road site, during the period spanning Saturday 25 March 2023 to Monday 24 April 2023.

The results are presented herein.

Unfortunately, we are unable to present data for Position 3 from Friday 07 April 2023 at approximately 2000 hours to Thursday 13 April 2023 at approximately 1330 hours.

This instance of data loss was caused by a depleted external battery. An engineer attended site on Thursday 13 April 2023 and proceeded to replace the depleted battery with a fully charged one.

Lastly, we are unfortunately unable to present data for Position 4 from Thursday 30 March 2023 at approximately 0230 hours to Monday 03 April 2023 at approximately 0200 hours.

This instance of data loss was caused by a depleted external battery. During this period of power loss, the battery's voltage level was partially replenished via its associated solar panel. An engineer attended site on Thursday 13 April 2023 and proceeded to replace the now partially depleted battery with a fully charged one.

APPENDIX A – AIR QUALITY TERMINOLOGY

PMx Particulate Matter

Used as a measurement of air particles where x is the size of the particle measured in micrometres (or µm). PM10 describes inhalable particles, with diameters that are 10 micrometres and smaller. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM2.5 describes fine particles that are 2.5 micrometres or smaller in diameter and can only be seen with an electron microscope and are able to penetrate to the lungs. Typical sources include all types of combustion, including motor vehicles, power plants and agricultural burning. PM1 describes particles that are 1 micrometre or smaller in diameter.

TSP Total Suspended Particles

Used as a measure of the mass concentration of particulate matter in the air. TSP covers the full range of particle sizes and is commonly measured alongside PM10 and PM2.5.

Nephelometer

Sometimes referred to as a turbidimeter, these devices are used to measure the concentration of particulates suspended in a fluid. Suspended particulates are measured by employing a light beam and a light detector set to one side (often 90°) of the source beam. Particle density is then a function of the light reflected into the detector from the particles.

APPENDIX B – MAXIMUM PM2.5/PM10 LEVELS

The following table presents the maximum PM2.5 levels measured during the period Saturday 25 March 2023 to Monday 24 April 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/03/2023	3	7	3	3
26/03/2023	No Work	No Work	No Work	No Work
27/03/2023	4	8	4	3
28/03/2023	6	10	5	6
29/03/2023	7	12	7	6
30/03/2023	5	8	4	-
31/03/2023	4	7	4	-
01/04/2023	6	9	5	-
02/04/2023	No Work	No Work	No Work	No Work
03/04/2023	9	15	8	8
04/04/2023	12	19	11	10
05/04/2023	12	23	12	13
06/04/2023	8	15	8	10
07/04/2023	4	8	3	4
08/04/2023	23	37	-	24
09/04/2023	No Work	No Work	No Work	No Work
10/04/2023	5	8	-	5

Date	Position 1	Position 2	Position 3	Position 4
11/04/2023	4	7	-	3
12/04/2023	4	7	-	3
13/04/2023	4	8	3	3
14/04/2023	3	7	3	3
15/04/2023	10	20	11	10
16/04/2023	No Work	No Work	No Work	No Work
17/04/2023	20	32	19	19
18/04/2023	21	33	20	19
19/04/2023	22	34	21	20
20/04/2023	8	14	8	8
21/04/2023	18	29	17	15
22/04/2023	28	46	26	26
23/04/2023	No Work	No Work	No Work	No Work
24/04/2023	6	10	7	6

Table 10 Measured maximum PM2.5 levels at the development site

The following table presents the 24-hour mean average PM2.5 levels measured during the period Saturday 25 March 2023 to Monday 24 April 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/03/2023	3	6	3	2
26/03/2023	No Work	No Work	No Work	No Work
27/03/2023	3	7	3	3
28/03/2023	4	7	4	3
29/03/2023	6	11	6	6
30/03/2023	4	7	3	4
31/03/2023	3	6	2	-
01/04/2023	4	7	4	3
02/04/2023	No Work	No Work	No Work	No Work
03/04/2023	5	8	5	5
04/04/2023	9	14	8	8
05/04/2023	11	19	10	11
06/04/2023	5	10	5	5
07/04/2023	4	8	3	3
08/04/2023	12	20	-	12
09/04/2023	No Work	No Work	No Work	No Work
10/04/2023	5	9	3	5
11/04/2023	2	6	-	2

Date	Position 1	Position 2	Position 3	Position 4
12/04/2023	2	6	-	2
13/04/2023	3	6	3	2
14/04/2023	3	7	3	3
15/04/2023	9	14	8	8
16/04/2023	No Work	No Work	No Work	No Work
17/04/2023	13	21	12	12
18/04/2023	16	26	15	14
19/04/2023	15	23	14	13
20/04/2023	7	12	7	7
21/04/2023	16	26	15	15
22/04/2023	20	32	19	18
23/04/2023	No Work	No Work	No Work	No Work
24/04/2023	9	15	9	8

Table 1 Measured 24-hour mean average PM2.5 levels at the development site

The following table presents the maximum PM10 levels measured during the period Saturday 25 March 2023 to Monday 24 April 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/03/2023	5	7	6	6
26/03/2023	No Work	No Work	No Work	No Work
27/03/2023	4	9	5	5
28/03/2023	10	11	10	11
29/03/2023	11	13	12	11
30/03/2023	9	9	11	-
31/03/2023	8	8	9	-
01/04/2023	9	10	9	-
02/04/2023	No Work	No Work	No Work	No Work
03/04/2023	11	16	12	12
04/04/2023	16	21	17	16
05/04/2023	17	25	18	19
06/04/2023	12	16	13	13
07/04/2023	4	9	6	6
08/04/2023	37	43	-	40
09/04/2023	No Work	No Work	No Work	No Work
10/04/2023	8	9	-	9
11/04/2023	5	8	-	6

Date	Position 1	Position 2	Position 3	Position 4
12/04/2023	5	8	-	6
13/04/2023	5	9	4	6
14/04/2023	5	7	6	5
15/04/2023	14	22	15	15
16/04/2023	No Work	No Work	No Work	No Work
17/04/2023	31	36	32	30
18/04/2023	33	39	33	32
19/04/2023	35	40	35	32
20/04/2023	11	16	15	14
21/04/2023	26	30	26	24
22/04/2023	47	56	44	44
23/04/2023	No Work	No Work	No Work	No Work
24/04/2023	8	11	9	8

Table 12 Measured maximum PM10 levels at the development site

The following table presents the 24-hour mean average PM10 levels measured during the period Saturday 25 March 2023 to Monday 24 April 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/03/2023	4	6	5	5
26/03/2023	No Work	No Work	No Work	No Work
27/03/2023	4	7	4	4
28/03/2023	5	7	6	6
29/03/2023	11	14	11	11
30/03/2023	7	7	8	9
31/03/2023	5	6	6	-
01/04/2023	7	8	7	6
02/04/2023	No Work	No Work	No Work	No Work
03/04/2023	7	9	8	8
04/04/2023	11	15	12	12
05/04/2023	13	18	13	13
06/04/2023	9	12	9	10
07/04/2023	5	8	5	5
08/04/2023	21	26	-	22
09/04/2023	No Work	No Work	No Work	No Work
10/04/2023	8	11	3	9
11/04/2023	4	6	-	4

Date	Position 1	Position 2	Position 3	Position 4
12/04/2023	4	6	-	5
13/04/2023	4	7	4	4
14/04/2023	4	6	4	4
15/04/2023	10	12	10	11
16/04/2023	No Work	No Work	No Work	No Work
17/04/2023	16	21	17	17
18/04/2023	24	29	25	23
19/04/2023	26	31	27	25
20/04/2023	9	12	9	9
21/04/2023	20	25	21	20
22/04/2023	41	46	39	39
23/04/2023	No Work	No Work	No Work	No Work
24/04/2023	14	18	14	14

Table 93 Measured 24-hour mean average PM10 levels at the development

APPENDIX C – PM10 Air Particulate Level Statistics for Saturday 25 March 2023 to Monday 24 April 2023

The tables below present the PM10 monitoring statistics for working hours and non-working hours during the monitoring period.

Position	Mean Average 15 min PM10 Dust Level ($\mu g/m^3$)	Minimum 15 min PM10 Dust Level ($\mu g/m^3$)	Maximum 15 min PM10 Dust Level ($\mu g/m^3$)	Data Capture Rate
Position 1	11	2	47	100%
Position 2	15	5	56	100%
Position 3	12	2	44	83%
Position 4	12	2	44	89%

Table 14 Working Day PM10 dust level statistics

Position	Mean Average 15 min PM10 Dust Level ($\mu g/m^3$)	Minimum 15 min PM10 Dust Level ($\mu g/m^3$)	Maximum 15 min PM10 Dust Level ($\mu g/m^3$)
Position 1	13	3	45
Position 2	16	5	50
Position 3	13	3	43
Position 4	13	3	47

Table 15 Out of hours PM10 dust level statistics

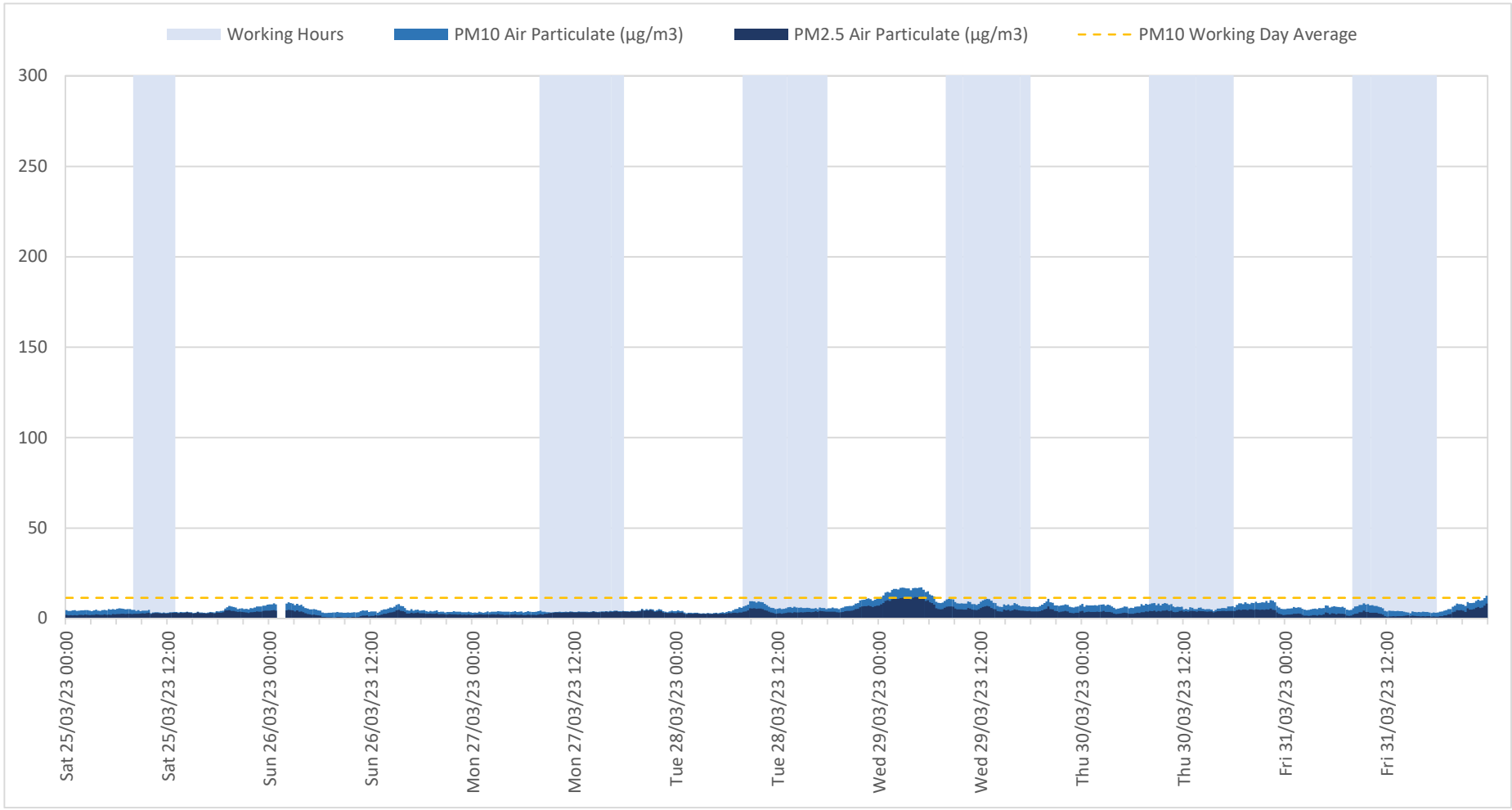
APPENDIX D – Environmental Monitoring Site Plan

Environmental Monitoring Positions	52 Avenue Road	Revision: -	Not to Scale	KP monitoring Part of the KP Acoustics Group

52 Avenue Road

Position 1

Saturday 25/03/2023 to Friday 31/03/2023

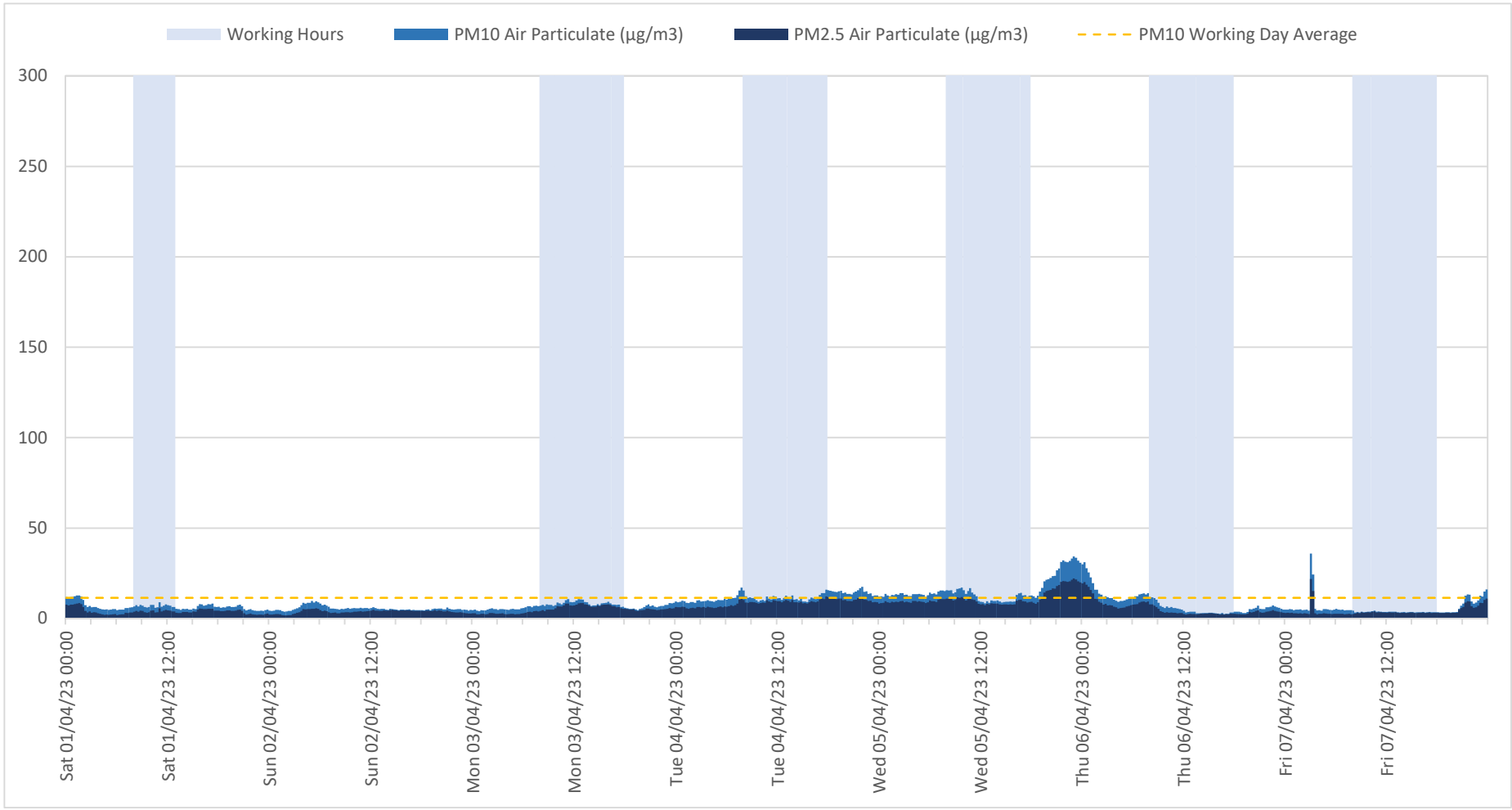


KPM-AP:26019-3.1-1

52 Avenue Road

Position 1

Saturday 01/04/2023 to Friday 07/04/2023

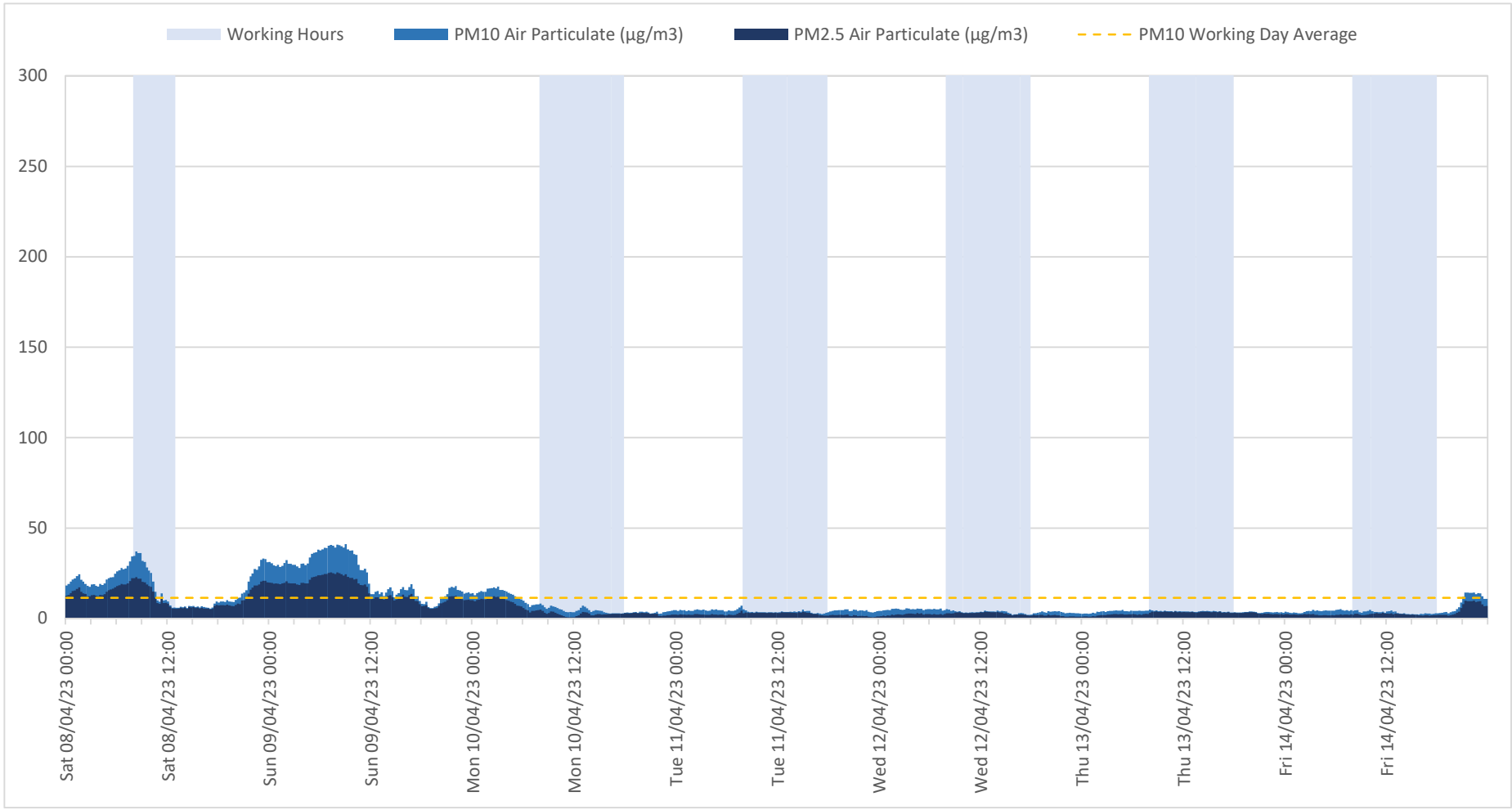


KPM-AP:26019-3.1-2

52 Avenue Road

Position 1

Saturday 08/04/2023 to Friday 14/04/2023

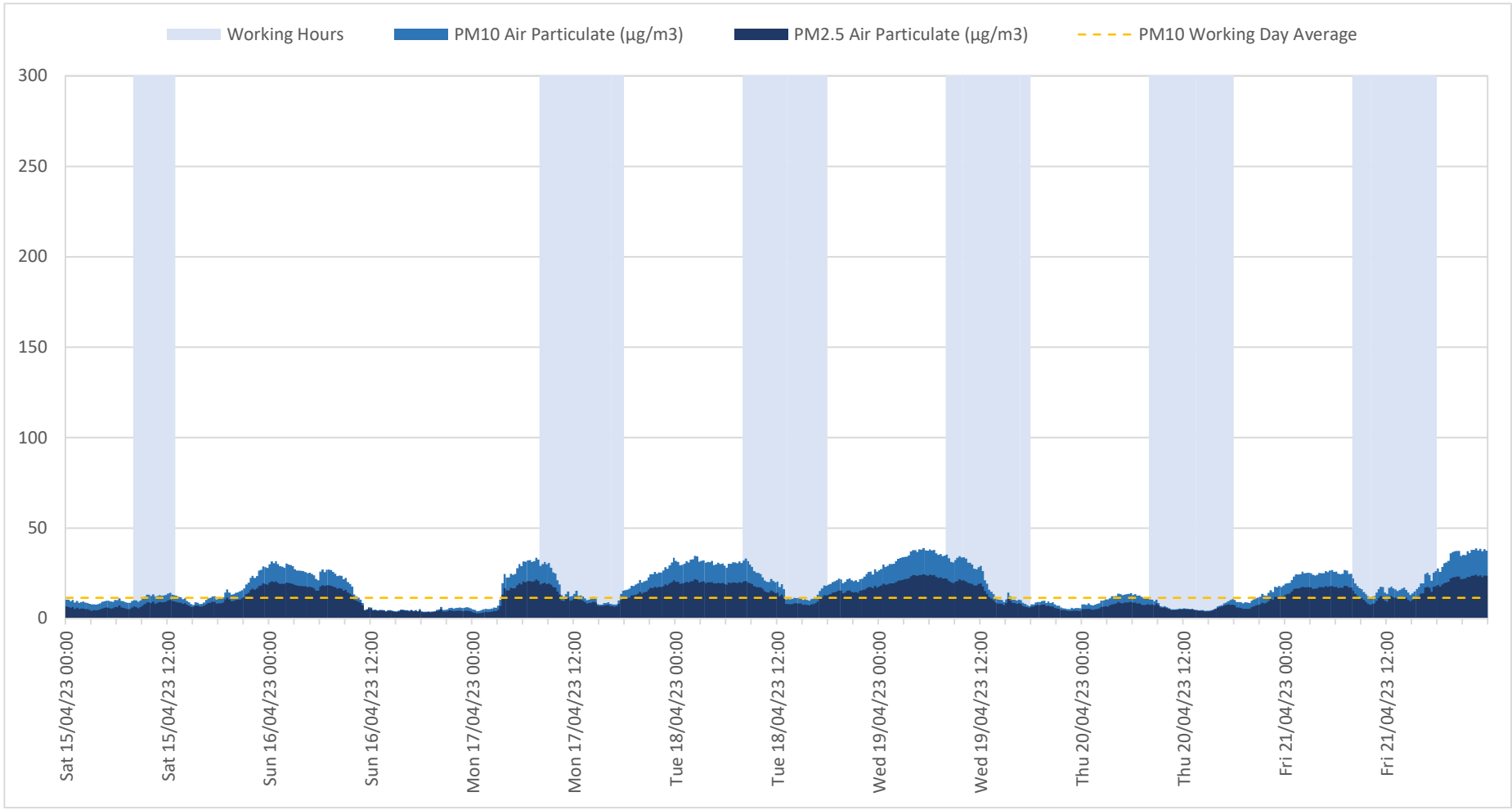


KPM-AP:26019-3.1-3

52 Avenue Road

Position 1

Saturday 15/04/2023 to Friday 21/04/2023

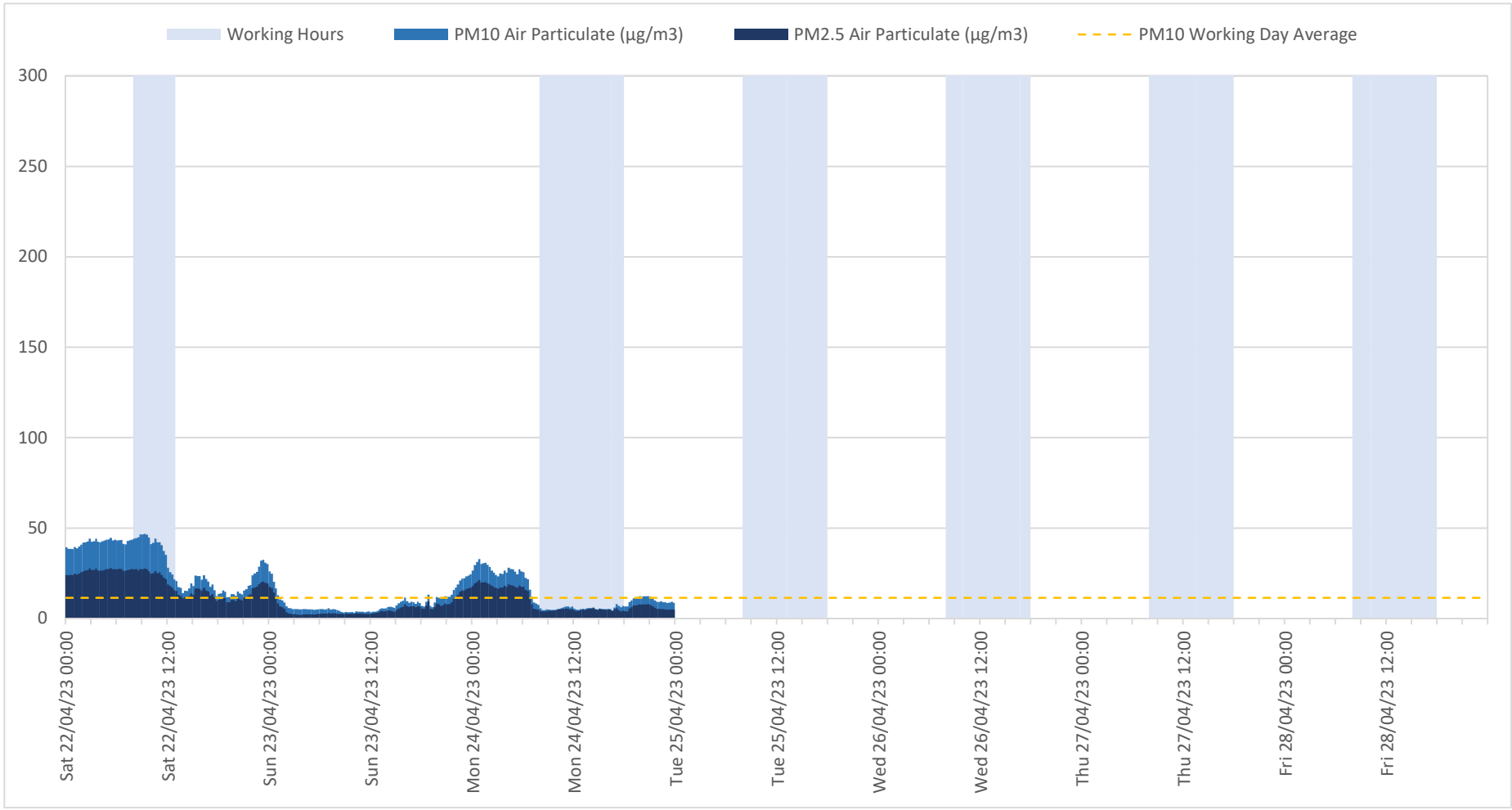


KPM-AP:26019-3.1-4

52 Avenue Road

Position 1

Saturday 22/04/2023 to Friday 28/04/2023

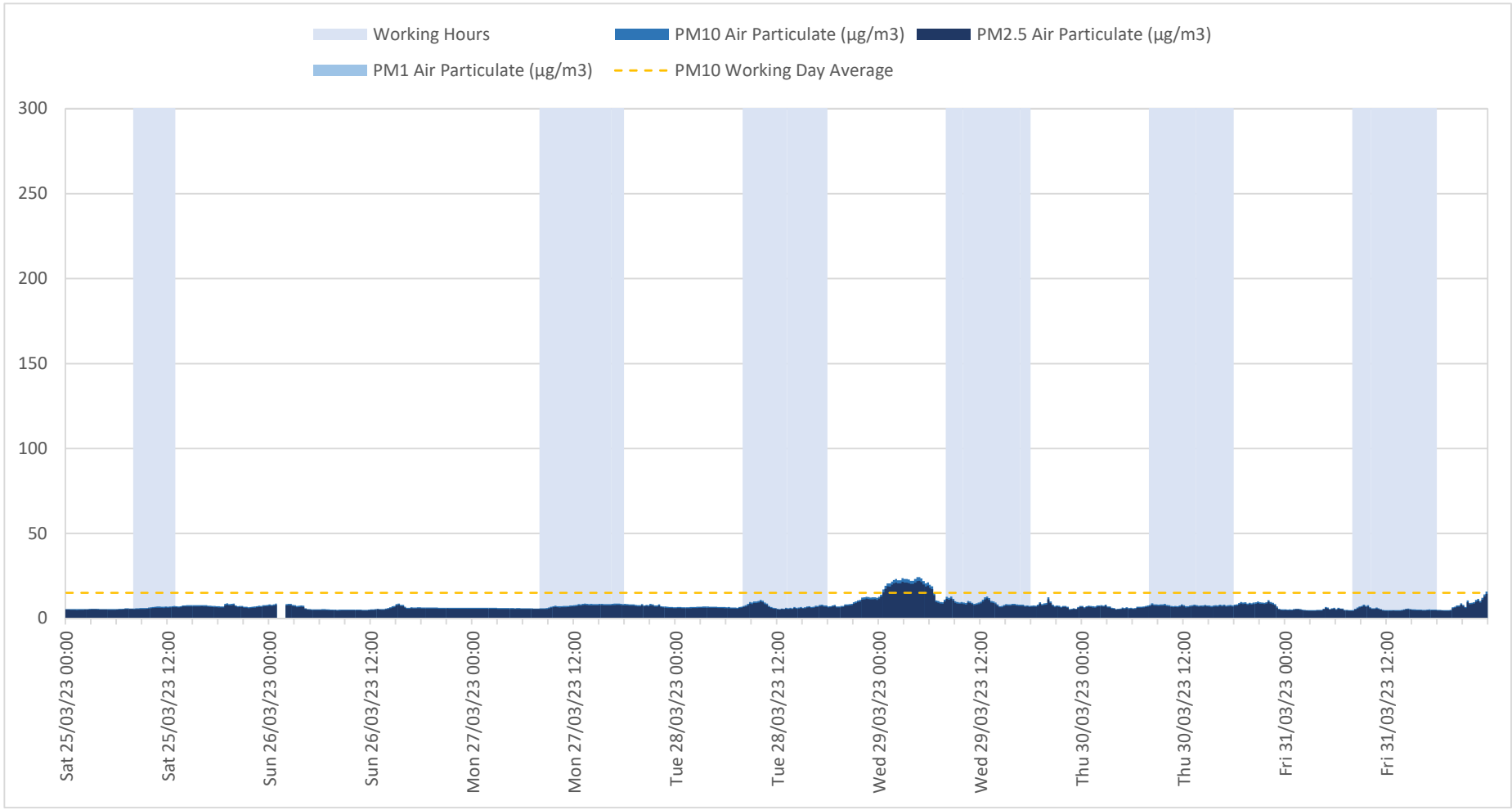


KPM-AP:26019-3.1-5

52 Avenue Road

Position 2

Saturday 25/03/2023 to Friday 31/03/2023

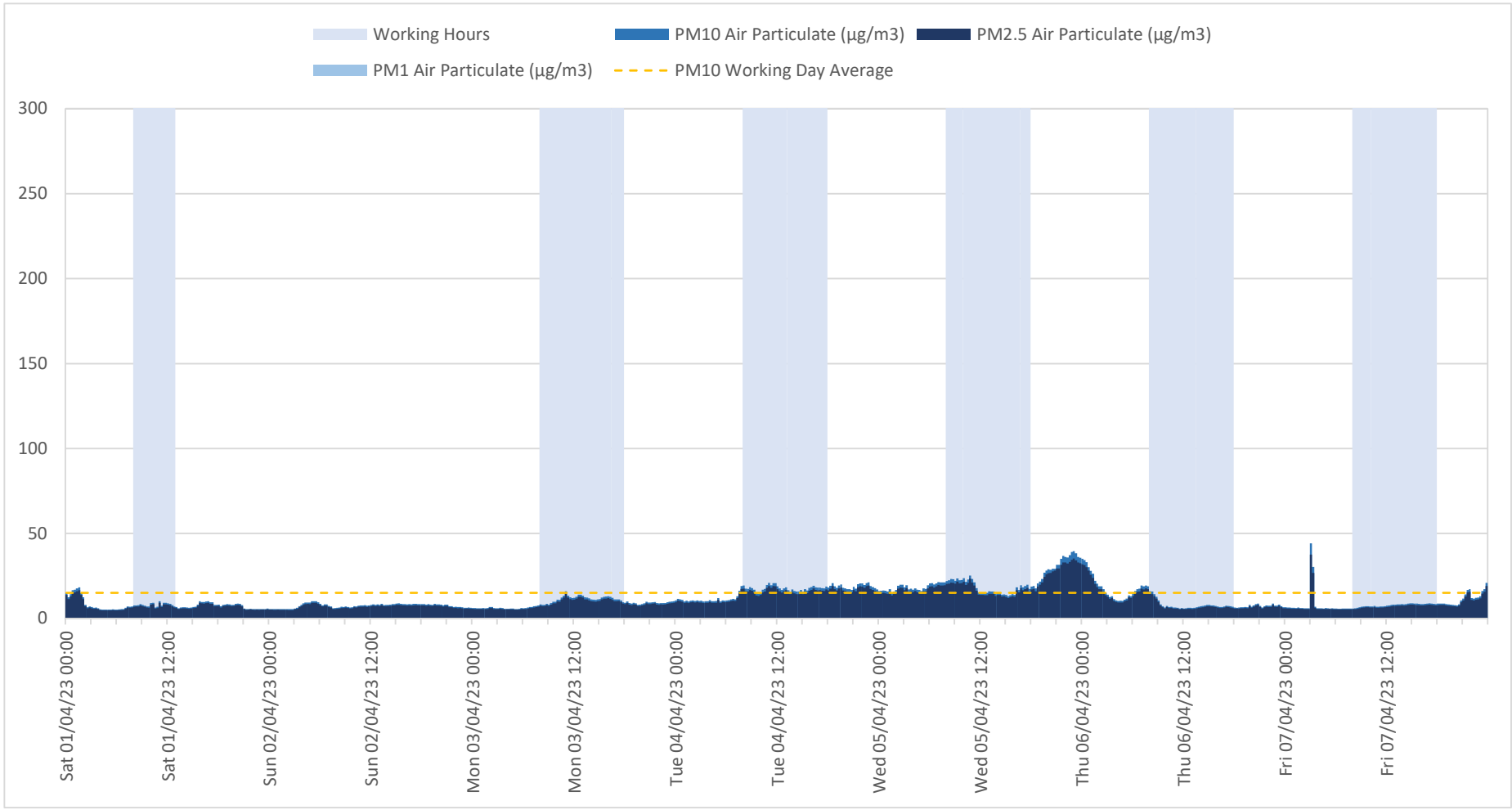


KPM-AP:26019-3.2-1

52 Avenue Road

Position 2

Saturday 01/04/2023 to Friday 07/04/2023

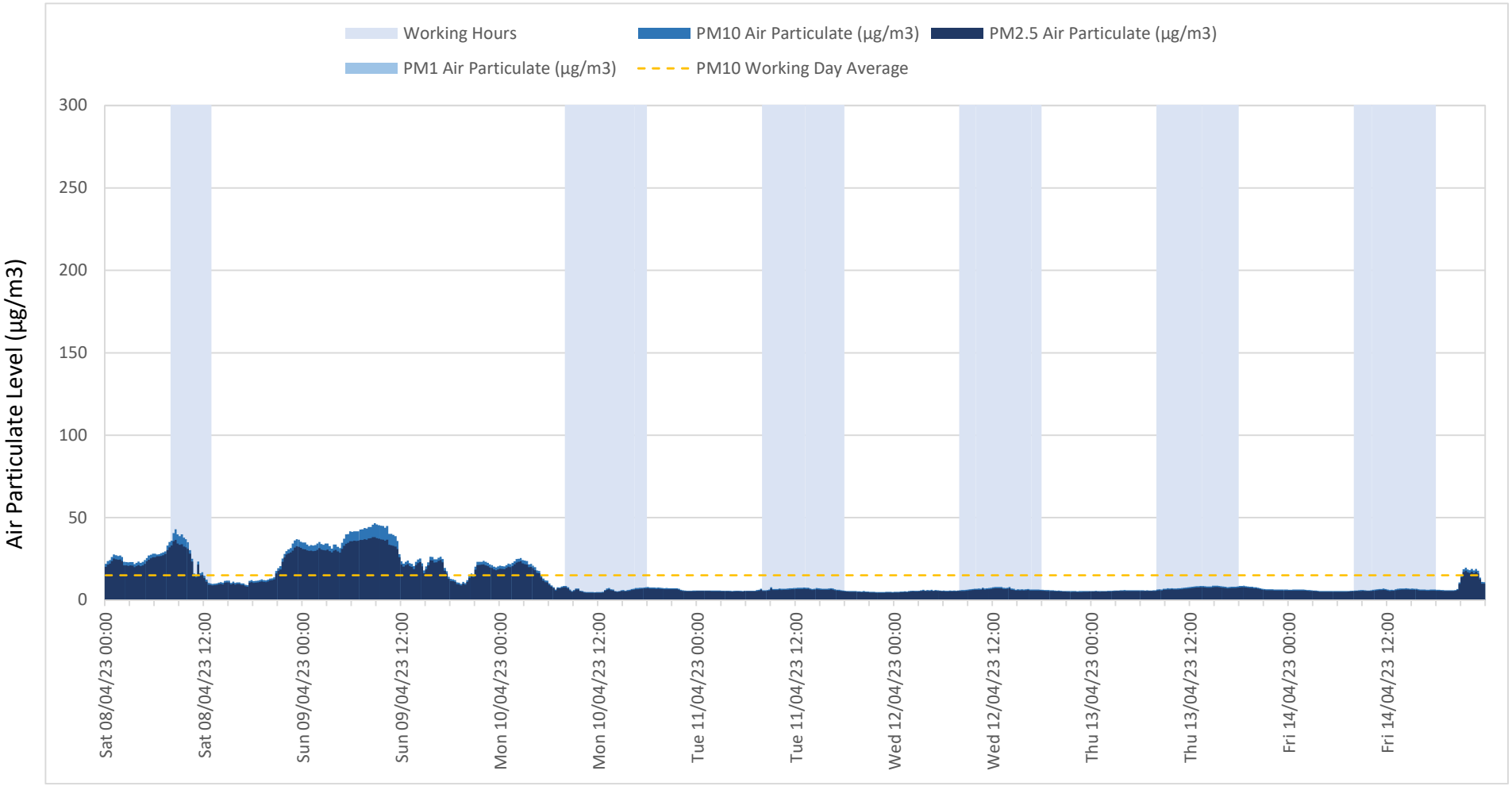


KPM-AP:26019-3.2-2

52 Avenue Road

Position 2

Saturday 08/04/2023 to Friday 14/04/2023

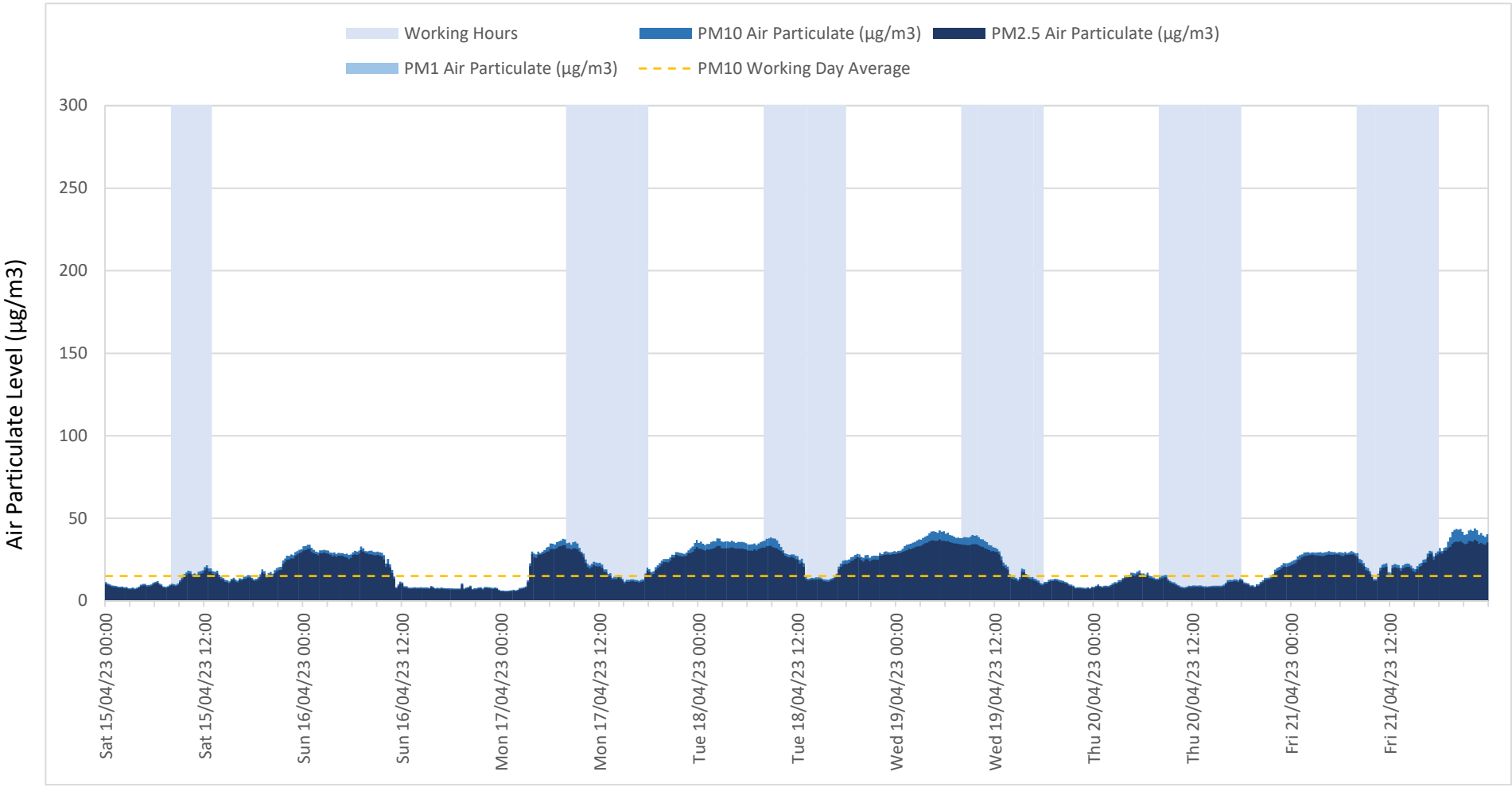


KPM-AP:26019-3.2-3

52 Avenue Road

Position 2

Saturday 15/04/2023 to Friday 21/04/2023

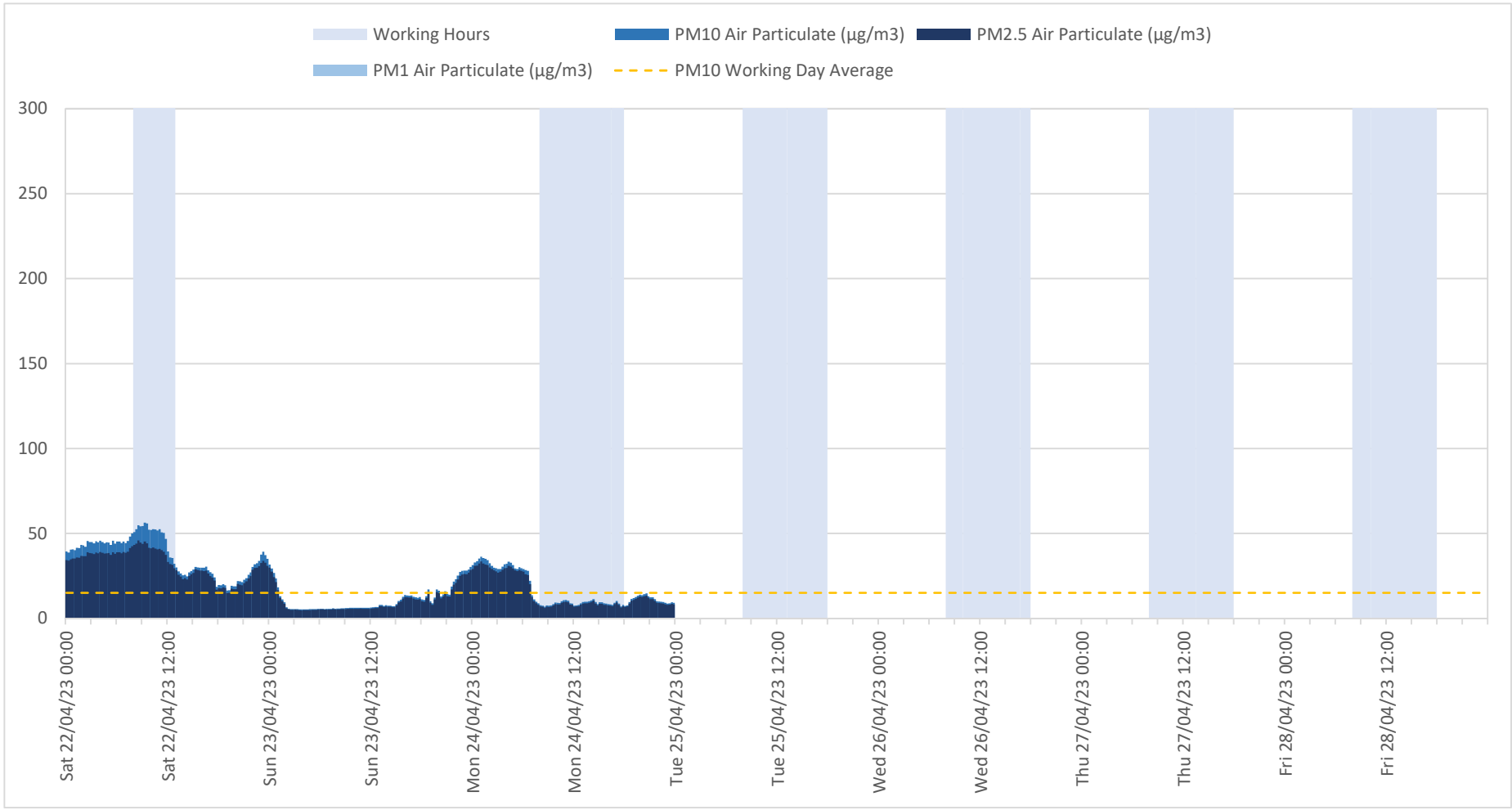


KPM-AP:26019-3.2-4

52 Avenue Road

Position 2

Saturday 22/04/2023 to Friday 28/04/2023

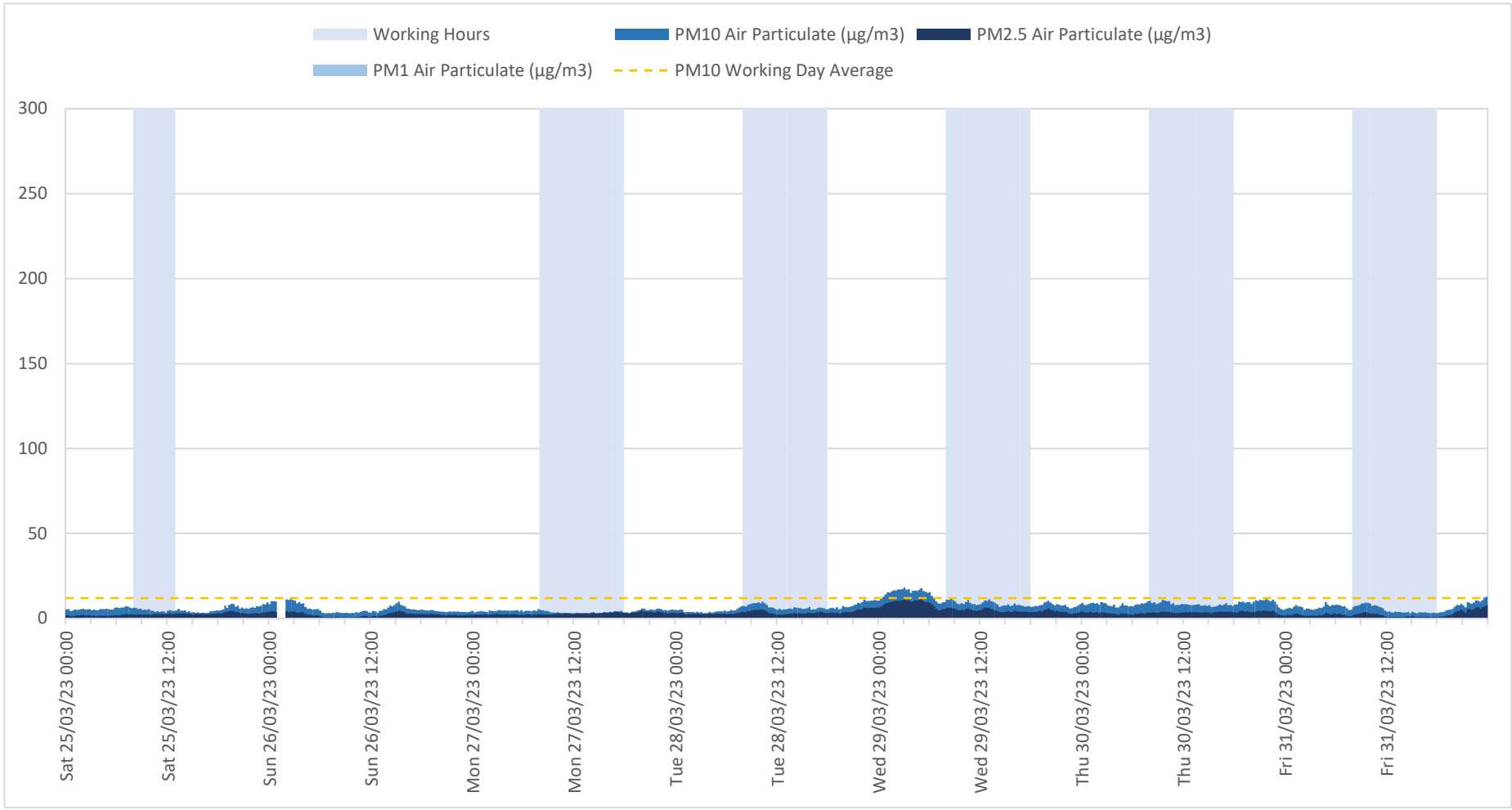


KPM-AP:26019-3.2-5

52 Avenue Road

Position 3

Saturday 25/03/2023 to Friday 31/03/2023

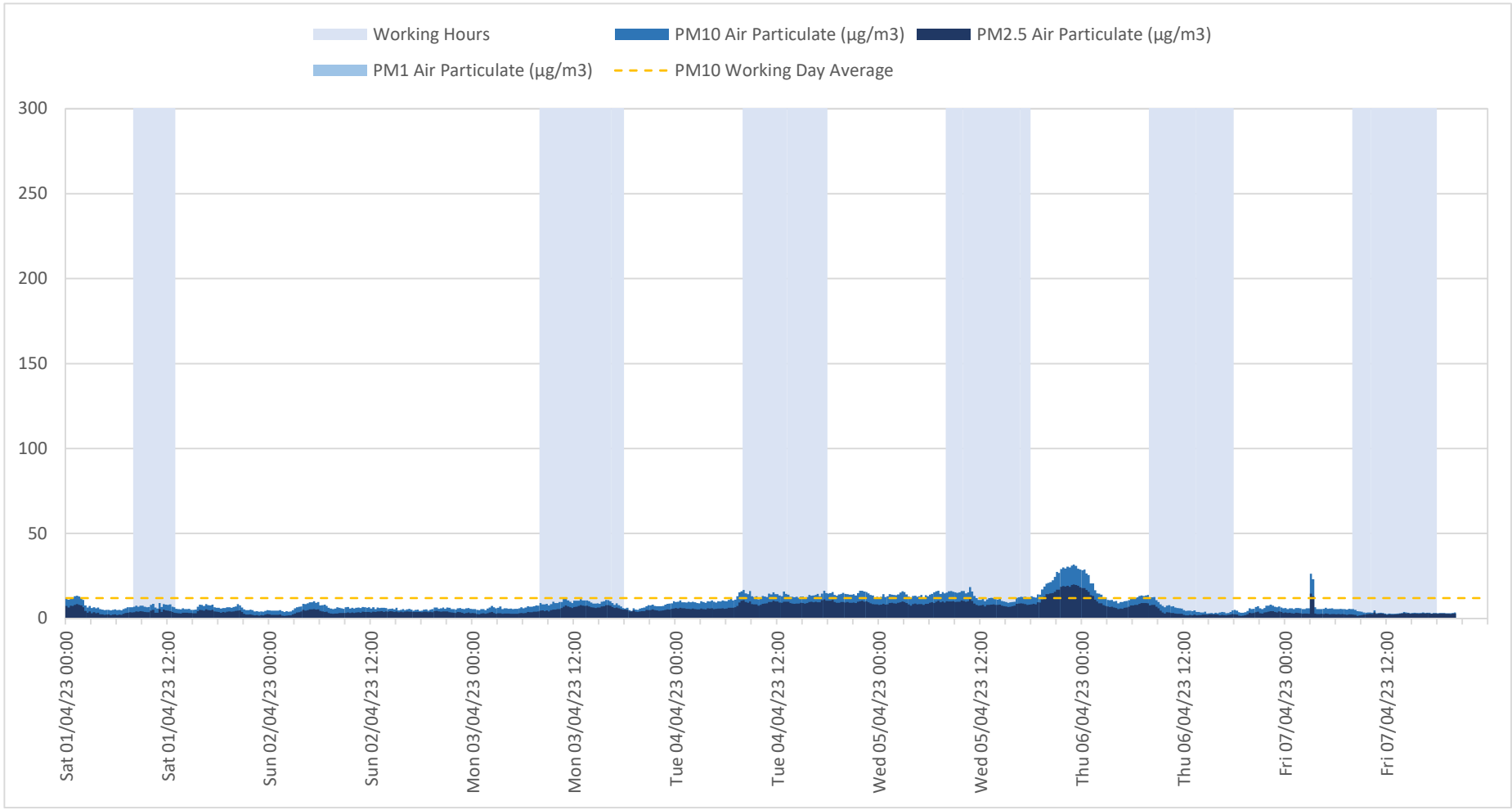


KPM-AP:26019-3.3-1

52 Avenue Road

Position 3

Saturday 01/04/2023 to Friday 07/04/2023

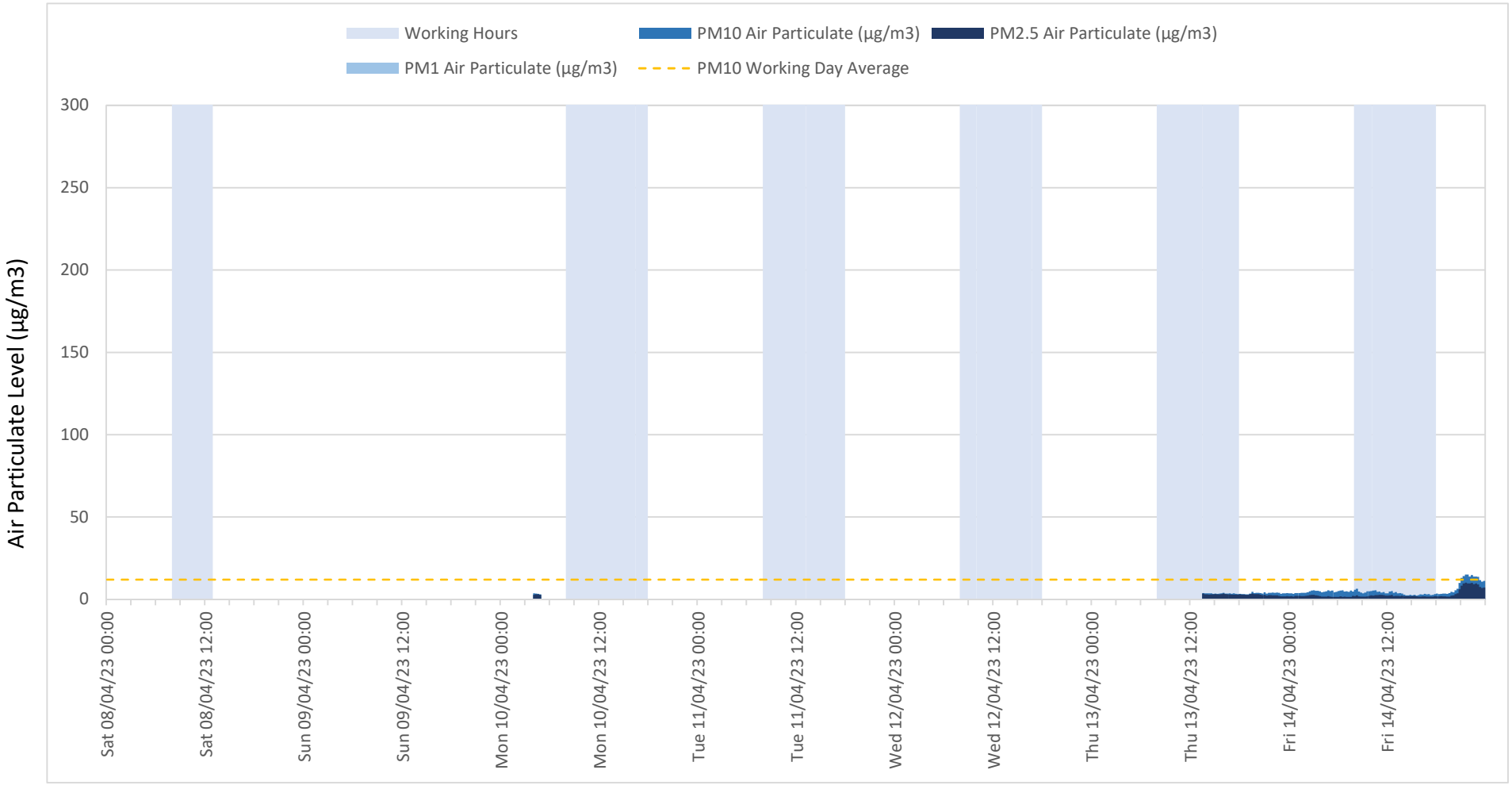


KPM-AP:26019-3.3-2

52 Avenue Road

Position 3

Saturday 08/04/2023 to Friday 14/04/2023

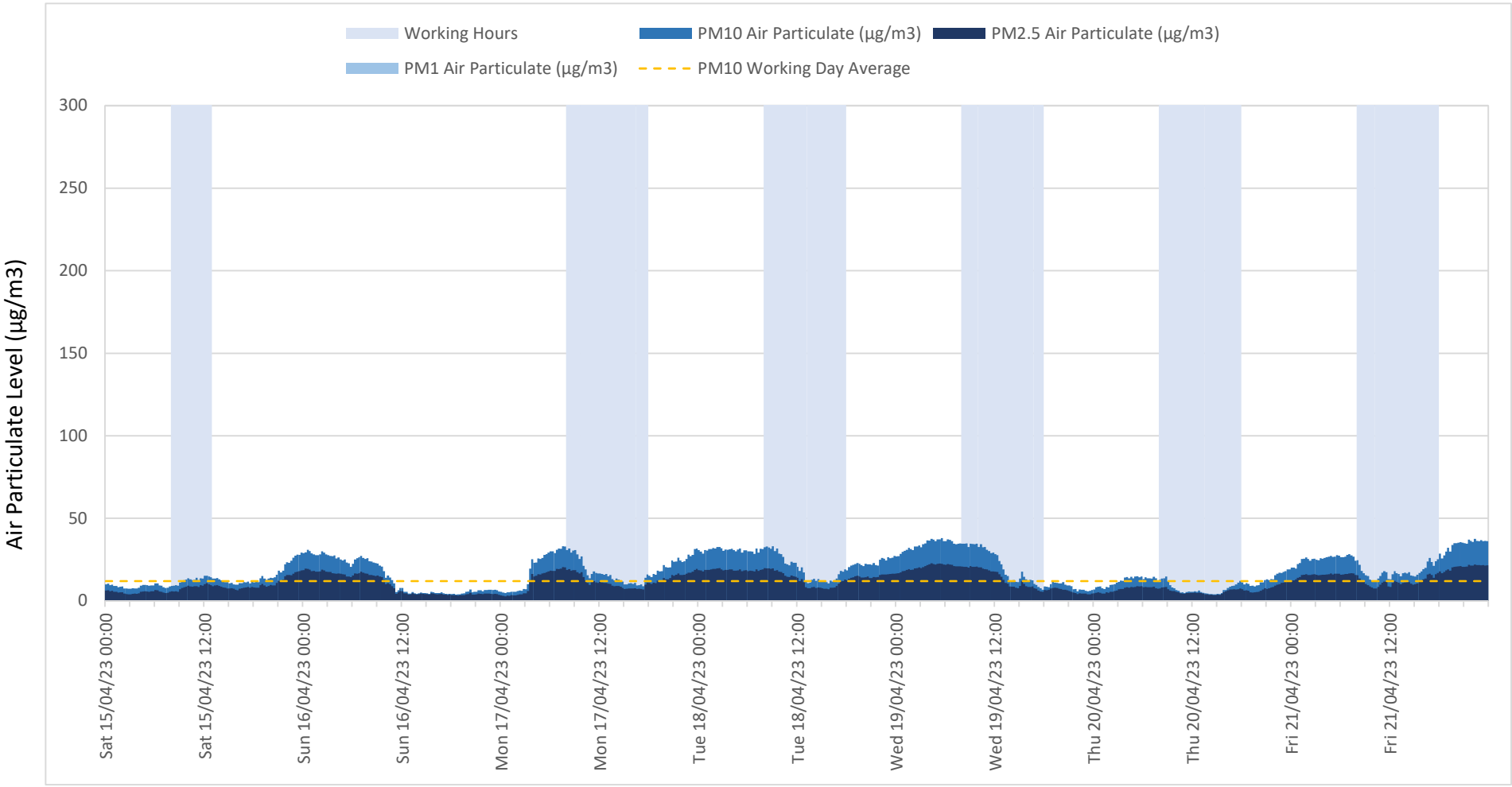


KPM-AP:26019-3.3-3

52 Avenue Road

Position 3

Saturday 15/04/2023 to Friday 21/04/2023

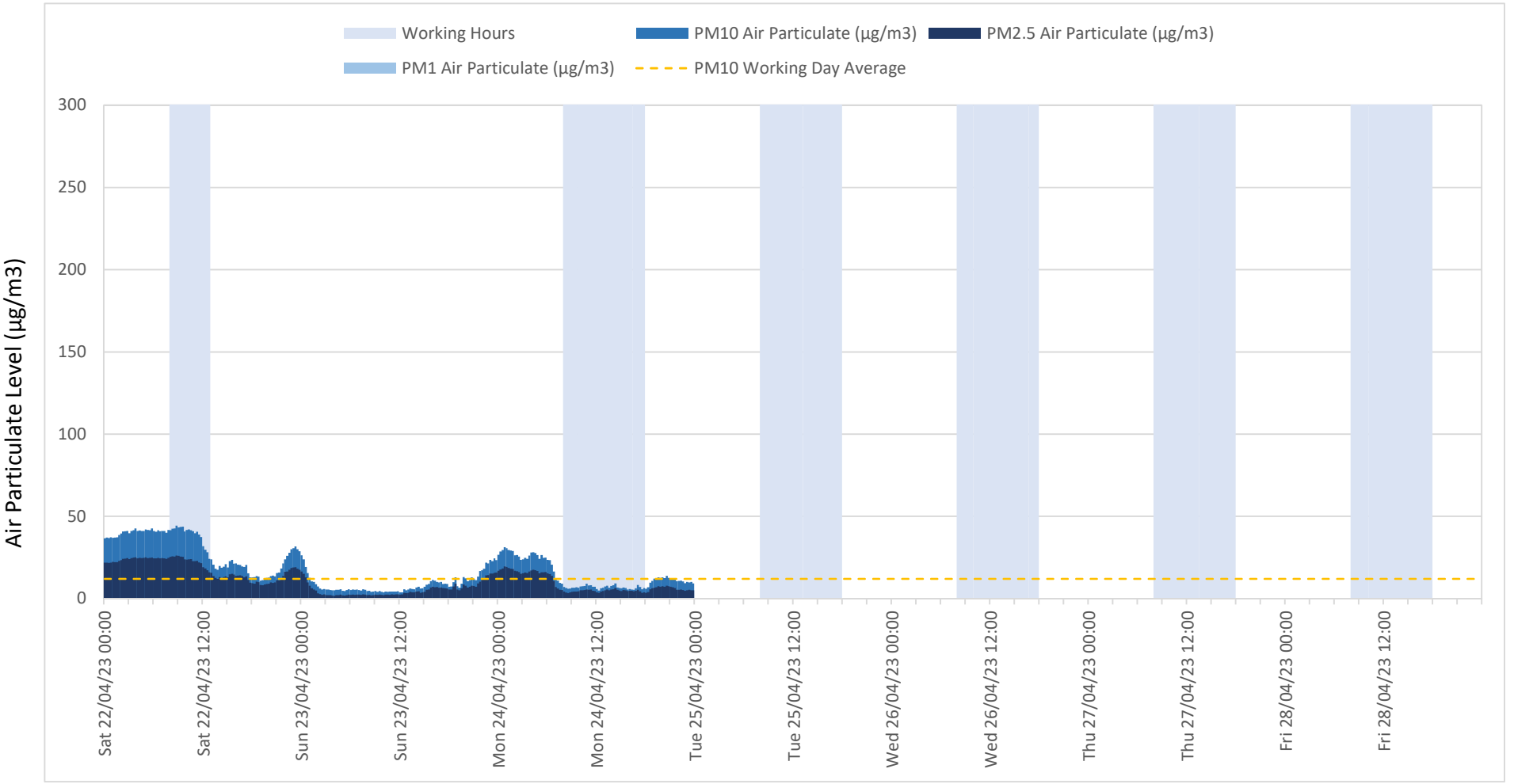


KPM-AP:26019-3.3-4

52 Avenue Road

Position 3

Saturday 22/04/2023 to Friday 28/04/2023

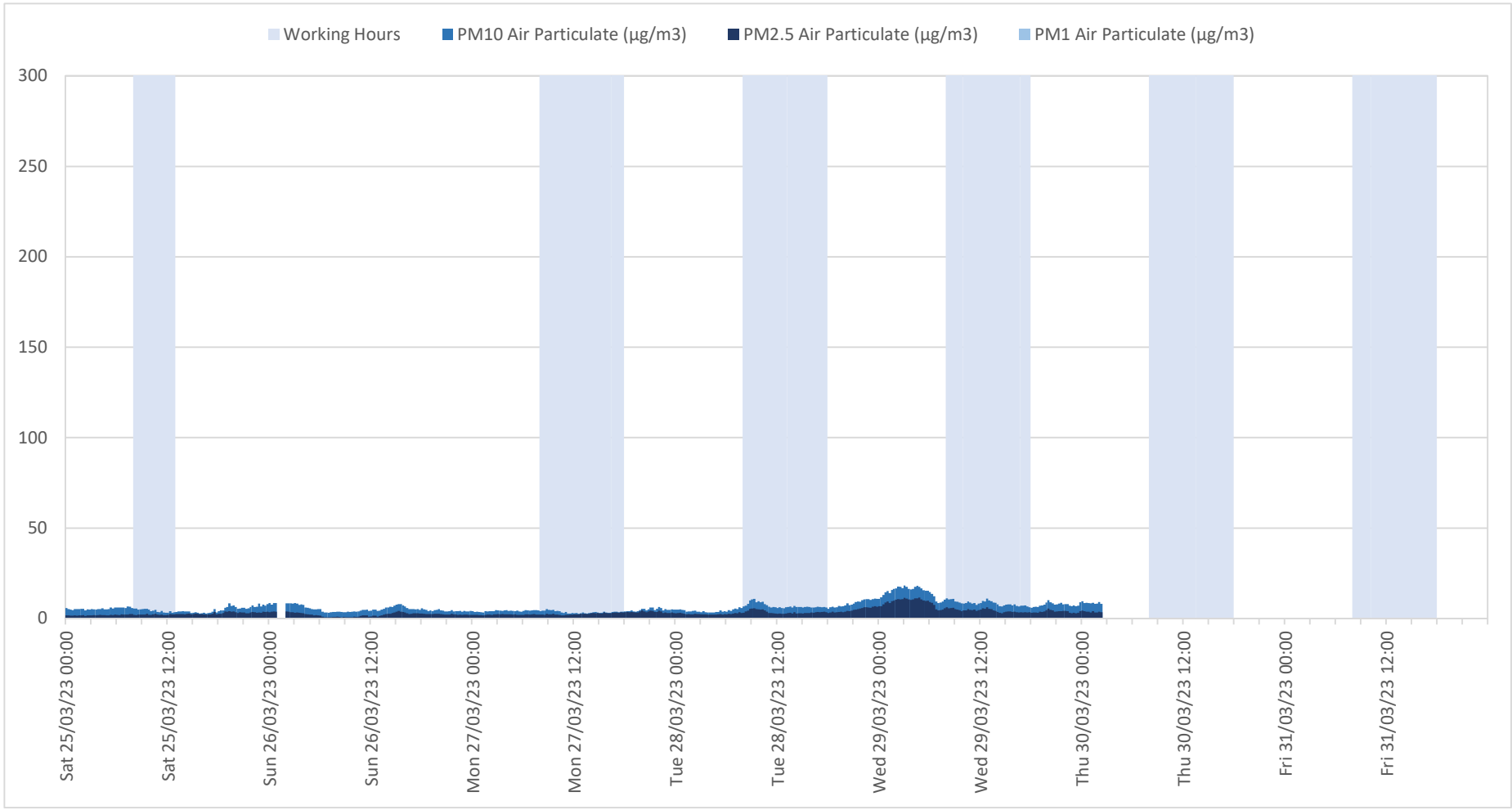


KPM-AP:26019-3.3-5

52 Avenue Road

Position 4

Saturday 25/03/2023 to Friday 31/03/2023

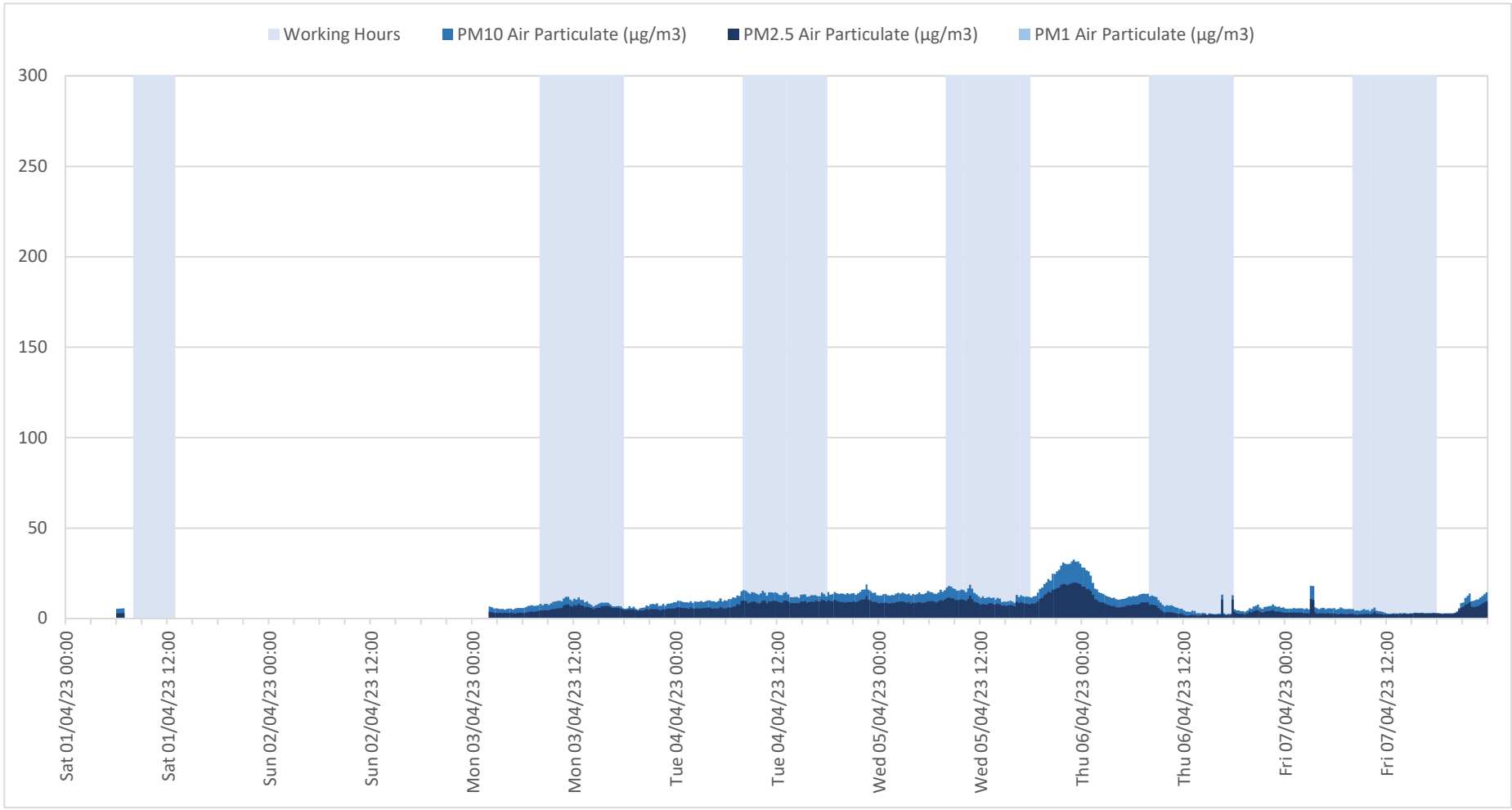


KPM-AP:26019-3.4-1

52 Avenue Road

Position 4

Saturday 01/04/2023 to Friday 07/04/2023

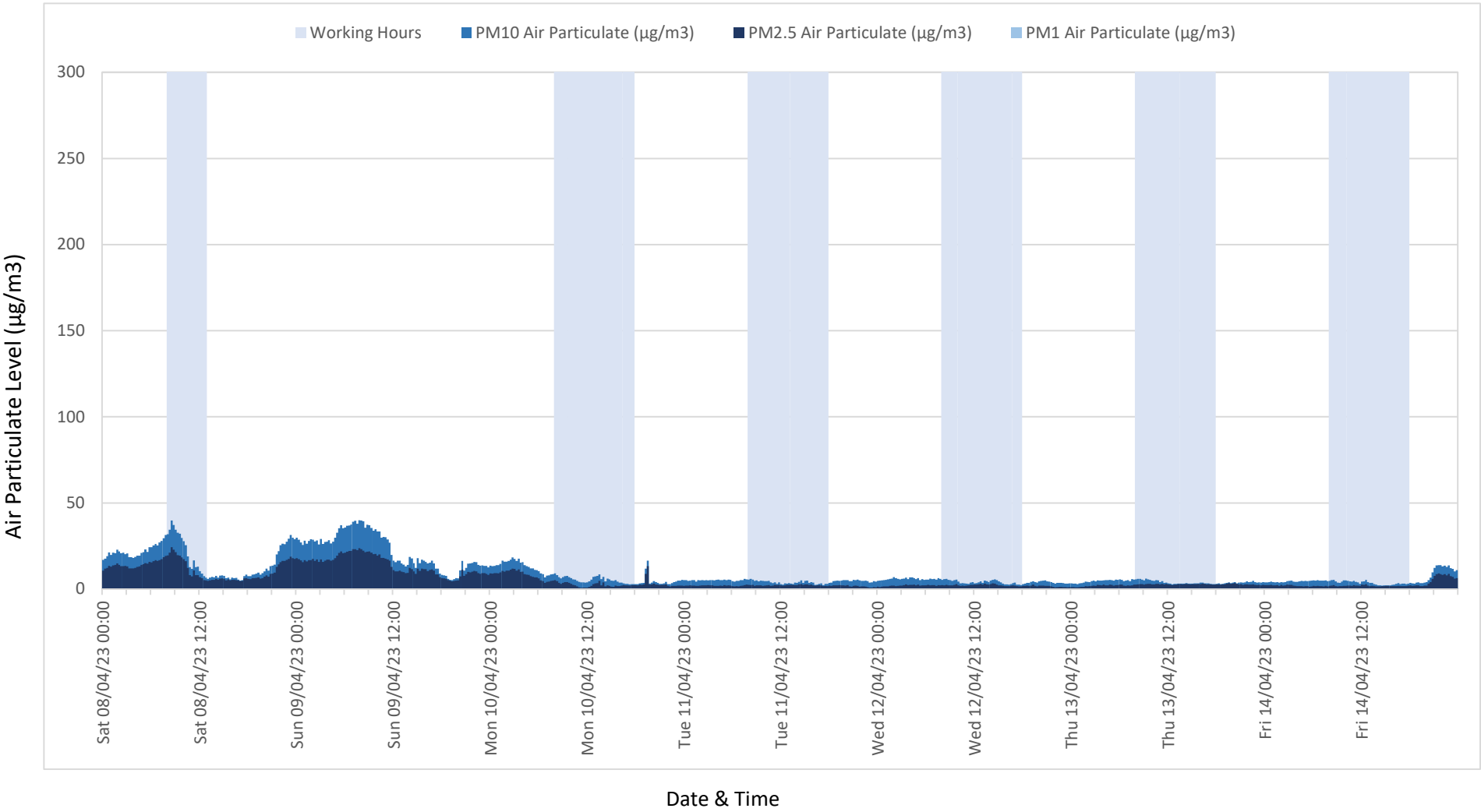


KPM-AP:26019-3.4-2

52 Avenue Road

Position 4

Saturday 08/04/2023 to Friday 14/04/2023

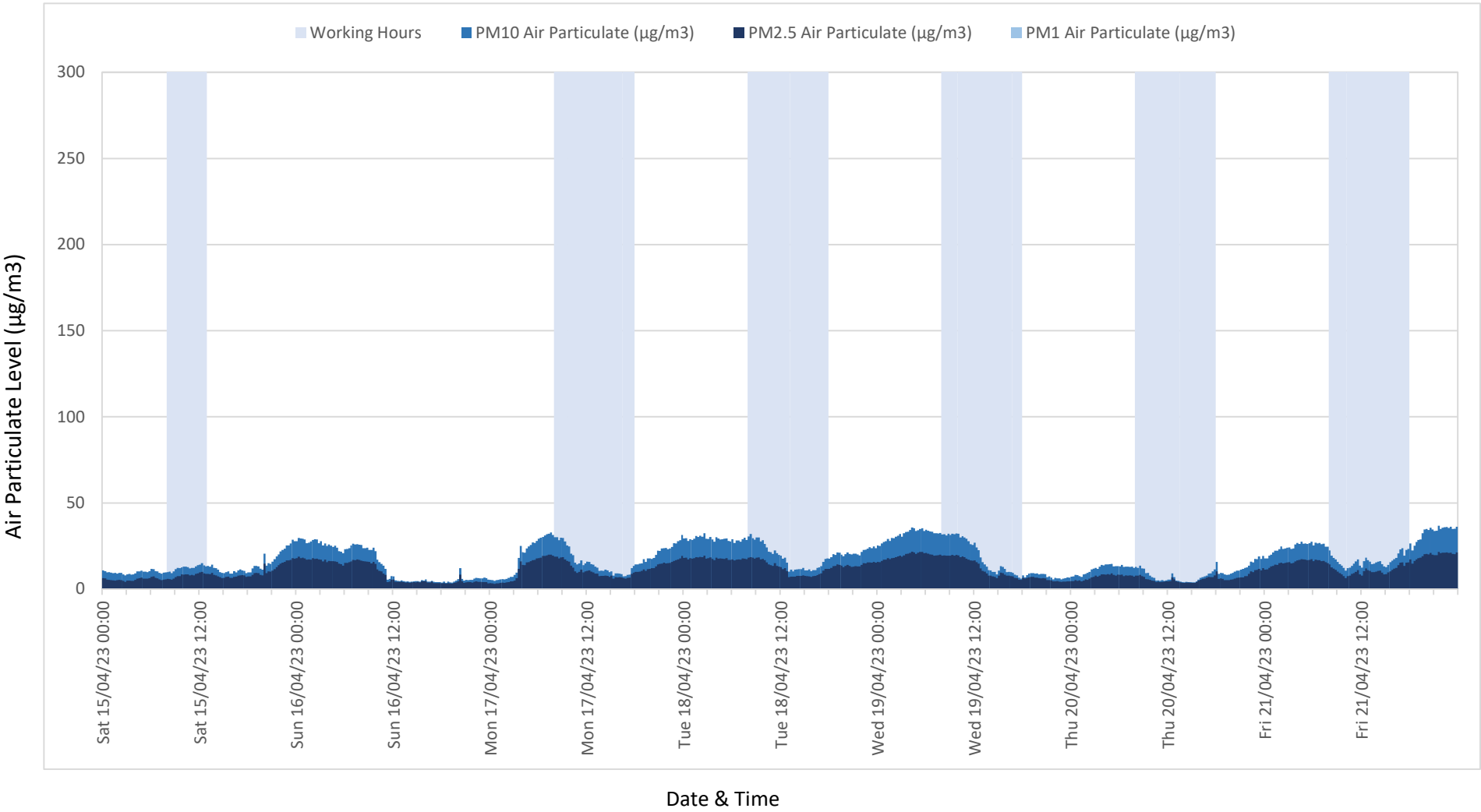


KPM-AP:26019-3.4-3

52 Avenue Road

Position 4

Saturday 15/04/2023 to Friday 21/04/2023

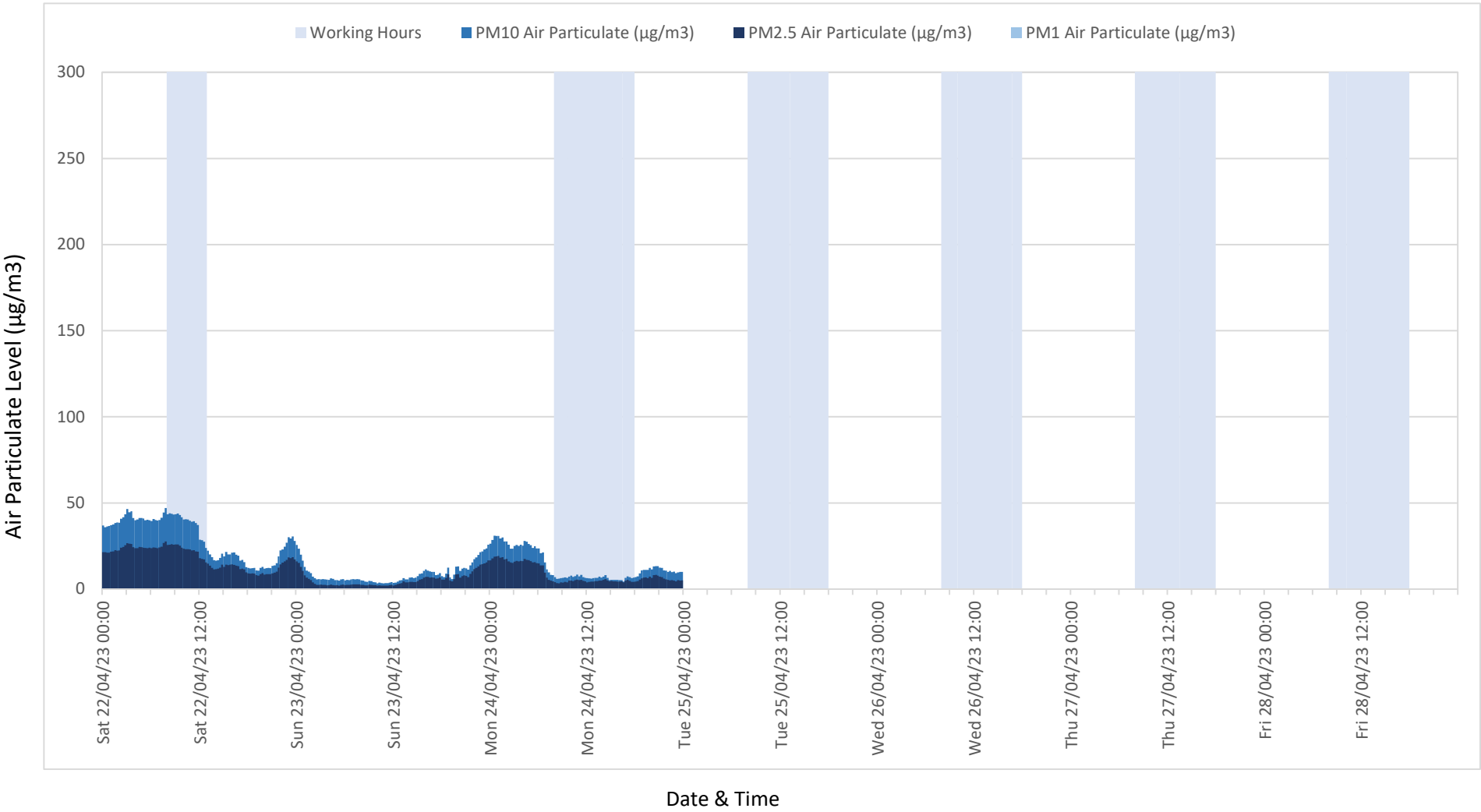


KPM-AP:26019-3.4-4

52 Avenue Road

Position 4

Saturday 22/04/2023 to Friday 28/04/2023



KPM-AP:26019-3.4-5

KP Monitoring Ltd.
info@kpacoustics.com
1 Galena Road, W6 0LT London, UK
+44 (0) 208 222 8778
www.kpacoustics.com

Part of the KP Acoustics Group

52 Avenue Road, London NW8 6HP

Air Quality Monitoring Report

Report 26019.1

Wednesday 25 January 2023 to Friday 24 February 2023

Domvs London (Global Holdings) Ltd
22 Wycombe End,
Beaconsfield,
Buckinghamshire,
United Kingdom HP9 1NB

KP monitoring
Part of the KP Acoustics Group

Report 26019.1 Revision History			
First Issue Date: 03/03/2023			
A		D	
B		E	
C		F	
Written by:		**Checked by:**	
Mohamed Salim Environmental Monitoring Project Engineer BEng(Hons), MIET		Richard P Booth Environmental Monitoring Manager MSc, BSc(Hons), MIOA, AMIEnvSc, AMIAQM	

KP monitoring
Part of the KP Acoustics Group

Contents

List of Attachments

EXECUTIVE SUMMARY

KP Monitoring Ltd has been commissioned to monitor the air quality levels at the 52 AvenueRoad site, 52 Avenue Road, St Johns Wood, London NW8 6HP.

Air quality levels have been measured at 4No. positions around the development site. The measured parameters include PM2.5 particulate, PM10 particulate.

The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	0	0	97%
Position 2	0	0	90%
Position 3	0	0	72%
Position 4	0	0	97%

Table 1 Recorded exceedance events at the development site

The results are presented herein.

1.0 INTRODUCTION

KP Monitoring Ltd have been appointed by Domvs London (Global Holdings) Ltd to monitor the ongoing air quality levels from the site at 52 Avenue Road, and to present the results within baseline monthly reports.

This report details the procedures employed and the data obtained during the monitoring period spanning Wednesday 25 January 2023 to Friday 24 February 2023.

2.0 SITE DESCRIPTION

The monitoring site is located within the London Borough of Camden's jurisdiction. It is bounded by Elsworthy Road to the north, Elsworthy Road to the west, residential properties to the south, and large residential landscapes to the east.

3.0 SITE WORKING HOURS

It is our understanding that no works are currently taking place at the development site. Once work commence, however, we understand that works shall take place between the following hours. These daytime periods shall hereby be referred to as the 'Working Day'.

Day	Start time	End Time
Monday	08:00	18:00
Tuesday	08:00	18:00
Wednesday	08:00	18:00
Thursday	08:00	18:00
Friday	08:00	18:00
Saturday	08:00	13:00
Sunday	No Work	No Work

Table 2 Site working hours referred to as 'Working Day'

4.0 INSTALLED EQUIPMENT

Air quality monitoring equipment was installed at the 52 Avenue Road site, and has been continuously serviced, calibrated, and maintained, since Wednesday, 25 January 2023. The following equipment is currently installed:

Position	Manufacturer	Model	Serial
Position 1	Earthsense	Zephyr	1149
Position 2	Earthsense	Zephyr	1169
Position 3	Earthsense	Zephyr	948
Position 4	Earthsense	Zephyr	1043

Table 3 Installed sensor details

Each of the installed air quality monitoring sensors is equipped with a data logger and modem, and is protected from the elements with an environmental kit.

5.0 MONITORING POSITIONS

Air quality monitoring sensors have been installed at 4No. positions around the development site. See site plan in Appendix D. The following table describes these positions.

Position	Monitoring Position
Position 1	The monitor is situated adjacent to Elsworthy Road at an approximate height of 2.5 metres.
Position 2	The monitor is situated adjacent to Elsworthy Road on the north western area of site and is at an approximate height of 2.5 metres.
Position 3	The monitor is situated on the south eastern area of site and is at an approximate height of 1 metre.
Position 4	The monitor is situated on the north eastern area of site and is at an approximate height of 1 metre.

Table 4 Description of monitoring positions

The above positions were recommended and approved by Camden Council as demonstrated in the attached email chain.

6.0 METHODOLOGY

Fully automated air quality monitoring has been undertaken at the 52 Avenue Road site, from Wednesday 25 January 2023 to Friday 24 February 2023.

The air quality monitors are sensitive to airborne particle concentrations down to a fraction of a microgram per cubic metre and provide detailed air quality measurements in real-time. A dedicated microprocessor analyses individual particles even if there are millions per litre.

7.0 AIR PARTICULATE (DUST)

7.1 Measured Particulates

Fully automated dust monitoring has been undertaken to measure PM2.5, and PM10 particulate at the 52 Avenue Road site.

7.2 Project Trigger & Action Levels

It is our understanding that there are currently no defined air particulate Trigger and Action levels for this project.

Position	Trigger Level (PM10, µg/m³, 15min)	Action Level (PM10, µg/m³, 15min)
Position 1	N/A	N/A
Position 2	N/A	N/A
Position 3	N/A	N/A
Position 4	N/A	N/A

Table 5 Defined Trigger and Action levels at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 6 Trigger and Action alert recipients

7.3 Air Particulate Monitoring Results

The measured dust levels are shown in Appendix B and the associated graphs. The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	N/A	N/A	97%
Position 2	N/A	N/A	90%
Position 3	N/A	N/A	72%
Position 4	N/A	N/A	97%

Table 7 Recorded exceedance events at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 8 Trigger and Action alert recipients

8.0 DISCUSSION

Environmental air quality monitoring has been undertaken at the 52 Avenue Road site, during the period spanning Wednesday 25 January 2023 to Friday 24 February 2023.

The results are presented herein.

Unfortunately, we are unable to present complete data for the monitoring period pertaining to Position 2 and Position 3 owing to suboptimal sunlight conditions with regards to each monitor's associated solar panel. As these periods were overnight i.e. no sunlight, data has been captured for the daytime future site-working hours.

An external battery solution was implemented to boost each dust monitors battery capacity. Installation of said battery solutions was completed successfully and measurements were attained for the remainder of the monitoring period without any intermittency issues.

Site were made aware.

APPENDIX A – AIR QUALITY TERMINOLOGY

PMx Particulate Matter

Used as a measurement of air particles where x is the size of the particle measured in micrometres (or µm). PM10 describes inhalable particles, with diameters that are 10 micrometres and smaller. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM2.5 describes fine particles that are 2.5 micrometres or smaller in diameter and can only be seen with an electron microscope and are able to penetrate to the lungs. Typical sources include all types of combustion, including motor vehicles, power plants and agricultural burning. PM1 describes particles that are 1 micrometre or smaller in diameter.

TSP Total Suspended Particles

Used as a measure of the mass concentration of particulate matter in the air. TSP covers the full range of particle sizes and is commonly measured alongside PM10 and PM2.5.

Nephelometer

Sometimes referred to as a turbidimeter, these devices are used to measure the concentration of particulates suspended in a fluid. Suspended particulates are measured by employing a light beam and a light detector set to one side (often 90°) of the source beam. Particle density is then a function of the light reflected into the detector from the particles.

APPENDIX B – MAXIMUM P2.5/PM10 LEVELS

The following table presents the maximum PM2.5 levels measured during the period Wednesday 25 January 2023 to Friday 24 February 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/01/2023	26	36	-	23
26/01/2023	8	14	-	7
27/01/2023	4	7	-	4
28/01/2023	15	25	-	16
29/01/2023	No Work	No Work	No Work	No Work
30/01/2023	4	-	-	4
31/01/2023	4	-	-	4
01/02/2023	14	8	4	4
02/02/2023	24	9	3	3
03/02/2023	40	7	4	5
04/02/2023	37	12	7	5
05/02/2023	No Work	No Work	No Work	No Work
06/02/2023	20	32	20	19
07/02/2023	27	38	47	26
08/02/2023	27	41	47	27
09/02/2023	26	37	27	22
10/02/2023	25	36	30	25

Date	Position 1	Position 2	Position 3	Position 4
11/02/2023	7	12	36	6
12/02/2023	No Work	No Work	No Work	No Work
13/02/2023	37	39	41	19
14/02/2023	33	54	45	36
15/02/2023	42	64	39	36
16/02/2023	5	10	5	6
17/02/2023	2	6	2	2
18/02/2023	2	5	2	1
19/02/2023	No Work	No Work	No Work	No Work
20/02/2023	4	8	4	5
21/02/2023	14	25	13	12
22/02/2023	20	33	19	20
23/02/2023	3	16	25	3
24/02/2023	11	20	11	10

Table 9 Measured maximum PM2.5 levels at the development site

The following table presents the 24-hour mean average PM2.5 levels measured during the period Wednesday 25 January 2023 to Friday 24 February 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/01/2023	26	32	-	21
26/01/2023	4	7	-	4
27/01/2023	4	8	-	4
28/01/2023	10	17	-	10
29/01/2023	No Work	No Work	No Work	No Work
30/01/2023	5	-	-	4
31/01/2023	4	-	-	4
01/02/2023	4	7	4	4
02/02/2023	3	5	2	3
03/02/2023	6	7	3	3
04/02/2023	5	13	7	4
05/02/2023	No Work	No Work	No Work	No Work
06/02/2023	11	18	10	9
07/02/2023	19	28	18	15
08/02/2023	25	36	23	20
09/02/2023	18	27	10	12
10/02/2023	16	24	10	11

Date	Position 1	Position 2	Position 3	Position 4
11/02/2023	8	14	12	7
12/02/2023	No Work	No Work	No Work	No Work
13/02/2023	21	34	19	16
14/02/2023	27	41	25	24
15/02/2023	24	38	23	22
16/02/2023	4	7	3	4
17/02/2023	3	7	3	3
18/02/2023	2	6	2	2
19/02/2023	No Work	No Work	No Work	No Work
20/02/2023	4	8	4	4
21/02/2023	11	18	10	10
22/02/2023	15	24	14	14
23/02/2023	4	8	4	4
24/02/2023	6	12	6	6

Table 10 Measured 24-hour mean average PM2.5 levels at the development site

The following table presents the maximum PM10 levels measured during the period Wednesday 25 January 2023 to Friday 24 February 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/01/2023	41	41	-	40
26/01/2023	13	15	-	13
27/01/2023	8	8	-	8
28/01/2023	23	28	-	24
29/01/2023	No Work	No Work	No Work	No Work
30/01/2023	7	-	-	7
31/01/2023	8	-	-	8
01/02/2023	19	9	11	10
02/02/2023	28	10	7	8
03/02/2023	44	7	7	8
04/02/2023	41	14	11	38
05/02/2023	No Work	No Work	No Work	No Work
06/02/2023	30	33	30	30
07/02/2023	40	42	50	41
08/02/2023	46	52	51	43
09/02/2023	40	43	40	37
10/02/2023	38	40	42	41
11/02/2023	11	13	40	11

Date	Position 1	Position 2	Position 3	Position 4
12/02/2023	No Work	No Work	No Work	No Work
13/02/2023	53	46	49	33
14/02/2023	55	67	50	52
15/02/2023	57	66	57	53
16/02/2023	9	11	9	9
17/02/2023	3	6	4	3
18/02/2023	4	6	4	3
19/02/2023	No Work	No Work	No Work	No Work
20/02/2023	7	8	7	8
21/02/2023	20	27	20	19
22/02/2023	32	37	31	33
23/02/2023	5	17	38	6
24/02/2023	16	22	18	17

Table 11 Measured maximum PM10 levels at the development site

The following table presents the 24-hour mean average PM10 levels measured during the period Wednesday 25 January 2023 to Friday 24 February 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/01/2023	42	38	-	39
26/01/2023	8	8	-	8
27/01/2023	6	8	-	7
28/01/2023	12	15	-	12
29/01/2023	No Work	No Work	No Work	No Work
30/01/2023	6	-	-	7
31/01/2023	7	-	-	7
01/02/2023	6	8	7	8
02/02/2023	5	6	6	5
03/02/2023	7	6	5	5
04/02/2023	9	17	14	8
05/02/2023	No Work	No Work	No Work	No Work
06/02/2023	14	18	16	15
07/02/2023	26	29	27	24
08/02/2023	40	42	37	34
09/02/2023	28	32	16	17
10/02/2023	27	29	17	21

Date	Position 1	Position 2	Position 3	Position 4
11/02/2023	14	18	21	14
12/02/2023	No Work	No Work	No Work	No Work
13/02/2023	29	38	29	26
14/02/2023	44	48	42	39
15/02/2023	40	46	40	38
16/02/2023	6	8	6	7
17/02/2023	4	6	4	4
18/02/2023	3	6	3	3
19/02/2023	No Work	No Work	No Work	No Work
20/02/2023	5	7	6	6
21/02/2023	12	16	12	12
22/02/2023	26	31	26	27
23/02/2023	6	8	7	7
24/02/2023	11	15	12	12

Table 12 Measured 24-hour mean average PM10 levels at the development

APPENDIX C – PM10 Air Particulate Level Statistics for Wednesday 25 January 2023 to Friday 24 February 2023

The tables below present the PM10 monitoring statistics for working hours and non-working hours during the monitoring period.

Position	Mean Average PM10 Dust Level ($\mu g/m^3$)	Minimum PM10 Dust Level ($\mu g/m^3$)	Maximum PM0 Dust Level ($\mu g/m^3$)	Data Capture Rate
Position 1	15	2	57	97%
Position 2	18	5	67	90%
Position 3	15	3	57	72%
Position 4	14	3	53	97%

Table 13 Working Day PM10 dust level statistics

Position	Mean Average PM10 Dust Level ($\mu g/m^3$)	Minimum PM10 Dust Level ($\mu g/m^3$)	Maximum PM0 Dust Level ($\mu g/m^3$)
Position 1	18	3	97
Position 2	20	5	60
Position 3	13	3	57
Position 4	14	3	51

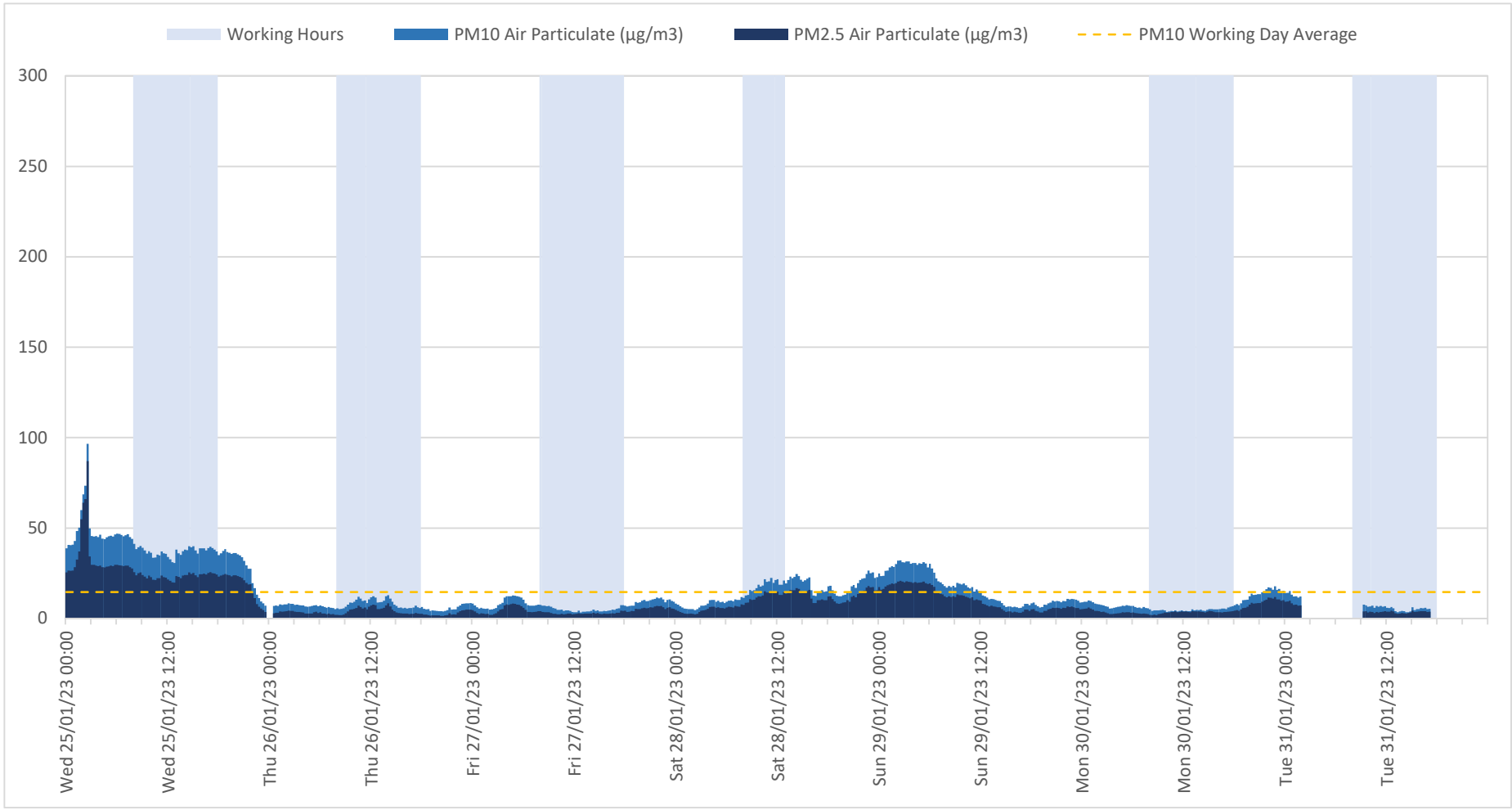
APPENDIX D – Environmental Monitoring Site Plan

Environmental Monitoring Positions	52 Avenue Road	Revision: -	Not to Scale	KP monitoring Part of the KP Acoustics Group

52 Avenue Road

Position 1

Wednesday 25/01/2023 to Tuesday 31/01/2023



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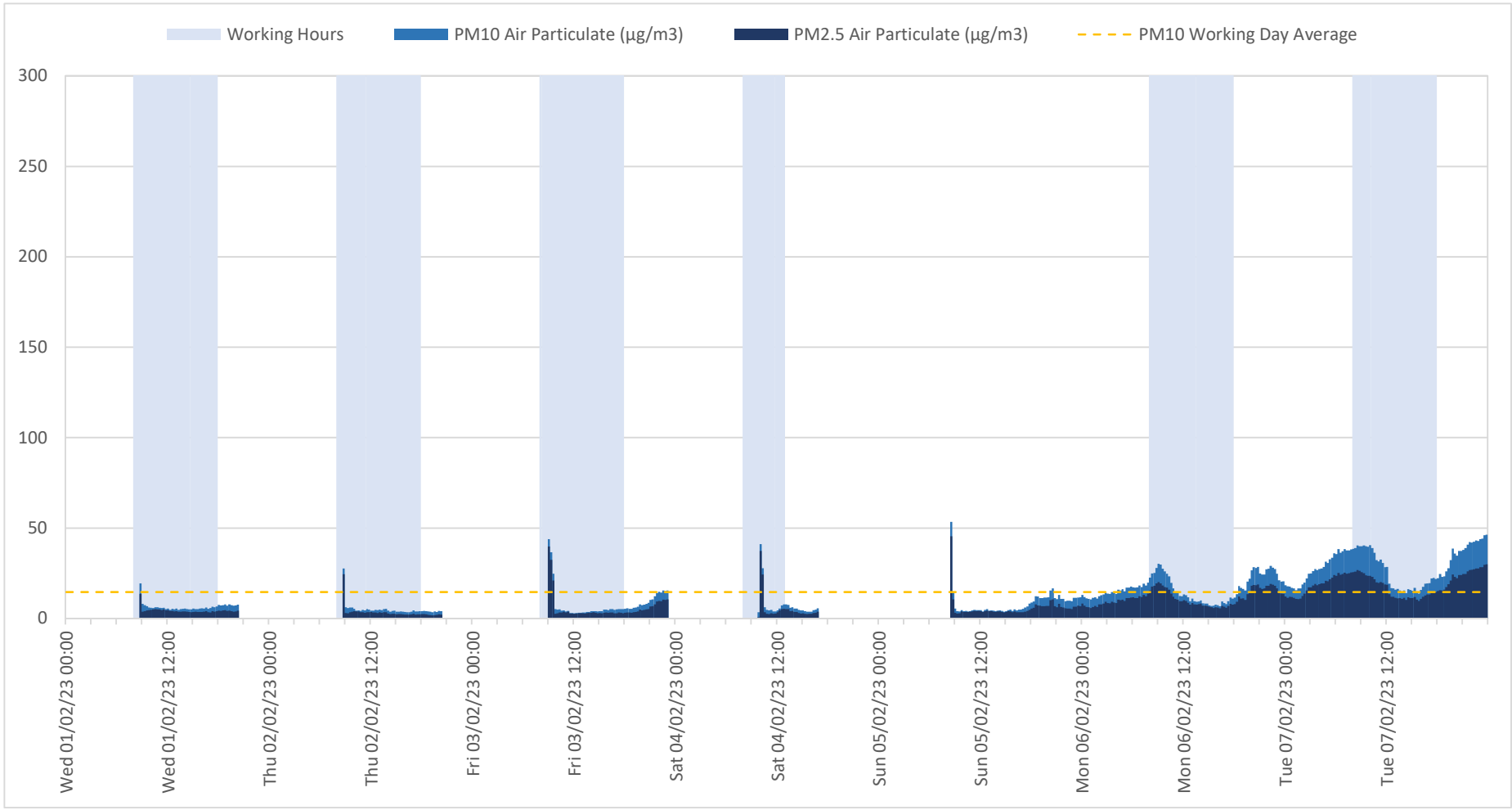
52 Avenue Road

Position 1

Wednesday 01/02/2023 to Tuesday 07/02/2023

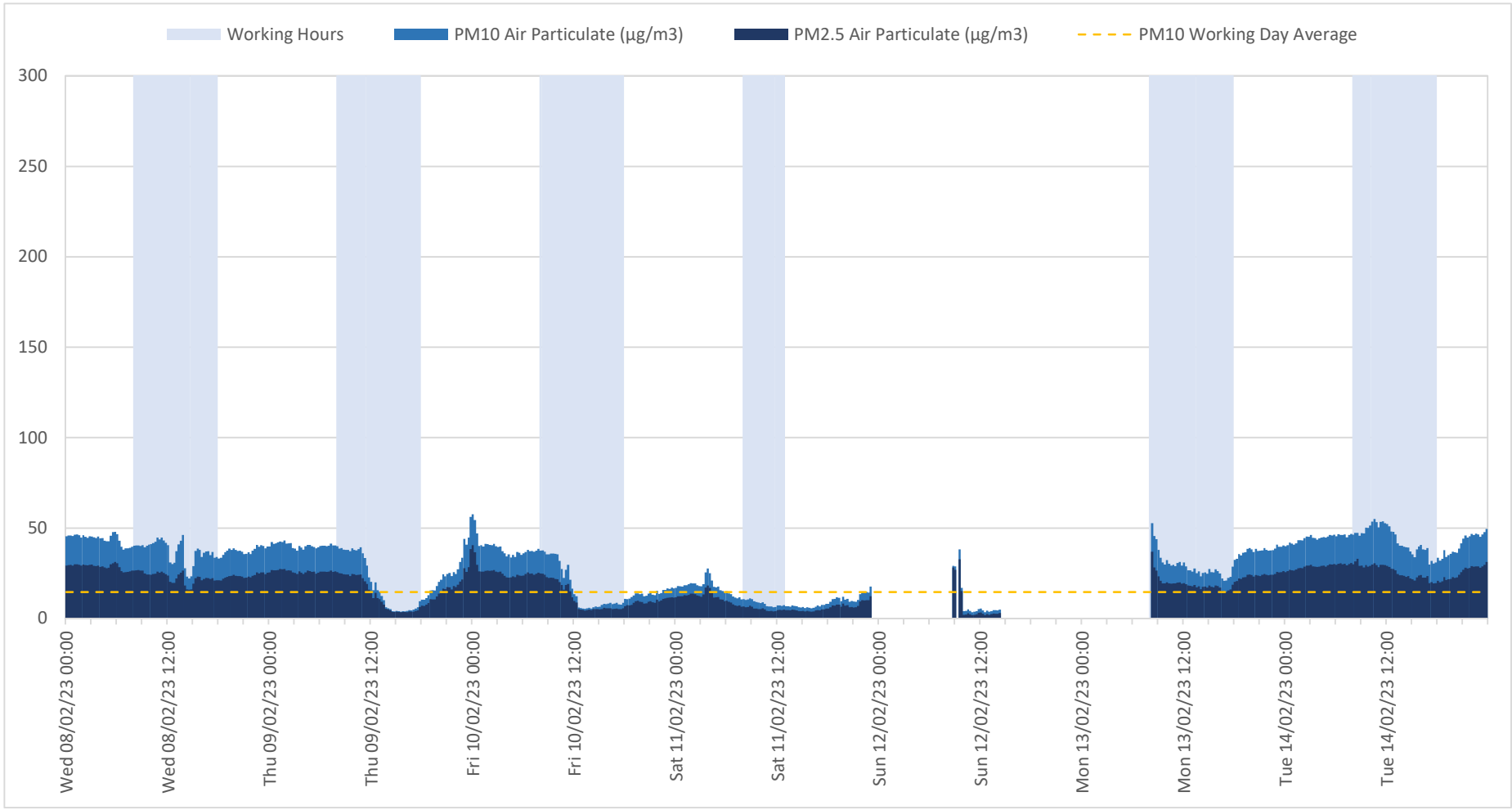


KPM-AP:26019-1.1-2

52 Avenue Road

Position 1

Wednesday 08/02/2023 to Tuesday 14/02/2023

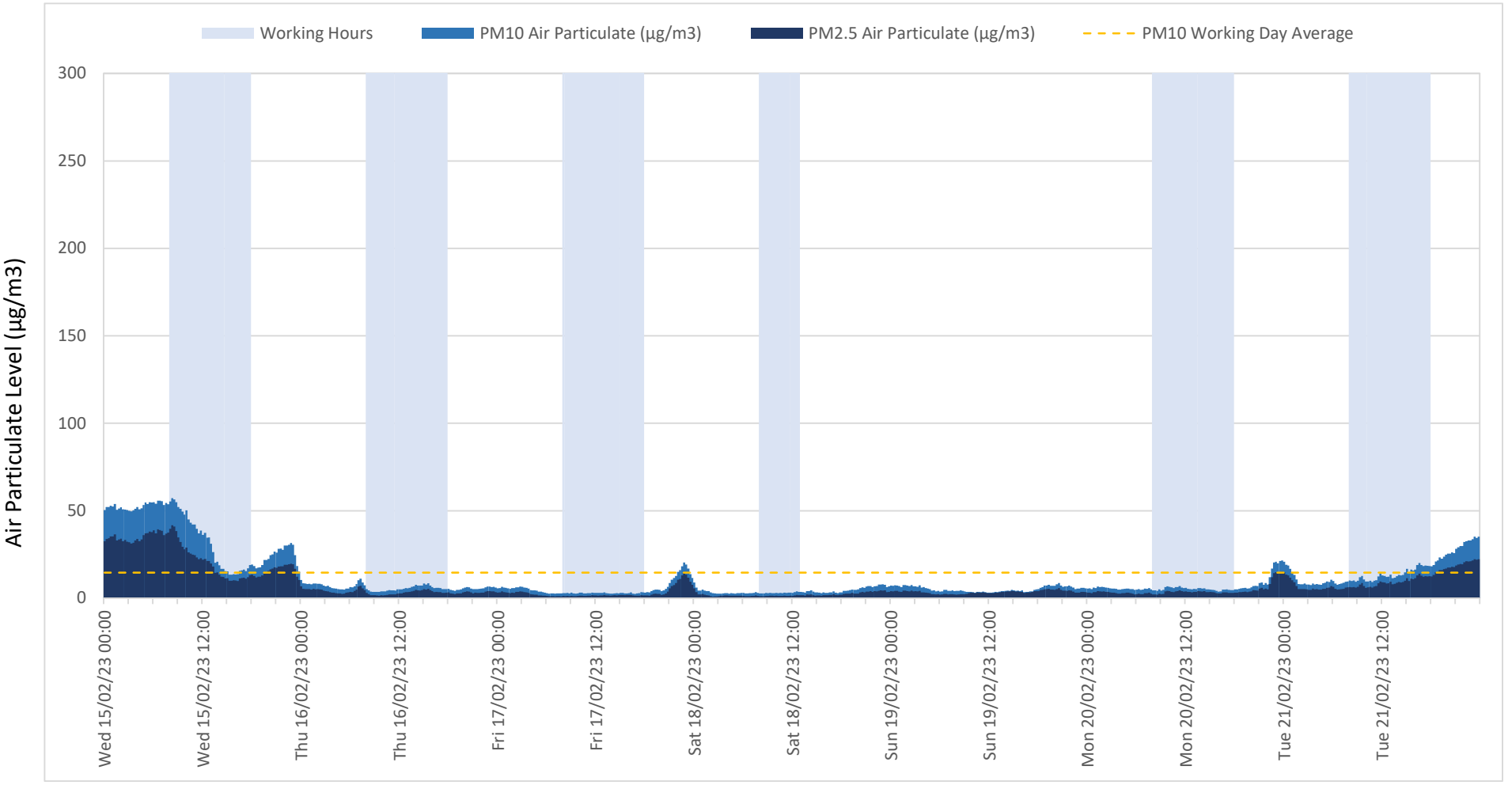


KPM-AP:26019-1.1-3

52 Avenue Road

Position 1

Wednesday 15/02/2023 to Tuesday 21/02/2023

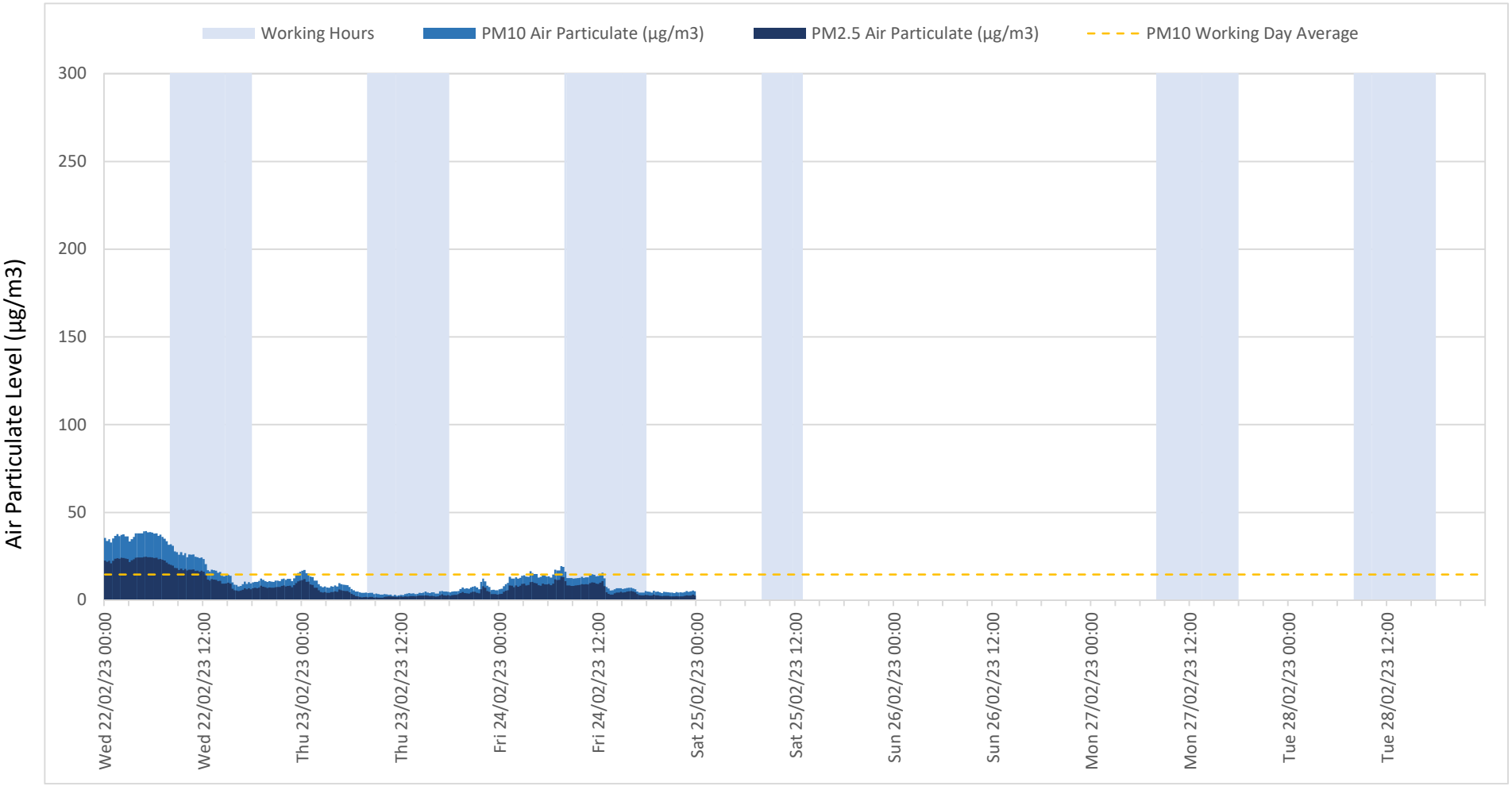


KPM-AP:26019-1.1-4

52 Avenue Road

Position 1

Wednesday 22/02/2023 to Tuesday 28/02/2023

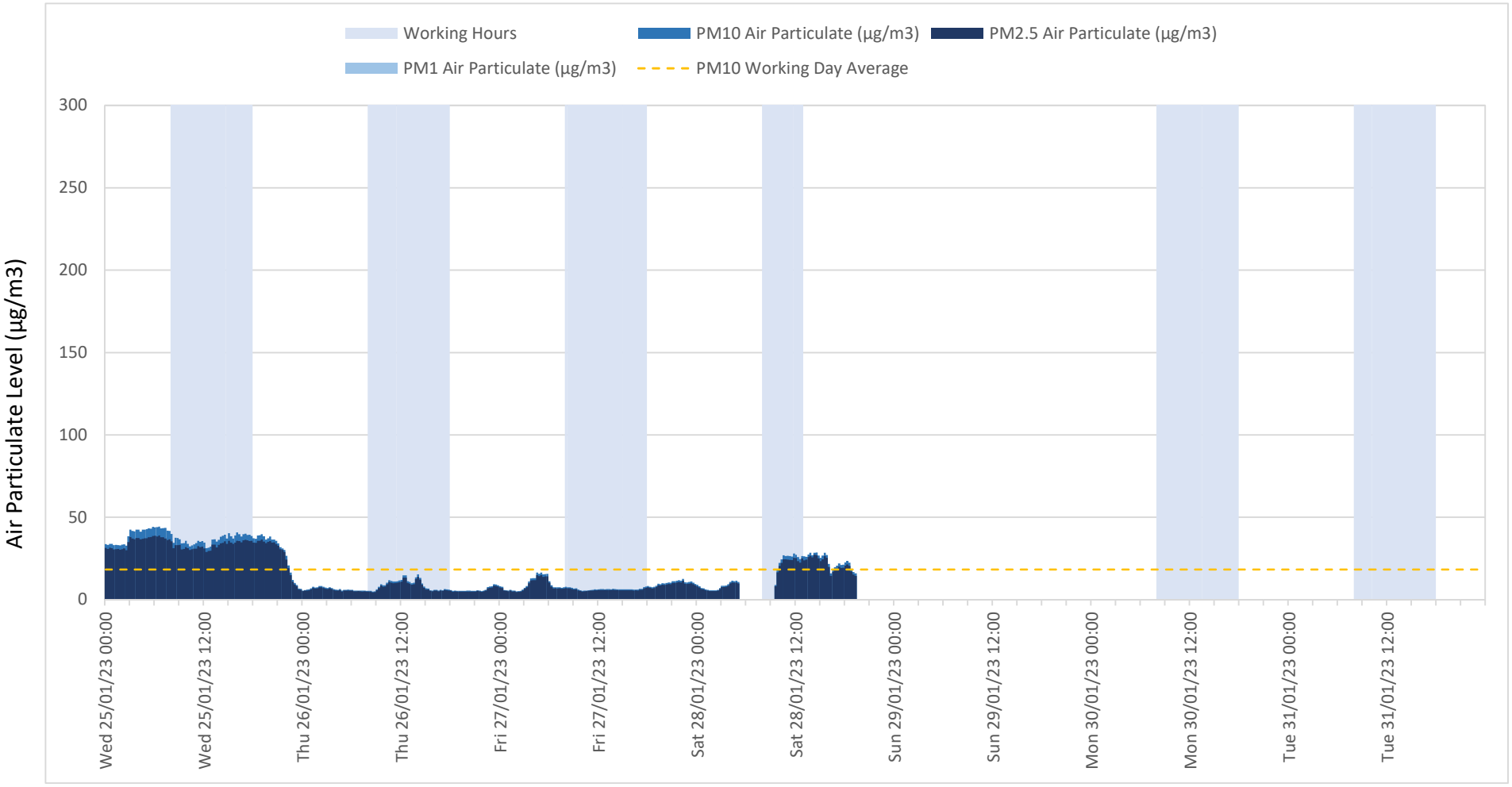


KPM-AP:26019-1.1-5

52 Avenue Road

Position 2

Wednesday 25/01/2023 to Tuesday 31/01/2023

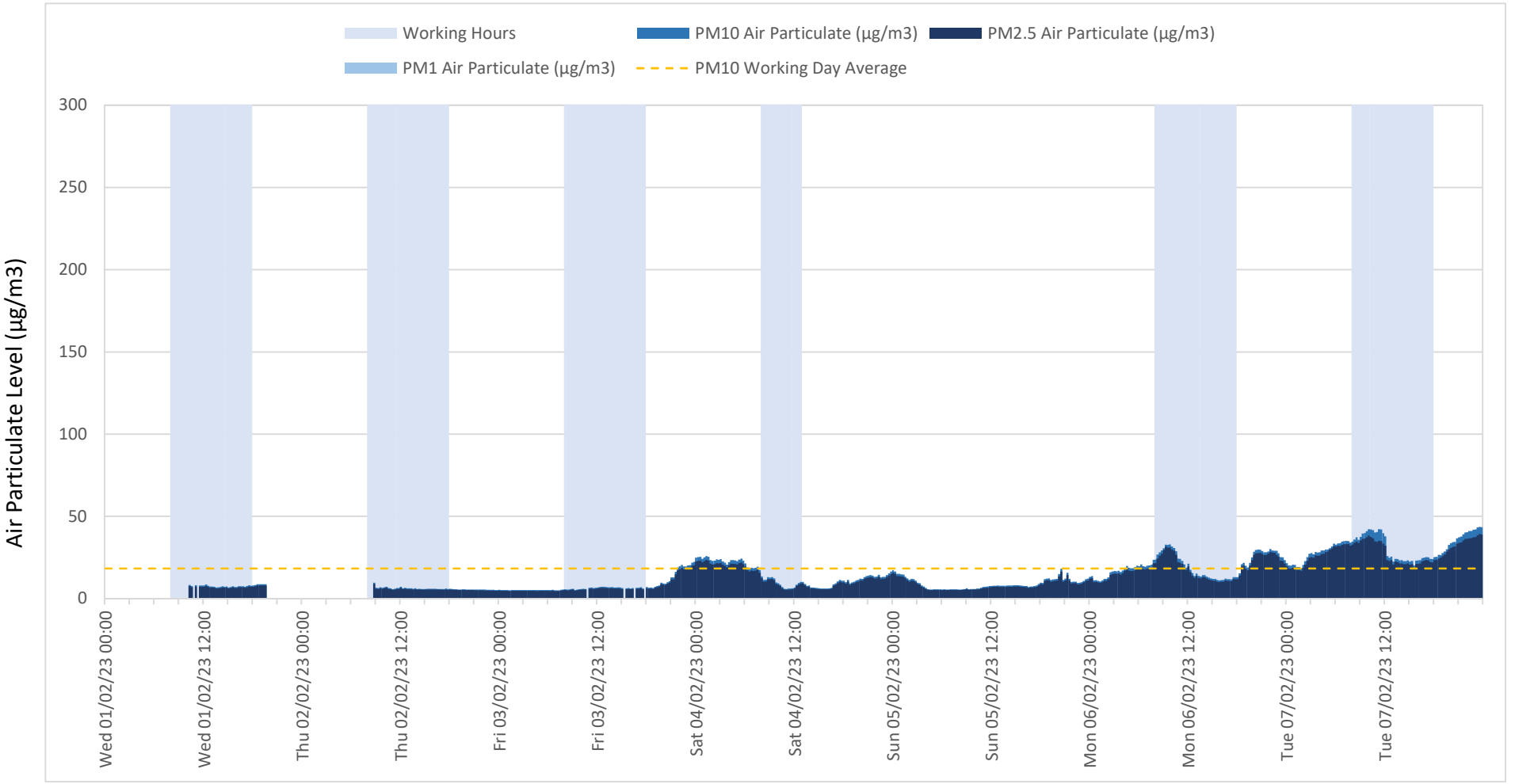


KPM-AP:26019-1.2-1

52 Avenue Road

Position 2

Wednesday 01/02/2023 to Tuesday 07/02/2023

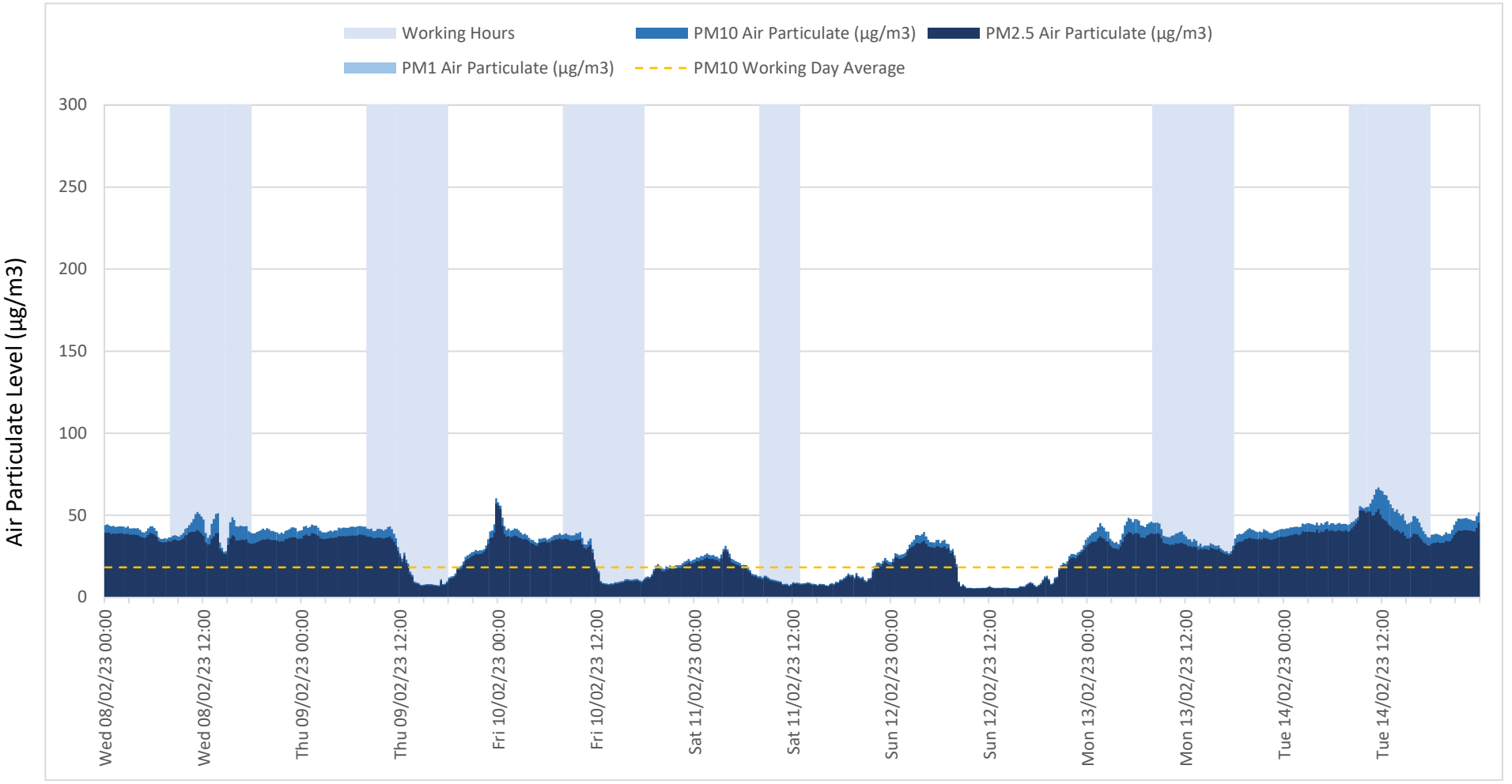


KPM-AP:26019-1.2-2

52 Avenue Road

Position 2

Wednesday 08/02/2023 to Tuesday 14/02/2023



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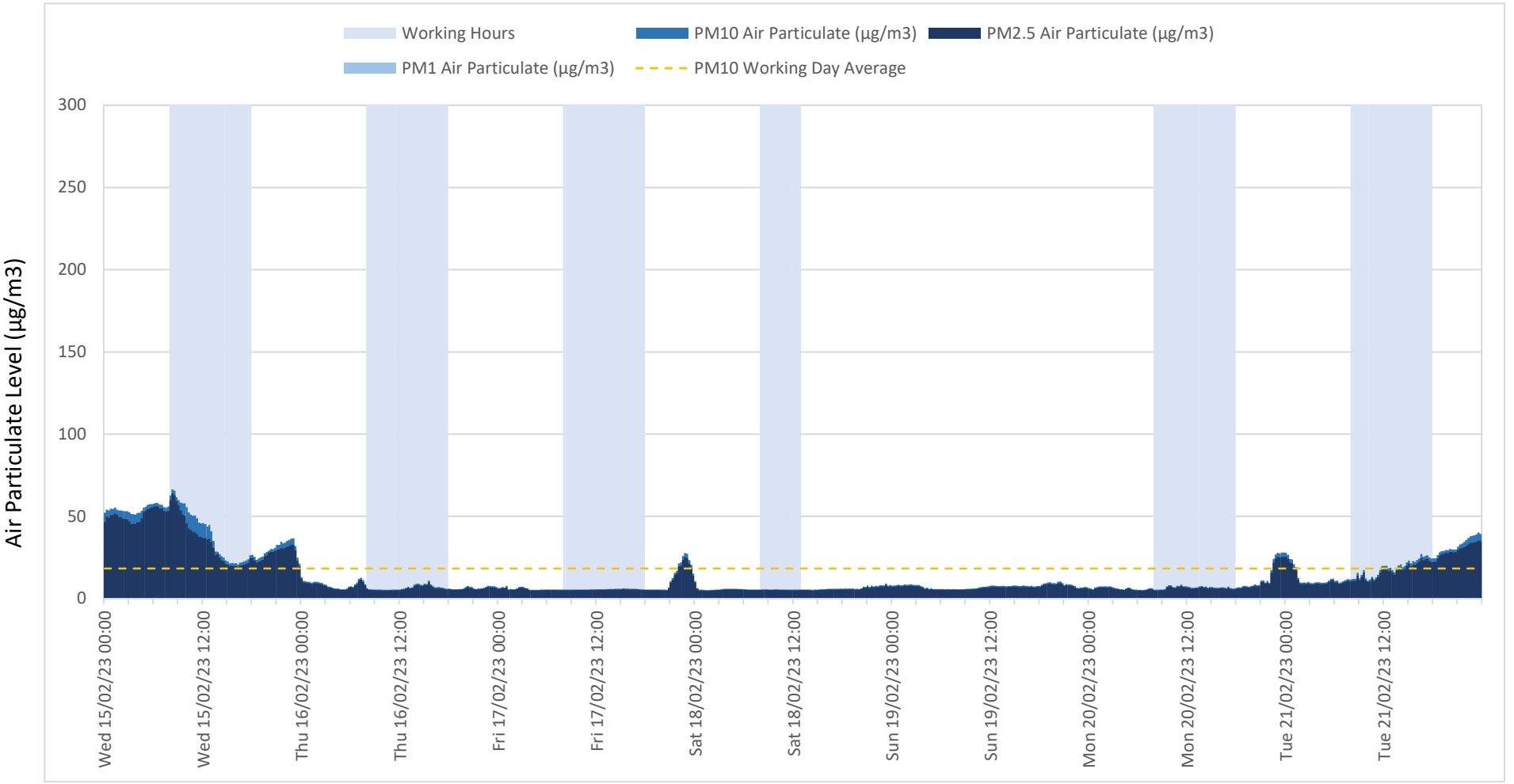
52 Avenue Road

Position 2

Wednesday 15/02/2023 to Tuesday 21/02/2023

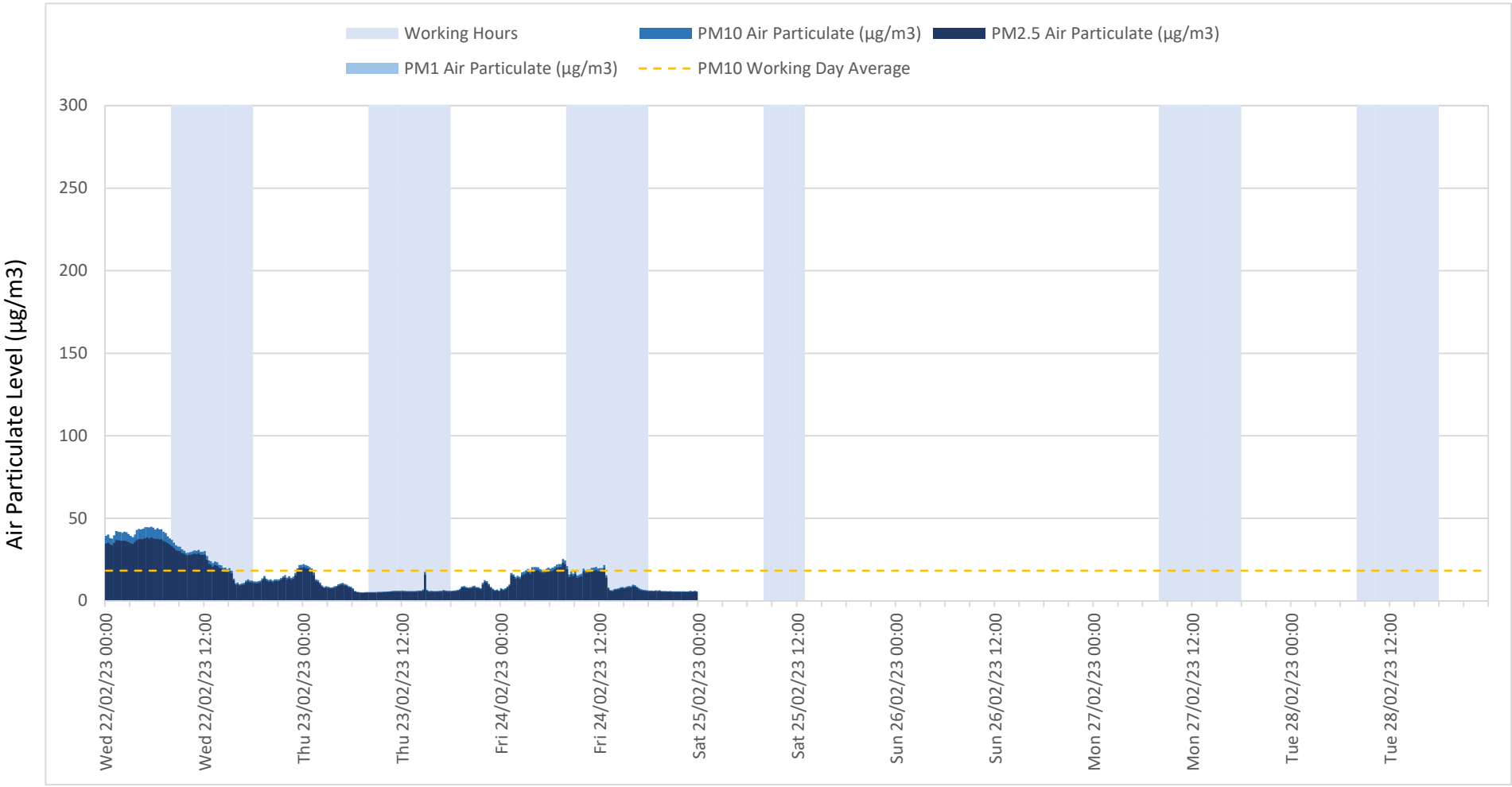


KPM-AP:26019-1.2-4

52 Avenue Road

Position 2

Wednesday 22/02/2023 to Tuesday 28/02/2023

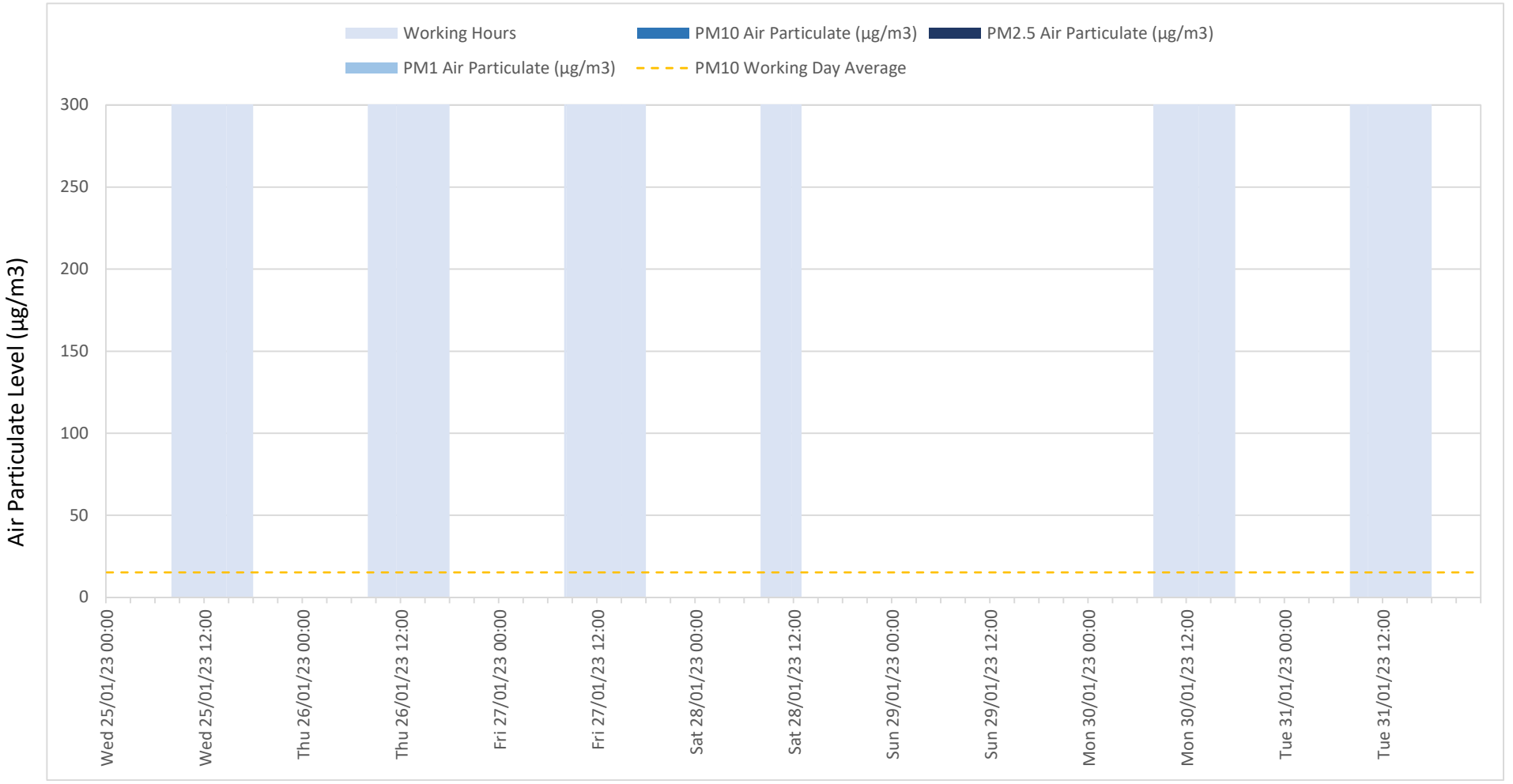


KPM-AP:26019-1.2-5

52 Avenue Road

Position 3

Wednesday 25/01/2023 to Tuesday 31/01/2023

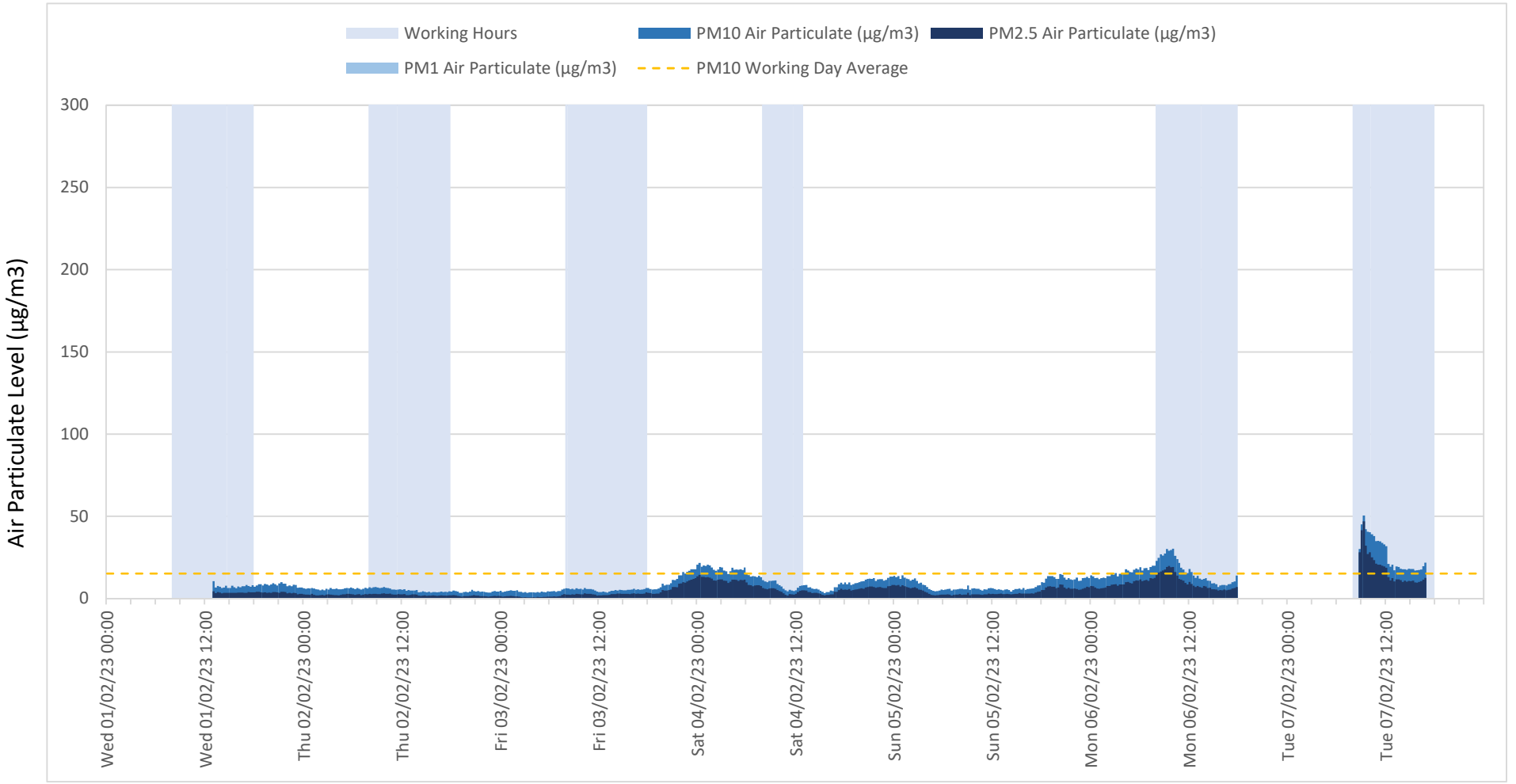


KPM-AP:26019-1.3-1

52 Avenue Road

Position 3

Wednesday 01/02/2023 to Tuesday 07/02/2023



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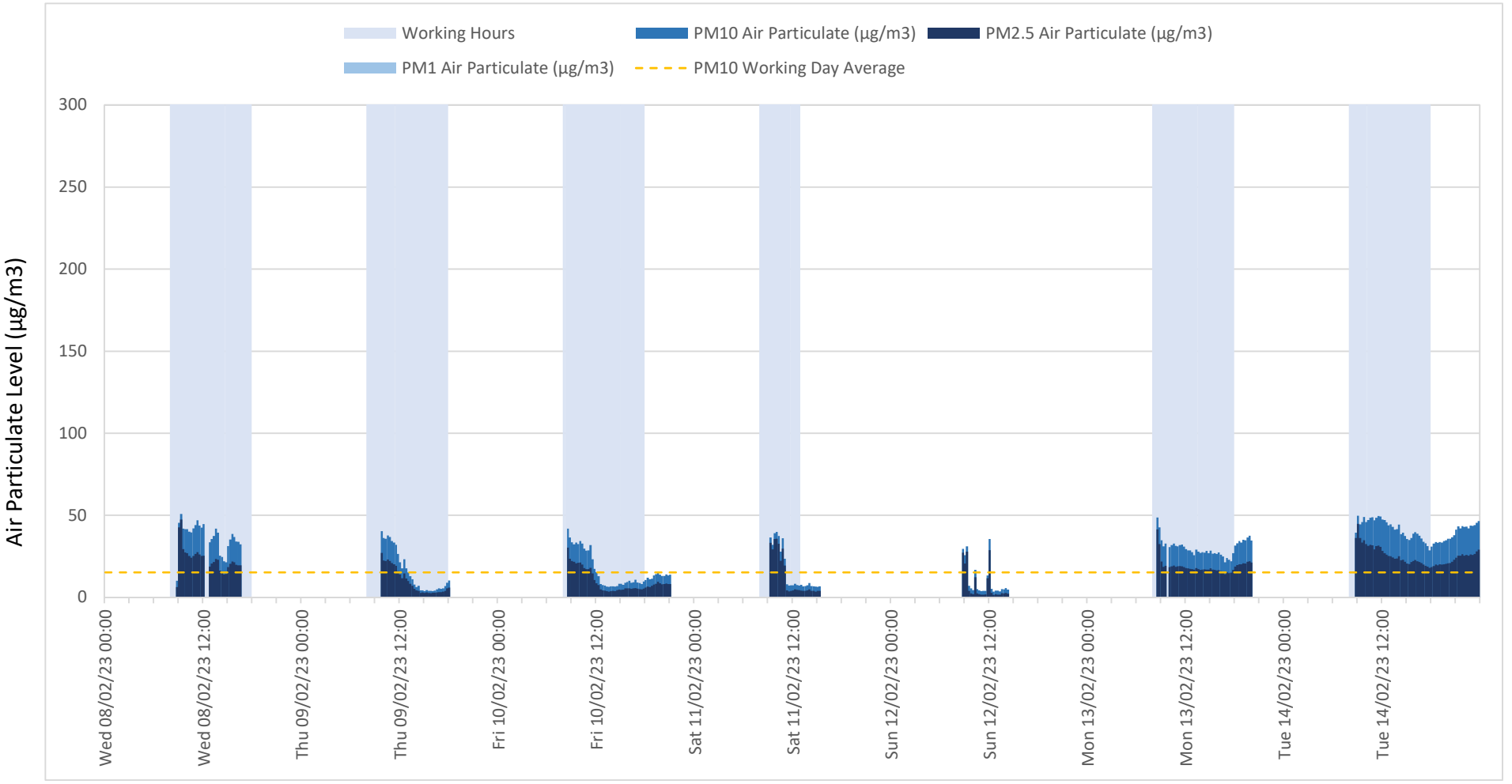
52 Avenue Road

Position 3

Wednesday 08/02/2023 to Tuesday 14/02/2023

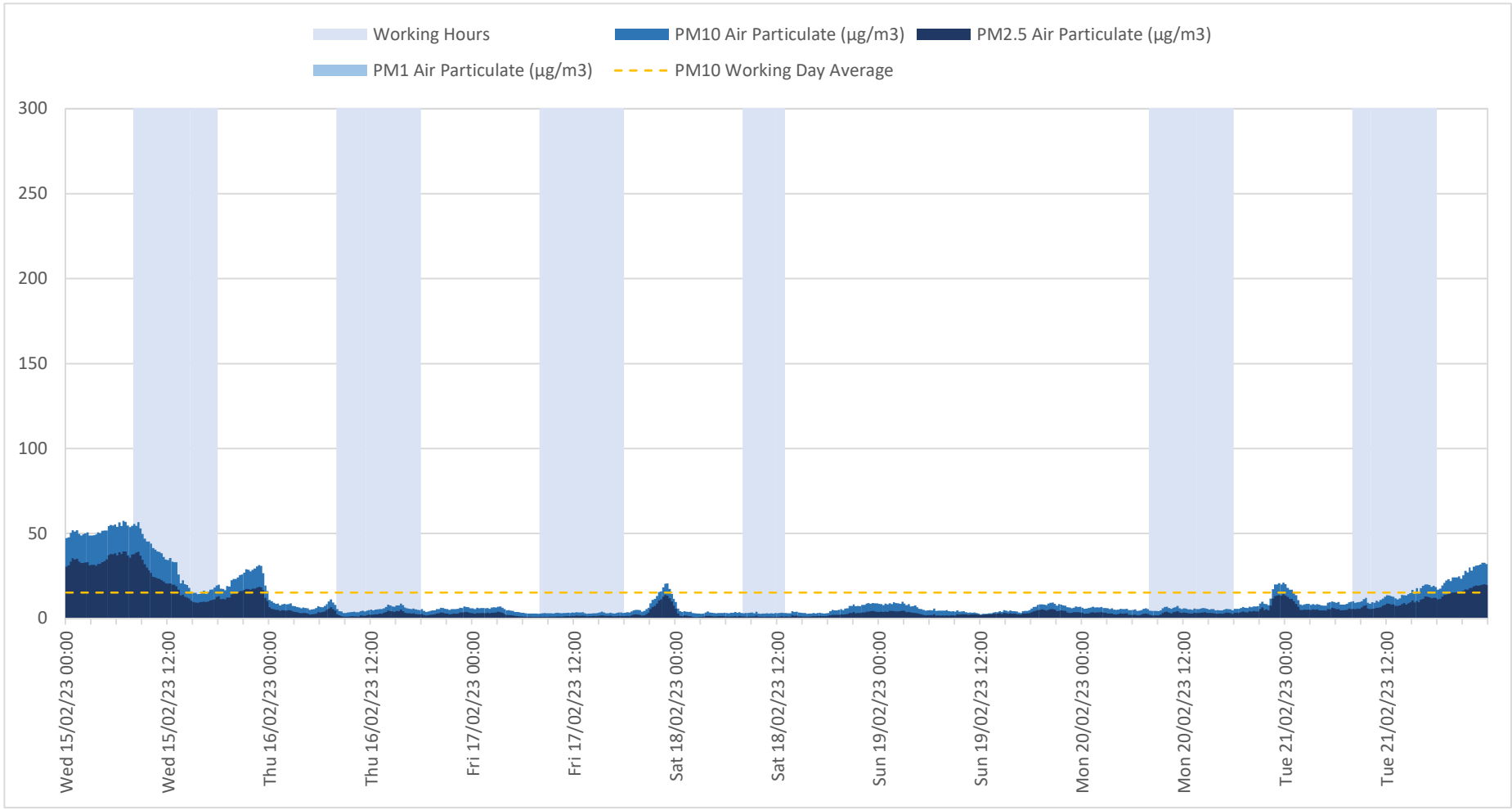


KPM-AP:26019-1.3-3

52 Avenue Road

Position 3

Wednesday 15/02/2023 to Tuesday 21/02/2023



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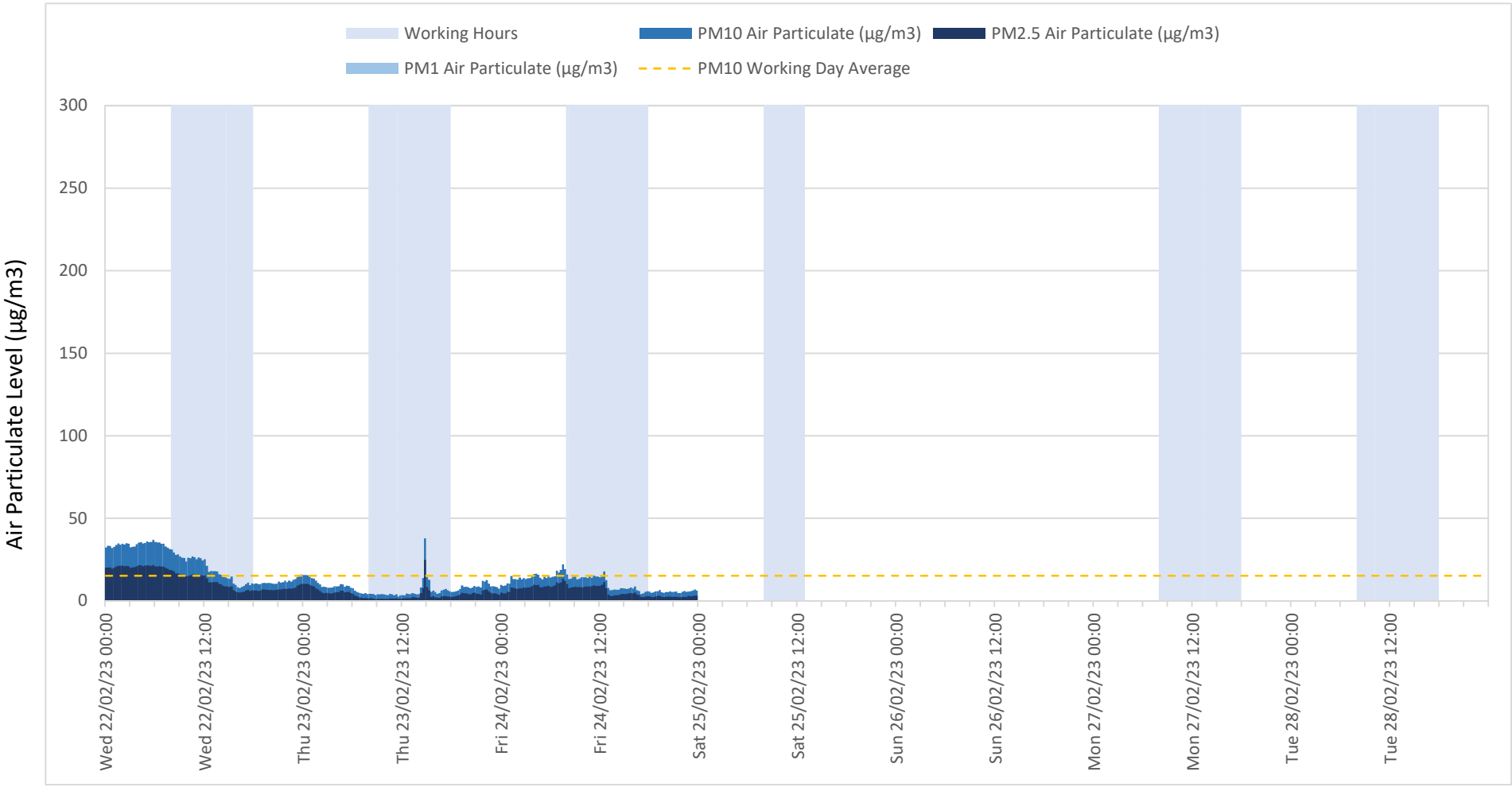
52 Avenue Road

Position 3

Wednesday 22/02/2023 to Tuesday 28/02/2023

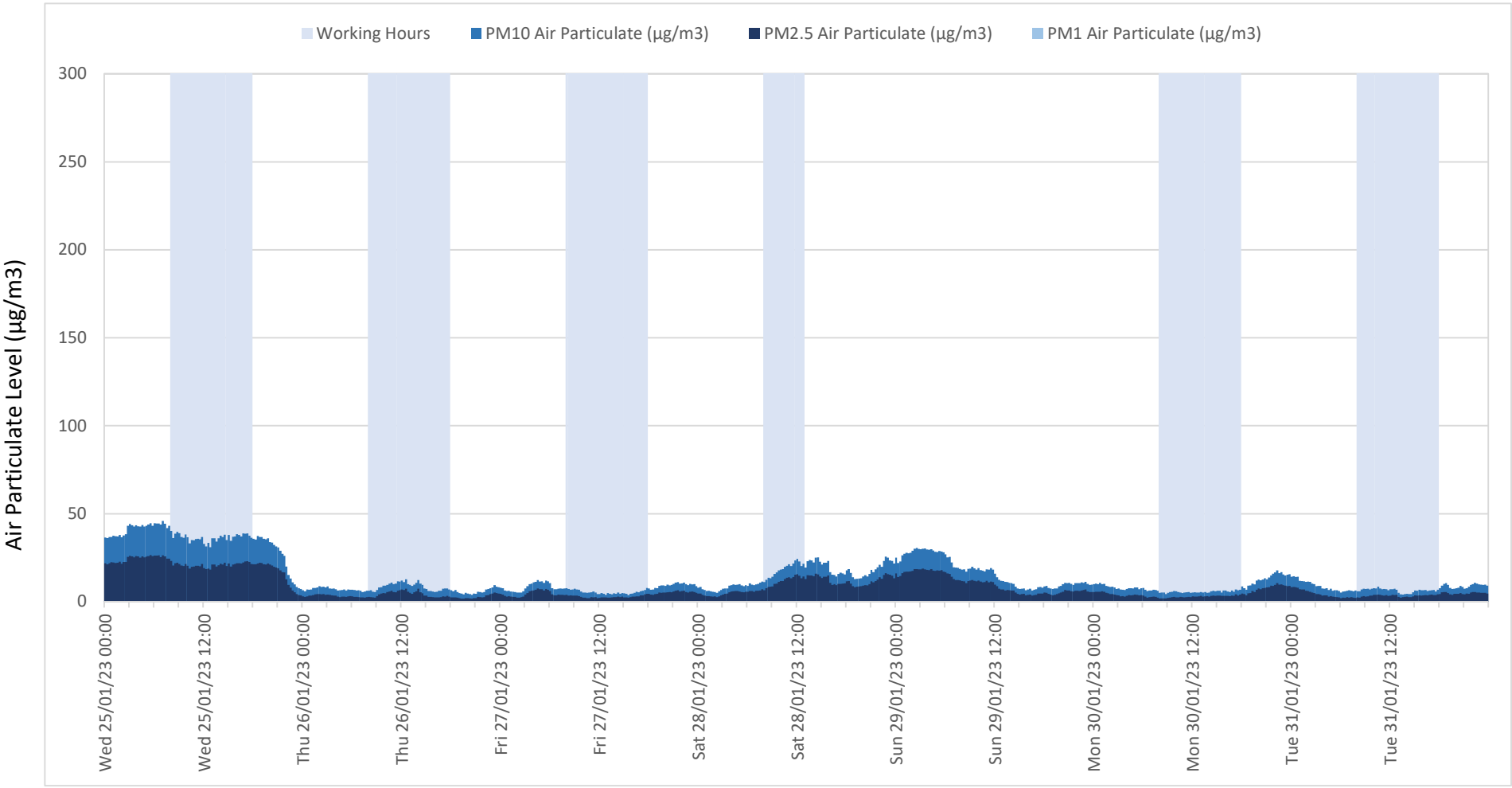


KPM-AP:26019-1.3-5

52 Avenue Road

Position 4

Wednesday 25/01/2023 to Tuesday 31/01/2023

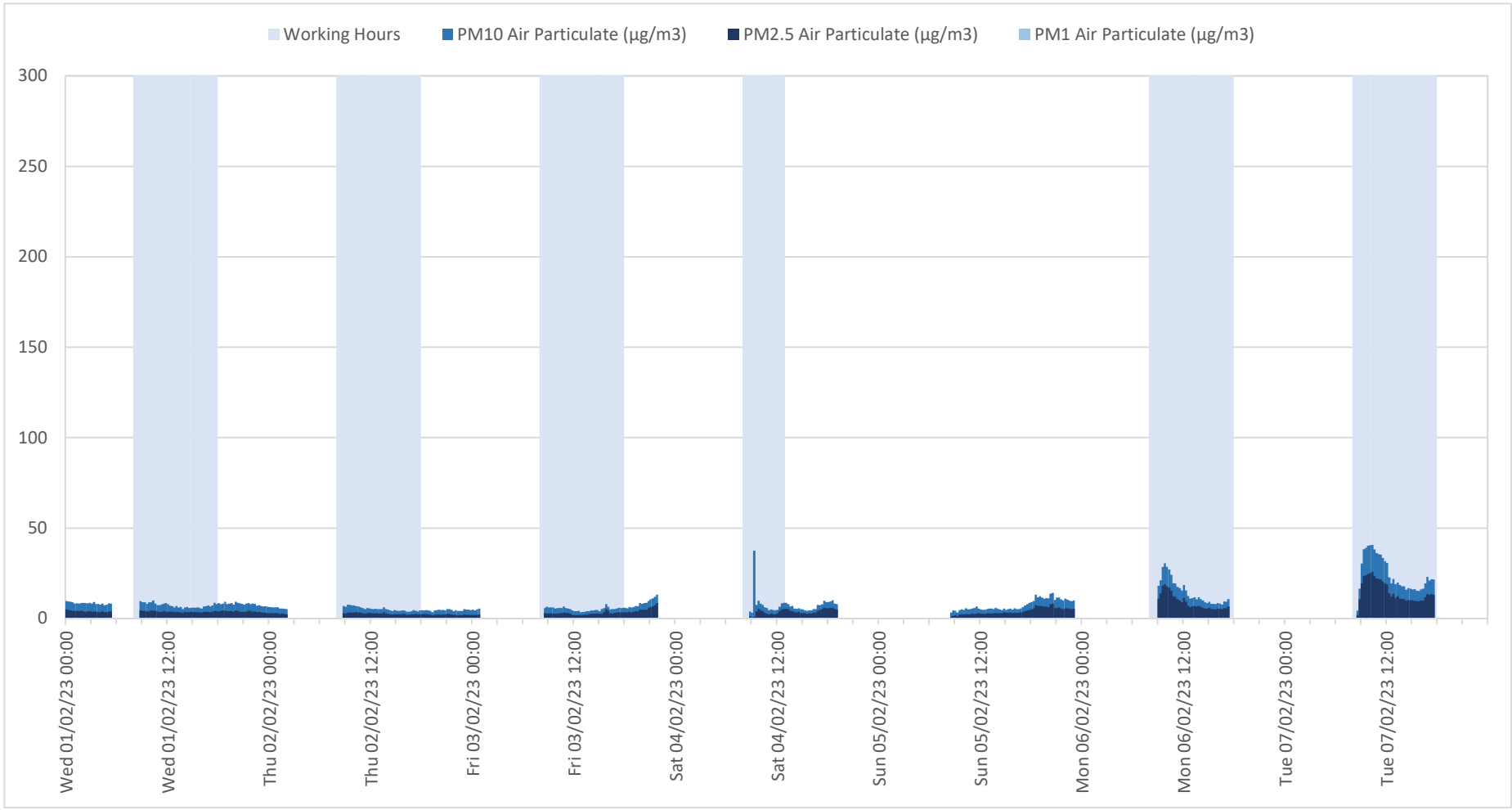


KPM-AP:26019-1.4-1

52 Avenue Road

Position 4

Wednesday 01/02/2023 to Tuesday 07/02/2023

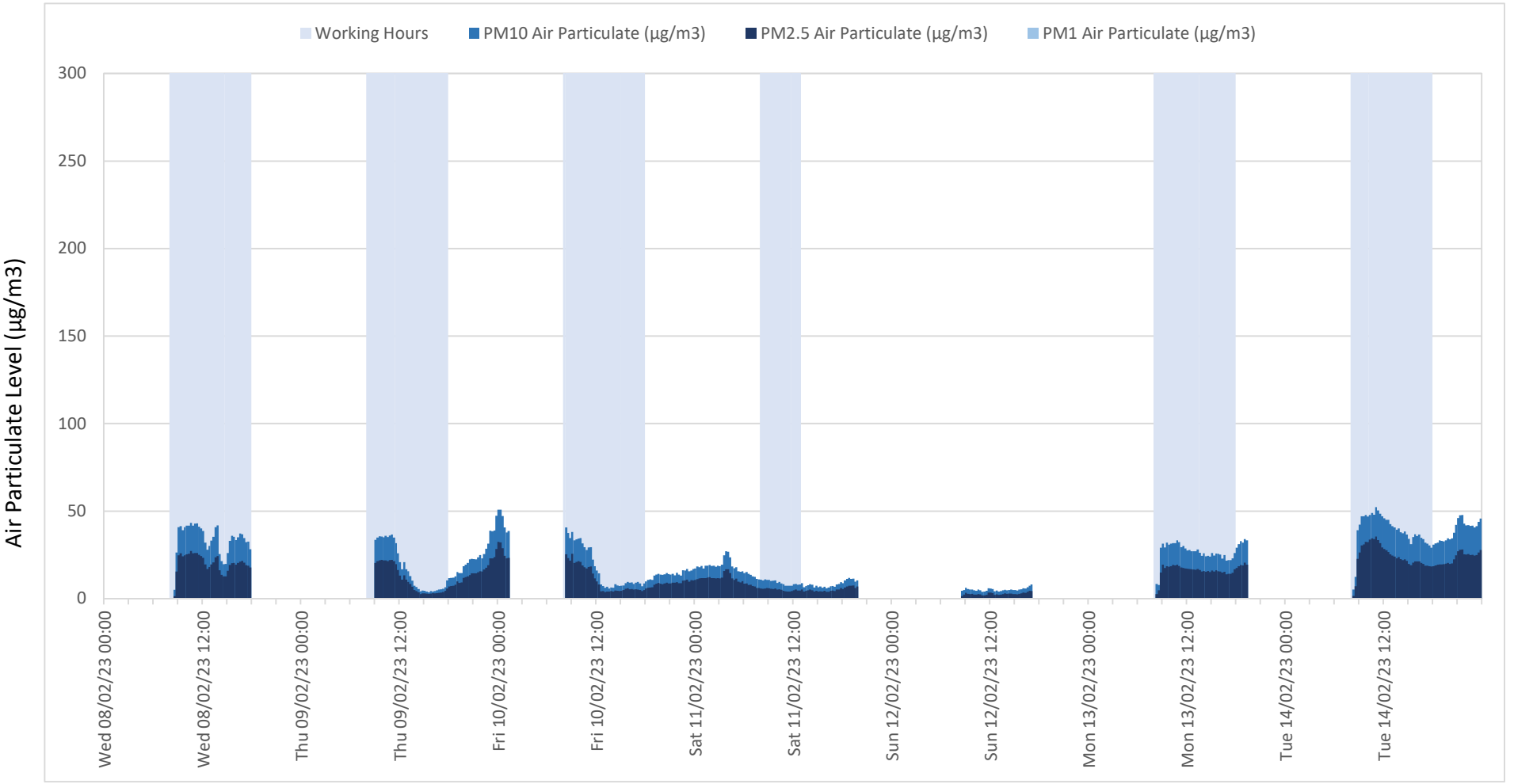


KPM-AP:26019-1.4-2

52 Avenue Road

Position 4

Wednesday 08/02/2023 to Tuesday 14/02/2023

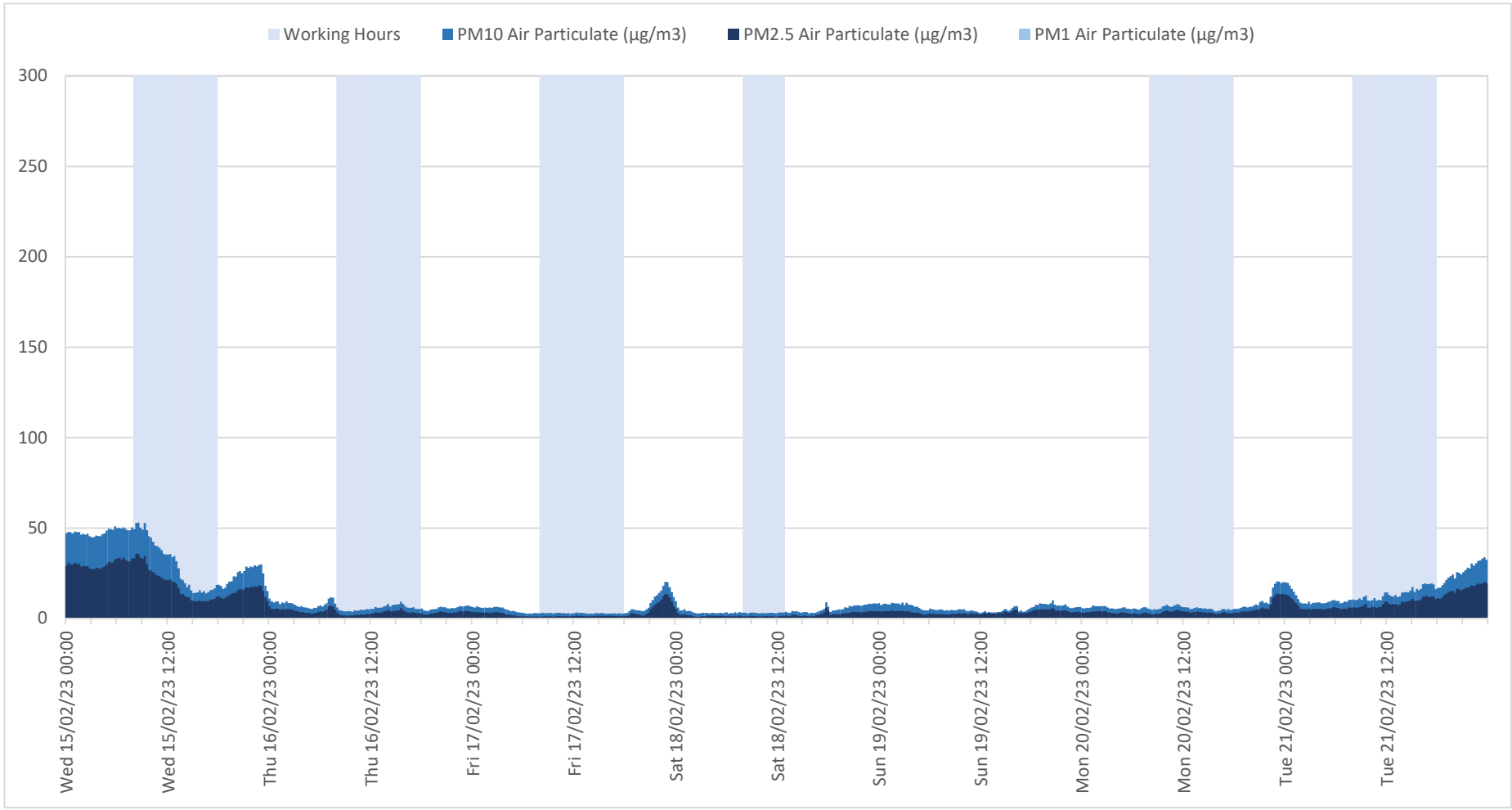


KPM-AP:26019-1.4-3

52 Avenue Road

Position 4

Wednesday 15/02/2023 to Tuesday 21/02/2023

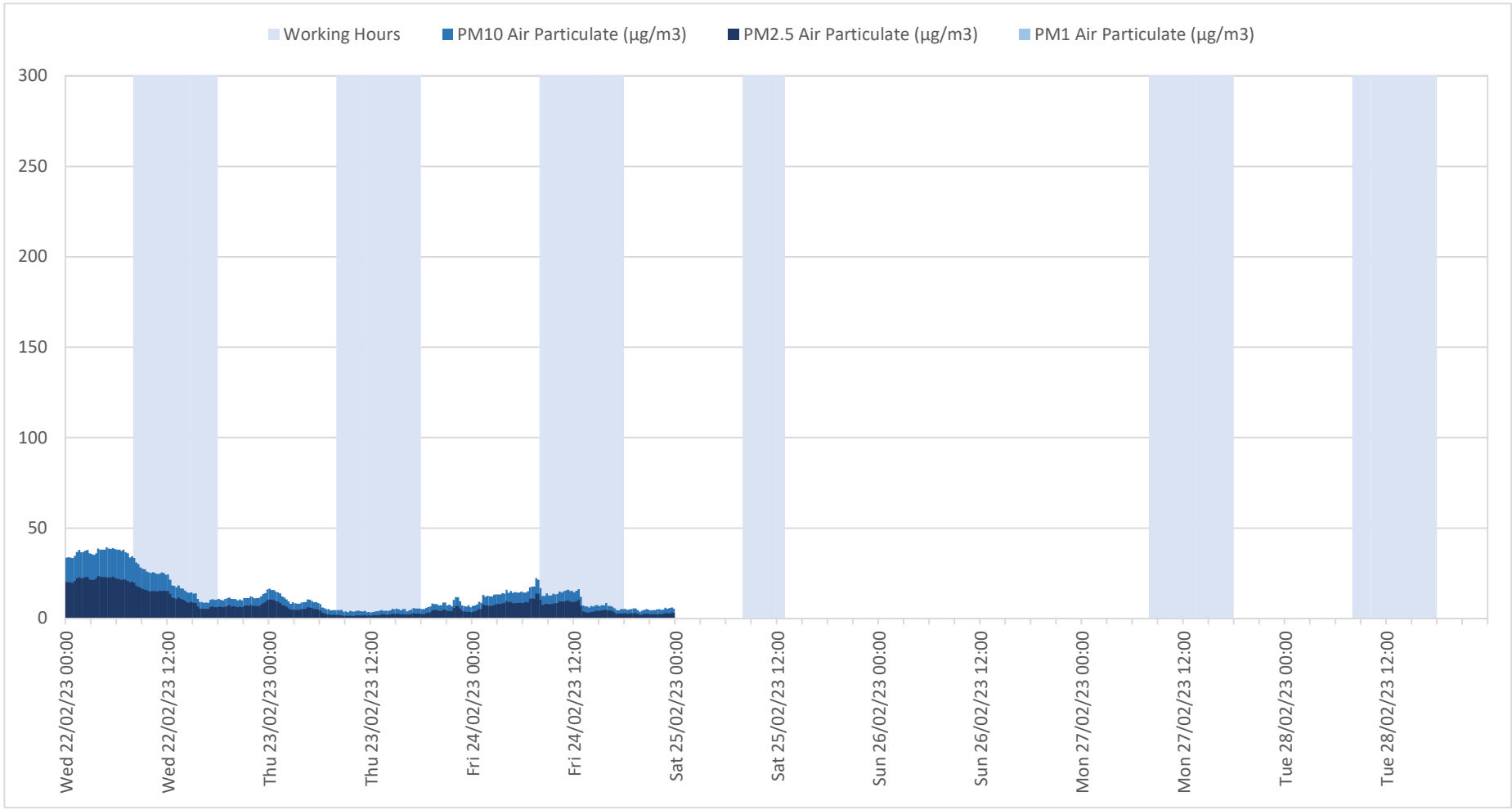


KPM-AP:26019-1.4-4

52 Avenue Road

Position 4

Wednesday 22/02/2023 to Tuesday 28/02/2023



KPM-AP:26019-1.4-5

From: Max O'Brien <max.obrien@domvslondon.com>
Subject: Re: 52 Avenue Road - 2022/1863/P
Date: 19 January 2023 at 18:04:22 GMT
To: Mandip Sahota <ms@ntaplanning.co.uk>
Cc: Jon O'Brien <jon.obrien@domvslondon.com>, Gary Wait <gary.wait@domvslondon.com>

Hi Mandip,

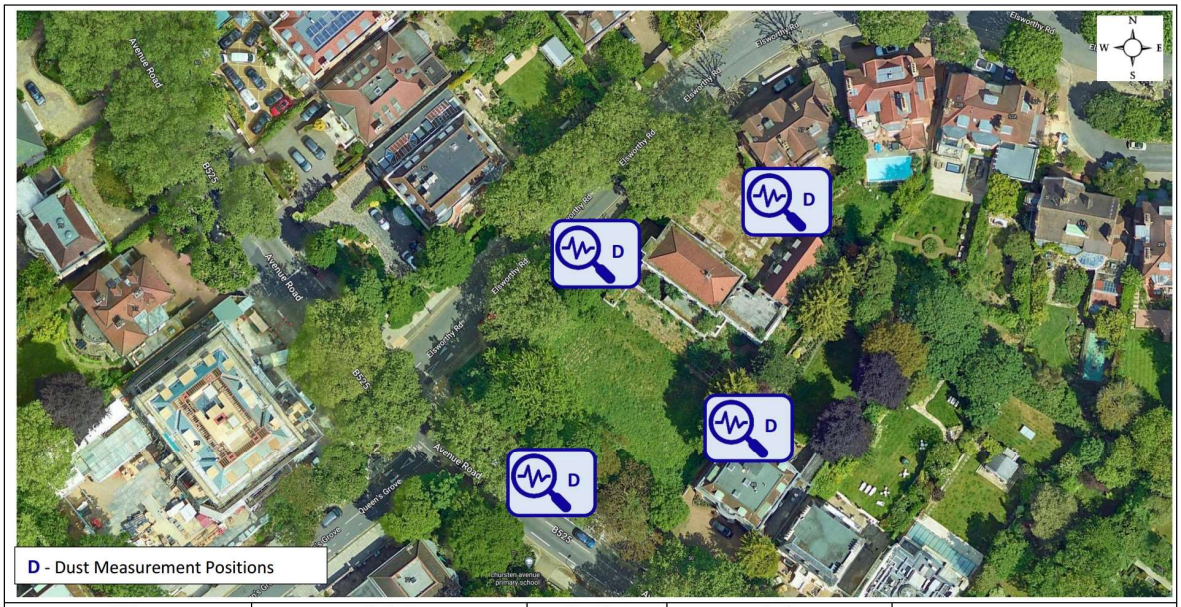
We have tentatively agreed a 4 unit proposal from KP Monitoring who can arrange installation for Tuesday.

They have proposed locations as per the attached plan, covering Elsworthy Road, 57 Elsworthy Road, Avenue Road & 50 Avenue Road.

Can you push on Sofie to agree these locations as soon as possible and that they are happy with Monthly written reports for the monitors (PM10 and PM2.5 Mcerts air particle (dust)) so we can confirm with KP and commence our baseline readings from next week.

Thank you

KP monitoring — Environmental Monitoring Services Proposal – Proposed Site Layout — 19 January 2023



Title	Project	Revision	Scale	
Proposed Environmental Monitoring Positions	KPM 26019: St Johns Wood, 52 Avenue Road, NW8	-	Not to Scale	KP monitoring

From: **Mandip Sahota** ms@ntaplanning.co.uk
Subject: Fwd: 52 Avenue Road - 2022/1863/P
Date: 16 February 2023 at 10:39
To: Max O'Brien max.obrien@domvslondon.com
Cc: Jon O'Brien jon.obrien@domvslondon.com

MS

Morning Max,

Please see below.

Kind regards,

MANDIP SINGH SAHOTA
PARTNER

NTA PLANNING LLP

Begin forwarded message:

From: Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
Date: 16 February 2023 at 09:43:48 GMT
To: Mandip Sahota <ms@ntaplanning.co.uk>
Cc: Richard Limbrick <Richard.Limbrick@camden.gov.uk>
Subject: RE: 52 Avenue Road - 2022/1863/P

Mandip,

Due to the large volume of emails you are sending about this site, can you label what it regards in each email's subject title going forward ie. This one AQ monitor query or S106 query?

See response from AQ officer below:

Assuming that the four sensors have been positioned at each corner of the site area, these locations look to be okay.

Can you please request specifications of the AQ sensors that the applicants are planning on using (so we can ensure they are of MCERTs indicative quality)?

Can you also ask for more detail on how the sensors will be installed? - It is best practice to install the monitors 2-3m high, 1m away from the building's façade and with a 270 degree angle of exposure for the inlet head (I've attached a best practice example). Also attached is the Camden Council requirements for real-time AQ monitoring which contains all relevant information for the applicants, including the reporting requirements.

Regards,

--
Sofie Fieldsend
Senior Planner

Telephone: 02079744607

From: Mandip Sahota <ms@ntaplanning.co.uk>
Sent: 16 February 2023 07:56
To: Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
Cc: Richard Limbrick <Richard.Limbrick@camden.gov.uk>

From: **Max O'Brien** max.obrien@domvslondon.com
Subject: Re: 52 Avenue Road - 2022/1863/P
Date: 17 February 2023 at 09:48
To: Mandip Sahota ms@ntaplanning.co.uk
Cc: Gary Wait gary.wait@domvslondon.com

MO

Morning Mandip,

Please see the attached from KP Acoustics. Hopefully this confirms all matters for Camden

Best,

PDF

EarthSense Zephyr...22.pdf

On 16 Feb 2023, at 10:39, Mandip Sahota <ms@ntaplanning.co.uk> wrote:

Morning Max,

Please see below.

Kind regards,

MANDIP SINGH SAHOTA
PARTNER

NTA PLANNING LLP

Begin forwarded message:

> **From:** Sofie Fieldsend <Sofie.Fieldsend@camden.gov.uk>
> **Date:** 16 February 2023 at 09:43:48 GMT
> **To:** Mandip Sahota <ms@ntaplanning.co.uk>
> **Cc:** Richard Limbrick <Richard.Limbrick@camden.gov.uk>
> **Subject: RE: 52 Avenue Road - 2022/1863/P**
>
> Mandip,
>
> Due to the large volume of emails you are sending about this site, can you label what it regards in each email's subject title going forward ie. This one AQ monitor query or S106 query?
>
> See response from AQ officer below:

KP Monitoring Ltd.
info@kpacoustics.com
1 Galena Road, W6 0LT London, UK
+44 (0) 208 222 8778
www.kpacoustics.com

Part of the KP Acoustics Group

52 Avenue Road, London NW8 6HP

Air Quality Monitoring Report

Report 26019.4

Tuesday 25 April 2023 to Wednesday 24 May 2023

Domvs London (Global Holdings) Ltd
22 Wycombe End,
Beaconsfield,
Buckinghamshire,
United Kingdom HP9 1NB

KP monitoring
Part of the KP Acoustics Group

Report 26019.4 Revision History			
First Issue Date: 30/05/2023			
A		D	
B		E	
C		F	
Written by:		**Checked by:**	
Mohamed Salim Environmental Monitoring Project Engineer BEng(Hons), MIET		Richard P Booth Environmental Monitoring Manager MSc, BSc(Hons), MIOA, AMIEnvSc, AMIAQM	

KP monitoring
Part of the KP Acoustics Group

Contents

List of Attachments

EXECUTIVE SUMMARY

KP Monitoring Ltd has been commissioned to monitor the air quality levels at the 52 Avenue Road site, 52 Avenue Road, St Johns Wood, London NW8 6HP.

Air quality levels have been measured at 4No. positions around the development site. The measured parameters include PM2.5 particulate, PM10 particulate.

The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	N/A	N/A	94%
Position 2	N/A	N/A	100%
Position 3	N/A	N/A	100%
Position 4	N/A	N/A	100%

Table 1 Recorded exceedance events at the development site

The results are presented herein.

1.0 INTRODUCTION

KP Monitoring Ltd have been appointed by Domvs London (Global Holdings) Ltd to monitor the ongoing air quality levels from the site at 52 Avenue Road, and to present the results within baseline monthly reports.

This report details the procedures employed and the data obtained during the monitoring period spanning Tuesday 25 April 2023 to Wednesday 24 May 2023.

2.0 SITE DESCRIPTION

The monitoring site is located within the London Borough of Camden's jurisdiction. It is bounded by Elsworthy Road to the north, Elsworthy Road to the west, residential properties to the south, and large residential landscapes to the east.

3.0 SITE WORKING HOURS

It is our understanding that no works are currently taking place at the development site. Once work commence, however, we understand that works shall take place between the following hours. These daytime periods shall hereby be referred to as the 'Working Day'.

Day	Start time	End Time
Monday	08:00	18:00
Tuesday	08:00	18:00
Wednesday	08:00	18:00
Thursday	08:00	18:00
Friday	08:00	18:00
Saturday	08:00	13:00
Sunday	No Work	No Work

Table 2 Site working hours referred to as 'Working Day'

4.0 INSTALLED EQUIPMENT

Air quality monitoring equipment was installed at the 52 Avenue Road site, and has been continuously serviced, calibrated, and maintained, since Wednesday, 25 January 2023. The following equipment is currently installed:

Position	Manufacturer	Model	Serial
Position 1	Earthsense	Zephyr	1149
Position 2	Earthsense	Zephyr	1169
Position 3	Earthsense	Zephyr	948
Position 4	Earthsense	Zephyr	1043

Table 3 Installed sensor details

Each of the installed air quality monitoring sensors is equipped with a data logger and modem, and is protected from the elements with an environmental kit.

5.0 MONITORING POSITIONS

Air quality monitoring sensors have been installed at 4No. positions around the development site. See site plan in Appendix D. The following table describes these positions.

Position	Monitoring Position
Position 1	The monitor is situated adjacent to Elsworthy Road at an approximate height of 2.5 metres.
Position 2	The monitor is situated adjacent to Elsworthy Road on the north western area of site and is at an approximate height of 2.5 metres.
Position 3	The monitor is situated on the south eastern area of site and is at an approximate height of 1 metre.
Position 4	The monitor is situated on the north eastern area of site and is at an approximate height of 1 metre.

Table 4 Description of monitoring positions

The above positions were recommended and approved by Camden Council as demonstrated in the attached email chain.

6.0 METHODOLOGY

Fully automated air quality monitoring has been undertaken at the 52 Avenue Road site, from Tuesday 25 April 2023 to Wednesday 24 May 2023.

The air quality monitors are sensitive to airborne particle concentrations down to a fraction of a microgram per cubic metre and provide detailed air quality measurements in real-time. A dedicated microprocessor analyses individual particles even if there are millions per litre.

7.0 AIR PARTICULATE (DUST)

7.1 Measured Particulates

Fully automated dust monitoring has been undertaken to measure PM2.5, and PM10 particulate at the 52 Avenue Road site.

7.2 Project Trigger & Action Levels

It is our understanding that there are currently no defined air particulate Trigger and Action levels for this project.

Position	Trigger Level (PM10, µg/m^3, 15min)	Action Level (PM10, µg/m^3, 15min)
Position 1	N/A	N/A
Position 2	N/A	N/A
Position 3	N/A	N/A
Position 4	N/A	N/A

Table 5 Defined Trigger and Action levels at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 6 Trigger and Action alert recipients

7.3 Air Particulate Monitoring Results

The measured dust levels are shown in Appendix B and the associated graphs. The following dust level exceedances were recorded across the development site during the monitoring period.

Position	Trigger Level Exceedances	Action Level Exceedances	Data Capture Rate
Position 1	N/A	N/A	94%
Position 2	N/A	N/A	100%
Position 3	N/A	N/A	100%
Position 4	N/A	N/A	100%

Table 7 Recorded exceedance events at the development site

The following contacts are current recipients of the above alerts by email and/or SMS.

Recipient Name	Organisation
max.obrien@domvslondon.com	Domvs London (Global Holdings) Ltd

Table 8 Trigger and Action alert recipients

During the monitoring period of 25 April 2023 to Wednesday 24 May 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 1.

During the monitoring period of 25 March 2023 to Wednesday 24 May 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 2.

During the monitoring period of 25 March 2023 to Wednesday 24 May 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 3.

During the monitoring period of 25 March 2023 to Wednesday 24 May 2023, there were 0No. days when PM10 particulate matter levels exceeded 50µg/m^3 over a 15-minute period at Position 4.

Using the data collected from the beginning of the project on 23 January 2023, we have estimated the Annual Mean PM10 particulate matter for each monitoring location. This

Annual Mean has been seasonally corrected to allow for the short-term monitoring period, and is presented below.

Background Site	Annual Mean 2022 (Am)	Period Mean 2023 (Pm)	Ratio (Am/Pm)
London Bloomsbury	17.3	14.2	1.2
Euston Road, Camden	20.6	16.4	1.3
Coopers Lane, Camden	16.5	11.2	1.5
		Average (Ra)	1.3

Table 9 Annualised Continuous Monitoring Data for 23 January 2023 to 24 May 2023

The Period Mean PM 10 particulate matter at Position 1 was 11.56µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 12.86µg/m^3. The total data capture rate at this location was 93% for the monitoring period of 23 January 2023 to 24 May 2023.

The Period Mean PM 10 particulate matter at Position 2 was 14.59µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 18.96µg/m^3. The total data capture rate at this location was 98% for the monitoring period of 23 January 2023 to 24 April 2023.

The Period Mean PM 10 particulate matter at Position 3 was 11.48µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 14.92µg/m^3. The total data capture rate at this location was 89% for the monitoring period of 23 January 2023 to 24 April 2023.

The Period Mean PM 10 particulate matter at Position 4 was 11.33µg/m^3. The best estimate of the Annual Mean at Position 1 for 2023 is 14.72µg/m^3. The total data capture rate at this location was 97% for the monitoring period of 23 January 2023 to 24 April 2023.

8.0 DISCUSSION

Environmental air quality monitoring has been undertaken at the 52 Avenue Road site, during the period spanning Tuesday 25 April 2023 to Wednesday 24 May 2023.

The results are presented herein.

Unfortunately, we are unable to present data for Position 1 from Tuesday 02 May 2023 at approximately 2015 hours to Thursday 04 May 2023 at approximately 1230 hours.

This instance of data loss was caused by a depleted external battery. An engineer attended site on Thursday 04 May 2023 and proceeded to replace the depleted battery with a fully charged one.

APPENDIX A – AIR QUALITY TERMINOLOGY

PMx Particulate Matter

Used as a measurement of air particles where x is the size of the particle measured in micrometres (or µm). PM10 describes inhalable particles, with diameters that are 10 micrometres and smaller. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM2.5 describes fine particles that are 2.5 micrometres or smaller in diameter and can only be seen with an electron microscope and are able to penetrate to the lungs. Typical sources include all types of combustion, including motor vehicles, power plants and agricultural burning. PM1 describes particles that are 1 micrometre or smaller in diameter.

TSP Total Suspended Particles

Used as a measure of the mass concentration of particulate matter in the air. TSP covers the full range of particle sizes and is commonly measured alongside PM10 and PM2.5.

Nephelometer

Sometimes referred to as a turbidimeter, these devices are used to measure the concentration of particulates suspended in a fluid. Suspended particulates are measured by employing a light beam and a light detector set to one side (often 90°) of the source beam. Particle density is then a function of the light reflected into the detector from the particles.

APPENDIX B – MAXIMUM PM2.5/PM10 LEVELS

The following table presents the maximum PM2.5 levels measured during the period Tuesday 25 April 2023 to Wednesday 24 May 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/04/2023	6	10	6	6
26/04/2023	8	12	7	7
27/04/2023	24	36	22	22
28/04/2023	5	9	5	5
29/04/2023	15	27	15	15
30/04/2023	No Work	No Work	No Work	No Work
01/05/2023	5	9	5	5
02/05/2023	8	12	8	7
03/05/2023	-	18	10	16
04/05/2023	22	34	20	24
05/05/2023	6	10	6	6
06/05/2023	6	12	6	6
07/05/2023	No Work	No Work	No Work	No Work
08/05/2023	8	17	8	8
09/05/2023	7	14	7	10
10/05/2023	8	15	7	20
11/05/2023	6	11	6	6

Date	Position 1	Position 2	Position 3	Position 4
12/05/2023	9	17	10	21
13/05/2023	12	20	12	16
14/05/2023	No Work	No Work	No Work	No Work
15/05/2023	4	7	4	5
16/05/2023	8	14	8	8
17/05/2023	9	13	8	19
18/05/2023	7	11	7	9
19/05/2023	10	18	10	21
20/05/2023	11	20	11	11
21/05/2023	No Work	No Work	No Work	No Work
22/05/2023	7	11	7	7
23/05/2023	5	8	5	6
24/05/2023	8	13	8	8
25/05/2023	-	-	-	-

Table 10 Measured maximum PM2.5 levels at the development site

The following table presents the 24-hour mean average PM2.5 levels measured during the period Tuesday 25 April 2023 to Wednesday 24 May 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/04/2023	4	8	4	4
26/04/2023	6	10	6	6
27/04/2023	16	26	15	15
28/04/2023	6	11	6	6
29/04/2023	13	21	13	12
30/04/2023	No Work	No Work	No Work	No Work
01/05/2023	7	13	7	7
02/05/2023	5	9	5	5
03/05/2023	-	13	8	8
04/05/2023	11	22	13	12
05/05/2023	4	7	4	3
06/05/2023	4	8	4	4
07/05/2023	No Work	No Work	No Work	No Work
08/05/2023	5	9	5	5
09/05/2023	3	7	4	4
10/05/2023	4	8	4	4
11/05/2023	3	7	3	4
12/05/2023	7	14	8	9

Date	Position 1	Position 2	Position 3	Position 4
13/05/2023	10	19	11	10
14/05/2023	No Work	No Work	No Work	No Work
15/05/2023	3	7	4	3
16/05/2023	4	8	5	5
17/05/2023	6	10	6	6
18/05/2023	5	9	5	5
19/05/2023	8	13	8	8
20/05/2023	7	12	7	7
21/05/2023	No Work	No Work	No Work	No Work
22/05/2023	6	10	6	6
23/05/2023	5	8	5	5
24/05/2023	6	11	7	6
25/05/2023	-	-	-	-

Table 1 Measured 24-hour mean average PM2.5 levels at the development site

The following table presents the maximum PM10 levels measured during the period Tuesday 25 April 2023 to Wednesday 24 May 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/04/2023	7	11	8	8
26/04/2023	9	13	10	9
27/04/2023	38	42	37	36
28/04/2023	7	10	7	7
29/04/2023	22	29	24	23
30/04/2023	No Work	No Work	No Work	No Work
01/05/2023	8	10	9	8
02/05/2023	11	13	12	11
03/05/2023	-	19	15	23
04/05/2023	37	40	35	41
05/05/2023	9	11	10	10
06/05/2023	10	14	11	10
07/05/2023	No Work	No Work	No Work	No Work
08/05/2023	12	18	12	12
09/05/2023	11	16	12	14
10/05/2023	12	16	12	31
11/05/2023	9	12	11	10
12/05/2023	14	19	16	29

Date	Position 1	Position 2	Position 3	Position 4
13/05/2023	17	22	18	23
14/05/2023	No Work	No Work	No Work	No Work
15/05/2023	5	8	5	6
16/05/2023	10	15	12	12
17/05/2023	12	14	12	27
18/05/2023	9	13	11	12
19/05/2023	14	20	15	30
20/05/2023	16	22	17	17
21/05/2023	No Work	No Work	No Work	No Work
22/05/2023	8	12	10	11
23/05/2023	6	9	8	7
24/05/2023	10	14	12	11
25/05/2023	-	-	-	-

Table 12 Measured maximum PM10 levels at the development site

The following table presents the 24-hour mean average PM10 levels measured during the period Tuesday 25 April 2023 to Wednesday 24 May 2023.

Date	Position 1	Position 2	Position 3	Position 4
25/04/2023	6	8	7	6
26/04/2023	7	9	7	7
27/04/2023	22	27	22	21
28/04/2023	6	9	7	7
29/04/2023	22	27	23	23
30/04/2023	No Work	No Work	No Work	No Work
01/05/2023	11	15	12	11
02/05/2023	8	10	9	8
03/05/2023	-	14	11	11
04/05/2023	28	29	25	23
05/05/2023	5	8	6	6
06/05/2023	7	8	8	7
07/05/2023	No Work	No Work	No Work	No Work
08/05/2023	8	10	8	8
09/05/2023	6	9	7	7
10/05/2023	7	9	8	8
11/05/2023	5	8	6	6
12/05/2023	10	13	11	12

Date	Position 1	Position 2	Position 3	Position 4
13/05/2023	13	18	15	14
14/05/2023	No Work	No Work	No Work	No Work
15/05/2023	5	8	5	5
16/05/2023	5	8	6	6
17/05/2023	8	11	10	9
18/05/2023	7	9	8	7
19/05/2023	11	14	12	12
20/05/2023	12	16	13	13
21/05/2023	No Work	No Work	No Work	No Work
22/05/2023	7	10	8	7
23/05/2023	7	10	8	7
24/05/2023	8	11	9	9
25/05/2023	-	-	-	-

Table 93 Measured 24-hour mean average PM10 levels at the development

APPENDIX C – PM10 Air Particulate Level Statistics for Tuesday 25 April 2023 to Wednesday 24 May 2023

The tables below present the PM10 monitoring statistics for working hours and non-working hours during the monitoring period.

Position	Mean Average 15 min PM10 Dust Level ($\mu g/m^3$)	Minimum 15 min PM10 Dust Level ($\mu g/m^3$)	Maximum 15 min PM10 Dust Level ($\mu g/m^3$)	Data Capture Rate
Position 1	10	2	38	94%
Position 2	13	5	42	100%
Position 3	11	3	37	100%
Position 4	10	2	41	100%

Table 14 Working Day PM10 dust level statistics

Position	Mean Average 15 min PM10 Dust Level ($\mu g/m^3$)	Minimum 15 min PM10 Dust Level ($\mu g/m^3$)	Maximum 15 min PM10 Dust Level ($\mu g/m^3$)
Position 1	11	3	38
Position 2	14	5	46
Position 3	12	3	37
Position 4	11	3	36

Table 15 Out of hours PM10 dust level statistics

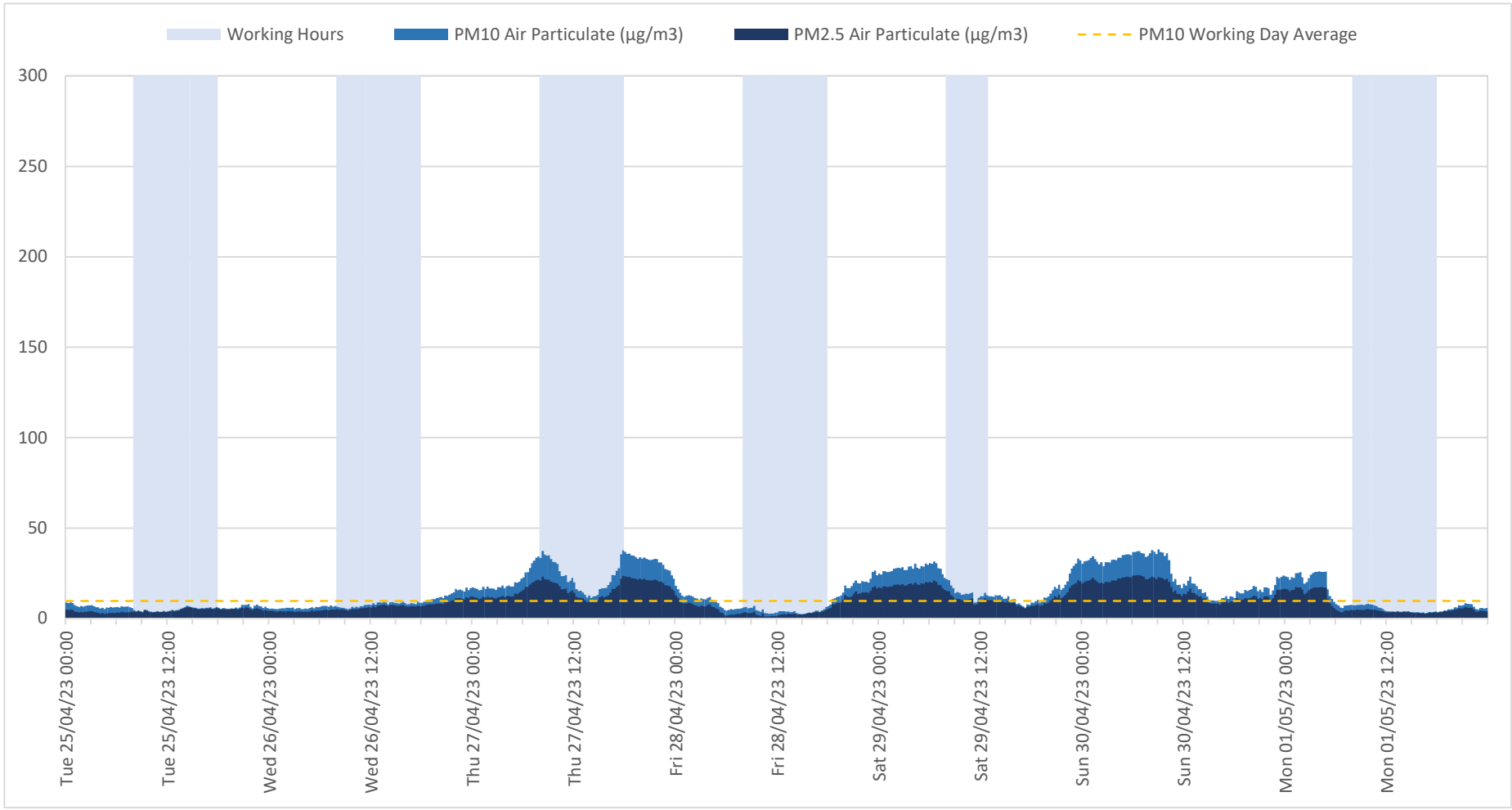
APPENDIX D – Environmental Monitoring Site Plan

Environmental Monitoring Positions	52 Avenue Road	Revision: -	Not to Scale	KP monitoring Part of the KP Acoustics Group

52 Avenue Road

Position 1

Tuesday 25/04/2023 to Monday 01/05/2023

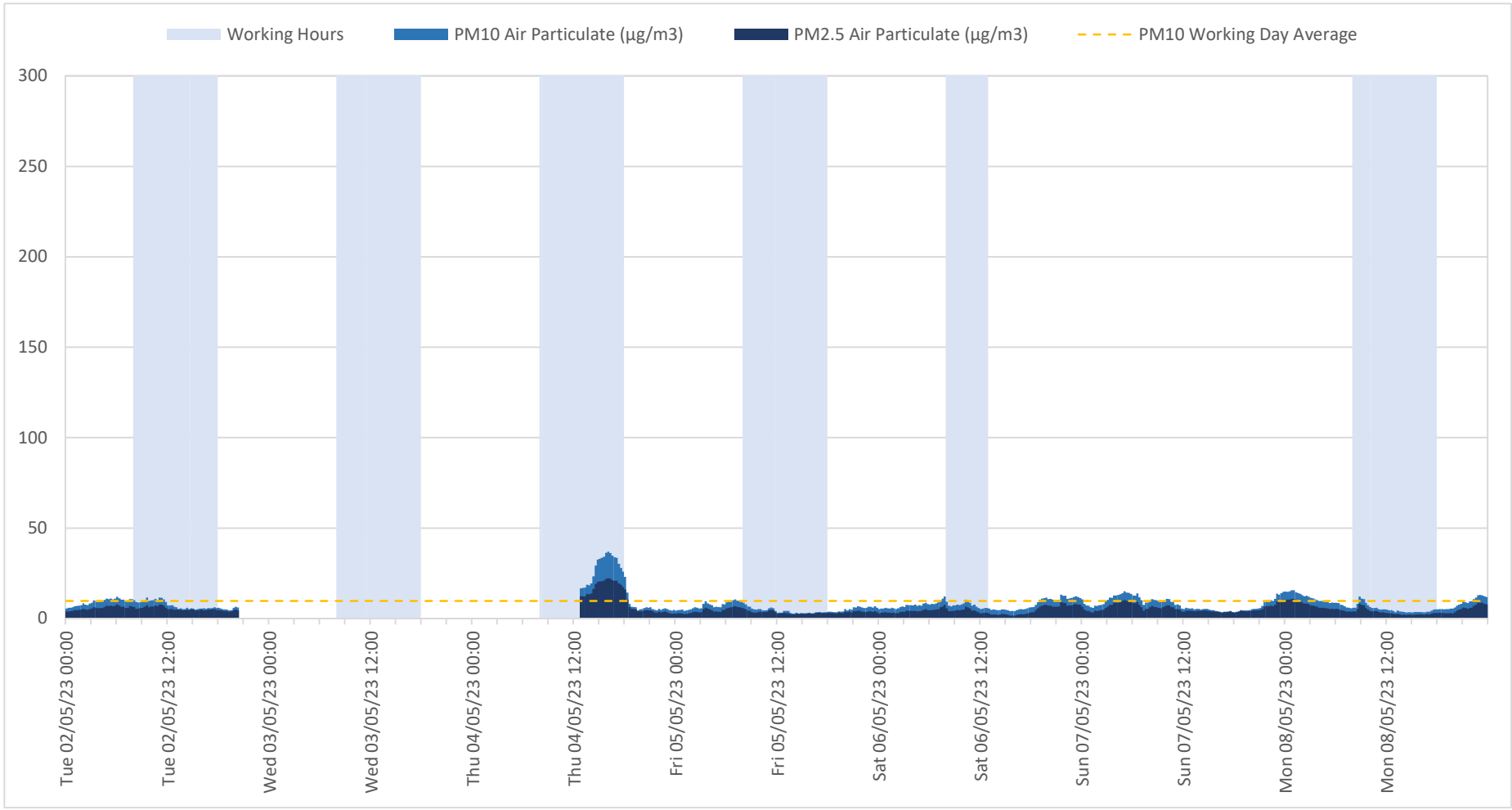


KPM-AP:26019-4.1-1

52 Avenue Road

Position 1

Tuesday 02/05/2023 to Monday 08/05/2023

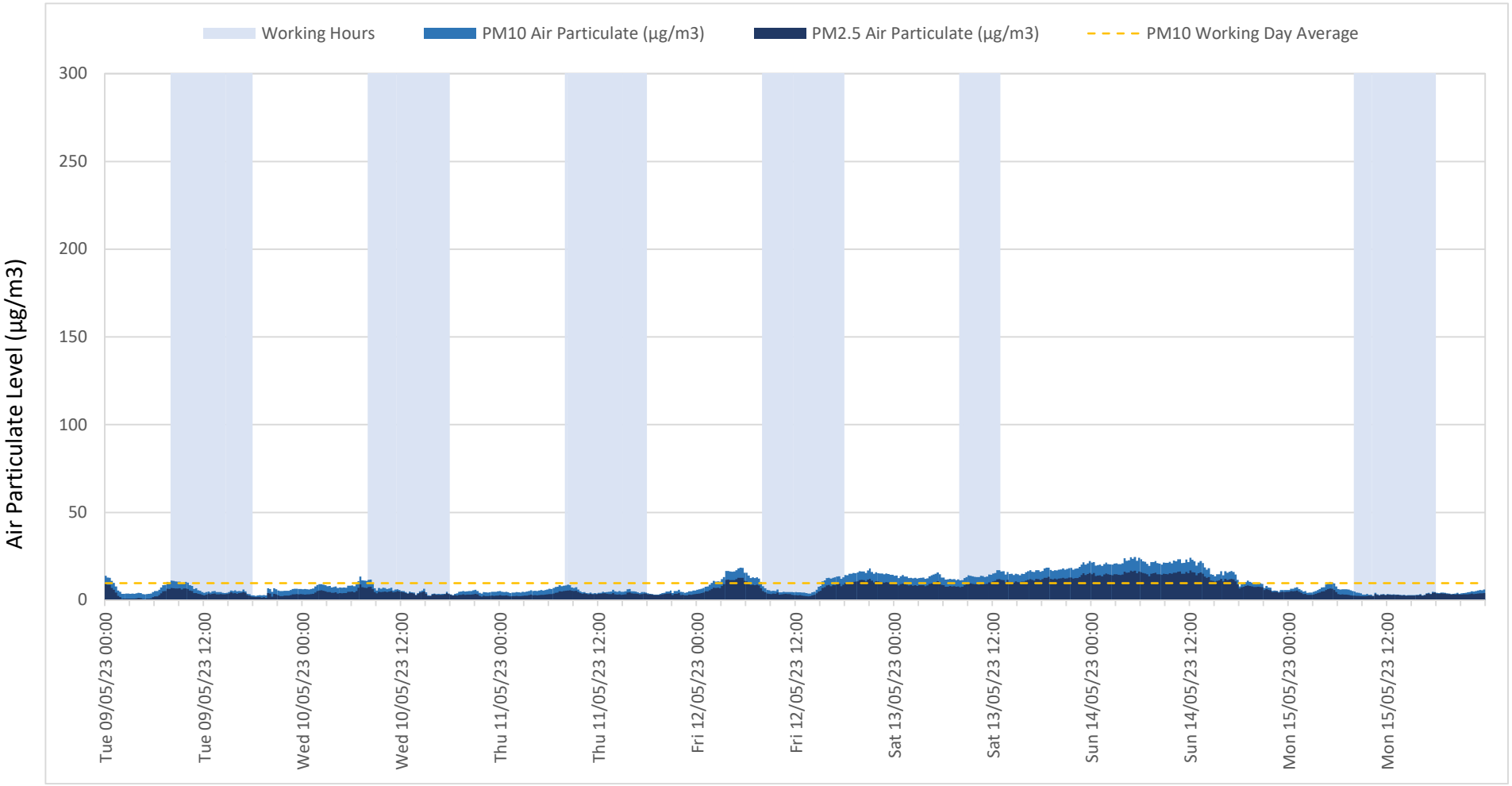


KPM-AP:26019-4.1-2

52 Avenue Road

Position 1

Tuesday 09/05/2023 to Monday 15/05/2023

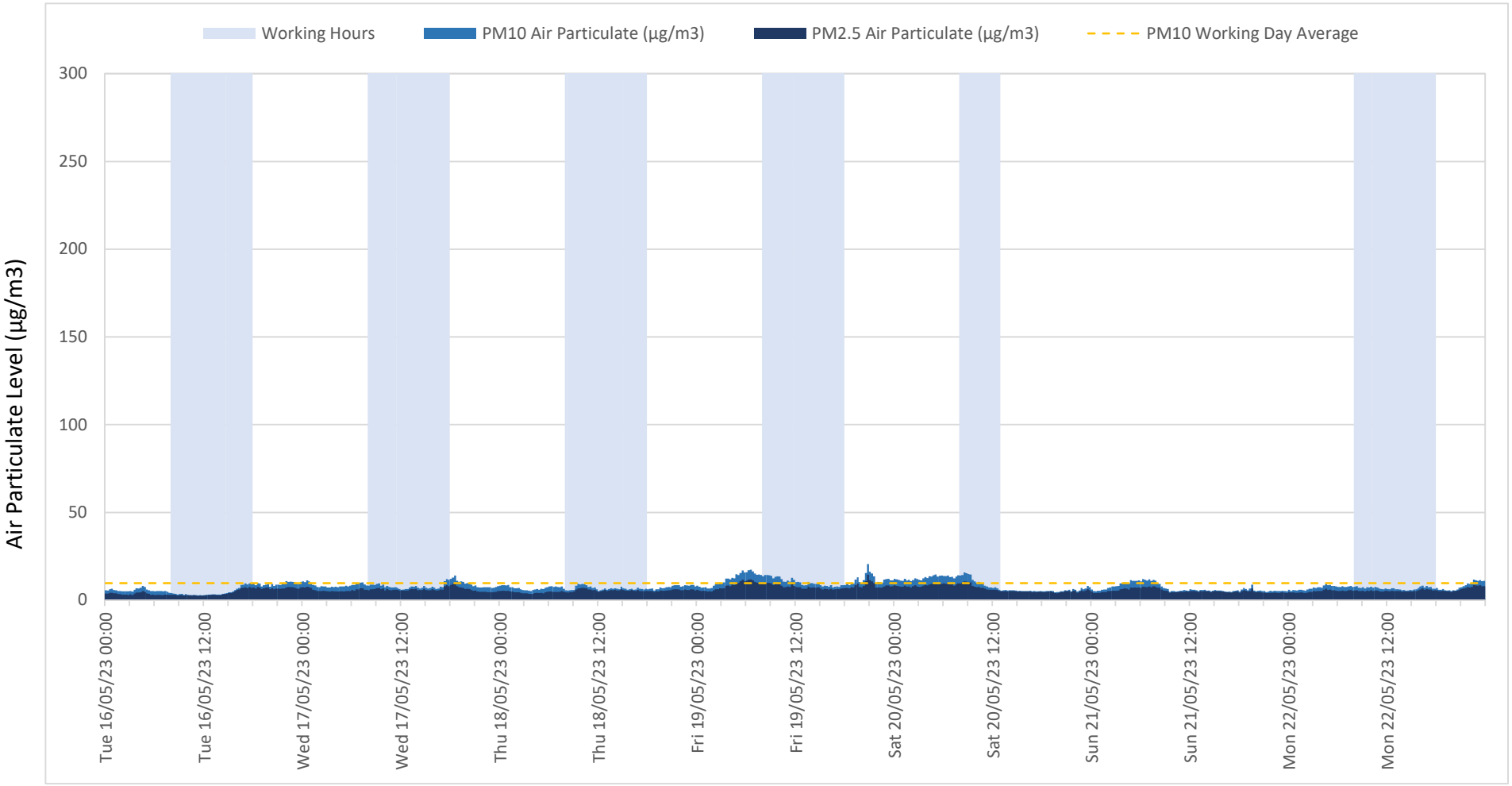


KPM-AP:26019-4.1-3

52 Avenue Road

Position 1

Tuesday 16/05/2023 to Monday 22/05/2023

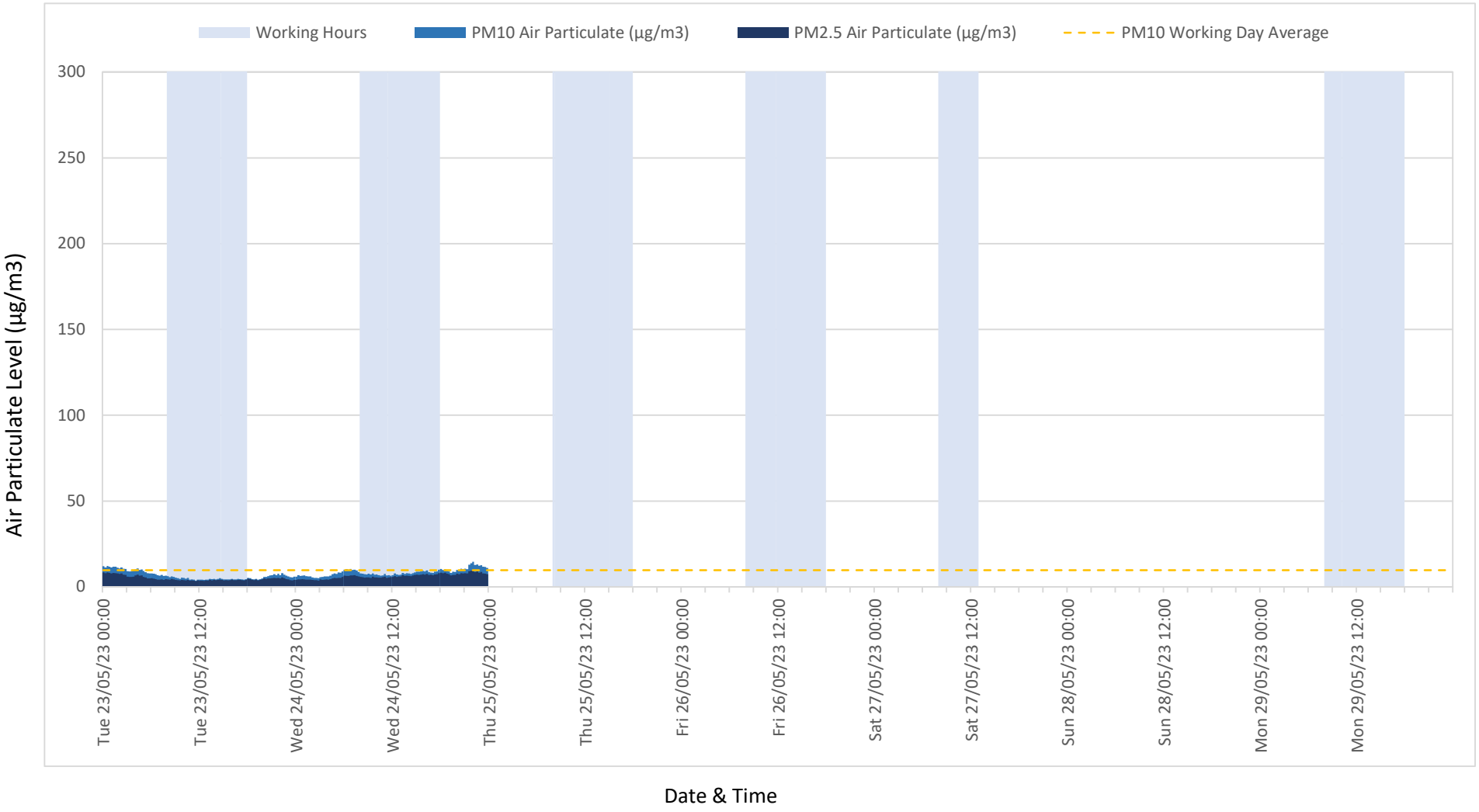


KPM-AP:26019-4.1-4

52 Avenue Road

Position 1

Tuesday 23/05/2023 to Monday 29/05/2023

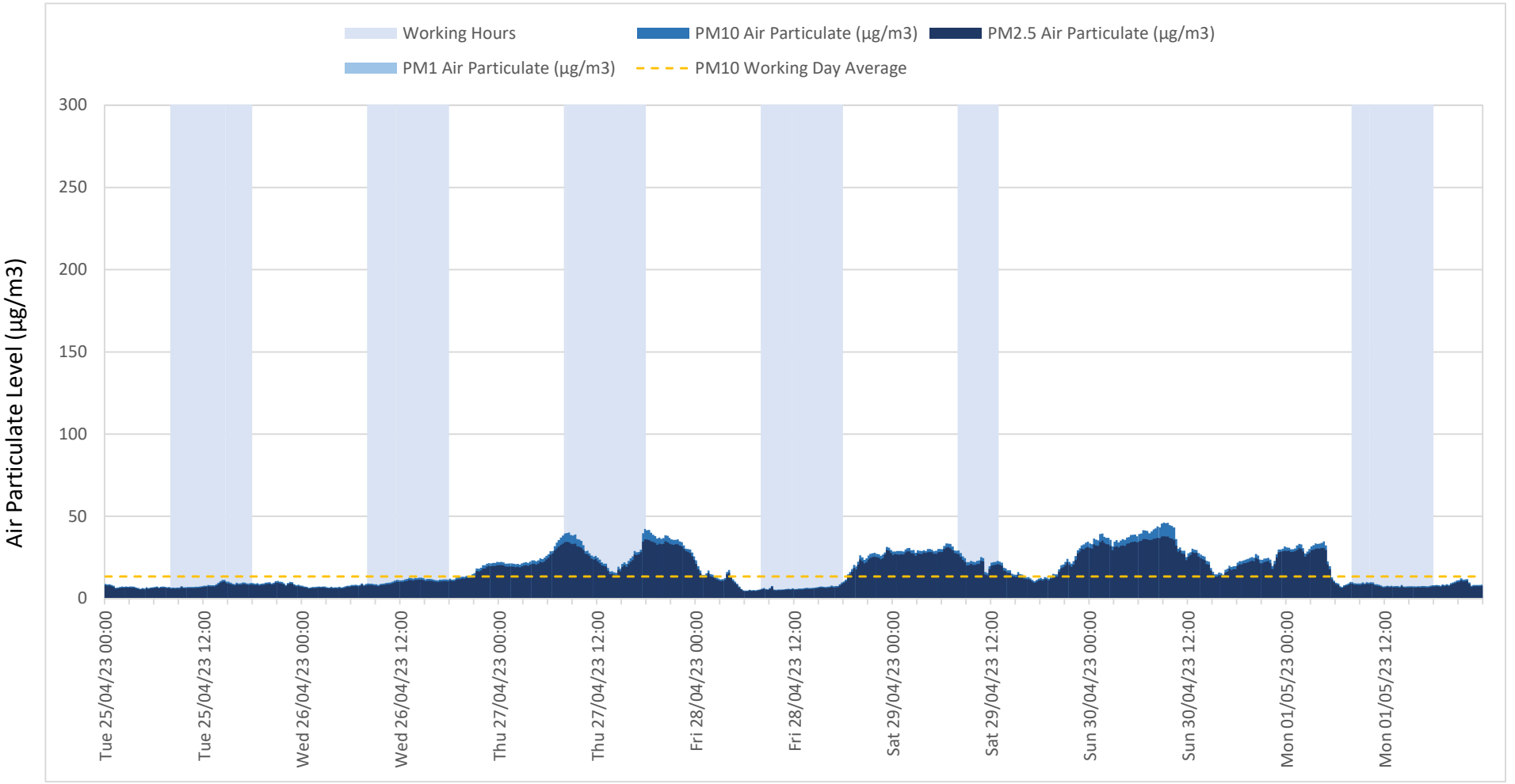


KPM-AP:26019-4.1-5

52 Avenue Road

Position 2

Tuesday 25/04/2023 to Monday 01/05/2023

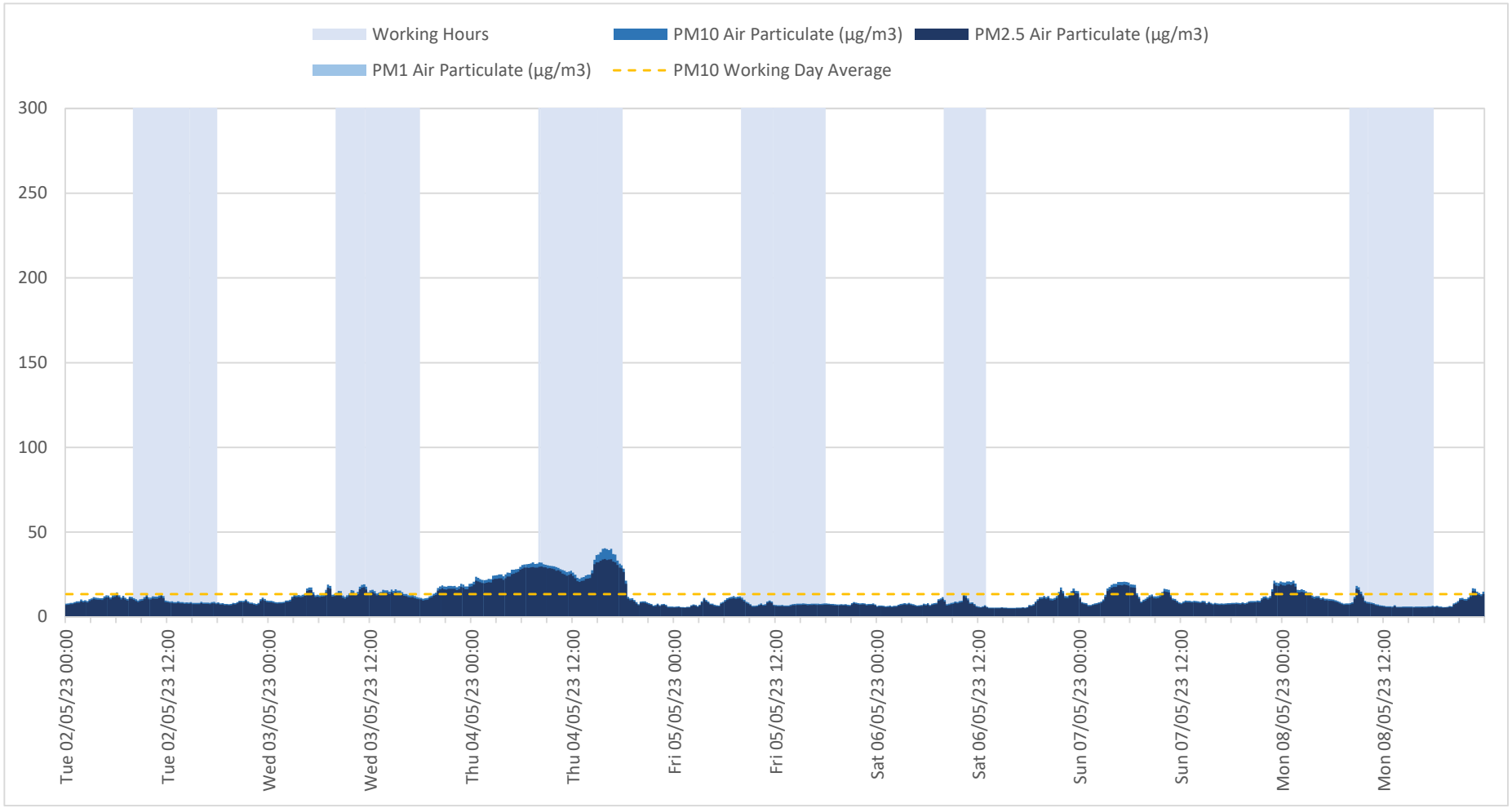


KPM-AP:26019-4.2-1

52 Avenue Road

Position 2

Tuesday 02/05/2023 to Monday 08/05/2023



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52 Avenue Road

Position 2

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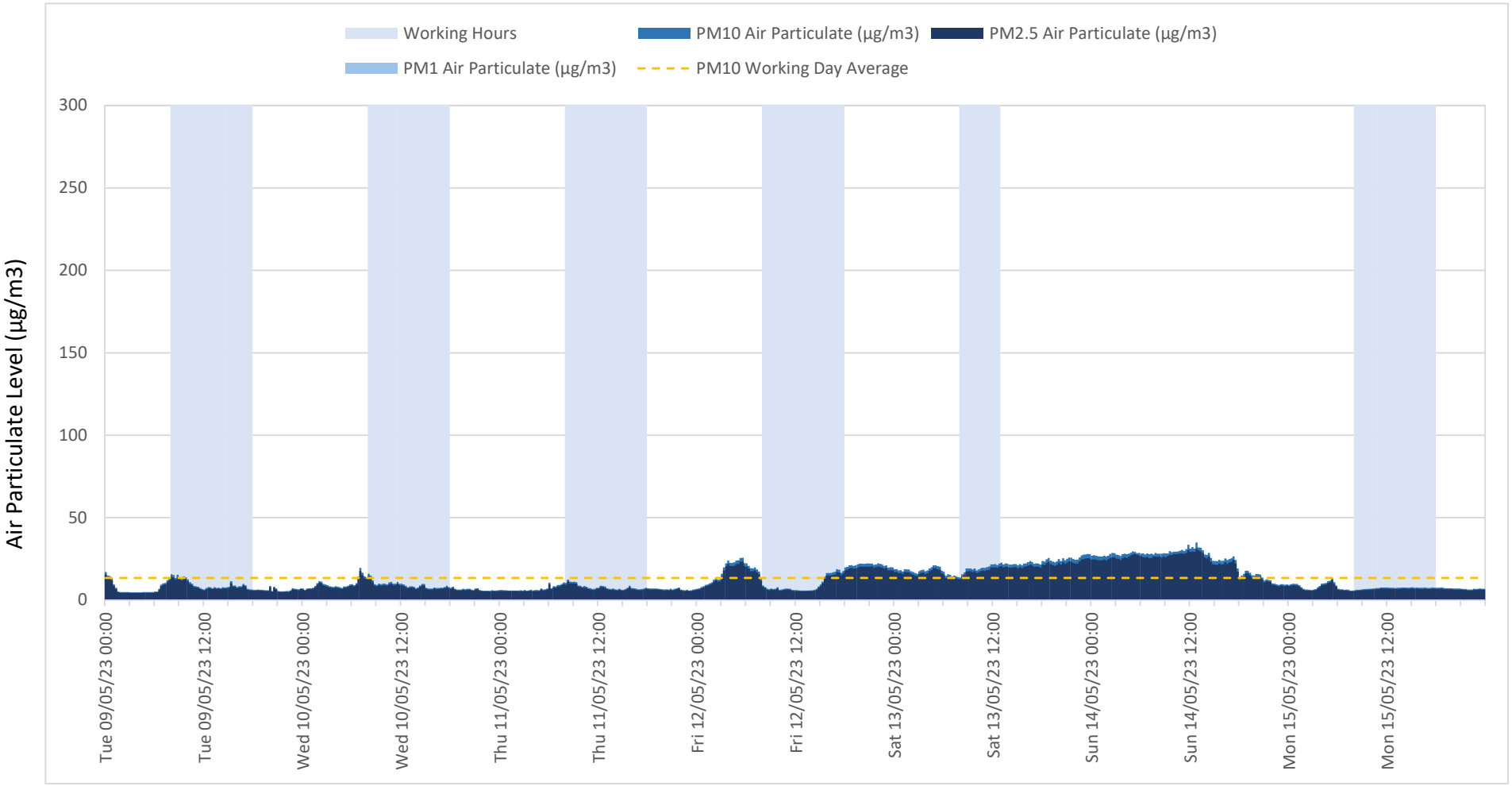

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Position 2

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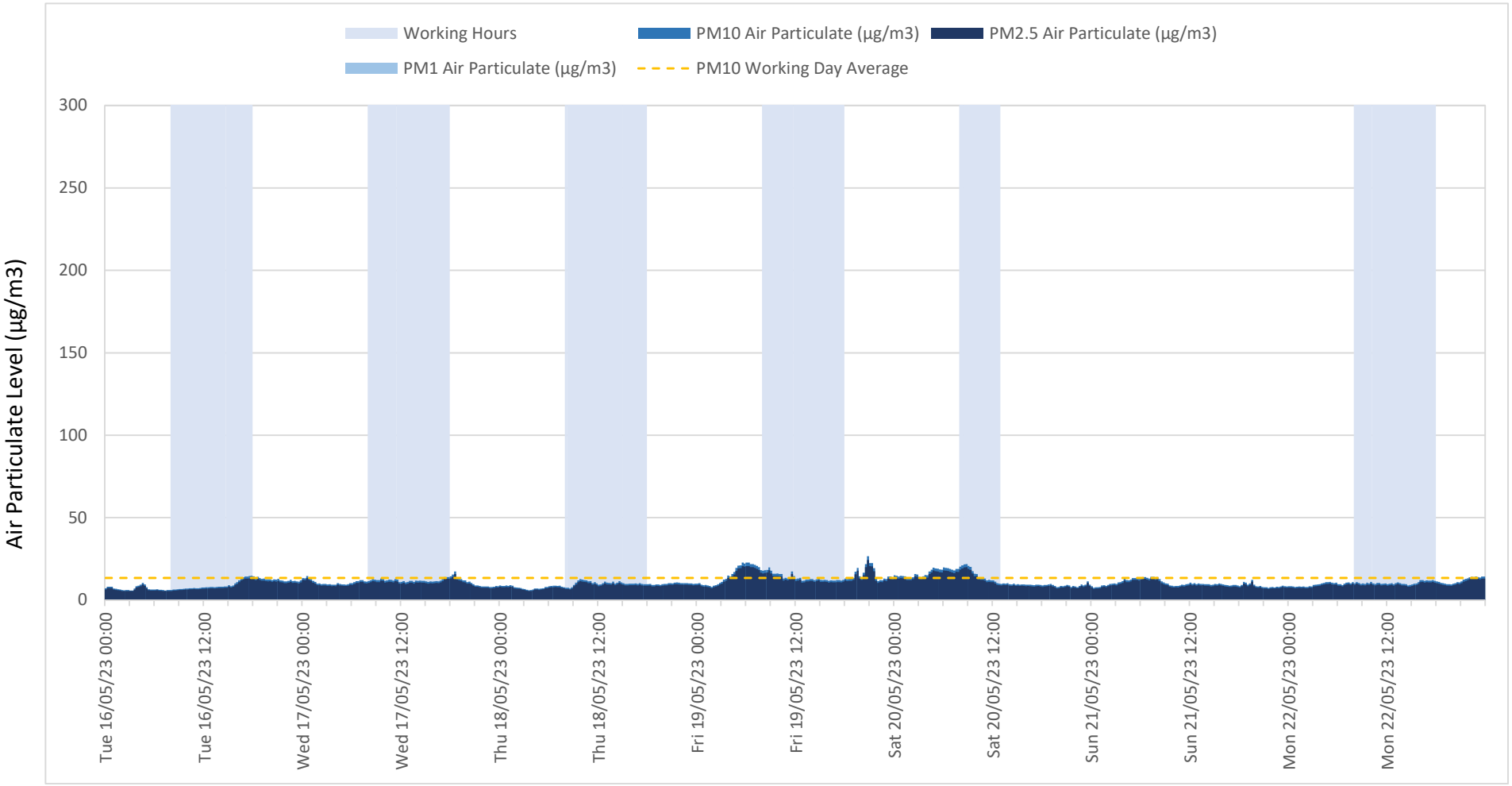

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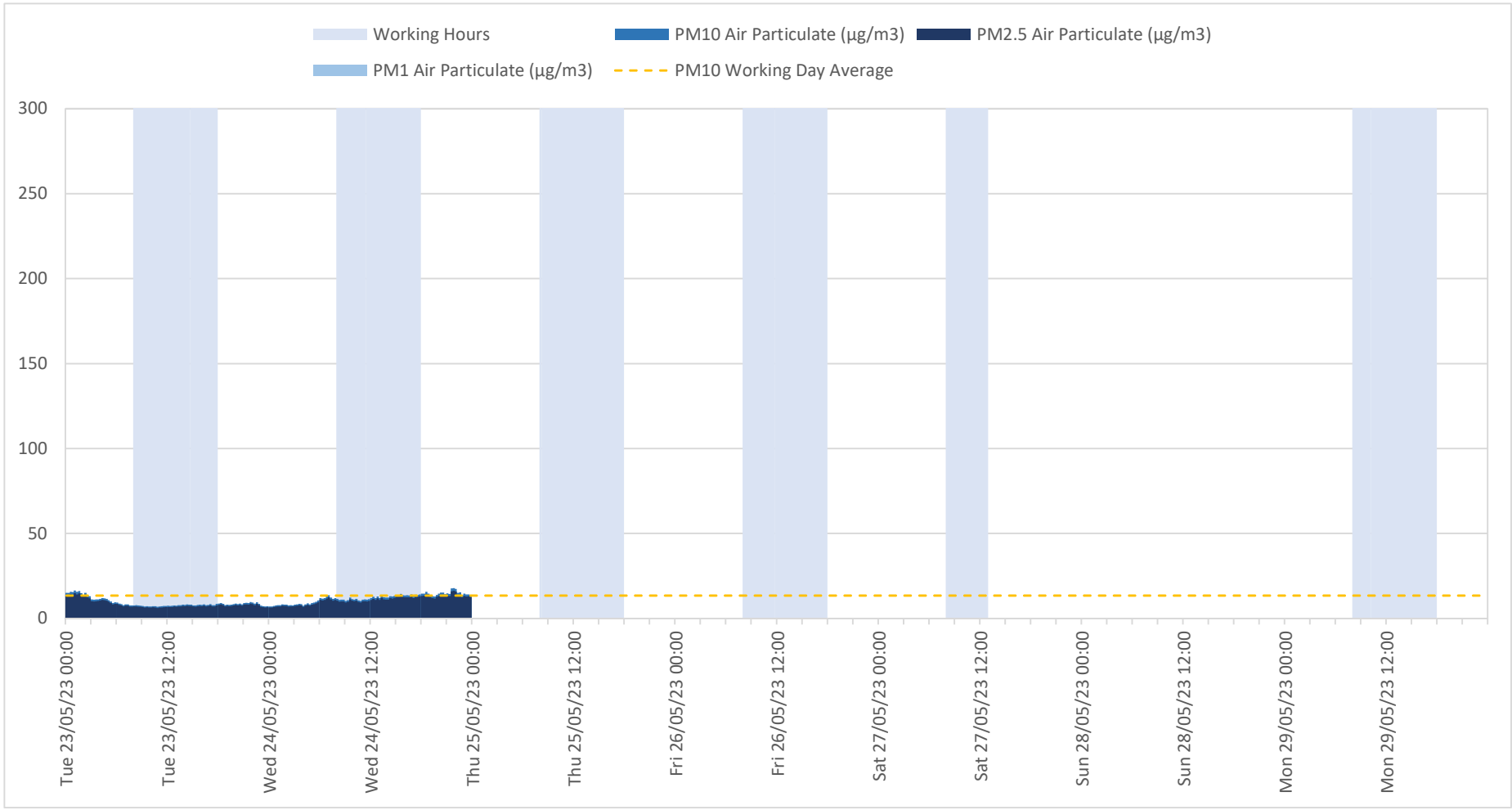

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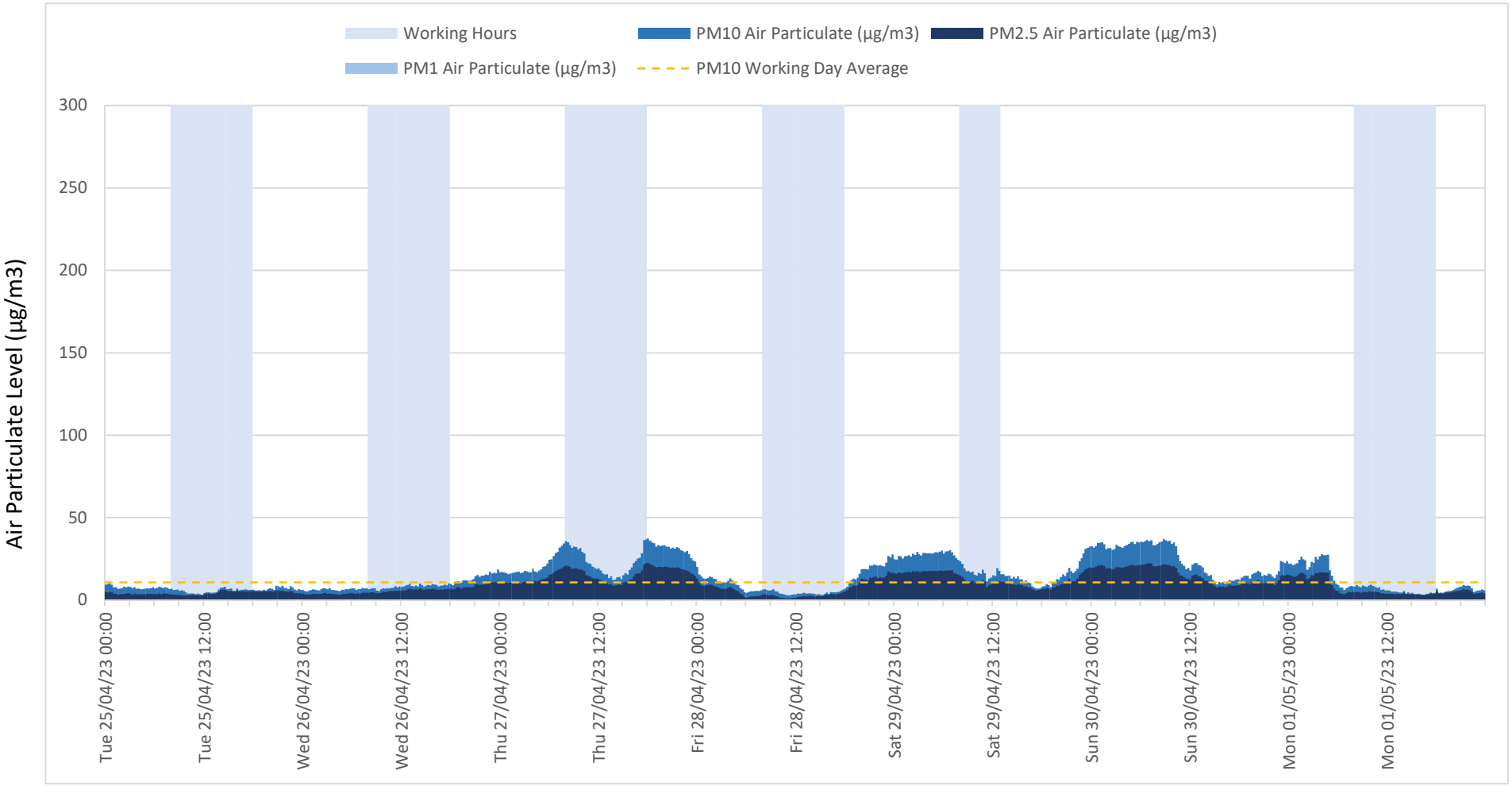

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52 Avenue Road

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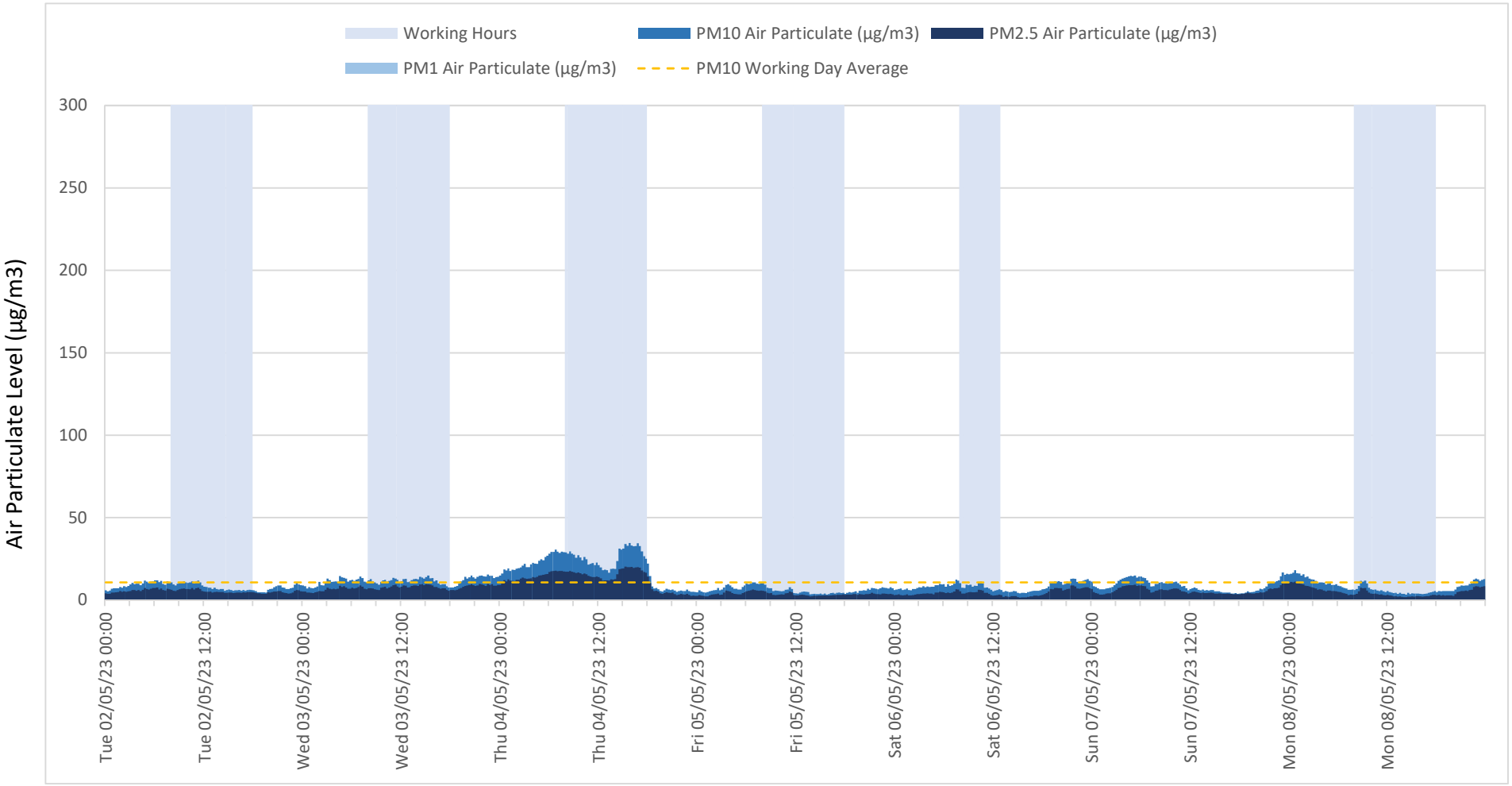

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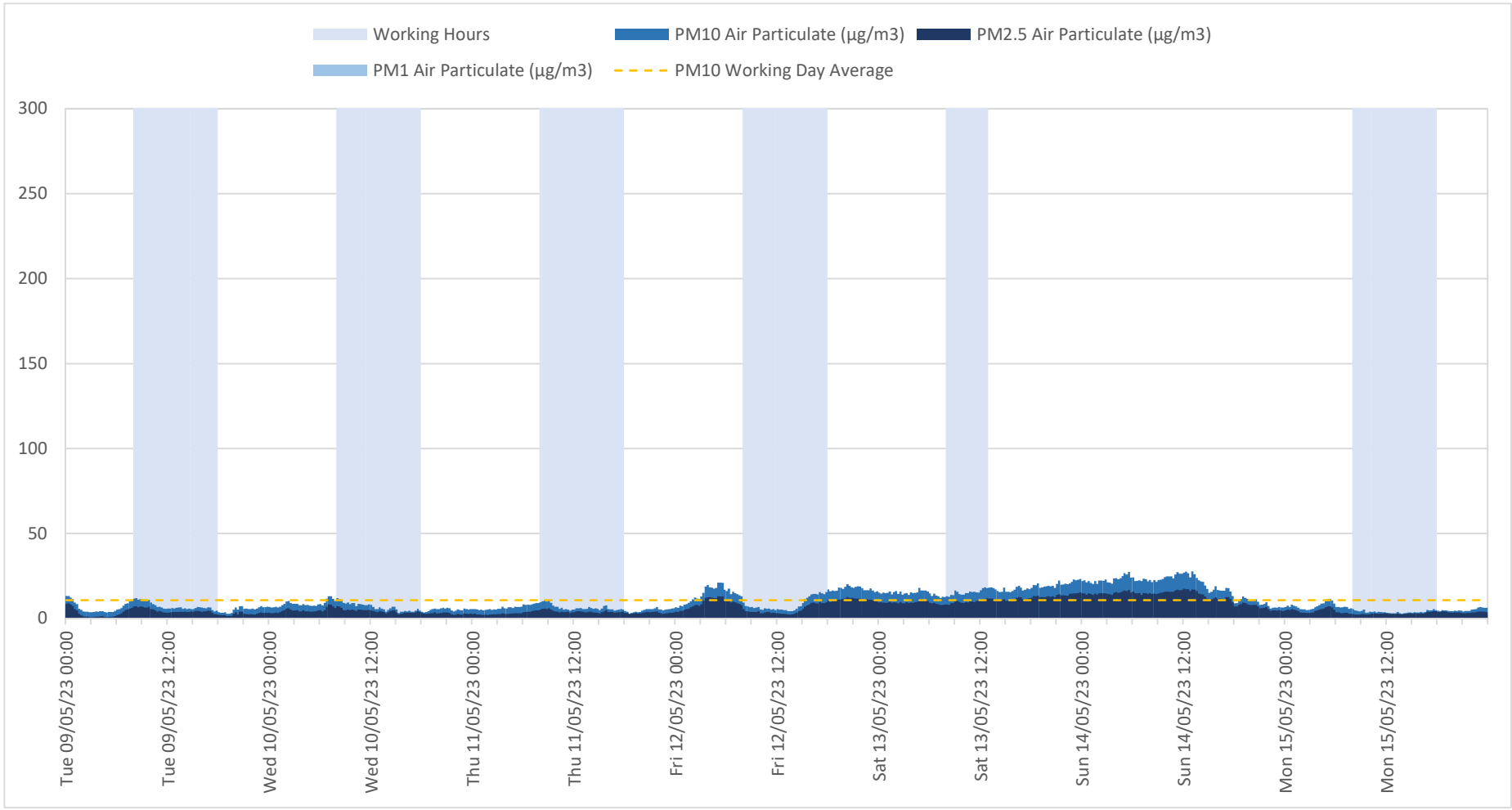

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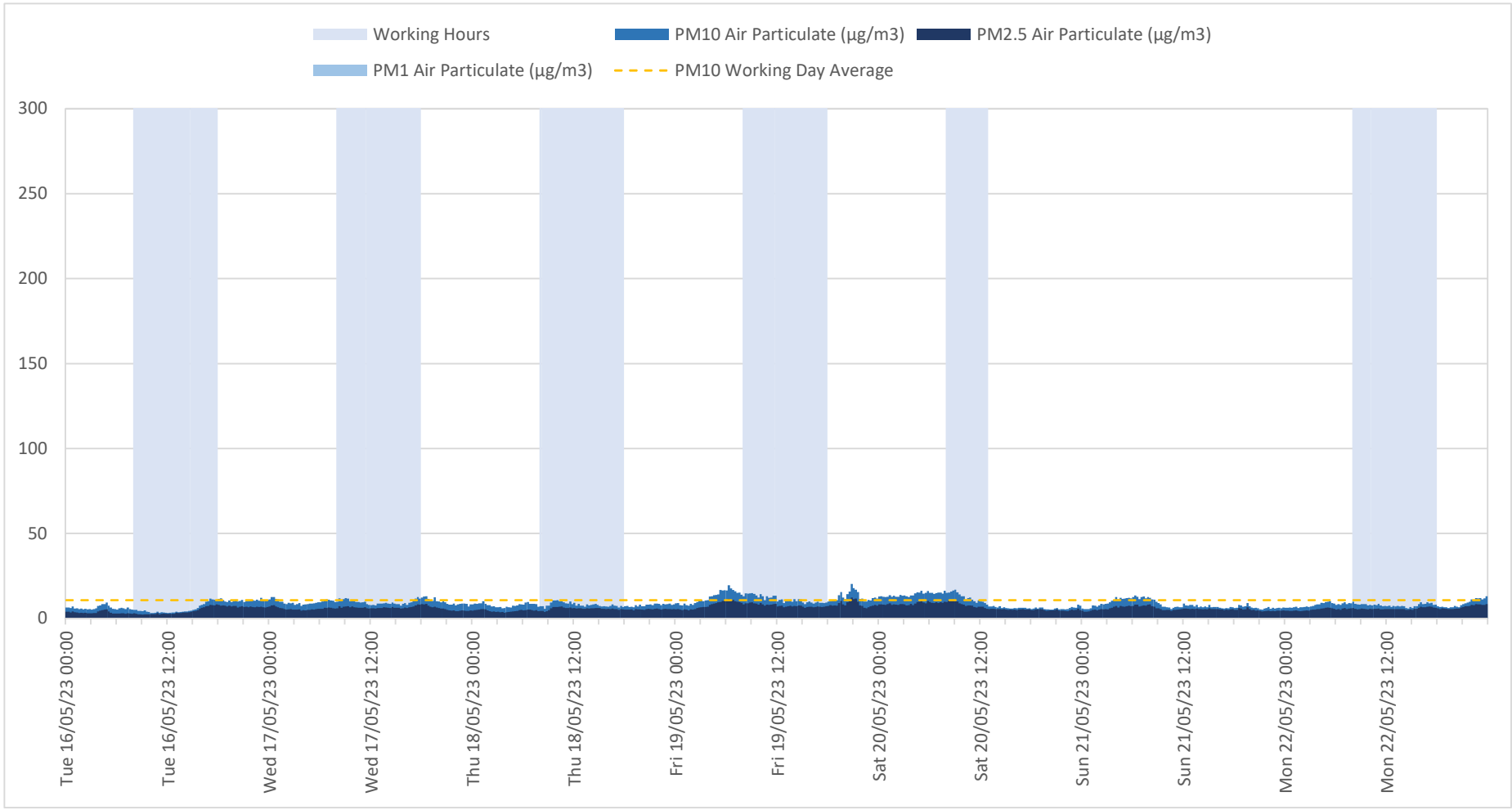

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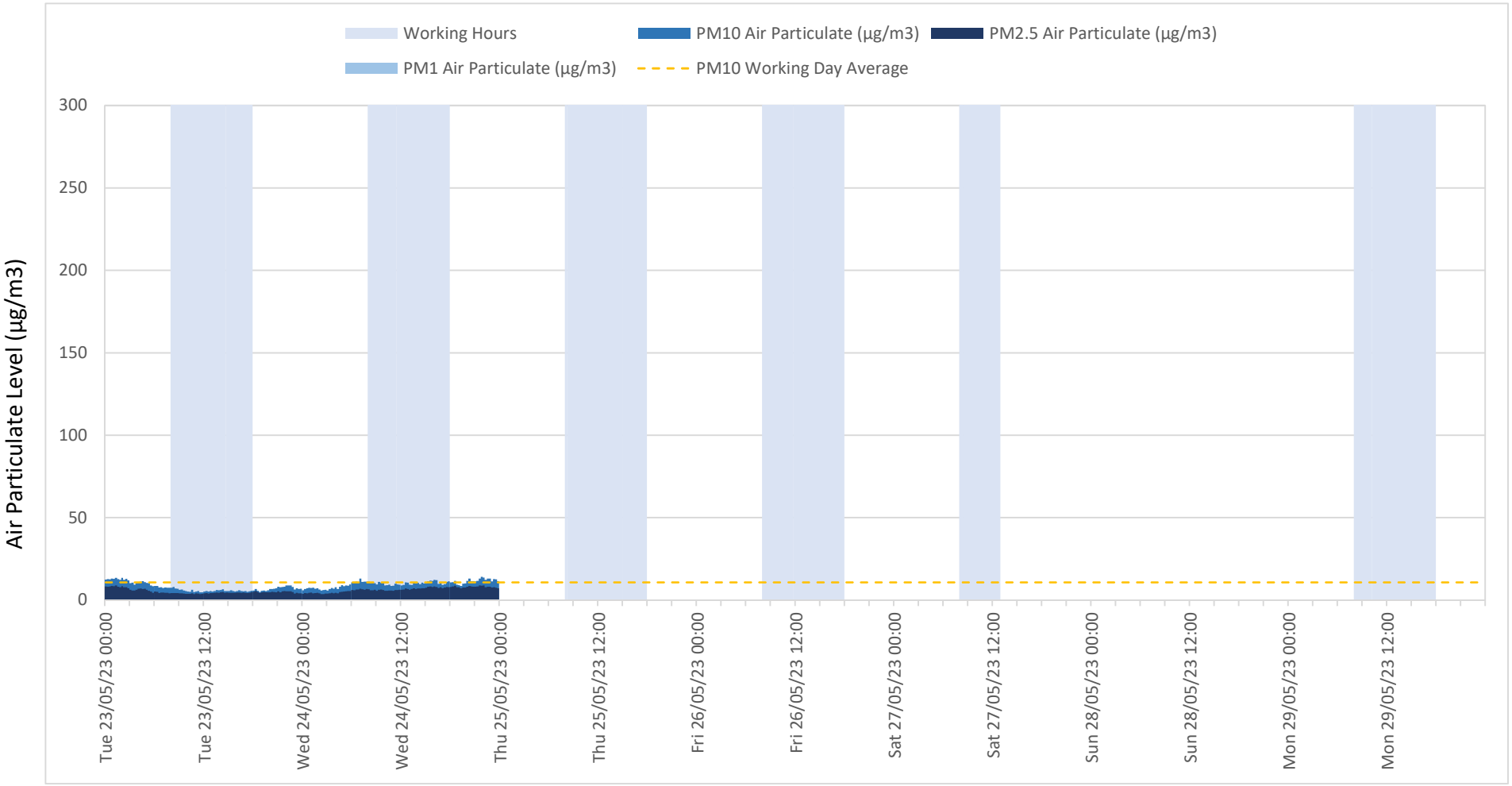

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52 Avenue Road

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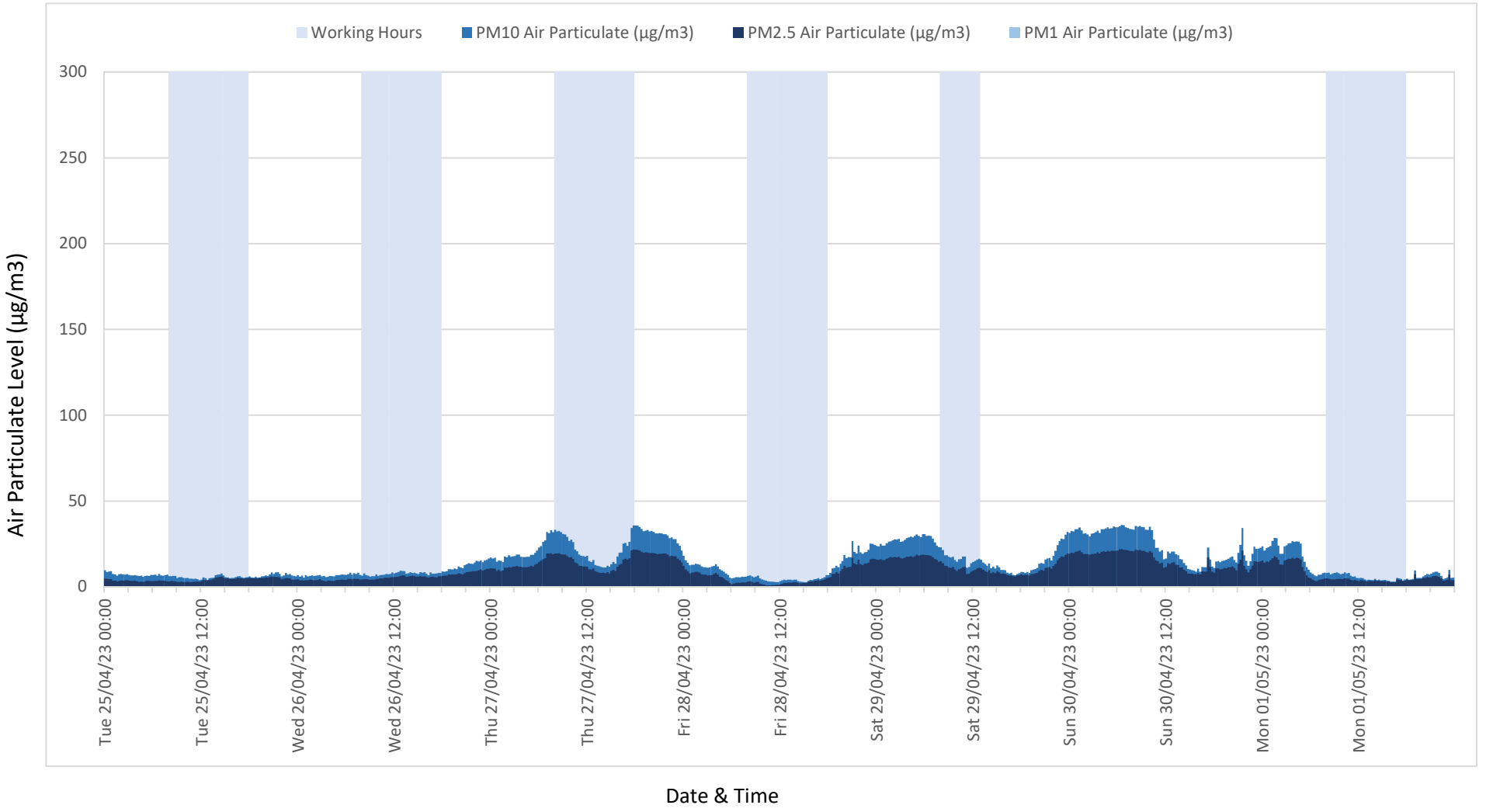

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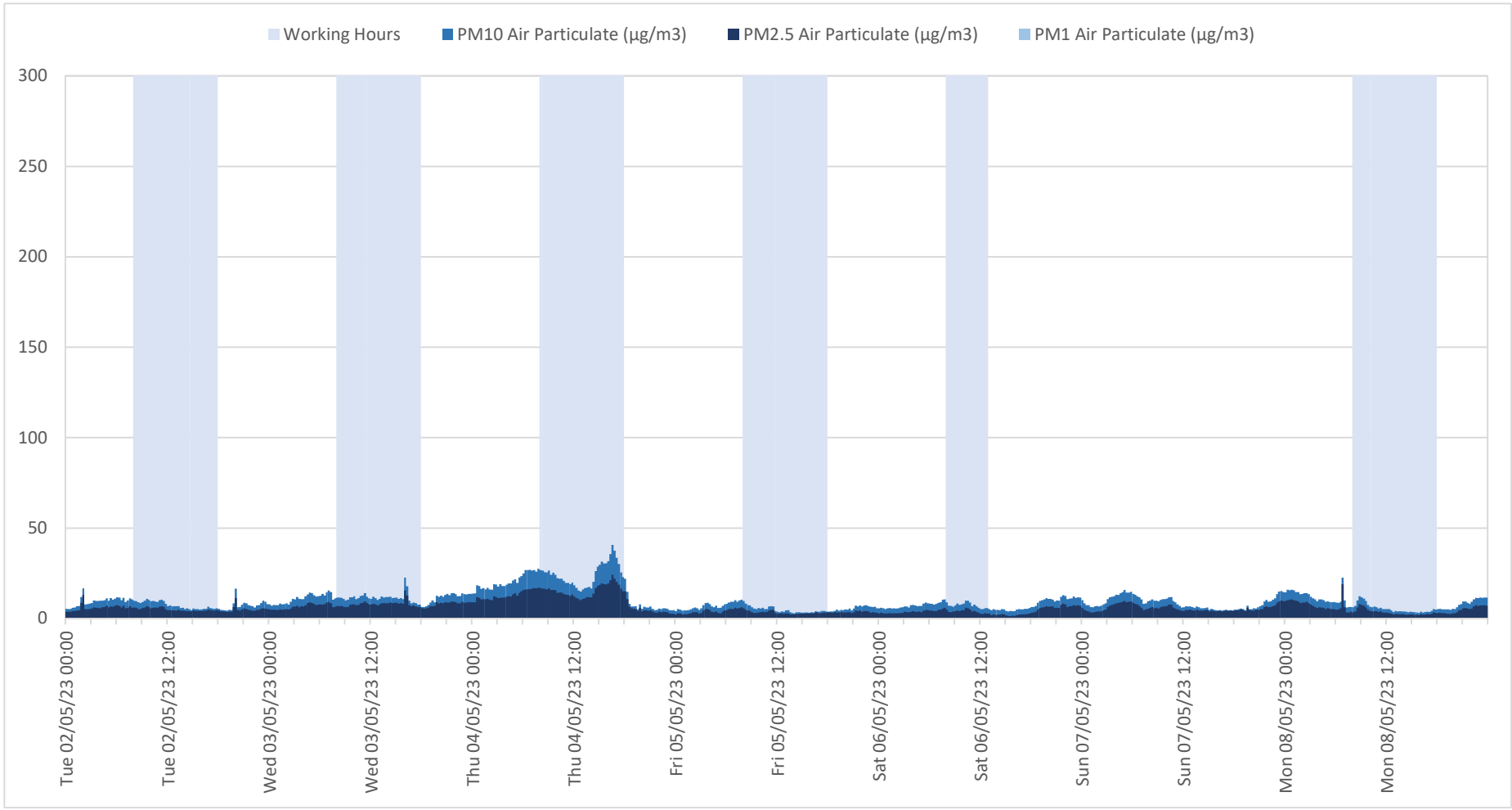

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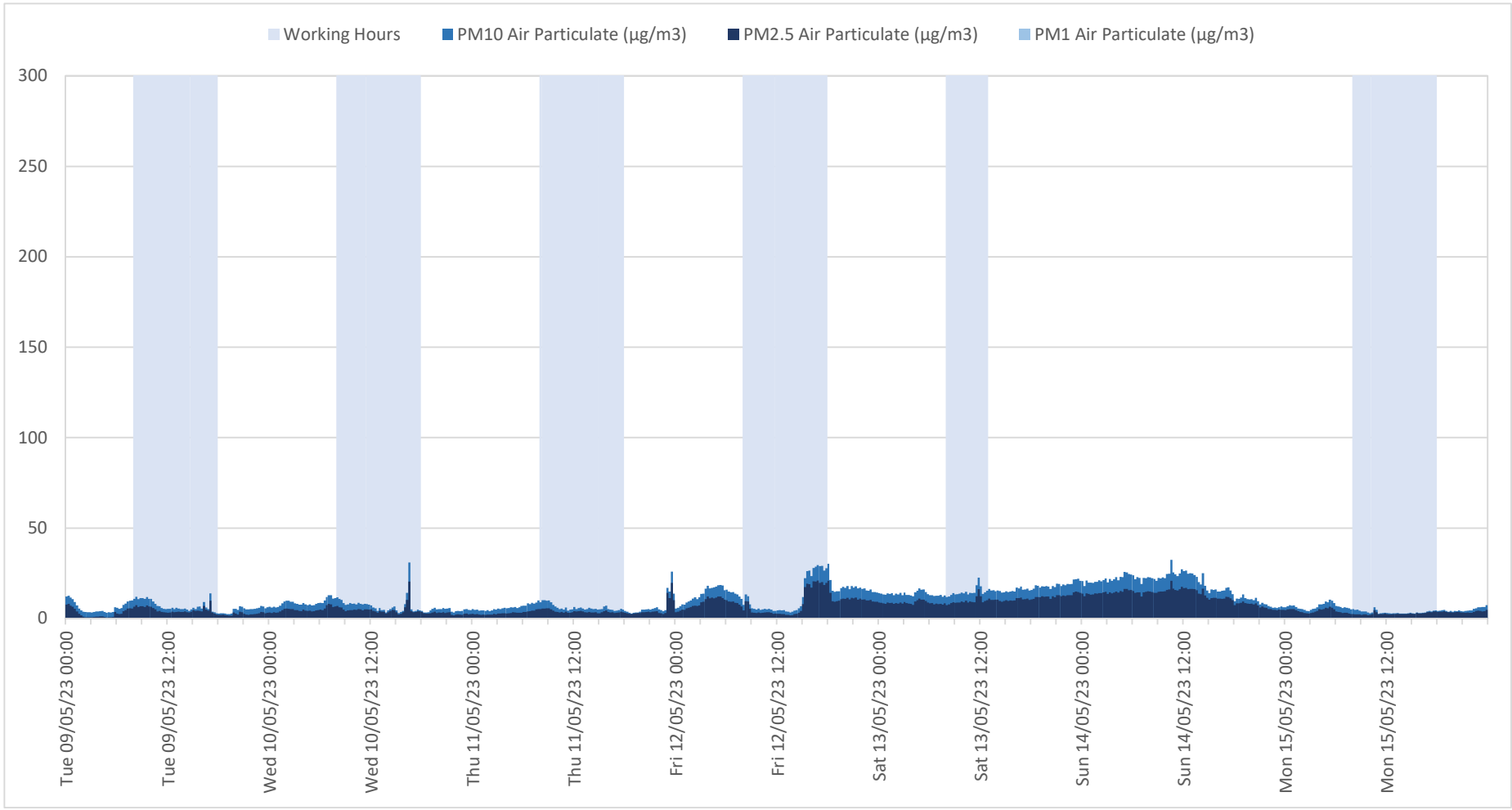

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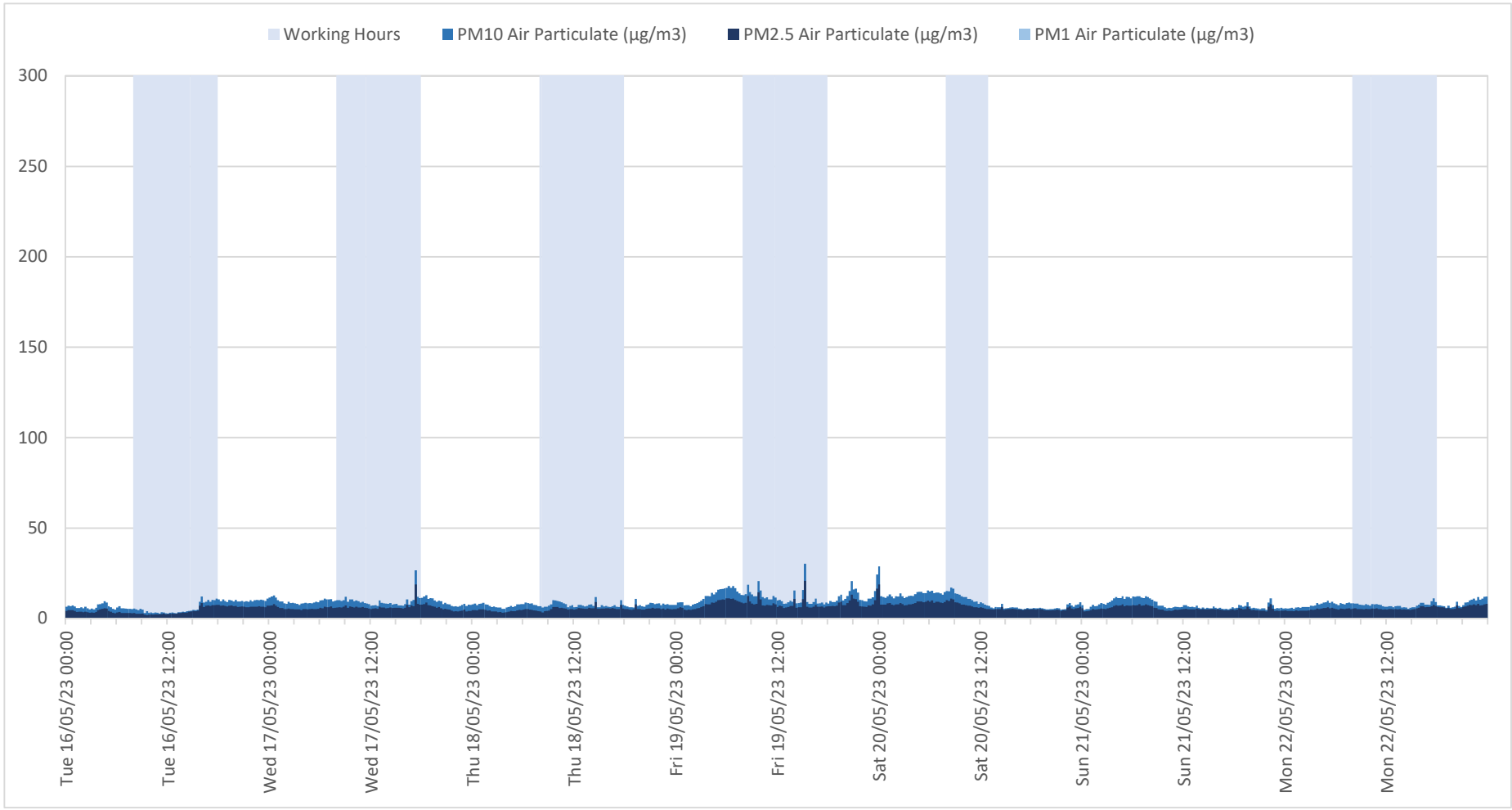

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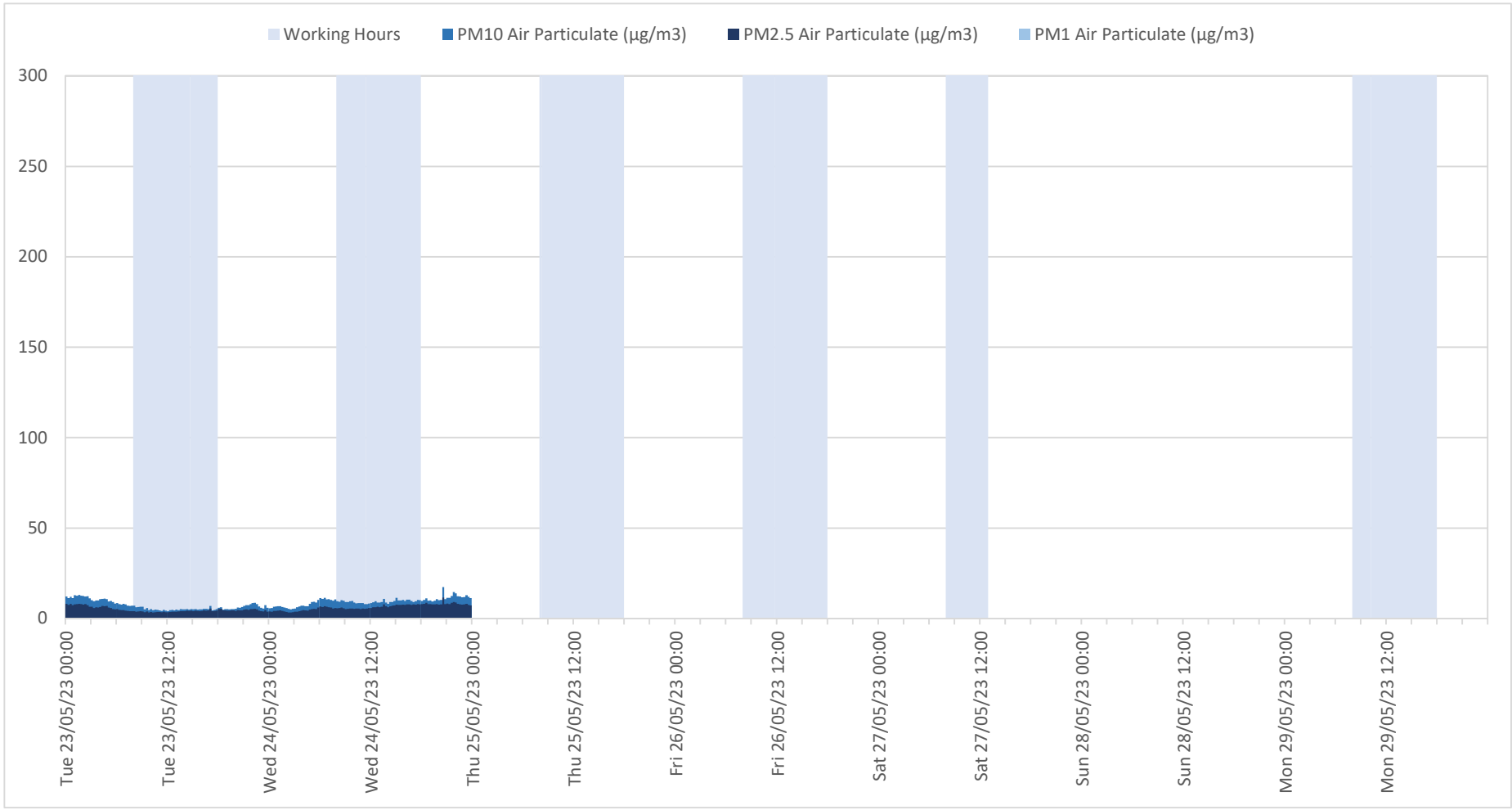

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Aval Consulting Group.

Air Quality Desktop Assessment

52-54 Avenue Road, St Johns Wood, London NW8 6HS

52 Avenue Road Limited

April 2022

Project Information

Title	Air Quality Desktop Assessment
Job Code	91544
Sector	Environment
Report Type	AQA
Client	52 Avenue Road Limited
Revision	A
Status	Final
Date of Issue	27 April 2022

Revision History

Revision	Date	Author	Reviewer	Approver	Status
A	27 April 2022	PR	MT	AC	Draft

Disclaimer

Table of Contents

1 Introduction

1.1 Overview

52 Avenue Road Limited ('the client') is seeking consent for residential development at 52-54 Avenue Road, St Johns Wood, London NW8 6HS (hereafter referred to as the 'proposed development'), which is within the London Borough of Camden (LBC).

AVAL Consulting Group Limited (ACGL) was instructed by the client to produce an Air Quality Assessment to accompany the planning application to the LBC for consent to undertake the proposed work.

The proposed development is for the construction of 12 townhouses with associated amenities and development and a communal Health and Wellness Spa.

The potential local air quality effects of the proposed development have been assessed using the latest planning guidance from Environmental Protection UK (EPUK), the Institute of Air Quality Management (IAQM)[1] , and the Department for Environment, Food and Rural Affairs (Defra)[2].

A construction dust risk assessment has been undertaken, to consider the potential risk from dust-generating activities during the construction phase of the development. This has been carried out in accordance with the latest IAQM guidance on construction dust[3].

An Air Quality Neutral Assessment (AQNA) will also be assessed as the proposed development is located within Greater London.

1.2 Objective

This report provides an assessment of the following key impacts associated with the constructional and operational phase of the proposed development:

- Nuisance, loss of amenity, and health impacts associated with the construction phase of the development on sensitive receptors;
- Changes in traffic-related pollutant concentrations associated with the operational phase of the proposed development;
- Suitability of the proposed development site location in terms of existing air quality; and
- Air Quality Neutral Assessment associated with the proposed development.

[1] IAQM (2017): 'Land Use Planning and Development Control: Planning for Air Quality v1.2'
[2] Defra (2016): 'Local Air Quality Management – Technical Guidance (TG16)'
[3] IAQM (2016): 'Guidance on the Assessment of Dust from Demolition and Construction v1.1'.

1.3 Site Location

Figure 1.1 shows the location of the proposed development site, which is located within the London Borough of Camden Air Quality Management Area (AQMA) which was declared due to breaches in the NO_2 Air Quality Objectives (AQO). The closest Local Nature Reserve is approximately 750m south of the proposed development site.

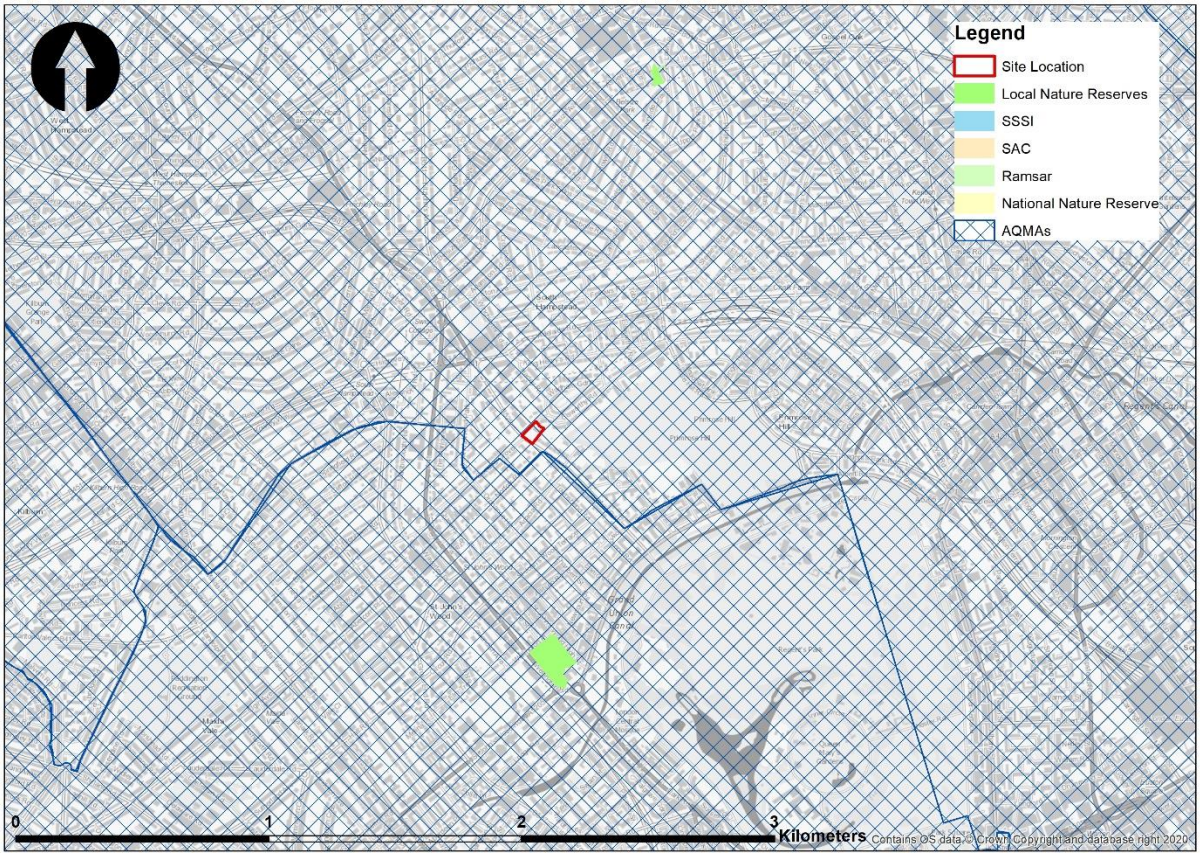

Figure 1.1: Proposed site location (Source: ArcGIS)

1.4 Key Pollutants

The key pollutants associated with the construction phase of the project will be 'disamenity' or 'nuisance' dust. The key pollutants associated with the operational phase of the proposed development will be road traffic emissions, including nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). These pollutants are therefore considered as part of this assessment. Further details of the key pollutants are presented in Appendix A.

2. Legislation and Policy

This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. Furthermore, the latest regional and local planning policy guidance specifically applicable to the proposed development has been reviewed.

2.1 European Union

The EU sets legally binding limit values for outdoor air pollutants to be met by EU countries by a given date. These limit values are based on the World Health Organisation (WHO) guidelines on outdoor air pollutants. These are legally binding and set out to protect human health and the environment by avoiding, preventing or reducing harmful air pollution effects.

The current air quality directive is the Directive 2008/50/EC[4] on ambient air quality, and cleaner air for Europe entered into force in June 2008. This merged most of the existing 'Daughter' Directives[5] (apart from the fourth Daughter Directive); maintaining existing air quality objectives set out by 'Daughter' Directives for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), and oxides of Nitrogen (NO_x), particulate matter (PM_{10} and $PM_{2.5}$), lead (Pb), benzene(C_6H_6), carbon monoxide (CO), ozone (O_3). It also includes related objectives, exposure concentration obligation and exposure reduction targets for $PM_{2.5}$ (fine particles). The 'Daughter' Directives were based upon requirements set out in the first EU Ambient Air Quality Framework Directive 96/92/EEC[6].

2.2 National Level – England

The UK government has a legal responsibility to meet the EU limit values. Part IV of the 1995 Environment Act[7] sets guidelines for protecting air quality in the UK and forms the basis of the local air quality management. The Environment Act requires local authorities in the UK to review air quality in their area periodically and designate 'Air Quality Management Area' (AQMAs) if improvements are necessary. Where an AQMA is designated, local authorities are also required to produce an 'Air Quality Action Plan' (AQAP) detailing the pollution reduction measures that need to be adopted to achieve the relevant air quality objectives within an AQMA.

As part of the Environment Act, the UK Government was required to publish a National Air Quality Strategy (NAQS) to establish the system of 'local air quality management' (LAQM) for the designation of AQMAs. This led to the introduction of the first Air Quality Strategy (AQS) in 1997[8] which since has progressed through several revisions until it was replaced by the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007[9]. Each revision introduced strategies and regulations that considered measures for different pollutants by tightening existing objectives and by introducing new

[4] European Union (2008): 'Ambient air quality assessment management', Framework Directive 2004/50/EC.
[5] European Union. (1999), 'Ambient air quality assessment management', Framework Directive 1999/30/EC;
European Union. (2000), 'Ambient air quality assessment management', Framework Directive 2000/3/EC;
European Union. (2002), 'Ambient air quality assessment management', Framework Directive 2002/3/EC;
European Union. (2004), 'Ambient air quality assessment management', Framework Directive 2004/107/EC.
[6] European Union. (1996), 'Ambient air quality assessment management', Framework Directive96/62/EC.
[7] Parliament of the United Kingdom. (1990), 'Environmental Protection Act', Chapter 43. Queen's Printer of Acts of Parliament.
[8] Department for Environment Food and Rural Affairs. (1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.
[9] Department for Environment Food and Rural Affairs. (2007), 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', Cm 7169, Department for Environment Food and Rural Affairs.

ones to establish a common framework to protect human health and the environment by achieving ambient air quality improvements.

The 2008 EU ambient air quality directive 2008/50/EC was transposed to England law through the introduction of the Air Quality (Standards) Regulations in 2010[10] which also incorporated the fourth EU Daughter Directive (2004/107/EC) that set target values for certain toxic heavy metals and polycyclic aromatic hydrocarbons, (PAH).

2.2.1 National Planning Policy Framework

The principal national planning policy guidance in respect of the proposed development is the National Planning Policy Framework (NPPF)[11]. The most recent update of the NPPF was published on 20th July 2021.

The NPPF Section 105 states that:

The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.

Section 174 states:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:
…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans...”

Section 185 states:

“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. In doing so they should:
a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

[10] Statutory Instrument. (2010), ‘The Air Quality Standards Regulations’, No. 1001. Queen's Printer of Acts of Parliament.
[11] National Planning Policy Framework. Accessible at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes, and nature conservation.

Section 186 states that:

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. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. 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."

2.2.2 Relevant National Planning Practice Guidance

The DCLG published a number of supporting web-based resources of Planning Practice Guidance (PPG)[12] to supplement the NPPF. With respect to air quality PPG provide guidance on when air quality is relevant to a planning application. It states that:

"Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife)."

The PPG also states that, when deciding whether air quality is relevant to a planning application, the applicant should consider whether the proposal will:

"Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. Introduce new point sources of air pollution…..,

Expose people to existing sources of air pollutants…..,

Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations….,

- Affect biodiversity….."

2.2.3 Statutory Nuisance

It is recognised that the planning system presents a way of protecting amenity. However, in cases where planning conditions are not applicable to a development/installation, the requirements of the Environmental Protection Act 1990 still apply. Under Part III of the Environmental Protection Act 1990, local authorities have a statutory duty to investigate any complaints of:

- "any premises in such a state as to be prejudicial to health or a nuisance

[12] National Planning Practice Guidance web-based resource. Accessible at: http://planningguidance.planningportal.gov.uk/

- smoke emitted from premises so as to be prejudicial to health or a nuisance
- fumes or gases emitted from premises so as to be prejudicial to health or a nuisance
- any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance
- any accumulation or deposit which is prejudicial to health or a nuisance"

Where the local authority establishes any one of these issues constitutes a statutory nuisance and believes it to be unreasonably interfering with the use or enjoyment of someone's premises and/or is prejudicial to health, an abatement notice will be served on the person responsible for the offence or the owner / occupier. Failure to comply with the notice could lead to a prosecution. However, it is considered as a defence if the best practicable means to prevent or to counteract the effects of the nuisance are employed.

2.2.4 Relevant National Air Quality Standards

A summary of the relevant Air Quality Standards/Objectives (henceforth referred to as 'AQO') and the types of receptors that are relevant to this assessment are presented in Table 2.1 and Table 2.2. The AQO listed in Table 2.1 applies only at locations with relevant exposure where a member of the public could be exposed to a level of pollution concentration for the specific averaging periods for that pollutant as stated in Table 2.2.

Table 2.1: AQO Relevant to the Proposed Development

Pollutant	**Air Quality Objectives**		**Concentration measured as:**	**Applicable to:**
	Concentration	**Allowance**		
Nitrogen Dioxide (NO_2)	200 µg/m^3	18 per calendar year	1-hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter (PM_{10})	50 µg/m^3	35 per calendar year	24-hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter ($PM_{2.5}$) Exposure reduction[(a)]	25 µg/m^3 [(a)]		Annual	England only

Notes: (a) This is a target value set for a 15% reduction in concentrations at urban backgrounds aimed to achieve between 2010 and 2020

Source: Department for Environment Food and Rural Affairs (2014): 'Local Air Quality Management Technical Guidance' (TG.16).

Table 2.2: Examples of Where the AQO Should Apply

Averaging period	***Objectives should apply at***	***Objectives should not apply at***
Annual	*All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.*	*Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence.* *Gardens of residential properties.* *Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.*
24 Hour	*All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.*[(a)]	*Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.*
1 Hour	*All locations where the annual mean and 24 and 8-hour mean objectives apply.* *Kerbside sites (for example, pavements of busy shopping streets).* *Those parts of car parks, bus stations, and railway stations, etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more.* *Any outdoor locations where members of the public might reasonably expected to spend one hour or longer.*	*Kerbside sites where the public would not be expected to have regular access.*

Note: [(a)] "Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied."

Source: Department for Environment Food and Rural Affairs (2014): 'Local Air Quality Management Technical Guidance' (TG.16).

2.3 Regional (London)

2.3.1 The Mayor of London's Air Quality Strategy

The Mayor of London's Air Quality Strategy was published in December 2010 which includes transport and non-transport related policy measures. The document also includes guidance on how regional and local planning processes will be used to enable future developments to be 'air quality neutral or better'.

Policy 15 within the Mayor's air quality strategy is committed to reporting back regularly on the progress made since the strategy has been delivered. The latest progress report was published in July 2015 and includes:

- Analysis of recent trends in air pollution in London;
- An update on the latest understanding of health impacts of air pollution in London;
- An update on the implementation of the transport and non-transport policies included in the Mayor's Air Quality Strategy, including measures announced by the Mayor in February 2013 such as the Ultra-Low Emission Zone;
- Setting out what further action the Mayor will take to improve air quality.

2.3.2 London Plan

The London Plan is the spatial development strategy for London which was first published by then-Mayor Ken Livingstone in 2004. The document has gone through a number of alterations with the most recent alterations published in 2021.

The London Local Plan sets out the overall strategic plan for London with an integrated approach for economic, environmental, transport, and social framework for the development of London over the next 20–25 years and covers a number of strategies including transport and environmental issues such as climate change and air quality.

Policy GG3 "Creating a healthy city" states:

- To improve Londoners' health and reduce health inequalities, those involved in planning and development must… seek to improve London's air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution"

Policy SI 1 "Improving Air Quality" states that:

- "Development Plans, through relevant strategic, site-specific, and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality."
- "To tackle poor air quality, protect health and meet legal obligations the following criteria

  should be addressed:

  1) Development proposals should not:
     a) lead to further deterioration of existing poor air quality

b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits

c) create an unacceptable risk of high levels of exposure to poor air quality.

2) In order to meet the requirements in Part 1, as a minimum:

a) development proposals must be at least Air Quality Neutral

b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provisions to address local problems of air quality in preference to post-design or retro-fitted mitigation measures

c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure."

- "Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:

1) how proposals have considered ways to maximise benefits to local air quality, and

2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this."

- "In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance."
- "Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."

2.3.3 The Mayor of London Transport Strategy

On the 21st June 2017, the Mayor of London published the draft, The Mayors Transport Strategy setting out the Mayor's "policies and proposals", enabling transport in London to be reshaped over the next 25 years.

The key themes within the strategy are; healthy streets and healthy people, good public transport experiences, new homes, and jobs.

Chapter 3, section C "Improving air quality and the environment" includes policies 5 and 6 which relate to transport and air quality."

Policy 5 states:

"The Mayor, through TfL and working with the boroughs, will take action to reduce emissions – in particular, diesel emissions – from vehicles on London's streets, to improve air quality and support London reaching compliance with UK and EU legal limits as soon as possible. Measures will include retrofitting vehicles with equipment to reduce emissions, promoting electrification, road charging, the imposition of parking charges/ levies, responsible procurement, the making of traffic restrictions/ regulations, and local actions."

Policy 6 states:

"Boroughs, and working with other transport providers, will seek to make London's transport network zero carbon by 2050, which will also deliver further improvements in air quality, by transforming London's streets and transport infrastructure so as to enable zero emission operation, and by supporting and accelerating the uptake of ultra-low and zero emission technologies."

2.4 Local Level – London Borough of Camden

Policy CC4: Air Quality of the 3rd July 2017 Adopted Local Plan states:

"The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough. The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan. Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact. Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan."

3. Methodology

3.1 Overview

This section provides the details of the methodological approach taken to assess the impacts on air quality from the construction and operation stages of the proposed development.

3.2 Scope of the Assessment

3.2.1 Construction Phase

Based on the IAQM Guidance, sensitive receptors within 350 m of the proposed development have been considered.

For track out IAQM guidance suggest without site-specific mitigation, track out may occur from roads up to 500 m from large sites, 200 m from medium sites, and 50 m from small sites, as measured from the site exit. It is considered that the track-out impact declines with distance from the site, and it is only necessary to consider track-out impacts up to 50 m from the edge of the road.

A construction dust assessment was carried out to consider impacts from 'disamenity' (or 'nuisance') dust, as discussed in Appendix A3, associated with annoyance. The development has the potential to generate dust during the construction phase of the project. Although there are no standards (such as AQO) for dust disamenity or annoyance, various 'custom and practice' criteria have become established.

For the purposes of this assessment, IAQM's 2016 construction dust guidance[13] has been used. The IAQM guidance provides a methodology (Appendix B) to evaluate the potential risk of dust generation for development and the level of mitigation required. The impact of the development is described using one of the following three categories: 'Low Risk', 'Medium Risk' and 'High Risk'. Based on the risk level, appropriate mitigation measures can be considered to minimise any effects of dust from the construction phase.

3.2.2 Operational Phase

The Transport Statement report states that the proposed development is proposed to generate up to 71 vehicles during whole day. It is to be noted that the proposed development is car-free (apart from two disabled car parking spaces) and instead the majority of the trips are likely to be visitors being dropped of or picked up from the site, delivery vehicles and servicing vehicles. This is considered to be the worst-case scenario as the trip generations are proposed to be lower as the development is car-free.

Based on the requirement of the EPUK criteria set out in Appendix B, the need for a detailed traffic-related air quality dispersion modelling can be scoped out as the total number of daily trips is expected to be less than 100 within an AQMA area.

[13] Institute of Air Quality Management (2014): 'Guidance on the Assessment of Dust from Demolition and Construction'

The proposed development will not include any new fixed plant or associated flue stacks. Therefore the need for stack dispersion modelling can be scoped out. The development is proposed to use ground source heat pumps as the primary heting method with supplementary standard low NO_X boilers only if necessary. This further limits the NO_x emissions.

The residential suitability (i.e. exposure to existing air pollution for new residents) and commercial suitability (i.e. exposure to existing air pollution for new users), in terms of existing air quality, have been assessed by comparing local monitoring and background data with the relevant AQO.

4. Baseline Conditions

4.1 Overview

The following section sets out the baseline conditions in relation to air quality for the proposed development. Baseline air quality information is available from a number of sources, including local and national monitoring data reports and websites. For the purposes of this assessment, data has been obtained from the Defra air quality resource website[14] and from Air Quality Monitoring Data obtained from London Borough of Camden[15].

4.2 Existing Baseline Conditions

London Borough of Camden undertook automatic air quality monitoring at 4 sites and non-automatic monitoring at 33 sites during 2019 using diffusion tubes.

Figure 4.1 shows the location of the monitoring location in relation to the proposed development site.

The nearest monitoring site is CD1 Automatic Monitoring Site which is approximately 250m from the proposed site location. A Diffusion Monitoring (CA15) was also done at the same location of the CD1 Automatic Monitoring The data obtained by CD1 from the local authority recorded the NO_2 concentration at this location as 43.0µg/m^3 which is above the AQO limit of 40 µg/m^3. Diffusion Monitoring CA15 recorded the NO2 concentration of 49.74µg/m^3.

However, the positions of the monitors are beside an A road (A41) which would include more traffic than the roads immediately beside the proposed development. Therefore, concentrations within the area of the proposed development could potentially be lower than the levels experienced at the monitors.

This is evident when analysing the PCM Defra data which is located within 500m from the proposed development. Census ID 802016434 has a projected background 2022 NO_2 reading of 27µg/m^3.

Further background pollution concentration derived from the Defra backgrounds maps have been used within the assessment and presented in Section 4.3.

[14] Department for Environmental Food and Rural Affairs. Accessible at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018
[15] London Borough of Camden (2020): 'London Borough of Camden Air Quality Annual Status Report for 2019'

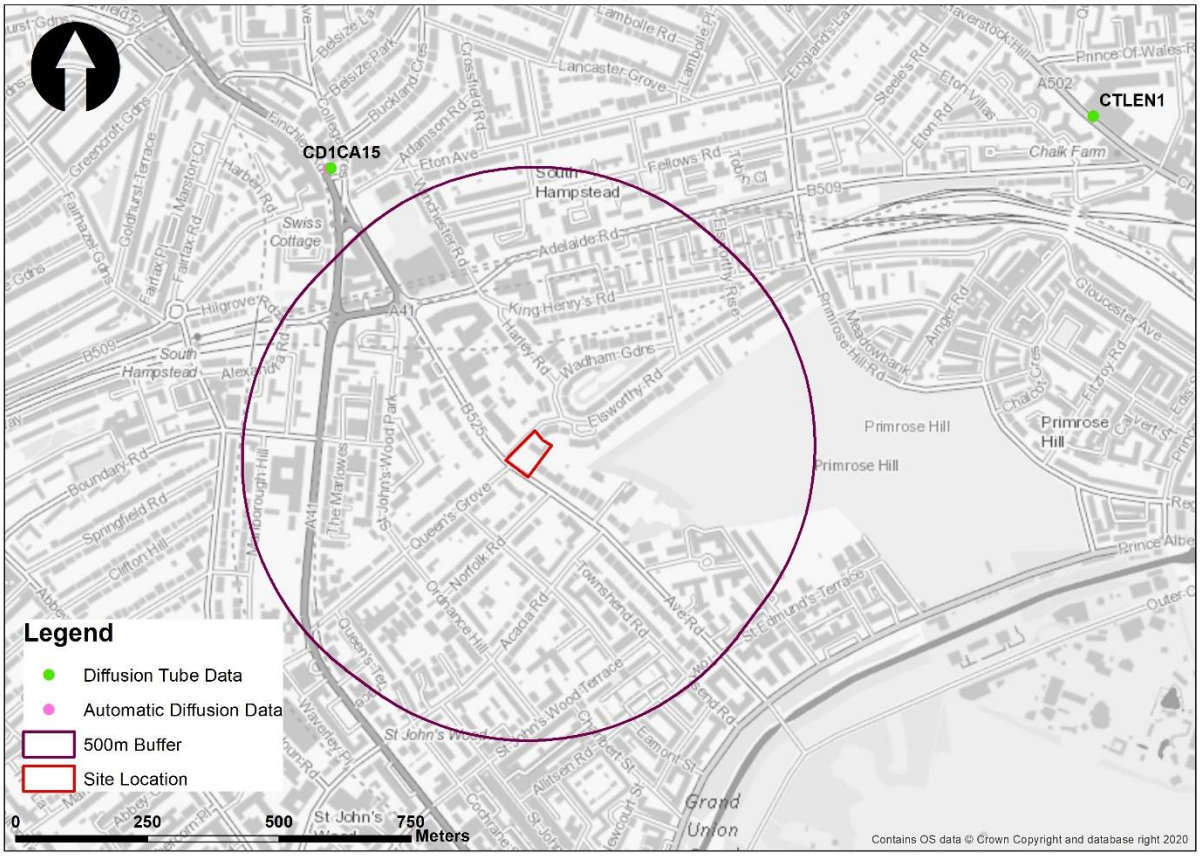

Figure 4.1: Existing nearby monitoring sites

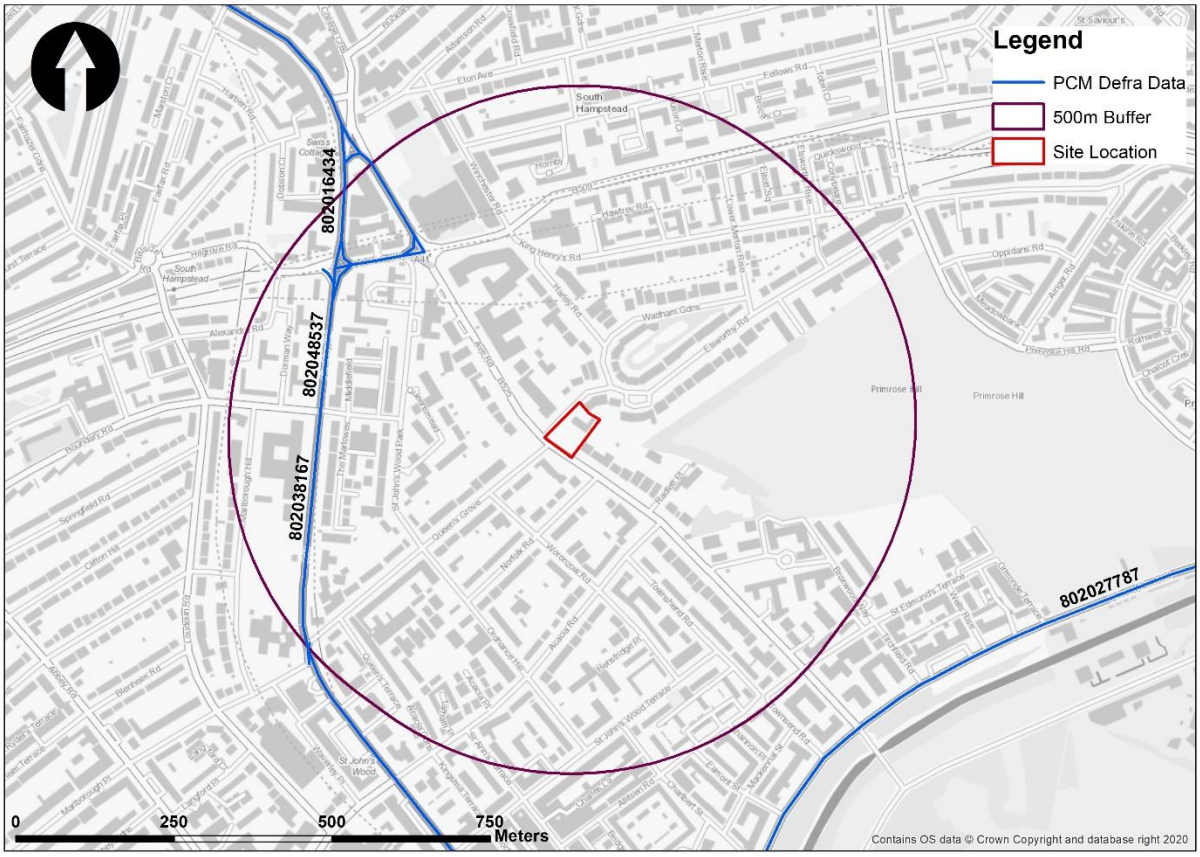

Figure 4.2: PCM Data Locations

4.3 Defra Background Pollution Concentrations

Defra provides background pollution concentration estimates to assist local authorities to undertake their 'Review and Assessment' work. This data is available to download from Defra air quality resource website for NO_x, NO_2, PM_{10}, and $PM_{2.5}$ for every 1 km X 1 km grid square for all local authorities. The current dataset is based on 2020 background data and the future year projections are available for 2017 to 2030. The background dataset provides a breakdown of pollution concentrations by different sources (both road and non-road sources).

Defra provides background pollution concentration estimates to assist local authorities to undertake their 'Review and Assessment' work. This data is available to download from Defra air quality resource website for NO_x, NO_2, PM_{10}, and $PM_{2.5}$ for every 1 km X 1 km grid square for all local authorities. The current dataset is based on 2020 background data and the future year projections are available for 2017 to 2030. The background dataset provides a breakdown of pollution concentrations by different sources (both road and non-road sources).

Table 4.3 presents the predicted background concentrations for the study area for the earliest year of occupation (2022) for the relevant receptor locations. Background concentrations for all pollutants presented in Table 4.1 are well below the relevant AQO.

Table 4.3: Defra Projected Background Concentrations (for all receptors)

Pollutant	Concentration (µg/m^3)
NO_2	25.07
PM_{10}	17.23
$PM_{2.5}$	11.12

Note: Data presented within the table are derived from the following ordinance survey grid squares: 527500, 183500.

4.4 Baseline Summary

The monitoring data indicated potential breaches of the AQO along the A41 road, however, the site is approximately 450m from the 'A Road', and therefore it is anticipated that the site would experience lower concentrations. Defra background data showed that all pollutant concentrations were below the AQO.

Moreover, when analysing the PCM Defra data which is located within 500m from the proposed development, Census ID 802016434 has a projected background 2022 NO_2 reading of 27µg/m^3. Therefore, it is expected that the levels of NO_2 at the site would be lower than 40µg/m^3.

However, it is recommended that an appropriate ventilation system is installed to ensure that residents are provided with air of adequate quality.

5. Potential Impacts

5.1 Construction Phase

The construction phase of the proposed development is yet to be decided. For the purpose of this assessment, the earliest construction year is assumed to be 2022. The impacts from demolition, earthworks, construction, and track-out have been considered. In order to assess the worst-case scenario, it has been assumed that all activities will be carried out for the duration of the construction period. Figure 5.1 shows the construction dust assessment study area based on the recommended distances by IAQM.

Magnitude and sensitivity descriptors that have been applied to assess the overall impact of the construction phase are presented in Appendix C.

Table 5.1 presents the potential dust emission magnitude based on project-specific construction activities and is based on the criteria presented in Table C1 within Appendix C.

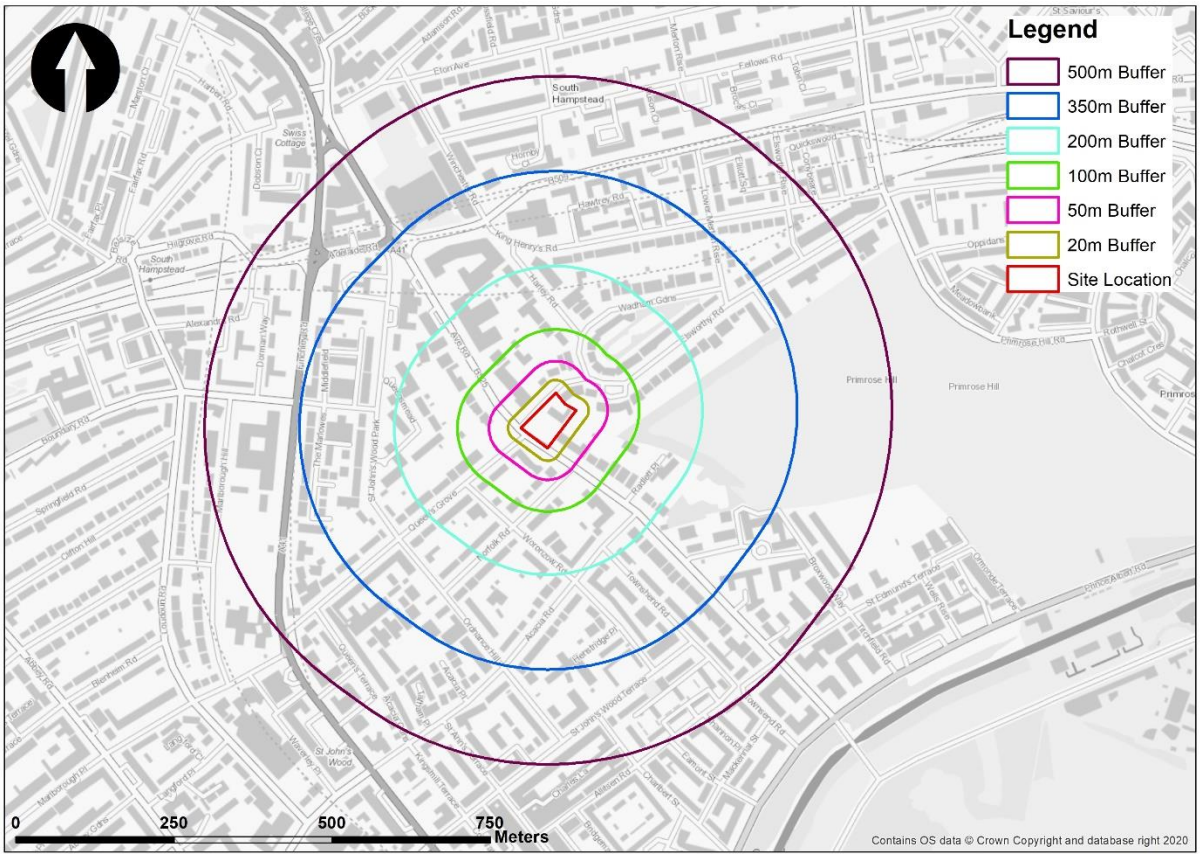

Figure 5.1: Construction assessment buffers

Table 5.1: Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Medium
Construction	Large
Track Out	Medium

Table 5.2 presents the sensitivity of receptors to effects caused by construction activities and is based on the criteria presented in Table C 2 within Appendix C.

Table 5.2: Sensitivity of Study Area

Potential Impact	The sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low

The overall risk of receptors to dust soiling effects and PM_{10} effects are presented in Table 5.3. Risk is based on the criteria presented in Table C 3 to Table C 6 within Appendix C.

Table 5.3: Summary of the Risk of Construction Effects

Sensitivity of Area	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	High Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk

Based on the above, the largest risk associated with all construction activities are considered to be 'High Risk' with regards to dust soiling and 'Low Risk' with regards to human health. Based on the outcome of the construction dust assessment, mitigation measures appropriate for the proposed development have been presented in Section 6. Overall, the impacts from disamenity dust and PM_{10} from the construction phase of the proposed development are considered to be not significant.

5.2 Operational Impacts

Mechanical ventilation with heat recovery (MVHR) is recommended to be incorporated within the design in order to supply adequate air to the users of the development.

As the number of daily trips is expected to be below 100, a detailed air quality assessment was scoped out.

There are no significant operational impacts associated with the proposed development, as discussed in Section 3.2.2.

5.3 Air Quality Neutral Assessment

Policy within the London Plan requires developments to be 'air quality neutral', the aim of which is to bring forward developments that are air quality neutral or better and that do not degrade air quality in areas where air quality objectives are not currently being achieved.

Guidance for undertaking the assessment is given in the following two documents:

- The Air Quality Neutral Planning Support Update 2014
- Mayor of London Sustainable Design and Construction Supplementary Planning Guidance 2014

The Sustainable Design and Construction SPG provides typical emission rates of NOx and PM_{10} for transport and building emissions for each land-use class. The Transport Emission Benchmarks (TEB) are location dependant: as per the guidance typical emission rates have been applied for a development within Inner London. The Buildings Emissions Benchmark (BEB) is not location dependant.

The development's Urban Greening Factor's basic requirements will be doubled with a score of approximately 0.95. This exceeds the policy requirements of the local authority. This has the ability to improve air qualtiy in terms of carbon emissions, as the plants will absorb CO_2. However this pollutant would not be considered in the AQ neutral test.

5.3.1 Building Emissions

The proposed development will use ground source heat pumps and, therefore, an assessment against the BEB can be scoped out.

If a mechanical MVHR system is used, then the impact will still be considered negligible and therefore an assessment against the BEB would still not be necessary.

5.3.2 Transport Emissions

As the proposed development is aimed at being car-free, it is not expected to generate a significant number of trips and therefore an assessment against the TEB is also considered to not be required.

Therefore, the need to do an Air Quality Neutral Assessment can be scoped out.

6. Proposed Mitigation Measures

6.1 Construction Phase Mitigation Measures

Mitigation measures have been set out in Appendix D in accordance with mitigation measures set out in the IAQM guidance for construction dust to reduce the potential impacts presented in Section 5.

The risks of construction activities in relation to dust soiling were deemed 'High Risk', and all risks to human health were also deemed 'Low Risk'. Therefore, it is recommended that the mitigation measures appropriate to mitigate 'High Risk' effects, as proposed in Appendix D are applied during the construction phase.

6.2 Operational Phase Mitigation Measures

Monitoring data within close proximity to the site indicated that there are potential breaches in the AQO. Although the nearest monitoring locations are situated on the A41 road, and it is anticipated that the concentrations of pollutants are likely to be lower at the development site, it is recommended that mechanical ventilation with a NOx filter is installed into the proposed development. This will ensure that air of adequate quality will be available for all occupants.

Based on the IAQM guidance, it is recommended that all gas-fired boilers meet a minimum standard of <40 mgNOx/kWh. No further mitigation measures are considered required.

7. Conclusion

This report provides an assessment of the following potential key impacts associated with the construction and operational phases of the proposed development of 52-54 Avenue Road, St Johns Wood, London NW8 6HS .

- Nuisance, loss of amenity, and health impacts associated with the construction phase of the development on sensitive receptors;
- Changes in traffic-related pollutant concentrations associated with the operational phase of the proposed development;
- Suitability of the proposed development location in terms of existing air quality; and
- Air Quality Neutral Assessment associated with the proposed development.

A qualitative assessment of construction dust effects has been undertaken for the proposed scheme. The construction phase is predicted to have a 'High Risk' of nuisance and/or loss of amenity impacts due to dust nuisance. However, the risk of dust nuisance can be mitigated by implementing the appropriate mitigation measures listed in Appendix D.

The Neutral Test has been scoped out as the proposed development is considered to generate very little trips due to the proposed development being car-free.

It can, therefore, be concluded that the proposed development is not considered to conflict with any national, regional, or local planning policy in relation to construction and operation phase dust and air quality nuisance.

Appendices

Appendix A: Key Pollutants

A1. Nitrogen Dioxide (NO_2)

Nitrogen dioxide (NO_2) and nitric oxide (NO) are collectively referred as oxides of nitrogen (NO_x). During fuel combustion, atmospheric nitrogen combines with oxygen to form nitric oxide (NO), which is not considered harmful. Through, a chemical reaction with ozone (O_3), however NO can further combine with oxygen to create NO_2 which is harmful to human health and vegetation. The foremost sources of NO_2 in the UK are combustion sources produced mainly by road traffic and power generation.

A2. Particulate Matter

Particulate matter is a term which refers to a mixture of solid particles and liquid droplets found in the air. These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others can be so small that they can only be detected using an electron microscope. Fine dust, essentially particles up to 10 microns (µm), is commonly referred to as PM_{10}.

PM_{10} is known to arise from a number of sources such as construction sites, road traffic movement, industrial and agricultural activates. Very fine particles ($PM_{2.5}$ – $PM_{0.1}$) are known to be associated with pollutants such as oxides of nitrogen (NO_x) and sulphur dioxide (SO_2) emitted from power plants, industrial installation, and road transport sources.

$PM_{2.5}$ is generally associated with combustion and traffic sources and is more likely to be associated with the operational phase of the proposed development.

A3. 'Disamenity' Dust

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and in an environmental context can be considered in two categories, according to size: coarser dust (essentially particles greater than 10 µm) and fine particulate matter (PM_{10} and $PM_{2.5}$) as set out above.

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'disamenity dust' and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance. Disamenity dust is more readily described than defined as it relates to the visual impact of short-lived dust clouds and the long-term soiling of surfaces.

Although it is a widespread environmental phenomenon, dust is also generated through many human activities including industrial and materials handling sites, construction and demolition sites, and roads. Dust is generally produced by mechanical action on materials and is carried by moving air when there is sufficient energy in the airstream. More energy is required for dust to become airborne than for it to remain suspended.

Appendix B: Operational Impact Assessment Methodology

The EPUK & IAQM guidance refers to the Town and Country Planning (Development Management Procedure) Order (England) 2010 [(Wales) 2012] for a definition of a 'major' development when scoping assessments required for the planning process. Based on the guidance, a 'major' development is such development where:

- The number of dwellings is 10 or above;
- The residential development is carried out of a site of more than 0.5ha where the number of dwellings is unknown;
- The provision of more than 1,000 m^2 commercial floorspace; or,
- Development carried out on land of 1ha or more.

It is recommended that consideration should be given to reduce impacts from any 'major' developments by considering:

- The impact of existing sources in the local area on the proposed development; and
- The impacts of the proposed development on the local area.

The assessment process involves two stages where:

Stage 1 scope out the need for an air quality assessment and **Stage 2** provides guidance in determining the level of assessment required for a project.

Table B 1 below sets out the Stage 1 criteria to determine the need to assess impacts arising from small developments and Table B 2 provides more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.

Table B 1: Stage 1 Criteria to proceed to Stage 2

Criteria to Proceed to Stage 2	
A	If any of the following apply: • or more residential units of a site area of more than 0.5ha • More than 1,000m^2 of floor space for all other uses or a site area greater than 1ha
B	Coupled with any of the following: • The development has more than 10 parking spaces • The development will have a centralised energy facility or other centralised combustion process

Table B 2: Indicative Criteria for Requiring an Air Quality Assessment

The development will	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light-Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy-Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with an extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO_x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

Appendix C: Construction Dust Assessment Criteria

IAQM guidance framework on assessing the risk of dust proposes the construction phase should be split into phases dependent on their potential impacts, determining the risk for each individually. Therefore, this assessment has determined the risk of the four construction categories put forward by the IAQM guidance:

- Demolition;
- Earthworks;
- Construction; and
- Track out (transport of dust and dirt onto the public road network).

The IAQM guidance framework states that the risk of dust impacts from the four categories can be defined as 'negligible', 'low risk', 'medium risk' or 'high risk' depending upon the scale and nature of the construction activity and the sensitivity and proximity of receptors to the construction site boundary. This categorisation is used to put forward appropriate mitigation measures, reducing the level of effects from the dust impacts so they are not significant.

The assessment of dust impacts using the IAQM guidance considers three separate effects from dust:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to significant increase in exposure to PM_{10}.

Step 1 of the assessment is set out to screen for the requirement for a more detailed assessment for the proposed development. The screening criteria states:

A 'human receptor' within:

- 350 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

An 'ecological receptor' within:

- 50 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

Where there are no receptors and the level of risk is deemed 'negligible', there is no need for further assessment.

Step 2A of the assessment enables the overall dust emission magnitude (small, medium, or large) from each dust source (demolition, earthworks, construction, and trackout) to be identified in relation to the criteria outlined in Table C 1.

Table C 1: Dust emission magnitude

Source	Large	Medium	Small
Demolition	Total building volume >50,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level.	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities <10 – 20 m above ground level.	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	Total site area >10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth-moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.	Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth-moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.	Total site area <2,500 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	Total building volume >100,000 m^3, on site concrete batching or sandblasting.	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.	Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Track out	>50 HDV (>3.5t) outward movements[a] in any one day[b], potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.	10-50 HDV (>3.5t) outward movements[a] in any one day[b], moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.	<10 HDV (>3.5t) outward movements[a] in any one day[b], surface material with low potential for dust release, unpaved road length <50 m.

Notes: [a] Vehicle movement is a one-way journey. i.e. from A to B, and excludes the return journey.

[b] HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

Step 2B allows for the sensitivity of the area (high, medium or low) to be assessed and takes into account a number of factors:

- The specific sensitivities of receptors in the area;

- The proximity and number of those receptors;
- In the case of PM_{10}, the existing local background concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Receptor sensitivity has been based on the highest of any criteria being met thus, the assessment is considered as robust. The sensitivity of the area is further determined for dust soiling, human health and ecosystem effects by considering the criteria presented in Table C 2.

Table C 2: Magnitude of Receptor Sensitivity

Source	High	Medium	Low
Sensitivities of people to dust soiling effects	• Users can reasonably expect enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks[b] and car showrooms.	• Users would expect[a] to enjoy a reasonable level of amenity, but would not reasonably expect[a] to enjoy the same level of amenity as in their home; or • The appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected[a] to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work.	• The enjoyment of amenity would not reasonably be expected[a]; or • Property would not reasonably be expected[a] to be diminished in appearance, aesthetics or value by soiling; or • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks[b] and roads.
Sensitivities of people to health effects of PM_{10}	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).[c]	• Locations where the people exposed are workers[d], and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include office and shop	• Locations where human exposure is transient.[e] • Indicative examples include public footpaths, playing fields, parks and shopping streets.

Source	High	Medium	Low
	• Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	
Sensitivities of receptors to ecological effects	• Locations with an international or national designation and the designated features may be affected by dust soiling; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.	• Locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.

Notes: a People's expectations will vary depending on the existing dust deposition in the area, see Section 4.2.

b Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.

c This follows Defra guidance as set out in LAQM.TG (09).

d Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM10. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.

e There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health impacts, albeit less certain.

f Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

The final step, step 2C allows for the risk of impacts to be defined. The dust emission magnitude derived in step 2A is combined with the sensitivity of the area defined in step 2B to determine the risk of effects on:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to an increase in exposure to PM_{10}.

The criteria for each of the dust sources are presented in Table C 3, Table C 4, Table C 5 and Table C 6.

Table C 3: Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table C 4: Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C 5: Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C 6: Track out

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Appendix D: Mitigation Measures for Construction Impacts

Mitigation measures set out are from IAQM guidance for construction dust and are appropriate for the mitigation of 'High Risk' effects as proposed below:

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Develop a Dust Management Plan.
- Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.
- Display the head or regional office contact information.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make a complaints log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority 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 and dust are being carried out, and during prolonged dry or windy conditions.
- 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.
- Hold regular liaison meetings with other high-risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.
- 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 enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.
- Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.
- Agree monitoring locations with the Local Authority.
- Where possible, commence baseline monitoring at least three months before phase begins.
- Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.
- Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.
- 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 10mph 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).
- 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 mitigation (using recycled water where possible).
- Use enclosed chutes, 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.
- Reuse and recycle waste to reduce dust from waste materials.
- Avoid bonfires and burning of waste materials.
- 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 water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil.
- Only remove secure covers in small areas during work and not all at once.
- 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 escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.
- 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 and regularly cleaned.
- Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- 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.
- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

Appendix E: Site Drawings

Please see planning portal for the most recent drawings submitted as part of the planning application.

Aval Consulting Group.

Noise Impact Assessment

52 Avenue Road, St. Johns Wood, London, NW8 6HS

Client Name: 52 Avenue Road Limited

April 2022

Project Information

Title	Noise Impact Assessment
Job Code	91544
Sector	Environment
Report Type	NIA
Client	52 Avenue Road Limited
Revision	A
Status	Draft
Date of Issue	27 April 2022

Revision History

Revision	Date	Author	Reviewer	Approver	Status
A	27 April 2022	Christopher Murphy DipHE IOA CCENM 2021	Nuvin Boyjonauth MSc, IOA Dip. 2021	Ayan Chakravartty MSc MPhil IOA CCENM 2019 IOA Dip. 2021	Draft

Disclaimer

1 Table of Contents

1. Introduction

1.1 Overview

AVAL Consulting Group Limited has been commissioned to carry out a Noise Impact Assessment for the proposed development at 52 Avenue Road, St. Johns Wood, London. The proposal involves:

- 12no townhouses
- Communal health and wellness spa
- Private and communal gardens

Detailed site drawings for the proposed scheme are attached in Appendix B.

1.2 Objective

The planning process requires evidence from a noise impact assessment that mitigation measures can ensure that noise can be reduced to acceptable levels within the premises. BS:8233 guidance suggests that prior to developing a scheme, details of the measures should be considered so that internal sound levels within all habitable rooms do not exceed 35 dB(A) L_{Aeq} (07:00-23:00); and internal sound levels within all bedrooms that do not exceed 30 dB(A) L_{Aeq} (23:00-07:00).

Mechanical equipment related to the proposed scheme will also be assessed following BS:4142 and local council guidance, whereby noise levels must be 10 dB(A) below the ambient background level at the nearest noise-sensitive receptors, which in this instance is the proposed townhouses.

The purpose of the noise impact assessment is to ensure that the proposed scheme and its usage are suitable for habitation in relation to the prevailing noise in the surrounding area's environment, as well as noise introduced from new mechanical equipment. If needed, mitigation measures to accompany the planning application will be provided.

1.3 Site Location

Figure 1.1 shows the proposed site location. The site is bounded by Avenue Road to the west and Elsworthy Road to the north. The area is predominantly residential in nature, with a moderate-high amount of vehicle activity on Avenue Road. There are no other notable permanent noise sources.

Figure 1.1: Proposed site location (image source: Google Maps)

2. Relevant Noise Standards

This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. Furthermore, the latest regional and local planning policy guidance specifically applicable to the proposed development has been reviewed.

New residential developments are typically assessed in accordance with BS8233:2014 which incorporates world Health Organisation (WHO) Guidelines. BS4142 has also been considered with regards to the proposed communal Health and Wellness Spa.

2.1 The 'National Planning Policy Framework (NPPF)

The updated 2021 version of the 'National Planning Policy Framework (NPPF)'[1] contains information and general guidance to Local Authorities in relation to considering and taking into account noise. The National Planning Policy Framework (NPPF) guidance reinforces that noise should be taken into account considering planning policies and decisions. Some of the guidance contained within the 'National Planning Policy Framework (NPPF)' includes the following:

- Paragraph 174e: "…*preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability*…"

- Paragraph 185a,b: "*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. In doing so they should*:

  (a) *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life…*

  (b) *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;…*"

- Paragraph 187: *Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues, and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.*

In conjunction with the 'National Planning Policy Framework (NPPF)', 'The Noise Policy Statement for England (NPSE)'[2], dated March 2010, states the following regarding a long-term vision of government noise policy:

[1] The National Planning Policy Framework (2021) https://www.gov.uk/guidance/national-planning-policy-framework
[2] Noise Policy Statement for England (NSPE) https://www.gov.uk/government/publications/noise-policy-statement-for-england

"Noise Policy Statement for England Aims:

The first aim of the NPSE:

Avoid significant adverse impacts on health and quality of life from environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development.

The second aim of the NPSE:

Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development.

The third aim of the NPSE:

Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development."

In terms of the NPSE, the impact of noise can be categorised by the following terms:

- NOEL – No Observed Effect Level – The level where no effect can be detected
- LOAEL – Lowest Observed Adverse Effect Level – The level where adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level – The level where significant adverse effects on health and quality of life may occur.

The NPSE further states that:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors, and at different times."

No specific guidance is detailed or given in the 'National Planning Policy Framework (NPPF)', or 'The Noise Policy Statement for England (NPSE)' in terms of acceptable acoustic criteria/noise criteria in order to achieve the 'NOEL, LOAEL or SOAEL'. Therefore, it is considered necessary to refer to alternate national guidance, preferably standardised or regulated such as an appropriate British Standard (BS), or in the absence of this, alternate World Health Organisation (WHO) guidelines, etc.

2.2 WHO 'Guidelines for Community Noise'

Where noise is assessed against the 'Absolute Level', then this can be split into separate daytime and night-time legislation. The WHO 'Guidelines for Community Noise' state in 4.2.7 "Annoyance Responses" that:

"During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55 dB; or moderately annoyed with L_{Aeq} levels below 50dB. Sound pressure levels during the evening and night should be 5-10 dB lower than during the day…."

The guidance goes on to provide a daytime[3] internal acoustic criteria relative to critical health effect(s) that of 35 dB $L_{Aeq,16\ hour}$, and a night-time[4] level of 30 dB $L_{Aeq,8\ hour}$ / 45 dB L_{AFmax} linked with dwelling indoors. Therefore, assuming a maximum external noise level of 50 dB $L_{Aeq,t}$ during the daytime, (considering a 15 dB reduction in noise via a partially open window) an internal noise level of 35 dB $L_{Aeq,t}$ should be achieved.

During the night-time periods, a further publication; WHO Night Noise Guidelines For Europe' published in 2009 states that:

"Below the level of 30 dB $L_{night,outside}$, no effects on sleep are observed except for a slight increase in the frequency of body movements during sleep due to night noise. There is no sufficient evidence that the biological effects observed at the level below 40 dB $L_{night,outside}$ are harmful to health. However, adverse health effects are observed at the level above 40 dB $L_{night,outside}$, such as self-reported sleep disturbance, environmental insomnia, and increased use of somnifacient drugs and sedatives. Therefore, 40 dB $L_{night,outside}$ is equivalent to the LOAEL for night noise….. The LOAEL of night noise, 40 dB $L_{night,outside}$, can be considered a health-based limit value of the night noise guidelines (NNG) necessary to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly, from the adverse health effects of night noise."

Therefore, where absolute levels need to be referenced, a maximum daytime noise limit of 50 dB $L_{Aeq,t}$ can be considered, with the LOAEL for night of 40 dB $L_{night,outside}$ being considered.

2.3 IEMA (Institute of Environmental Management & Assessment)

IEMA also defines the sensitivity of receptors according to the table below

Very Substantial	Greater than 10 dB L_{Aeq} change in sound level perceived at a receptor of great sensitivity to noise
Substantial	Greater than 5 dB L_{Aeq} change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB L_{Aeq} change in sound level at a receptor of great sensitivity to noise
Moderate	A 3 to 4.9 dB L_{Aeq} change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB L_{Aeq} change in sound level at a receptor of some sensitivity
Slight	A 3 to 4.9 dB L_{Aeq} change in sound level at a receptor of some sensitivity
None/Not Significant	Less than 2.9 dB L_{Aeq} change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals

Table 2.1 Effect Descriptors (Guidelines For Environmental Noise Assessment, 2014)

2.4 The British Standard 8233: Sound Insulation and Noise Reduction for Buildings/Code of Practice

BS 8233: Sound Insulation and Noise Reduction for Buildings/Code of Practice provides the acceptable noise levels. Table 4 of British Standard BS 8233 reproduced below (Table 2.1) provides appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

[3] daytime is typically between 07:00 h and 23:00 h.
[4] night-time is between 23:00 h and 07:00 h.

Activity	Location	07:00 to 23:00 (Day Time)	23:00 to 07:00 (Night Time)
Resting	Living Room	35 dB $L_{Aeq,\ 16\ hour}$	-
Dinning	Dining Room/area	40 dB $L_{Aeq,\ 16\ hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,\ 16\ hour}$	30 dB $L_{Aeq,\ 8\ hour}$

Table 2.2: British Standard recommended indoor noise levels for dwellings (Source: British Standard BS: 8233)

In addition, the WHO Guidelines 1999 recommends that to avoid sleep disturbance, indoor night-time guideline noise values of 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for individual noise events should be applicable. It is to be noted that the WHO Night Noise Guidelines for Europe 2009 makes reference to research that indicates sleep disturbance from noise events at indoor levels as low as 42 dB L_{AFmax}. The number of individual noise events should also be taken into account and the WHO guidelines suggest that indoor noise levels from such events should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night. The WHO document recommends that steady, continuous noise levels should not exceed 55 dB L_{Aeq} on balconies, terraces, and outdoor living areas. It goes on to state that to protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB L_{Aeq}.

BS 8233 further states that "The noise level in any hotel bedroom, with windows closed, from all external sources, including road, rail and air traffic and noise from activities outside the hotel and any adjacent premises, are to be within the range of average noise levels in Table H3.

Table H.3 **Indoor ambient noise level ranges for hotel bedrooms**

Period	Noise level
Daytime (07:00 – 23:00 hrs)	30 – 40 dB $L_{Aeq,1hour}$
Night-time (23:00 – 07:00 hrs)	25 – 35 dB $L_{Aeq,1hour}$
Night-time (23.00 – 07.00 hrs)	45 – 55 dB L_{Amax}

2.5 BS 4142: 2014; Methods for rating and assessing industrial and commercial sound

In terms of industrial/commercial development, guidance is set out in BS 4142: 2014, 'Methods for rating and assessing industrial and commercial sound'. BS 4142 requires the noise from the process/equipment (in LA_{eq}) to be compared with the background sound level (LA_{90}) in conjunction with the new noise source.

BS 4142 states that if the rated noise level exceeds the LA_{90} background sound level by around +10 dB or more, then it is likely that the resultant noise may have a significant adverse

impact, a difference of around +5 dB over the background sound level is likely to have an adverse impact, and where the rating level does not exceed the background sound level it is an indication that the resultant noise is likely to have a low adverse impact.

BS 4142: 2014 provides a method for assessing whether an industrial or commercial sound source (e.g. fixed mechanical plant) is likely to cause a disturbance to persons living near to the sound source.

The 2014 document introduces three main acoustic features:

- **Tonality:** Defined as more sound in the 1/3 octave band than those nearby 1/3 octave bands or more sound in a given frequency than in those nearby frequencies. The tonality feature correction +6dB and can be applied using subjective method or an objective method using 1/3 octave bands.
- **Impulsivity:** defined as sound that increases by a rate of at least 10dB per second, regardless of its duration. The impulsivity feature correction range from 0-9 dB and can be applied using a subjective method or an objective method using a sound level meter capable of sampling sound at either once every 0.01s interval or once every 0.025s interval.
- **Intermittency:** Defined as sound that can be identified as being on/off during the measurement period in which case the correction factor that is applied to the specific sound source (e.g. fume extraction system) is +3 DB.

BS 4142 assesses potential significant effect by comparing the source noise (extractor duct vent noise) with the measured background noise level (LA90). The standard provides a penalty (correction factor) for acoustic features for instance bangs or tonal qualities that can increase the likelihood of noise complaints and in these cases, the standard requires a correction to be added to the source noise level. The source noise level along with the correction factor is referred to as the 'rating level'. The rating level is then compared with the background level (La90). BS 4142:2014 advocates the use of LAeq,T - a level, which is directly measurable and termed the Specific Sound Level.

- Subjectively the Specific Sound Level may be corrected as follows:

The Specific Sound Level is subject to a correction for tonality between 0dB to +6dB for sound ranging from not tonal to prominently tonal. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6dB where it is highly perceptible.

The Specific Sound Level may be also corrected to impulsivity. A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of +3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible.

Other sound characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, can have a penalty of 3dB applied.

Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.

Further corrections may be applied due to intermittency. When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time

period of length equal to the reference time interval which contains the greatest total amount of on time. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.

If the subjective method is not sufficient for assessing the audibility of tones in sound or the prominence of impulsive sounds, BS4142:2014 suggests using the one-third octave method and/or the reference methods, as appropriate.

The one-third octave method tests for the presence of a prominent, discrete-frequency spectral component (tone) typically compares the LZeq,T sound pressure level averaged over the time when the tone is present in a one-third-octave band with the time-average linear sound pressure levels in the adjacent one-third-octave bands. For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the one-third-octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference. The level differences between adjacent one-third-octave bands that identify a tone are:

• 15 dB in the low-frequency one-third-octave bands (25Hz to 125Hz);

• 8 dB in the middle-frequency one-third-octave bands (160Hz to 400Hz); and

• 5 dB in the high-frequency one-third-octave bands (500Hz to 10,000Hz).

- The reference (objective) method.

If the presence of audible tones is in dispute, a special measurement procedure can be used to verify their presence. Based on the prominence of the tones this procedure also provides recommended level adjustments. The aim of the reference method is to assess the prominence of tones in the same way as listeners do on average. The method is based on the psychoacoustic concept of critical bands, which are defined so that sound outside a critical band does not contribute significantly to the audibility of tones inside that critical band. The method includes procedures for steady and varying tones, narrow-band sound and low-frequency tones, and the result is a graduated 0dB to 6dB adjustment. It is known as the Joint Nordic Method 2 and is to be found in ISO 1996-2. The reference method is also described in BS4142:2014.

Specific Sound Level with (or without) added contentions is termed the Rating Level. When used to assess industrial or commercial sound, the Rating Level is determined and the LA90 background level is subtracted from it. Typically, the greater this difference, the greater the magnitude of the impact.

A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

In addition to above, based on the Guidance of Control of Odour and Noise from Commercial Kitchen Exhaust Systems (2018), there are two fundamental categories of noise source are of relevance. The first is the noise produced by the fan, which is a function of the type of fan (axial, centrifugal, mixed flow, etc), the rate of the airflow and the pressure drop. For these calculations, the octave band sound power from the fan is required. This can normally be obtained from the manufacturer.

The second category of noise is generated by turbulence as the air passes within the ducts or through the exit grille or louvre. In this case, the amount of noise is determined by the design of duct, grille, or louvre, the pressure drop across terminations, the velocity of the air (this can be variable across the duct, grille, or louvre) and the area of the duct or opening. The problem with this form of noise, especially at terminations, is that in most situations it can only be controlled at its source. For example, at the feature that is generating the noise as there is no further length of duct in which to install noise control equipment.

In some situations, a third source may need to be considered. This is where noise generated within the building breaks into the ductwork and is radiated from the outlet. The area of the duct walls, the acoustic properties of the duct walls, and the area of any inlets determine the amount of break-in noise. Once this noise has broken into the ducts it can be treated as if it were an additional component of the fan noise. However, the nature of this additional noise is such that it usually contains a relatively high level of low-frequency sound which can be difficult to attenuate.

The attenuation of fan noise (and break-in noise) provided by the ductwork is determined by the length of the ducts, the presence of any bends, changes in cross-section, the presence of any plenum chambers and termination effects (including sound-attenuating louvres if present and the attenuation provided by any change in cross-section). A balance has to be struck between the acoustic benefit of bends and louvres etc and the pressure drop that these create, possibly requiring a larger fan.

The sound energy components arising from fan noise, turbulence within the duct and at outlets, and from noise break-in, combine to produce an acoustic source at the outlet. The energy will then propagate away from the outlet in a manner determined by the nature and geometry of surrounding buildings and terrain. The nature, temporal characteristic and level of the resultant sound that reaches the ears of people in the vicinity (usually quantified by considering the noise at façades), and its level relative to the background noise, all contribute to its potential to cause disturbance and complaint. These factors should be taken into account at the planning stage as a matter of course. They form the basis of BS 4142 “Rating industrial noise affecting mixed residential and industrial areas” which is also used by Local Authority as support to the issue of a Noise Abatement Notice under the Environmental Protection Act.

3. Noise Surveys

3.1 Overview

This section provides the details of the methodological approach taken to assess the prevailing acoustic environment at the site where new noise-sensitive receptors (residential units) will be introduced. To establish the current acoustic environment and the monitoring of noise levels at the site, the noise key indicators namely L_{Aeq} , L_{A90},and L_{Amax}, have been used where appropriate and are described in Appendix A.

3.2 Noise Monitoring Location

Noise monitoring was carried out at the location shown in Figure 3.1 below. This location was deemed appropriate to give an accurate assessment of the prevailing levels of noise that are likely to be experienced by the proposed development, including both the boundary roads.

The noise monitor was positioned 1.3 m above ground level and > 3.5 m away from all reflective surfaces. As such, the readings obtained are considered to be in free-field conditions as per BS 7445.

Figure 3.1 Noise Monitoring Location (image source: Google Maps)

Figure 3.2 Background noise monitoring location (image source: Aval Consulting Group Ltd)

3.3 Noise Survey Periods

The noise survey was carried out for 46 hours at 1 second intervals. The time periods have been outlined below.

Measurement Location	Start Date	Start Time	End Date	End Time
1	09/11/21	14:11	11/11/21	12:11

Table 3.2 Noise Survey Periods

3.4 Details of Noise Monitoring Equipment

The details of the equipment used for all noise monitoring have been tabulated below. The sound level meter used for this survey was a Class 1 device which has been laboratory calibrated, as well as field calibrated on site before and after monitoring (no calibration drift was recorded). Calibration certificates are attached in Appendix B.

Location	Equipment	Serial Number	Last Calibrated
1	BSWA 308 Class 1 Sound level meter	580273	01/02/21
3	BSWA CA111 Class 1 Calibrator (UKAS)	550282	23/07/21

Table 3.3 Noise Equipment Details

3.5 Weather Conditions

During the background survey, conditions were mostly overcast with low-moderate winds, and some light rain noted on the morning of the 11th November. The weather conditions throughout this survey period are suitable for the measurement of environmental noise in accordance with BS7445: Description and Measurement of Environmental Noise.

Variable	Condition
Wind	4 m/s Maximum
Humidity	70% Average
Cloud cover	77% Average
Precipitation	0.6 mm
Temperature	15C Max 10C Min

Table 3.4 Meteorological conditions during survey period (Source: Worldweatheronline St Johns Wood)

4. Noise Survey Results

4.1 Ambient noise results

A summary of the noise results can be seen below in Table 4.1. A full graph of the results is presented below in Figure 4.2, with the night-time LAFmax figures isolated in Figure 4.3.

Indicator	Daytime (07:00-23:00) All values in dB(A)	Night-time (23:00-07:00) All values in dB(A)
L_{Aeq}	61.8	45.6
L_{A90}	49.9	40.7
L_{A10}	60.9	52.2
L_{Amax}	88.3	74.2

Table 4.1 Summary of Noise Results

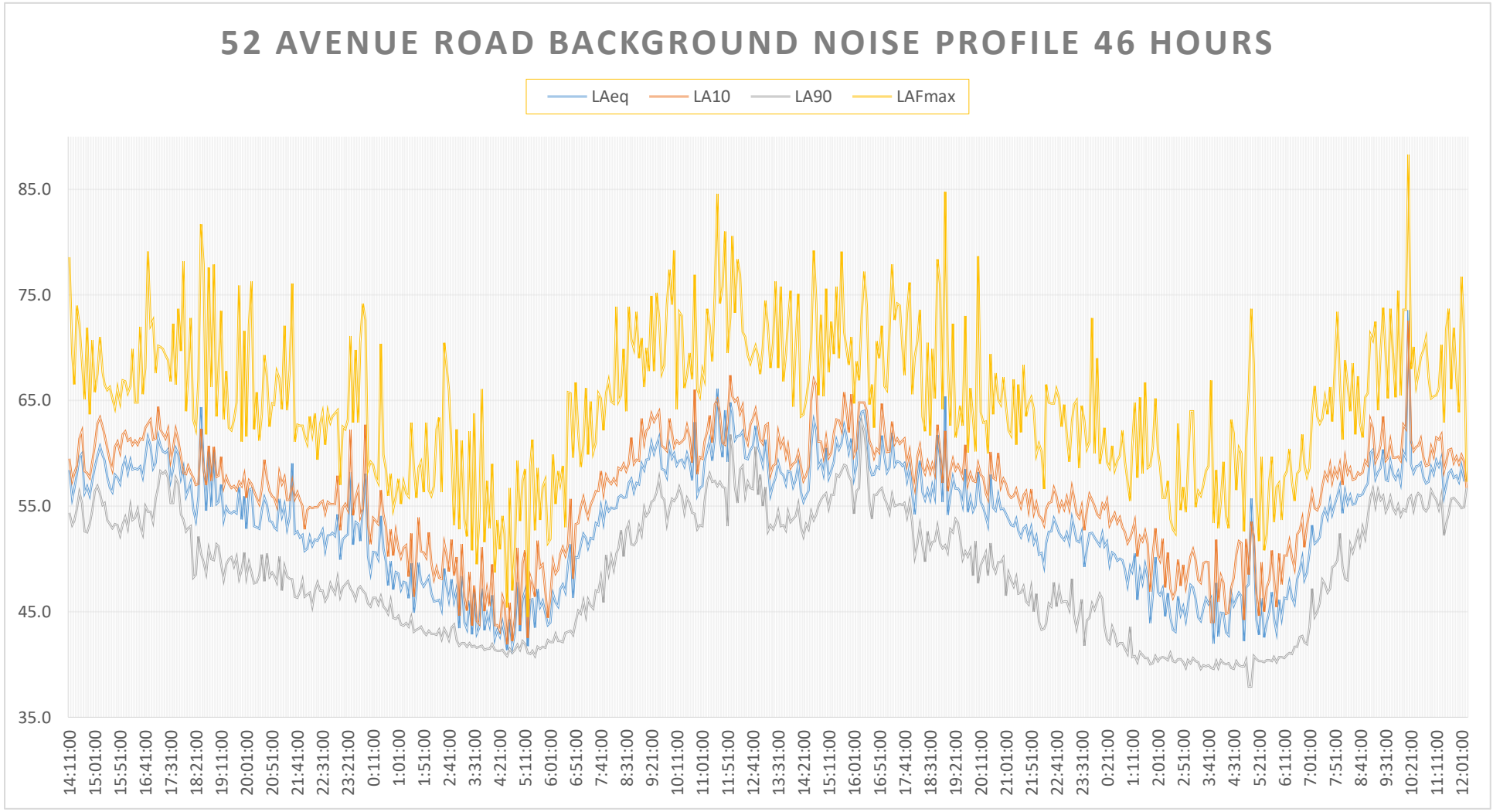

Figure 4.2 Noise profile 46 hours, presented in 5 minute intervals – 52 Avenue Road

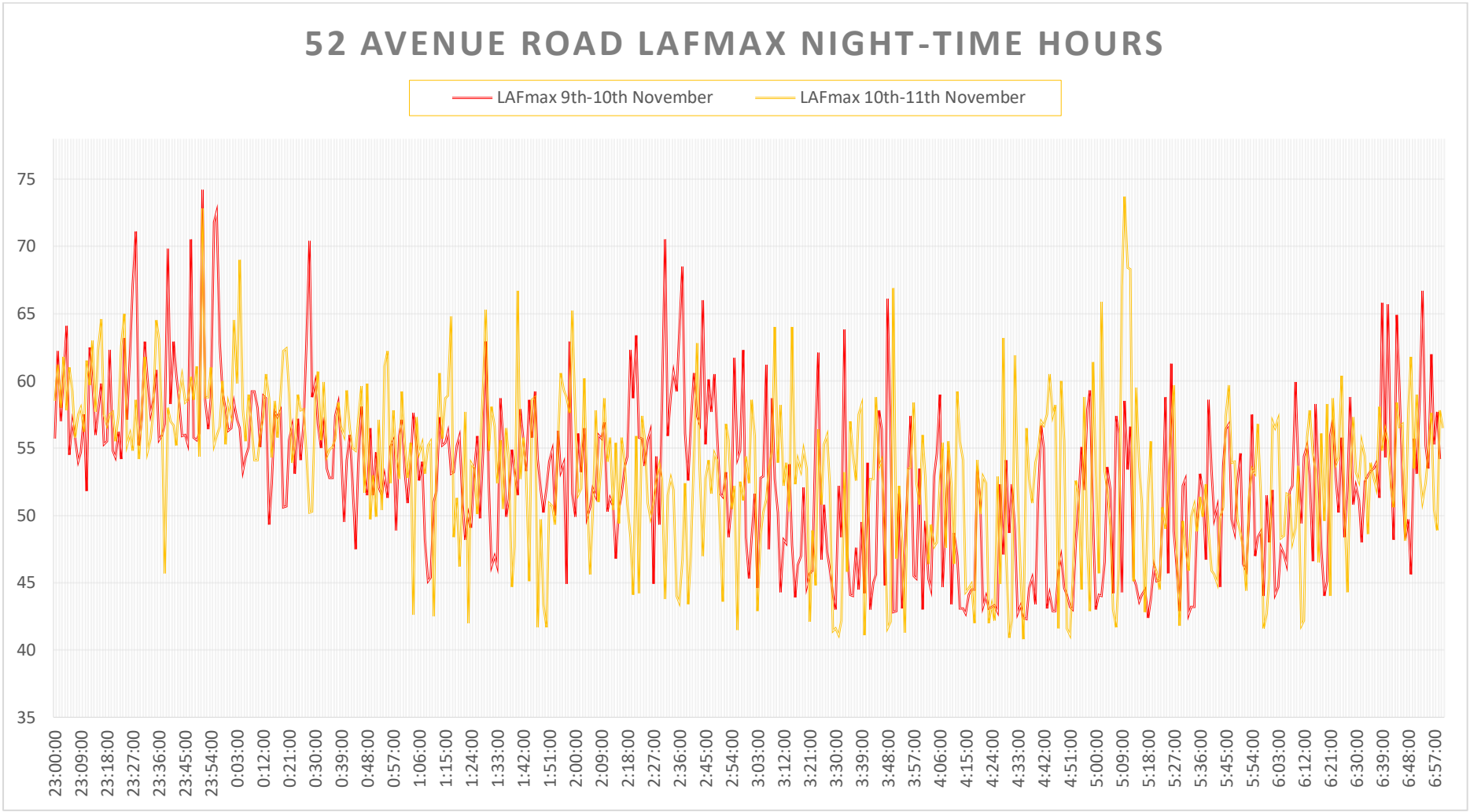

Figure 4.3 LAFmax night-time exceedances, presented in 1 minute intervals between 23:00 – 07:00 – 52 Avenue Road

5. Noise Impact Assessment

The predicted external noise levels have been compared with the WHO, BS:8233 to derive the required noise reduction of façade/windows.

The internal target levels for bedrooms are based on guidelines laid out by BS:8233

- Day-time (07.00-23.00 hrs): 35dB(A)
- Night-time (23.00-07.00 hrs): 30dB(A)

5.1 Noise Impact of Prevailing External Noise

It was found that a minimum attenuation level of **61.8 – 35 = 26.8 dB** is required during daytime and a minimum attenuation of **45.8 – 30 = 31.8 dB** during the night- time.

ProPG and the WHO community noise guidelines also recommend that the peak noise in bedrooms should not exceed 45 dB L_{Amax} more than 15 times per night. Pro PG mentions that "A site should be regarded as high risk if the $L_{Amax,F}$ exceeds, or is likely to exceed 80 dB more than 20 times a night. It further states that behavioural awakening (sleep disturbance) is likely to occur where the maximum sound level at the façade of a building with partially open windows is above

- 85 dB $L_{Amax,F}$ (where the number of events exceeding this value is ≤ 20); or
- 80 dB $L_{Amax,F}$ (where the number of events exceeding this value is > 20).

Based on the L_{Amax} graph showing individual peak events (refer to Section 4.1 of this report), it can be determined that the maximum night-time values and number of occurrences referred to by the Pro PG (80 - 85 dB) have not been exceeded, and are not likely to be exceeded at any point in time.

Based on the night-time L_{AFmax} values recorded (refer to L_{AFmax} graph in Section 4), it was observed that the highest L_{AFmax} value over 2 nights was 74.2 dB, and this is deemed to be a a fair representation of the worst-case peak noise level to be expected throughout the night. It was found that a minimum attenuation level of **74.2 – 45 = 29.2 dB** is required to meet these criteria.

Therefore, on the overall, a minimum noise attenuation of 32 dB(A) is required to account for a worst-case scenario based on the night-time LAeq levels. To ensure robust mitigation, it is proposed that all building facades and windows should have a minimum acoustic performance of **32 dB (A).**

5.2 Noise Impact on Amenity areas

BS 8233 states that "*For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be*

warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

In reference to Section 4 of this report, the prevailing noise levels were recorded as having an L_{Aeq} of 61.8 dB. This exceeds the upper guideline of 55 dB as outlined in BS8233. However, the proposed site is in a location that sees relatively high traffic levels of vehicle traffic connecting Regents Park and Swiss Cottage, so this is to be expected for the area.

The communal garden is situated in the centre of the site and will be surrounded by the proposed buildings, so this figure is likely to be lower in the final development as the townhouses will block some of the road noise. No mitigation measures are deemed necessary.

5.3 Communal Health and Wellness Spa

The proposed health and wellness spa is to be located underground and will not be adjoined to any noise sensitive rooms, therefore noise from residents using this area is not considered to be a concern.

Equipment in the plant room has not yet been finalised, so target values are advised based on the lowest measured background level. Rated noise levels from any external plant equipment (e.g. relating to the pool, sauna, ventilation etc) must not exceed a level > 10 dB(A) below the prevailing daytime background level of 49.9 dB(A) and night-time level of 40.7 dB(A). This equipment is expected to be tonal in nature and will be subject to an acoustic penalty. All plant equipment must be designed and installed by suitably qualified persons so that related **noise levels should not exceed 30.7 dB 1 meter from the façade of the nearest unit** on the development as per BS4142.

6. Proposed Mitigation Measures

Mitigation measures need to be in place to minimise the potential negative impacts. In order to ensure that the internal noise limits are achieved, we would recommend the following scheme of mitigation measures as outlined below.

6.1 Non-Glazed Elements

It is currently understood that the non-glazed building façade elements of the proposed development would be comprised of masonry. As deduced in section 5 of this report and to ensure robust mitigation, it is proposed that all external non-glazed elements of the building façade should be able to provide a sound reduction performance of at least 32 dB. This should be easily achieved as part of the Building Regulations 2010 requirements, which require a minimum acoustic performance of 43 dB for external facades.

6.2 Glazed Elements

It is proposed that acoustically laminated double-glazed windows would be able to attenuate background noise by at least 32 dB(A). Examples of such window configurations and their specifications can be found in Appendix C.

6.3 Amenity Areas

Based on the findings in section 5.2 of this report, no mitigation measures are required for the amenity area.

6.4 Ventilation Strategy

The findings of the noise survey, the prevailing L_{Aeq} levels have been presented below.

Indicator	Daytime dB(A)	Night-time dB(A)
L_{Aeq}	61.8	45.6

Table 6.1 L_{Aeq} levels at noise monitoring location

In reference to Table 3.2 of The "*Acoustics Ventilation and Overheating Residential Design Guide*", it was found that the risk category (for a level 1 assessment) is medium during the day time and negligible during night time.

BS 8233 states that "*If partially open windows were relied upon for background ventilation, the insulation would be reduced to approximately 15 dB, resulting in the target levels being exceeded. However, windows may still be openable for rapid or purge ventilation, or occupant's choice*." This would also vary on the type of window used.

Based on the background survey, open windows in bedrooms would result in the daytime limit of 35 dB being exceeded by 11.8 dB, and the limit of 30 dB at night time being exceeded by 0.6 dB. In order to prevent internal noise disturbance, we recommend rapid purge ventilation along with acoustic trickle vents that have attenuation characteristics ≥ 32 dB, $D_{n,e,w.}$ (see Appendix C for example).

6.5 Communal Health and Wellness Spa

It is advised that all plant equipment is to be designed and installed by suitably qualified persons whereby noise levels do not exceed 30.7 dB 1 meter from the façade of the nearest unit on the development as per BS4142 methodology and local council guidance. Should mechanical noise exceed this level, the equipment will be mitigated directly at the source and as such will have no impact on the previous mitigation measures outlined as per BS8233.

6.6 Proposed Control Measures for Construction Noise

The contractor to ensure The Best Practicable Means (BPM) (as defined in Section 72 of the Control of Pollution Act 1974) will be used to reduce noise and vibration levels at all times. Where practicable the control measures set out in BS 5228:2009 + A1:2014 Part 1 & Part 2, Section 8 will also be implemented.

The following noise and vibration control measures to be included as a minimum:

- Choice of methodology/technique for operations (including site layout) will be considered in order to eliminate or reduce emissions at sensitive locations;
- Fixed items of construction plant will be electrically powered in preference to diesel or petrol-driven;
- If any specialist fabrication is required, this will be undertaken off-site if possible;
- Noisy plant will be kept as far away as possible from sensitive areas;
- Each item of the plant used will comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701 where reasonably available;
- Equipment will be well-maintained and will be used in the mode of operation that minimises noise and shut down when not in use;
- Vehicles shall not wait or queue on the public highway with engines running (unless the engine is required to power the operation of the vehicle e.g. concrete wagon);
- Where possible deliveries will be arranged on a just-in-time basis to prevent vehicles from queuing outside of the site and
- All materials will be handled in a manner that minimizes noise.

6.6.1 Temporary Noise Barrier or Noise Insulation

Table E2 of BS 5228-1:2009+A1:2014 provides an example of time periods, averaging times, and noise levels associated with the determination of eligibility for noise insulation.

Noise insulation, or the reasonable costs thereof, will be offered by the developer or promoter to owners, where applied for by owners or occupiers, subject to meeting the other requirements of the proposed scheme, where the construction of the development causes, or is expected to cause, a measured or predicted airborne construction noise level that exceeds either of the following at property lawfully occupied as a permanent dwelling: the noise insulation trigger levels presented in Table E.2 for the corresponding times of day; and a noise level 5 dB or more above the existing pre-construction ambient noise level for the corresponding times of day; whichever is the higher; and for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months."

7. Conclusions

An environmental noise survey has been undertaken for the proposed development at 52 Avenue Road, St Johns Wood, allowing the assessment of daytime and night-time levels likely to be experienced by the proposed development.

Measured noise levels allowed for a robust noise insulation proposal to be made to comply with the minimum values for required attenuation, which would, in turn, provide internal noise levels for all residential environments of the development commensurate to the relevant design standards.

Acoustic attenuation for all non-glazed external facades will be sufficiently met based on external façade requirements as per Building Regulations 2010. Mitigation advise has been provided for windows and ventilation, as well as the construction phase as per BS5228.

Target noise levels have been provided for plant equipment relating to the health and wellness spa. We advise that these are verified upon completion of the design scheme to confirm whether additional mitigation measures are required as per BS4142 and local Camden noise guidance.

With regards to existing external noise intrusion as per BS8233, no further mitigation measures should be required in order to protect the proposed habitable spaces from adverse impact.

Appendices

Decibel scale - dB

Appendix A: Noise Indicators and Acoustic Terminology

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Reference Time Interval, T

The specified time interval over which an equivalent continuous A-weighted sound pressure level is determined.

$L_{Aeq,T}$

The A-weighted equivalent continuous sound level. This is the sound level of a notionally steady sound having the same energy as the fluctuating sound over a specified measurement period, T.

$L_{A10,T}$

The A-weighted sound level exceeded for 10% of the specified measurement period, T.

L_{Amax}

The highest short duration A-weighted sound level recorded during a noise event.

L_{den}

The Lden (Day Evening Night Sound Level) or CNEL (Community Noise Equivalent Level) is the average sound level over a 24 hour period, with a penalty of 5 dB added for the evening hours or 19:00 to 22:00, and a penalty of 10 dB added for the nighttime hours of 22:00 to 07:00.

L_{night}

The A-weighted, Leq (equivalent noise level) over the 8 hour night period of 23:00 to 07:00 hours, also known as the night noise indicator.

L_{A90}

The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 % of a given time interval, T.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources, there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.

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Appendix B: Site Drawings

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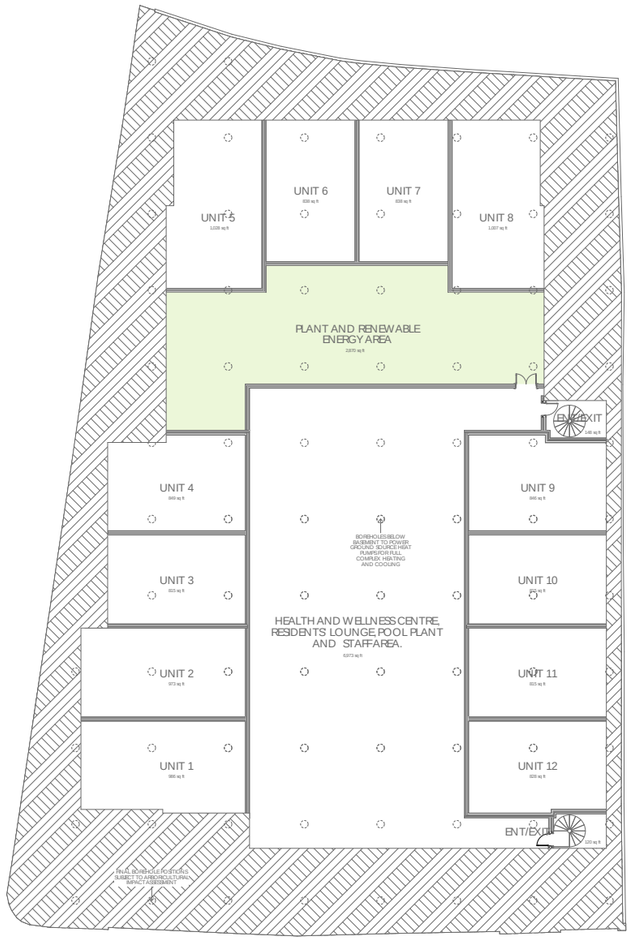

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AVENUE GARDENS

TITLE:
PROPOSED BASEMENT PLAN - 12 UNIT SCHEME

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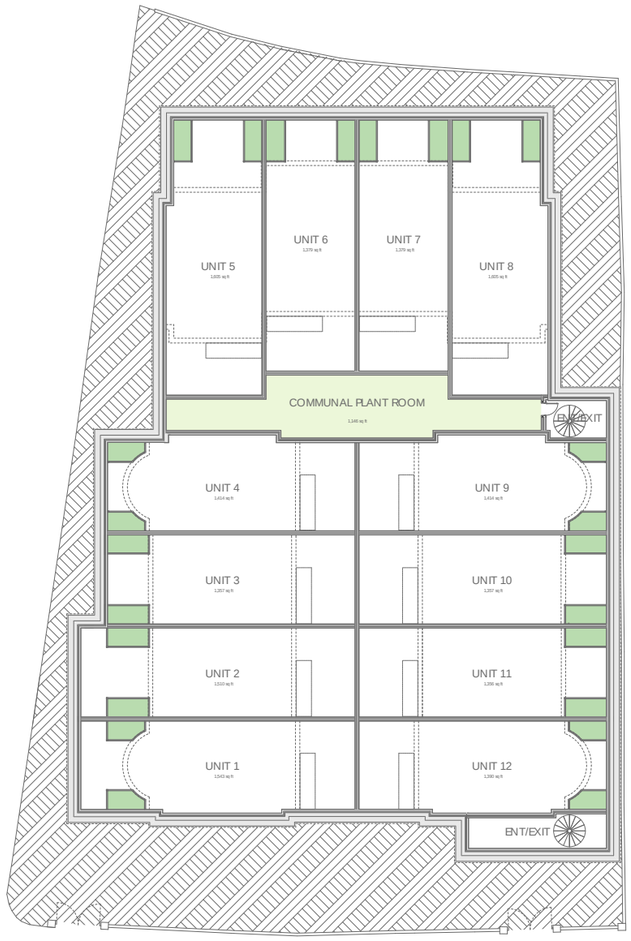

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PROPOSED LOWER GROUND FLOOR PLAN - 12 UNIT SCHEME

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PROPOSED FIRST FLOOR PLAN - 12 UNIT SCHEME

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PROPOSED ROOF PLAN - 12 UNIT SCHEME

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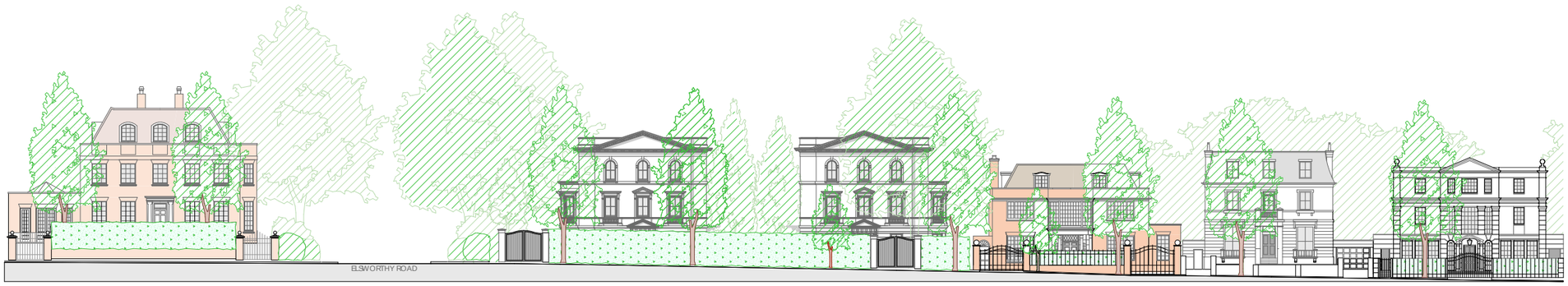

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PROPOSED AVENUE ROAD STREET ELEVATION

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PROPOSED AVENUE ROAD
STREET SCENE ELEVATION
- 12 UNIT SCHEME

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PROPOSED ELSWORTHY ROAD STREET SCENE ELEVATION

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PROPOSED ELSWORTHY ROAD STREET SCENE ELEVATION - 12 UNIT SCHEME

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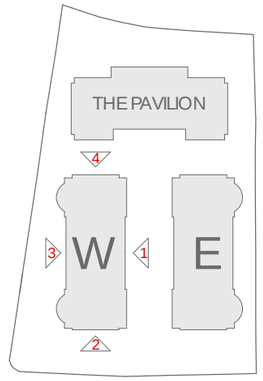
ELEVATION 1

ELEVATION 2



KEY

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ELEVATION 3

ELEVATION 4

WEST BUILDING 1:100

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PROJECT:
AVENUE GARDENS

TITLE:
WEST BUILDING
PROPOSED ELEVATIONS
- 12 UNIT SCHEME

Date: APRIL 2022

Scale: 1:100 @ A1 Drawn: SDK

DRAWING NUMBER: 208-272A

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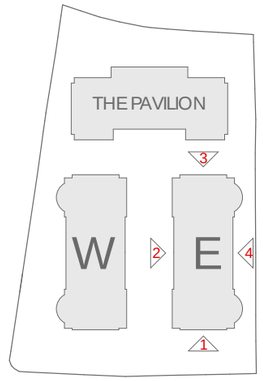
ELEVATION 1

ELEVATION 2

ELEVATION 3

ELEVATION 4

EAST BUILDING 1:100



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EAST BUILDING
PROPOSED ELEVATIONS
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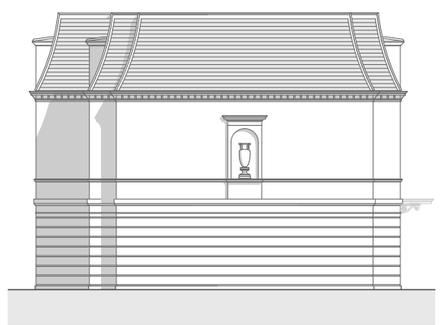

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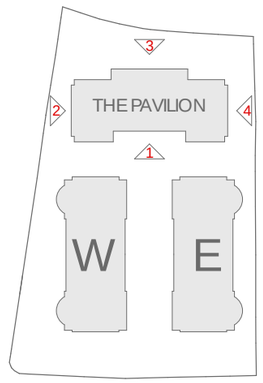

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PLANNING

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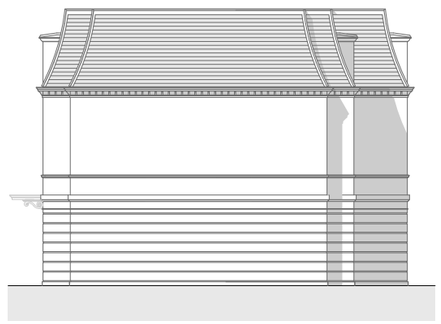

ELEVATION 4

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PROJECT:
AVENUE GARDENS

TITLE:
THE PAVILION
PROPOSED ELEVATIONS
- 12 UNIT SCHEME

Date: APRIL 2022

Scale: 1:100 @ A1 Drawn: SDK

DRAWING NUMBER: 208-274A

THE PAVILION 1:100

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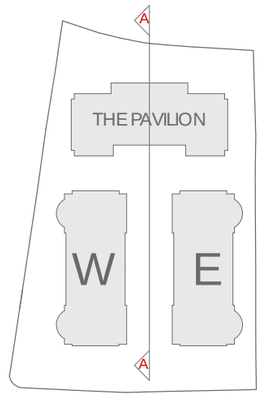

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PROPOSED SECTION A - A 1:200

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PROPOSED SECTION A - A
- 12 UNIT SCHEME

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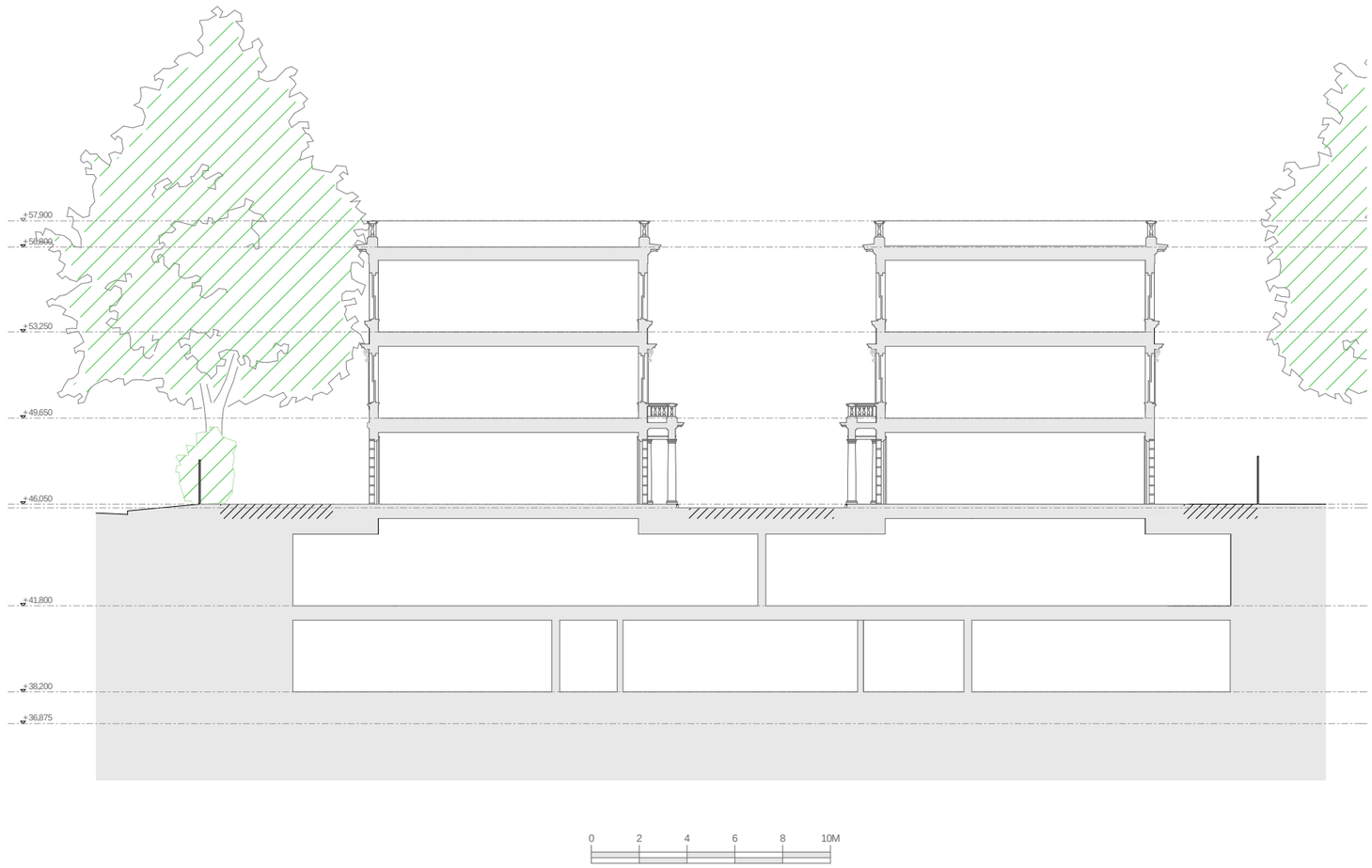

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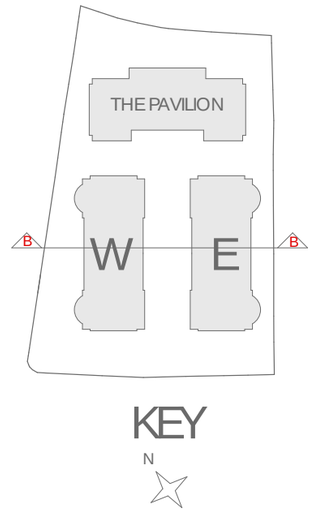

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TITLE:
PROPOSED SECTION B - B
- 12 UNIT SCHEME

Date: APRIL 2022
Scale: 1:100 @ A1 Drawn: SDK

DRAWING NUMBER: 208-291A

Appendix C: Proposed Mitigation

Acoustic Glass Options

For environments where a sound barrier would be beneficial, we advise specifying acoustic glass.

What level of noise reduction is required?

25 dB	Low to normal speech can be overheard and interpreted easily
30 dB	Standard to loud speech can be overheard and discriminated easily
35 dB	Loud speech can be distinguished and interpreted under normal background levels
40 dB	Loud speech can be heard but not easily distinguished
45 dB	Loud speech can be heard but not distinguished
50 dB	Very loud speech or shouting can be heard but not distinguished

Overview of single skin glass types to be used to achieve particular dB ratings

32 dB	6 mm toughened
35 dB	6.8 mm acoustic laminate 10.8 mm PVB laminated
40 dB	14.8 mm acoustic laminate
45 dB	See double glazed skin options
50 dB	See double glazed skin options

Overview of double skin options to be used to achieve particular dB ratings

	Gap between panes					
Thickness of pane	30mm	50mm	75mm	100mm	200mm	250mm
6mm	32 dB	33 dB	35 dB	36 dB	39 dB	40 dB
8mm	34 dB	35 dB	37 dB	39 dB	42 dB	44 dB
10mm	36 dB	37 dB	39 dB	41 dB	45 dB	46 dB
12mm	38 dB	40 dB	42 dB	44 dB	48 dB	49 dB

(Sound reduction can be achieved when both pieces of glass are of the same thickness. dB rating varies according to air gap between the two panels.)

Products, Processes and Applications

Optional features
- Sound reduction
- Fire resistant
- Low iron • Mirrored
- Tinted
- Satin finish • Ritec coating
- ESG Switchable Privacy Glass

Processes
- Drilling • Sandblasting
- Notching • Cut outs
- Toughening
- Corner mitering
- Polishing • Laminating

Applications
- External walkways
- Internal corridors
- Meeting rooms
- Office space
- Privacy screening
- Shop fittings
- Smoking areas

Quality Standards

Toughened Glass: manufactured in accordance with the latest standard 'Glass in building – thermal toughened sodalime silicate safety glass BS EN 12150 : (Parts 1 & 2) : 2000, incorporating 'Glass in building – impact test BS EN 12600 : 2002' and 'Glass in building – four point bending test BS EN 1288-3 :2000'.

Laminating: conducted in accordance with 'Glass in building – Laminated glass and laminated safety glass – BS EN 12543 (Parts 1-6:1998 and BS EN 14449:2005). The EVA interlayer is manufactured in accordance with 'UNI EN ISO 12543-4:2000' and is certified by the manufacturer.

Safety: ESG TuffLam satisfies all safety glazing requirements of BS 6262 : Part 4 : Safety related to human impact, Regulation 14 of the Health and Safety at Work Act as well as Approved Document N of the Building Regulations. It is particularly suited to areas where enhanced performance is required.

Essex Safety Glass Ltd, Units 1-3 Moss Road, Witham, Essex CM8 3UQ
Tel: 01376 520061 **Fax:** 01376 521176 **Web:** www.esguk.co.uk **Email:** sales@esguk.co.uk

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2500EA / 5000EA

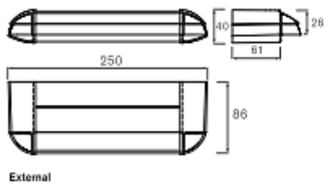
Acoustic window ventilator

Physical specification

All measurements in millimetres unless otherwise indicated

Materials: Aluminium Alloy

2500EA Acoustic



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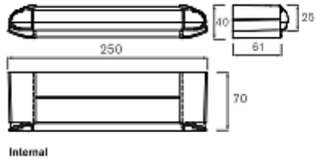
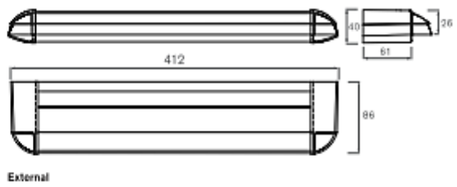


Internal

5000EA Acoustic



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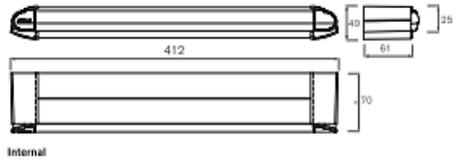


Internal

Installation

1. Prepare the window frame with the correct slot sizes.

2. Use the self tapping screws to install the acoustic parts.

3. Use standard pyramid vent screws to install the canopy and vent.

2500EA Acoustic slot size

Height: 13mm

Length
192mm

5000EA Acoustic slot size

Height: 13mm

Length	Central gap	Length
172mm	10mm	172mm

The best of both worlds... achieves Building Regulations' EA requirements along with fantastic acoustic performances up to 45dB(A)

Features and benefits

- Smallest acoustic window vents providing 2500mm² or 5000mm² equivalent area ventilation on the market
- Achieves the best acoustic performance for window ventilators available within the UK – up to 45dB(A)
- A simple, yet adaptable, solution to meet required specification/ Building Regulation requirements incorporating both high levels of equivalent area ventilation and acoustic noise reduction
- Modularity of acoustic sets provides flexibility for installation and acoustic performance
- Aesthetically pleasing design which is easy to open and control by the homeowner
- Excellent airtightness performance with upward air deflection to reduce the risk of draughts
- May require add on section in some window installations

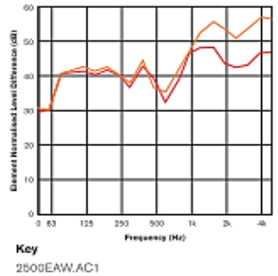
Sets comprise of:

1 EA vent + 1 external acoustic module – providing noise reduction with discreet internal aesthetics.

1 EA vent + 2 acoustic modules (for internal and external install) – providing maximum noise reduction.

Performance

2500EA acoustic performance

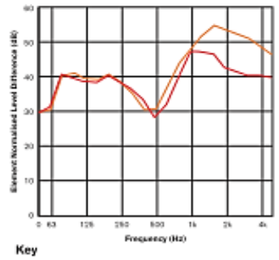


Key

2500EAW.AC1

2500EAW.AC2

5000EA acoustic performance



Key

5000EAW.AC1

5000EAW.AC2

Models, control options and key data

			Acoustic performance				
Product code	**Description**	**Controls**	**Dn,e,w**	**Dn,e,w (C)**	**Dn,e,w (Ctr)**	**Equivalent area mm²**	**Colour**
2500EAW.AC1 *	Vent + 1 Acoustic External Module	Front	42dB(A)	41dB	40dB	2670	White
2500EAW.AC2 *	Vent + 2 Acoustic Modules	Front	45dB(A)	43dB	42dB	2670	White
5000EAW.AC1 *	Vent + 1 Acoustic External Module	Front	39dB(A)	38dB	37dB	5350	White
5000EAW.AC2 *	Vent + 2 Acoustic Modules	Front	42dB(A)	40dB	38dB	5350	White

* Pricing is variable depending on quantity ordered - please call for details

Appendix D: Certificates

Certificate of Calibration Class 1 BSWA-IV-C021-09-P0274

CERTIFICATE OF CALIBRATION

Class 1

京制01020122号

TYPE: BSWA 308 S/N: 580273

1. APPEARANCE Pass

2. CALIBRATION (sound)

Calibrator: BK4231 Sound Level: 93.8 dB Frequency: 1000 Hz

Microphone Model / SN: MP231 /580307

Filter	Nominal[dB]	Indication[dB]	Error[dB]
A	93.8	93.8	0.0
C	93.8	93.8	0.0
Z	93.8	93.8	0.0

3. FREQUENCY WEIGHTINGS (sound & electrical)

Z-weighting (sound & electrical); A/C-weighting (electrical, plus Z-weighting error)

Frequency [Hz]	Attenuation[dB] A	C	Z
10	-69.0	-14.3	0.0
20	-50.4	-6.2	0.0
31.5	-39.5	-3.1	0.0
63	-26.2	-0.8	0.0
125	-16.1	-0.2	0.0
250	-8.7	0.0	0.0
500	-3.3	0.0	0.0
1000	0.2	0.2	0.2
2000	1.6	0.2	0.4
4000	1.3	-0.5	0.4
8000	-0.7	-2.6	0.9
16000	-11.7	-13.8	0.9
20000	-25.5	-27.5	-0.8

4. LEVEL LINEARITY (electrical)

Filter=A; Fsin=1kHz

Nominal[dB]	20	21	22	23	24	25	30	40	50	60	70	80	89
Indication[dB]	20.0	21.0	22.0	23.0	24.0	25.0	30.0	40.0	50.0	60.0	70.0	80.0	89.0
Error[dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal[dB]	90	91	92	93	94	95	96	97	98	99	100	110	120
Indication[dB]	90.0	91.0	92.0	93.0	94.0	95.0	96.0	97.0	98.0	99.0	100.0	110.0	120.0
Error[dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal[dB]	129	130	131	132	133	134							
Indication[dB]	129.0	130.0	131.0	132.0	133.0	134.0							
Error[dB]	0.0	0.0	0.0	0.0	0.0	0.0							

5. SELF-GENERATED NOISE LEVEL (sound)

Measured in anechoic chamber with microphone; Backlight Off; Electrical noise please refer user manual

Filter	A	C	Z
Indication[dB]	~ 18	~ 23	~ 31

6. TIME WEIGHTINGS (electrical)

Filter=A; Fsin=4kHz; Steady Level=132dBA

Detector	F	S
Rate of Decay[dB/s]	34.7	4.3
Delta of F/S[dB]	0.0	

7. TONEBURST RESPONSE (electrical)

Filter=A; Fsin=4kHz

Steady Level L_A= 132.0 dB

Tone Burst Duration [ms]	Response[dB] $L_{AFmax}-L_A$	$L_{ASmax}-L_A$	$L_{AE}-L_A$
500	-0.1	-4.1	-3.1
200	-1.0	-7.5	-7.0
50	-4.9	-13.2	-13.1
10	-11.2	-20.1	-20.1

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Certificate of Calibration Class 1 BSWA-IV-C021-09-P0274

8. REPEATED TONEBURST RESPONSE (electrical)

Filter=A; Fsin=4kHz

Steady Level L_A= 132.0 dB

Tone Burst Duration [ms]	Tone Burst Interval [ms]	Response[dB] $L_{Aeq}-L_A$
500	2000	-7.0
200	800	-7.0
50	200	-7.0
10	40	-7.0

9. OVERLOAD INDICATION (electrical)

Filter=A; Fsin=1000Hz

Nominal[dB]	Error[dB] Steady	Positive Half Cycle	Negative Half Cycle	Delta of Positive and Negative[dB]
134.1	0.1	0.1	0.1	0.0

10. C-WEIGHTED PEAK SOUND LEVEL (electrical)

Filter=C; Peak; Fsin=500Hz

Steady Signal Level	$(L_{Cpeak}-L_C)$[dB] Single Cycle	Positive Half Cycle	Negative Half Cycle
4dB Below Top	3.6	2.3	2.3
Middle	3.6	2.3	2.3
1dB Above Floor	3.7	2.6	2.3

CONDITIONS		
Temperature	18	℃
Relative Humidity	36	%
Static Pressure	101.4	kPa

TEST EQUIPMENT

Item	Manufacturer	Model	S/N	Description
1	B&K	4231	3008422	Sound Calibrator
2	Agilent	33220A	MY44036043	Signal Generator
3	Agilent	34401A	SG47000236	Digital Multimeter
4	NJZY	ZY5142D	0425	Step Attenuator
5	B&K	4180	2412874	Standard Microphone

TEST PROCEDURES IN ACCORDANCE WITH IEC 61672-3:2013

Class 1 Performance Verified. Test Qualified.

DATE: 2021 Y 2M 1 D TEST (sig.): JD APVD (sig.): QC 05

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Calibration Certificate

With UKAS Results

Issued By: Castle Group Ltd

Date Of Issue : 03/08/21
Certificate No : 550282/79553

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Castle

All instruments are tested to check compliance with particular specifications. These may be an appropriate British or International Standard, or if the instrument was not originally designed to meet any such Standard, or when the instrument was originally manufactured a relevant Standard did not exist, the instrument will be tested to the manufacturer's original specification.

The measurements reported in the attached certificate were carried out using equipment whose values are traceable to National Standards and verified by equipment traceable whose values are traceable to a National Standards Laboratory. The applicable reference for the calibration of the test equipment is shown below.

The performance of the instrument was determined by comparison with the manufacturers' specification as found in the instrument handbook or other technical publication. Any significant uncertainty of the measuring system will also be included.

The instrument was allowed to stabilise for a period of 30 minutes prior to measurements made.

The ambient temperature and relative humidity throughout verification were 24 ±2 °C and 40% RH respectively.

Instruments used to carry out this calibration are as follows: -
Multifunction Calibrator 4226 Serial No: 3290080
Applicable Reference: CDK2101873.
Sound Level Meter 2260 Serial No: 1875415
Applicable Reference: 08277

Subject of Calibration: CA111
Instrument: Sound Level Calibrator
Serial No: 550282

Supplied Barometer Data (If applicable)
Barometer Type: –
Barometer Serial No: –

UKAS Reference: 0653
UKAS Certificate: UCRT21/1913

Basis Of Test: Compliance to Manufacturer's Original Specification

Checked By:
M. Mann
(Approved Signatory)

Date of Calibration: 23 Jul 2021

Date of Verification: 02 Aug 2021

Client: Aval Consulting Group Ltd
Address: Unit 33 Newhaven Enterprise Centre
Denton Island
Newhaven
Sussex
BN9 9BA

Client Reference:

– Indicates item or information not available

Castle Group Ltd
Salter Road, Scarborough Business Park, Scarborough, North Yorkshire YO11 3UZ United Kingdom
t: +44 (0)1723 584250 **f:** +44 (0)1723 583728 **e:** sales@castlegroup.co.uk
www.castlegroup.co.uk