

APPENDIX 30

NDV Plan 21577.NMP.01

156-164 Gray's Inn Road & Panther House, London



Noise, Vibration & Dust
Management Plan
Report 21577.NMP.01

Erith
Erith House
Queen Street
Erith
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1.0 INTRODUCTION

KP Acoustics has been commissioned by Erith Group Ltd, Erith House, Queen Street, Erith DA8 1RP, to compile a noise, vibration and dust management plan for the demolition of the existing building at 156-164 Gray's Inn Road & Panther House, London.

This report presents all information gathered from relevant documentation and outlines steps that should be adopted regarding noise, vibration and dust in order to maintain the amenity of all sensitive receivers adjacent to the site.

2.0 SITE DESCRIPTION

The buildings to be demolished consist of adjoining commercial local stores, café shop and 2 flats respectively located at 164, 162, 160 and 156 Gray's Inn Road as well as Tram Shed building and Panther House to the West. Most sensitive receivers have been identified as adjoining Dawlish Mansions, Dulverton Mansions, Mount Pleasant Studios & Holsworthy Square.

A site plan with the location of the demolition site and buildings are shown in the following Figure 2.1.

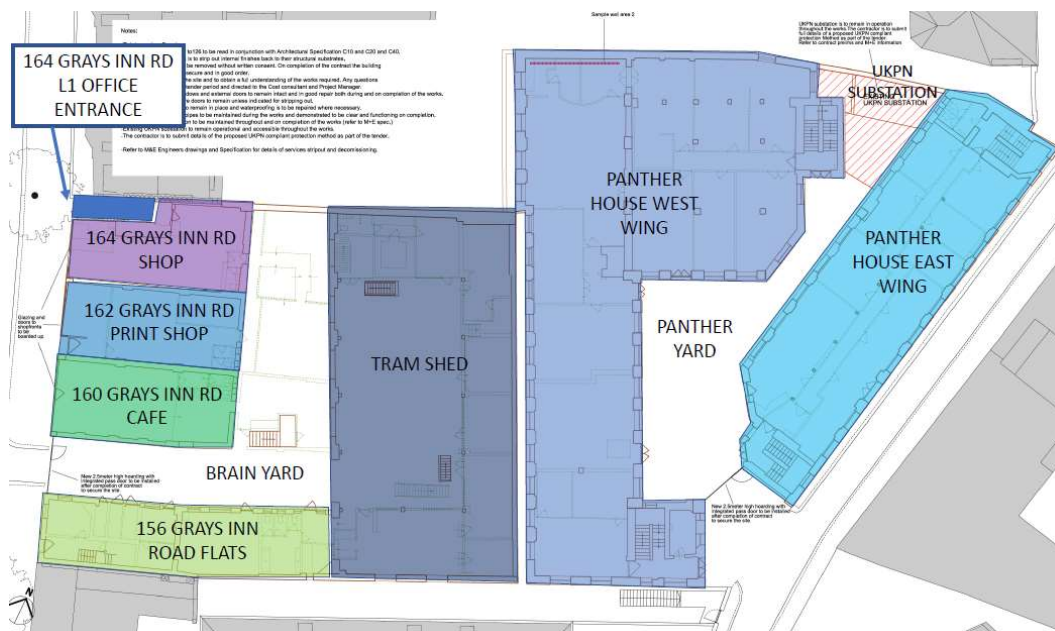


Figure 2.1. Demolition site and buildings

3.0 WORK PROGRAMME AND EQUIPMENT

An associated activities and equipment used for each phase is presented in Appendix A.

It is understood that a typical working day would span from 8:00 to 18:00 from Monday to Friday. Periods of “noisy works” would occur only between 8am-10am, 12pm-2pm and 4pm-6pm.

All resultant noise levels have been calculated taking into consideration for all of the above-mentioned information in reference to a 10-hour working day.

4.0 NOISE ELEMENTS

4.1 Noise

The effects of noise on all neighbouring premises can vary significantly and complicated to predict. In extreme cases they would be likely to include a sensation of loudness, potential interference with speech communication, disturbance of work or leisure, and disturbance of sleep. A complicating factor is that, in any neighbourhood, some individuals will be more sensitive to noise than others.

In order to assess instantaneous noise levels at any time, the instantaneous A-weighted sound pressure level, L_{pA} can be used. This will give an indication of the loudness and degree of speech interference from noise.

The most commonly used descriptor however, is the equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$. The time period involved should always be stated as the figure is a mathematical average of the all individual contributions of various sources during the reference period T. When assessing noise from individual events that may not always be present during a longer period L_{Aeq} , it can be useful to use a short reference period (e.g. 5min). As an alternative descriptor, the maximum sound pressure level, $L_{A(max)}$, or the one percentile level, L_{A01} , may be used.

5.0 CRITERIA FOR NOISE

The following factors are typically used to assess the likelihood of disturbance caused by noise generating activities:

5.1 Site Location

The relative location of a site in relation to noise or vibration sensitive receivers will be a determining factor. The closer a site is to sensitive premises, the higher the likelihood of complaints due to noise and vibration emanating from the site.

5.2 Duration of Site Operations

In general, the longer the duration of all on-site operations, the more likely it is that noise from the site will potentially be an issue. In this respect, good public relations are very important. Local residents may be willing to accept a new status of noise and vibration if they know and understand the source and the duration of all operations. It is then important that site operations are carried out according to a stated schedule.

5.3 Hours of Work

For any noise sensitive premises some periods of the day will be more sensitive than others. For example, levels of noise that would be intruding within a dwelling during the day would not be an issue during the night. For dwellings, times of site operation outside normal weekday working hours will need special consideration.

Noise control targets for the evening period in such cases will need to be stricter than those for the daytime and, when noise limits are set, the evening limit may have to be as low as 10 dB(A) below the daytime limit. Very strict noise control targets should be applied to any site which is to operate at night.

5.4 Attitude to the Site Operator

It is well established that “one’s music is somebody else’s noise” and vice-versa. People's attitudes to noise are always influenced by their attitudes to the noise source itself.

Noise and vibration generated from a site will tend to be accepted more willingly by local residents if they consider that the site operator is adopting best practicable means to avoid unnecessary noise.

5.5 Noise Characteristics

In many cases the identification of a particular noise source will affect people’s judgement and appreciation of the signal itself. For example, the presence of a high-amplitude impulsive noise, accompanied by a vibration sensation would render the overall assessment slightly

more onerous as “penalties” would need to be employed. These would comprise weightings to signals (e.g. 5dB(A) to a highly tonal, or intermittent noise source).

With regards to noise levels, BS5228: 2009 *“Code of Practice for noise and vibration control on construction and open sites”* dictates the following:

“Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. The noise can be measured with a simple sound level meter, as we hear it, in A-weighted decibels (dB(A))- see note below. Noise levels, between say 7.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- 70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;
- 75 decibels (dBA) in urban areas near main roads in heavy industrial areas.

Based on the above, the daily noise limit from all on-site operations should therefore not exceed 75dB(A) at the closest noise sensitive receiver.

With regards to noise levels, it is understood that noise levels thresholds for demolition and construction activities noise emissions have been agreed with the Council and these have been based on the guidelines of Control of Pollution 1974 – Section 61 – Appendix 1. The agreed thresholds are shown in Table 5.1

5.6 Criteria for Vibration

This section presents an assessment of the potential risk regarding vibration generated by the construction works detailed in this document, and the associated adverse effects on the surrounding area.

Guidance Vibration Limits

Estimated vibration levels have been evaluated against guidance presented in relevant British Standards in order to assess the likelihood of both structural damage to neighbouring buildings and the human response of the occupants.

Building Damage

According to BS7385-2:1993 for residential or light commercial buildings, the threshold for the onset of potential cosmetic damage (i.e. formation of hairline cracks on drywall surfaces or the growth of existing cracks in plaster or drywall surfaces) to buildings varies with frequency. This ranges from a P.P.V of 15 mm/s at 4Hz, rising to 20mm/s at 15 Hz, and to 50 mm/s at and

above 40Hz for transient vibration. BS7385 also states that the probability of building damage tends towards zero at 12.5 mm/s peak component particle velocity.

Line (see Figure 6.1)	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4Hz to 15Hz	15Hz and above
1	Reinforced or framed structures. Industrial and heavy commercial buildings	50mm/s at 4Hz and above	
2	Unreinforced or light framed structures. Residential or light commercial type buildings	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above
Note 1: Values referred to are at the base of the building			
Note 2: For Line 2, at frequencies below 4Hz, a maximum displacement of 0.6mm (zero to peak) should not be exceeded			

Table 5.2 Transient vibration guide values for cosmetic damage (from BS7385-2:1993)

Subjective Response

According to guidance provided in BS5228-2:2009+A1:2014, the threshold of vibration perceptible to humans lies around 0.14 to 0.3 mm/s. The Standard also indicates that a P.P.Vs of around 1 mm/s in residential environments, as a first estimate, are likely to cause complaints, but can be tolerable provided prior warning and explanation of the works is given to residents; whilst, vibration magnitudes of around 10 mm/s are likely to be intolerable for more than a very brief exposure to this level.

Based on the above, vibration threshold levels are outlined below:

- 1 mm/s P.P.V. Trigger levels
- 3 mm/s P.P.V. Action level

5.7 Criteria for Dust

The supplementary planning guidance (SPG) of Control of Dust and Emissions during Construction and Demolition from July 2014 included in London Plan 2011 Implementation Framework, states:

“A trigger level of 250 ug m⁻³ is set as a 15-minute mean for concentrations of PM10 close to construction sites. This trigger level was devised from measurement near a construction site in London using TEOM measurements with a multiplier of 1.3.

The multiplier of 1.3 was designed to allow for the loss of volatile PM from the TEOM which would not be an issue with construction dust. The trigger level of 250 ug m-3 would approximate to 200 ug m-3 as a 15 minute mean without the multiplier.”

6.0 NOISE, VIBRATION & DUST MANAGEMENT PLAN

Deviation from approved method statements will be permitted only with prior approval from relevant parties. This will be facilitated by formal review before any deviation is undertaken.

Site Personnel

All operatives on site will be trained to ensure that noise minimisation and best practicable means (BPM) are implemented at all times. Works will be checked regularly by Site Engineers to ensure that BPM are being undertaken and where necessary corrective actions implemented.

Employees must show consideration to the sensitive receptors, including residential neighbours, and must not generate unnecessary noise when walking to and from the site, or when leaving and arriving at work.

General Noise, Vibration and Dust Control Measures

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 BS5228-1:2009+A1:2014, Section 8 will also be implemented.

Recommended noise and vibration control measures include:

- 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 specialise 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 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 [3] 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 in order to prevent vehicles queuing outside site.
- All materials will be handled in a manner that minimises noise.

Recommended dust control measures include:

General advice for all construction and demolition sites, as recommended within the Mayor's SPG for Control of Dust and Emissions during Construction and Demolition include the following:

- Dust generated by the construction process will be suppressed via a fine directional spray jet of water aimed at the source, and any material to be transported to be wetted down prior to transit.
- Skips and powder containers to be covered when not in use.
- Cutting equipment to be used with water suppressant and/or suitable extract system.
- No burning of waste wood or other materials on site.
- The stockpiling of dust generating materials on site will be minimised.
- Wet brushing techniques will be used for cleaning.
- Regular checks for visual observation of dust and soiling within 50m of site.
- Screening to be erected surrounding site boundaries where possible.

Regular monitoring may be necessary during the construction operations on site, in order to ensure that measured pollutants do not exceed safe levels, in positions agreed with the Local Authority. Furthermore, according to IAQM guidelines, it would be necessary to inspect the area in the local vicinity of the construction works to ensure that surfaces are not soiled by dust emissions from the site, with suitable cleaning offered if necessary. In order to minimise this, it would be recommended that screens are erected around the site boundaries as appropriate.

7.0 NOISE CALCULATION RESULTS & ASSESSMENT

Overview of the noise programme is assumed to be as follows:

1. Site set up & Enabling Works – Typical day between 21st April and 5th May 2021.
2. Scaffolding – Typical day between 6th May and 29th June 2021.
3. Demolition – Typical day between 20th May to 14th August 2021.
4. Installing Façade Retention – Typical day between 04th May and 15th July 2021..
5. Groundworks (Pile Enabling) – Typical day between 13th August and 26th August 2021
6. Groundworks (Piling) – Typical day between 06th September and 01st October 2021.
7. Groundworks (Excavation) - Typical day between 04th October 2021 and 18th March 2021
8. Steelworks - Typical day between 1st February 2021 to 04th July 2022.

Typical noise data has been sourced from the relevant manufacturers where possible, and levels stated in BS5228 have been used where no manufacturer's data is available.

Activity	Predicted Daily Airborne Noise Level, dB L _{Aeq,10h} at the nearest sensitive façade: 154-164 Gray's Inn Road, London
1	72
2	74
3	74
4	75
5	76
6	75
7	75
8	75

Table 7.1 Predicted noise levels of site operations in the worst case-scenario (154 Gray's Inn Road, London)

Please note that all calculations as shown above and in Appendix B have been calculated using the method stipulated in BS5228-1:2009+A1:2014. All resultant noise levels have been calculated taking into account the operating hours of the activity/operation/machinery in reference to 10 hours working day. An exceedance of 1dB is considered negligible.

As shown in Appendix B and Table 7.1, transmission of noise to the nearest building windows due to the works on site would meet the noise emissions criterion outlined in BS5228-1/2:2009+A1:2014.

Please note that noisy operations should be undertaken internally where appropriate. If this is not practical, a portable acoustic screen should be employed in order to reduce transmission to the adjacent buildings.

When using hand breakers/saws and drills at a distance of approximately $\leq 8\text{m}$ from the closest residential window (e.g. at the roof of 156 Gray's Inn Road), we recommend that a maximum on time of 2 hours is enforced. For these works, acoustic barriers should also be used that provide 10dB attenuation (i.e. echo-barrier or similar).

Tipper Lorries delivering pile matting should only be in operation for 2 hours a day and piling should only be in operation for 7 hours in a day.

When breaking foundations, the excavator with breaker should only be in operation for 3 hours per day and acoustic barriers should also be used that provide 10dB attenuation (i.e. echo-barrier or similar).

As a proactive approach to controlling noisy site operations, it would be recommended that noise monitoring is undertaken throughout the works to alert site staff when noise emissions criteria are being approached in order to reduce operations accordingly.

8.0 CONCLUSION

KP Acoustics has been commissioned to undertake an assessment of noise, vibration and dust levels from all the site operations at 156-164 Gray's Inn Road & Panther House, London in order to provide initial advice on the control of noise, vibration and dust on site.

Note that due to the nature of construction/demolition noise, levels could rise above the threshold stipulated, and therefore continuous noise, vibration and dust monitoring should be undertaken to ensure operational periods of site activity are controlled.

Guidelines are provided to ensure that any disturbance caused by noise, vibration and dust will be minimised as much as is practically possible.

Appendix A



SCHEDULE OF WORKS AND EQUIPMENT

Phase	Main Phase	Construction Activity	Anticipated Start Date	Anticipated End Date	Equipment Used
1	Site Setup & Enabling Works	Building Hoarding	21/04/2021	05/05/2021	Circular saw, impact driver, hammer drill and HIAB.
2	Scaffolding	Scaffolding being Erected	06/05/2021	29/06/2021	Impact wrench and hammer drill.
3	Demolition	Demolition	20/05/2021	14/08/2021	Recip saw, Hilti TE1000, circular saw, hammer drill, 20T excavator, 3T Skid steer, Husqvarna DXR 300, Track saw 8-20iQ and Diamond core drill MD1.
4	Temporary Works	Installing Façade Retention	04/05/2021	15/07/2021	9" grinder, SDS max, HIAB and 20T excavator.
5	Groundworks	Piling Enabling	13/08/2021	26/08/2021	Tipper lorries, 20T excavator, TV1300 Roller and Rigid lorries.
6	Groundworks	Piling	06/09/2021	01/10/2021	Piling rig, Concrete pump SP500, Crawler crane and 20T excavator with breaker.
7	Groundworks	Excavation	04/10/2021	18/03/2022	20T excavator
8	Steelworks		01/02/2021	04/07/2022	Concrete pump SP500, 20T excavator with pile cracker, 8m3 readymix lorries, vibrating poker and circular saw, 9" grinder.

APPENDIX B

156-164 Gray's Inn Road & Panther House, London WC1X 8ED

BS5228 CALCULATIONS OF ACTIVITY NOISE

Source: Demolition/Construction works 156-164 Gray's Inn Road, London	Frequency, Hz								dB(A)
Closest Receivers: Residential window of 154 Gray's Inn Road	63	125	250	500	1k	2k	4k	8k	
Site Setup & Enabling works: Typical day between 21st April and 5th May 2021									
Building Hoarding									
Handheld circular skill saw: Makita HS7601 110V (Sound Pressure Level at 10m)	69	75	77	74	71	70	74	69	67
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (10% of 10h)	-10	-10	-10	-10	-10	-10	-10	-10	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	57	63	65	62	59	58	62	57	
Cordless Drill (Sound Pressure Level at 10m)	63	65	65	66	65	69	64	61	64
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	54	56	56	57	56	60	55	52	
Drill Makita(Sound Pressure Level at 10m)	83	83	81	74	73	76	78	77	69
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (5% of 10h)	-13	-13	-13	-13	-13	-13	-13	-13	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	68	68	66	59	58	61	63	62	
Delivery vehicles (Sound Pressure Level at 10m)	68	67	63	62	62	61	54	47	63
Distance correction (min. 5m)	6	6	6	6	6	6	6	6	
Correction due to on- time on (10% of 10h)	-10	-10	-10	-10	-10	-10	-10	-10	
Total	64	63	59	58	58	57	50	43	
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	70	70	69	65	64	65	66	64	72
Scaffolding: Typical day between 6th May 2021 and 29 June 2021									
Scaffolding being erected									
Cordless Drill (Sound Pressure Level at 10m)	63	65	65	66	65	69	64	61	69
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (70% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	59	61	61	62	61	65	60	57	
Drill Makita(Sound Pressure Level at 10m)	83	83	81	74	73	76	78	77	72
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (10% of 10h)	-10	-10	-10	-10	-10	-10	-10	-10	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	71	71	69	62	61	64	66	65	
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	71	71	70	65	64	68	67	66	74

APPENDIX B (cont'd)

156-164 Gray's Inn Road & Panther House, London WC1X 8ED

BS5228 CALCULATIONS OF ACTIVITY NOISE

Source: Demolition/Construction works 156-164 Gray's Inn Road, London	Frequency, Hz								dB(A)
Closest Receivers: Residential window of 154 Gray's Inn Road	63	125	250	500	1k	2k	4k	8k	
Demolition: Typical day between 20th May and 14th August 2021									
Hand held breaker Hilti (Sound Pressure Level at 10m)	83	83	81	74	73	76	78	77	
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Attenuation provided by directivity and recommended portable acoustic screen	-10	-10	-10	-10	-10	-10	-10	-10	
Total	68	68	66	59	58	61	63	62	69
Handheld saw (Sound Pressure Level at 10m)	69	75	77	74	71	70	74	69	
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	60	66	68	65	62	61	65	60	70
Drill Makita(Sound Pressure Level at 10m)	83	83	81	74	73	76	78	77	
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Attenuation provided by directivity and recommended portable acoustic screen	-10	-10	-10	-10	-10	-10	-10	-10	
Total	68	68	66	59	58	61	63	62	69
20T Tracked Excavator (Sound Pressure Level at 10m)	80	83	76	73	72	70	69	66	
Distance correction (min. 8m)	2	2	2	2	2	2	2	2	
Correction due to on- time on (50% of 10h)	-3	-3	-3	-3	-3	-3	-3	-3	
Attenuation provided by the building envelope	-7	-9	-12	-14	-17	-20	-23	-26	
Total	72	73	63	58	54	49	45	39	62
Husqvarna 300 with Breaker (Sound Pressure Level at 10m)	79	75	73	74	77	77	75	70	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by the building envelope	-7	-9	-12	-14	-17	-20	-23	-26	
Total	70	64	59	58	58	55	50	42	62
3T Skid Steer (Sound Pressure Level at 10m)	72	63	67	67	63	62	56	50	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by the building envelope	-7	-9	-12	-14	-17	-20	-23	-26	
Total	63	52	53	51	44	40	31	22	51
Circular wall saw (Sound Pressure Level at 10m)	85	74	72	70	72	76	82	77	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by the building envelope	-4	-6	-8	-10	-13	-16	-19	-22	
Total	79	66	62	58	57	58	61	53	66
Diamond Core Drill (Sound Pressure Level at 10m)	75	74	75	72	74	75	80	80	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by the building envelope	-4	-6	-8	-10	-13	-16	-19	-22	
Total	69	66	65	60	59	57	59	56	66
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	76	76	72	68	66	66	69	66	74

APPENDIX B (cont'd)

156-164 Gray's Inn Road & Panther House, London WC1X 8ED

BS5228 CALCULATIONS OF ACTIVITY NOISE

Source: Demolition/Construction works 156-164 Gray's Inn Road, London	Frequency, Hz								
Closest Receivers: Residential window of 154 Gray's Inn Road	63	125	250	500	1k	2k	4k	8k	dB(A)
Temporary Works (Installing Façade Retention): Typical day between 04th May and 15th July 2021									
9" Grinder (Sound Pressure Level at 10m)	73	67	70	68	73	78	78	77	
Distance correction (min. 13m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (10% of 10h)	-10	-10	-10	-10	-10	-10	-10	-10	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	57	51	54	52	57	62	62	61	67
Cordless Drill (Sound Pressure Level at 10m)	63	65	65	66	65	69	64	61	
Distance correction (min. 13m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Total	54	56	56	57	56	60	55	52	64
Lorry With Lifting Boom (Sound Pressure Level at 10m)	81	78	76	74	72	69	64	56	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (40% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5	
Total	74	71	69	67	65	62	57	49	70
20T Tracked Excavator (Sound Pressure Level at 10m)	83	79	78	76	74	71	65	60	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (30% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5	
Total	76	72	71	69	67	64	58	53	72
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	78	75	73	72	70	68	65	62	75
Groundworks (Pile Enabling): typical day between 13th August and 26 August 2021									
Tipper Lorries (Sound Pressure Level at 10m)	88	82	74	74	74	73	70	67	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Total	79	73	65	65	65	64	61	58	71
20T Excavator (Sound Pressure Level at 10m)	80	83	76	73	72	70	69	66	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Total	74	77	70	67	66	64	63	60	72
Vibratory Roller (Sound Pressure Level at 10m)	88	83	69	68	67	65	62	59	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Total	77	72	58	57	56	54	51	48	63
Rigid Lorry (Sound Pressure Level at 10m)	73	78	78	78	74	73	68	66	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Total	62	67	67	67	63	62	57	55	70
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	82	80	73	72	70	69	66	63	76

APPENDIX B (cont'd)

156-164 Gray's Inn Road & Panther House, London WC1X 8ED

BS5228 CALCULATIONS OF ACTIVITY NOISE

Source: Demolition/Construction works 156-164 Gray's Inn Road, London	Frequency, Hz								dB(A)	
Closest Receivers: Residential window of 154 Gray's Inn Road	63	125	250	500	1k	2k	4k	8k		
Groundworks (Piling): typical day between 06th September and 01st October 2021										
Piling Rig (Sound Pressure Level at 10m)	87	77	72	73	71	69	65	57	71	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4		
Correction due to on- time on (70% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2		
Total	82	72	67	68	66	64	60	52		
Concrete pump (Sound Pressure Level at 10m)	82	82	72	71	69	70	59	80	72	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4		
Correction due to on- time on (30% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5		
Total	73	73	63	62	60	61	50	71		
Crawler Crane (Sound Pressure Level at 10m)	81	77	66	62	59	57	51	46	61	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0		
Correction due to on- time on (30% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5		
Total	76	72	61	57	54	52	46	41		
20T Excavator (Sound Pressure Level at 10m)	84	76	67	64	62	59	53	43	66	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0		
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2		
Total	82	74	65	62	60	57	51	41		
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	86	79	71	70	68	67	61	71	75	
Groundworks (Excavation): Typical day between 04th October 2021 to 18th March 2022										
20T excavator with breaker (Sound Pressure Level at 10m)	88	88	86	89	83	83	80	76	72	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4		
Correction due to on- time on (30% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5		
Attenuation provided by directivity and recommended portable acoustic screen	-10	-10	-10	-10	-10	-10	-10	-10		
Total	69	69	67	70	64	64	61	57		
Husqvarna 300 with Breaker (Sound Pressure Level at 10m)	79	75	73	74	77	77	75	70	62	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0		
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2		
Attenuation provided by the building envelope	-7	-9	-12	-14	-17	-20	-23	-26		
Total	70	64	59	58	58	55	50	42		
9" Grinder (Sound Pressure Level at 10m)	73	67	70	68	73	78	78	77	67	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2		
Correction due to on- time on (30% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5		
Attenuation provided by directivity and recommended portable acoustic screen	-10	-10	-10	-10	-10	-10	-10	-10		
Total	56	50	53	51	56	61	61	60		
Concrete pump (Sound Pressure Level at 10m)	82	82	72	71	69	70	59	80	70	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2		
Correction due to on- time on (60% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5		
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4		
Total	71	71	61	60	58	59	48	69		

APPENDIX B (cont'd)

156-164 Gray's Inn Road & Panther House, London WC1X 8ED

BS5228 CALCULATIONS OF ACTIVITY NOISE

Cement Mixer Lorry (Sound Pressure Level at 10m)	75	76	71	70	71	68	64	61	
Correction due to on- time on (40% of 10h)	-4	-4	-4	-4	-4	-4	-4	-4	
Distance correction (min. 15m)	-4	-4	-4	-4	-4	-4	-4	-4	
Total	67	68	63	62	63	60	56	53	68
Poker Vibrator (Sound Pressure Level at 10m)	62	70	70	70	64	62	61	56	
Distance correction (min. 13m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (40% of 10h)	-4	-4	-4	-4	-4	-4	-4	-4	
Total	56	64	64	64	58	56	55	50	65
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	76	75	71	72	68	67	64	70	75
Steelworks: Typical day between 1st February 2021 to 04th July 2022									
Handheld circular skill saw: Makita HS7601 110V (Sound Pressure Level at 10m)	69	75	77	74	71	70	74	69	
Distance correction (min. 12m)	-2	-2	-2	-2	-2	-2	-2	-2	
Correction due to on- time on (60% of 10h)	-2	-2	-2	-2	-2	-2	-2	-2	
Attenuation provided by directivity and recommended portable acoustic screen	-10	-10	-10	-10	-10	-10	-10	-10	
Total	55	61	63	60	57	56	60	55	65
Drill Makita(Sound Pressure Level at 10m)	83	83	81	74	73	76	78	77	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (20% of 10h)	-7	-7	-7	-7	-7	-7	-7	-7	
Attenuation provided by directivity and recommended portable acoustic screen	-4	-4	-4	-4	-4	-4	-4	-4	
Total	72	72	70	63	62	65	67	66	73
Tower Crane (Sound Pressure Level at 10m)	82	77	80	76	66	66	56	50	
Distance correction (min. 10m)	0	0	0	0	0	0	0	0	
Correction due to on- time on (40% of 10h)	-5	-5	-5	-5	-5	-5	-5	-5	
Total	77	72	75	71	61	61	51	45	71
Predicted Daily Airborne Noise Level, dB LAeq,10h at the nearest sensitive façade	78	75	76	72	65	67	68	66	75

APPENDIX 36

Rev A Erith Dust Management Plan
210429

156-164 Gray's Inn Road & Panther House, Holborn London

Dust Management Plan
Report 21577.DMP.01.RevA

Erith Contractors Ltd.
Erith House Queen Street,
Erith, Kent, DA8 1RP

First Issue date: 11/01/2021			
Revision History			
Report 21577.DMP.01.RevA			
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B		E	
C		F	
Written by:		Checked by:	
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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by Erith Contractors Ltd., Erith House Queen Street, Erith, Kent, DA8 1RP to compile a dust management plan for the scheme at 156-164 Gray's Inn Road & Panther House, Holborn, London.

This report presents all information gathered from relevant documentation and the steps which should be adopted regarding dust, in order to maintain the amenity of all sensitive receivers adjacent to the site.

2.0 AIR QUALITY AND DUST MANAGEMENT PLAN

2.1 Air Quality Statement

Erith Contractors are committed to applying the Air Quality Management standards required by the London Borough of Camden and confirm that we shall apply the relevant air quality control mitigation measures outlined in The Control of Dust and Emissions During Construction and Demolition SPG July 2014 (Mayor of London).

This document includes our Air Quality (Dust) Risk Assessment, inventory and timetable of dust generating activities and dust emission mitigation measures to be employed.

2.2 Air Quality Legislation and Policy

A summary of the relevant to air quality legislation and policies that is current at the time of writing this plan are shown below:

- The Air Quality Standards Regulations 2010
- The Air Quality Limit Values Regulations 2003
- Environmental Protection Act 1990 as amended
- Common Law Nuisance
- Clean Air Act 1993
- Control of Substances Hazardous to health regulations 2002
- Environment Act 1995
- Environmental permitting (England and Wales) Regulations 2010 as amended
- Pollution Prevention and Control (England and Wales) Regulations 2011
- Climate Change Act 2008

2.3 Guidance

The following guidance has been taken into consideration when writing this plan:

- The Control of Dust and Emissions During Construction and Demolition, Supplementary Planning Guidance (July 2014), Mayor of London
- The London Plan, Mayor of London's The Spatial Development Strategy for London (March 2016), Improving Air Quality
- Assessment of Dust from Demolition and Construction 2014 (Version 1.1) - Institute of Air Quality Management
- Air Quality Monitoring in the Vicinity of Demolition and Construction Sites 2018 - Institute of Air Quality Management
- London Councils Air Quality and Planning Guidance January 2007

2.4 Site location plan and nearby sensitive receptors

A red line site location plan with the location of the sensitive receptors (indicated in yellow) within approximately 50m of the site is shown below in Figure 2.1.



Figure 2.1 Site location plan indicating site boundary in red and 50m sensitive receptors zone (Source: Google Maps)

2.5 Site works and timetable of dust and NOx air pollutant generating activities

The following activities are identified as major sources of dust and NOx air pollutant emission to occur on this project:

Main Phase	Description	Activity Period (Weeks or days No.)
Façade Retention	160 – 164 Grays Inn Road	3 Weeks
Demolition 1	160 – 164 Grays Inn Road	2 Weeks
Demolition 2	156 Grays Inn Road & Tam Shed	2 Weeks
Demolition 3	Cute and carve demolition works Panther House	10 Weeks
Piling	156-164 Grays Inn Road & Tram Shed	7 Weeks
Basement excavation	156-164 Grays Inn Road & Tram Shed	10 Weeks
Basement construction	156-164 Grays Inn Road & Tram Shed	14 Weeks

Table 2.1 Site work activities

Furthermore, it is understood that the following non-road mobile machinery and equipment will be used on site and therefore will be also generating NOx on site:

- 2 No. 20T excavators demolishing Tram Shed and 156-164 Grays Inn Road and piling and basement excavation/construction.
- 2 No. 5T excavators demolishing Panther House and basement excavation/piling
- 2 No. skid steers with cut and cave demolition works on Panther House
- Static concrete line pump for piling and basement construction
- Compressors
- Temporary site generator for site power (until mains supply is secured)

It is anticipated that normal working hours will be between 08:00 to 18:00 hours Monday to Friday and 08:00 to 13:00 on Saturdays.

Figure 2.1 below shows the proposed fuel storage location consisting of Diesel fuel to be kept within 2000l bunded bowser.

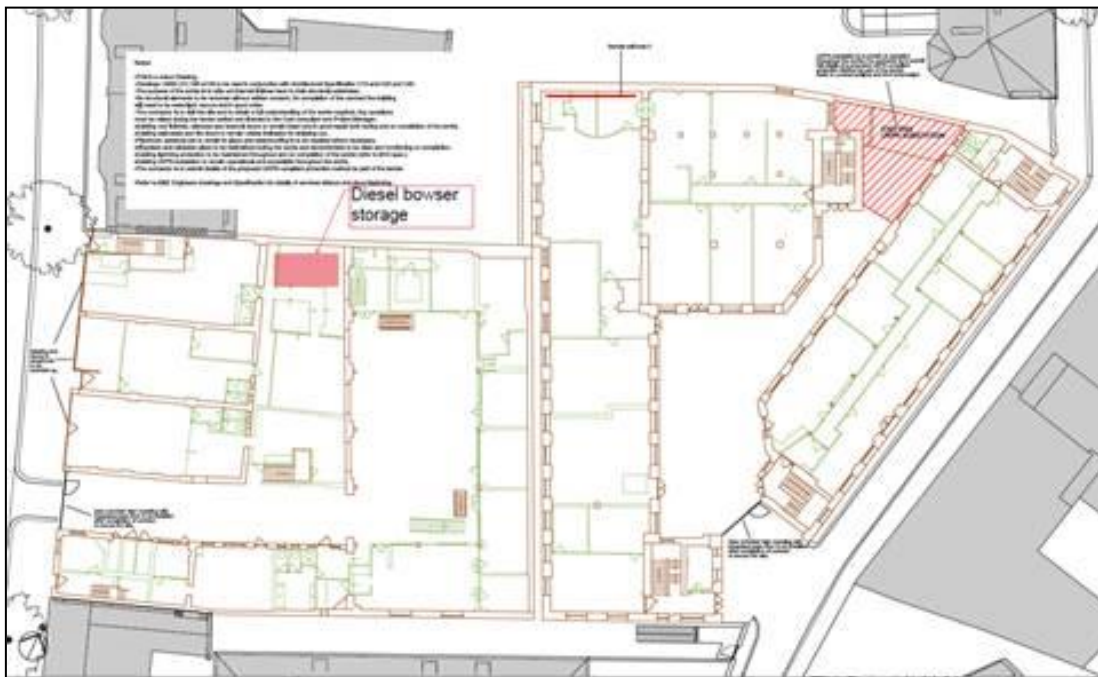


Figure 2.1 Proposed Fuel storage location

2.6 Air Quality (Dust) Risk Assessment

The construction dust assessment considers the potential for impacts within 50m of the site boundary. The assessment methodology follows the Greater London Authority (GLA) Supplementary Planning Guidance (SPG) on the Control of Dust and Emissions During Construction and Demolition (2014) which is based on that provided by the Institute of Air Quality Management (IAQM). The Dust Emission Magnitude (DEM) is based on the scale of the anticipated works and the site will be classified as Small, Medium or Large.

The risk evaluation considerations are based on the following steps:

Step 1: Screen the need for a detailed assessment of residential receptors

Step 2A: Define the potential dust emission magnitude based on the scale of anticipated works

Step 2B: Define the sensitivities of the area to any dust that may be raised

Step 2C: Define the risk of dust impacts without appropriate mitigation

The site activities can be divided into four types according to dust risk and are assessed on the basis of site activities and the sensitivity of nearby receptors, these are:

- Removal of existing structures
- Earthworks

- Construction
- Trackout

Step 1: Area sensitivity screening

The sensitive receptors adjacent to this site are described within Table 2.2 and shown within Figure 2.2.

Icon	Receptors	Description
	Holsworthy Square & Greys Inn Road adjacent buildings	Residential and commercial receptors located to the North of the demolition site, as shown in Figure 2.2
	Mullen Towers & 15 Rosebery Avenue	Residential receptors located to the East of the demolition site, as shown in Figure 2.2
	Mount Pleasant residential properties	Residential receptors located to the South of the demolition site, as shown in Figure 2.2

Table 2.2 Sensitive receptors location and description



Figure 2.2. Identified nearest potential receptors likely to be affected by the activities on site

Site Access Egress

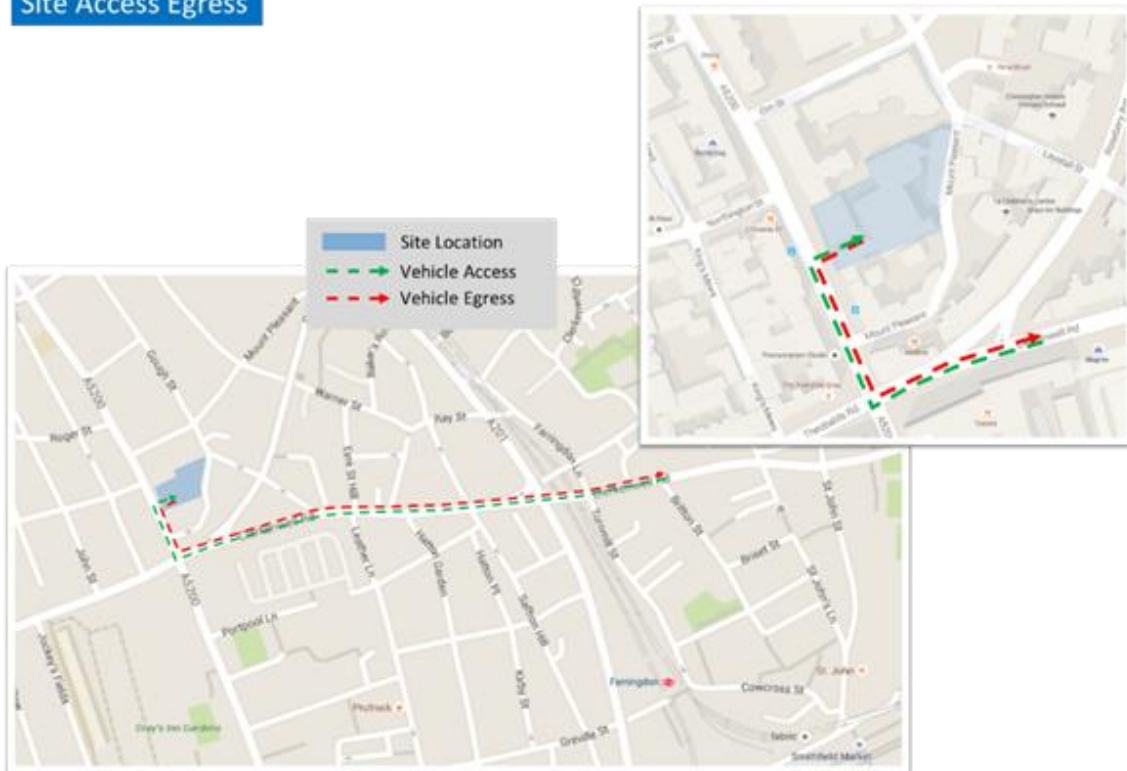


Figure 2.3 Proposed traffic management site plan

Step 2A: Dust Emission Magnitude

Removal of existing structures Phase

The removal of existing structures phase of this project has been assessed as medium risk based on the nature of the works which will be undertaken on external areas.

Therefore, the extent of removal works (reduced distance of receivers to demolition works, potential dusty construction materials, total building volume < 20,000m³) would fall into the category of medium risk.

- Total building volume < 20,000m³

Earthworks Phase

Earthworks primarily cover excavation and underpinning.

The earthwork phase for this project has been assessed as medium risk based on the scale of the potential dust emissions during this phase as per the following assessment:

- Total site area <2,500m²
- < 5 heavy earth moving vehicles active at any one time
- Reduced distance of receivers to the site (within 50m)
- Stock piling of excavated material, whilst it is being loaded into lorries

Demolition Phase

The key issues when determining the potential scale of dust emissions during the construction phase include the size of the building, the method of construction, the construction materials to be used and the duration of the build.

The scale of the potential dust emissions for the site has been assessed as medium risk based on the following criteria:

- Total building volume < 25,000m³
- Construction material potentially dusty (e.g. concrete bricks)

Trackout Phase

Factors that determine the risk of dust emissions from trackout are vehicle size, vehicle speed, geology and duration. Only receptors within 50m of the route(s) used by vehicles on the public highway and up to 500m from the site entrance(s) are considered to be at risk from the effects of dust trackout.

It is anticipated that there would be minimal tracked vehicles from the site onto the road. Anticipated vehicle movements are 30 nr per day. Most of these movements will be done by Muck Away Lorries during most of the phases.

The scale of risk of dust emission during the trackout phase on this project has been assessed as medium based on the number of outward movements made in any one day (30 HDV (>3.5t)), the site roadway being completely paved thus resulting in minimal transfer of site debris onto public roadways and based on the proposed traffic management plan shown in Figure 2.3 above.

Activity	Dust Emission Magnitude
Removal works	Medium
Earthworks	Medium
Construction	Medium
Trackout	Medium

Table 2.3 Dust emission magnitude overview

Step 2B: Sensitivity of the area

The sensitivity of the area takes into account a number of factors including:

- The specific sensitivities of receptors in the area
- The proximity and number of those receptors
- Site specific factors.

The sensitivity of the area has been assessed for each phase of construction activity (i.e. removal of existing structures works, earthworks, construction and trackout) and the highest level of sensitivity has been addressed.

Sensitivity of people to dust soiling effects

The sensitivity of people to dust soiling effects within the local area of this project has been assessed as high, due to the immediate residential receptors to the proposed development. The closest residential receptors are located approximately in a range between 10-15 meters away from the boundaries of the site, as shown in Figure 2.3.

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	10 -100	High	Medium	Low	Low

Table 2.4: Sensitivities of people to dust soiling effects

Step 2C: Risk of dust impacts with no mitigation applied

We have assessed the following risk of dust impacts for the various phases of work.

The below tables combine the dust emission magnitude determined above with the sensitivity of the area, determining the risk of impacts with no mitigation applied.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	<u>Medium Risk</u>	Low Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 2.5: Risk of dust impacts – removal works

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	<u>Medium Risk</u>	Low Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 2.6: Risk of dust impacts – earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	<u>Medium Risk</u>	Low Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 2.7: Risk of dust impacts – trackout

The overall dust risk classification of the site is Medium Risk in accordance with the Mayor of London SPG ‘The Control of Dust and Emissions during Construction and Demolition’, July 2014

2.7 Dust Monitoring

Automated particulate monitoring of average 15-minute PM₁₀ dust levels will be undertaken. The monitoring would be undertaken in accordance with The London Councils’ Best Practice Guidance: The control of dust and emissions from construction and demolition (November 2006) and Air Quality Monitoring in the Vicinity of Demolition and Construction Sites 2018 – IAQM.

Alert threshold response will be available by SMS text or e-mail facility. The system will be set up such that the site’s Project Manager will be notified when dust levels reach the

proposed project action level of PM10 (15-minute average). A second alert will be set at the proposed upper limit action level of PM10. This approach provides warning to site personnel, so they can review and modify their activities and implement further practicable mitigation measures where these are identified and can be effectively implemented.

On occasions when exceedances of the upper limit action level occur, the Project Manager should register what activities have taken place during the day to be included in the report.

The propagation of dust is related to wind direction and speed around the site. It has been assumed that meteorological data for the local area is readily available and a site weather monitoring station is not required on site.

Monitoring data will be downloaded from monitors, and normal operation of the monitors will be verified, on a regular basis via a remote modem link. Calibration would be checked during periodic visits to site. Weekly summary reports will be issued to relevant parties by email, as required.

All data will be remotely managed so that the involvement of non-acoustically trained staff is minimised. Raw data will be collected on a remote server and treated according to the specific requirements, therefore providing a highly flexible solution. All data will be accessible through a secure website, with individual access to the RG Group team.

The dust (PM10) monitors are MCerts compliant instruments meeting the requirements for Indicative Ambient Particulate Monitors. Each monitor is fitted with a modem to allow data-streaming to an online web portal.

In addition, it is the responsibility of the Site Manager to record, respond to and follow up all complaints regarding dust. Site Managers are responsible for ensuring that suitably qualified personnel are available to respond to complaints at all times.

The following actions will be carried out in the event of obvious high levels of observed dust;

- On site activities will be immediately inspected to identify and record likely sources;
- If on site sources are identified as obvious high levels of observed dust, the relevant activities will be halted until remedial measures can be implemented (e.g. wetting down, road sweeping, sheeting up); and
- Once mitigation measures are implemented, site activities will continue whilst being observed to ensure that the mitigation has been effective. All the remedial measures applied should be registered by the Site Manager to be included in the report.

2.8 Mitigation Measures

Dust from construction and removal works can have a negative effect on the amenity of neighbouring residents. As with noise and vibration, dust and other pollutants can have a range of effects, the severity of which can vary depending upon the on the recipient as referenced in the IAQM 'Guidance on the assessment of dust from demolition and construction'.

As such, it is important that a number of mitigation measures are applied in order to minimise dust emissions from the site, in accordance with the Mayor's SPG for Control of Dust and Emissions during Construction and Demolition.

General advice for all construction and removal works, include the following:

- Dust generated by the construction process will be suppressed via a fine directional spray jet of water aimed at the source, and any material to be transported to be wetted down prior to transit.
- Skips and powder containers to be covered when not in use
- Wherever possible fabrication / dismantling is undertaken off site
- Cutting equipment to be used with water suppressant and/or suitable extract system
- Vehicles transporting materials capable of generating dust to and from site will be suitably sheeted on each journey to prevent release of materials and particulate matter. The sheeting material will be maintained in good order, free from excessive rips and tears;
- Plant is well maintained (with efficient dust suppression systems) and switched off when not in use;
- No burning of waste wood or other materials on site
- The stockpiling of dust generating materials on site will be minimised
- Wet brushing techniques will be used for cleaning
- Regular checks for visual observation of dust and soiling within 50m of site
- Soft strip inside the building before removal works (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Screening to be erected surrounding site boundaries where possible
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone, where applicable
- All employees are provided with an appropriate induction and on-going briefings regarding dust mitigation measures required from the works they are carrying out

- Only use registered waste carriers to take waste off-site

Furthermore, according to IAQM guidelines, it would be necessary to inspect the area in the local vicinity of the construction works to ensure that surfaces are not soiled by dust emissions from the site, with suitable cleaning offered if necessary. In order to minimise this, it would be recommended that screens are erected around the site boundaries as appropriate.

The following mitigation measures will be implemented when construction methods are being considered, to reduce emissions in relation to construction plant:

- Vehicle engines and equipment will be switched off when not in use and not left running unnecessarily
- Vehicles and Equipment will be maintained in accordance with the manufacturer's recommendations
- Where practicable kept operating equipment away from potentially sensitive receptors
- Mains or battery powered equipment will be used where practically possible and available
- All qualifying plant procured or hired will be registered on the NRMM register ensuring that it conforms to EU standard IIIA for GLA.

3.0 CONCLUSION

KP Acoustics has been commissioned to undertake a dust management plan assessment from site operations of the proposed development at 156-164 Gray's Inn Road & Panther House, Holborn, London in order to provide initial dust risk assessment and control of dust on site.

Information on good practice steps have been provided to minimise dust and emissions from the removal works and demolition activities, while a realistic approach has been adopted regarding the dust emissions which should be met on site.

Guidelines given within this report are provided to ensure that any disturbance caused by dust will be minimised as much as is practically possible.

APPENDIX 37

GLA Mitigation Checklist

Appendix 37 GLA Mitigation Checklist Panther House

MEASURES RELEVANT FOR DEMOLITION, EARTHWORKS, CONSTRUCTION AND TRACK-OUT

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Site management			
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.		XX	
Develop a Dust Management Plan.		XX	
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.		XX	
Display the head or regional office contact information.		XX	
Record and respond to all dust and air quality pollutant emissions complaints.		XX	
Make a complaints log available to the local authority when asked.		XX	
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.		XX	
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.		XX	
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.		XX	

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
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.		XX	
Preparing and maintaining the site			
Plan site layout: machinery and dust causing activities should be located away from receptors.		XX	
Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.		XX	
Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.		XX	
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.			
Avoid site runoff of water or mud.		XX	
Keep site fencing, barriers and scaffolding clean using wet methods.		XX	
Remove materials from site as soon as possible.		XX	
Cover, seed or fence stockpiles to prevent wind whipping.		XX	
Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.		X	
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.		XX	
Where possible, commence baseline monitoring at least three months before phase begins.		XX	

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.		XX	
Operating vehicle/machinery and sustainable travel			
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.		XX	
Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.		XX	
Ensure all vehicles switch off engines when stationary – no idling vehicles.		XX	
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.		XX	
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.		XX	
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).		XX	
Operations			
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.		XX	

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).		XX	
Use enclosed chutes, conveyors and covered skips.		XX	
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.		XX	
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.		XX	
Waste management			
Reuse and recycle waste to reduce dust from waste materials		XX	
Avoid bonfires and burning of waste materials.		XX	

MEASURES SPECIFIC TO DEMOLITION

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).		XX	
Ensure water suppression is used during demolition operations.		XX	
Avoid explosive blasting, using appropriate manual or mechanical alternatives.		XX	
Bag and remove any biological debris or damp down such material before demolition.		XX	

MEASURES SPECIFIC TO EARTHWORKS

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
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.			

MEASURES SPECIFIC TO CONSTRUCTION

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Avoid scabbling (roughening of concrete surfaces) if possible		X	
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		XX	
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.		X	
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.		X	

MEASURES SPECIFIC TO TRACKOUT

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.		XX	
Avoid dry sweeping of large areas.		XX	
Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.		XX	
Record all inspections of haul routes and any subsequent action in a site log book.		XX	
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned.		XX	
Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;		XX	
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).		XX	
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.		XX	
Access gates to be located at least 10m from receptors where possible.		XX	
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site		XX	

XX Highly Recommended X Desirable

APPENDIX 38

Erith Back Ground Survey
3month Monitoring. 210112

156-164 Gray's Inn Road & Panther House, Holborn London



**Noise, Vibration & Dust Baseline Survey
Report 21577.NVDBS.01**

**Erith Contractors Ltd.
Erith House Queen Street,
Erith, Kent, DA8 1RP**

First Issue date: 11/01/2021			
Revision History Report 21577.NVDBS.01			
A		D	
B		E	
C		F	
Written by:		Checked by:	Approved by:
Alejandro Santana AMIOA Acoustic Consultant		Daniel Green MIOA Senior Acoustic Consultant	Kyriakos Papanagiotou MIOA Managing Director
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1.0 INTRODUCTION

KP Acoustics Ltd has been appointed by Erith Contractors Ltd., Erith House Queen Street, Erith, Kent, DA8 1RP to provide noise, vibration and dust baseline survey at Gray's Inn Road & Panther House, Holborn, London.

This report outlines the results of the noise, vibration and dust surveys undertaken between the periods from 28/08/2020 to 19/12/2020 in order to establish the current background levels prior to the commencement of all on-site operations.

2.0 SITE SURVEYS

2.1 Site Description

The site is located in 156-164 Gray's Inn Road & Panther House, Holborn, London, WC1X 0AG and it is bounded by Grays Inn Rd to the West, Mount Pleasant to the South, Grays Inn Buildings School to the West and Holsworthy Square to the North.

Initial inspection of the site revealed that the background noise profile at the monitoring locations were typical of an urban cityscape environment, with the dominant source being road traffic noise from the surrounding roads and nearby construction site.

2.2 Environmental Baseline Survey Procedure

Noise, vibration and dust background readings were taken from Class 1 automated monitors located as shown in Figure 2.1 previous to any on-site works. The locations were chosen in order to collect representative data of the worst-case levels expected on the site due to all nearby sources.

Weather conditions were generally dry with light winds and therefore suitable for the measurement of environmental noise. The measurement procedure complied with ISO 1996-2:2007 Acoustics '*Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels*'.

2.3 Measurement Positions

Measurement positions are as described within Table 2.1 and shown within Figure 2.1.

Icon	Descriptor	Location Description
	Noise, Vibration and Dust Measurement Position (MP.1)	The microphone, accelerometer and dust monitor were installed next to 156 Grays Inn Road.
	Noise, Vibration and Dust Measurement Position (MP.2)	The microphone, accelerometer and dust monitor were installed in the close proximity of Holsworthy Square.
	Noise, Vibration and Dust Measurement Position (MP.3)	The microphone, accelerometer and dust monitor were installed within the perimeter of Grays Inn Road covering background readings next to 11 Mount Pleasant.
	Noise, Vibration and Dust Measurement Position (MP.4)	The microphone, accelerometer and dust monitor were installed at Panther House capturing background levels next to Grays Inn Building School

Table 2.1 Measurement positions and descriptions

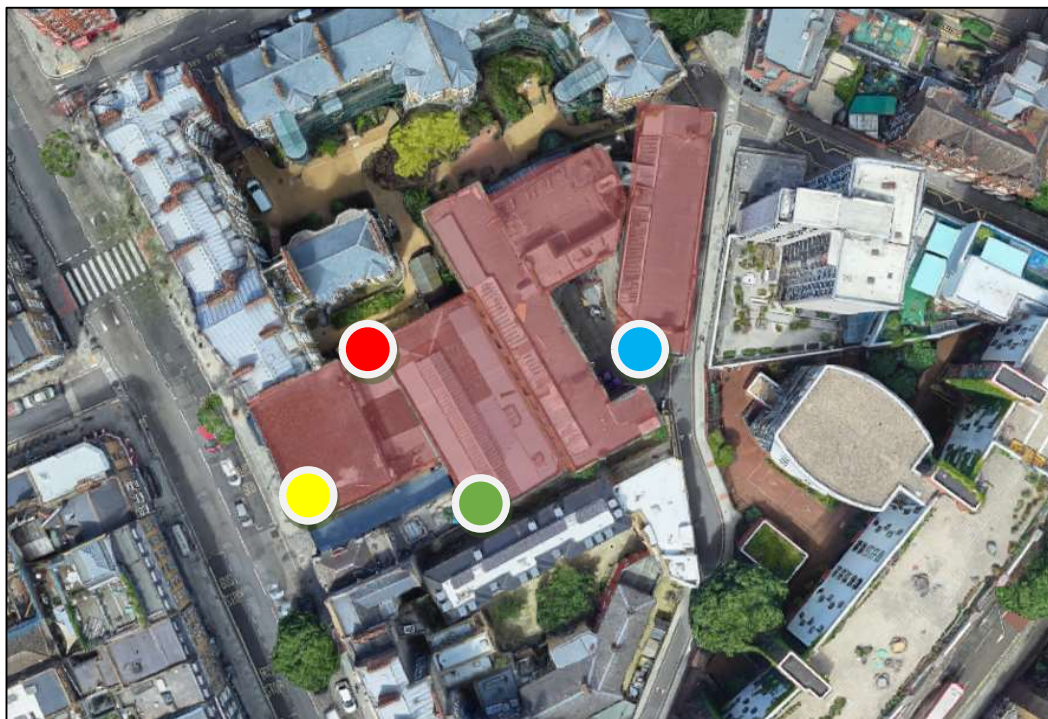


Figure 2.1 Site measurement positions (Image Source: Google Maps)

3.0 EQUIPMENT

The equipment calibration was verified before and after the survey and no calibration irregularities were observed. The equipment used was as follows:

- 4 No. Svantek Type SV958A Sound & Vibration Analyzers.
- 4 No. Met One Type ES-642 PM10 MCert Dust Monitors

4.0 NOISE, VIBRATION AND DUST BASELINE SURVEY

4.1 Noise Results

The results of the background noise measurements are averaged over 5-minute sample periods between 08:00 to 18:00 Monday to Friday and 08:00 to 13:00 Saturday.

Average ambient noise levels during daytime are as shown in Table 4.1-4.

Location 1	Average ambient noise Levels L_{Aeq} dB(A)
From 08:00 to 18:00 Monday to Friday	66
From 08:00 to 13:00 Saturday	56

Table 4.1 Measured ambient background noise levels at Location 1

Location 2	Average ambient noise Levels L_{Aeq} dB(A)
From 08:00 to 18:00 Monday to Friday	64
From 08:00 to 13:00 Saturday	55

Table 4.2 Measured ambient background noise levels at Location 2

Location 3	Average ambient noise Levels L_{Aeq} dB(A)
From 08:00 to 18:00 Monday to Friday	63
From 08:00 to 13:00 Saturday	52

Table 4.3 Measured ambient background noise levels at Location 3

Location 4	Average ambient noise Levels L_{Aeq} dB(A)
From 08:00 to 18:00 Monday to Friday	59
From 08:00 to 13:00 Saturday	47

Table 4.4 Measured ambient background noise levels at Location 4

4.2 Vibration Results

The results of the background vibration monitoring are shown as a time history of Peak Particle Velocity (mm/s) in Figure 21577.VTH1-4.

4.3 Dust Results

The results of the background dust monitoring are shown as a time history of PM10 (ug/m3) in Figure 21577.DTH1-4.

5.0 CONCLUSIONS

A Noise, Vibration and Dust Baseline Survey have been undertaken on site at Gray's Inn Road & Panther House, Holborn, London to establish the ambient noise, vibration and dust profile of the site prior to the commencement of all on-site works between 28/08/2020 and 19/12/2020.



21577: 156-164 Gray's Inn Road & Panther House Location 1. Noise Time History

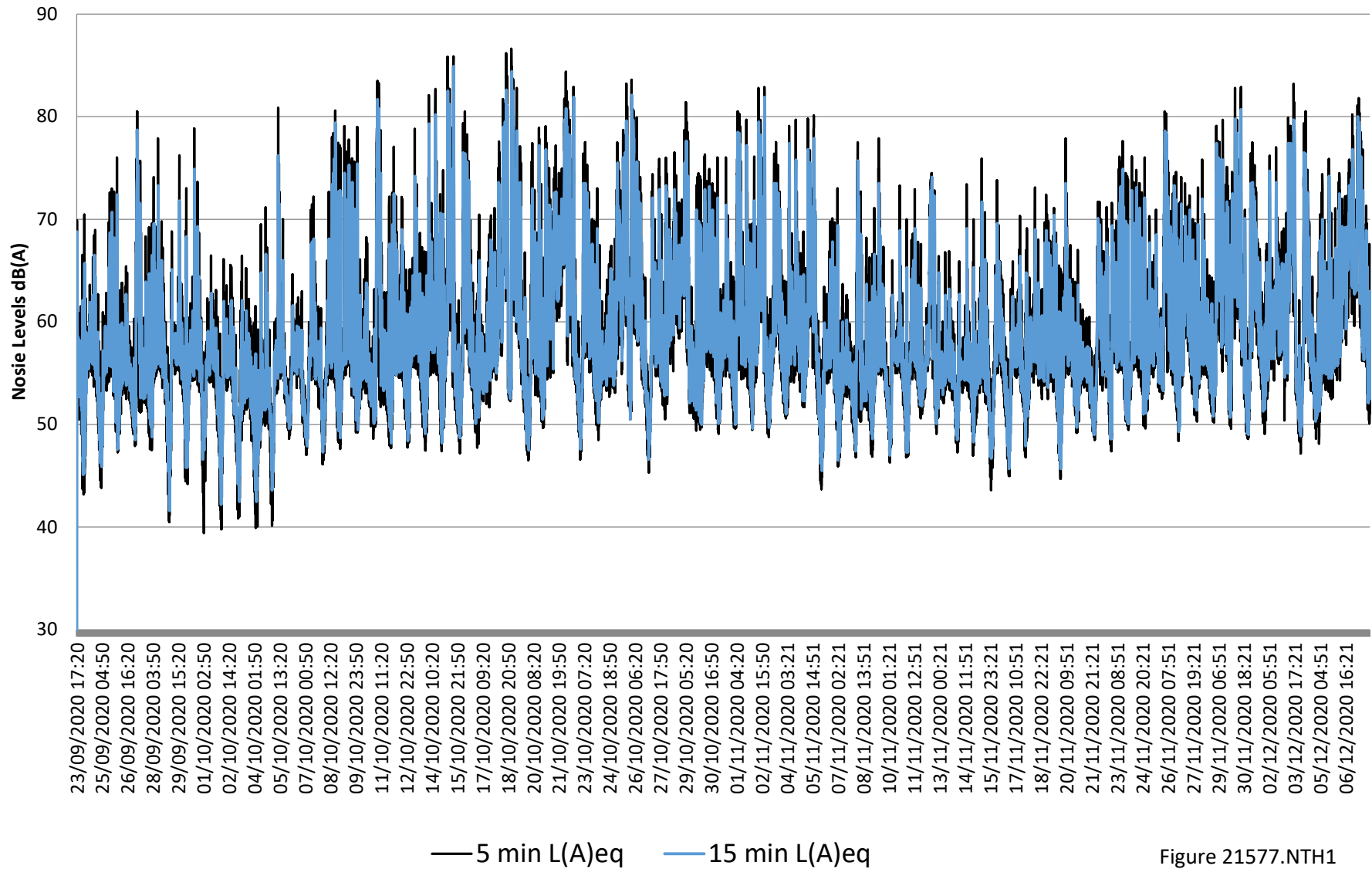


Figure 21577.NTH1



21577: 156-164 Gray's Inn Road & Panther House

Location 2. Noise Time History

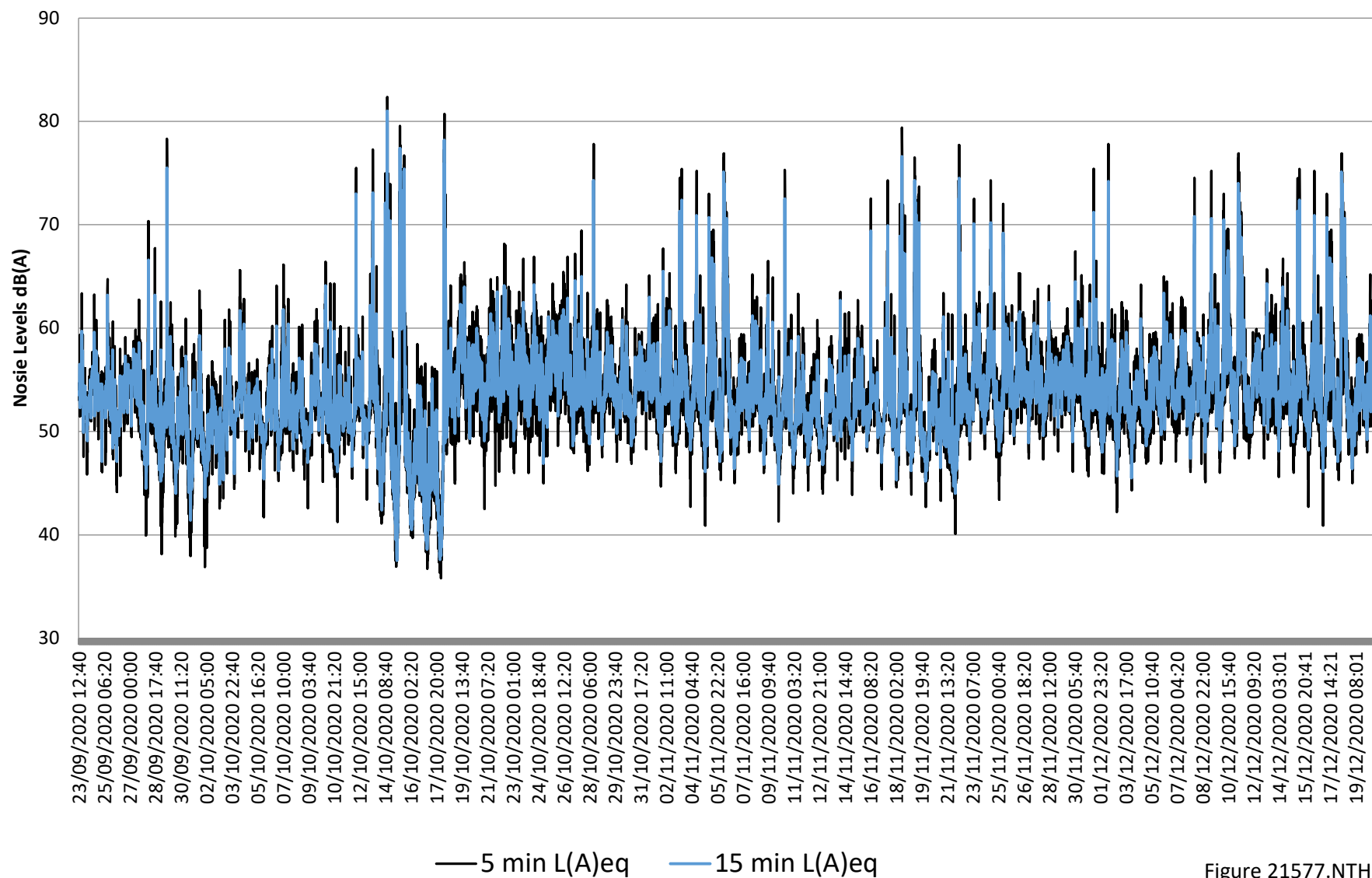


Figure 21577.NTH2

21577: 156-164 Gray's Inn Road & Panther House

Location 3. Noise Time History

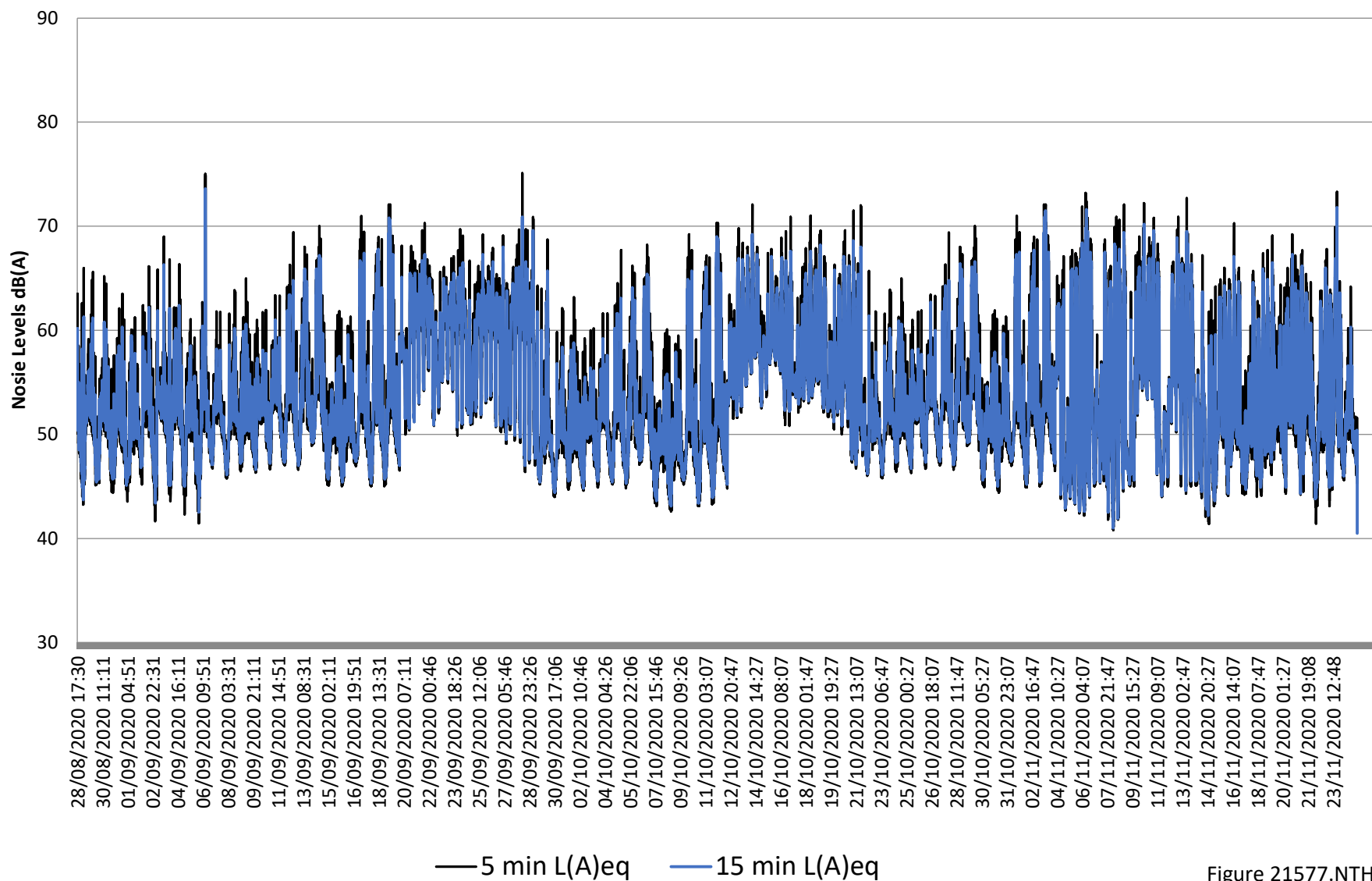


Figure 21577.NTH3



21577: 156-164 Gray's Inn Road & Panther House

Location 4. Noise Time History

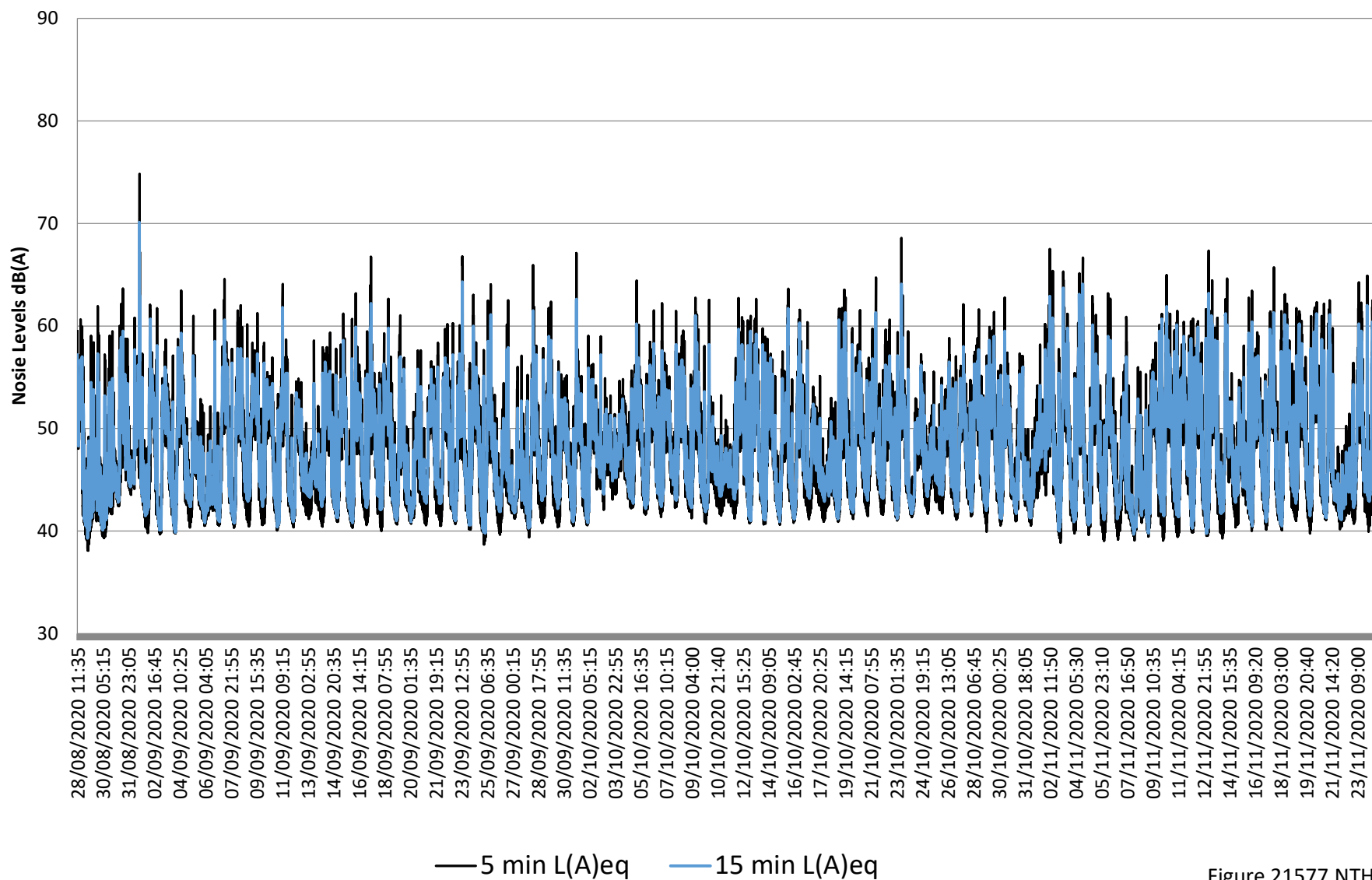
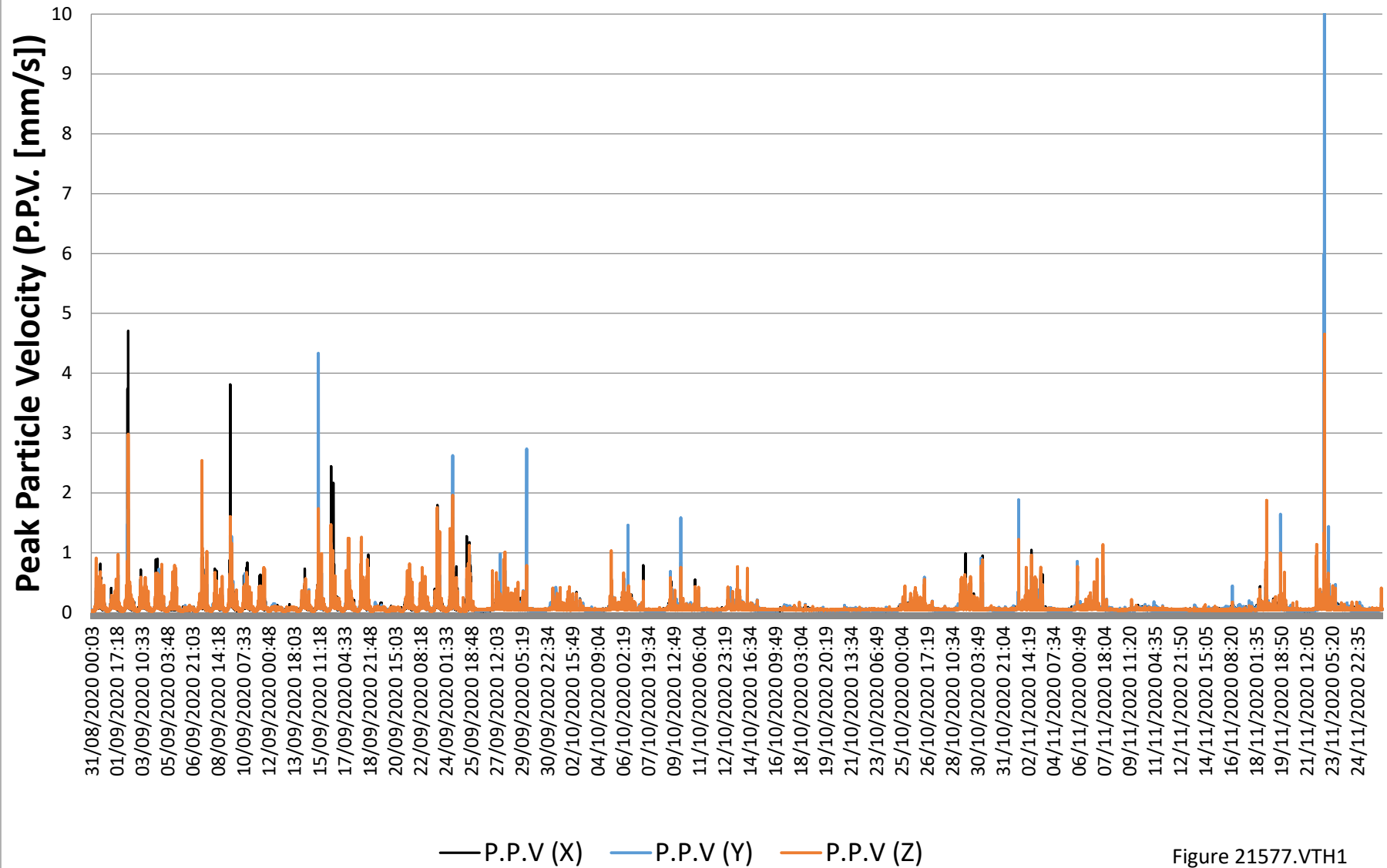


Figure 21577.NTH4



21577: 156-164 Gray's Inn Road & Panther House

Location 1. Vibration Time History





21577: 156-164 Gray's Inn Road & Panther House Location 2. Vibration Time History

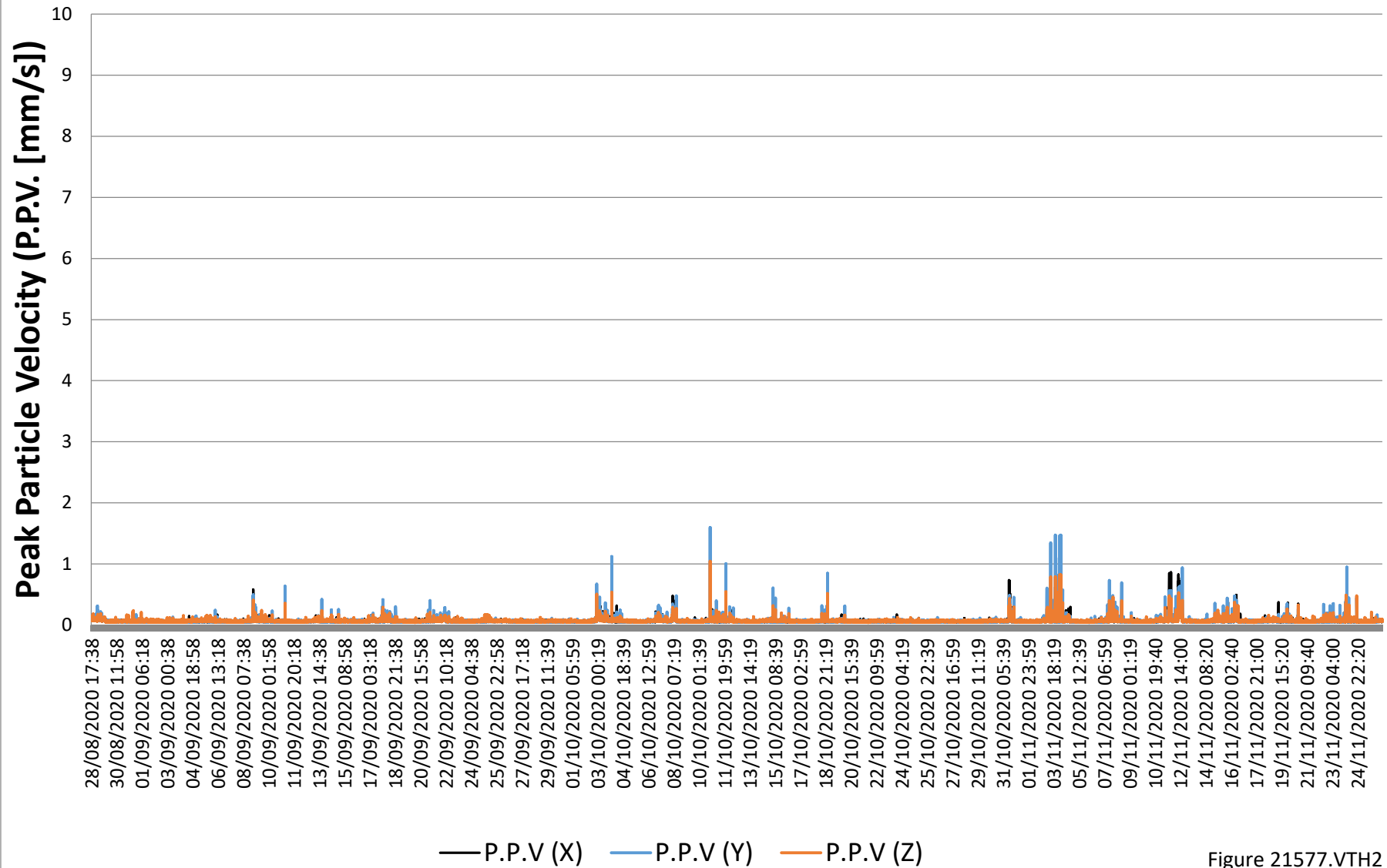


Figure 21577.VTH2



21577: 156-164 Gray's Inn Road & Panther House Location 3. Vibration Time History

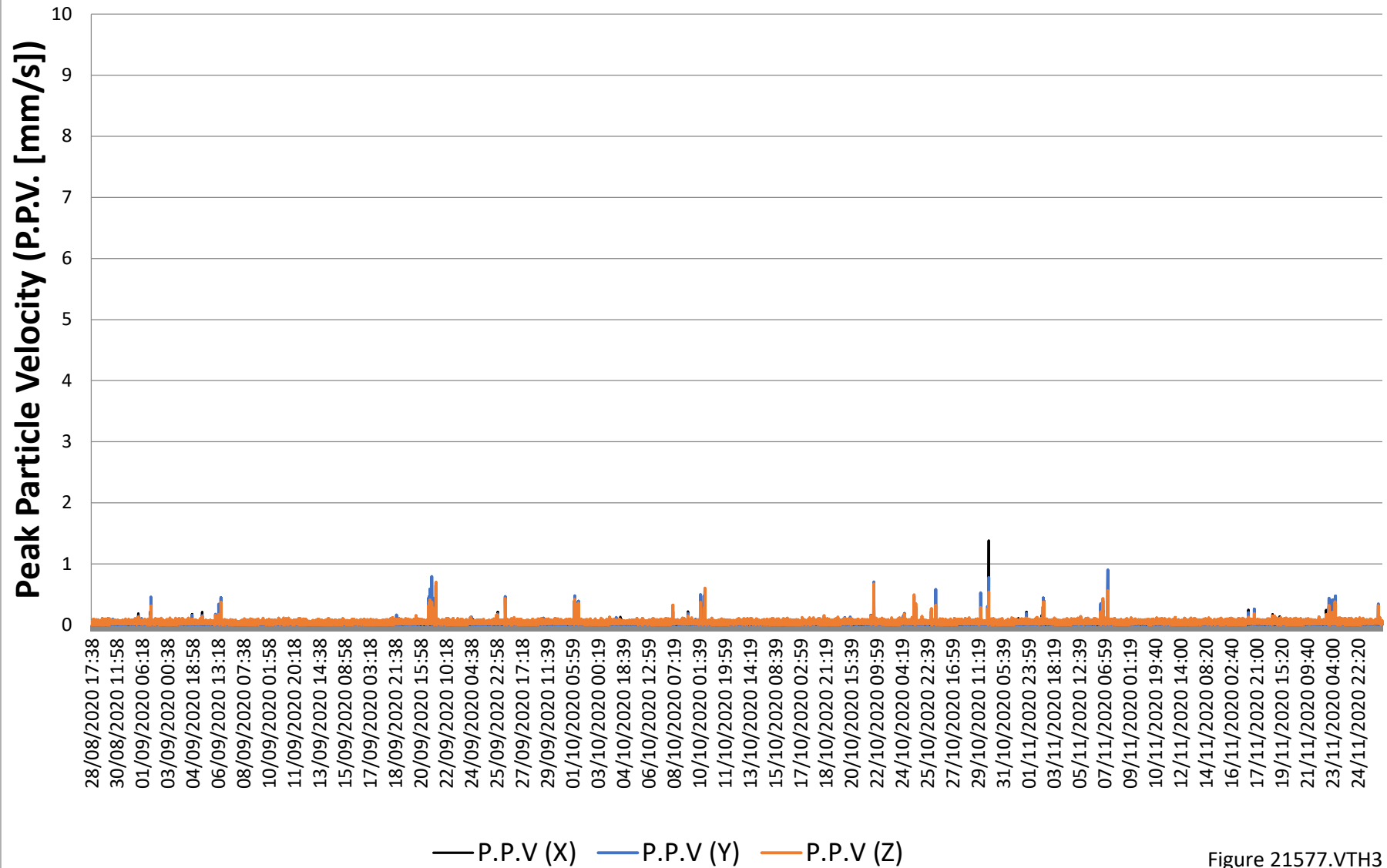


Figure 21577.VTH3



21577: 156-164 Gray's Inn Road & Panther House Location 4. Vibration Time History

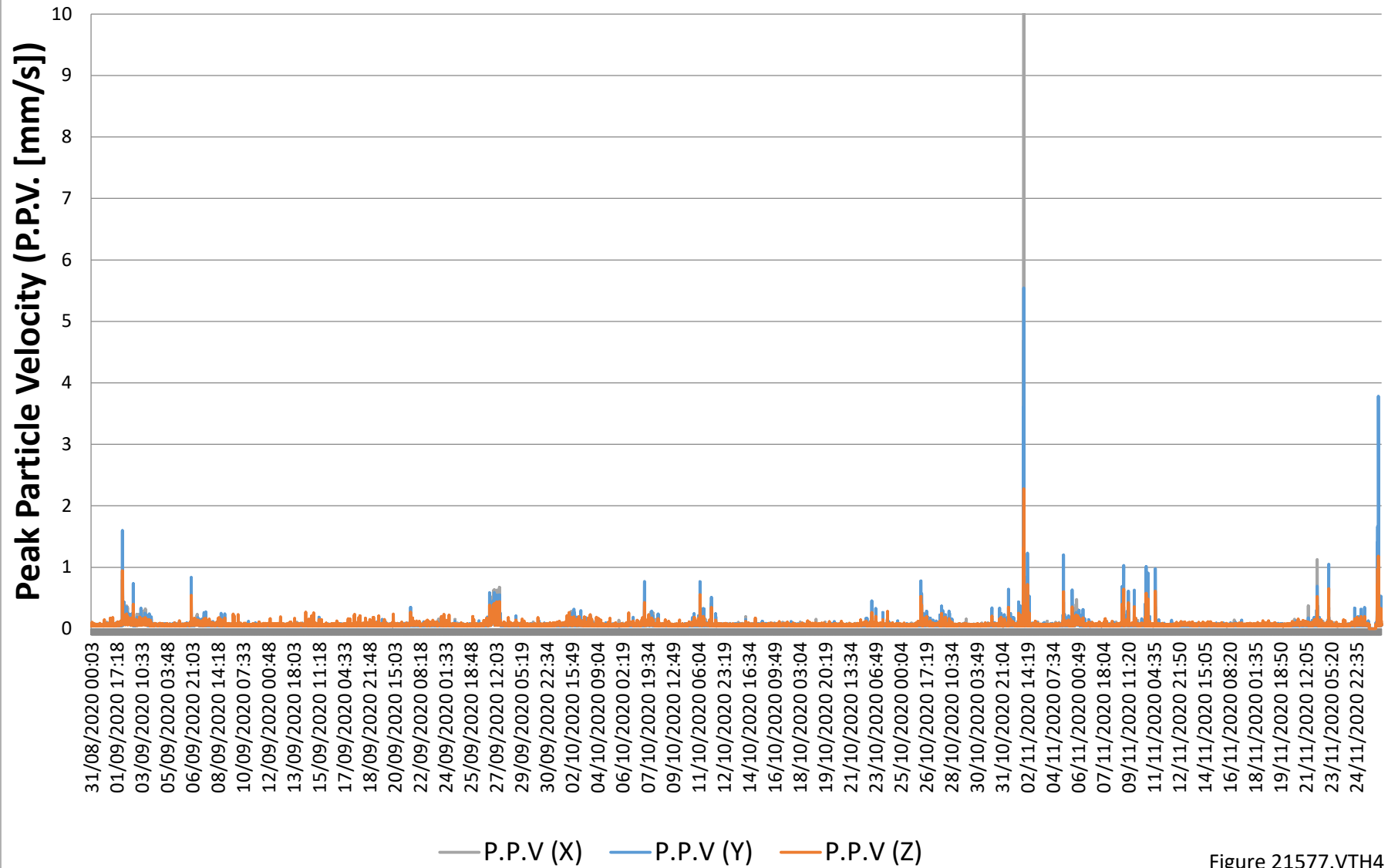
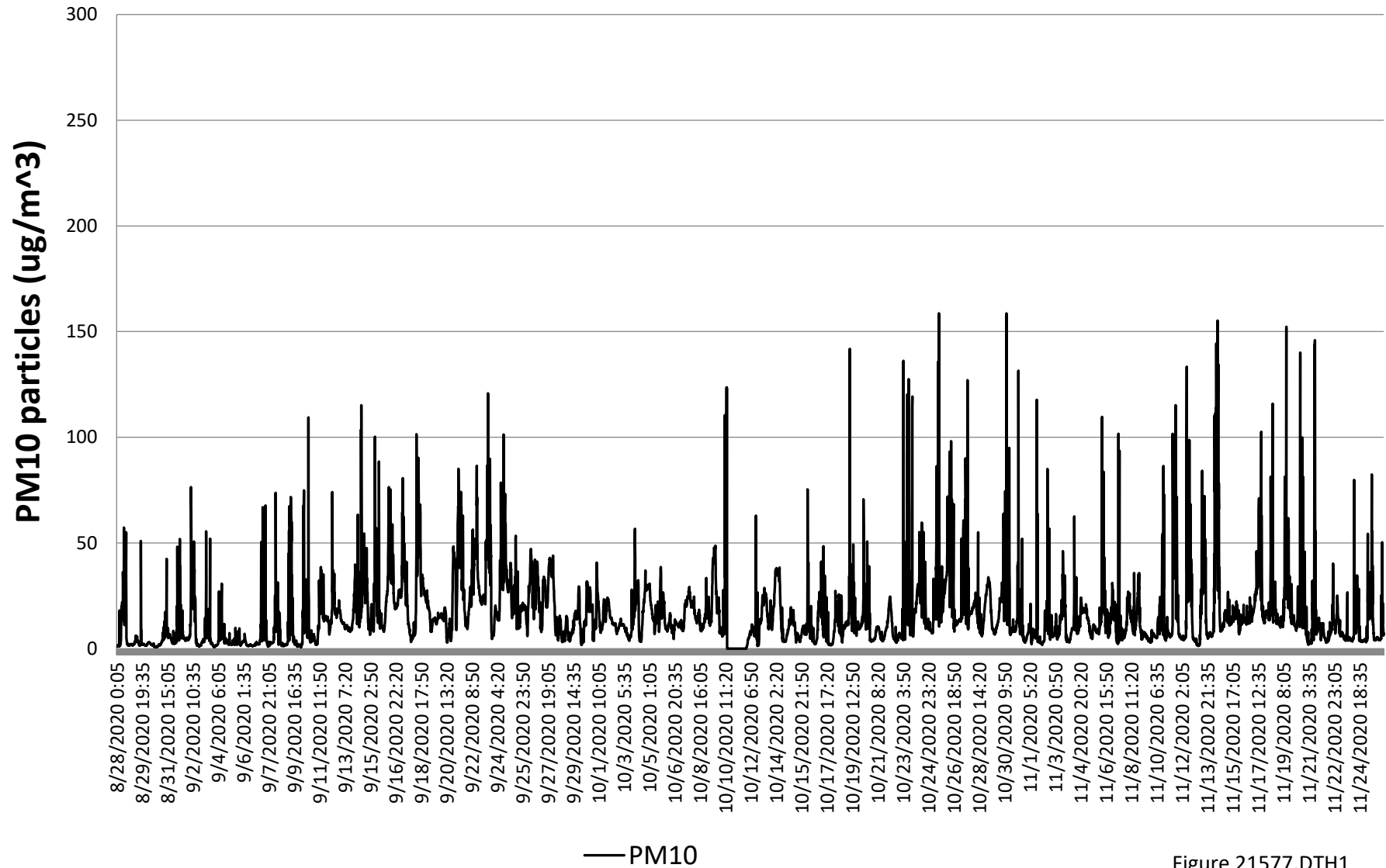


Figure 21577.VTH4



21577: 156-164 Gray's Inn Road & Panther House

Location 1. Dust Time History





21577: 156-164 Gray's Inn Road & Panther House Location 2. Dust Time History

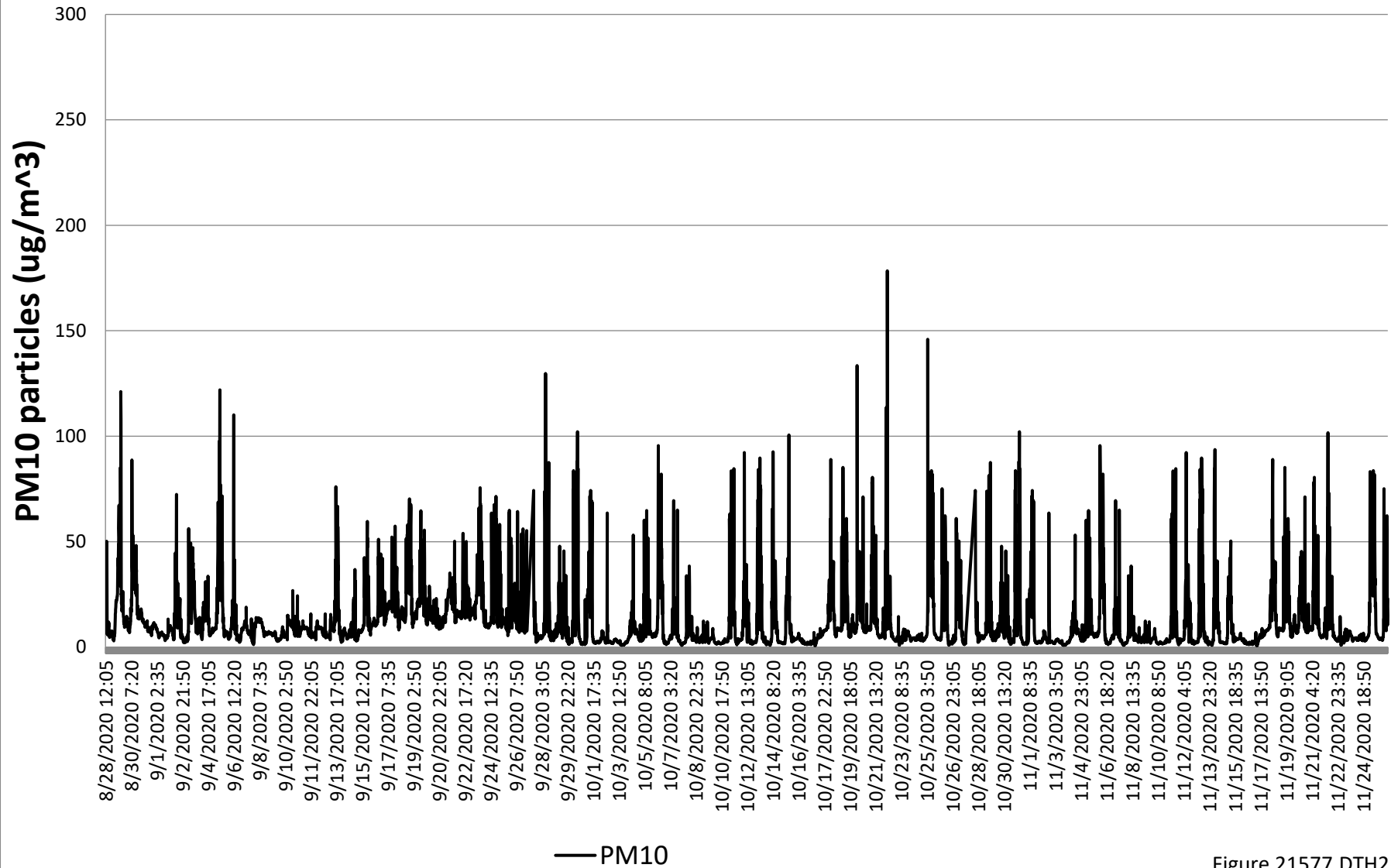


Figure 21577.DTH2



21577: 156-164 Gray's Inn Road & Panther House Location 3. Dust Time History

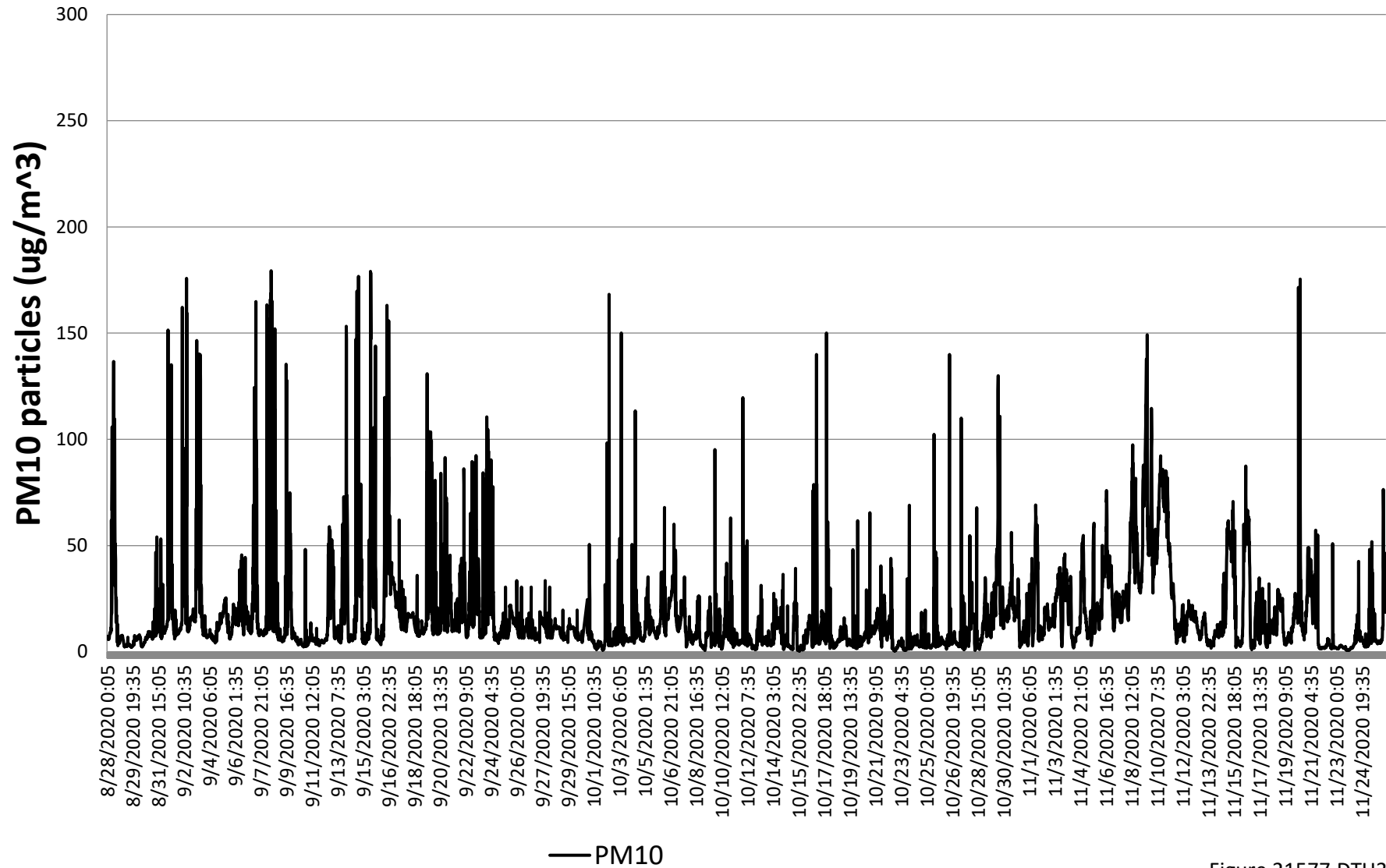


Figure 21577.DTH3



21577: 156-164 Gray's Inn Road & Panther House

Location 4. Dust Time History

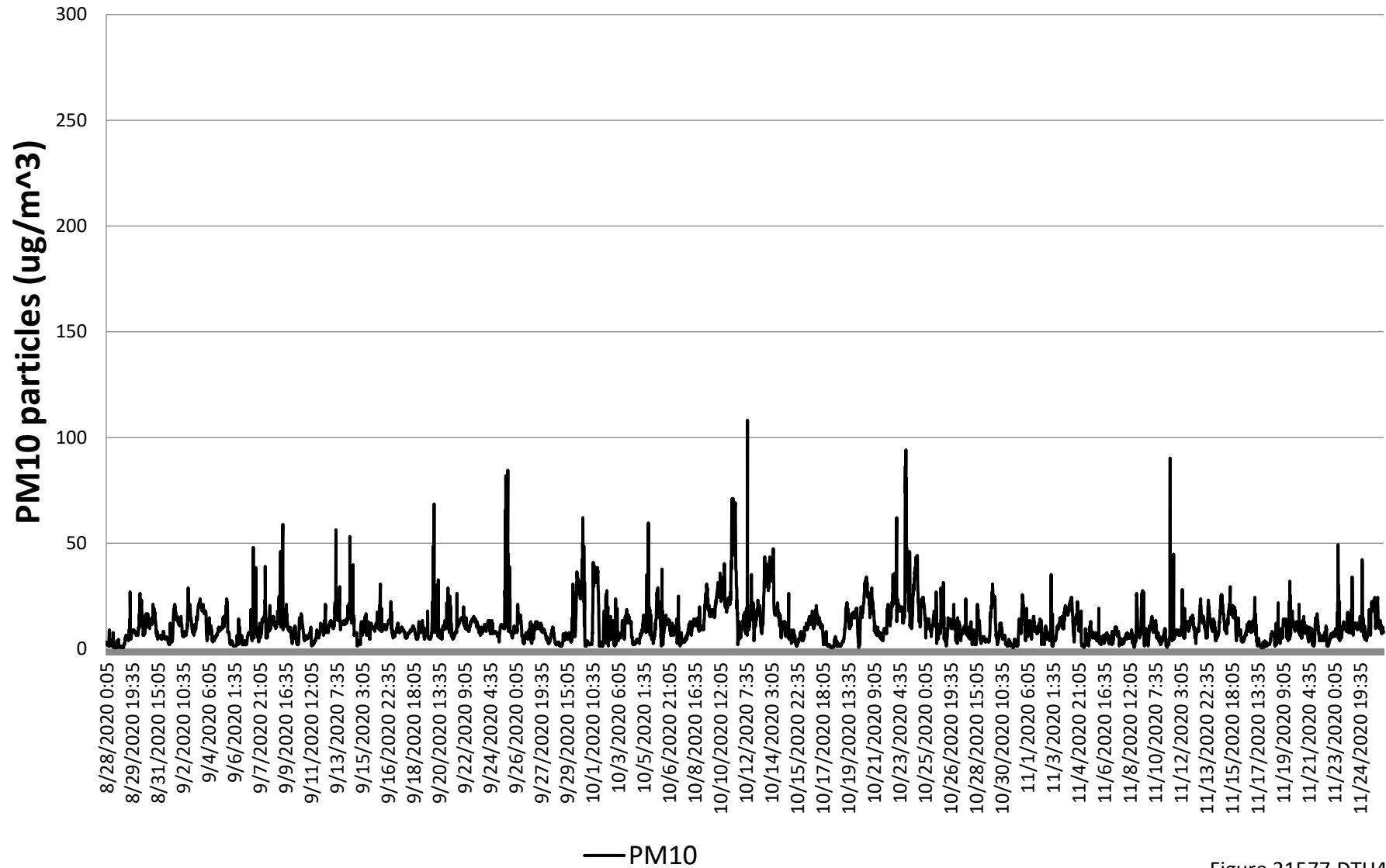


Figure 21577.DTH4