

Architectural & Environmental Acousticians
Noise & Vibration Engineers

Holloway Park, London

Construction Monitoring Report

Client: London Square

Ref: CM78-22405-R0

Date: 5 April 2024

Note by: Anthony Coraci, MSc DiplOA MIOA, Senior Acoustics Consultant

1. INTRODUCTION

1.1 This Technical Note sets out results of the construction monitoring being carried out at the above site between Monday 25th & Thursday 28th March 2024. No works took place on Friday 29th or Saturday 30th March due to the bank holiday weekend. The monitoring is being carried out in accordance with the methodology set out in the Cass Allen response (reference LR03-22405-R0 dated 27 October 2023) to a S60 warning letter issued to Downwell Demolition Ltd.

2. WEEKLY ACTIVITIES

2.1 The following activities have been carried out onsite this week, in addition to the usual use of the Haul Road with site vehicles:

ОНОВ

Creating a new haul road

Horizon

Demobilising on site from the recently completed crush works

Pure Logistic

- General site works
- Changing over fencing from walkways



Kesel

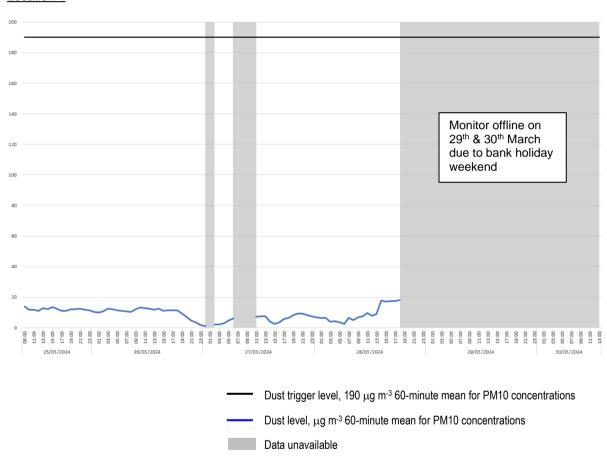
Refurbishment of new welfare containers

3. MONITORING DATA

3.1 This section sets out a summary of the monitoring data that has been recorded onsite and provides a discussion of any exceedances and best practicable means incorporated by the site team if exceedances were believed to be construction related.

Dust Monitoring Results

Location 1

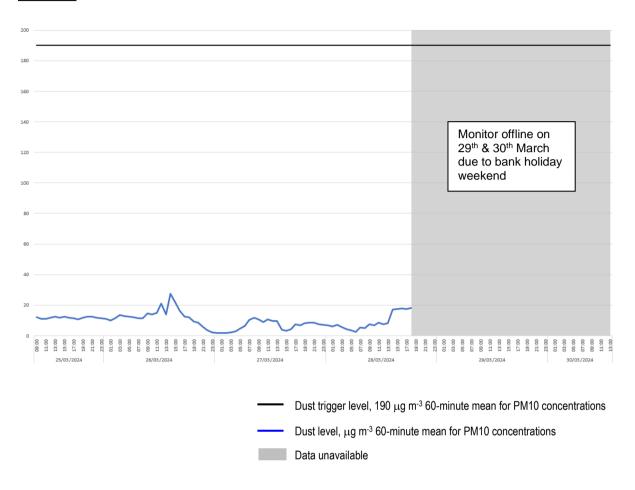


- 3.2 There was 95% data coverage at Location 1 during construction hours for the monitoring period covered by this report. The monitor was offline between 08:00 & 11:00 on Wednesday 27th March.
- 3.3 Cass Allen and London Square are intending to connect the monitors to site power as this becomes available at the monitoring locations. This will remove the reliance on battery power – it follows that there would consequently be far fewer interruptions in the data collection going forward. Cass Allen



will provide further updates on this in due course. No exceedances of the project dust criteria of 190 micrograms per cubic meter were recorded during the monitoring period covered by this report.

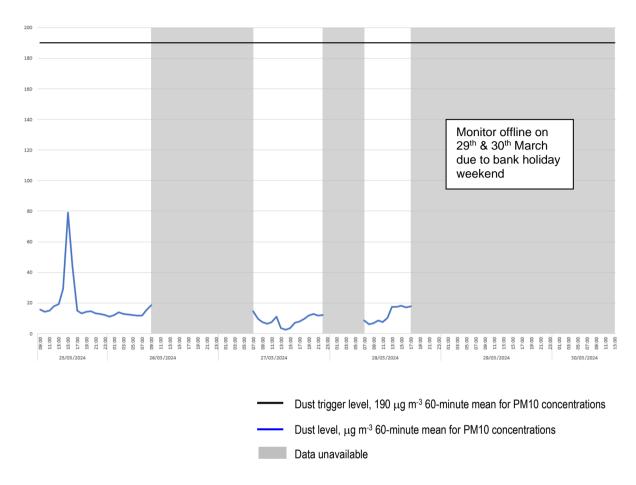
Location 2



- 3.4 There was 100% data coverage at Location 2 during construction hours for the monitoring period covered by this report.
- 3.5 No exceedances of the project dust criteria of 190 micrograms per cubic meter were recorded during the monitoring period covered by this report.



Location 3



- 3.6 There was 79% data coverage at Location 3 during construction hours for the monitoring period covered by this report. The monitor was offline between 09:00 & 18:00 on Tuesday 26th March, due to drained battery.
- 3.7 No exceedances of the project dust criteria of 190 micrograms per cubic meter were recorded during the monitoring period covered by this report.



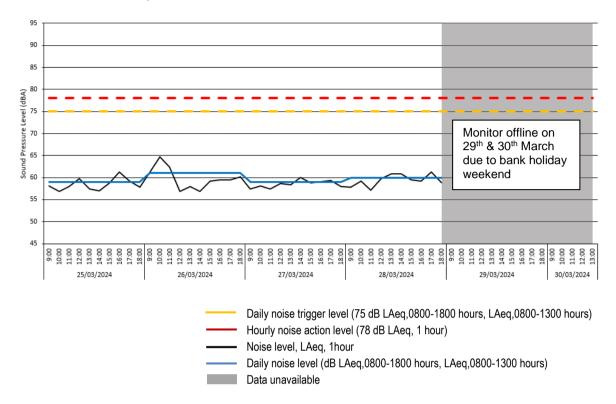
Noise Monitoring Results

Location 1 - Raw Data

# Broadband Results					
Date	Time	LAeg(60min)	LAeg(7hr)	LAeq(10hr)	LAeg(5hr)
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]
2024-03-25	09:00:00	58.1			
2024-03-25	10:00:00	56.8			
2024-03-25	11:00:00	58.0	-1-		-:-
2024-03-25	12:00:00	59.7	-1-		-:-
2024-03-25	13:00:00	57.4			
2024-03-25	14:00:00	57.0			
2024-03-25	15:00:00	58.8		-,-	
2024-03-25	16:00:00	61.3			
2024-03-25	17:00:00	59.2			
2024-03-25	18:00:00	57.8		58.6	
2024-03-26	09:00:00	61.1			
2024-03-26	10:00:00	64.7			
2024-03-26	11:00:00	62.3			
2024-03-26	12:00:00	56.9			
2024-03-26	13:00:00	58.0			
2024-03-26	14:00:00	56.9			
2024-03-26	15:00:00	59.2			
2024-03-26	16:00:00	59.4			
2024-03-26	17:00:00	59.5			
2024-03-26	18:00:00	60.1		60.5	
2024-03-27	09:00:00	57.4			
2024-03-27	10:00:00	58.1			
2024-03-27	11:00:00	57.4			
2024-03-27	12:00:00	58.7			
2024-03-27	13:00:00	58.4			
2024-03-27	14:00:00	60.0			
2024-03-27	15:00:00	58.8			
2024-03-27	16:00:00	59.1			
2024-03-27	17:00:00	59.3			
2024-03-27	18:00:00	57.9		58.6	
2024-03-28	09:00:00	57.8			
2024-03-28	10:00:00	59.2			
2024-03-28	11:00:00	57.1			
2024-03-28	12:00:00	59.7			
2024-03-28	13:00:00	60.9			
2024-03-28	14:00:00	60.8			
2024-03-28	15:00:00	59.5			
2024-03-28	16:00:00	59.2			
2024-03-28	17:00:00	61.3			
2024-03-28	18:00:00	58.8		59.6	



Location 1 - Time History Data



3.8 There was 100% data coverage at Location 1 during construction hours for the monitoring period covered by this report. No exceedances of the project hourly noise criteria of 78 dB LAeq nor the daily project noise limit of 75 dB LAeq (0800-1800 hours) were recorded during the monitoring period covered by this report.

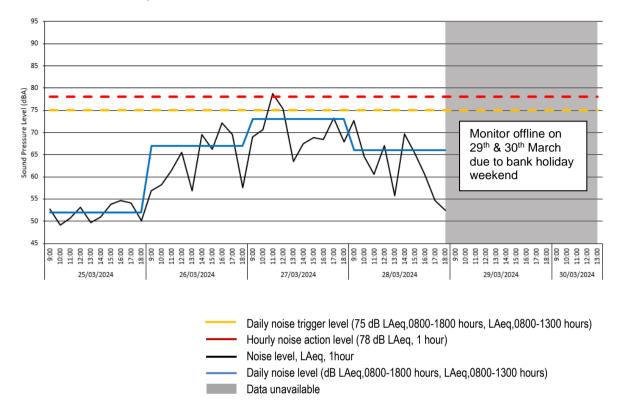


Location 2 - Raw Data

#	Broadband Results				
	Date	Time	LAeq(60min)	LAeg(10hr)	LAeq(5hr)
	[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]
	2024-03-25	09:00:00	52.7		
	2024-03-25	10:00:00	49.2	-:-	
	2024-03-25	11:00:00	50.7		
	2024-03-25	12:00:00	53.1		
	2024-03-25	13:00:00	49.7		
	2024-03-25	14:00:00	50.9		
	2024-03-25	15:00:00	53.8		
	2024-03-25	16:00:00	54.7		
	2024-03-25	17:00:00	54.1		
	2024-03-25	18:00:00	50.1	52.3	
	2024-03-26	09:00:00	56.8		
	2024-03-26	10:00:00	58.2		
	2024-03-26	11:00:00	61.4		
	2024-03-26	12:00:00	65.5		
	2024-03-26	13:00:00	56.9		
	2024-03-26	14:00:00	69.5		
	2024-03-26	15:00:00	66.2		
	2024-03-26	16:00:00	72.1		
	2024-03-26	17:00:00	69.5		
	2024-03-26	18:00:00	57.5	66.5	
	2024-03-27 2024-03-27	09:00:00 10:00:00	68.9 70.6		
	2024-03-27	11:00:00	78.8		
	2024-03-27	12:00:00	75.3		
	2024-03-27	13:00:00	63.4	7.7	
	2024-03-27	14:00:00	67.4		
	2024-03-27	15:00:00	68.8		
	2024-03-27	16:00:00	68.4		
	2024-03-27	17:00:00	73.3		
	2024-03-27	18:00:00	67.9	72.5	
	2024-03-28	09:00:00	72.7		
	2024-03-28	10:00:00	64.5		
	2024-03-28	11:00:00	60.6		
	2024-03-28	12:00:00	67.0		
	2024-03-28	13:00:00	55.7		
	2024-03-28	14:00:00	69.7		
	2024-03-28	15:00:00	65.3		
	2024-03-28	16:00:00	60.6		
	2024-03-28	17:00:00	54.6		
	2024-03-28	18:00:00	52.5	66.3	



Location 2 - Time History Data



3.9 There was 100% data coverage at Location 2 during construction hours for the monitoring period covered by this report. No exceedances of the project hourly noise criteria of 78 dB LAeq nor the daily project noise limit of 75 dB LAeq (0800-1800 hours) were recorded during the monitoring period covered by this report.

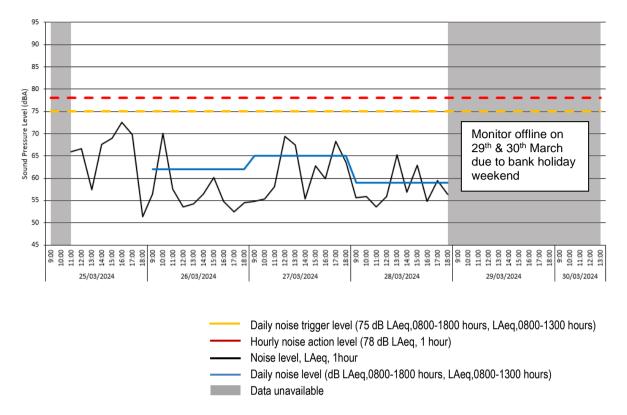


Location 3 - Raw Data

#	Broadband Results				
	Date	Time	LAeq(60min)	LAea(10hr)	LAeq(5hr)
	[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]
	2024-03-25	11:00:00	65.9		
	2024-03-25	12:00:00	66.6		
	2024-03-25	13:00:00	57.4		
	2024-03-25	14:00:00	67.6		
	2024-03-25	15:00:00	69.0		
	2024-03-25	16:00:00	72.5		
	2024-03-25	17:00:00	69.8		
	2024-03-25	18:00:00	51.4		
	2024-03-26	09:00:00	56.4		
	2024-03-26	10:00:00	70.1		
	2024-03-26	11:00:00	57.6		
	2024-03-26	12:00:00	53.5		
	2024-03-26	13:00:00	54.3		
	2024-03-26	14:00:00	56.5		
	2024-03-26	15:00:00	60.1		
	2024-03-26	16:00:00	54.8		
	2024-03-26	17:00:00	52.4		
	2024-03-26	18:00:00	54.5	61.5	
	2024-03-27	09:00:00	54.8		
	2024-03-27	10:00:00	55.3		
	2024-03-27	11:00:00	58.1		
	2024-03-27	12:00:00	69.4		
	2024-03-27	13:00:00	67.5		
	2024-03-27	14:00:00	55.3		
	2024-03-27	15:00:00	62.8		
	2024-03-27	16:00:00	59.9		
	2024-03-27	17:00:00	68.3		
	2024-03-27	18:00:00	63.5	64.5	
	2024-03-28	09:00:00	55.6		
	2024-03-28	10:00:00	55.9		
	2024-03-28	11:00:00	53.6		
	2024-03-28	12:00:00	55.9		
	2024-03-28	13:00:00	65.2		
	2024-03-28	14:00:00	56.8		
	2024-03-28	15:00:00	62.9		
	2024-03-28	16:00:00	54.8		
	2024-03-28	17:00:00	59.4		
	2024-03-28	18:00:00	56.3	59.4	



Location 3 - Time-history graph



- 3.10 There was 95% data coverage at Location 3 during construction hours for the monitoring period covered by this report. The monitor was offline between 08:00 and 11:00 on Monday 25th March, due to a drained battery.
- 3.11 No exceedances of the project hourly noise criteria of 78 dB LAeq nor the daily project noise limit of 75 dB LAeq (0800-1800 hours) were recorded during the monitoring period covered by this report.

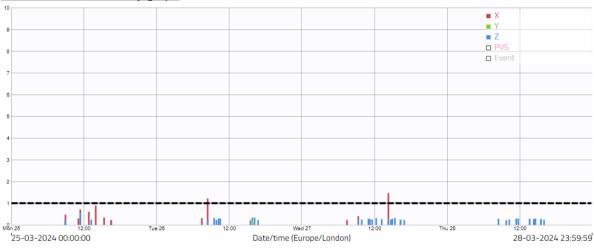


Vibration Monitoring Results

Location 1 - Raw data

Measuring point:		Period:		Order	Value	Date	Time
Holloway - L1		25/03/2024 to 28/03/2024		1	1.49	27/03/2024	14:19
				2	1.22	26/03/2024	08:28
Criteria mm/s PVS		Exceedances		3	0.90	25/03/2024	13:59
1.0		2		4	0.88	25/03/2024	11:26
				5	0.62	25/03/2024	12:51
				6	0.58	25/03/2024	11:25
				7	0.49	25/03/2024	12:44
				8	0.47	25/03/2024	08:59
				9	0.40	27/03/2024	09:21
				10	0.37	25/03/2024	15:22

Location 1 - Time-history graph



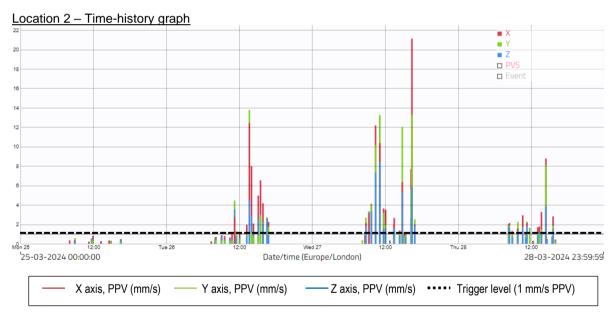


- 3.12 There was 100% data coverage at Location 1 during construction hours for the monitoring period covered by this report. There were two exceedances of the project vibration trigger level of 1 mm/s PPV as shown in the raw data and graph above. The highest recorded vibration level occurred on Wednesday 27th March at 14:19, with a recorded level of 1.5 mm/s PPV. It is worth noting from the raw data above that the exceedances are sporadic and are likely to have been caused by individual, short-lived events, rather than continuous activity at this location. This will continue to be monitored.
- 3.13 The majority of exceedances at this location are believed to be due to non-construction related activities. In this location, it is likely that the residents opening and closing the main door to the residential building will cause occasional vibration spikes, given that the monitor is located on the same facade as the doors.



Location 2 - Raw data

Measuring	g point:	Period:		Order	Value	Date	Time	Order	Value	Date	Time	Order	Value	Date	Time
Holloway -	- L2	25/03/202	4 to 28/03/2024	1	24.89	27/03/2024	16:25	31	5.08	26/03/2024	15:08	61	3.59	27/03/2024	12:05
				2	16.60	26/03/2024	13:40	32	4.96	27/03/2024	10:31	62	3.57	27/03/2024	10:39
Criteria m	m/s PVS	Exceedan	ces	3	14.13	27/03/2024	11:07	33	4.96	27/03/2024	14:46	63	3.53	27/03/2024	15:55
.0		421		4	14.02	27/03/2024	11:08	34	4.94	27/03/2024	10:45	64	3.41	28/03/2024	13:44
				5	13.70	27/03/2024	14:50	35	4.87	27/03/2024	09:21	65	3.38	27/03/2024	10:35
				6	12.77	27/03/2024	10:26	36	4.86	28/03/2024	14:32	66	3.35	26/03/2024	15:32
				7	11.71	27/03/2024	10:25	37	4.74	27/03/2024	10:30	67	3.33	28/03/2024	15:39
				8	11.20	27/03/2024	10:28	38	4.73	27/03/2024	09:44	68	3.33	28/03/2024	10:39
				9	10.16	26/03/2024	13:32	39	4.63	27/03/2024	10:53	69	3.33	27/03/2024	08:51
				10	9.74	28/03/2024	14:28	40	4.63	27/03/2024	10:51	70	3.28	27/03/2024	11:42
				11	9.65	27/03/2024	10:59	41	4.51	27/03/2024	10:48	71	3.26	27/03/2024	10:41
				12	9.62	27/03/2024	10:33	42	4.43	27/03/2024	10:42	72	3.23	27/03/2024	14:47
				13	8.61	26/03/2024	13:33	43	4.39	27/03/2024	11:04	73	3.18	27/03/2024	09:19
				14	8.21	27/03/2024	11:09	44	4.34	27/03/2024	10:46	74	3.17	27/03/2024	10:44
				15	8.08	27/03/2024	16:17	45	4.34	27/03/2024	10:50	75	3.14	27/03/2024	13:30
				16	8.01	26/03/2024	14:01	46	4.32	27/03/2024	10:15	76	3.09	27/03/2024	10:17
				17	7.32	27/03/2024	10:40	47	4.29	26/03/2024	15:31	77	3.06	27/03/2024	10:36
				18	7.18	26/03/2024	15:30	48	4.26	27/03/2024	16:18	78	3.04	27/03/2024	10:55
				19	6.66	26/03/2024	13:41	49	4.22	26/03/2024	11:11	79	2.94	28/03/2024	11:21
				20	6.66	26/03/2024	13:31	50	4.21	27/03/2024	11:01	80	2.92	27/03/2024	13:53
				21	6.40	27/03/2024	14:43	51	4.18	26/03/2024	15:54	81	2.91	27/03/2024	11:00
				22	6.21	27/03/2024	10:49	52	4.09	27/03/2024	10:11	82	2.90	28/03/2024	08:28
				23	6.12	26/03/2024	13:43	53	3.99	27/03/2024	10:10	83	2.83	26/03/2024	16:49
				24	5.79	26/03/2024	15:29	54	3.99	27/03/2024	14:45	84	2.80	27/03/2024	16:08
				25	5.76	27/03/2024	14:38	55	3.97	27/03/2024	10:34	85	2.79	28/03/2024	14:29
				26	5.66	27/03/2024	10:54	56	3.93	27/03/2024	10:38	86	2.77	27/03/2024	11:15
				27			13:28	57	3.92	26/03/2024	16:35	87	2.77	27/03/2024	14:42
				28		27/03/2024	14:44	58	3.80	28/03/2024	14:31	88	2.76	27/03/2024	10:43
				29			11:14	59			13:35	89	2.75	26/03/2024	15:55
				30			13:34	60	3.74	27/03/2024	11:45	90	2.73	28/03/2024	10:44



3.14 There was 100% data coverage at Location 2 during construction hours for the monitoring period covered by this report. There were 421 exceedances of the project vibration trigger level of 1.0 mm/s PPV, which are shown in the raw data and graph above. The highest recorded vibration level occurred on Wednesday 27th March at 16:25, with a recorded level of 24.9 mm/s PPV. It is understood that the majority of exceedances at this location were caused by pile mat repair work, which lasted appx. three days. It is worth noting that higher than usual vibration levels were recorded at this location during the week covered by this report. The site team have confirmed that the pile mat repair works have now finished. The site team have also confirmed that no complaints were received due to vibration emissions over the period covered by this report.



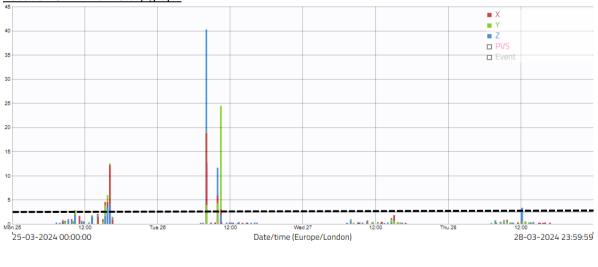
3.15 In addition, the site team confirmed that several exceedances were caused by a battery change and plant equipment within proximity of the monitor. Furthermore, it is our understanding that one of the residents behind the monitoring location has some form of workshop with power tools at the rear of their garden. Any operation of these tools could also generate vibration alerts.

Location 3 - Raw data

Measuring	g point:	Period:		Order		Date	Time	Order	Value	Date	Time	Order	Value	Date	Time
Holloway	- L3	25/03/202	24 to 28/03/2024	1	40.39	26/03/2024	08:06	31	2.32	25/03/2024	14:13	61	1.34	25/03/2024	15:49
				2		26/03/2024	10:30	32	2.27	25/03/2024	13:14	62	1.31	25/03/2024	16:41
Criteria m	m/s PVS	Exceedan	ces	3	17.96	26/03/2024	08:09	33	2.25	25/03/2024	16:16	63	1.25	25/03/2024	09:51
1.0		77		4	16.44	25/03/2024	16:10	34	2.21	25/03/2024	14:09	64	1.19	25/03/2024	15:21
				5	14.54	26/03/2024	08:08	35	2.15	27/03/2024	15:07	65	1.19	25/03/2024	15:13
				6	12.56	26/03/2024	09:57	36	2.14	25/03/2024	13:12	66	1.18	25/03/2024	15:17
				7	9.43	25/03/2024	16:09	37	2.11	25/03/2024	15:36	67	1.18	27/03/2024	07:57
				8	6.95	25/03/2024	15:47	38	2.05	25/03/2024	10:23	68	1.18	25/03/2024	09:18
				9	5.91	26/03/2024	08:07	39	2.03	28/03/2024	12:12	69	1.17	25/03/2024	13:11
				10	5.54	25/03/2024	16:08	40	2.00	25/03/2024	14:12	70	1.15	25/03/2024	16:37
				11	5.51	25/03/2024	15:23	41	1.98	26/03/2024	08:05	71	1.13	25/03/2024	16:30
				12	5.25	25/03/2024	15:45	42	1.96	27/03/2024	15:08	72	1.13	25/03/2024	16:38
				13	5.06	25/03/2024	15:48	43	1.89	25/03/2024	13:10	73	1.13	25/03/2024	16:11
				14	4.92	25/03/2024	15:46	44	1.87	25/03/2024	13:09	74	1.11	25/03/2024	08:24
				15	4.51	25/03/2024	15:39	45	1.80	25/03/2024	15:42	75	1.03	25/03/2024	09:15
				16	4.51	26/03/2024	09:58	46	1.79	25/03/2024	15:35	76	1.03	25/03/2024	15:01
				17	4.19	26/03/2024	08:04	47	1.79	25/03/2024	16:14	77	1.01	25/03/2024	11:10
				18		25/03/2024	10:24	48	1.75	25/03/2024	15:16	78	1.00	25/03/2024	16:18
				19	3.85	25/03/2024	15:38	49	1.62	25/03/2024	15:14	79	0.99	25/03/2024	12:58
				20	3.72	25/03/2024	16:07	50	1.60	25/03/2024	11:18	80	0.99	25/03/2024	15:40
				21	3.67	25/03/2024	15:43	51	1.59	25/03/2024	15:18	81	0.98	25/03/2024	16:15
				22		28/03/2024	12:16	52	1.55	25/03/2024	13:13	82	0.98	25/03/2024	09:08
				23	3.30	25/03/2024	15:44	53	1.53	25/03/2024	16:26	83	0.93	25/03/2024	16:23
				24		25/03/2024	15:22	54		27/03/2024	14:40	84		28/03/2024	09:15
				25		28/03/2024	12:10	55	1.45	25/03/2024	16:36	85	0.90	28/03/2024	09:46
				26		25/03/2024	15:24	56	1.42	25/03/2024	15:34	86	0.89	27/03/2024	07:55
				27		25/03/2024	16:12	57	1.41	26/03/2024	09:45	87	0.87	25/03/2024	16:25
				28	2.63	25/03/2024	11:09	58	1.40	25/03/2024	16:17	88	0.85	25/03/2024	16:27
				29	2.39	25/03/2024	13:15	59	1.40	25/03/2024	15:41	89	0.85	28/03/2024	07:50
				30	2.35	25/03/2024	16:13	60	1.40	25/03/2024	15:20	90	0.84	25/03/2024	15:37



X axis, PPV (mm/s)



3.16 There was 100% data coverage at Location 3 during construction hours for the monitoring period covered by this report. There were 28 exceedances of the project vibration trigger level of 1.0 mm/s PPV, which are shown in the raw data and graph above. The highest recorded vibration level occurred on Tuesday 26th March at 08:06, with a recorded level of 40.4 mm/s PPV.

Z axis, PPV (mm/s)

Y axis, PPV (mm/s)

Trigger level (1 mm/s PPV)

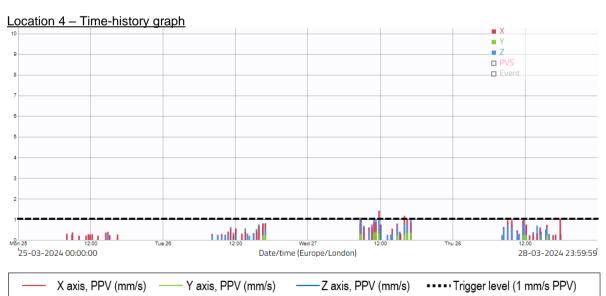


- 3.17 It is understood that the majority of exceedances were likely to have been caused onsite vehicles moving material within the vicinity of the monitor. It is possible that the higher vibration levels recorded over this period were also caused by vehicle movements (i.e. when a lorry drives over an uneven part of ground near the monitor, a high vibration level can be recorded). Furthermore, it is understood that several exceedances at this location were caused by pile mat repair work, which lasted appx. three days. It is worth noting that higher than usual vibration levels were recorded at this location during the week covered by this report. The site team have confirmed that the pile mat repair works have now finished. The site team have also confirmed that no complaints were received due to vibration emissions over the period covered by this report.
- 3.18 In addition, it is our understanding that one of the residents behind the monitoring location has some form of workshop with power tools at the rear of their garden. Any operation of these tools could also generate vibration alerts.
- 3.19 However, due to the proximity between the vibration sensor and the nearest sensitive receptor, it follows that the vibration levels at this position would have been lower than shown at the sensor location, but still likely above the 1.0 mm/s PPV action level at the NSR, at times.
- 3.20 Cass Allen will continue to review noise and vibration emissions and advise on any further practicable measures to minimise vibration.



Location 4 - Raw data

Measuring point:		Period:		Order	Value	Date	Time
Holloway - L4		25/03/2024 to 28/03/2024		1	1.58	27/03/2024	11:50
				2	1.49	27/03/2024	11:48
Criteria m	nm/s PVS	Exceedan	ces	3	1.38	27/03/2024	11:49
1.0		21		4	1.26	27/03/2024	17:06
				5	1.17	27/03/2024	16:02
				6	1.15	28/03/2024	11:50
				7	1.15	27/03/2024	08:51
				8	1.14	27/03/2024	11:47
				9	1.14	27/03/2024	08:43
				10	1.11	27/03/2024	11:19
				11	1.11	27/03/2024	11:00
				12	1.10	28/03/2024	11:49
				13	1.08	27/03/2024	17:03
				14	1.08	26/03/2024	16:35
				15		28/03/2024	17:52
				16	1.06	28/03/2024	09:50
				17	1.05	28/03/2024	11:51
				18	1.04	27/03/2024	14:50
				19	1.03	27/03/2024	11:39
				20	1.03	27/03/2024	16:29
				21	1.02	28/03/2024	11:41
				22	1.00	28/03/2024	09:09
				23	0.99	28/03/2024	11:58
				24	0.97	28/03/2024	11:48
				25	0.97	27/03/2024	11:13
				26	0.97	27/03/2024	08:47
				27	0.96	27/03/2024	11:38
				28	0.96	27/03/2024	16:27
				29	0.96	27/03/2024	16:28
				30	0.95	27/03/2024	11:01





3.21 There was 100% data coverage at Location 4 during construction hours for the monitoring period covered by this report. There were 22 exceedances of the project vibration trigger level of 1.0 mm/s PPV, which are shown in the raw data and graph above. The highest recorded vibration level occurred on Wednesday 27th March at 11:50, with a recorded level of 1.6 mm/s PPV. Although this recorded level is a relatively small exceedance of the vibration trigger level, this will continue to be monitored. It is also worth noting that the vibration sensor is fixed to the garden wall of a private residential dwelling and the monitor is located next to a child's play area. It is, therefore, possible that exceedances at this location may have been caused by non-construction related activity.