

APPENDIX 10.3
ENVIRONMENTAL NOISE SURVEY (BUROHAPPOLD, 2019)

10.3 ENVIRONMENTAL NOISE AND VIBRATION SURVEY

Methodology – Noise

To assess the noise environment at the site, attended noise surveys were carried on Tuesday 3rd September 2019 (daytime), Monday/Tuesday 2nd- 3rd and Tuesday/Wednesday 3rd- 4th September 2019 (night-time). The measurement locations are shown in Figure 10.3.

All measurements were taken in free-field conditions with a microphone height of approximately 1.5m above ground level.

Location A was midway along the site boundary at the carriageway on Syon Lane, approximately 90m from the junction with Great West Road. During both daytime and night-time periods, sources of ambient noise at this location were caused by road traffic on Syon Lane, with background noise being caused by distant road traffic. Typical maximum noise events were caused by plane movements overhead.

Location B was on the carriageway at the junction between Syon Lane and Great West Road. Sources of ambient noise at this location during both periods were road traffic on Syon Lane and Great West Road, with background noise being caused by distant road traffic. Typical maximum noise events were caused by plane movements overhead.

Location C was on the carriageway of Great West Road, approximately 125m away from the junction with Syon Lane. Sources of ambient noise at this location during both periods were road traffic on Great West Road, with background noise being caused by distant road traffic. Typical maximum noise events were caused by plane movements overhead.

Location D was approximately 15m from a railway line that lies south east of the site boundary. Ambient noise at this location for both measurement periods was caused by traffic from Syon Lane, with typical maximum noise events being caused by plane movements overhead. Background noise was caused by distant road traffic

Location E was on the site's south eastern boundary, overlooking the railway line, approximately 15m away. Ambient noise at this location for both measurement periods was caused by traffic from Syon Lane, with typical maximum noise events being caused by plane movements overhead. Background noise was caused by distant road traffic

The daytime measurements were carried out generally in accordance with the shortened measurement procedure detailed in the Calculation of Road Traffic Noise (CRTN) document (Department of Transport (Welsh Office), 1988).

Night-time measurements were carried out between 23:00 and 01:30h, representative of the noisiest period at night. Although night-time noise levels will reduce further in the period 01:00-07:00h, the measured levels have been considered representative of the entire 8-hour period, in order to provide a robust, worst-case assessment.

Weather Conditions

Weather conditions during the measurement periods were generally cloudy, warm and dry. Wind speeds were within suitable parameters for the measurement of environmental noise (i.e. generally under 5 ms^{-1}). All microphones were protected with a windshield for the duration of the survey.

Equipment

The equipment used during the environmental noise survey is detailed in Table 10.3.1, below.

Table 10.3.1. Equipment Used in Environmental Noise Survey

Equipment	Manufacturer & Part No.	Serial Number
Sound Level Meter	Casella C633C	1488264
Pre-amplifier	CEL 495	003937
Microphone	CEL 251	002590
Calibrator	CEL 120/1	2045151

The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, with the exception of the calibrator, which had been calibrated not more than one year prior to the survey.

Environmental Noise Survey Results

Daytime Noise Levels

A summary of the daytime noise levels measured are presented in Table 2, below. Measurements were taken over 15-minute periods, in 3 consecutive hours between 10:00 and 17:00h, generally in accordance with the shortened measurement procedure in CRTN.

Table 10.3.2 Summary of daytime measured noise levels

Location	Period, h	L _{Aeq} (dB)	L _{A10} (dB)	L _{A90} (dB)	L _{Amax, F} (dB)
A	10:24-10:39	71.3	72.5	58.0	96.3
	11:50-12:05	67.9	71.5	58.5	80.3
	13:01-13:16	69.0	72.0	58.0	85.3
B	10:57-11:12	69.2	72.1	60.5	95.3
	12:07-12:22	67.3	70.5	61	78
	13:18-13:33	67.8	71	61.4	79.7
C	11:01-11:16	70.9	74.5	59.5	82.4
	12:11-12:26	70.2	74	60.5	80.9
	13:21-13:36	70.5	74.0	60.0	88.1
D	11:28-11:43	64.6	70	48.5	78.0
	12:39-12:54	61.8	66.5	52.0	74.6
	13:45-14:00	61.9	65.5	49.5	82.0
E	10:19-10:34	63.2	67.0	50.6	78.4
	11:48-12:03	63.1	67.7	50.3	76.2
	12:59-13:14	65.0	67.6	52.0	85.7

All measurements were taken in free field conditions.

Based on the CRTN methodology, the data shown in Table 10.3.2, above, can be used to determine the 16-hour daytime ambient noise level.

The logarithmic average of the dBL_{A10} values provides the 3-hour average, $dBL_{A10,3hour}$. This is converted to the 18-hour $dBL_{A10,18hour}$ value by subtracting 1dB. This is then converted to the 16-hour ambient noise level, $dBL_{Aeq,16hour}$, by subtracting a further 2dB. The results of these calculations are shown in Table 3, below, compared with the logarithmic average of the ambient noise levels measured. The higher value of the two has been used in the assessment.

Table 10.3.3 Assessment of daytime ambient noise levels

Location	Average Measured Ambient Noise Level, $dBL_{Aeq,T}$	CRTN Ambient Noise Level, $dBL_{Aeq,16hour}$	Value Used in Assessment, $dBL_{Aeq,16hour}$
A	69	69	69
B	68	68	68
C	71	71	71
D	63	65	65
E	64	64	64

Night-Time Noise Levels

A summary of the night-time noise levels measured are presented in Table 10.3.4, below. The measurements were carried out between 23:00 and 01:00h, representative of the noisiest period at night. Although night-time noise levels will reduce further in the period 01:00-07:00h, these levels have been considered representative of the entire 8-hour period, in order to provide a robust, worst-case assessment.

Table 10.3.4 Summary of night-time measured noise levels

Location	Period, h	L _{Aeq} (dB)	L _{A10} (dB)	L _{A90} (dB)	L _{Amax,F} (dB)
A	23:52-00:17	63	67	47	78
	00:26-00:41	61	64	43	78
	01:02-01:17	60	62	42	79
B	00:10-00:25	62	67	49	77
	00:45-01:00	61	64	44	82
C	01:20-01:35	58	60	42	73
	00:37-00:52	60	64	51	75
D	01:12-01:27	45	47	38	62
	00:19-00:34	49	51	41	68
E	23:44-23:59	63	67	51	80
	00:01-00:16	61	66	50	76

Methodology – Vibration

Vibration measurements were carried out at Location E using a Vibrok V9000 seismograph serial number 2177. A number of passenger and freight train movements were measured. The accelerometer was calibrated both prior to and on completion of the survey with no calibration drifts observed.

The rail line adjacent to the site is part of the 'Hounslow Loop' with services between London Waterloo and Weybridge. There are approximately 8 passenger train movements per hour during the daytime period, and occasional freight movements overnight. Passenger trains run between approximately 0530 hours and midnight and are formed of electric units. Syon Lane station is within close proximity to the site.

Daytime measurements were affected by localized traffic and pedestrian movements along the access road and as such have not been used in the assessment.

At night the measured PPV was 0.625mm/s. The VDV was below 0.1m/s^{-1.75}.