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Noico Limited
Landmark House
Station Road
Hook
Hampshire RG27 9HA

Tel: 01256 766207
Email: sales@noico.co.uk
Web site: www.noico.co.uk

REPORT No. 2204058-3

Unit 17 Capitol Park
Capitol Close
Dodworth
Barnsley
S75 3UB

ENVIRONMENTAL NOISE SURVEY & PLANT NOISE ASSESSMENT REPORT

PREPARED: 9th May 2022

Presented by: Martyn Ayling (BSc, MIOA)

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1.0 Introduction

1.1 Celsius Solutions Limited has commissioned Noico Ltd to conduct an environmental noise survey at the site of Unit 17 Capitol Park, Capitol Close, Dodworth, Barnsley.

1.2 The purpose of the survey is to obtain statistical noise data and to determine the background noise levels at the site. Based on the noise survey data, noise criteria are to be established for limiting noise emission from the mechanical plant installations serving the premises. The noise criteria are to be set in accordance with the requirements of the local planning authority (Barnsley Metropolitan Borough Council).

1.3 Following completion of the survey, a noise assessment is to be carried out on the proposed new external mechanical plant installations to establish whether the plant will meet the planning noise requirements or whether noise control measures will be required.

1.4 The development site is a 2-storey industrial unit of some 20,000 sq. ft, situated within the Capitol Park commercial development. The site is located close to the M1 motorway (approximately 75 metres away to the east) and is surrounded by several other similar industrial units. Residential housing is situated to the east (beyond the motorway) approximately 250 metres away, and to the south approximately 160 metres away. The Ibis Hotel is situated approximately 45 metres to the south and this is considered to be the nearest noise sensitive property to the development site.

1.5 As part of the development plans, new items of mechanical plant are to be installed externally at ground level on the north east side of the building facing in the direction of the M1 motorway. The plant comprises a number of condenser units and close control air conditioning units.

2.0 Instrumentation

2.1 A precision grade Larson Davies ‘Type 1’ data logging sound level meter was used for the survey. This was equipped with an environmental microphone and extension cable. The instrument was powered by an external battery and stored in a weatherproof case.

2.2 The instrument was calibrated prior and subsequent to use with no calibration drift recorded.

3.0 Survey Details

3.1 Location: The environmental noise analyser microphone was located externally and fixed to the boundary fence in the south east corner of the site approximately 6 metres from the building, close to where the new plant is to be installed. This position was chosen as it was considered to be representative of the background noise environment that exists in the area and at the Ibis Hotel which is the nearest adjacent noise sensitive property.

3.2 Period: Monitoring was carried out continuously from approximately 11:30 hrs on the 3rd May through to 11:45 hrs on the 4th May 2022. The instrument was set up to monitor noise levels continuously and store data in fifteen-minute intervals.

3.3 Weather: The prevailing weather condition throughout the survey period was satisfactory for noise monitoring, being overcast with very light wind levels and some light intermittent rain. Windspeed, although not recorded, was considered to be less than 5 m/s throughout the survey period, and temperatures ranged from approximately 8 degrees centigrade to 16 degrees centigrade.

3.4 Site Noise Characteristics: Although the survey was un-manned, at the time of setting up and collecting the survey equipment, the ambient noise level was characterised by road traffic noise from the nearby M1 motorway and surrounding road systems. It is thought that no unusual events occurred during the survey period and the data are considered to be a true representation of ambient noise levels.

4.0 Survey Results

4.1 The results of the environmental survey are presented in graphical and numerical format in the attached appendices, showing the recorded values of L_{Aeq} and L_{A90}.

4.2 See Appendix 1 for a glossary of terms.

4.3 With reference to the measured data, the minimum background noise level measured during the survey period was:

Daytime (07:00 to 23:00hrs)	- 56.0 L_{A90}
Night time (23:00 to 07:00hrs)	- 43.0 L_{A90}

5.0 Environmental Noise Level Criteria – Residential and Noise Sensitive properties

5.1 Criteria for mechanical services noise emission are normally based upon the prevailing level of background noise in the period of concern and may be set against this to a level as normally defined by the local planning authority.

5.2 Barnsley Metropolitan Borough Council has confirmed that they assess each application on its own merit in terms of plant noise emissions associated with new commercial or industrial use near to residential or noise sensitive properties. In the absence of any specific planning requirement it is safe to assess the noise in accordance with BS4142 with the aim of controlling noise to 5dB below the prevailing minimum background noise levels.

5.3 To conform to the above criteria, and in accordance with the minimum background noise levels measured during the survey (detailed summarised in 4.3 above), noise from the proposed plant installations should not exceed the following value.

Daytime plant operation (07:00 to 23:00hrs)	- 51.0 dB L_{Aeq}
Night time (23:00 to 07:00hrs)	- 38.0 dB L_{Aeq}

Note: These levels must be achieved cumulatively with all plant operating, and as measured at 1 metre from the window of the nearest affected property.

6.0 BS4142 Noise Assessment

6.1 We understand the following plant equipment is to be installed externally at ground level immediately to the east of the building and facing towards the motorway. Also detailed below is the noise data as confirmed by the equipment manufacturers.

Plant reference	**Model**	**Plant type**	**Sound pressure level (free field)**
CU-00-01 to CU-00-06 (6No.)	Mitsubishi PUZ-ZM100VKA2	Air cooled heat pump condensers	51dBA at 1 metre
CU-00-07	Denco DMA018U	Close control AC unit	48dBA at 5 metres
CU-00-08 to CU-00-11 (4No.)	Denco DMA065U	Close control AC units	51dBA at 5 metres
CU-00-12	Denco DMA045U	Close control AC unit	52dBA at 5 metres

6.2 We understand the plant serving the Comms Room and Build Room (CU-00-07 to CU-00-12) will operate 24 hours a day, whilst the condensers (CU-00-01 to CU-00-16) will operate daytime hours only (07;00 to 23;00hrs).

6.3 A review of the plant noise level indicates that there is no evidence of any tonal content and no acoustic feature correction is required.

6.4 The nearest noise sensitive property is the IBIS Hotel which is located approximately 45 metres to the south of the development site, with the nearest plant item being a further 5 metres away. The following calculations detail the resultant noise level at the windows of the hotel for both day and nightime plant operation.

Daytime (07;00 to 23;00hrs) noise level prediction at windows of nearest noise sensitive property (The IBIS Hotel)

PLANT ITEM	**CU-00-01 to CU-00-06 (6No.)**	**CU-00-07**	**CU-00-08 to CU-00-11 (4No.)**	**CU-00-12**	**Resultant level**
Sound pressure level free-field	51dBA at 1m	48dBA at 5m	51dBA at 5m	52dBA at 5m	
Correction for multiple units (dB)	+9	0	+6	0	
Distance loss to windows (dB) (average)	(65m) - 36	(73m) -23	(60m) -22	(75m) -24	
Reverberation effect of area (dB)	+3	+3	+3	+3	
Directivity correction (60 degrees)	-3	-3	-3	-3	
Specific noise level L_{Aeq} (dB)	27	28	38	31	**36dBA**
Acoustic feature correction (dB)	0	0	0	0	**0**
Rating level (dB)					**36dBA**
Noise criteria external to hotel windows					**51dBA**
Safety margin					**15dBA**

Nightime (23;00 to 07;00hrs) noise level prediction at windows of nearest noise sensitive property (The IBIS Hotel)

PLANT ITEM	CU-00-01 to CU-00-06 (6No.)	CU-00-07	CU-00-08 to CU-00-11 (4No.)	CU-00-12	**Resultant level**
Sound pressure level free-field	n/a	48dBA at 5m	51dBA at 5m	52dBA at 5m	
Correction for multiple units (dB)	n/a	0	+6	0	
Distance loss to windows (dB) (average)	n/a	(73m) -23	(60m) -22	(75m) -24	
Reverberation effect of area (dB)	n/a	+3	+3	+3	
Directivity correction (60 degrees)	-3	-3	-3	-3	
Specific noise level L_{Aeq} (dB)	n/a	28	38	31	**36dBA**
Acoustic feature correction (dB)	n/a	0	0	0	**0**
Rating level (dB)	n/a				**36dBA**
Noise criteria external to hotel windows					**38dBA**
Safety margin					**2dBA**

6.5 The results of our assessment indicate that the noise level at the nearest affected windows is below the council requirement and therefore no acoustic treatment is required.

7.0 Conclusion

7.1 A background noise level survey has been carried out at Unit 17 Capitol Park, Barnsley over a 24-hour period.

7.2 Based upon the survey results and discussions with the local planning authority, criteria applicable to noise from the mechanical services plant have been established.

7.3 A plant noise assessment for the proposed new equipment being installed at the above has established that the required criterion will be achieved without the need for acoustic treatment.

Appendix 1 - Glossary of Terms

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (Lp) the reference quantity is $2x10^{-5}$ N/m^2. The sound pressure level existing when microphone measured pressure is $2x10^{-5}$ N/m^2 is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (Lp).
Frequency	Is related to sound pitch; frequency equals the ratio between velocity of sound and wavelength.
A weighting	Arithmetic corrections applied to values of Lp according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of Lp actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of Lp actually measured.
$L_{n,T}$	Lp which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during time, T.
$L_{Amax,T}$	The instantaneous maximum A weighted sound pressure level which occurred during time, T.
Background Noise Level	The value of $L_{A90,T}$, ref. BS4142:1997.
Traffic Noise Level	The value of $L_{A10,T}$.
Specific Noise Level	The value of $L_{Aeq,T}$ at the assessment position produced by the specific noise source, ref. BS4142:1997.
Rating Level	The specific noise level, corrected to account for any characteristic features of the noise, by adding a 5 dBA penalty for any tonal, impulsive or irregular qualities, ref. BS4142:1997.
Specific Noise Source	The noise source under consideration when assessing the likelihood of complaint.
Assessment Position	Unless otherwise noted, is a point at 1 m from the façade of the nearest affected sensitive property.

Appendix 2 - Environmental Noise Monitoring Data

Date	LAeq	LA90
2022-05-03	74.2	66.0
2022-05-03	67.5	65.6
2022-05-03	67.7	65.5
2022-05-03	67.4	65.1
2022-05-03	67.4	65.3
2022-05-03	67.5	65.7
2022-05-03	67.6	65.8
2022-05-03	67.6	65.2
2022-05-03	67.6	65.5
2022-05-03	67.5	65.6
2022-05-03	67.5	65.0
2022-05-03	67.4	64.9
2022-05-03	67.3	65.1
2022-05-03	67.3	65.1
2022-05-03	67.5	65.2
2022-05-03	67.8	65.6
2022-05-03	67.8	65.8
2022-05-03	67.8	65.9
2022-05-03	67.7	65.8
2022-05-03	67.8	65.9
2022-05-03	68.0	66.4
2022-05-03	67.7	65.8
2022-05-03	67.8	66.2
2022-05-03	67.3	64.8
2022-05-03	67.8	66.1
2022-05-03	67.8	66.0
2022-05-03	68.0	66.0
2022-05-03	67.5	65.6
2022-05-03	67.4	65.4
2022-05-03	66.9	64.4
2022-05-03	66.5	63.8
2022-05-03	66.2	63.4
2022-05-03	66.2	63.8
2022-05-03	65.7	62.6
2022-05-03	65.6	62.1
2022-05-03	65.4	62.1
2022-05-03	65.0	61.9
2022-05-03	65.0	61.7
2022-05-03	65.0	61.0
2022-05-03	64.7	60.0
2022-05-03	63.8	59.1
2022-05-03	64.2	60.8
2022-05-03	63.7	58.9
2022-05-03	63.4	58.7
2022-05-03	62.9	58.3
2022-05-03	62.6	57.1
2022-05-03	62.6	56.0
2022-05-03	62.4	54.8
2022-05-03	62.3	56.0
2022-05-03	63.2	55.0
2022-05-03	61.3	52.5
2022-05-04	61.6	53.6
2022-05-04	60.5	51.6
2022-05-04	63.5	52.8
2022-05-04	60.9	51.8
2022-05-04	60.4	50.6
2022-05-04	60.7	48.5
2022-05-04	60.7	50.1
2022-05-04	59.9	43.0
2022-05-04	65.0	48.7
2022-05-04	59.9	46.8
2022-05-04	59.8	49.1
2022-05-04	59.6	47.6
2022-05-04	60.3	50.5
2022-05-04	59.9	47.8
2022-05-04	60.4	48.8
2022-05-04	61.4	49.8
2022-05-04	60.4	47.2
2022-05-04	61.9	55.3
2022-05-04	62.3	56.5
2022-05-04	62.3	57.2
2022-05-04	63.7	58.5
2022-05-04	64.8	61.0
2022-05-04	65.8	62.1
2022-05-04	66.7	63.3
2022-05-04	68.1	65.6
2022-05-04	69.0	67.0
2022-05-04	69.6	67.3
2022-05-04	69.9	68.0
2022-05-04	70.2	68.3
2022-05-04	68.5	65.9
2022-05-04	67.1	65.5
2022-05-04	68.9	66.9
2022-05-04	69.6	67.8
2022-05-04	68.1	64.6
2022-05-04	63.1	58.9

Date	LAeq	LA90
2022-05-04	67.3	63.3
2022-05-04	68.4	66.9
2022-05-04	68.4	66.8
2022-05-04	68.0	65.8
2022-05-04	67.9	65.8
2022-05-04	67.6	65.6
2022-05-04	67.2	65.0
2022-05-04	68.1	64.9

Figure 1

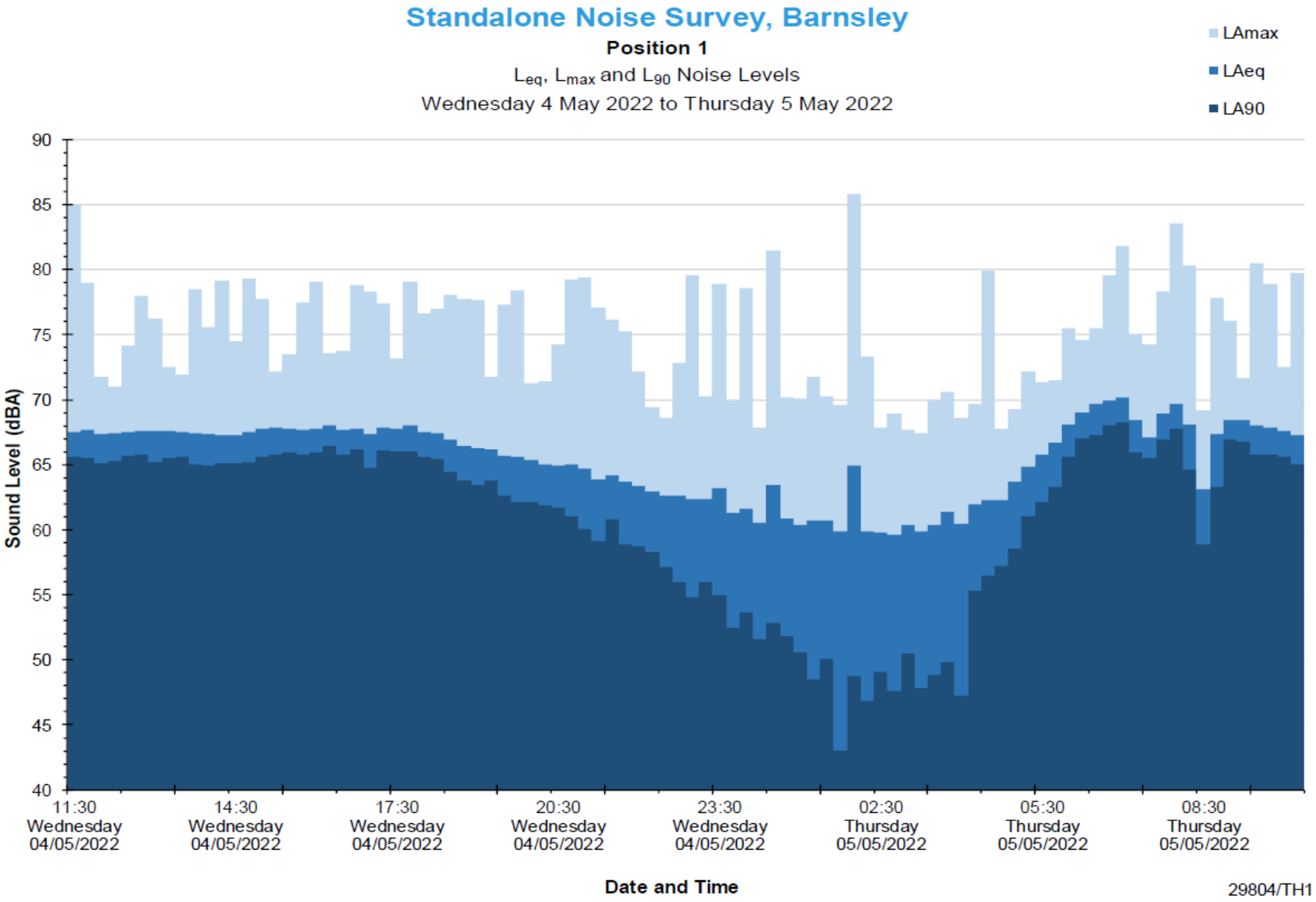
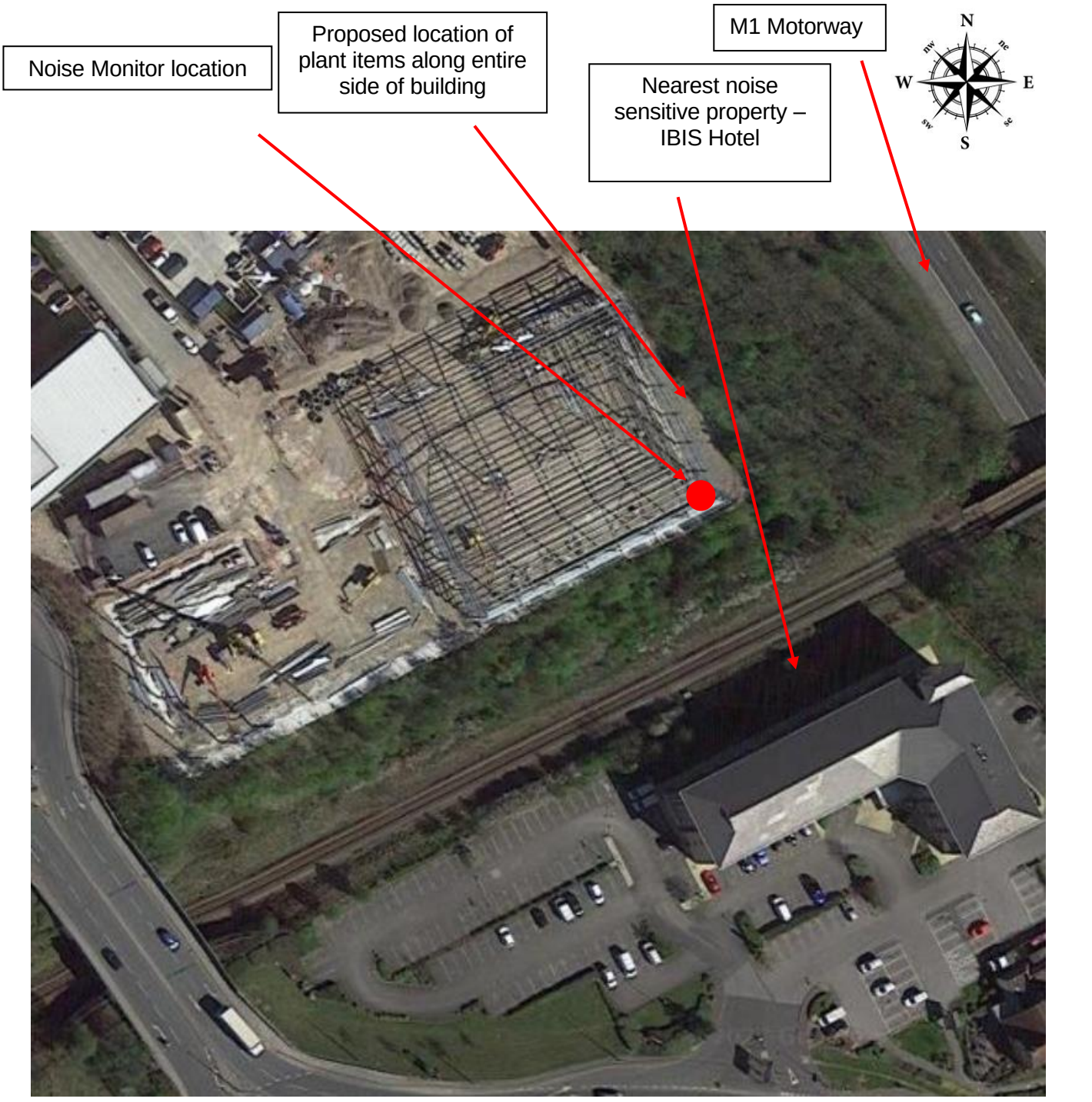

Standalone Noise Survey, Barnsley
Position 1
Leq, Lmax and L90 Noise Levels
Wednesday 4 May 2022 to Thursday 5 May 2022
LAmax
LAeq
LA90
Sound Level (dBA)
90
85
80
75
70
65
60
55
50
45
40
11:30 Wednesday 04/05/2022
14:30 Wednesday 04/05/2022
17:30 Wednesday 04/05/2022
20:30 Wednesday 04/05/2022
23:30 Wednesday 04/05/2022
02:30 Thursday 05/05/2022
05:30 Thursday 05/05/2022
08:30 Thursday 05/05/2022
Date and Time
29804/TH1

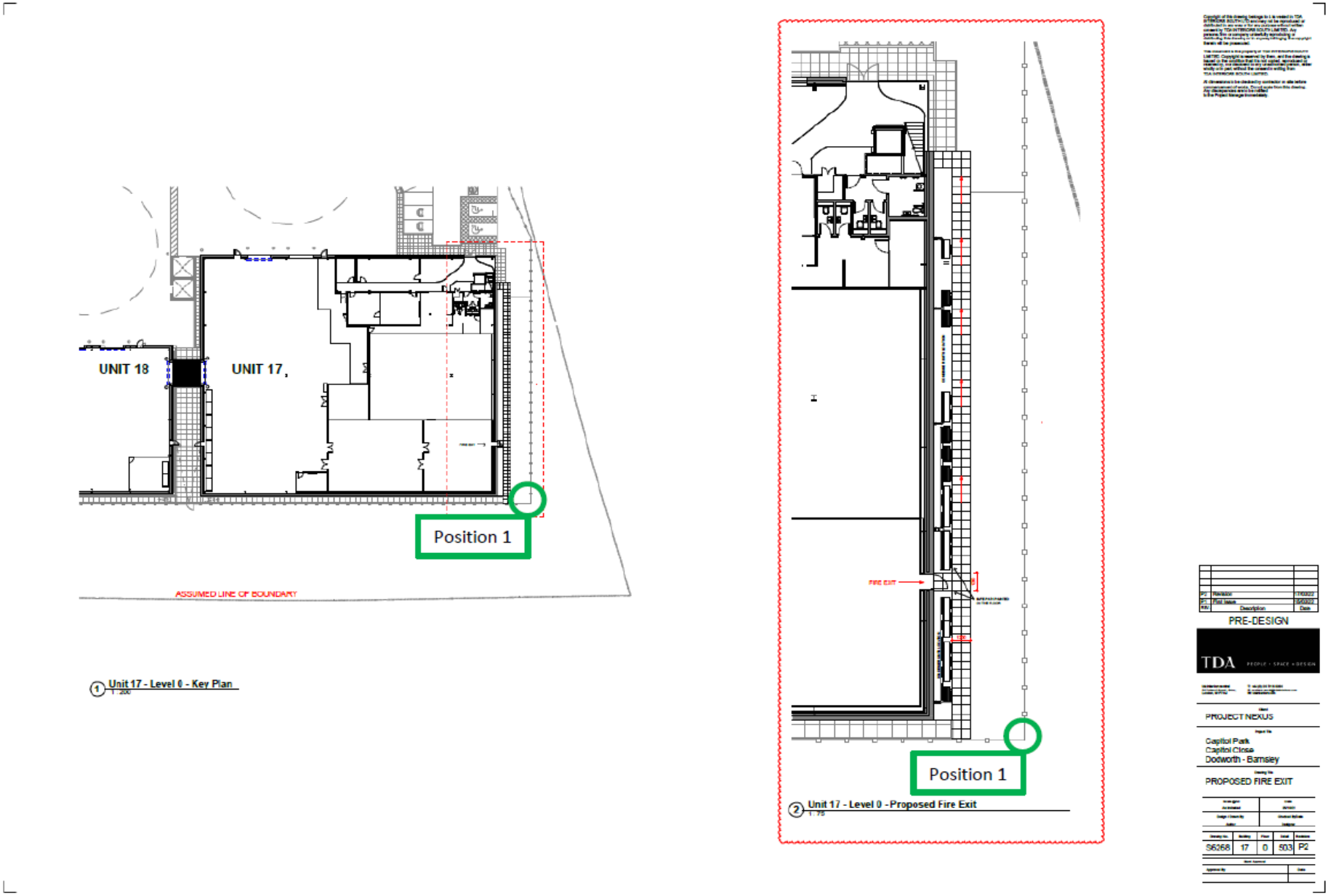
Figure 2



NOICO NOISE CONTROL	Project: Unit 17, Capitol Park	Title: Noise Survey Position
	Dwg No: 32204058 Rev A	Date: 9th May 2022

Landmark House, Station Road, Hook, Hampshire, RG27 9HA
Tel: 01256 766207

Figure 3


UNIT 18
UNIT 17
Position 1
ASSUMED LINE OF BOUNDARY
1 Unit 17 - Level 0 - Key Plan
1 : 200
FIRE EXIT
Position 1
2 Unit 17 - Level 0 - Proposed Fire Exit
1 : 75
PRE-DESIGN
TDA
PROJECT NEXUS
Capitol Park
Capitol Close
Dodworth - Barnsley
PROPOSED FIRE EXIT
S6268
17
0
503
P2