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# **Noise Impact Assessment for a Proposed Carbon Capture Facility**

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**Runcorn Energy from Waste Facility**



Report Quality Management			
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# 1 Executive Summary

- 1.1 The Acoustics, Noise and Vibration Team at Savills has been appointed by Viridor Runcorn CCS Limited (Viridor) to undertake a noise impact assessment in relation to an 'Environmental Permit' (EP) variation application to add a proposed 'monoethanolamine' (MEA) based Carbon Capture facility (CC facility). The CC facility will be constructed on land adjacent to the existing Runcorn Energy from Waste' (EfW) Facility.
- 1.2 From a noise emissions perspective, the primary sources of noise associated with the operation of the CC facility would be the operation of 45 hybrid coolers, flue gas fan and flue gas discharge at the stack exit. Whist additional noise sources would also be present, these would be located within buildings/structures or be relatively minor noise sources such as pumps housed in enclosures etc.
- 1.3 Noise emissions from the site will controlled through the selection of quiet plant (variable speed fans for the coolers) and inclusion of physical mitigation measures (louvres, silencers and enclosures). Due to technical and spatial constraints (cooling demand required and area of site respectively), it is not feasible to include additional techniques.
- 1.4 During periods the coolers are operating at up to 90% fan speed, which would occur for 99% of the year, Rating Levels would not exceed the representative background sound level at the nearest 'noise sensitive receptors' (NSRs). Furthermore, specific sound levels at NSRs would be relatively low, and not result in more than a negligible +1 dB increase in ambient sound levels, or be otherwise distinguishable.
- 1.5 During periods the coolers are operating at maximum capacity, which would occur for 0.4% of the year (11 hours), Rating Levels would be up to 6 dB above the representative background sound level, resulting in a marginal +3 dB increase in ambient sound level at the most affected NSR, considered to be of moderate adverse impact.
- 1.6 However, as this moderate adverse impact would only occur for 11 hours in a year, and would be limited to the daytime period only, and therefore not affecting sleep, it is considered that, on balance over the entire year, the overall impact would be negligible.
- 1.7 Consequently, when considering the operation of the CC facility over the entire year period, the resulting site noise impact would be negligible at all NSRs and for all time periods.

## 2 Introduction

- 2.1 The Acoustics, Noise and Vibration Team at Savills has been appointed by Viridor Runcorn CCS Limited (Viridor) to undertake a noise impact assessment in relation to an 'Environmental Permit' (EP) variation application for a proposed 'monoethanolamine' (MEA) based 'carbon capture' (CC) facility. The CC facility will be constructed on land adjacent to the existing Runcorn 'energy from waste' (EfW) facility.
- 2.2 From a noise emissions perspective, the primary sources of noise associated with operation of the CC facility would be the operation of 45 hybrid coolers, flue gas fan and flue gas discharge at the stack exit. Whilst additional noise sources would also be present, these would be located within buildings/structures or be relatively minor noise sources such as pumps housed in enclosures etc.
- 2.3 The CC facility would operate on a 24/7 basis; however, noise emissions would vary depending on the 'wet bulb' (WB) temperature. This is as the coolers operate at an increased fan speed at higher WB temperatures to provide the necessary cooling demand. Based on data provided by BAC (the proposed cooler manufacturer), the coolers would only operate at 100% fan speed (and maximum noise emissions) for 0.4% of the year (when the WB temperature is >19°C), and for 85% of the time would operate with a fan speed of <50% (when the WB temperature is <14°C).
- 2.4 The assessment has been undertaken based upon information on the proposed development provided by the project team. The assessment considers potential adverse noise impacts affecting the nearest 'noise sensitive receptors' (NSRs) to the proposed development site. The assessment has been undertaken following a baseline noise survey and desktop assessment.
- 2.5 As the CC facility is a new addition to the current EP and is not currently constructed/operational, no previous surveys or assessments have been completed. However, it is noted that the permitted Runcorn EfW is adjacent to the proposed CC facility, for which previous surveys and assessments have been completed. It is also understood that noise mitigation works have been completed by Viridor recently.
- 2.6 The technical content of this assessment has been provided by Savills personnel, all of whom are corporate members, i.e. Member (MIOA) or Fellow (FIOA), of the Institute of Acoustics (IOA), the UK's professional body for those working in acoustics, noise and vibration. The assessment has been undertaken with integrity, objectivity and honesty in accordance with the Code of Conduct of the IOA.
- 2.7 The Team is also a member of the Association of Noise Consultants (ANC) which seeks to raise the standards of acoustic consultancy and improve recognition of the vital role which good acoustics, and the management and mitigation of noise and vibration play in achieving good design and effective planning in the built and natural environment. Membership of the ANC indicates that the Team is sufficiently competent to pass the high standards for entry to the association.

- 2.8 This report and assessment has been peer reviewed within the Savills team to ensure that it is technically robust and meets the requirements of our Integrated Management System.
- 2.9 Personnel and individual qualifications are provided within the Quality Management table at the start of this report and in Appendix A in accordance with the requirement of Section 12 of British Standard (BS) 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142) [1].



### 3 Site, Area and Baseline Acoustic Environment

#### Site Layout & Noise Sources

- 3.1 Figure 3.1 below shows the current proposed site layout. The 45 coolers will be located on the roof of the Compressor House and CCP structure buildings. The flue gas stack exit point will be at ~105 m above ground level.
- 3.2 Other noise sources will be located within the Compressor House, CCP structure and Carbon Capture buildings buildings/structures.

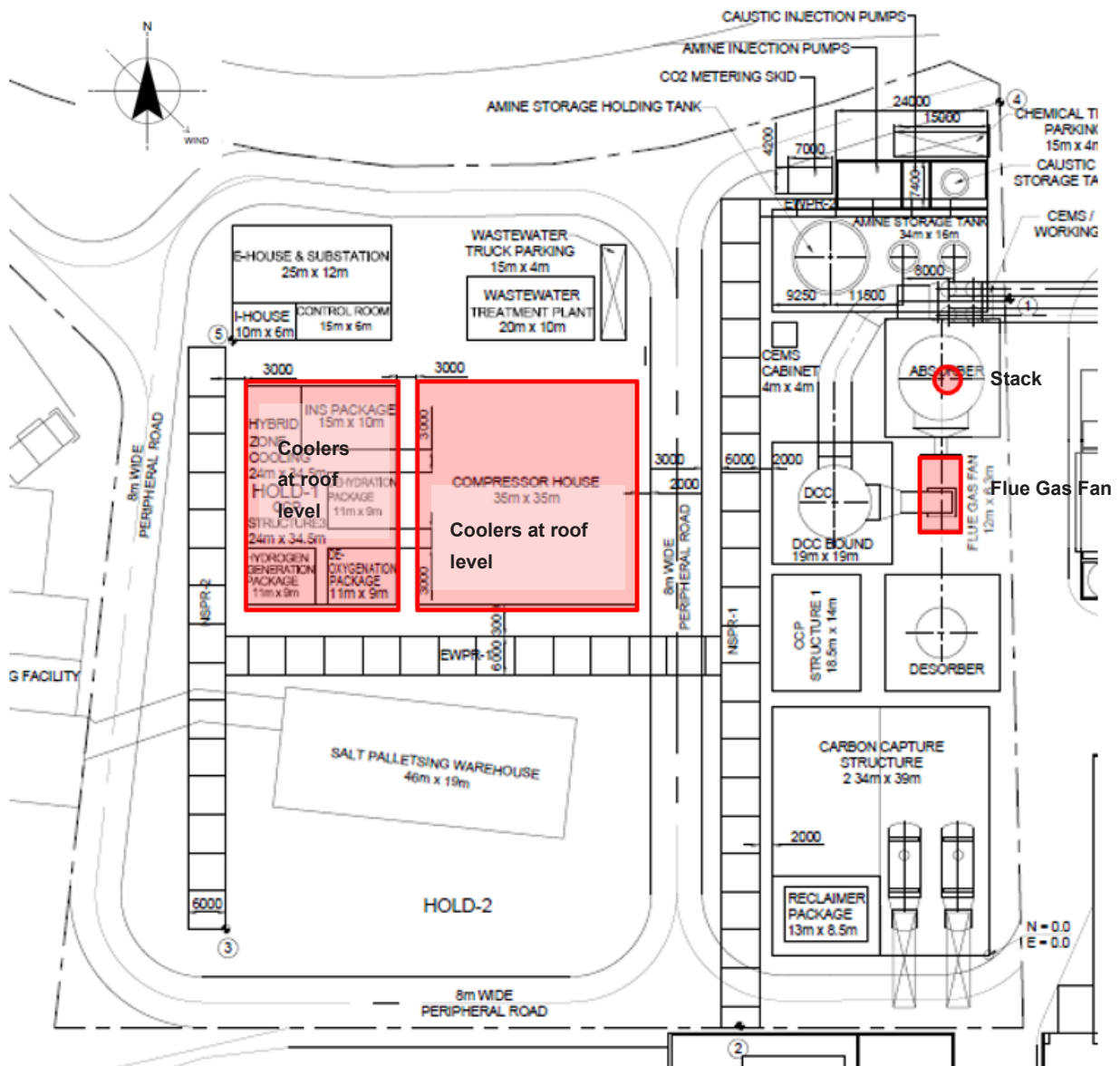
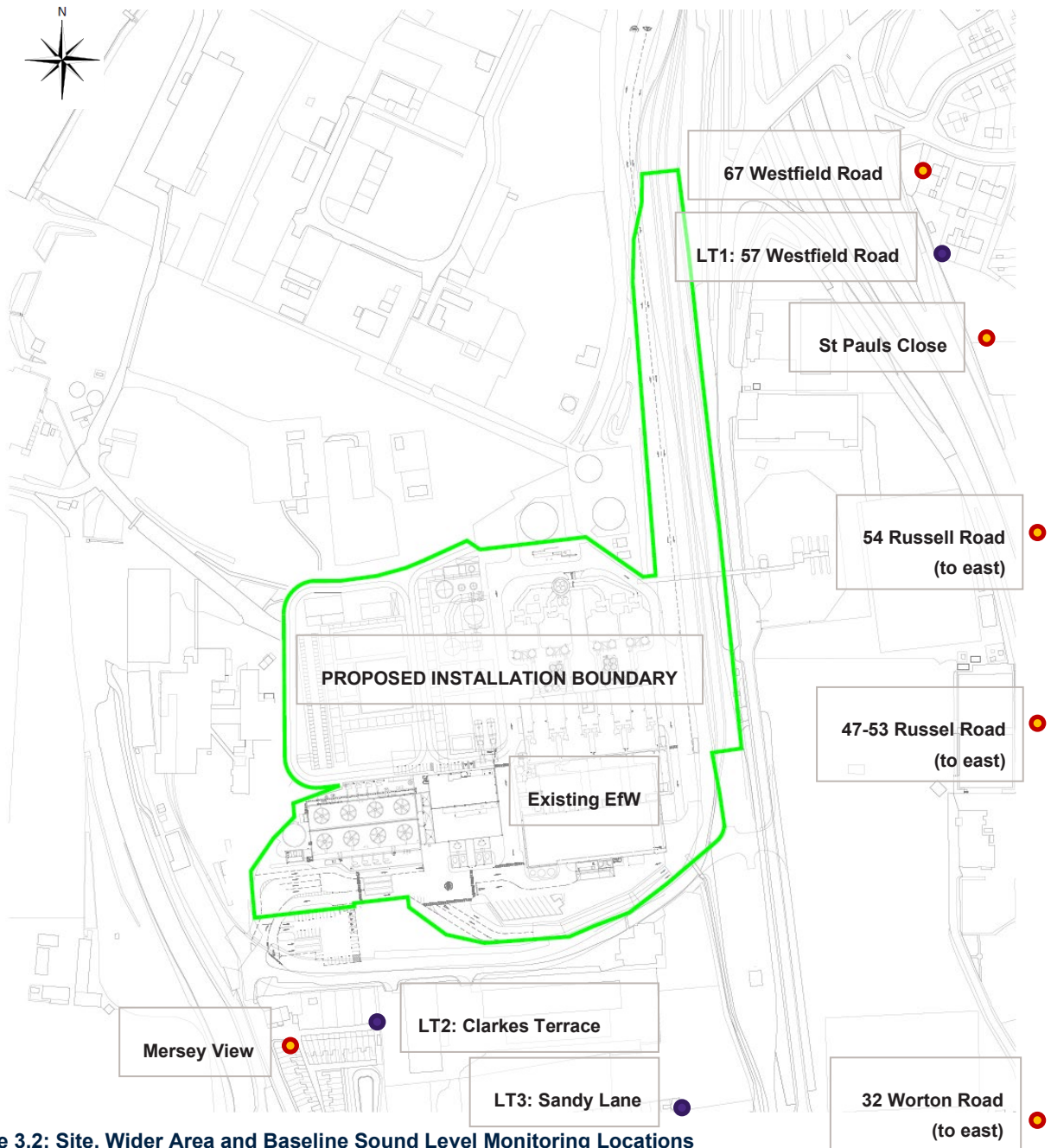


Figure 3.1: Site Layout & Noise Sources

## Site and Wider Area

3.3 Figure 3.2 below shows the proposed installation boundary, wider area and identified NSRs. Also identified are the locations of baseline sound level monitoring (LT1, LT2 and LT3), undertaken in August 2023, as detailed below.



**Figure 3.2: Site, Wider Area and Baseline Sound Level Monitoring Locations**

- 3.4 The site of the proposed CC facility is on land immediately adjacent to the existing Runcorn EfW facility.
- 3.5 Other existing commercial and industrial land uses are also located in the immediate vicinity of the proposed CC facility, particularly to the north, including recycling and manufacturing facilities. Historically, the area has been used for commercial and/or industrial purposes for a number of decades.
- 3.6 On the basis of the above, sound of an industrial and/or commercial nature will have historically affected the acoustic environment in the area around and close to the site.
- 3.7 The ground type between the site and the nearest NSRs to the south (Clarkes Terrace and Mersey View) is hard, albeit there are existing and substantial intervening structures associated with the existing EfW facility.
- 3.8 The ground type between the site and NSRs located further to the north-east, east, and south-east is generally soft (grass fields, foliage etc.), with some hard ground (roads etc.) with an increasing number of intervening structures further from the site. The land is generally elevated away from the site.

### Baseline Conditions

- 3.9 In order to establish baseline acoustic conditions at NSR locations, three long term unattended sound level surveys (LT1, LT2 and LT3) were deployed on Thursday 10 August and collected on Monday 21 August 2023.
- 3.10 LT1 was deployed at 57 Westfield Road, approximately 450 m to the north-east of the site boundary. Due to the proximity of the A557 (located between the site and survey location) and distance to site, it is considered that the acoustic environment at LT1 would be similar to the acoustic environment more generally at locations to the east, i.e. on/close to Russel Road.
- 3.11 The microphone was mounted at 2.3 m above ground level in a free-field position (at least 3.5 m from any reflecting surface, excluding the ground) using the Rion NL-52 all-weather kit.
- 3.12 At the time of setting up and collecting the LT1 survey, the following noise sources were noted as affecting the acoustic environment: regular road traffic movements on the (the road was considered to be busy with regular vehicle movements, including HGVs, albeit with periods with low/negligible flow) and commercial aircraft soon after taking off from Liverpool John Lennon Airport (i.e. relatively low). At no point was noise from the existing EfW facility noted as being audible.
- 3.13 LT2 was deployed on the south-eastern boundary of a local commercial facility on Mersey View Road at 2 m above ground in a free field position, approximately 200 m to the south of the site boundary and approximately 10 m north of NSRs on Clarkes Terrace. Due to the close proximity,

this location is considered to be a representative of the acoustic environment of the nearest NSRs to the south, i.e. at Clarkes Terrace and Mersey View.

- 3.14 At the time of setting up and collecting the LT2 survey, the following noise sources were noted as affecting the acoustic environment: a slight rattle of an operational fan from the neighbouring commercial premises (not the EfW facility), distant road traffic movements and noise from a fan located on the EfW site. It should be noted that, whilst audible, the EfW fan noise source was not considered to be loud, or particularly discernible, i.e. tonal, rather a low level relatively broadband noise.
- 3.15 LT3 was deployed on a fence adjacent to 39 Sandy Lane at 2 m above ground in a free field position at a position approximately 280 m to the south-east of the site boundary and immediately adjacent to dwellings on Sandy Lane. Due to the proximity of Sandy Lane and distance to the site, it is considered that the acoustic environment at LT3 would be similar to the acoustic environment more generally to the south-east, i.e. on/close to Sandy Lane.
- 3.16 At the time of setting up and collecting the LT3 survey, the following noise sources were noted as affecting the acoustic environment: road traffic movements on the (regular movements, including HGVs, albeit with periods with low/negligible flow), distant road traffic movements and pedestrians walking on the footway. At no point was noise from the existing EfW facility noted as being audible.
- 3.17 The LT1 sound level measurements were made using a Rion NL-52 sound level meter (SLM)<sup>1</sup> in accordance with BS 7445-2:1991 'Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use' [2]. The SLM was set to log the A-weighted broadband sound pressure level (SPL) in 125 ms periods at 1/3 octave bands. Raw data were post processed into 15 minute periods.
- 3.18 The LT2 and LT3 sound level measurements were made using NSRT Mk3 SLMs in accordance with BS 7445. The SLM was set to log the A-weighted broadband SPL in 15-minute periods.
- 3.19 The equipment calibration level for each measurement was checked with a Svantek SV33B handheld calibrator<sup>2</sup> to 94.0 dB prior to and after the monitoring period; no significant deviation (i.e. above 0.5 dB) was noted.
- 3.20 Meteorological conditions were monitored with a Luft WS600-UMB Smart Weather Sensor, deployed at the location of LT1. The survey period was largely dry with only one period of rain and wind speeds were low at all times (below 5 m/s). As such, sound level data logged during the period of rain have been removed from the subsequent analysis. However, it should be noted that

<sup>1</sup> S/N: 520993, purchased 17/02/2023.

<sup>2</sup> S/N: 123979, purchased 06/06/2022

comparison of the complete and rain removed data sets shows only negligible difference of less than 1 dB and only for some metrics.

- 3.21 Raw data, time histories, equipment details (serial numbers etc.) and photos of survey locations are provided in Appendix B.

## 4 Methodology

### Assessment Methodology

- 4.1 In accordance with Environment Agency (EA) guidance, this assessment has been undertaken based on the methodology detailed in BS 4142, a summary of which is provided below. It is understood
- 4.2 BS 4142 primarily provides a numerical method by which to determine the significance of sound of a commercial and/or industrial nature, i.e. the 'specific sound', at NSR locations.
- 4.3 The specific sound level may then be corrected for the character of the sound, if appropriate, and is then termed the 'Rating Level' whether corrections are made or not.
- 4.4 The commentary to paragraph 9.2 of BS 4142 suggests the following subjective methods for the determination of the rating penalty for tonal, impulsive and/or intermittent specific sounds:

#### *Tonality*

*For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a rating penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.*

#### *Impulsivity*

*A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.*

#### *Intermittency*

*When the specific sound has identifiable on/off conditions, the specific sound level should be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. ... If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.*

#### *Other sound characteristics*

*Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."*



- 4.5 The Rating Level is then compared to the background sound level, which should be representative of the period being assessed.
- 4.6 The approach that has been adopted for this project is based on unattended surveys to obtain 15-minute values of  $L_{A90,T}$  for a continuous period of at least 1-week at each assessment location. Representative background sound levels for the daytime and night-time have been derived from a combination of statistical data analysis; review of the temporal variations of sound and meteorological data throughout the survey period; and professional judgment supplemented by aural and visual observations of the acoustic environment at the survey locations.
- 4.7 Only data that was measured when the wind speeds were at or less than 5 m/s were included in the dataset used to derive the baseline noise levels. The standard indicates that measurements can be taken in wind speeds up to 5 m/s, i.e. it states *“Exercise caution when making measurements in poor weather conditions such as wind speeds greater than 5 m/s”*. It is considered that, by only using data obtained when wind speeds are at or less than 5 m/s, data will be obtained that is valid in this respect in accordance with BS 4142.
- 4.8 An initial estimate of the impact of the specific sound is obtained by subtracting the representative background sound level from the Rating Level.
- 4.9 Typically, the greater this difference, the greater is the magnitude of the impact:
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
  - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- 4.10 The lower the rating level is relative to the representative background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 4.11 The significance of the effect of the noise in question should be determined on the basis of the initial estimate of impact significance from the BS 4142 assessment with reference to the examples of outcomes described within the PPG-N and after having considered the context of the sound. It is necessary to consider all pertinent factors, including:
- the absolute level of sound;
  - the character and level of the residual sound compared to the character and level of the specific sound; and

- the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

### Noise Propagation Methodology

- 4.12 As the CC facility is not yet operational, specific sound levels associated with operation of the CC facility at NSR locations have been predicted using a 3D sound model, built using SoundPLAN v8.2 noise modelling software.
- 4.13 The model predicts sound levels under light down-wind conditions based on hemispherical sound propagation with corrections for atmospheric absorption, ground effects, screening and directivity based on the procedure detailed in ISO 9613-2:1996 'Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation' [3].



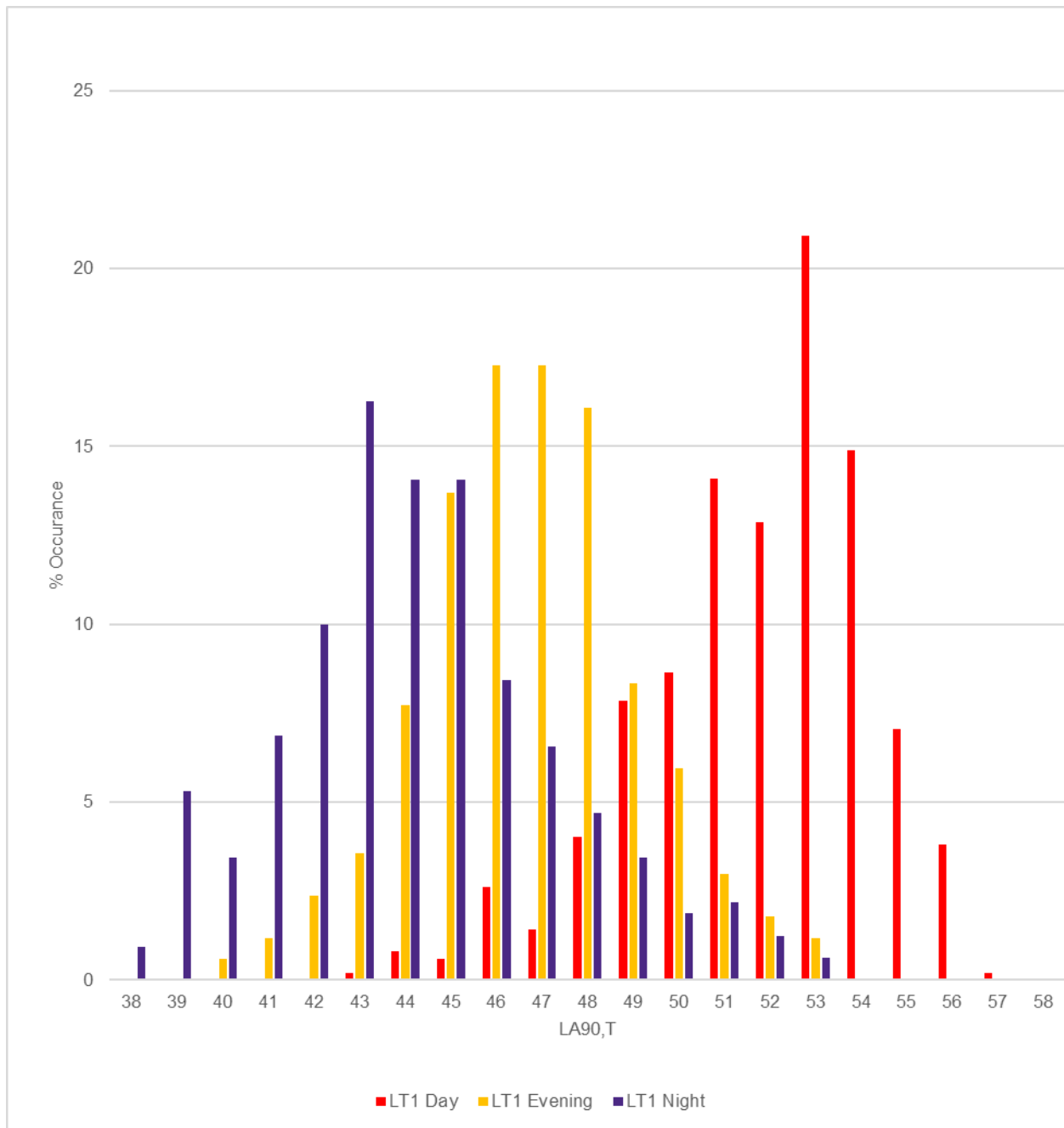
## 5 Noise Monitoring Data and Predictions

### Representative Baseline Sound Levels

- 5.1 Tables 5.1 to 5.3 and Figures 5.1 to 5.3 below provide a tabular and graphical summary of the 15-minute baseline sound levels measured at LT1, LT2 and LT3 respectively, for the daytime (07:00 to 23:00 hours), evening (23:00 to 07:00 hours) and night-time (23:00 to 07:00 hours) periods. Note that the figures only show background sound levels.
- 5.2 BS 4142 requires that the background sound levels adopted for the assessment are representative of the period being assessed. The Standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-minute intervals, which can be contiguous or disaggregated (paragraph 8.13 of BS 4142).
- 5.3 However, the Standard states that there is no 'single' background sound level that can be derived from such measurements. It is particularly difficult to determine what is 'representative' of the night-time period because it can be subject to a wide variation in background sound levels between the beginning and end of the night period, and the quieter middle part of the night period. The accompanying note states that *"a representative level should account for the range of background sounds levels and should not automatically be assumed to be either the minimum or modal value"*.
- 5.4 In this instance, the 25<sup>th</sup> percentile levels of the long term survey data have been used to characterise the baseline sound environment at all NSRs.
- 5.5 This is not the lowest sound level encountered but is lower than that obtained using the average. It therefore represents somewhere in the range of lower sound levels that are likely to be encountered and provides a precautionary assessment. For 75% of the time, baseline sound levels will be higher than the 25<sup>th</sup> percentile levels. Use of the 25<sup>th</sup> percentile ensures that any periods when higher wind speeds (or other extraneous noise) could have affected the measured baseline sound levels do not unduly affect the analysis.
- 5.6 It should also be noted that use of the 25<sup>th</sup> percentile  $L_{A90,T}$  values tend to be lower, or the same as, the modal values.
- 5.7 Similarly, representative baseline residual levels have been based on the 25<sup>th</sup> percentile level.

**Table 5.1: LT1 Baseline Sound Levels**

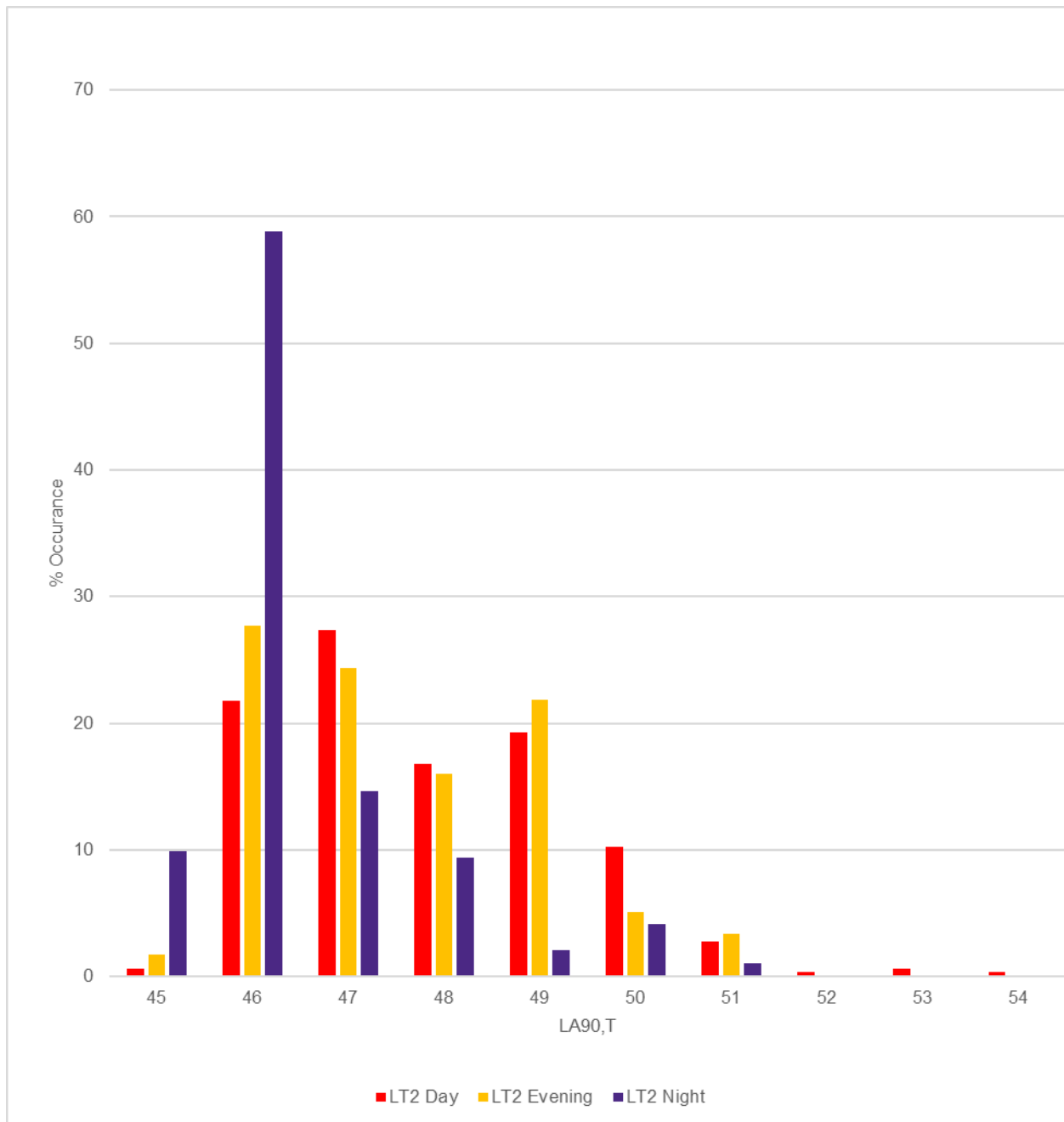
Period	Background Sound Levels (dB L <sub>A90,15min</sub> )					Residual Sound Levels (dB L <sub>Aeq,15min</sub> )				
	Min	25 <sup>th</sup> % <sup>1</sup>	50 <sup>th</sup> %	75 <sup>th</sup> %	Max	Min	25 <sup>th</sup> %	50 <sup>th</sup> %	75 <sup>th</sup> %	Max
Daytime	43	50	52	54	57	54	61	62	63	77
Evening	40	45	47	48	57	53	57	58	60	77
Night-time	38	42	44	46	53	45	52	54	56	66



**Figure 5.1: LT1 LA<sub>90,T</sub> Distribution**

**Table 5.2: LT2 Baseline Sound Levels**

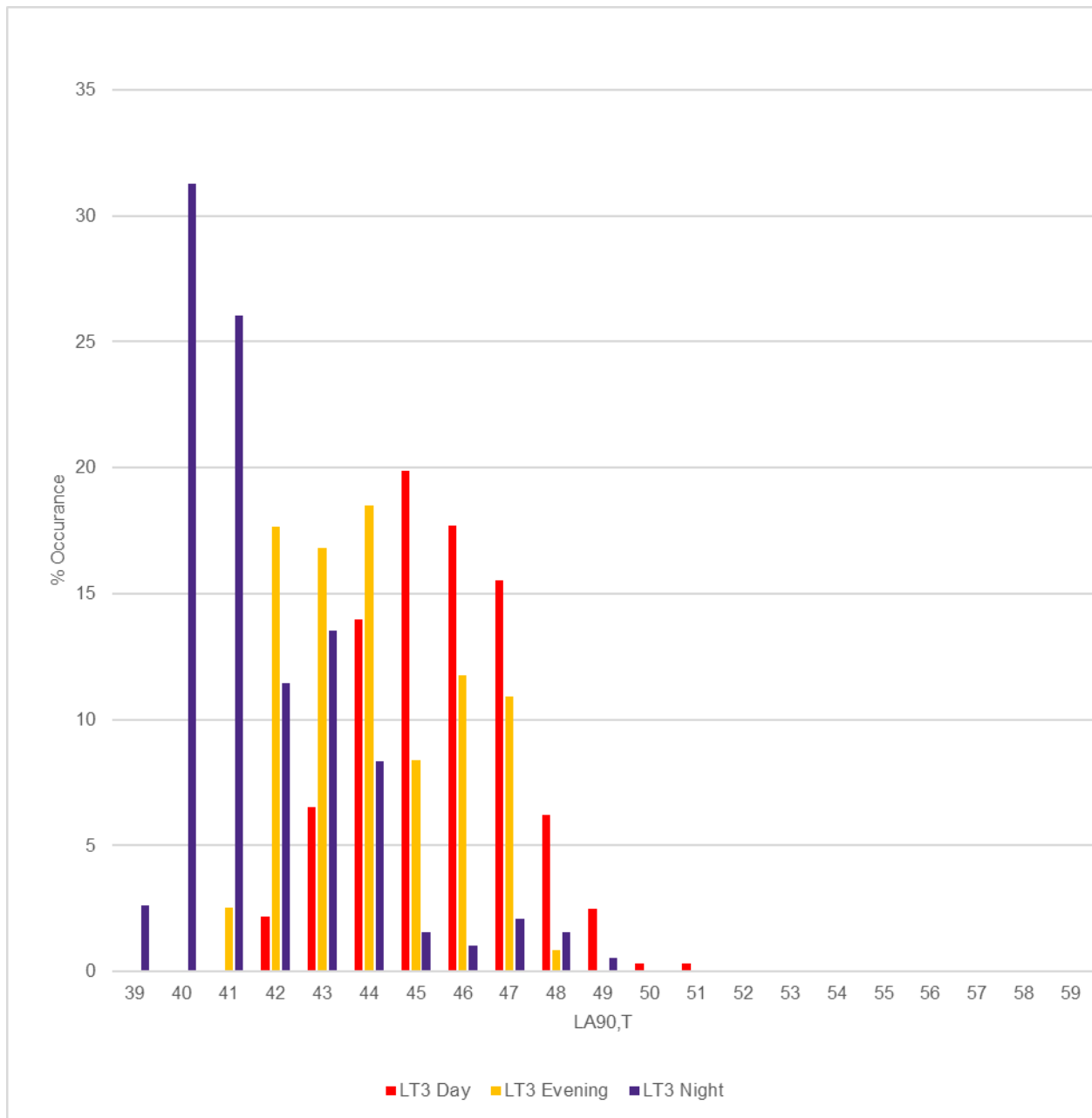
Period	Background Sound Levels (dB L <sub>A90,15min</sub> )					Residual Sound Levels (dB L <sub>Aeq,15min</sub> )				
	Min	25 <sup>th</sup> % <sup>1</sup>	50 <sup>th</sup> %	75 <sup>th</sup> %	Max	Min	25 <sup>th</sup> %	50 <sup>th</sup> %	75 <sup>th</sup> %	Max
Daytime	45	47	48	49	54	47	51	52	54	67
Evening	45	46	47	49	54	47	48	49	51	53
Night-time	45	46	46	47	51	46	47	48	49	56



**Figure 5.2: LT2 LA<sub>90,T</sub> Distribution**

**Table 5.3: LT3 Baseline Sound Levels**

Period	Background Sound Levels (dB L <sub>A90,15min</sub> )					Residual Sound Levels (dB L <sub>Aeq,15min</sub> )				
	Min	25 <sup>th</sup> % <sup>1</sup>	50 <sup>th</sup> %	75 <sup>th</sup> %	Max	Min	25 <sup>th</sup> %	50 <sup>th</sup> %	75 <sup>th</sup> %	Max
Daytime	42	44	46	47	51	45	51	52	53	59
Evening	41	43	44	46	51	44	48	50	51	63
Night-time	39	40	41	43	49	40	43	45	48	56



**Figure 5.3: LT3 L<sub>A90,T</sub> Distribution**

5.8 On the basis of the above, Tables 5.4 to 5.5 below provide representative baseline sound levels that have been used in the subsequent assessment.

**Table 5.4: LT1 Representative Baseline Sound Levels (Westfield Road & Russel Road)**

Period	Background Sound Level $L_{A90, T}$ (dB)	Residual Sound Level $L_{Aeq, T}$ (dB)
Daytime <sup>1</sup>	50	61
Evening <sup>2</sup>	45	57
Night-time <sup>3</sup>	42	52
Notes 1. 07:00 hours and 19:00 hours. 2. 19:00 to 23:00 hours. 3. 23:00 to 07:00 hours.		

**Table 5.5: LT2 Representative Baseline Sound Levels (Clarkes Terrace & Mersey View)**

Period	Background Sound Level $L_{A90, T}$ (dB)	Residual Sound Level $L_{Aeq, T}$ (dB)
Daytime	47	51
Evening	46	48
Night-time	46	47

**Table 5.6: LT3 Representative Baseline Sound Levels (Sandy Lane & Worton Road)**

Period	Background Sound Level $L_{A90, T}$ (dB)	Residual Sound Level $L_{Aeq, T}$ (dB)
Daytime	44	51
Evening	43	48
Night-time	40	43

### Comment

5.9 Review of the baseline data at LT1 shows a broad range of sound levels, lower in the evening and night-time periods, typical for locations close to transport links. As observed when deploying the survey, vehicle movements were the dominant source of noise. Residual sound levels are ~10 dB higher than background sound levels, again typical for locations close to transport links where vehicle movements are the primary noise source.

5.10 Review of the baseline data at LT2 shows a quite narrow range of sound levels, with residual sound levels only a few dB higher than the background levels. Following observation on site, this is considered to be due to regular constant noise, likely operation of a fan or similar on the EfW site and potentially the adjacent commercial facility. Whilst this commercial noise is primarily 'controlling' the acoustic environment, the magnitude of noise is not considered to be particularly high and, whilst on site at LT2, the noise was not noted to be particularly discernible or distinguishable, and subjectively not tonal.

5.11 Review of the baseline data at LT3 shows a broader range of sound levels, similar to location LT1, lower in the evening and night-time periods, indicating that vehicle movements on Sandy Lane and the more distant A557 are the primary noise sources, as observed when at the LT3 survey location. It is noted that background sound levels ‘bottom off’ at ~ 40 dB  $L_{A90,T}$  during the night-time period and this may be due to constant noise emissions from the existing commercial facilities to the north (as affecting Clarkes Terrace). However, it should be noted that no commercial/industrial noise was noted during the daytime period.

### Comparison with Historic Baseline Data

5.12 Prior to the Runcorn EfW facility becoming operational, baseline sound level monitoring was undertaken in the vicinity of the site in similar locations as the surveys undertaken in 2023. These previous surveys were undertaken on a similar basis, i.e. to establish representative background and ambient sound levels at NSR locations close to the then proposed EfW.

5.13 The results of those surveys are summarised below in Table 5.7.

**Table 5.7: Historic Baseline Sound Levels**

Period	Russell Road		Clarkes Terrace		Sandy Lane (east)	
	$L_{A90,T}$ (dB)	$L_{Aeq,T}$ (dB)	$L_{A90,T}$ (dB)	$L_{Aeq,T}$ (dB)	$L_{A90,T}$ (dB)	$L_{Aeq,T}$ (dB)
Daytime	61	67	50	55	65	56
Night	46	53	49	52	50	45

5.14 With reference to Table 5.7 above and Tables 5.4 to 5.6, baseline sound levels measured in 2023 are lower than in 2009. For example, at Russel Road, considered representative of Westfield Road, the historic daytime and night-time background sound levels are 61 and 46 dB  $L_{A90,T}$  respectively, whereas in 2023 they have been measured to be 50 and 42 dB  $L_{A90,T}$  respectively.

5.15 It is considered that this may be due to reduced traffic movements on the A557, following the opening of the Mersey Gateway Bridge in 2017 and potentially reduced noise emissions from the existing industrial/commercial facilities.

5.16 It also potentially indicates that noise emissions from the existing EfW are not significantly affecting the acoustic environment in the local area.

### Specific Sound Level Predictions

5.17 The externally located noise generating aspects of the CC facility include 45 hybrid coolers, (located on roof level of the Compressor House and CCP structure buildings), an enclosed axial flue gas fan and flue gas discharge point (at ~105 m AGL). There will also be other noise sources, although these will be located within structure/buildings and hence are not considered sufficiently significant to include within the noise model.

## Hybrid Coolers

- 5.18 One-third-octave ‘sound power level’ (SWL) of the proposed hybrid coolers have been based on data provided by BAC, the proposed cooler manufacturer, as summarised below. Based on these data, each cooler unit has a maximum operational A-weighted SWL of 107 dBA L<sub>w</sub>. A manufacturer’s data sheet, including 1/3 octave band data is provided in Appendix C.

**Table 5.8 Hybrid Cooler SWL Data**

One-third-octave Band SWL (dB L <sub>w</sub> )																			
50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6k	2.0k	2.5k	3.15	4.0k
93	103	95	97	100	97	98	101	97	99	98	96	97	96	94	98	97	93	92	89

- 5.19 The coolers have been modelled as 3D structures with two radiating facades, the top/roof and one vertical side, reflecting the air discharge and air intake sections of the coolers, respectively. The top/discharge and the side/intake have been assigned a SWL of 105 and 100 dBA L<sub>w</sub> respectively. No directivity has been applied.
- 5.20 The 45 coolers include a ‘low sound fan’, with the rooftop areas louvred on two sides to provide some screening effects. Due to peak cooling demand, it is not feasible to select a lower number of coolers and due to airflow constraints, it is not feasible to further enclose the coolers.
- 5.21 The coolers have been modelled on top of the Compressor House and CCP structure buildings, approximately 10 m AGL. Due to spatial constraints, it is not feasible to locate the coolers at ground level.
- 5.22 Based on professional experience, cooling units such as those that will be utilised, when operating with a lower fan speed (due to higher cooling efficiency resulting from lower WB temperatures) have a lower operational SWL, with typical SWLs reduced by 6 and 11 dB when operating at 90 and 50% maximum fan speed respectively (101 and 96 dBA L<sub>w</sub> respectively).
- 5.23 Based on data supplied by BAC, the cooler units would only operate at 100% capacity when the WB is >19°C, which would occur for only 0.4% of the year (11 hours/year) and very unlikely during the night-time period when temperatures are lower. The coolers are expected to operate at 90% capacity, or lower, for 99% of the year and 50% capacity, or lower, for 85% of the year.
- 5.24 On the basis of the above, specific sound levels associated with the operation of the coolers have been calculated for three scenarios, one when operating at 50% capacity or less (85% of the time), one for 50 to 90% capacity (14.6% of the time) and one for 100% capacity (0.4% of the time).

### Flue Gas Fan & Stack Discharge

5.25 As no specific axial flue gas fan has been selected yet, the SWL and 1/1 octave band spectra has been calculated based on the fan properties<sup>3</sup> and empirical formula<sup>4</sup>. Based on the fan properties, the A weighted SWL is 137 dBA L<sub>w</sub> (141 dB L<sub>w</sub>).

**Table 5.9 Flue Gas Fan SWL Data**

Broadband SWL (dBA L <sub>w</sub> )	Octave Band SWL (dB L <sub>w</sub> )							
	63	125	250	500	1k	2k	4k	8k
137	134	132	134	134	133	130	125	123

5.26 The fan breakout SWL has been calculated based on the fan housed within 100 mm thick enclosure providing a weighted sound reduction index value of 44 dB R<sub>w</sub>, such that the enclosed flue gas fan has facades with a unit area operational SWL of 82 dBA L<sub>w</sub>".

5.27 The flue gas fan enclosure has been modelled as a 3D structure with five radiating facades, each with a unit area SWL of 82 dBA L<sub>w</sub>" (total SWL 105 dBA L<sub>w</sub>). No directivity has been applied.

5.28 The SWL of the flue gas exhaust at the stack exit has been calculated, based on the inclusion provided by a silencer (providing 17 dB overall attenuation), one 90° bend and the attenuation along the 105 m stack calculated based on Verein Deutscher Ingenieure (VDI) 3733:1997 'Geräusche bei Rohrleitungen' [4], as summarised below.

**Table 5.10: Flue Gas Fan**

	63	125	250	500	1k	2k	4k	8k
Induct SWL (dB)	134	132	134	134	133	130	125	123
Silencer Attenuation (dB)	-10	-24	-38	-42	-43	-41	-36	-21
Bend Attenuation (dB)	0	-1	-2	-3	-3	-3	-3	-3
Stack Attenuation (dB)	-3	-3	-3	-3	-5	-7	-10	-12
SWL at Stack Exit (dB)	121	104	91	86	82	79	76	87

5.29 On the basis of the above, the flue gas exhaust has been modelled as a point source with an A-weighted broadband SWL of 96 dBA L<sub>w</sub>, with directivity applied based on that within the SoundPLAN library for a 3 m stack diameter at 20 C.

<sup>3</sup> 2,500 kW motor power (S), 7,200 Pa static pressure (p) and 244 m<sup>3</sup>/s discharge (Q).

<sup>4</sup> L<sub>N</sub> = 67 + 10 log(S) + 10 log(p), or L<sub>N</sub> = 40 + 10 log(Q)+ 20 log(p), or L<sub>N</sub> = 94 + 20 log(S) - 10 log(Q) .



### Other Sources

- 5.30 In addition to the above, the Compressor House, CCP structure, Carbon Capture Structure, Wastewater Treatment Plant, Amine Storage Tank, CCP Structure 1 and Desorber have been included in the model as industrial building noise sources.
- 5.31 These have all been modelled with an internal reverberant SPL of 80 dBA  $L_{pi}$  and constructed from standard cladding providing an overall attenuation of 24 dB  $R_w$ .
- 5.32 The following assumptions have been incorporated into the noise model:
- the topography of the site and the surrounding area has been obtained from publicly available data sources;
  - the effect of screening from solid structures (buildings) has been incorporated into the modelling process by importing OS Open Data ‘Settlement Area’ shape file data into the model and publicly available data; and
  - the ground type in the model has been set  $G=0$  and soft ( $G=0$ ) for the surrounding area.
- 5.33 On the basis of the above, Tables 5.11 to 5.13 below provide a summary of modelled specific sound levels, at ground and first floor level, at the nearest NSRs for the following three scenarios respectively:
- Scenario 1: Coolers operating with an airflow at 50% capacity (or less), occurring for 85% of the year when the WB temperature is  $<14^{\circ}\text{C}$ . Due to the fact that this would be the dominant operational scenario this is considered to be representative of ‘normal’ conditions and likely how the coolers would operate at night when temperatures are lower.
  - Scenario 2: Coolers operating with an airflow between 50% and 90% capacity, occurring for 14% of the year when the WB temperature is between 14 and  $18^{\circ}\text{C}$ . This scenario is considered to be a ‘reasonable worst case’ daytime scenario.
  - Scenario 3: Coolers operating with an airflow at 100% capacity ( $40\text{ m}^3/\text{s}$ ), occurring for 0.4% of the year (11 hours) when the WB temperature is  $>19^{\circ}\text{C}$ . This is considered to be a ‘worst case’ scenario and would only occur during the daytime period in summer.

**Table 5.11 Predicted Specific Sound Levels (Scenario 1)**

NSR	Specific Sound Level $L_{Aeq,Tr}$ (dB)	
	Ground Floor	First Floor
1-13 Mersey View	37	40
23 St Pauls Close	37	39
32 Worton Road	36	36
37 Sandy Lane	37	38
47-53 Russell Road	40	41

NSR	Specific Sound Level $L_{Aeq,Tr}$ (dB)	
	Ground Floor	First Floor
54 Russel Road	41	42
57 Westfield Road	41	42
67 Westfield Road	41	42
Clarks Terrace	41	42

**Table 5.12 Predicted Specific Sound Levels (Scenario 2)**

NSR	Specific Sound Level $L_{Aeq,Tr}$ (dB)	
	Ground Floor	First Floor
1-13 Mersey View	38	42
23 St Pauls Close	38	40
32 Worton Road	37	37
37 Sandy Lane	39	40
47-53 Russell Road	41	42
54 Russel Road	42	43
57 Westfield Road	43	43
67 Westfield Road	42	43
Clarks Terrace	42	44

**Table 5.13 Predicted Specific Sound Levels (Scenario 3)**

NSR	Specific Sound Level $L_{Aeq,Tr}$ (dB)	
	Ground Floor	First Floor
1-13 Mersey View	45	50
23 St Pauls Close	45	47
32 Worton Road	44	44
37 Sandy Lane	47	48
47-53 Russell Road	46	48
54 Russel Road	49	51
57 Westfield Road	50	51
67 Westfield Road	49	50
Clarks Terrace	50	52

### Rating Levels

- 5.34 With reference to BS 4142, a character correction can be applied to the specific sound level depending on the acoustic characteristics of the sound at the assessment location, including impulsivity, tonality, intermittency or other distinctive character.
- 5.35 In this case it has not been considered appropriate to apply any correction for scenarios 1 and 2 at any assessment/NSR location. This is on the basis that:

1. The specific sound would not be impulsive or intermittent, rather it would be on for a full assessment period (1-hour during the daytime, 15-minutes during the night-time), potentially gradually ramping up/down reflecting the demand for cooling at any one time.
  2. Based on professional experience, whilst the coolers incorporate a fan, with potential for tonal emissions, the surrounding parts of the coolers (grilles etc.) act to provide a masking sound such that the resulting emissions are more broadband and 'whooshing' in nature. This is further 'backed' up by the one-third-octave data showing no objective indication for tonal features.
  3. Specific sound levels do not exceed the background sound level and are 4 dB below the residual sound level at all NSRs for all time periods (detailed below in Section 6). Consequently, it is unlikely that the operation of CC plant would be discernible, regardless of character. Higher residual sound levels, particularly when the residual sound is largely affected by low frequency vehicle movements, i.e. it is considered likely that any low potential for tonal aspects of the specific sound at NSR locations would be masked by the residual sound.
  4. The sound would be of a similar character and coming from a similar direction as that currently affecting the acoustic environment, i.e. existing commercial/industrial activity. On this basis, if noticeable, the specific sound would be less distinguishable compared to a new source type.
- 5.36 On the basis of the above, specific sound levels are equal to the Rating Level at all NSRs for Scenarios 1 and 2.
- 5.37 For Scenario 3, a +3 dB correction has been applied to specific sound levels at NSRs where the resultant ambient sound level would increase by at least 1 dB, to account for the risk that operation of the CC plant would be readily distinctive (a change in ambient sound level of less than 1 dB would likely not be particularly noticeable).
- 5.38 On this basis, a +3 dB correction has been applied to the calculated specific sound level at NSRs on Clarkes Terrace and Sandy Lane during the daytime period and at NSRs on Mersey View, Clarkes Terrace, Sandy Lane and Worton Road during the evening period. Note that Scenario 3 would not occur during the night-time period due to cooler temperatures.

## 6 Noise Impact Assessment

### Scenario 1

- 6.1 Tables 6.1 to 6.3 below provide an initial estimate of the noise impact at the nearest NSRs for Scenario 1, i.e. with the coolers operating with a fan speed at 50% capacity, occurring for 85% of the year, for the daytime, evening and night-time periods respectively. Note daytime and evening Rating Levels are at ground floor level, whereas night-time Rating Levels are at first floor level.
- 6.2 Figure 1 at the end of the report provides graphical prevention of the Scenario 1 specific sound level at 4 m AGL (note only Scenario 1 has been calculated graphically on the basis this a the typical operating scenario and very likely the only scenarios that would occur during the night-time period).

**Table 6.1 Scenario 1: Daytime (07:00 to 19:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	37	0	37	47	-10
23 St Pauls Close	37	0	37	51	-14
32 Worton Road	36	0	36	45	-9
37 Sandy Lane	37	0	37	45	-8
47-53 Russell Road	40	0	40	51	-11
54 Russel Road	41	0	41	51	-10
57 Westfield Road	41	0	41	51	-10
67 Westfield Road	41	0	41	51	-10
Clarks Terrace	41	0	41	47	-6

**Table 6.2 Scenario 1: Evening (19:00 to 23:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	37	0	37	46	-9
23 St Pauls Close	37	0	37	45	-8
32 Worton Road	36	0	36	42	-6
37 Sandy Lane	37	0	37	42	-5
47-53 Russell Road	40	0	40	45	-5
54 Russel Road	41	0	41	45	-4

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
57 Westfield Road	41	0	41	45	-4
67 Westfield Road	41	0	41	45	-4
Clarks Terrace	41	0	41	46	-5

**Table 6.3 Scenario 1: Night-time (23:00 to 07:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	40	0	40	46	-6
23 St Pauls Close	39	0	39	42	-3
32 Worton Road	36	0	36	40	-4
37 Sandy Lane	38	0	38	40	-2
47-53 Russell Road	41	0	41	42	-1
54 Russel Road	42	0	42	42	0
57 Westfield Road	42	0	42	42	0
67 Westfield Road	42	0	42	42	0
Clarks Terrace	42	0	42	46	-4

6.3 With regard to the rating/background level differences, BS 4142:2014+A1:2019 states:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

6.4 On the basis of the above, and with reference to Tables 6.1 to 6.3, it is considered that, during periods the WB temperature is <14 C, i.e. for 85% of the year, there is a low risk that operation of the CC facility would result in adverse impact at all NSRs for all time periods, significant or otherwise, depending on the context.

6.5 In this instance, it is considered that the context of the noise does further reduce the risk for adverse impact such that an adverse impact would be very unlikely to occur as explained below.

- 6.6 At ground floor level the maximum Rating Level of 41 dB  $L_{Ar,Tr}$  is considered to be of a reasonably low magnitude (note that the 1997 revision of BS 4142 considered Rating Levels below 35 dB to be very low). This is slightly higher at first floor level (42 dB  $L_{Ar,Tr}$ ), although still considered to be relatively low and not of a magnitude on its own to result in adverse impact regardless of the difference to the background sound level.
- 6.7 Where Rating Levels are higher relative to the background sound level, i.e. at NSRs on Sandy Lane, Russell Road and Westfield Road during the night-time period, the specific sound level is at least 5 dB below the residual sound level, resulting in an at worst a +1 dB change in ambient sound level. This change in ambient noise level is summarised in Tables 6.4 to 6.6 below for the daytime, evening and night-time periods, respectively.

**Table 6.4 Scenario 1: Daytime (07:00 to 19:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	37	51	51	0
23 St Pauls Close	37	61	61	0
32 Worton Road	36	51	51	0
37 Sandy Lane	37	51	51	0
47-53 Russell Road	40	61	61	0
54 Russel Road	41	61	61	0
57 Westfield Road	41	61	61	0
67 Westfield Road	41	61	61	0
Clarks Terrace	41	51	51	0

**Table 6.5 Scenario 1: Evening (19:00 to 23:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	37	48	48	0
23 St Pauls Close	37	57	57	0
32 Worton Road	36	48	48	0
37 Sandy Lane	37	48	48	0
47-53 Russell Road	40	57	57	0
54 Russel Road	41	57	57	0
57 Westfield Road	41	57	57	0
67 Westfield Road	41	57	57	0
Clarks Terrace	41	48	49	+1

**Table 6.6 Scenario 1: Night-time (23:00 to 07:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	40	47	48	+1
23 St Pauls Close	39	52	52	0
32 Worton Road	36	43	44	+1
37 Sandy Lane	38	43	44	+1
47-53 Russell Road	41	52	52	0
54 Russel Road	42	52	52	0
57 Westfield Road	42	52	52	0
67 Westfield Road	42	52	52	0
Clarks Terrace	42	47	48	+1

- 6.8 A change in ambient noise level of less than +1 dB is not considered to be a significant increase and would likely not be noticeable, particularly as this increase is based on the 25<sup>th</sup> percentile value of the residual/baseline ambient sound levels.
- 6.9 The change is considered to be further mitigated due to the fact the noise source/character is not new. Noise emissions from the Weston Point industrial area have affected the acoustic environment for decades and, as such, any change would be less noticeable than if the type and location of the noise source was new.
- 6.10 Similarly, it should also be noted that the numeric BS 4142 assessment is based on the 25<sup>th</sup> percentile value of the background sound level data measured and, for the majority of the time, the background sound level is higher and the likelihood for adverse impact is further reduced.
- 6.11 Consequently, as Rating Levels would not exceed the representative background sound level, and as the change in ambient sound would likely not be discernible, Scenario 1 impacts would be negligible at all NSRs as summarised below in Table 6.7.

**Table 6.7 Scenario 1: Site Noise Impact**

NSR	Scenario 1: Site Noise Impact		
	Daytime	Evening	Night-time
1-13 Mersey View	Negligible	Negligible	Negligible
23 St Pauls Close	Negligible	Negligible	Negligible
32 Worton Road	Negligible	Negligible	Negligible
37 Sandy Lane	Negligible	Negligible	Negligible
47-53 Russell Road	Negligible	Negligible	Negligible
54 Russel Road	Negligible	Negligible	Negligible
57 Westfield Road	Negligible	Negligible	Negligible

NSR	Scenario 1: Site Noise Impact		
	Daytime	Evening	Night-time
67 Westfield Road	Negligible	Negligible	Negligible
Clarks Terrace	Negligible	Negligible	Negligible

## Scenario 2

6.12 Tables 6.8 to 6.10 below provide an initial estimate of the noise impact at the nearest NSRs for Scenario 2, i.e. with the coolers operating at a fans speed of between 50 and 90% capacity, occurring for 14% of the year, for the daytime, evening and night-time periods, respectively. Note daytime and evening Rating Levels are at ground floor level, whereas night-time Rating Levels are at first floor level.

**Table 6.8 Scenario 2: Daytime (07:00 to 19:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	38	0	38	47	-9
23 St Pauls Close	38	0	38	51	-13
32 Worton Road	37	0	37	45	-8
37 Sandy Lane	39	0	39	45	-6
47-53 Russell Road	41	0	41	51	-10
54 Russel Road	42	0	42	51	-9
57 Westfield Road	43	0	43	51	-8
67 Westfield Road	42	0	42	51	-9
Clarks Terrace	42	0	42	47	-5

**Table 6.9 Scenario 2: Evening (19:00 to 23:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	38	0	38	46	-8
23 St Pauls Close	38	0	38	45	-7
32 Worton Road	37	0	37	42	-5
37 Sandy Lane	39	0	39	42	-3
47-53 Russell Road	41	0	41	45	-4
54 Russel Road	42	0	42	45	-3
57 Westfield Road	43	0	43	45	-2



NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
67 Westfield Road	42	0	42	45	-3
Clarks Terrace	42	0	42	46	-4

**Table 6.10 Scenario 2: Night-time (23:00 to 07:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	42	0	42	46	-4
23 St Pauls Close	40	0	40	42	-2
32 Worton Road	37	0	37	40	-3
37 Sandy Lane	40	0	40	40	0
47-53 Russell Road	42	0	42	42	0
54 Russel Road	43	0	43	42	+1
57 Westfield Road	43	0	43	42	+1
67 Westfield Road	43	0	43	42	+1
Clarks Terrace	44	0	44	46	-2

- 6.13 With reference to Tables 6.8 to 6.10 above, as Rating Levels do not exceed the background sound level at any NSR for the daytime and evening period and only by 1 dB during the night-time period when the WB temperature is between 14 and 19°C, (i.e. for 15% of the year), there is a low risk that operation of the CC facility would result in adverse impact at any NSRs for any time periods, significant or otherwise, depending on the context.
- 6.14 In this instance, similar to Scenario 1, it is considered that the context of the noise does further reduce the risk for adverse impact such that adverse impact would be unlikely, significant, or otherwise, as reasoned below.
- 6.15 At ground floor level, the maximum Rating Level of 43 dB L<sub>Ar,Tr</sub> is considered to be of a reasonably low magnitude (note that the 1997 revision of BS 4142 considered Rating Levels below 35 dB to be very low). This is slightly higher at first floor level (44 dB L<sub>Ar,Tr</sub>), although still considered to not be of sufficient magnitude likely to result in adverse impact, such as sleep disturbance.
- 6.16 Where Rating Levels are highest relative to the background sound level, i.e. at NSRs on Sandy Lane, Russell Road and Westfield Road during the night-time period, the specific sound level is at least 3 dB below the residual sound level, resulting in an at worst a 2 dB change in ambient sound level. This change in ambient noise level is summarised in Tables 6.11 to 6.13 below for the daytime, evening and night-time periods, respectively.

**Table 6.11 Scenario 2: Daytime (07:00 to 19:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	38	51	51	0
23 St Pauls Close	38	61	61	0
32 Worton Road	37	51	51	0
37 Sandy Lane	39	51	51	0
47-53 Russell Road	41	61	61	0
54 Russel Road	42	61	61	0
57 Westfield Road	43	61	61	0
67 Westfield Road	42	61	61	0
Clarks Terrace	42	51	52	+1

**Table 6.12 Scenario 2: Evening (19:00 to 23:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	38	48	48	0
23 St Pauls Close	38	57	57	0
32 Worton Road	37	48	48	0
37 Sandy Lane	39	48	48	0
47-53 Russell Road	41	57	57	0
54 Russel Road	42	57	57	0
57 Westfield Road	43	57	57	0
67 Westfield Road	42	57	57	0
Clarks Terrace	42	48	49	+1

**Table 6.13 Scenario 2: Night-time (23:00 to 07:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
1-13 Mersey View	42	47	48	+1
23 St Pauls Close	40	52	52	0
32 Worton Road	37	43	44	+1
37 Sandy Lane	40	43	45	+2
47-53 Russell Road	42	52	52	0
54 Russel Road	43	52	53	+1
57 Westfield Road	43	52	53	+1
67 Westfield Road	43	52	52	0
Clarks Terrace	44	47	49	+2

- 6.17 A change in ambient noise level of up to +2 dB is not considered to be a significant increase (typically a change of +/-3 dB is the minimum perceivable change) and would likely not be noticeable, particularly as this increase is based on the 25<sup>th</sup> percentile value of the residual/baseline ambient sound levels.
- 6.18 The change is considered to be further mitigated due to the fact the noise source/character is not new. Noise emissions from the Weston Point industrial area have affected the acoustic environment for decades and, as such, any change would be less noticeable than if the type and location of the noise source was new.
- 6.19 Similarly, it should also be noted that the numeric BS 4142 assessment is based on the 25<sup>th</sup> percentile value of the background sound level data measured and for the majority of the time the background sound level is higher.
- 6.20 Consequently as Rating Levels would not exceed the representative background sound level, and the resultant change in ambient sound would likely not be discernible, resultant impacts would be negligible at all NSRs as summarised below in Table 6.14.

**Table 6.14 Scenario 2: Site Noise Impact**

NSR	Scenario 2: Site Noise Impact		
	Daytime	Evening	Night-time
1-13 Mersey View	Negligible	Negligible	Negligible
23 St Pauls Close	Negligible	Negligible	Negligible
32 Worton Road	Negligible	Negligible	Negligible
37 Sandy Lane	Negligible	Negligible	Negligible
47-53 Russell Road	Negligible	Negligible	Negligible
54 Russel Road	Negligible	Negligible	Negligible
57 Westfield Road	Negligible	Negligible	Negligible
67 Westfield Road	Negligible	Negligible	Negligible
Clarks Terrace	Negligible	Negligible	Negligible

### Scenario 3

- 6.21 Table 6.15 below provides an initial estimate of the noise impact at the nearest NSRs for Scenario 3, i.e. with the coolers operating at a 100% fan speed, which would occur for 0.4% of the year (11 hours) when the WB temp is >19 C, for the daytime period.
- 6.22 Note that as this scenario would only occur at maximum WB temperatures, only a daytime assessment has been undertaken as maximum WB temperatures would not occur during the evening or night-time periods. Rating Levels are at ground floor level.

**Table 6.15 Scenario 3: Daytime (07:00 to 19:00 hours) BS 4142 Numerical Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Rating Penalty, dB	Rating Level, dB L <sub>Ar,Tr</sub>	Background Level, dB L <sub>A90,T</sub>	Rating / Background Level Difference, dB
1-13 Mersey View	45	3	48	47	+1
23 St Pauls Close	45	0	45	51	-6
32 Worton Road	44	3	47	45	+2
37 Sandy Lane	47	3	50	45	+5
47-53 Russell Road	46	0	46	51	-5
54 Russel Road	49	0	49	51	-2
57 Westfield Road	50	0	50	51	-1
67 Westfield Road	49	0	49	51	-2
Clarks Terrace	50	3	53	47	+6

6.23 With reference to Table 6.15 above, as Rating Levels are below the background sound levels at five of the NSR locations it is considered that adverse impact would be unlikely to result at those NSRs.

6.24 At four of the NSRs the Rating Level is at, or up to 6 dB above, the background sound level. As such, there is a risk of adverse noise impact at these NSRs, during periods the coolers are operating at 100% capacity, although a low risk for significant adverse impact, depending on the context.

6.25 In this instance, it is considered that the context of the noise does not increase the risk for adverse impacts, and that adverse impacts would be minimised and significant adverse impacts would be unlikely.

6.26 This is primarily on the basis that the specific sound level would be at least 1 dB below the residual sound level, resulting in an at worst a +3 dB change in ambient sound level, which may be just noticeable. This change in ambient noise level is summarised in Table 6.16 below.

**Table 6.16 Scenario 3: Daytime (07:00 to 19:00 hours) Ambient Noise Change Assessment**

NSR	Specific Sound Level, dB L <sub>Aeq,Tr</sub>	Residual Sound Level, dB L <sub>Aeq,T</sub>	Ambient Sound Level, dB L <sub>Aeq,T</sub>	Change (dB)
1-13 Mersey View	45	51	52	+1
23 St Pauls Close	45	61	61	0
32 Worton Road	44	51	52	+1
37 Sandy Lane	47	51	52	+1
47-53 Russell Road	46	61	61	0
54 Russel Road	49	61	61	0



NSR	Specific Sound Level, dB $L_{Aeq,Tr}$	Residual Sound Level, dB $L_{Aeq,T}$	Ambient Sound Level, dB $L_{Aeq,T}$	Change (dB)
57 Westfield Road	50	61	61	0
67 Westfield Road	49	61	61	0
Clarks Terrace	50	51	54	+3

- 6.27 A change in ambient noise level of less than +1 dB is not considered to be a significant increase and is unlikely to be noticeable, particularly as this increase is based on the 25<sup>th</sup> percentile value of the residual/baseline ambient sound levels. A change of +3 dB may just be noticeable.
- 6.28 The change is considered to be further mitigated due to the fact the noise source/character is not new. Noise emissions from the Weston Point industrial area have affected the acoustic environment for decades and, as such, any change would be less noticeable than if the type and location of the noise source was new.
- 6.29 Similarly, it should also be noted that the numeric BS 4142 assessment is based on the 25<sup>th</sup> percentile value of the measured background sound level, and for the majority of the time, the background sound level is higher.
- 6.30 Consequently, as Rating Levels would not exceed the representative background sound level at five NSR locations and site noise would not increase overall ambient sound levels negligible impacts would result. At one NSR a moderate impact would result as the Rating Level would exceed the background level by 6 dB and resulting ambient sound levels increasing by 3 dB, which would be just noticeable. At the remaining three NSRs minor impacts would result as either Rating Levels just exceed the background level or ambient sound levels would not noticeably increase.

**Table 6.17 Scenario 3: Site Noise Impact**

NSR	Scenario 3: Site Noise Impact Daytime
1-13 Mersey View	Minor
23 St Pauls Close	Negligible
32 Worton Road	Minor
37 Sandy Lane	Minor
47-53 Russell Road	Negligible
54 Russel Road	Negligible
57 Westfield Road	Negligible
67 Westfield Road	Negligible
Clarks Terrace	Moderate

## Summary

- 6.31 For Scenarios 1 and 2, when the coolers are operating at up to 90% fan speed, which would occur for 99% of the year, the Rating Level at NSR locations would not exceed the representative background sound level. Furthermore, specific sound levels at NSRs are considered to be of a relatively low magnitude, unlikely to result in adverse impact, and not result in more than a negligible +1 dB increase in ambient sound level.
- 6.32 On the basis of the above, for Scenarios 1 and 2, the resulting noise impact would be negligible at all NSRs for all time periods.
- 6.33 For Scenario 3, i.e. the fans operating at 100% capacity as required when the WB temperature is >19°C, which would occur for 0.4% of the year (11 hours), the Rating Level would be up to 6 dB above the representative background sound level, resulting in a marginal +3 dB increase in ambient sound level at the most affected NSR, considered to be of a moderate impact.
- 6.34 However, as this moderate impact would only occur for 11 hours in a year, and would be limited to the daytime period only, and therefore not affecting sleep, it is considered that, on balance and over the entire year, the overall impact would be negligible.
- 6.35 Consequently, when considering the operation of the CC facility over the entire year period, the resulting site noise impact would be negligible at all NSRs and for all time periods, as summarised in Table 6.18 below.

**Table 6.18 Overall Site Noise Impact**

NSR	Overall: Site Noise Impact		
	Daytime	Evening	Night-time
1-13 Mersey View	Negligible	Negligible	Negligible
23 St Pauls Close	Negligible	Negligible	Negligible
32 Worton Road	Negligible	Negligible	Negligible
37 Sandy Lane	Negligible	Negligible	Negligible
47-53 Russell Road	Negligible	Negligible	Negligible
54 Russel Road	Negligible	Negligible	Negligible
57 Westfield Road	Negligible	Negligible	Negligible
67 Westfield Road	Negligible	Negligible	Negligible
Clarks Terrace	Negligible	Negligible	Negligible

## 7 Noise Control

7.1 With reference to Section 6 above, operation of the CC facility over the entire year period would result in negligible noise impacts at all NSRs for all time periods. However, this is based on the following application of noise control methods/techniques:

- the proposed coolers being fitted with low sound fans;
- two sides of the roof top areas, where the coolers are installed, having louvres;
- the flue gas fan having a silencer fitted; and
- the flue gas fan being housed in an enclosure.

7.2 Due to technical and spatial constraints, it is not feasible to select coolers with lower noise emissions or install the coolers differently, i.e. at low/ground level or be more enclosed.

7.3 On the basis of the above, all techniques have been employed to minimise noise emissions as far as reasonably practicable.

## 8 Uncertainty

- 8.1 In all assessments, it is good practice to consider uncertainty which can arise from a number of different aspects. There are degrees of uncertainty associated with: instrumentation used for surveying; measurement technique and the variables influencing the measurement results such as transmission path and weather conditions; source terms used for modelling; calculation uncertainty; assessment uncertainty; and the subjective response of residents to noise sources.
- 8.2 Uncertainty due to instrumentation has been significantly reduced with the introduction of more modern instrumentation and is reduced further by undertaking field calibration checks on sound level meters before and after each measurement period with no significant drift (less than 0.5 dB) and that all instrumentation is within accepted laboratory calibration intervals.
- 8.3 Every effort has been made to reduce the uncertainty of the baseline sound level measurements. The duration of the baseline survey is considered to significantly reduce the uncertainty associated with the baseline sound levels. Data logged during periods of rainfall has been removed from the analysis. Based on professional judgement including substantial experience of acquiring and analysing baseline data for numerous sites in various locations, and a desk-based review of the site and surrounding area, it is considered that the baseline data acquired during the survey is typical of the area.
- 8.4 Representative baseline sound levels used in the assessment have been based on the 25% of all data logged, i.e. for 75% of the time, baseline sound levels are higher than used in the assessment. This approach will favour a reasonable 'worst case' scenario and a robust assessment to be completed. Representative baseline sound levels have been calculated for three accepted time periods daytime (07:00 to 19:00 hours), evening (19:00 to 23:00 hours) and night-time (23:00 to 07:00 hours).
- 8.5 Calculation uncertainty and assessment uncertainty have been reduced by peer review of all baseline data, model input data, model results and assessment calculations, and by using the appropriate level of precision at each stage of the assessment calculations.
- 8.6 With regard to the primary noise source, the 45 hybrid coolers, acoustic and operational data has been provided by the manufacturer (BAC) so it is considered there is minimal uncertainty with regard to this data. Acoustic data for the flue gas fan has been calculated based on accepted empirical formula, 'favouring' the worst case approach.
- 8.7 There are uncertainties in any prediction methodology. ISO 9613 Part 2 provides a method for predicting acoustic propagation outdoors. The method is applicable in practice to a great variety of sound sources and environments. It is applicable (directly or indirectly) to most situations including industrial sound sources, construction activities and many other ground-based sound sources. The estimated accuracy for values of the average downwind sound pressure level is stated as +/-3 dB



for a mean source/receptor height of up to five metres and source/propagation separation distance of up to 1 km. For a mean source height between 5 and 30 m, the estimated accuracy is given as +/-1 dB for a source/propagation separation distance of 0 to 100 m and +/- 3 dB for a source/propagation separation distance of >100 m. This is a standard approach and is considered to be an acceptable prediction methodology.

- 8.8 Specific sound levels have been calculated at ground and first floor level for the daytime and night-time periods respectively, at locations of facades albeit in free-field locations.
- 8.9 Intervening structures between the site and NSR location and the ground type has been based on a review of mapping and site observations.
- 8.10 A quantitative assessment has been undertaken based on information provided by the project team for the proposed development and professional judgement based on recognised and accepted empirical calculation methodologies. Where assumptions have been made, these have been informed through assessment and visiting similar facilities and have favoured a worst-case scenario, allowing for a reasonable and robust assessment.
- 8.11 With regards to subjective response, the noise standards adopted for the assessment are based upon the subjective response of the majority of the population or will be based upon the most likely response of the majority of the population. This is considered to be the best that can be achieved in a population of varying subjective response which will vary dependent upon a wide range of factors.
- 8.12 All areas and potential consequences of uncertainty have been minimised at every stage of the assessment process. On the basis of the above, and in the context of subjective response, the effects of uncertainty on the assessment conclusions are considered minimal.

## 9 Summary and Conclusions

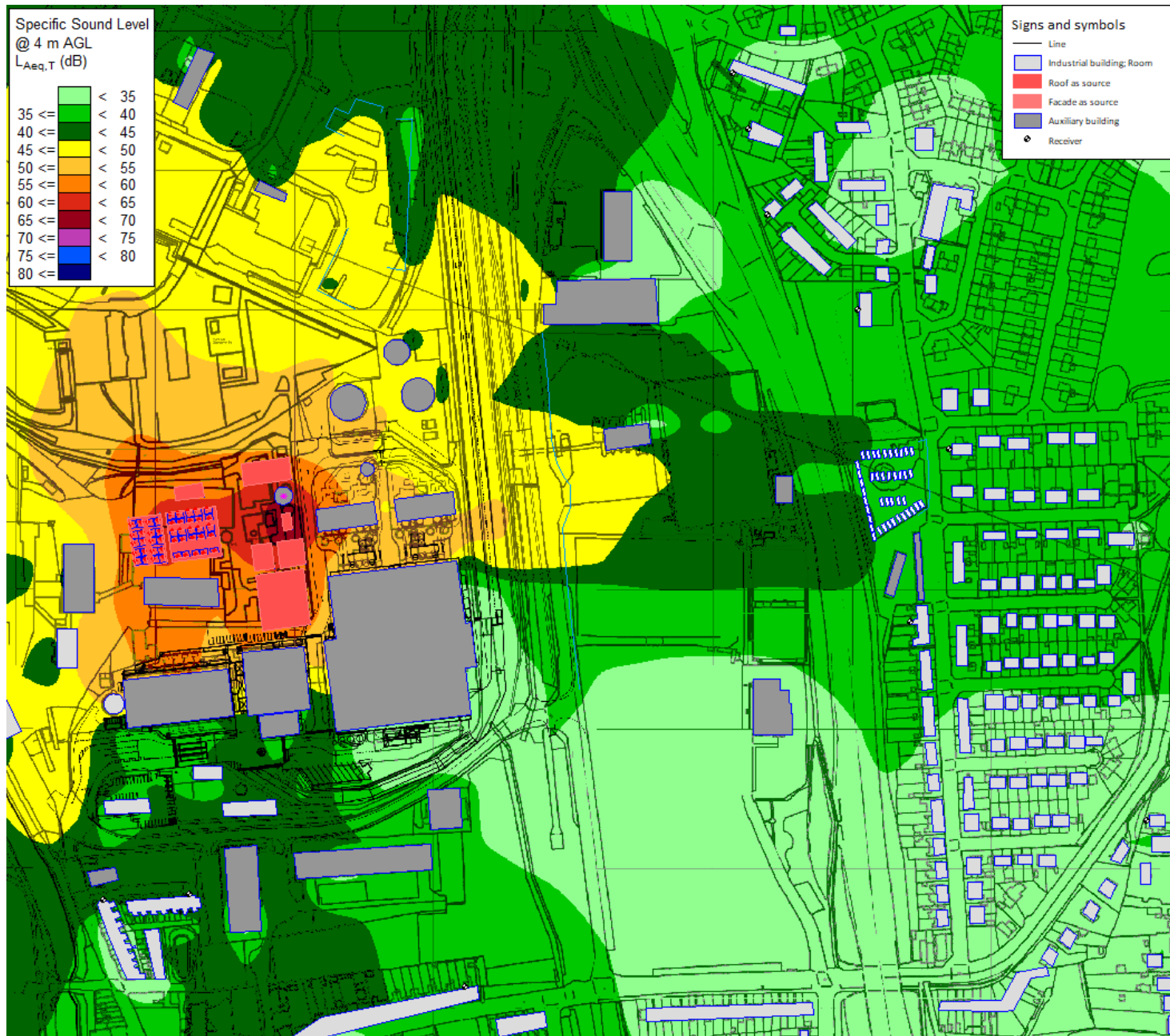
- 9.1 The Acoustics, Noise and Vibration Team at Savills has been appointed by Viridor Energy Limited (Viridor) to undertake a noise impact assessment in relation to an 'Environmental Permit' (EP) application for a currently proposed 'monoethanolamine' (MEA) 'carbon capture and storage' (CC) facility.
- 9.2 Noise emissions from the CC facility will be controlled through the application of noise control measures/techniques which have been described. Due to technical and spatial constraints, it is not feasible to incorporate additional noise control techniques.
- 9.3 For 99.6% of the year noise emissions from operation of the CC facility would result in negligible impact at all noise sensitive receptors (NSRs) and for all time periods (daytime, evening and night-time). For the remaining 0.4% of the year (11 hours), noise emissions would be higher, and a moderate adverse impact would likely result at two NSRs.
- 9.4 However, as this moderate impact would only occur for 11 hours in a year, and would be limited to the daytime period only, not affecting sleep, it is considered that, on balance and over the entire year period, the overall impact would be negligible.
- 9.5 Consequently, when considering the entire year period, noise emissions from operation of the CC facility would result in negligible impact at all NSRs and for all time periods.

## **References**

- 1 British Standards Institution. British Standard 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound.
- 2 British Standards Institution. British Standard 7445-2:1991 'Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use.
- 3 ISO. International Standard ISO 9613-2:1996. Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation.
- 4 Verein Deutscher Ingenieure. VDI 3733 Geräusche bei Rohrleitungen. 1996.



# Figures



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**Notes**

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Mocatta House, Trafalgar Place  
 Brighton, East Sussex BN1 4DU

Client: Viridor Energy Limited

Project: Proposed Carbon Capture Facility

Job Ref: 642310

File location:

Date: 15/11/2023 Rev: 2

Drawn: GR Checked: PB

**Figure 1: Scenario 1 Specific Sound Levels @ 4 m AGL**

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## Appendices



## Appendix A: BS 4142 Statements

**Phil Evans: Director - Acoustics**

*BSc (Hons) Geology; MSc Acoustics, Vibration and Noise Control; Fellow of the Geological Society; Fellow of the Institute of Acoustics; Associate Member Acoustical Society of America*

- A.1 Phil is a Director and leads the Savills Acoustics Team. He is a specialist in environmental acoustics and is active on a number of committees including the Association of Noise Consultants' Vibration Working Group; British Standards Institution (BSi) Committee GME/21/6/4 - BS 6472: Guide to Evaluation of Human Exposure to Vibration in Buildings; BSi Committee B/564/01 on BS 5228: Noise and Vibration Control on Construction and Open Sites which has now also revised and issued BS 8233:2014 Guidance on sound insulation and noise reduction in buildings. He has been a corporate Member of the Institute of Acoustics (MIOA) for over 20 years.
- A.2 Phil has over 25 years' experience in the project management of, and technical input to, environmental noise and vibration impact assessments for major developments. He is an expert in the industrial/commercial, transportation and construction sectors including the measurement, calculation, evaluation and mitigation of environmental noise and vibration. Phil has significant experience in the preparation and presentation of technical evidence and reports for public inquiries and planning applications. He is experienced in consultation and liaison with government departments, local authorities and other statutory bodies. He is an experienced expert witness. He has a Continuous Professional Development Record to support this competency and experience.
- A.3 Phil has been involved in many BS 4142 noise assessments for both the previous and current 2014 version of BS 4142. He has given evidence at public inquiries where BS 4142 has been the primary assessment methodology. He is very familiar with the Standard and attended the joint ANC/BSi launch of the 2014 version of the Standard. On the basis of Phil's overall experience in acoustics combined with particular focus on BS 4142, he is deemed competent for BS 4142 assessments.
- A.4 For this project, Phil has taken on the role of Project Director and has been responsible for overseeing and delivering the project.



**Peter Barling: Associate - Acoustics**

*BSc (Hons) Physics; PGDip Environmental Assessment and Management; Member of the Institute of Acoustics*


- A.6 Peter is an Associate Consultant in Acoustics and environmental acoustics specialist with over 10e years' experience. He has a Degree in Physics and also has a Post Graduate Diploma in Environmental Assessment and Management. He has been a member of the Institute of Acoustics since 2013.
- A.7 Peter has project managed and undertaken noise assessments for a variety of developments, including: large scale mixed-use developments, incorporating commercial, retail, leisure and residential elements; on-shore substations for off-shore windfarms; energy from waste facilities; manufacturing facilities; distribution centres; retail units; minerals extraction and exploration; solar farms; and petrol service filling stations. He has provided input into Environmental Impact Assessments (EIAs) and undertaken noise assessments to support planning applications and discharge planning conditions. He has a Continuous Professional Development (CPD) Record to support this competency and experience.
- A.8 Peter has undertaken BS 4142 noise assessments for both the previous and current 2014 version of BS 4142. He is familiar with the Standard and has attended and participated in internal and external CPD training seminars regarding the revised 2014 version of the Standard. On the basis of Peter's overall experience in acoustics, combined with particular focus on BS 4142, he is deemed competent for BS 4142 assessments.
- A.9 Peter was responsible for undertaking the baseline acoustic survey, and preparation of the assessment and report.

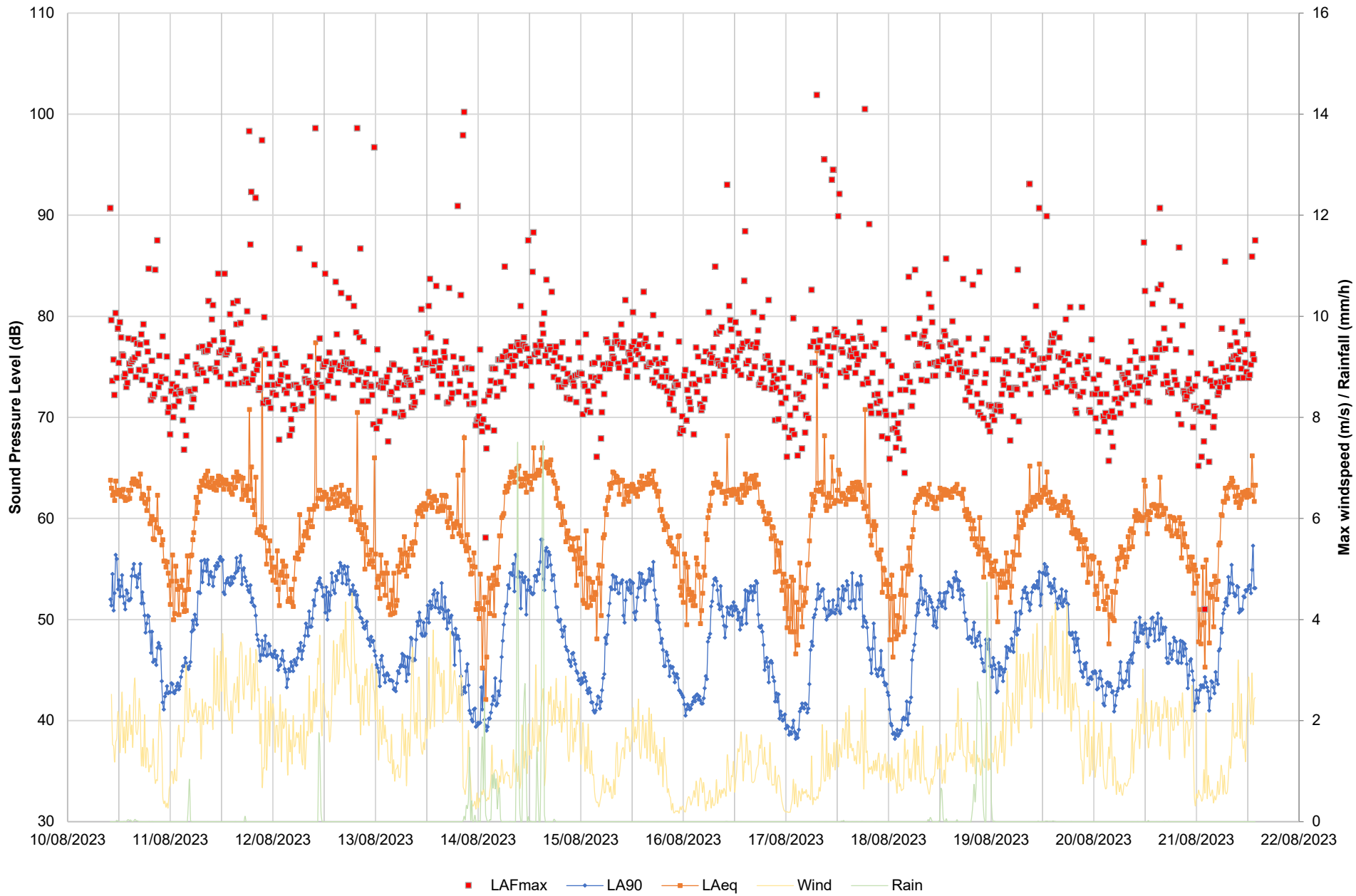


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# Appendix B: Baseline Data

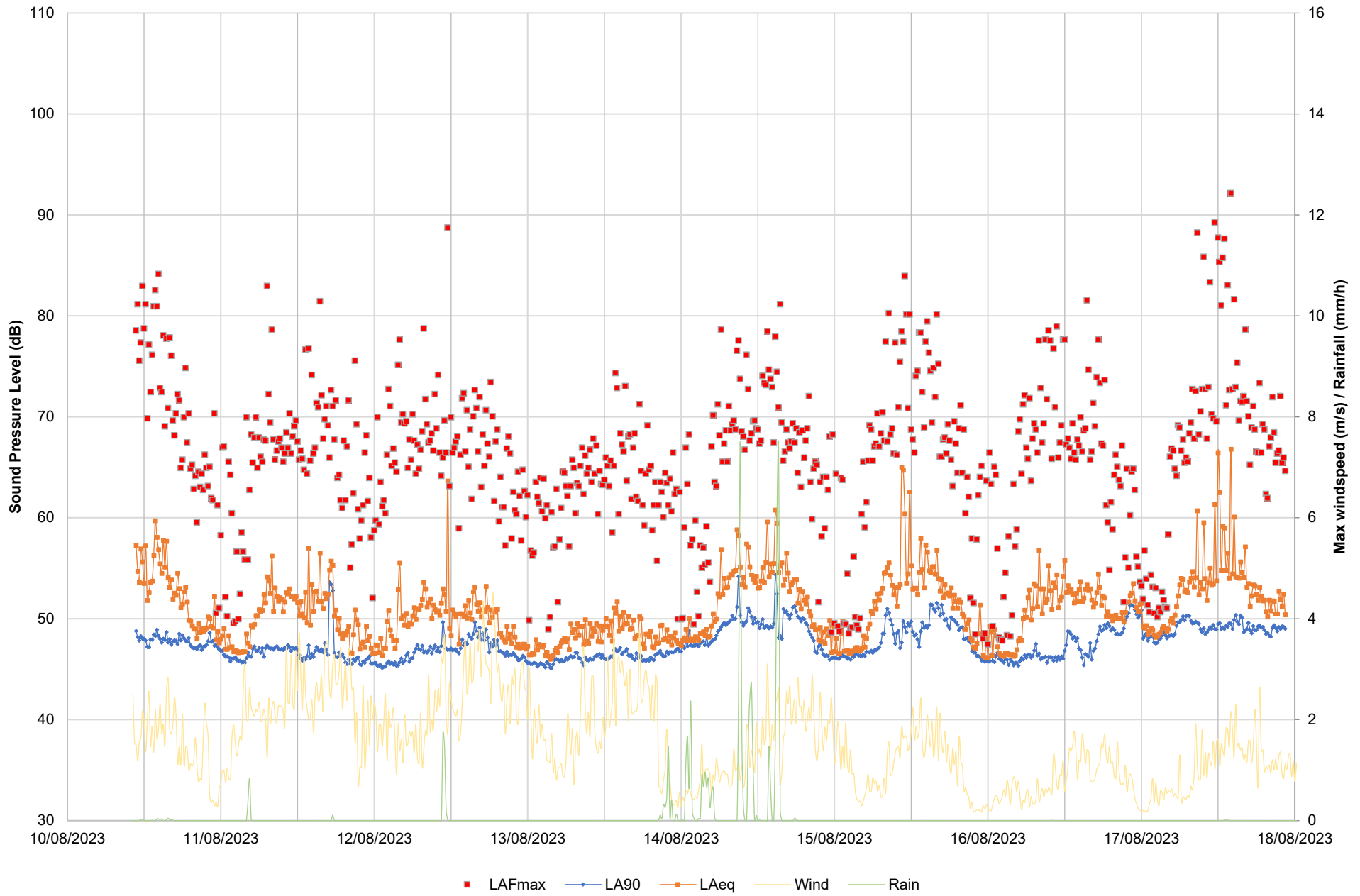
## Sound Level Survey Record

Project Name and Number		Runcorn CCS	
Location		LT1	
Purpose of Monitoring		Baseline	
Relevant Guidance / Standard		BS 4142:2014	
<b>Sound Measurement System</b>			
ID	Manufacturer / Model	Serial Number	Last Lab Verification
-	Rion NL-52	SLM1	17/02/2023
Microphone Height	Façade / Freefield	Measurement Interval	Filename
2.3	Free	125 ms	1
<b>START</b>		<b>END</b>	
Personnel		PB	
Date / time		10/08/2023 10:00	
Call brat	Reference level	94.0	94.0
	Meter reading	94.0	94.1
Photographs of Measurement Location			
			
Description of site (location of equipment, general surroundings, nature of ground between NSR and sound source(s) (hard/ soft ground, topography, intervening features, reflecting surfaces))			
<p>LT1 was deployed at 57 Westfield Road, approximately 450 m to the north-east of the site boundary. Due to the proximity of the A557 (located between the site and survey location) and distance to site, it is considered that the acoustic environment at LT1 would be similar to the acoustic environment more generally at locations to the east, i.e. on/close to Russel Road.</p>			
Description of sound environment (principal environmental and natural sound sources, which sources are dominant, character of the sound environment cf. to the character of the new source)			
<p>At the time of setting up and collecting the LT1 survey, the following noise sources were noted as affecting the acoustic environment: regular road traffic movements on the (the road was considered to be busy with regular vehicle movements, including HGVs, albeit with periods with low/negligible flow) and commercial aircraft soon after taking off from Liverpool John Lennon Airport (i.e. relatively low). At no point was noise from the existing EfW facility noted as being audible.</p>			




## Sound Level Survey Record

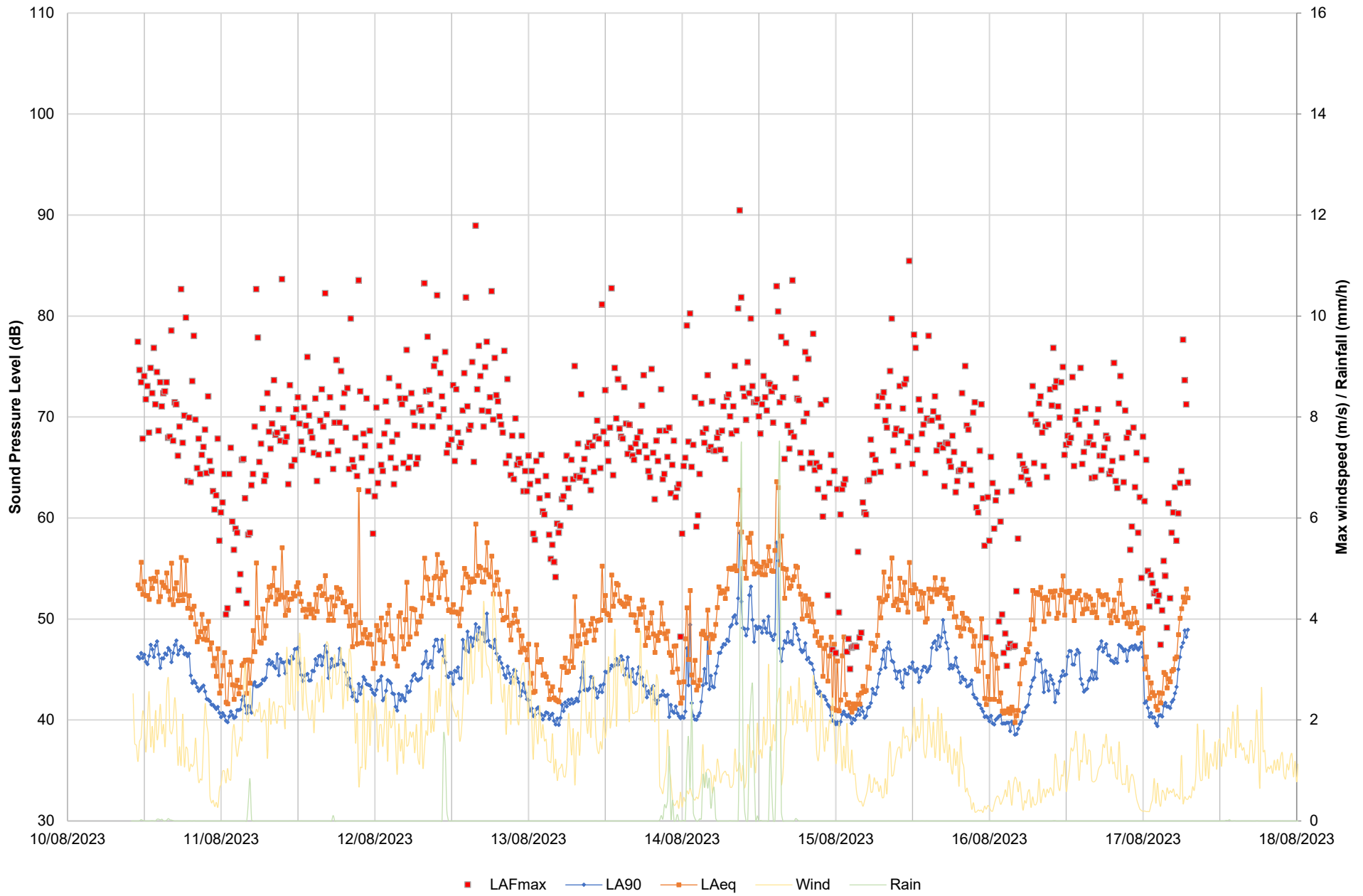
Project Name and Number		Runcorn CCS	
Location		LT1	
Purpose of Monitoring		Baseline	
Relevant Guidance / Standard		BS 4142:2014	
<b>Sound Measurement System</b>			
ID	Manufacturer / Model	Serial Number	Last Lab Verification
-	Convergence	SLM2	27/12/2021
Microphone Height	Façade / Freefield	Measurement Interval	Filename
1.5	Free	125 ms	1
<b>START</b>		<b>END</b>	
Personnel		PB	
Date / time		10/08/2023 10:45	
Call brat	Reference level	94.0	94.0
	Meter reading	94.0	93.8
Photographs of Measurement Location			
			
Description of site (location of equipment, general surroundings, nature of ground between NSR and sound source(s) (hard/ soft ground, topography, intervening features, reflecting surfaces))			
<p>LT2 was deployed on the south-eastern boundary of a local commercial facility on Mersey View Road at 2 m above ground in a free field position, approximately 200 m to the south of the site boundary and approximately 10 m north of NSRs on Clarkes Terrace. Due to the close proximity, this location is considered to be a representative of the acoustic environment of the nearest NSRs to the south, i.e. at Clarkes Terrace and Mersey View.</p>			
Description of sound environment (principal environmental and natural sound sources, which sources are dominant, character of the sound environment cf. to the character of the new source)			
<p>At the time of setting up and collecting the LT2 survey, the following noise sources were noted as affecting the acoustic environment: a slight rattle of an operational fan from the neighbouring commercial premises (not the EfW facility), distant road traffic movements and noise from a fan located on the EfW site. It should be noted that, whilst audible, the EfW fan noise source was not considered to be loud, or particularly discernible, i.e. tonal, rather a low level relatively broadband noise.</p>			





## Sound Level Survey Record

Project Name and Number		Runcorn CCS	
Location		LT1	
Purpose of Monitoring		Baseline	
Relevant Guidance / Standard		BS 4142:2014	
<b>Sound Measurement System</b>			
ID	Manufacturer / Model	Serial Number	Last Lab Verification
-	Rion NL-52	SLM3	27/12/2021
Microphone Height	Façade / Freefield	Measurement Interval	Filename
2	Free	125 ms	1
<b>START</b>		<b>END</b>	
Personnel		GR	
Date / time		10/08/2023 11:00	
Call brat	Reference level	94.0	94.0
	Meter reading	94.0	93.9
Photographs of Measurement Location			
			
Description of site (location of equipment, general surroundings, nature of ground between NSR and sound source(s) (hard/ soft ground, topography, intervening features, reflecting surfaces))			
<p>LT3 was deployed on a fence adjacent to 39 Sandy Lane at 2 m above ground in a free field position at a position approximately 280 m to the south-east of the site boundary and immediately adjacent to dwellings on Sandy Lane. Due to the proximity of Sandy Lane and distance to the site, it is considered that the acoustic environment at LT3 would be similar to the acoustic environment more generally to the south-east, i.e. on/close to Sandy Lane.</p>			
Description of sound environment (principal environmental and natural sound sources, which sources are dominant, character of the sound environment cf. to the character of the new source)			
<p>At the time of setting up and collecting the LT3 survey, the following noise sources were noted as affecting the acoustic environment: road traffic movements on the (regular movements, including HGVs, albeit with periods with low/negligible flow), distant road traffic movements and pedestrians walking on the footway. At no point was noise from the existing EfW facility noted as being audible.</p>			





Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
10/08/2023 10:00	52.0	63.8						0.0
10/08/2023 10:15	51.4	63.0					2.5	0.0
10/08/2023 10:30	54.5	62.3					1.5	0.0
10/08/2023 10:45	50.9	62.6	48.8	57.3			1.5	0.0
10/08/2023 11:00	52.6	61.8	48.2	54.7	46.2	53.4	1.2	0.0
10/08/2023 11:15	56.4	63.7	47.8	53.6	46.1	53.0	1.6	0.0
10/08/2023 11:30	56.0	62.5	48.3	56.9	46.6	55.6	1.7	0.0
10/08/2023 11:45	53.0	62.4	48.0	55.6	46.1	52.5	2.2	0.0
10/08/2023 12:00	53.9	62.8	48.0	53.5	46.5	53.7	2.0	0.0
10/08/2023 12:15	52.3	62.6	47.8	57.2	45.8	52.3	1.4	0.0
10/08/2023 12:30	53.3	62.2	47.2	51.8	45.5	52.3	2.0	0.0
10/08/2023 12:45	54.4	62.8	47.2	52.6	46.3	51.9	2.6	0.0
10/08/2023 13:00	52.3	62.9	47.9	53.6	47.5	54.0	1.5	0.0
10/08/2023 13:15	51.6	62.1	47.9	53.7	47.0	53.0	1.9	0.0
10/08/2023 13:30	51.0	61.8	48.4	56.3	46.2	54.1	1.4	0.0
10/08/2023 13:45	52.9	61.9	48.3	59.7	47.4	53.8	2.2	0.0
10/08/2023 14:00	52.6	61.9	48.9	58.1	47.8	54.7	1.6	0.0
10/08/2023 14:15	51.9	62.8	48.3	56.8	46.5	51.7	1.8	0.0
10/08/2023 14:30	51.9	62.0	48.0	55.4	45.1	52.2	2.3	0.0
10/08/2023 14:45	52.1	62.8	47.6	54.5	46.1	53.6	1.7	0.0
10/08/2023 15:00	54.3	63.5	48.0	57.8	46.1	53.3	1.9	0.0
10/08/2023 15:15	55.0	63.9	47.9	55.1	46.6	53.1	1.5	0.0
10/08/2023 15:30	55.5	63.9	48.7	57.7	46.5	54.6	2.6	0.0
10/08/2023 15:45	54.3	63.4	47.6	54.1	47.1	52.8	2.8	0.0
10/08/2023 16:00	54.3	63.7	48.0	53.1	46.9	51.9	1.8	0.0
10/08/2023 16:15	53.2	63.6	47.4	53.8	45.7	55.5	1.7	0.0
10/08/2023 16:30	54.1	63.2	47.7	52.0	46.6	51.4	1.9	0.0
10/08/2023 16:45	54.5	63.2	47.9	52.5	47.4	53.0	2.4	0.0
10/08/2023 17:00	55.5	64.4	47.8	52.3	47.9	53.6	2.1	0.0
10/08/2023 17:15	51.6	62.0	47.5	54.5	46.5	51.8	1.1	0.0
10/08/2023 17:30	52.7	62.4	48.5	53.0	46.9	52.4	1.5	0.0
10/08/2023 17:45	51.6	62.3	47.9	51.1	47.3	56.1	1.1	0.0
10/08/2023 18:00	50.4	61.6	48.4	51.5	47.2	51.8	2.1	0.0
10/08/2023 18:15	48.7	61.5	48.1	52.7	46.5	52.4	1.1	0.0
10/08/2023 18:30	49.6	60.8	47.8	53.2	46.6	55.8	1.5	0.0
10/08/2023 18:45	50.4	61.9	47.7	51.6	46.3	51.1	1.4	0.0
10/08/2023 19:00	50.3	63.0	48.1	49.9	46.6	52.3	1.0	0.0
10/08/2023 19:15	48.8	59.5	47.4	49.8	44.4	50.2	1.1	0.0
10/08/2023 19:30	46.7	59.8	47.1	49.3	43.7	51.0	1.1	0.0
10/08/2023 19:45	48.8	60.2	47.1	49.0	43.9	51.3	1.1	0.0
10/08/2023 20:00	45.8	58.0	47.1	49.0	43.7	49.5	1.6	0.0
10/08/2023 20:15	46.0	57.9	47.0	48.0	43.2	47.8	1.1	0.0
10/08/2023 20:30	46.0	59.9	47.2	49.5	42.9	48.2	0.8	0.0
10/08/2023 20:45	45.5	59.1	47.4	48.7	43.1	48.8	0.8	0.0
10/08/2023 21:00	47.2	62.3	46.9	49.0	43.3	50.5	0.8	0.0
10/08/2023 21:15	47.7	59.0	47.2	48.8	43.4	48.0	1.6	0.0
10/08/2023 21:30	47.4	58.6	47.2	48.9	42.8	49.1	2.3	0.0
10/08/2023 21:45	47.1	58.7	47.4	49.1	42.1	47.9	1.9	0.0
10/08/2023 22:00	43.9	57.4	47.8	50.2	42.0	49.8	1.7	0.0
10/08/2023 22:15	41.8	57.9	48.6	50.0	41.9	47.0	0.5	0.0
10/08/2023 22:30	41.1	55.8	47.7	49.2	41.5	47.7	0.4	0.0
10/08/2023 22:45	42.4	55.8	47.8	49.1	41.5	45.4	0.4	0.0
10/08/2023 23:00	42.7	55.2	47.3	52.2	41.3	46.1	0.3	0.0
10/08/2023 23:15	43.4	55.7	47.5	47.9	41.1	44.3	0.4	0.0
10/08/2023 23:30	42.7	54.6	47.2	48.7	41.3	47.1	0.3	0.0
10/08/2023 23:45	42.8	53.4	47.0	47.6	40.7	42.7	0.6	0.0
11/08/2023 00:00	42.8	51.5	46.8	48.0	40.3	43.4	0.7	0.0
11/08/2023 00:15	43.7	53.8	46.8	48.3	40.7	45.4	1.0	0.0
11/08/2023 00:30	43.6	56.4	46.4	49.0	40.4	46.7	1.0	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
11/08/2023 00:45	42.8	50.0	46.2	47.0	39.9	41.8	0.8	0.0
11/08/2023 01:00	42.7	50.6	46.3	47.0	39.8	41.6	1.0	0.0
11/08/2023 01:15	43.0	55.3	46.2	48.3	40.3	44.5	0.8	0.0
11/08/2023 01:30	43.4	53.8	45.8	47.2	40.8	45.8	0.8	0.0
11/08/2023 01:45	43.7	53.0	46.0	47.2	40.5	43.5	1.7	0.0
11/08/2023 02:00	43.1	50.5	46.0	46.7	40.2	42.1	1.9	0.0
11/08/2023 02:15	43.4	53.3	46.2	46.9	40.3	43.4	1.5	0.0
11/08/2023 02:30	44.3	53.2	45.9	46.8	41.0	44.0	1.3	0.0
11/08/2023 02:45	44.9	53.9	45.8	46.7	41.0	42.6	1.5	0.0
11/08/2023 03:00	45.4	51.5	45.8	46.7	41.1	43.3	1.7	0.0
11/08/2023 03:15	45.4	50.8	45.7	46.7	42.0	45.4	1.6	0.0
11/08/2023 03:30	46.2	52.9	45.8	46.8	42.3	45.6	2.6	0.0
11/08/2023 03:45	45.7	50.9	45.6	46.7	41.4	45.9	3.1	0.0
11/08/2023 04:00	45.2	56.3	46.1	48.5	40.7	42.6	2.1	0.0
11/08/2023 04:15	45.1	53.0	46.7	47.6	41.4	46.0	2.0	0.4
11/08/2023 04:30	45.4	54.7	46.3	47.2	41.3	43.7	2.6	0.8
11/08/2023 04:45	45.8	56.3	46.2	49.3	40.7	45.8	2.2	0.0
11/08/2023 05:00	48.8	56.4	47.0	49.2	43.5	48.9	2.2	0.0
11/08/2023 05:15	49.9	57.9	47.2	49.4	43.7	46.8	2.1	0.0
11/08/2023 05:30	49.0	58.6	46.8	50.3	43.3	55.6	2.2	0.0
11/08/2023 05:45	50.5	60.0	46.8	50.3	43.3	50.1	2.2	0.0
11/08/2023 06:00	50.0	62.1	47.1	50.9	43.4	47.7	2.3	0.0
11/08/2023 06:15	49.5	60.6	46.6	50.7	43.6	47.6	2.0	0.0
11/08/2023 06:30	52.7	61.6	47.1	50.8	44.0	51.0	2.1	0.0
11/08/2023 06:45	52.7	63.1	46.2	52.4	43.9	48.1	2.2	0.0
11/08/2023 07:00	52.6	62.7	47.1	51.6	44.2	49.3	2.0	0.0
11/08/2023 07:15	55.8	63.7	47.4	54.2	45.5	51.9	1.2	0.0
11/08/2023 07:30	53.7	63.5	47.2	53.7	46.0	53.2	2.4	0.0
11/08/2023 07:45	54.8	63.3	47.1	52.5	45.5	52.2	1.9	0.0
11/08/2023 08:00	55.9	64.0	47.1	56.2	45.7	53.3	2.2	0.0
11/08/2023 08:15	55.6	64.3	46.9	50.7	45.3	55.0	2.4	0.0
11/08/2023 08:30	54.8	63.2	47.1	53.1	45.1	51.5	2.1	0.0
11/08/2023 08:45	55.9	64.7	47.3	52.2	46.5	52.9	1.9	0.0
11/08/2023 09:00	53.5	63.6	47.0	51.7	44.4	52.0	2.3	0.0
11/08/2023 09:15	54.4	63.1	46.9	52.1	46.1	52.4	2.3	0.0
11/08/2023 09:30	54.7	63.1	47.0	51.9	45.7	57.1	2.3	0.0
11/08/2023 09:45	54.2	64.0	46.9	50.7	45.7	52.1	2.2	0.0
11/08/2023 10:00	53.3	63.2	47.1	51.6	44.6	50.4	1.9	0.0
11/08/2023 10:15	54.2	62.9	47.0	52.6	45.8	52.6	3.4	0.0
11/08/2023 10:30	55.3	63.5	47.4	52.5	45.9	50.9	2.4	0.0
11/08/2023 10:45	55.0	62.8	47.2	53.0	45.6	52.0	2.3	0.0
11/08/2023 11:00	55.6	63.7	46.8	52.1	46.3	52.0	3.3	0.0
11/08/2023 11:15	55.3	64.2	47.1	52.2	46.1	52.6	2.3	0.0
11/08/2023 11:30	56.0	63.3	47.0	52.0	47.0	52.3	2.2	0.0
11/08/2023 11:45	56.2	64.1	47.1	52.2	47.0	53.2	3.4	0.0
11/08/2023 12:00	55.8	63.9	46.9	51.6	47.2	53.6	2.6	0.0
11/08/2023 12:15	55.9	63.5	46.4	50.3	45.6	52.5	3.7	0.0
11/08/2023 12:30	52.7	62.9	46.0	51.7	44.5	51.8	2.9	0.0
11/08/2023 12:45	52.5	63.8	45.8	50.5	43.9	50.9	2.2	0.0
11/08/2023 13:00	53.6	63.8	46.1	50.1	44.4	51.0	3.2	0.0
11/08/2023 13:15	53.9	63.4	46.0	52.6	44.5	50.2	2.5	0.0
11/08/2023 13:30	54.1	63.4	46.3	49.6	44.6	50.9	2.2	0.0
11/08/2023 13:45	53.6	62.9	47.4	57.0	43.9	51.5	2.0	0.0
11/08/2023 14:00	53.4	63.4	46.1	49.4	43.9	50.5	2.0	0.0
11/08/2023 14:15	54.2	62.6	46.5	53.4	44.9	51.0	2.4	0.0
11/08/2023 14:30	53.6	62.4	46.2	50.7	44.8	50.1	1.7	0.0
11/08/2023 14:45	54.2	64.1	46.8	52.7	46.0	52.4	2.5	0.0
11/08/2023 15:00	54.1	63.0	47.2	52.7	45.4	50.8	2.7	0.0
11/08/2023 15:15	54.6	63.1	46.9	51.8	46.3	53.1	2.4	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
11/08/2023 15:30	56.1	64.6	46.8	56.5	46.4	53.2	2.5	0.0
11/08/2023 15:45	54.8	63.7	47.0	51.7	45.4	52.3	2.9	0.0
11/08/2023 16:00	55.1	64.2	46.7	51.0	46.2	52.5	2.2	0.0
11/08/2023 16:15	55.7	64.0	47.6	52.5	47.3	54.3	3.3	0.0
11/08/2023 16:30	56.3	64.1	46.9	52.0	46.7	51.9	3.6	0.0
11/08/2023 16:45	53.5	61.9	46.4	52.5	44.2	49.9	3.5	0.0
11/08/2023 17:00	54.9	64.0	53.6	54.9	45.2	50.5	2.6	0.0
11/08/2023 17:15	55.1	62.8	53.4	55.7	46.0	52.2	2.4	0.0
11/08/2023 17:30	54.2	62.3	52.8	55.3	45.4	49.9	3.1	0.1
11/08/2023 17:45	53.8	62.7	46.6	50.3	45.4	51.3	3.3	0.0
11/08/2023 18:00	53.3	63.2	46.2	50.9	45.5	53.1	2.7	0.0
11/08/2023 18:15	52.9	61.8	46.2	48.9	45.5	52.0	2.7	0.0
11/08/2023 18:30	52.7	70.8	46.7	50.1	47.1	53.0	3.0	0.0
11/08/2023 18:45	53.4	62.9	46.3	48.5	46.0	52.6	3.4	0.0
11/08/2023 19:00	51.7	65.1	46.5	48.0	45.6	51.6	2.2	0.0
11/08/2023 19:15	52.1	61.1	46.2	48.6	45.5	51.8	2.6	0.0
11/08/2023 19:30	51.4	61.8	45.7	48.4	44.7	50.7	3.1	0.0
11/08/2023 19:45	51.3	60.4	45.5	48.8	43.5	51.2	2.4	0.0
11/08/2023 20:00	50.4	64.1	46.0	49.2	44.1	49.3	3.4	0.0
11/08/2023 20:15	48.5	58.6	45.6	46.6	43.3	51.3	3.3	0.0
11/08/2023 20:30	48.0	58.9	45.5	46.6	42.3	47.3	2.6	0.0
11/08/2023 20:45	47.4	58.8	46.0	48.4	42.7	49.4	2.6	0.0
11/08/2023 21:00	45.9	58.4	45.8	50.9	41.9	50.5	1.5	0.0
11/08/2023 21:15	46.5	59.2	46.1	49.9	41.9	47.5	2.1	0.0
11/08/2023 21:30	47.9	76.8	46.2	49.4	43.6	62.8	0.7	0.0
11/08/2023 21:45	46.5	58.3	45.5	47.0	42.6	49.7	1.1	0.0
11/08/2023 22:00	47.1	59.1	45.4	47.5	43.3	47.6	1.1	0.0
11/08/2023 22:15	48.4	58.1	45.8	47.7	44.3	48.5	2.7	0.0
11/08/2023 22:30	46.4	55.5	45.6	47.2	44.0	49.0	1.1	0.0
11/08/2023 22:45	46.5	56.8	46.0	49.3	43.6	48.2	1.5	0.0
11/08/2023 23:00	47.6	56.8	46.0	47.9	43.5	47.6	2.4	0.0
11/08/2023 23:15	47.4	57.8	46.3	48.2	43.4	48.5	1.5	0.0
11/08/2023 23:30	46.6	54.7	45.5	47.1	43.0	47.5	2.5	0.0
11/08/2023 23:45	46.5	56.1	45.5	46.5	42.7	45.1	2.0	0.0
12/08/2023 00:00	46.3	53.9	45.6	46.6	42.5	45.6	2.3	0.0
12/08/2023 00:15	46.6	55.2	45.6	47.4	43.0	49.4	2.1	0.0
12/08/2023 00:30	46.9	55.2	45.3	47.4	43.9	48.9	1.4	0.0
12/08/2023 00:45	46.2	53.7	45.4	46.7	43.9	48.0	1.9	0.0
12/08/2023 01:00	46.4	56.8	45.4	48.1	44.3	50.1	1.9	0.0
12/08/2023 01:15	45.0	53.0	45.1	46.3	42.0	45.6	1.5	0.0
12/08/2023 01:30	45.4	51.4	45.3	47.1	42.1	47.7	1.9	0.0
12/08/2023 01:45	45.5	54.4	45.3	47.1	42.9	49.4	2.5	0.0
12/08/2023 02:00	46.1	54.7	45.6	49.7	44.0	50.6	1.2	0.0
12/08/2023 02:15	46.9	55.8	45.8	50.8	43.8	51.4	2.2	0.0
12/08/2023 02:30	45.9	53.7	45.5	48.9	43.6	48.4	1.8	0.0
12/08/2023 02:45	45.1	55.3	45.6	48.3	42.6	48.0	1.9	0.0
12/08/2023 03:00	44.8	55.3	45.4	47.8	42.6	46.3	2.2	0.0
12/08/2023 03:15	43.3	54.3	45.7	47.0	41.3	46.1	1.6	0.0
12/08/2023 03:30	44.1	51.8	45.4	47.8	40.9	45.3	0.9	0.0
12/08/2023 03:45	45.1	52.0	45.4	52.9	42.6	50.3	1.9	0.0
12/08/2023 04:00	44.9	52.1	45.7	55.5	42.0	50.6	1.4	0.0
12/08/2023 04:15	45.8	53.0	46.1	50.0	42.5	48.3	1.6	0.0
12/08/2023 04:30	45.4	51.7	45.6	50.3	42.2	47.1	1.1	0.0
12/08/2023 04:45	44.9	51.3	45.8	49.4	41.9	49.9	2.1	0.0
12/08/2023 05:00	46.0	54.0	46.4	50.5	43.3	53.6	1.5	0.0
12/08/2023 05:15	45.8	56.1	46.6	49.2	42.8	47.5	1.5	0.0
12/08/2023 05:30	45.5	56.1	45.7	49.6	42.8	48.2	1.8	0.0
12/08/2023 05:45	46.2	56.6	46.1	49.5	43.9	51.0	1.7	0.0
12/08/2023 06:00	47.1	56.0	46.1	50.3	44.4	51.0	1.8	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
12/08/2023 06:15	46.9	60.4	46.7	51.1	44.6	50.9	1.3	0.0
12/08/2023 06:30	47.7	57.1	47.0	49.9	44.1	48.5	1.9	0.0
12/08/2023 06:45	46.1	56.8	47.4	51.0	43.9	49.7	1.2	0.0
12/08/2023 07:00	46.9	57.4	47.0	50.9	44.0	49.7	1.1	0.0
12/08/2023 07:15	47.4	58.3	46.9	51.3	44.1	50.3	2.1	0.0
12/08/2023 07:30	48.4	58.7	47.3	51.9	45.6	52.1	1.1	0.0
12/08/2023 07:45	49.6	58.5	46.6	53.6	45.8	56.0	1.4	0.0
12/08/2023 08:00	49.2	59.6	46.8	53.0	46.8	54.1	1.8	0.0
12/08/2023 08:15	48.4	58.1	46.6	51.1	45.2	54.0	1.7	0.0
12/08/2023 08:30	50.8	60.9	46.8	51.6	45.5	51.8	2.9	0.0
12/08/2023 08:45	49.3	59.8	47.2	52.0	45.9	52.4	1.8	0.0
12/08/2023 09:00	49.3	59.2	46.6	50.0	45.2	51.5	2.0	0.0
12/08/2023 09:15	50.1	59.2	47.0	51.3	47.3	54.1	1.8	0.0
12/08/2023 09:30	51.9	60.9	47.3	50.9	48.0	54.2	2.6	0.0
12/08/2023 09:45	51.4	61.3	46.8	50.6	47.9	56.4	2.2	0.0
12/08/2023 10:00	52.9	77.4	47.1	50.8	46.8	52.1	2.6	0.0
12/08/2023 10:15	52.9	61.2	46.7	50.4	47.0	54.0	2.3	0.0
12/08/2023 10:30	53.6	62.0	47.3	51.6	47.9	55.6	3.2	0.0
12/08/2023 10:45	53.8	62.8	49.7	53.0	46.3	54.3	3.1	1.7
12/08/2023 11:00	54.1	62.8	48.3	52.4	45.7	54.7	3.7	1.4
12/08/2023 11:15	53.5	62.0	47.0	50.7	44.4	52.0	2.1	0.2
12/08/2023 11:30	53.2	61.9	46.9	63.7	44.3	50.8	1.7	0.0
12/08/2023 11:45	52.3	62.1	46.9	49.1	44.7	50.9	2.7	0.0
12/08/2023 12:00	52.4	62.6	47.0	48.4	44.6	50.7	2.4	0.0
12/08/2023 12:15	50.7	62.2	46.9	50.9	43.6	51.4	2.2	0.0
12/08/2023 12:30	53.2	62.4	46.9	50.5	44.9	50.7	2.1	0.0
12/08/2023 12:45	50.0	61.0	47.0	50.2	44.8	50.7	2.1	0.0
12/08/2023 13:00	52.7	61.9	46.7	50.5	45.2	50.5	2.2	0.0
12/08/2023 13:15	50.9	61.0	46.6	47.5	44.1	49.3	1.6	0.0
12/08/2023 13:30	52.4	61.9	47.1	50.5	44.1	51.0	1.7	0.0
12/08/2023 13:45	54.6	62.9	47.9	50.5	47.9	53.1	2.3	0.0
12/08/2023 14:00	53.7	62.4	47.4	50.3	47.1	55.0	3.1	0.0
12/08/2023 14:15	52.9	61.1	47.6	51.3	46.9	54.4	3.6	0.0
12/08/2023 14:30	52.6	61.7	47.5	50.1	48.8	54.2	2.5	0.0
12/08/2023 14:45	54.3	63.1	48.5	51.8	46.8	52.7	2.8	0.0
12/08/2023 15:00	53.9	61.8	48.2	50.6	48.2	53.7	3.5	0.0
12/08/2023 15:15	54.8	61.3	48.0	49.9	47.3	54.0	2.7	0.0
12/08/2023 15:30	54.6	62.5	48.5	52.7	48.1	53.7	2.8	0.0
12/08/2023 15:45	55.6	62.2	49.7	53.1	49.5	59.4	3.6	0.0
12/08/2023 16:00	55.3	63.3	48.8	51.5	47.9	54.3	3.7	0.0
12/08/2023 16:15	53.6	61.5	48.2	50.8	49.2	55.2	3.4	0.0
12/08/2023 16:30	55.0	61.7	49.1	51.6	48.7	55.1	3.8	0.0
12/08/2023 16:45	55.3	62.4	47.9	50.2	48.5	53.7	2.8	0.0
12/08/2023 17:00	54.5	61.7	48.5	50.9	48.6	53.7	4.3	0.0
12/08/2023 17:15	53.5	61.2	47.9	50.7	47.7	54.9	3.5	0.0
12/08/2023 17:30	55.2	62.0	49.0	53.2	50.5	57.6	3.1	0.0
12/08/2023 17:45	53.9	62.8	48.1	51.1	47.8	54.4	3.1	0.0
12/08/2023 18:00	52.5	61.6	46.7	49.6	47.3	54.2	2.9	0.0
12/08/2023 18:15	52.9	59.9	47.6	50.9	47.2	56.2	2.4	0.0
12/08/2023 18:30	52.7	60.6	47.2	50.1	47.1	52.5	4.5	0.0
12/08/2023 18:45	53.4	61.0	47.9	50.7	47.9	53.3	4.1	0.0
12/08/2023 19:00	52.5	61.2	47.4	50.9	46.6	54.6	3.5	0.0
12/08/2023 19:15	52.8	60.8	47.8	51.0	46.0	53.9	2.9	0.0
12/08/2023 19:30	51.2	59.7	46.8	48.5	46.2	52.5	3.1	0.0
12/08/2023 19:45	52.4	70.5	46.8	48.6	45.6	50.9	2.5	0.0
12/08/2023 20:00	51.0	58.9	46.7	48.2	45.1	49.9	2.4	0.0
12/08/2023 20:15	50.8	59.4	46.6	47.9	44.4	50.1	2.7	0.0
12/08/2023 20:30	50.2	61.1	46.3	47.7	44.2	50.2	1.7	0.0
12/08/2023 20:45	50.1	58.6	46.7	49.3	45.3	52.7	2.4	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
12/08/2023 21:00	49.7	58.0	46.4	48.0	44.6	49.4	2.7	0.0
12/08/2023 21:15	49.2	59.4	46.4	48.5	43.7	47.9	1.9	0.0
12/08/2023 21:30	49.1	55.0	46.4	47.6	44.3	49.6	2.9	0.0
12/08/2023 21:45	49.4	59.1	46.6	49.3	44.9	50.4	2.7	0.0
12/08/2023 22:00	49.8	57.7	46.4	48.2	44.9	51.0	3.0	0.0
12/08/2023 22:15	48.1	56.4	46.2	47.2	44.1	49.7	2.0	0.0
12/08/2023 22:30	48.0	55.5	45.9	47.5	43.7	48.9	1.9	0.0
12/08/2023 22:45	47.4	55.8	45.9	47.1	42.4	46.7	2.6	0.0
12/08/2023 23:00	48.3	56.9	46.1	47.2	42.9	48.3	3.1	0.0
12/08/2023 23:15	47.8	55.8	46.3	47.5	43.6	47.1	3.1	0.0
12/08/2023 23:30	47.9	55.2	46.2	47.5	42.7	47.0	2.7	0.0
12/08/2023 23:45	46.9	66.0	45.8	47.0	42.1	46.0	2.5	0.0
13/08/2023 00:00	46.4	56.5	45.6	47.3	42.0	47.5	2.0	0.0
13/08/2023 00:15	45.5	53.2	45.6	46.4	40.9	43.7	3.0	0.0
13/08/2023 00:30	45.2	54.0	45.5	46.4	41.1	44.6	2.0	0.0
13/08/2023 00:45	44.8	54.3	45.5	46.6	40.4	42.7	1.2	0.0
13/08/2023 01:00	43.4	52.1	45.6	46.5	40.5	42.8	2.2	0.0
13/08/2023 01:15	46.0	56.4	45.6	47.9	41.1	47.5	1.8	0.0
13/08/2023 01:30	46.4	54.6	45.3	46.9	41.2	45.8	1.5	0.0
13/08/2023 01:45	45.3	53.5	45.4	47.5	40.7	45.7	2.3	0.0
13/08/2023 02:00	44.5	54.6	45.6	47.4	40.5	46.0	1.7	0.0
13/08/2023 02:15	43.8	52.4	45.5	47.2	40.0	44.4	1.9	0.0
13/08/2023 02:30	44.5	55.6	45.4	47.4	40.4	44.6	1.6	0.0
13/08/2023 02:45	44.7	54.6	45.2	46.4	40.7	44.3	1.6	0.0
13/08/2023 03:00	44.5	51.2	45.7	46.7	40.7	43.7	1.2	0.0
13/08/2023 03:15	44.0	51.5	45.5	46.3	40.1	42.0	1.2	0.0
13/08/2023 03:30	44.0	50.5	45.2	46.0	40.5	42.9	1.2	0.0
13/08/2023 03:45	44.0	52.9	45.1	46.2	40.6	43.3	1.7	0.0
13/08/2023 04:00	43.9	50.6	45.5	46.4	39.9	42.2	1.0	0.0
13/08/2023 04:15	43.1	54.6	45.9	46.9	39.5	42.0	1.2	0.0
13/08/2023 04:30	43.2	50.7	46.0	47.1	40.1	41.9	0.8	0.0
13/08/2023 04:45	42.9	51.4	45.9	46.7	39.5	41.8	1.0	0.0
13/08/2023 05:00	43.7	51.9	45.7	47.3	40.2	43.0	1.1	0.0
13/08/2023 05:15	44.9	55.3	46.0	47.6	41.5	45.3	1.1	0.0
13/08/2023 05:30	44.7	54.7	45.8	47.8	40.9	45.2	0.9	0.0
13/08/2023 05:45	45.3	56.9	45.8	48.1	41.7	46.1	0.9	0.0
13/08/2023 06:00	45.5	55.6	46.1	47.7	41.3	44.7	1.2	0.0
13/08/2023 06:15	46.6	56.5	45.9	48.0	42.0	44.8	2.1	0.0
13/08/2023 06:30	45.4	54.9	46.2	47.0	41.6	45.8	1.8	0.0
13/08/2023 06:45	46.4	58.2	46.3	49.5	42.1	48.3	1.3	0.0
13/08/2023 07:00	45.3	56.6	46.2	48.6	41.6	45.2	1.8	0.0
13/08/2023 07:15	43.9	54.3	46.2	49.0	41.8	52.2	0.7	0.0
13/08/2023 07:30	46.3	56.4	46.6	48.1	42.1	47.3	1.6	0.0
13/08/2023 07:45	44.6	55.3	46.6	49.5	41.9	48.4	1.8	0.0
13/08/2023 08:00	46.2	57.0	46.1	48.4	42.8	47.5	1.3	0.0
13/08/2023 08:15	48.2	57.0	46.0	49.2	44.2	49.8	2.1	0.0
13/08/2023 08:30	48.1	57.6	45.6	49.2	45.7	49.4	3.2	0.0
13/08/2023 08:45	45.9	56.4	45.4	47.5	43.0	48.5	3.4	0.0
13/08/2023 09:00	46.1	57.7	46.2	49.9	43.0	47.7	2.2	0.0
13/08/2023 09:15	46.0	57.6	45.9	47.8	42.9	48.8	1.7	0.0
13/08/2023 09:30	48.0	59.4	45.9	47.5	43.1	48.8	2.2	0.0
13/08/2023 09:45	49.8	60.7	46.1	49.5	44.3	49.5	1.7	0.0
13/08/2023 10:00	49.4	60.5	46.0	48.2	44.2	50.0	2.8	0.0
13/08/2023 10:15	50.7	61.1	46.0	49.0	43.2	47.9	2.9	0.0
13/08/2023 10:30	49.9	60.7	46.3	48.8	43.1	48.9	1.8	0.0
13/08/2023 10:45	48.6	61.3	46.3	49.5	42.2	49.8	1.4	0.0
13/08/2023 11:00	48.4	60.2	46.4	47.8	42.8	49.9	1.3	0.0
13/08/2023 11:15	49.7	61.5	46.5	49.3	43.4	49.9	1.6	0.0
13/08/2023 11:30	48.4	61.2	46.1	47.7	42.8	55.2	1.4	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
13/08/2023 11:45	48.6	60.9	46.4	48.9	43.6	50.8	2.0	0.0
13/08/2023 12:00	50.1	61.3	46.1	49.3	44.8	52.3	1.6	0.0
13/08/2023 12:15	51.4	62.5	46.0	50.0	44.7	50.6	2.0	0.0
13/08/2023 12:30	49.7	62.7	46.0	49.3	44.8	50.4	3.3	0.0
13/08/2023 12:45	51.8	62.1	46.1	48.4	45.1	49.9	1.9	0.0
13/08/2023 13:00	51.1	61.5	46.3	49.8	45.4	54.4	2.1	0.0
13/08/2023 13:15	51.4	61.1	46.2	47.8	45.3	51.3	2.4	0.0
13/08/2023 13:30	52.5	62.0	46.9	51.1	45.4	52.4	3.8	0.0
13/08/2023 13:45	52.9	62.2	47.0	50.6	46.0	53.5	1.9	0.0
13/08/2023 14:00	51.2	61.8	46.8	51.7	45.5	53.4	3.1	0.0
13/08/2023 14:15	51.9	61.8	46.8	48.8	45.9	51.8	3.2	0.0
13/08/2023 14:30	52.6	60.7	47.1	50.2	46.3	51.6	2.9	0.0
13/08/2023 14:45	51.1	61.0	46.5	49.0	45.9	51.5	3.2	0.0
13/08/2023 15:00	50.7	60.8	46.7	50.6	44.5	51.2	2.9	0.0
13/08/2023 15:15	51.2	61.2	46.8	49.5	45.1	52.2	2.7	0.0
13/08/2023 15:30	53.6	62.3	47.0	49.5	46.2	51.5	2.9	0.0
13/08/2023 15:45	51.0	60.8	46.4	50.3	44.3	52.1	2.0	0.0
13/08/2023 16:00	50.1	61.2	46.4	48.9	44.3	50.4	3.0	0.0
13/08/2023 16:15	52.2	62.3	46.4	49.0	45.0	50.4	2.1	0.0
13/08/2023 16:30	50.8	62.2	46.0	49.9	43.7	50.4	2.1	0.0
13/08/2023 16:45	49.1	59.7	45.9	48.1	43.6	49.7	2.2	0.0
13/08/2023 17:00	50.9	59.1	46.6	48.3	44.6	48.9	2.2	0.0
13/08/2023 17:15	49.7	61.1	46.1	48.4	45.2	51.0	2.4	0.0
13/08/2023 17:30	50.2	60.0	46.3	50.2	44.1	50.5	3.8	0.0
13/08/2023 17:45	50.4	60.5	46.3	50.0	44.2	51.9	2.3	0.0
13/08/2023 18:00	48.7	58.2	45.8	47.5	43.4	51.2	2.4	0.0
13/08/2023 18:15	48.5	59.5	45.9	47.1	43.4	47.4	2.8	0.0
13/08/2023 18:30	45.5	59.1	45.8	48.5	42.2	49.1	3.0	0.0
13/08/2023 18:45	49.1	59.5	45.9	48.5	42.9	48.2	2.7	0.0
13/08/2023 19:00	48.1	59.7	45.9	48.2	42.6	49.6	2.6	0.0
13/08/2023 19:15	48.4	64.3	46.2	48.8	43.1	50.6	2.0	0.0
13/08/2023 19:30	48.1	58.5	46.0	47.2	43.4	48.5	2.7	0.0
13/08/2023 19:45	46.9	59.3	45.9	47.2	42.0	46.7	2.0	0.0
13/08/2023 20:00	44.4	58.3	46.4	48.2	41.6	48.3	2.9	0.0
13/08/2023 20:15	42.6	57.7	46.5	47.5	41.9	47.9	2.7	0.0
13/08/2023 20:30	42.9	64.8	46.6	47.6	42.4	48.7	0.7	0.0
13/08/2023 20:45	43.3	68.0	46.8	49.3	42.4	51.6	0.6	0.1
13/08/2023 21:00	42.8	57.3	46.5	49.4	42.9	49.5	0.5	0.0
13/08/2023 21:15	44.9	56.8	46.3	47.9	42.4	48.6	0.8	0.3
13/08/2023 21:30	45.6	58.4	46.3	48.0	42.4	48.1	1.0	0.3
13/08/2023 21:45	43.5	57.1	46.7	48.9	42.5	48.8	1.8	0.4
13/08/2023 22:00	41.0	55.9	46.5	47.7	40.3	46.7	1.1	1.5
13/08/2023 22:15	40.7	54.5	46.7	48.3	41.5	46.4	0.8	0.1
13/08/2023 22:30	40.1	54.6	46.7	47.4	40.9	44.7	0.4	0.4
13/08/2023 22:45	39.9	55.3	46.7	48.1	40.7	47.3	0.3	0.0
13/08/2023 23:00	41.1	56.6	46.7	48.6	41.3	47.4	0.3	0.0
13/08/2023 23:15	41.2	55.2	47.0	47.9	40.7	45.1	0.4	0.1
13/08/2023 23:30	39.4	51.0	47.1	47.6	40.4	43.7	0.3	0.0
13/08/2023 23:45	39.5	51.6	46.8	47.6	40.2	41.7	0.6	0.0
14/08/2023 00:00	39.8	51.6	46.8	47.3	40.4	42.2	0.3	0.0
14/08/2023 00:15	39.7	50.1	47.3	47.8	40.2	43.8	0.5	0.0
14/08/2023 00:30	39.8	54.5	47.1	48.1	40.8	48.1	0.4	0.0
14/08/2023 00:45	43.3	51.1	47.7	48.9	47.1	51.1	0.6	1.2
14/08/2023 01:00	41.1	45.2	47.3	47.9	43.4	46.0	0.5	1.7
14/08/2023 01:15	45.1	51.0	48.8	50.0	49.4	52.8	0.7	0.6
14/08/2023 01:30	40.1	52.2	47.4	48.0	41.7	44.5	0.5	2.4
14/08/2023 01:45	39.5	42.1	47.3	47.8	40.4	43.7	0.4	0.2
14/08/2023 02:00	39.0	46.3	47.3	47.8	40.1	45.9	0.4	0.1
14/08/2023 02:15	39.4	51.7	47.4	48.2	40.0	43.0	0.5	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
14/08/2023 02:30	40.2	54.1	47.4	48.1	40.4	43.4	0.4	0.0
14/08/2023 02:45	40.2	50.6	47.3	47.9	40.7	44.0	0.6	0.0
14/08/2023 03:00	40.8	53.1	47.6	48.6	41.8	48.5	0.8	0.0
14/08/2023 03:15	41.6	53.4	47.7	48.5	43.4	48.8	1.5	0.9
14/08/2023 03:30	42.4	54.4	47.8	48.7	45.1	48.4	0.7	0.7
14/08/2023 03:45	42.0	50.4	47.4	48.4	43.6	48.1	1.0	1.0
14/08/2023 04:00	44.2	55.1	48.2	48.9	48.2	50.9	1.0	0.6
14/08/2023 04:15	41.5	53.9	47.4	48.2	43.0	46.7	1.0	0.8
14/08/2023 04:30	41.7	53.5	47.6	48.3	44.4	48.5	0.9	0.3
14/08/2023 04:45	42.9	55.2	47.7	49.3	43.3	48.0	0.6	0.6
14/08/2023 05:00	42.5	58.3	47.9	50.5	43.2	48.4	0.9	0.7
14/08/2023 05:15	43.9	58.3	48.0	49.7	44.6	49.5	0.8	0.1
14/08/2023 05:30	46.3	60.1	48.3	50.0	45.3	51.1	1.2	0.0
14/08/2023 05:45	47.9	60.3	48.7	52.5	46.6	53.2	1.0	0.0
14/08/2023 06:00	49.5	60.5	48.9	52.1	46.7	52.6	0.8	0.0
14/08/2023 06:15	50.6	62.6	49.2	56.9	47.2	52.8	0.9	0.0
14/08/2023 06:30	51.3	63.2	49.4	52.4	47.5	52.7	1.0	0.0
14/08/2023 06:45	51.5	62.7	49.6	54.0	47.5	52.0	1.0	0.0
14/08/2023 07:00	53.4	63.1	49.4	53.1	48.0	53.0	0.9	0.0
14/08/2023 07:15	53.1	63.5	49.5	53.2	47.8	55.0	0.9	0.0
14/08/2023 07:30	54.6	64.1	49.7	54.0	49.2	55.0	0.7	0.0
14/08/2023 07:45	54.6	64.6	49.8	54.4	49.4	54.9	0.7	0.0
14/08/2023 08:00	54.4	64.5	50.3	54.3	50.2	55.0	0.8	0.0
14/08/2023 08:15	55.5	64.2	50.0	54.7	50.4	55.3	1.4	0.0
14/08/2023 08:30	52.8	63.6	50.0	54.8	49.6	54.8	1.0	0.0
14/08/2023 08:45	56.4	64.3	51.2	58.8	52.1	59.4	1.0	0.0
14/08/2023 09:00	56.3	64.9	54.2	58.3	58.5	62.8	1.1	2.7
14/08/2023 09:15	54.2	65.0	50.3	55.1	51.7	58.6	0.8	7.5
14/08/2023 09:30	54.7	65.2	49.6	53.4	49.1	55.0	1.1	1.7
14/08/2023 09:45	54.2	63.9	49.3	54.1	49.0	55.7	0.7	0.3
14/08/2023 10:00	51.1	63.2	49.6	53.2	48.4	54.0	0.8	0.0
14/08/2023 10:15	54.6	63.4	49.8	57.4	49.0	58.0	1.9	0.0
14/08/2023 10:30	53.9	63.3	51.1	57.1	52.4	57.6	1.7	1.6
14/08/2023 10:45	53.7	63.9	50.7	55.1	53.2	58.5	1.1	2.4
14/08/2023 11:00	54.2	64.5	50.2	54.3	49.9	55.7	1.4	2.7
14/08/2023 11:15	50.5	62.6	49.5	53.9	47.7	54.5	1.2	1.1
14/08/2023 11:30	52.9	64.0	50.0	53.6	49.3	55.5	1.0	0.0
14/08/2023 11:45	53.9	64.2	49.6	54.2	49.0	55.3	1.9	0.1
14/08/2023 12:00	52.9	63.6	49.7	53.0	49.2	54.6	1.3	0.0
14/08/2023 12:15	53.2	63.5	49.1	53.1	49.2	55.2	1.4	0.0
14/08/2023 12:30	52.6	62.9	49.5	53.7	48.6	54.4	1.3	0.0
14/08/2023 12:45	52.5	64.2	50.0	55.1	49.8	55.7	2.1	0.0
14/08/2023 13:00	52.6	67.0	49.1	53.6	49.1	54.4	1.5	0.0
14/08/2023 13:15	54.3	64.0	49.3	55.6	48.6	55.3	1.6	0.0
14/08/2023 13:30	54.3	64.3	49.3	59.6	50.2	57.2	3.1	0.0
14/08/2023 13:45	53.8	64.4	49.0	54.2	48.6	55.8	2.0	1.5
14/08/2023 14:00	54.9	64.8	49.2	55.4	48.3	54.8	1.4	0.6
14/08/2023 14:15	54.5	64.3	49.1	54.6	47.9	54.7	1.9	0.0
14/08/2023 14:30	55.7	64.7	49.5	55.5	48.5	56.8	1.6	0.0
14/08/2023 14:45	57.9	65.8	54.4	60.8	57.6	63.6	2.3	1.9
14/08/2023 15:00	57.9	67.0	52.4	59.4	55.8	63.0	2.4	6.0
14/08/2023 15:15	54.0	65.4	48.1	54.6	47.1	55.4	2.6	7.4
14/08/2023 15:30	52.9	65.1	48.3	55.2	45.8	58.2	0.7	0.2
14/08/2023 15:45	56.8	65.4	48.0	55.5	47.1	55.0	0.9	0.0
14/08/2023 16:00	57.1	65.6	51.0	53.3	47.8	52.1	1.6	0.0
14/08/2023 16:15	55.2	65.0	50.6	53.9	47.7	54.9	1.8	0.0
14/08/2023 16:30	56.7	64.5	50.7	56.5	48.7	54.1	2.6	0.0
14/08/2023 16:45	56.4	65.3	50.4	54.5	47.7	53.1	2.3	0.0
14/08/2023 17:00	55.4	65.8	50.0	52.7	47.8	53.3	2.7	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
14/08/2023 17:15	53.9	64.6	50.4	53.4	47.5	53.9	1.9	0.0
14/08/2023 17:30	54.4	64.3	51.1	53.6	49.5	54.2	2.1	0.0
14/08/2023 17:45	54.4	63.7	51.2	53.9	49.1	55.2	2.4	0.0
14/08/2023 18:00	52.8	63.5	50.7	53.9	48.5	55.1	1.9	0.0
14/08/2023 18:15	51.2	62.0	50.2	51.5	47.9	53.2	2.8	0.0
14/08/2023 18:30	51.2	63.0	50.0	52.9	47.0	52.5	2.3	0.0
14/08/2023 18:45	49.9	61.3	49.8	51.0	46.7	50.0	2.3	0.0
14/08/2023 19:00	49.8	61.5	50.0	52.7	46.9	52.0	2.0	0.0
14/08/2023 19:15	50.0	61.1	49.9	51.8	47.6	52.3	2.4	0.0
14/08/2023 19:30	49.0	59.4	49.6	51.5	46.0	50.4	1.8	0.0
14/08/2023 19:45	48.3	61.2	49.4	52.1	46.2	52.0	2.0	0.0
14/08/2023 20:00	48.9	59.7	48.8	50.7	45.7	49.8	2.2	0.0
14/08/2023 20:15	49.3	59.6	48.4	50.3	45.6	51.5	2.0	0.0
14/08/2023 20:30	47.3	57.7	48.1	49.2	45.0	49.7	2.9	0.0
14/08/2023 20:45	47.0	58.5	47.8	49.4	43.6	48.3	2.2	0.0
14/08/2023 21:00	46.9	58.8	46.7	48.9	43.3	48.7	1.4	0.0
14/08/2023 21:15	46.0	58.1	46.6	49.0	42.6	47.7	1.2	0.0
14/08/2023 21:30	45.8	57.0	47.3	47.9	42.8	47.4	1.5	0.0
14/08/2023 21:45	45.4	56.9	47.5	49.1	42.3	48.1	2.5	0.0
14/08/2023 22:00	46.6	57.2	46.9	47.7	42.4	44.3	1.9	0.0
14/08/2023 22:15	46.7	58.0	46.5	48.7	42.3	47.1	1.4	0.0
14/08/2023 22:30	46.0	56.0	46.3	47.5	42.0	47.4	1.8	0.0
14/08/2023 22:45	45.6	56.8	46.4	49.0	41.5	43.9	1.6	0.0
14/08/2023 23:00	44.9	53.4	46.3	48.3	41.3	46.3	2.0	0.0
14/08/2023 23:15	44.7	58.1	45.9	49.8	40.4	48.2	1.9	0.0
14/08/2023 23:30	44.0	55.1	46.1	46.7	39.9	41.2	2.4	0.0
14/08/2023 23:45	44.1	57.0	46.1	49.4	39.8	47.5	1.8	0.0
15/08/2023 00:00	43.6	54.5	46.1	46.8	39.6	41.0	1.1	0.0
15/08/2023 00:15	44.2	56.1	46.1	48.1	39.8	45.9	1.4	0.0
15/08/2023 00:30	43.8	51.9	46.0	46.6	39.5	40.9	2.0	0.0
15/08/2023 00:45	44.7	51.6	46.0	46.6	39.8	42.0	1.6	0.0
15/08/2023 01:00	44.3	55.6	46.3	48.5	40.5	46.4	1.0	0.0
15/08/2023 01:15	43.9	58.8	46.4	49.7	40.8	48.2	1.5	0.0
15/08/2023 01:30	43.0	51.2	46.3	46.8	40.5	42.5	1.1	0.0
15/08/2023 01:45	42.7	54.1	46.2	46.8	40.4	41.5	1.9	0.0
15/08/2023 02:00	43.2	54.0	46.0	46.9	40.5	41.7	1.1	0.0
15/08/2023 02:15	42.8	51.4	46.1	46.6	40.3	41.2	1.0	0.0
15/08/2023 02:30	41.8	52.2	45.9	46.6	39.7	40.8	1.4	0.0
15/08/2023 02:45	41.8	53.7	46.3	46.8	40.1	41.6	0.9	0.0
15/08/2023 03:00	41.0	52.0	46.2	46.8	40.0	41.2	0.9	0.0
15/08/2023 03:15	40.8	52.7	46.5	47.1	40.5	41.6	0.6	0.0
15/08/2023 03:30	41.0	52.5	46.6	47.2	41.0	42.5	0.4	0.0
15/08/2023 03:45	41.6	48.1	46.4	46.8	40.5	41.6	0.4	0.0
15/08/2023 04:00	42.4	54.1	46.3	46.9	41.3	42.7	0.4	0.0
15/08/2023 04:15	42.3	55.4	46.3	47.1	40.8	43.4	0.3	0.0
15/08/2023 04:30	41.2	53.6	46.4	48.3	40.2	42.8	0.4	0.0
15/08/2023 04:45	41.9	50.4	46.3	47.2	40.4	42.9	0.5	0.0
15/08/2023 05:00	43.0	55.3	46.7	48.1	41.2	45.3	0.7	0.0
15/08/2023 05:15	44.2	58.1	46.7	49.1	41.3	45.1	0.9	0.0
15/08/2023 05:30	44.6	58.4	46.7	49.5	41.7	47.6	0.6	0.0
15/08/2023 05:45	48.2	61.0	46.8	50.8	43.1	47.6	0.6	0.0
15/08/2023 06:00	47.6	60.4	46.6	50.5	42.6	46.9	0.9	0.0
15/08/2023 06:15	48.5	61.8	46.9	51.8	42.5	47.3	0.7	0.0
15/08/2023 06:30	50.4	62.1	46.9	51.0	43.3	48.4	0.8	0.0
15/08/2023 06:45	51.6	63.4	47.0	52.5	44.6	52.1	0.6	0.0
15/08/2023 07:00	53.2	63.0	47.2	51.9	45.0	50.1	0.7	0.0
15/08/2023 07:15	53.0	63.5	47.6	52.5	46.0	51.7	0.5	0.0
15/08/2023 07:30	54.4	64.6	48.5	53.0	46.9	54.7	0.5	0.0
15/08/2023 07:45	54.2	64.5	48.5	54.5	45.2	51.9	0.8	0.0



Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
15/08/2023 08:00	53.0	63.6	50.3	54.6	47.1	52.3	0.5	0.0
15/08/2023 08:15	54.2	64.2	51.0	55.1	47.7	53.2	1.3	0.0
15/08/2023 08:30	53.6	64.1	50.6	55.5	47.0	54.0	1.6	0.0
15/08/2023 08:45	52.6	63.6	49.9	54.3	45.9	56.1	0.9	0.0
15/08/2023 09:00	52.6	62.4	49.4	53.3	45.7	51.3	0.9	0.0
15/08/2023 09:15	53.6	63.8	48.5	52.4	44.9	51.7	1.1	0.0
15/08/2023 09:30	53.6	63.7	47.5	53.1	44.1	52.0	1.3	0.0
15/08/2023 09:45	53.9	63.8	48.6	51.3	44.8	50.9	1.4	0.0
15/08/2023 10:00	50.4	61.4	48.8	53.1	44.8	54.0	1.5	0.0
15/08/2023 10:15	49.7	61.9	47.1	53.4	43.7	51.8	1.3	0.0
15/08/2023 10:30	51.9	63.2	47.6	65.0	43.2	52.4	1.9	0.0
15/08/2023 10:45	53.7	62.6	49.8	64.7	45.0	53.6	1.6	0.0
15/08/2023 11:00	53.1	62.3	49.2	60.4	44.6	51.6	1.7	0.0
15/08/2023 11:15	52.9	61.7	48.7	53.5	44.6	50.7	1.7	0.0
15/08/2023 11:30	53.9	63.2	49.5	54.5	45.2	55.6	1.4	0.0
15/08/2023 11:45	52.6	62.7	49.3	62.6	45.2	52.8	1.5	0.0
15/08/2023 12:00	53.7	63.4	49.7	55.2	45.7	52.6	1.8	0.0
15/08/2023 12:15	53.6	63.2	48.7	53.0	45.0	53.4	2.3	0.0
15/08/2023 12:30	50.7	62.8	48.3	53.0	44.8	53.0	1.6	0.0
15/08/2023 12:45	50.0	62.5	48.4	53.0	45.1	51.5	1.9	0.0
15/08/2023 13:00	50.8	62.9	47.9	52.4	43.8	51.0	1.6	0.0
15/08/2023 13:15	52.2	62.2	47.2	54.6	44.2	52.7	1.8	0.0
15/08/2023 13:30	53.1	62.9	48.7	58.0	44.9	51.1	2.4	0.0
15/08/2023 13:45	54.6	63.6	49.6	54.9	45.3	52.6	1.4	0.0
15/08/2023 14:00	53.2	62.9	49.1	53.0	45.2	49.7	1.2	0.0
15/08/2023 14:15	54.5	64.2	49.2	57.3	44.8	50.0	1.5	0.0
15/08/2023 14:30	53.6	63.0	49.1	56.6	45.0	53.0	2.1	0.0
15/08/2023 14:45	53.9	63.4	49.4	54.7	45.3	52.1	1.8	0.0
15/08/2023 15:00	51.9	63.5	51.4	54.6	47.2	51.7	1.5	0.0
15/08/2023 15:15	53.5	63.4	51.4	55.1	47.6	52.9	2.0	0.0
15/08/2023 15:30	53.7	64.1	51.0	55.2	47.8	54.1	1.3	0.0
15/08/2023 15:45	53.9	63.4	50.7	54.4	47.0	52.5	1.6	0.0
15/08/2023 16:00	55.0	64.4	51.5	56.8	48.3	52.9	2.2	0.0
15/08/2023 16:15	53.8	63.5	51.0	54.0	47.3	52.6	1.2	0.0
15/08/2023 16:30	54.9	63.8	50.3	52.7	48.1	53.1	2.1	0.0
15/08/2023 16:45	54.4	63.6	51.4	53.9	49.9	53.9	1.5	0.0
15/08/2023 17:00	55.7	64.7	50.5	52.1	48.7	52.4	1.4	0.0
15/08/2023 17:15	52.9	63.1	49.9	53.4	47.7	53.0	1.8	0.0
15/08/2023 17:30	52.0	63.4	50.0	52.5	47.1	52.0	1.2	0.0
15/08/2023 17:45	49.9	62.7	49.3	52.6	45.1	51.1	1.5	0.0
15/08/2023 18:00	51.4	62.2	49.0	52.3	45.5	51.5	1.1	0.0
15/08/2023 18:15	49.7	62.7	50.1	53.0	45.1	52.1	0.9	0.0
15/08/2023 18:30	49.0	60.8	49.9	51.1	45.4	50.2	1.4	0.0
15/08/2023 18:45	47.7	60.9	49.9	52.3	46.2	50.3	1.1	0.0
15/08/2023 19:00	48.1	60.2	49.7	51.7	45.2	49.2	1.4	0.0
15/08/2023 19:15	47.0	59.8	49.4	51.1	44.7	49.2	0.7	0.0
15/08/2023 19:30	45.4	58.9	48.9	51.9	43.7	48.3	1.7	0.0
15/08/2023 19:45	45.4	59.5	49.1	51.6	44.3	50.6	1.2	0.0
15/08/2023 20:00	46.8	59.3	49.1	50.5	44.0	49.0	1.1	0.0
15/08/2023 20:15	46.5	59.2	48.0	50.2	44.0	50.1	0.6	0.0
15/08/2023 20:30	45.9	57.7	48.0	48.9	43.3	50.0	0.7	0.0
15/08/2023 20:45	44.4	57.5	48.1	49.5	43.4	49.8	0.5	0.0
15/08/2023 21:00	45.4	58.1	47.8	49.9	43.5	49.0	0.5	0.0
15/08/2023 21:15	45.2	57.3	47.6	48.0	43.9	48.9	0.2	0.0
15/08/2023 21:30	45.3	56.7	46.8	47.8	42.5	47.3	0.4	0.0
15/08/2023 21:45	44.7	57.0	46.7	47.2	42.2	48.3	0.2	0.0
15/08/2023 22:00	43.8	55.3	46.6	47.0	42.1	45.0	0.2	0.0
15/08/2023 22:15	44.4	56.6	46.3	47.6	41.6	44.9	0.2	0.0
15/08/2023 22:30	44.6	56.5	46.3	48.6	41.5	47.3	0.2	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
15/08/2023 22:45	44.2	58.2	46.2	51.4	41.1	50.0	0.2	0.0
15/08/2023 23:00	43.0	58.3	45.9	48.5	40.8	45.7	0.2	0.0
15/08/2023 23:15	42.9	53.2	45.9	46.4	40.3	42.1	0.3	0.0
15/08/2023 23:30	42.7	52.4	45.7	46.2	40.4	41.5	0.2	0.0
15/08/2023 23:45	42.5	53.8	45.9	48.1	40.2	44.3	0.3	0.0
16/08/2023 00:00	42.3	51.7	45.7	46.2	39.9	42.1	0.3	0.0
16/08/2023 00:15	41.6	56.5	45.8	49.3	40.4	48.1	0.2	0.0
16/08/2023 00:30	40.5	55.6	46.5	48.7	39.7	46.5	0.2	0.0
16/08/2023 00:45	41.1	49.5	45.8	46.4	39.6	42.1	0.3	0.0
16/08/2023 01:00	41.6	55.2	45.7	48.9	40.0	46.3	0.4	0.0
16/08/2023 01:15	41.4	53.0	46.3	48.3	40.2	45.2	0.5	0.0
16/08/2023 01:30	41.1	52.5	46.6	47.2	40.4	41.9	0.5	0.0
16/08/2023 01:45	41.2	51.9	46.0	46.5	40.5	42.7	0.3	0.0
16/08/2023 02:00	41.6	52.7	45.9	46.4	39.7	40.9	0.4	0.0
16/08/2023 02:15	41.9	51.4	45.8	46.4	39.7	40.7	0.5	0.0
16/08/2023 02:30	42.3	52.3	45.7	46.3	39.7	40.9	0.6	0.0
16/08/2023 02:45	41.9	51.4	46.0	46.6	39.7	40.8	0.5	0.0
16/08/2023 03:00	42.5	56.1	45.9	46.5	39.7	41.1	0.8	0.0
16/08/2023 03:15	42.6	55.5	45.4	46.5	38.9	40.7	0.6	0.0
16/08/2023 03:30	42.1	54.4	45.9	46.4	39.8	41.3	0.3	0.0
16/08/2023 03:45	42.4	54.2	45.7	46.5	39.6	41.0	0.7	0.0
16/08/2023 04:00	42.0	49.6	45.4	46.3	38.5	39.7	0.9	0.0
16/08/2023 04:15	41.7	50.9	45.6	46.4	38.6	40.4	0.8	0.0
16/08/2023 04:30	41.7	52.6	45.6	46.9	39.1	41.0	0.6	0.0
16/08/2023 04:45	42.2	55.2	45.3	47.8	39.6	43.6	0.8	0.0
16/08/2023 05:00	43.2	54.4	45.8	48.0	39.9	45.6	0.5	0.0
16/08/2023 05:15	44.4	58.5	46.1	47.9	40.7	46.0	0.2	0.0
16/08/2023 05:30	44.1	57.9	46.0	50.0	40.8	45.7	0.4	0.0
16/08/2023 05:45	47.8	60.1	46.4	50.8	41.3	47.0	0.4	0.0
16/08/2023 06:00	48.2	60.8	46.1	50.1	41.5	46.8	0.6	0.0
16/08/2023 06:15	48.6	61.3	46.4	52.1	42.6	47.5	0.6	0.0
16/08/2023 06:30	51.3	62.5	46.5	52.8	43.3	49.9	0.3	0.0
16/08/2023 06:45	51.8	62.6	46.2	49.9	44.0	52.8	0.5	0.0
16/08/2023 07:00	53.4	63.5	46.3	51.0	44.2	49.0	0.3	0.0
16/08/2023 07:15	54.0	63.3	46.8	53.5	46.0	52.5	0.3	0.0
16/08/2023 07:30	54.1	64.4	47.5	53.3	46.6	52.6	0.4	0.0
16/08/2023 07:45	53.8	63.5	46.4	51.2	45.8	52.4	0.8	0.0
16/08/2023 08:00	52.9	63.6	46.6	56.8	46.0	53.2	0.4	0.0
16/08/2023 08:15	51.5	63.1	46.0	53.0	44.7	52.0	0.5	0.0
16/08/2023 08:30	51.0	63.2	46.1	50.5	42.8	49.8	0.6	0.0
16/08/2023 08:45	53.3	63.4	46.1	53.0	44.9	52.1	0.5	0.0
16/08/2023 09:00	51.3	62.6	46.2	51.6	43.8	51.9	0.6	0.0
16/08/2023 09:15	50.3	62.6	45.7	51.9	42.9	50.5	0.6	0.0
16/08/2023 09:30	49.4	62.7	46.2	55.2	44.4	52.7	0.7	0.0
16/08/2023 09:45	48.2	61.5	46.2	52.8	44.0	52.7	0.6	0.0
16/08/2023 10:00	49.3	62.1	46.2	50.9	43.6	52.2	0.5	0.0
16/08/2023 10:15	51.2	68.2	45.8	53.6	41.8	52.8	1.3	0.0
16/08/2023 10:30	50.7	62.7	46.2	53.1	42.9	50.1	1.1	0.0
16/08/2023 10:45	50.5	62.8	45.9	54.4	42.7	50.6	0.7	0.0
16/08/2023 11:00	51.1	62.8	46.3	51.1	43.8	52.4	0.6	0.0
16/08/2023 11:15	51.3	62.3	45.9	51.8	44.3	52.9	0.9	0.0
16/08/2023 11:30	50.4	62.5	46.3	52.1	44.9	54.3	0.9	0.0
16/08/2023 11:45	51.7	62.9	46.0	54.2	44.4	50.4	1.2	0.0
16/08/2023 12:00	50.9	62.5	46.8	55.8	44.5	52.7	0.6	0.0
16/08/2023 12:15	51.3	62.7	47.4	52.6	46.3	52.6	0.8	0.0
16/08/2023 12:30	51.0	62.4	48.8	53.3	46.8	52.8	1.0	0.0
16/08/2023 12:45	50.0	61.9	48.7	52.6	46.8	51.7	1.4	0.0
16/08/2023 13:00	50.7	62.9	48.5	52.9	45.5	52.2	1.4	0.0
16/08/2023 13:15	49.0	61.6	48.0	52.4	45.5	49.9	1.5	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
16/08/2023 13:30	50.2	61.6	48.2	51.6	46.5	52.1	1.8	0.0
16/08/2023 13:45	49.5	63.3	47.8	52.5	47.0	52.5	1.4	0.0
16/08/2023 14:00	50.9	63.0	48.1	51.7	46.7	52.8	0.8	0.0
16/08/2023 14:15	51.0	62.3	47.0	52.9	44.1	51.9	1.2	0.0
16/08/2023 14:30	52.9	64.4	46.9	53.7	43.5	50.5	1.2	0.0
16/08/2023 14:45	49.6	62.6	46.1	51.7	42.8	51.0	1.7	0.0
16/08/2023 15:00	52.8	63.9	45.4	52.0	43.0	52.4	1.5	0.0
16/08/2023 15:15	51.9	63.0	46.5	52.9	43.1	51.0	1.1	0.0
16/08/2023 15:30	52.6	63.0	46.4	53.4	43.9	52.2	1.4	0.0
16/08/2023 15:45	53.3	64.0	46.2	52.8	44.1	52.0	1.4	0.0
16/08/2023 16:00	52.8	64.2	47.6	53.0	44.9	50.6	0.8	0.0
16/08/2023 16:15	51.9	63.9	45.9	51.8	44.0	51.4	0.8	0.0
16/08/2023 16:30	53.3	63.5	46.8	51.1	44.7	50.7	0.8	0.0
16/08/2023 16:45	52.7	63.1	47.1	51.6	44.1	50.1	0.8	0.0
16/08/2023 17:00	53.8	64.3	47.8	52.6	47.0	52.8	1.0	0.0
16/08/2023 17:15	53.6	63.4	48.5	54.4	47.2	52.4	1.1	0.0
16/08/2023 17:30	50.5	63.4	49.2	53.2	47.8	52.2	1.1	0.0
16/08/2023 17:45	49.3	61.6	48.8	51.3	46.8	51.4	1.5	0.0
16/08/2023 18:00	49.2	61.5	48.9	52.3	47.1	52.3	1.5	0.0
16/08/2023 18:15	49.4	61.6	49.4	52.1	47.5	52.4	1.7	0.0
16/08/2023 18:30	48.8	61.2	49.1	50.2	46.4	51.9	1.3	0.0
16/08/2023 18:45	47.5	60.7	49.6	50.7	46.4	50.4	1.1	0.0
16/08/2023 19:00	45.0	59.9	49.3	50.3	45.9	49.6	1.5	0.0
16/08/2023 19:15	45.8	60.0	48.9	50.2	45.9	50.8	1.1	0.0
16/08/2023 19:30	46.2	59.5	49.1	49.8	45.6	51.9	1.2	0.0
16/08/2023 19:45	45.3	59.6	48.9	50.3	46.1	50.2	0.9	0.0
16/08/2023 20:00	43.8	60.5	48.5	50.4	45.7	49.9	0.8	0.0
16/08/2023 20:15	45.8	59.9	48.5	50.0	47.4	52.6	1.6	0.0
16/08/2023 20:30	45.9	58.0	48.4	50.0	47.3	53.8	1.0	0.0
16/08/2023 20:45	45.7	59.2	48.4	50.1	47.1	51.5	0.7	0.0
16/08/2023 21:00	44.3	59.1	48.6	50.6	46.8	50.2	0.7	0.0
16/08/2023 21:15	43.9	58.3	49.0	49.7	47.0	50.6	0.7	0.0
16/08/2023 21:30	41.9	54.7	49.8	50.6	45.8	49.6	1.1	0.0
16/08/2023 21:45	42.7	57.8	50.2	51.6	46.9	50.7	0.6	0.0
16/08/2023 22:00	41.9	56.8	50.6	51.6	47.2	49.2	0.8	0.0
16/08/2023 22:15	42.6	56.4	51.3	52.3	47.3	49.5	0.9	0.0
16/08/2023 22:30	40.2	54.8	51.4	52.5	47.0	51.1	0.9	0.0
16/08/2023 22:45	40.9	57.6	51.3	53.5	47.4	50.7	0.6	0.0
16/08/2023 23:00	40.5	52.9	50.9	51.8	47.1	49.6	0.4	0.0
16/08/2023 23:15	40.0	53.7	50.4	51.1	47.0	48.6	0.3	0.0
16/08/2023 23:30	40.1	54.5	50.1	50.7	47.2	48.9	0.2	0.0
16/08/2023 23:45	40.6	51.1	50.3	51.4	47.6	49.1	0.2	0.0
17/08/2023 00:00	39.2	53.8	50.9	51.5	46.2	49.1	0.2	0.0
17/08/2023 00:15	39.5	49.2	48.0	49.3	41.7	45.1	0.2	0.0
17/08/2023 00:30	39.4	53.3	48.3	49.1	41.9	46.3	0.2	0.0
17/08/2023 00:45	38.6	50.1	48.5	49.3	41.2	44.2	0.2	0.0
17/08/2023 01:00	38.9	48.8	47.8	48.4	40.3	42.1	0.2	0.0
17/08/2023 01:15	38.7	54.2	48.2	48.8	40.7	43.7	0.3	0.0
17/08/2023 01:30	39.3	48.8	48.3	49.0	40.2	42.7	0.4	0.0
17/08/2023 01:45	40.0	53.9	48.2	48.9	40.3	42.4	0.8	0.0
17/08/2023 02:00	38.9	48.8	47.6	48.4	39.7	41.4	0.4	0.0
17/08/2023 02:15	38.2	46.6	47.6	48.2	39.4	41.0	0.7	0.0
17/08/2023 02:30	38.7	51.7	47.6	48.3	40.4	42.7	0.4	0.0
17/08/2023 02:45	38.3	47.5	47.9	48.5	40.5	41.7	0.3	0.0
17/08/2023 03:00	39.1	51.0	48.0	48.7	40.4	42.6	0.6	0.0
17/08/2023 03:15	40.9	55.6	48.4	49.0	41.4	44.7	0.6	0.0
17/08/2023 03:30	41.2	53.2	48.6	49.2	41.7	44.5	0.4	0.0
17/08/2023 03:45	41.7	49.3	48.4	49.0	41.3	43.2	0.7	0.0
17/08/2023 04:00	41.3	51.4	48.1	48.8	41.3	44.1	0.5	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
17/08/2023 04:15	41.2	52.9	48.3	49.0	41.2	43.8	0.6	0.0
17/08/2023 04:30	41.7	51.7	48.4	49.8	41.8	44.8	0.6	0.0
17/08/2023 04:45	41.6	53.1	48.4	50.0	42.0	45.0	0.6	0.0
17/08/2023 05:00	40.8	55.4	48.3	49.6	42.6	46.1	0.5	0.0
17/08/2023 05:15	41.2	55.5	48.5	50.4	43.3	46.2	0.5	0.0
17/08/2023 05:30	43.6	57.8	49.3	51.2	45.0	48.5	0.5	0.0
17/08/2023 05:45	47.0	60.3	49.7	52.3	46.2	50.1	0.4	0.0
17/08/2023 06:00	47.8	62.4	49.6	53.4	47.2	51.0	1.3	0.0
17/08/2023 06:15	47.4	60.9	49.9	54.0	47.6	52.2	0.3	0.0
17/08/2023 06:30	50.2	62.2	50.3	53.9	48.9	51.7	0.5	0.0
17/08/2023 06:45	50.5	61.6	49.8	52.7	48.2	53.0	0.4	0.0
17/08/2023 07:00	51.0	62.8	50.3	52.8	48.9	52.1	0.4	0.0
17/08/2023 07:15	52.0	76.6	50.3	52.6			0.5	0.0
17/08/2023 07:30	53.5	63.5	50.3	53.7			0.5	0.0
17/08/2023 07:45	52.1	62.7	49.8	54.0			0.7	0.0
17/08/2023 08:00	52.3	62.8	49.5	54.7			0.6	0.0
17/08/2023 08:15	52.8	62.9	49.6	53.2			0.9	0.0
17/08/2023 08:30	53.0	63.6	49.7	54.0			1.9	0.0
17/08/2023 08:45	53.0	62.4	49.6	60.7			1.1	0.0
17/08/2023 09:00	51.1	68.2	49.5	52.4			0.8	0.0
17/08/2023 09:15	51.0	61.3	49.0	53.6			0.8	0.0
17/08/2023 09:30	50.0	60.8	48.7	53.0			1.8	0.0
17/08/2023 09:45	50.3	62.1	49.1	59.5			0.9	0.0
17/08/2023 10:00	51.8	62.5	48.5	54.0			1.4	0.0
17/08/2023 10:15	50.5	61.2	48.6	51.8			0.8	0.0
17/08/2023 10:30	50.9	62.1	48.9	53.6			1.3	0.0
17/08/2023 10:45	50.7	66.1	49.2	55.0			1.2	0.0
17/08/2023 11:00	51.9	63.7	49.0	53.3			1.1	0.0
17/08/2023 11:15	50.7	61.5	49.4	53.5			1.6	0.0
17/08/2023 11:30	50.6	61.7	49.0	61.3			1.0	0.0
17/08/2023 11:45	51.0	61.8	48.9	53.8			1.6	0.0
17/08/2023 12:00	51.4	62.8	49.5	66.4			1.6	0.0
17/08/2023 12:15	53.0	64.8	49.6	62.5			1.1	0.0
17/08/2023 12:30	50.8	64.4	49.0	54.8			1.5	0.0
17/08/2023 12:45	50.6	61.7	49.1	59.2			1.4	0.0
17/08/2023 13:00	52.1	62.4	49.0	59.0			1.3	0.0
17/08/2023 13:15	53.3	62.5	49.3	54.8			1.8	0.0
17/08/2023 13:30	51.9	62.3	49.2	56.5			1.8	0.0
17/08/2023 13:45	53.0	62.0	49.6	54.0			1.4	0.0
17/08/2023 14:00	52.9	61.4	49.5	66.8			2.2	0.0
17/08/2023 14:15	53.8	61.9	49.0	54.5			1.8	0.0
17/08/2023 14:30	53.4	62.8	49.9	60.1			1.3	0.0
17/08/2023 14:45	51.2	63.0	50.3	54.2			2.3	0.0
17/08/2023 15:00	51.1	62.6	49.7	54.1			1.5	0.0
17/08/2023 15:15	51.8	61.9	49.5	54.0			1.5	0.0
17/08/2023 15:30	54.6	63.5	50.3	55.6			1.4	0.0
17/08/2023 15:45	51.9	62.1	50.1	54.6			1.4	0.0
17/08/2023 16:00	51.9	63.1	48.7	54.1			1.2	0.0
17/08/2023 16:15	51.1	61.9	48.8	57.1			1.3	0.0
17/08/2023 16:30	53.4	63.6	49.0	53.1			1.1	0.0
17/08/2023 16:45	53.6	62.9	49.6	53.5			1.6	0.0
17/08/2023 17:00	53.4	63.6	48.9	51.2			1.6	0.0
17/08/2023 17:15	52.0	63.3	48.6	52.3			1.1	0.0
17/08/2023 17:30	54.3	62.9	49.3	53.3			1.5	0.0
17/08/2023 17:45	53.5	62.7	48.9	53.3			2.2	0.0
17/08/2023 18:00	49.3	61.6	48.9	52.4			1.5	0.0
17/08/2023 18:15	50.3	61.0	49.2	51.8			0.7	0.0
17/08/2023 18:30	49.9	70.8	49.3	53.1			2.6	0.0
17/08/2023 18:45	49.7	61.2	49.1	52.2			1.4	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
17/08/2023 19:00	49.2	60.2	49.2	51.8			1.4	0.0
17/08/2023 19:15	47.2	59.7	48.9	51.8			1.0	0.0
17/08/2023 19:30	47.0	63.3	48.5	50.7			1.1	0.0
17/08/2023 19:45	46.0	58.3	48.6	50.2			1.0	0.0
17/08/2023 20:00	44.7	57.4	48.3	51.8			1.1	0.0
17/08/2023 20:15	47.1	59.3	48.2	50.8			0.9	0.0
17/08/2023 20:30	49.6	59.7	49.1	51.8			1.2	0.0
17/08/2023 20:45	48.2	58.9	49.3	51.7			1.0	0.0
17/08/2023 21:00	45.1	59.3	49.1	50.5			1.2	0.0
17/08/2023 21:15	44.6	56.6	48.8	50.5			1.0	0.0
17/08/2023 21:30	44.4	56.4	49.2	52.8			1.3	0.0
17/08/2023 21:45	45.0	56.0	49.0	51.9			1.3	0.0
17/08/2023 22:00	45.2	56.0	49.2	51.2			0.9	0.0
17/08/2023 22:15	46.9	56.9	49.2	52.5			0.8	0.0
17/08/2023 22:30	44.5	52.7	49.0	50.4			1.1	0.0
17/08/2023 22:45	45.0	55.1					1.0	0.0
17/08/2023 23:00	43.8	54.9					1.3	0.0
17/08/2023 23:15	43.5	53.5					1.3	0.0
17/08/2023 23:30	43.6	53.9					0.9	0.0
17/08/2023 23:45	42.8	52.3					1.2	0.0
18/08/2023 00:00	42.5	53.5					0.8	0.0
18/08/2023 00:15	41.1	48.0					1.1	0.0
18/08/2023 00:30	39.7	52.1					0.8	0.0
18/08/2023 00:45	39.5	54.4					1.3	0.0
18/08/2023 01:00	38.7	46.3					0.8	0.0
18/08/2023 01:15	38.8	52.3					1.0	0.0
18/08/2023 01:30	38.2	48.8					0.9	0.0
18/08/2023 01:45	38.6	48.1					0.8	0.0
18/08/2023 02:00	39.1	50.4					0.6	0.0
18/08/2023 02:15	38.5	48.5					1.4	0.0
18/08/2023 02:30	38.7	50.2					0.7	0.0
18/08/2023 02:45	39.0	52.5					0.7	0.0
18/08/2023 03:00	39.0	52.9					0.6	0.0
18/08/2023 03:15	40.1	55.1					0.6	0.0
18/08/2023 03:30	40.3	48.8					0.7	0.0
18/08/2023 03:45	40.1	49.3					1.6	0.0
18/08/2023 04:00	40.2	52.4					1.3	0.0
18/08/2023 04:15	41.9	55.3					1.3	0.0
18/08/2023 04:30	39.6	54.5					1.4	0.0
18/08/2023 04:45	40.7	57.1					0.9	0.0
18/08/2023 05:00	41.8	55.3					1.1	0.0
18/08/2023 05:15	42.3	54.9					0.8	0.0
18/08/2023 05:30	46.0	58.2					1.1	0.0
18/08/2023 05:45	46.9	58.9					1.3	0.0
18/08/2023 06:00	47.5	60.6					1.6	0.0
18/08/2023 06:15	48.6	61.6					0.8	0.0
18/08/2023 06:30	50.4	61.9					1.8	0.0
18/08/2023 06:45	51.6	61.9					1.1	0.0
18/08/2023 07:00	50.7	62.3					1.5	0.0
18/08/2023 07:15	51.9	62.1					1.0	0.0
18/08/2023 07:30	54.3	62.9					0.8	0.0
18/08/2023 07:45	53.1	62.5					1.3	0.0
18/08/2023 08:00	51.5	62.4					1.9	0.0
18/08/2023 08:15	51.8	63.0					1.0	0.0
18/08/2023 08:30	52.9	62.4					0.8	0.0
18/08/2023 08:45	52.6	62.7					0.9	0.0
18/08/2023 09:00	51.0	61.4					0.7	0.0
18/08/2023 09:15	50.5	62.3					0.6	0.0
18/08/2023 09:30	52.3	63.4					0.5	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
18/08/2023 09:45	52.0	62.2					0.7	0.1
18/08/2023 10:00	51.7	61.9					0.9	0.0
18/08/2023 10:15	51.2	62.1					0.7	0.0
18/08/2023 10:30	49.4	61.1					0.9	0.0
18/08/2023 10:45	50.9	61.7					0.9	0.0
18/08/2023 11:00	49.8	61.0					1.3	0.0
18/08/2023 11:15	49.2	61.0					1.5	0.0
18/08/2023 11:30	51.2	62.1					1.0	0.0
18/08/2023 11:45	51.9	62.1					1.3	0.0
18/08/2023 12:00	52.6	63.0					1.1	0.1
18/08/2023 12:15	51.6	61.9					1.5	0.7
18/08/2023 12:30	51.3	62.8					0.8	0.6
18/08/2023 12:45	51.8	62.3					0.8	0.1
18/08/2023 13:00	52.6	62.9					1.0	0.0
18/08/2023 13:15	51.1	62.5					0.8	0.0
18/08/2023 13:30	52.7	62.8					1.7	0.1
18/08/2023 13:45	52.7	62.3					1.2	0.0
18/08/2023 14:00	53.7	62.4					1.3	0.0
18/08/2023 14:15	53.4	62.7					1.3	0.0
18/08/2023 14:30	53.4	62.1					1.4	0.0
18/08/2023 14:45	53.2	62.1					1.3	0.0
18/08/2023 15:00	52.2	62.9					1.2	0.0
18/08/2023 15:15	54.1	62.7					1.4	0.0
18/08/2023 15:30	53.8	63.0					1.3	0.0
18/08/2023 15:45	54.7	63.1					1.9	0.0
18/08/2023 16:00	54.0	63.4					1.9	0.0
18/08/2023 16:15	52.9	62.5					2.6	0.0
18/08/2023 16:30	53.8	62.5					1.5	0.0
18/08/2023 16:45	52.0	62.5					1.4	0.0
18/08/2023 17:00	53.0	62.4					2.0	0.0
18/08/2023 17:15	52.9	62.0					1.6	0.0
18/08/2023 17:30	52.4	62.9					1.3	0.0
18/08/2023 17:45	50.7	60.8					1.3	0.0
18/08/2023 18:00	49.9	60.2					1.3	0.0
18/08/2023 18:15	50.0	60.9					1.0	0.0
18/08/2023 18:30	48.1	59.9					2.0	0.0
18/08/2023 18:45	48.1	60.5					1.4	0.0
18/08/2023 19:00	48.3	60.0					1.4	0.0
18/08/2023 19:15	48.2	59.0					1.2	0.0
18/08/2023 19:30	47.7	58.0					1.3	0.1
18/08/2023 19:45	49.0	59.8					1.1	0.4
18/08/2023 20:00	49.7	59.0					1.6	0.7
18/08/2023 20:15	47.3	57.4					1.0	0.4
18/08/2023 20:30	48.1	58.0					1.0	0.9
18/08/2023 20:45	47.9	57.2					1.3	2.8
18/08/2023 21:00	48.4	56.5					1.2	2.6
18/08/2023 21:15	48.7	60.1					1.3	2.4
18/08/2023 21:30	47.4	56.9					0.9	2.4
18/08/2023 21:45	46.1	56.9					1.1	1.8
18/08/2023 22:00	45.7	58.0					1.2	0.7
18/08/2023 22:15	44.9	54.2					1.1	0.2
18/08/2023 22:30	44.9	56.2					1.1	0.0
18/08/2023 22:45	48.0	56.9					1.8	0.0
18/08/2023 23:00	47.6	56.6					1.9	4.6
18/08/2023 23:15	47.1	55.9					1.0	3.7
18/08/2023 23:30	48.0	56.3					1.2	3.1
18/08/2023 23:45	45.4	54.5					1.0	2.6
19/08/2023 00:00	45.4	55.6					1.3	0.6
19/08/2023 00:15	44.3	54.3					1.4	0.1

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
19/08/2023 00:30	46.2	55.0					1.2	0.0
19/08/2023 00:45	45.5	54.8					1.4	0.0
19/08/2023 01:00	45.1	55.8					1.7	0.0
19/08/2023 01:15	42.8	52.2					1.2	0.0
19/08/2023 01:30	42.9	49.8					1.0	0.0
19/08/2023 01:45	45.7	54.5					1.3	0.0
19/08/2023 02:00	44.5	53.9					1.5	0.0
19/08/2023 02:15	45.3	53.2					1.8	0.0
19/08/2023 02:30	45.1	54.8					1.4	0.0
19/08/2023 02:45	43.9	54.5					2.4	0.0
19/08/2023 03:00	44.8	53.6					1.1	0.0
19/08/2023 03:15	45.1	53.2					1.4	0.0
19/08/2023 03:30	47.3	56.6					2.0	0.0
19/08/2023 03:45	46.2	54.8					3.0	0.0
19/08/2023 04:00	47.2	53.7					2.3	0.0
19/08/2023 04:15	47.0	55.3					2.3	0.0
19/08/2023 04:30	46.9	51.7					2.1	0.0
19/08/2023 04:45	48.1	53.3					1.5	0.0
19/08/2023 05:00	47.5	56.7					2.5	0.0
19/08/2023 05:15	46.8	55.0					2.1	0.0
19/08/2023 05:30	48.8	56.4					2.0	0.0
19/08/2023 05:45	50.7	58.2					2.7	0.0
19/08/2023 06:00	48.5	58.1					3.6	0.0
19/08/2023 06:15	49.1	60.6					1.9	0.0
19/08/2023 06:30	49.0	56.4					1.8	0.0
19/08/2023 06:45	50.8	59.2					3.3	0.0
19/08/2023 07:00	50.6	59.1					2.7	0.0
19/08/2023 07:15	52.1	59.8					2.3	0.0
19/08/2023 07:30	52.9	59.4					3.3	0.0
19/08/2023 07:45	52.7	60.6					2.9	0.0
19/08/2023 08:00	53.2	60.3					2.7	0.0
19/08/2023 08:15	52.1	60.8					2.9	0.0
19/08/2023 08:30	52.6	61.2					3.2	0.0
19/08/2023 08:45	51.7	60.8					3.3	0.0
19/08/2023 09:00	50.9	65.2					3.0	0.0
19/08/2023 09:15	51.5	60.9					1.9	0.0
19/08/2023 09:30	52.7	61.7					1.9	0.0
19/08/2023 09:45	53.2	62.1					3.7	0.0
19/08/2023 10:00	53.4	61.6					2.7	0.0
19/08/2023 10:15	53.1	61.2					2.5	0.0
19/08/2023 10:30	53.3	62.1					3.3	0.0
19/08/2023 10:45	53.8	62.3					3.9	0.0
19/08/2023 11:00	53.1	61.9					2.9	0.0
19/08/2023 11:15	54.7	65.4					2.8	0.0
19/08/2023 11:30	51.4	61.6					2.4	0.0
19/08/2023 11:45	52.5	62.1					3.0	0.0
19/08/2023 12:00	54.6	62.8					2.2	0.0
19/08/2023 12:15	54.6	62.4					3.0	0.0
19/08/2023 12:30	55.5	63.1					3.5	0.0
19/08/2023 12:45	54.4	62.4					3.5	0.0
19/08/2023 13:00	55.2	64.6					3.0	0.0
19/08/2023 13:15	54.5	61.8					2.5	0.0
19/08/2023 13:30	53.3	61.6					2.4	0.0
19/08/2023 13:45	53.6	62.6					3.9	0.0
19/08/2023 14:00	52.6	61.0					3.3	0.0
19/08/2023 14:15	53.3	61.9					4.1	0.0
19/08/2023 14:30	53.1	61.5					3.1	0.0
19/08/2023 14:45	54.0	61.7					2.6	0.0
19/08/2023 15:00	52.8	61.1					4.3	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
19/08/2023 15:15	51.6	61.1					3.6	0.0
19/08/2023 15:30	51.1	60.3					2.2	0.0
19/08/2023 15:45	52.1	61.2					2.8	0.0
19/08/2023 16:00	52.3	61.3					2.9	0.0
19/08/2023 16:15	51.6	60.8					2.7	0.0
19/08/2023 16:30	53.0	61.3					2.5	0.0
19/08/2023 16:45	51.3	61.7					3.8	0.0
19/08/2023 17:00	51.8	60.6					2.8	0.0
19/08/2023 17:15	52.0	62.2					2.1	0.0
19/08/2023 17:30	52.8	61.7					2.9	0.0
19/08/2023 17:45	51.6	60.9					4.3	0.0
19/08/2023 18:00	51.5	61.6					2.3	0.0
19/08/2023 18:15	48.7	60.3					3.5	0.0
19/08/2023 18:30	48.5	60.6					2.4	0.0
19/08/2023 18:45	48.5	58.6					1.8	0.0
19/08/2023 19:00	48.7	60.1					2.7	0.0
19/08/2023 19:15	48.1	58.5					2.2	0.0
19/08/2023 19:30	46.8	58.9					2.7	0.0
19/08/2023 19:45	48.7	58.7					2.7	0.0
19/08/2023 20:00	47.5	58.1					2.4	0.0
19/08/2023 20:15	48.1	58.8					2.3	0.0
19/08/2023 20:30	46.9	57.0					2.3	0.0
19/08/2023 20:45	45.8	58.4					1.8	0.0
19/08/2023 21:00	44.9	57.9					1.2	0.0
19/08/2023 21:15	44.8	57.7					1.2	0.0
19/08/2023 21:30	44.3	55.4					0.7	0.0
19/08/2023 21:45	45.6	57.1					1.2	0.0
19/08/2023 22:00	45.1	57.9					1.9	0.0
19/08/2023 22:15	45.7	57.0					1.6	0.0
19/08/2023 22:30	43.6	53.7					1.3	0.0
19/08/2023 22:45	43.6	56.2					2.2	0.0
19/08/2023 23:00	44.2	54.5					0.9	0.0
19/08/2023 23:15	44.3	54.6					1.0	0.0
19/08/2023 23:30	44.1	56.3					1.7	0.0
19/08/2023 23:45	44.8	56.0					1.0	0.0
20/08/2023 00:00	44.7	56.2					2.4	0.0
20/08/2023 00:15	44.9	52.5					0.9	0.0
20/08/2023 00:30	44.7	53.3					1.1	0.0
20/08/2023 00:45	43.1	52.6					1.3	0.0
20/08/2023 01:00	43.2	51.1					1.6	0.0
20/08/2023 01:15	44.2	55.6					1.7	0.0
20/08/2023 01:30	44.9	54.6					1.1	0.0
20/08/2023 01:45	44.1	54.0					2.0	0.0
20/08/2023 02:00	43.4	54.3					1.7	0.0
20/08/2023 02:15	41.7	51.8					0.9	0.0
20/08/2023 02:30	41.5	51.0					0.8	0.0
20/08/2023 02:45	42.5	51.6					0.6	0.0
20/08/2023 03:00	43.7	53.3					0.7	0.0
20/08/2023 03:15	43.8	52.2					1.1	0.0
20/08/2023 03:30	43.4	47.6					1.5	0.0
20/08/2023 03:45	43.7	50.5					1.3	0.0
20/08/2023 04:00	43.4	50.3					2.0	0.0
20/08/2023 04:15	42.8	52.8					1.3	0.0
20/08/2023 04:30	42.9	50.1					0.7	0.0
20/08/2023 04:45	40.9	49.9					1.3	0.0
20/08/2023 05:00	41.5	52.7					1.2	0.0
20/08/2023 05:15	42.5	53.8					0.5	0.0
20/08/2023 05:30	42.9	56.0					0.8	0.0
20/08/2023 05:45	43.2	55.0					0.7	0.0



Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
20/08/2023 06:00	44.7	56.1					0.6	0.0
20/08/2023 06:15	45.8	57.2					0.7	0.0
20/08/2023 06:30	44.0	56.6					0.6	0.0
20/08/2023 06:45	43.2	56.2					0.5	0.0
20/08/2023 07:00	43.8	56.9					0.7	0.0
20/08/2023 07:15	43.8	55.2					0.8	0.0
20/08/2023 07:30	44.0	55.7					0.7	0.0
20/08/2023 07:45	44.9	56.2					0.7	0.0
20/08/2023 08:00	45.7	58.2					0.8	0.0
20/08/2023 08:15	43.4	57.0					0.9	0.0
20/08/2023 08:30	46.0	58.8					0.9	0.0
20/08/2023 08:45	46.5	59.0					1.3	0.0
20/08/2023 09:00	45.7	57.2					1.8	0.0
20/08/2023 09:15	46.7	58.6					1.0	0.0
20/08/2023 09:30	48.7	60.2					1.5	0.0
20/08/2023 09:45	49.7	60.8					1.6	0.0
20/08/2023 10:00	47.8	59.8					2.0	0.0
20/08/2023 10:15	48.2	60.5					2.4	0.0
20/08/2023 10:30	47.8	60.4					1.8	0.0
20/08/2023 10:45	50.2	60.2					1.5	0.0
20/08/2023 11:00	48.7	59.9					2.1	0.0
20/08/2023 11:15	49.4	59.8					2.0	0.0
20/08/2023 11:30	48.6	60.1					3.0	0.0
20/08/2023 11:45	49.0	63.8					1.8	0.0
20/08/2023 12:00	49.6	63.2					2.0	0.0
20/08/2023 12:15	49.1	60.4					2.4	0.0
20/08/2023 12:30	47.6	58.5					1.9	0.0
20/08/2023 12:45	47.3	60.7					1.5	0.0
20/08/2023 13:00	49.1	59.9					1.6	0.0
20/08/2023 13:15	48.5	60.6					1.7	0.0
20/08/2023 13:30	50.1	61.3					2.4	0.0
20/08/2023 13:45	50.2	61.3					1.8	0.0
20/08/2023 14:00	49.1	61.4					2.0	0.0
20/08/2023 14:15	47.9	61.1					2.1	0.0
20/08/2023 14:30	49.7	61.0					2.4	0.0
20/08/2023 14:45	49.6	60.3					2.4	0.0
20/08/2023 15:00	50.6	61.3					1.9	0.0
20/08/2023 15:15	48.0	60.2					2.3	0.0
20/08/2023 15:30	48.6	64.1					1.5	0.0
20/08/2023 15:45	50.1	61.3					1.7	0.0
20/08/2023 16:00	48.6	60.4					2.1	0.0
20/08/2023 16:15	49.2	60.5					2.0	0.0
20/08/2023 16:30	48.9	61.0					2.5	0.0
20/08/2023 16:45	49.2	61.0					2.3	0.0
20/08/2023 17:00	46.2	59.0					2.1	0.0
20/08/2023 17:15	45.7	59.2					2.4	0.0
20/08/2023 17:30	45.7	59.2					1.5	0.0
20/08/2023 17:45	47.6	60.2					1.2	0.0
20/08/2023 18:00	46.6	58.8					2.2	0.0
20/08/2023 18:15	46.1	58.3					2.0	0.0
20/08/2023 18:30	46.9	60.1					1.8	0.0
20/08/2023 18:45	48.2	60.0					1.8	0.0
20/08/2023 19:00	47.9	59.8					2.3	0.0
20/08/2023 19:15	47.8	58.5					2.2	0.0
20/08/2023 19:30	45.9	58.8					2.0	0.0
20/08/2023 19:45	45.7	58.2					1.9	0.0
20/08/2023 20:00	46.8	60.1					2.4	0.0
20/08/2023 20:15	47.9	59.5					2.2	0.0
20/08/2023 20:30	45.7	56.1					2.1	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
20/08/2023 20:45	47.8	59.5					2.5	0.0
20/08/2023 21:00	46.4	57.4					1.8	0.0
20/08/2023 21:15	47.6	58.5					1.3	0.0
20/08/2023 21:30	47.1	57.2					1.9	0.0
20/08/2023 21:45	45.6	57.2					2.0	0.0
20/08/2023 22:00	43.2	55.2					1.9	0.0
20/08/2023 22:15	44.5	54.8					1.5	0.0
20/08/2023 22:30	45.9	56.2					1.8	0.0
20/08/2023 22:45	46.1	55.0					1.8	0.0
20/08/2023 23:00	44.9	56.2					2.7	0.0
20/08/2023 23:15	44.0	52.6					1.7	0.0
20/08/2023 23:30	41.0	55.4					0.5	0.0
20/08/2023 23:45	41.7	54.9					0.3	0.0
21/08/2023 00:00	43.0	53.6					0.5	0.0
21/08/2023 00:15	42.2	54.3					0.5	0.0
21/08/2023 00:30	41.8	47.8					0.6	0.0
21/08/2023 00:45	43.0	51.0					0.5	0.0
21/08/2023 01:00	43.5	47.6					0.5	0.0
21/08/2023 01:15	43.3	49.5					0.4	0.0
21/08/2023 01:30	43.5	55.2					0.5	0.0
21/08/2023 01:45	43.3	49.7					1.0	0.0
21/08/2023 02:00	44.3	45.3					0.6	0.0
21/08/2023 02:15	43.8	55.9					2.1	0.0
21/08/2023 02:30	43.3	52.6					0.5	0.0
21/08/2023 02:45	42.9	52.6					0.9	0.0
21/08/2023 03:00	41.0	47.7					0.7	0.0
21/08/2023 03:15	42.2	52.2					0.5	0.0
21/08/2023 03:30	43.9	53.5					0.6	0.0
21/08/2023 03:45	43.8	52.3					0.6	0.0
21/08/2023 04:00	43.3	49.3					0.4	0.0
21/08/2023 04:15	42.7	54.3					0.5	0.0
21/08/2023 04:30	44.8	53.7					0.4	0.0
21/08/2023 04:45	44.0	52.0					0.5	0.0
21/08/2023 05:00	43.6	53.8					0.8	0.0
21/08/2023 05:15	46.9	57.4					0.5	0.0
21/08/2023 05:30	47.1	57.6					0.7	0.0
21/08/2023 05:45	49.1	60.4					1.1	0.0
21/08/2023 06:00	48.7	60.3					1.0	0.0
21/08/2023 06:15	50.6	61.7					0.5	0.0
21/08/2023 06:30	51.0	61.6					0.9	0.0
21/08/2023 06:45	51.7	63.0					0.6	0.0
21/08/2023 07:00	52.1	62.2					0.5	0.0
21/08/2023 07:15	51.4	62.0					0.6	0.0
21/08/2023 07:30	54.2	63.1					0.9	0.0
21/08/2023 07:45	52.6	63.3					1.3	0.0
21/08/2023 08:00	53.6	63.5					1.1	0.0
21/08/2023 08:15	55.4	64.0					1.5	0.0
21/08/2023 08:30	53.5	63.7					2.3	0.0
21/08/2023 08:45	52.6	63.1					1.7	0.0
21/08/2023 09:00	52.3	62.2					1.7	0.0
21/08/2023 09:15	52.4	61.6					1.8	0.0
21/08/2023 09:30	53.3	63.1					1.7	0.0
21/08/2023 09:45	53.2	62.3					3.2	0.0
21/08/2023 10:00	50.7	61.1					2.3	0.0
21/08/2023 10:15	51.0	61.5					1.6	0.0
21/08/2023 10:30	50.9	61.9					2.5	0.0
21/08/2023 10:45	51.0	62.6					1.6	0.0
21/08/2023 11:00	52.3	62.3					1.4	0.0
21/08/2023 11:15	52.2	62.4					1.6	0.0

Start	LT1 (dB)		LT2 (dB)		LT3 (dB)		Max Wind (m/s)	Rain (mm/s)
	LA90	LAeq	LA90	LAeq	LA90	LAeq		
21/08/2023 11:30	52.9	62.7					1.2	0.0
21/08/2023 11:45	52.8	62.1					2.0	0.0
21/08/2023 12:00	53.0	62.8					2.5	0.0
21/08/2023 12:15	53.3	62.2					2.9	0.0
21/08/2023 12:30	53.4	62.4					2.3	0.0
21/08/2023 12:45	52.6	62.3					2.0	0.0
21/08/2023 13:00	54.9	66.2					2.9	0.0
21/08/2023 13:15	57.3	63.3					1.9	0.0
21/08/2023 13:30	53.1	61.7					2.4	0.0
21/08/2023 13:45	53.1	63.3					2.5	0.0



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## Appendix C: Model Input Data



# Baltimore Aircoil Company Closed Circuit Product Selection Report

Version: 7.8.17 NA  
Product data correct as of: August 30, 2023

Project Name: Virodor  
Selection Name: Cowi  
Project State/Province: Liverpool  
Project Country: United Kingdom  
Date: September 05, 2023

## Model Information

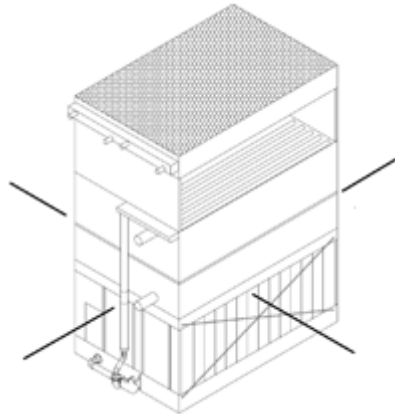
Product Line: HXV Hybrid Cooler Fan Type: Low Sound Fan  
Model: HXV-1218N-1C30TB-O Fan Motor: (1) 22.00 + (1) 11.24 = 33.24 kW/Unit  
Number of Units: 1 Total Standard Fan Power: 86% of Full Speed, 21.14 kW/Unit

Wet Coil Type: Standard Coil Total Pump Motor Power: (1) 7.50 = 7.50 kW/Unit  
Dry Coil Type: Copper-Aluminum (10 FPI) w/ Coating  
Intake Option: None  
Internal or Const. Option: None  
Discharge Option: None

Octave band and A-weighted sound pressure levels (Lp) are expressed in decibels (dB) reference 0.0002 microbar. Sound power levels (Lw) are expressed in decibels (dB) reference one picowatt. Octave band 1 has a center frequency of 63 Hertz.

Top Lp Sound Pressure (dB)		
Octave Band	Distance	
	1.5 m	15 m
1	88	71
2	84	71
3	82	70
4	80	70
5	75	69
6	76	70
7	71	63
8	56	58
A-wgtd	<b>82</b>	<b>75</b>

Back Lp Sound Pressure (dB)		
Octave Band	Distance	
	1.5 m	15 m
1	70	65
2	63	58
3	66	63
4	62	53
5	55	50
6	53	45
7	51	45
8	39	26
A-wgtd	<b>63</b>	<b>58</b>



End Lp Sound Pressure (dB)		
Octave Band	Distance	
	1.5 m	15 m
1	70	64
2	72	60
3	68	60
4	59	55
5	57	52
6	53	45
7	51	40
8	46	29
A-wgtd	<b>64</b>	<b>57</b>

Connection End Lp Sound Pressure (dB)		
Octave Band	Distance	
	1.5 m	15 m
1	72	64
2	72	60
3	69	60
4	61	55
5	58	52
6	57	45
7	54	40
8	49	29
A-wgtd	<b>66</b>	<b>57</b>

Sound Power (dB)		
Octave Band	Center Frequency (Hertz)	Lw
1	63	104
2	125	103
3	250	104
4	500	102
5	1000	101
6	2000	101
7	4000	94
8	8000	90
A-wgtd		<b>107</b>

Air Inlet Lp Sound Pressure (dB)		
Octave Band	Distance	
	1.5 m	15 m
1	82	74
2	79	71
3	84	76
4	78	71
5	67	64
6	58	60
7	58	56
8	51	59
A-wgtd	<b>78</b>	<b>72</b>

**Note:** The use of frequency inverters (variable frequency drives) can increase sound levels.  
**Extra Notes:** Sound data provided by CTI ATC-128 sound test code revision 2019

Model: (15)HXV-1218N-1C30TB-O-4	Design load:	Cte: 120000 kW
Location: ASHRAE 2017 - United Kingdom	Target delta T:	20 °C
COC: 3	Target outlet:	23 °C



Cumm %	HRS	Wb(°C)	Db(°C)	Mode	VFD(%)	Evap (m³/h)	cc	Make-up (m³/h)	Bleed (m³/h)	Evap TOT(m³)	Make-up TOT(m³)	Bleed TOT(m³)	Total BHP (kW)	E TOT(kWh)
100.0	0.04	24	25.0	WET	1	79.9	3.0	119.9	40.0	3.2	4.8	1.6	2430	97
100.0	0.12	23	27.3	WET	1	98.8	3.0	148.2	49.4	11.9	17.8	5.9	2430	292
100.0	0.56	22	28.9	WET	1	112.7	3.0	169.0	56.3	63.1	94.7	31.6	2430	1361
100.0	1.57	21	26.1	WET	1	101.7	3.0	152.5	50.8	159.6	239.4	79.8	2430	3815
100.0	8.37	20	25.6	WET	1	103.4	3.0	155.1	51.7	865.5	1298.3	432.8	2430	20339
99.9	27.72	19	24.0	WET	1	99.4	3.0	149.1	49.7	2755.6	4133.5	1377.8	2430	67360
99.6	71.45	18	22.4	WET	0.9	95.9	3.0	143.8	47.9	6851.7	10277.6	3425.9	1893	135285
98.7	138.05	17	20.4	WET	0.8	91.6	3.0	137.4	45.8	12649.9	18974.9	6325.0	1464	202072
97.2	226.69	16	19.1	WET	0.7	91.0	3.0	136.5	45.5	20624.3	30936.4	10312.1	1129	255965
94.6	321.24	15	17.8	WET	0.6	91.0	3.0	136.5	45.5	29243.2	43864.7	14621.6	878	281946
90.9	478.3	14	16.8	WET	0.55	91.2	3.0	136.8	45.6	43613.6	65420.3	21806.8	779	372798
85.5	588.18	13	15.6	WET	0.49	91.2	3.0	136.8	45.6	53660.2	80490.3	26830.1	683	401695
78.7	633.15	12	14.5	WET	0.45	91.3	3.0	136.9	45.6	57781.8	86672.8	28890.9	630	399155
71.5	608.11	11	13.3	WET	0.42	90.5	3.0	135.8	45.3	55058.9	82588.3	27529.4	597	362856
64.6	677.6	10	12.0	WET	0.38	90.0	3.0	135.0	45.0	61005.7	91508.6	30502.9	559	378539
56.8	630.48	9	11.1	WET	0.35	90.3	3.0	135.5	45.2	56948.1	85422.1	28474.0	535	337239
49.6	637.99	8	9.9	WET	0.33	89.3	3.0	133.9	44.6	74819.3	112228.9	37409.6	521	436723
40.1	608.04	7	8.6	WET	0.32	89.3	3.0	133.9	44.6	54288.4	81432.5	27144.2	515	313068
33.1	592.59	6	7.5	WET	0.32	89.3	3.0	133.9	44.6	52908.9	79363.4	26454.5	515	305113
26.4	526.79	5	6.6	WET	0.3	83.4	3.0	125.1	41.7	43927.9	65891.9	21964.0	503	265218
20.4	451.19	4	5.5	WET	0.3	80.7	3.0	121.0	40.3	36390.9	54586.3	18195.4	503	227156
15.2	367.43	3	4.5	WET	0.3	78.1	3.0	117.2	39.1	28712.0	43068.0	14356.0	503	184986
11.0	316.09	2	3.4	WET	0.3	75.2	3.0	112.8	37.6	23764.7	35647.1	11882.4	503	159139
7.4	237.78	1	2.3	WET	0.3	72.5	3.0	108.8	34.6	17249.6	25874.4	8624.8	503	119713
4.7	170.68	0	1.2	WET	0.3	69.2	3.0	103.8	34.6	11811.4	17717.1	5905.7	503	85931
2.7	122.25	-1	0.2	WET	0.3	66.7	3.0	100.1	33.4	8154.5	12231.8	4077.3	503	61548
1.3	60.83	-2	-1.1	WET	0.3	63.1	3.0	94.7	31.6	3838.9	5758.3	1919.4	503	30625
0.6	31.98	-3	-2.2	WET	0.3	60.1	3.0	90.1	30.0	1921.4	2882.1	960.7	503	16101
0.3	14.57	-4	-3.4	WET	0.3	56.8	3.0	85.2	28.4	827.5	1241.2	413.7	503	7335
0.1	5.16	-5	-4.6	WET	0.3	53.0	3.0	79.5	26.5	273.4	410.2	136.7	503	2598
0.1	1.92	-6	-5.7	WET	0.3	51.1	3.0	76.6	25.5	98.1	147.1	49.0	503	967
0.0	1.42	-7	-6.7	WET	0.3	47.8	3.0	71.7	23.9	67.9	101.8	33.9	503	715
0.0	0.76	-8	-7.9	WET	0.3	43.8	3.0	65.7	21.9	33.3	49.9	16.6	503	383
0.0	0.51	-9	-8.9	WET	0.3	40.6	3.0	61.0	20.3	20.7	31.1	10.4	503	257
0.0	0.3	-10	-10.0	WET	0.3	38.9	3.0	58.4	19.5	11.7	17.5	5.8	503	151
0.0	0.08	-11	-11.0	WET	0.3	39.8	3.0	59.8	19.9	3.2	4.8	1.6	503	40

Values are per cell			
Unit Air in W (g/kg)	Unit Air out W (g/kg)	Moisture pick up (g/kg)	Airflow (m³/s)
18.5	26.5	8.0	40.0
15.9	25.9	10.0	40.0
13.8	25.2	11.4	40.0
13.5	23.7	10.2	40.0
12.4	22.7	10.3	40.0
11.7	21.6	9.9	40.0
11.1	21.6	10.5	36.0
10.7	21.9	11.2	32.0
10.1	22.7	12.7	28.0
9.5	24.2	14.7	24.0
8.8	24.8	16.0	22.0
8.3	26.1	17.9	19.6
7.7	27.1	19.4	18.0
7.2	27.7	20.5	16.8
6.8	29.2	22.4	15.2
6.3	30.6	24.3	14.0
5.9	31.2	25.3	13.2
5.6	31.6	26.0	12.8
5.2	31.1	25.9	12.8
4.8	30.5	25.7	12.0
4.4	29.2	24.7	12.0
4.1	28.0	23.9	12.0
3.8	26.6	22.9	12.0
3.5	25.5	22.0	12.0
3.3	24.2	20.9	12.0
3.0	23.0	20.0	12.0
2.8	21.7	18.8	12.0
2.6	20.5	17.9	12.0
2.5	19.3	16.8	12.0
2.3	17.9	15.6	12.0
2.1	17.1	15.0	12.0
2.0	15.9	14.0	12.0
1.9	14.6	12.7	12.0
1.7	13.5	11.8	12.0
1.6	12.8	11.2	12.0
1.5	12.9	11.4	12.0

Sound Rating Sheet HXV-1218N-1C30TB-O  
86% Fan Speed

	ft	m	
H	26.91667	8.2042	31.50362
W	11.83333	3.6068	23.35553
L	18	5.4864	23.59188

1/3rd Octave Band	Side	Top	Top	End	End	Air Inlet	Air Inlet	Back	Back	Pump	Pump	PWL
Hz	Distance	1.5	15	1.5	15	1.5	15	1.5	15	1.5	15	
50		77	57	65	59	73	66	62	55	64	61	93
63		87	70	66	60	81	72	68	64	70	60	103
80		79	60	65	59	72	67	63	53	66	55	95
100		82	65	63	51	71	62	59	51	62	50	97
125		77	68	70	58	75	68	58	56	69	58	100
160		78	65	67	55	75	67	57	52	68	55	97
200		76	64	60	52	73	69	59	58	62	56	98
250		79	67	65	57	80	74	64	60	66	55	101
315		75	64	63	55	81	70	59	55	64	54	97
400		76	66	57	53	75	68	57	47	60	52	99
500		75	65	53	49	72	67	58	49	54	50	98
630		75	64	47	43	72	63	57	48	50	49	96
800		71	66	53	48	63	61	51	47	54	49	97
1000		71	64	52	47	63	58	51	46	54	47	96
1250		69	62	51	46	61	59	49	43	52	45	94
1600		73	67	50	42	56	57	50	41	51	40	98
2000		71	66	48	40	52	55	49	41	56	42	97
2500		69	62	44	36	50	53	45	38	44	37	93
3150		68	60	47	36	54	52	48	42	48	35	92
4000		66	58	46	35	53	51	46	40	48	34	89
5000		63	56	46	35	52	51	45	39	51	36	88
6300		53	54	38	21	46	53	30	18	38	21	86
8000		52	51	44	27	47	55	37	23	47	26	84
10000		45	54	40	23	45	54	33	22	43	24	86
<b>dBA</b>		<b>82</b>	<b>75</b>	<b>64</b>	<b>57</b>	<b>79</b>	<b>72</b>	<b>63</b>	<b>58</b>	<b>66</b>	<b>57</b>	<b>107</b>
1/1 Octave Band	Side	Top	Top	End	End	Air Inlet	Air Inlet	Back	Back	Pump	Pump	PWL
Hz	Distance	1.5	15	1.5	15	1.5	15	1.5	15	1.5	15	
63		88	71	70	64	82	74	70	65	72	64	104
125		84	71	72	60	79	71	63	58	72	60	103
250		82	70	68	60	84	76	66	63	69	60	104
500		80	70	59	55	78	71	62	53	61	55	102
1000		75	69	57	52	67	64	55	50	58	52	101
2000		76	70	53	45	58	60	53	45	57	45	102
4000		71	63	51	40	58	56	51	45	54	40	95
8000		56	58	46	29	51	59	39	26	49	29	90
<b>dBA</b>		<b>83</b>	<b>75</b>	<b>64</b>	<b>57</b>	<b>79</b>	<b>72</b>	<b>63</b>	<b>58</b>	<b>66</b>	<b>57</b>	<b>107</b>