100207665
Revision 01

Sizewell C Project

Combustion Activity Permit Application

Appendix E

Noise Assessment

Template No: NNB-301-TEM-000704
Template Version: 5.0

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SHARPS REDMORE

ACOUSTIC CONSULTANTS • Established 1990

Report

Sizewell C Power Station - Back-up Generators:
Sound Level Assessment for Combustion Plant Permit Application

Date 17th March 2020
Project No 1212653

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1.0 Introduction

1.1 Sharps Redmore has been appointed by SZC Co. to undertake a sound level assessment of the proposed back-up or emergency diesel generator facilities to serve the proposed Sizewell C Nuclear Power Station (SZC) at times of mains power outages during the operational phase anticipated from 2034.

1.2 The combined thermal input of the proposed generators is such that that they require a permit under the Environmental Permitting regime. This sound level assessment is therefore intended to accompany an application for a combustion permit under the Environmental Permitting (England and Wales) Regulations 2016, to be submitted to the Environment Agency.

1.3 The proposed SZC station would be served by four generator buildings, two for each power station reactor (UK EPR™ units). The locations of these generator buildings within the proposed SZC station are indicated in **Figure A1** in **Appendix A** to this report.

1.4 The back-up generator facilities would first be subject to Commissioning testing following installation, and then regular Routine testing according to a prescribed schedule. In the event of mains power outage to the proposed operational station, then the back-up generator facilities would operate to keep the power station 'on-line' until such time as mains power is restored. These 'operating scenarios' are further detailed in **Section 2** of this report.

1.5 Section 2 sets out further detail on the generator building design, their function, and their associated sound sources. Sound source data has been provided by SZC Co. Section 3 identifies the noise sensitive receptors for the assessment, and describes the existing sound character at these receptor areas. This is supported by site summary reports in **Appendix B**.

1.6 **Section 4** of the report discusses the Environment Agency requirements for combustion plant sound level assessments, and in particular the BS 4142:2014+A1:2014[1] assessment methodology.

1.7 Within **Section 4**, sound level assessment criteria are then established in accordance with the BS 4142:2014+A1:2014 methodology. Tables of the Initial Estimate of Impact for the LOOP scenario at night in accordance with the Standard are provided in **Appendix C** to this report.

1.8 **Section 5** further describes the predictive sound level model, and the assumptions used in order to predict sound levels emitted from the proposed back-up generator facilities.

1.9 Sharps Redmore has predicted sound levels from the back-up generator facilities to a number of noise sensitive receptors using a predictive sound level model (SoundPLAN™). **Section 6** sets out the predicted sound level results at the noise sensitive receptor locations to ground and first floor.

1.10 Predicted sound levels have then been compared and assessed in **Section 7** using the methodology and criteria established in **Section 4**.

1. BSI BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound.

1.11 The operation of the proposed generator facilities (combustion plant) should ensure that there are no noise emissions that may be harmful to human health or quality of the environment through the application of BAT (Best Available Techniques). **Section 8** discusses how the proposed installation activities address indicative BAT. Finally, the assessment conclusions can be found in **Section 9** to this report.

1.12 Vibration from the proposed back-up generator facilities has been considered, however receptor locations are not in close proximity to the main platform area. Any plant or equipment generating vibration energy is likely to be locally isolated to protect surrounding equipment and infrastructure. No vibration energy is therefore expected to be detectable or measurable beyond the site. Vibration is not expected to be experienced off-site and has therefore been scoped out from further assessment.

1.13 This sound level assessment has been prepared as far as possible in accordance with the Horizontal Guidance for Noise[2] (Part 2 – Noise assessment and Control), and other EA permit guidance including Noise impact assessments involving calculations or modelling[3]. Regard has also been had to the combustion sector guidance on BAT for large combustion plants[4].

2. Horizontal Guidance Note IPPC H3 (part 2). Horizontal Guidance for Noise Part 2 – Noise Assessment and Control. Environment Agency, 2004.

3. Noise impact assessments involving calculations or modelling (Published 23rd October 2018). https://www.gov.uk/guidance/noise-impact-assessments-involving-calculations-or-modelling

4. European Commission Report EUR 28836 EN (2018). Best Available Techniques (BAT) Reference Document for Large Combustion Plants.

2.0 Description of the Back-up Generator Facilities

2.1 The full details of these back-up generator facilities are provided in Sections 1 and 2 of the permit application. These descriptions include the precise locations (and Ordnance Survey National Grid References) of the application site, and the generator facility buildings within the proposed site complex. The most relevant of these details to the sound level assessment have been extracted and are set out in this section.

2.2 Other than routine testing of the generators to ensure they remain in good operable condition, it should be emphasised that these facilities are provided to serve the proposed SZC power station in emergency situations only and not during ordinary operations.

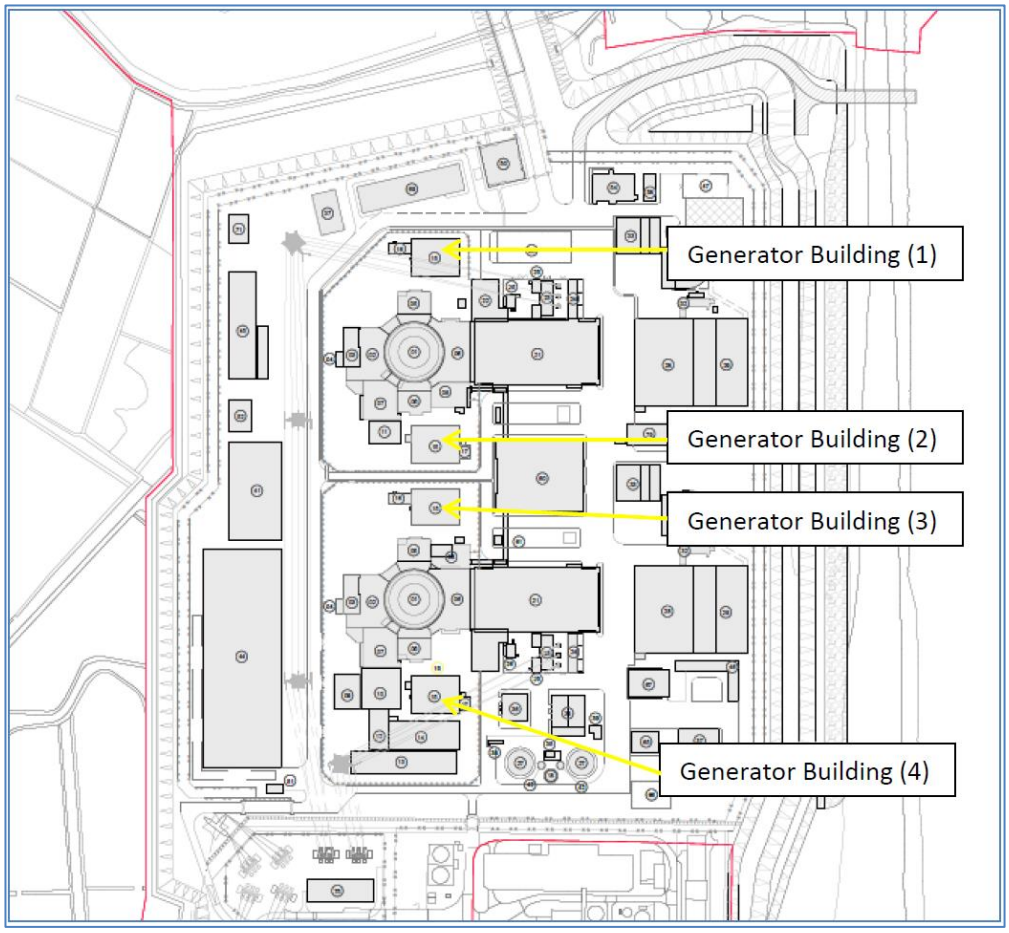
Description of Back-up Generator Facilities

2.3 The proposed Sizewell C Power Station would comprise two reactors (UK EPR™ units). Each of these reactors would be served by a pair of back-up generator buildings. Within each of the four buildings would be housed three diesel generators; two essential diesel generators (EDG's) and one ultimate, or station blackout diesel generator (UDG or SBO).

2.4 In addition to the generators, the purpose built concrete buildings would also contain the fuel storage tanks, pipes and ductwork, and cooling fans to remove heated air. The generators would be contained in independent sections within each of the four generator buildings. The concrete generator buildings would offer significant attenuation of the noise generated through combustion operations.

2.5 The location of the four back-up generator buildings is highlighted on the section of the permanent site layout drawing (illustrative) supplied by SZC Co. overleaf in **Figure 2.1**. Note that the back-up generator building numbering is for the purposes of the sound level assessment.

Figure 2.1 Location of back-up generator buildings

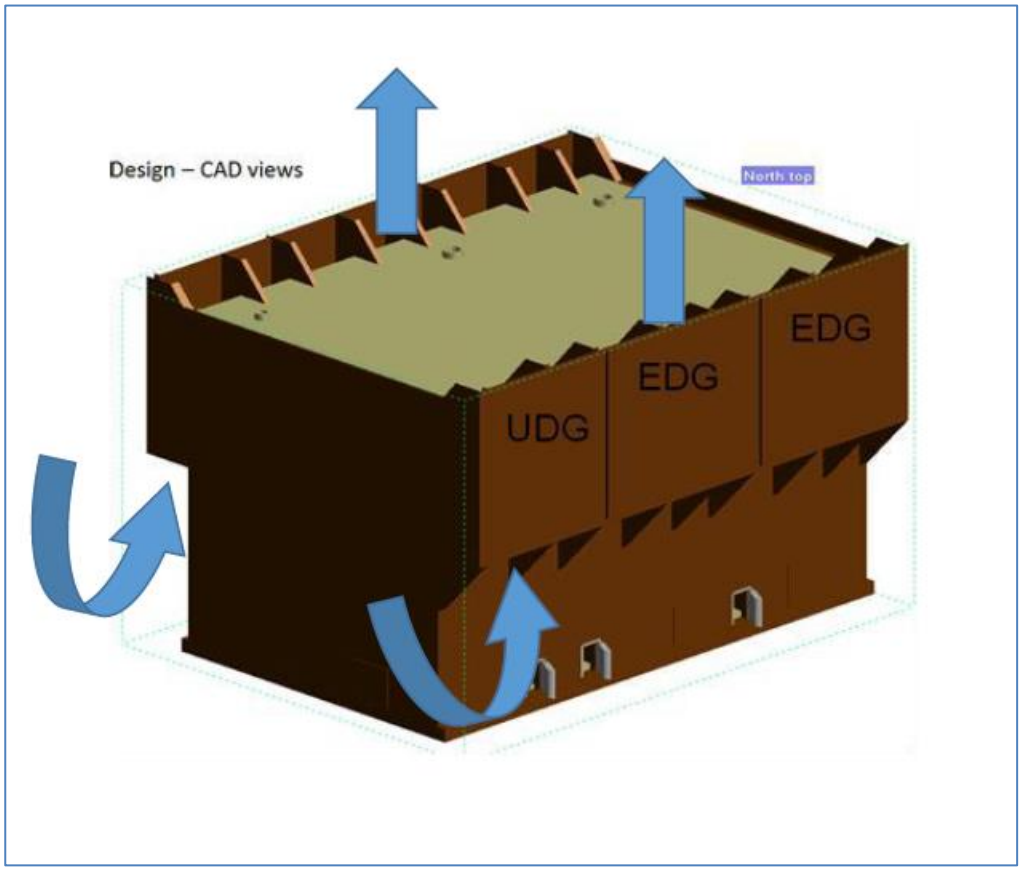


Note: Generator building labels for noise assessment purposes only

2.6 Sharps Redmore understand that the back-up generator buildings would each contain three diesel generators. Each generator would require a fresh air supply, extraction of warm air (by a deck of extract/cooling fans), and an exhaust stack for dispersion of combustion gases to atmosphere. These three elements would comprise the sound sources during the operation of the back-up generators.

2.7 The general arrangement for each building is illustrated in **Figure 2.2** overleaf (courtesy of SZC Co.). The indicative internal arrangements for each of these generator buildings is shown in cross-section as **Figure A2** in **Appendix A** to this report.

Figure 2.2 General back-up generator building arrangement (illustrative only)



Operational Scenarios

2.8 Following Commissioning testing, the generators would be tested individually and sequentially immediately after a station maintenance outage, on an approximate cycle of once every 18 months. It is understood each generator would be operated for a 24-hour period. Back-up generators would then only operate for routine testing purposes during daytime periods (0700 to 2300 hours) in accordance with a prescribed testing program. The main purpose of the generator facilities is to deal with emergency situations where there is a loss of off-site power (LOOP).

Commissioning

2.9 It is anticipated that the diesel generators serving reactor Units 1 and 2 would be commissioned separately in consecutive years. It is further anticipated during this commissioning period that there would only ever be a single generator running at any one time.

2.10 For each reactor unit therefore, expected commissioning hours would be 242.5 hours and 738 hours for the EDG's and UDG's respectively, a total of 2,446 hours per 12-month commissioning.

Routine Testing

2.11 It is understood that following commissioning of the generators, future routine testing hours would be much reduced. It is assumed that immediately following an outage period, generators would be subject to sequential 24-hour tests. After these test runs it is expected that the annual run-time for each diesel generator during routine testing would be approximately 60 hours (approximately 5 days). It is expected that routine testing would only take place during daytime hours (0700 – 2300hrs).

LOOP (Loss Of Off-site Power) events

2.12 In the event of LOOP, in order to keep the SZC station on-line, it is expected that power would be supplied by the two EDG's within each generator building. In the event of both LOOP and EDG failure, then the UDG within each building would operate to maintain power to the SZC station.

2.13 The likely anticipated duration of generator operation during LOOP events would be up to 72 hours on full power, after which time it is anticipated either that off-site power is restored, or alternative longer-term power provision has been made.

2.14 Sharps Redmore note that whereas the operational station would be continuous, for the back-up generator facilities, each generator would run for less than 1% of the year.

<u>Sound Sources and data</u>

2.15 Sharps Redmore have discussed the generator building design with SZC Co. in order to determine the primary sound sources associated with each of the four buildings.

2.16 The primary sound sources identified and therefore input to the predictive sound level model are as follows:

- Exhaust stacks on roof at a height of 34.5m AoD (for dispersion of generator combustion gases). Three stacks per building, one per generator.
- Two fresh-air intakes at mid-level, one either side of the building (per generator), therefore a total of six per generator building.
- Two fresh-air in/warm air out louvres per generator at higher level, therefore a total of six per generator building.

2.17 It is noted that there is a personnel door, or hatch to each generator compartment of the generator buildings. It is understood however that these openings would remain closed during operation and non-operation of the generators via an access control system. It is anticipated that the design and seal of these doors in the closed position would be of suitable acoustic insulation performance so as to ensure any sound breakout is insignificant compared with the sources described above.

2.18 At the final generator building design stage therefore, a minimum design specification in terms of acoustic performance would be determined for any personnel doors.

2.19 Sharps Redmore understands that until final manufacturing and test data of the equipment for the UK EPR™ are available, each sound source has been assigned an acoustic sound power level based on similar sources for which data is available from similar operational reactors in France. The primary sound sources described above have therefore been

assigned sound power levels in accordance with advice of SZC Co. Engineers and presented in **Table 2.1** below.

Table 2.1 Back-up generator building sound source levels

Building		Sound sources	Sound Power Level dB L_{WA}
Emergency Diesel Generator Building	HDA & HDB (Reactor 1)	Fresh air in/warm air out louvre (high-level)	89 per opening
		Generator fresh air intake (mid-level)	105 per opening
		Generator exhaust stack	105 per opening
	HDA & HDB (Reactor 2)	Fresh air in/warm air out louvre (high-level)	89 per opening
		Generator fresh air intake (mid-level)	105 per opening
		Generator exhaust stack	105 per opening

2.20 The source sound power data has been supplied in octave bands ($^1/_3$ octave band centre frequencies), and also input into the predictive sound level model built. The frequency banded data for each source is presented in **Table 2.2** below.

Table 2.2 Octave band (centre frequency) sound power data for sources listed in **Table 2.1**

	Octave Band (centre frequency, Hz) Sound Power Level, dB lin L_W		
Source Frequency, Hz	Fresh air in/warm air out louvre (high-level)	Generator fresh air intake (mid-level)	Generator exhaust stack
31.5	90.8	92.8	92.8
63	87.1	104.5	104.5
125	86.9	100.6	100.6
250	91.4	108.2	108.2
500	86.3	103.6	103.6
1000	83.4	99.3	99.3
2000	82.4	94.2	94.2
4000	64.4	87.2	87.2
8000	52.1	80.2	80.2
dBA	**89.3**	**105.2**	**105.2**
dBlin	**96.4**	**111.5**	**111.5**

2.21 The worst case scenario in terms of sound sources operating would be during LOOP events when either two EDG's or one UDG is operating per generator building. In the condition where the EDG's are operable there would be ten sound sources per building as described above. Sharps Redmore has therefore modelled this scenario and predicted sound levels to receptor locations for both daytime (0700-2300hours) and night-time (2300-0700hours) assessment periods.

3.0 Receptor Locations and Background Sound Levels

3.1 Residential receptor locations have been identified at various orientations away from the proposed SZC site. Eight of these residential receptors from a range of compass orientations away from development site have been selected for this sound level assessment.

3.2 The receptor names identified are as follows:

- Sizewell Village dwellings (South to South-East)
- Rosery Cottage (South to South-West)
- Halfway Cottages (South-West)
- Keepers Cottage – single storey dwelling (South-West to West)
- Reckham Lodge – (South-West)
- Common Cottages (South-West)
- Old Abbey Farm/Upper Abbey Farm (West to North-West)
- Ash Wood Cottages (North-West)

3.3 All the residential receptor locations have been assumed to be two-storey dwellings, i.e. comprising ground and first floors with the exception of Keepers Cottage which has been verified as comprising ground floor only. These noise sensitive receptors are identified on an aerial plan (GoogleEarth), presented as Figure A3 to this report.

3.4 These receptors have been input into the SoundPLAN^{TM} predictive sound level model that is described in detail in **Section 5** of this report with grid-references as set out in **Table 3.1** below.

Table 3.1 Noise sensitive receptors and grid references

Receptor Name	Latitude	Longitude	Distance from Proposed Power Station Platform (m)
Sizewell Village	52°12’29.46”N	1°37’13.58”E	950
Rosery Cottage	52°12’34.04”N	1°36’51.44”E	850
Halfway Cottages	52°12’16.24”N	1°36’13.06”E	1,600
Keepers Cottage	52°12’51.09”N	1°36’13.76”E	800
Reckham Lodge	52°12’47.27”N	1°36’03.46”E	1,000
Common Cottages	52°12’53.43”N	1°35’41.14”E	1,350
Upper Abbey Farm	52°13’27.71”N	1°35’26.25”E	1,700
Ash Wood Cottages	52°13’39.69”N	1°36’7.10”E	1,050

Background sound level surveys

3.5 Sharps Redmore have undertaken extensive baseline sound level surveys across the study area with respect to the construction and operational phases of the proposed power station. These baseline surveys also support the assessment and reporting with respect to the construction and operational phases of the proposed SZC power station and the associated Development Control Order (DCO) application.

3.6 The majority of the baseline survey work on this project has been undertaken during the period 2014 to 2016. Sharps Redmore have subsequently re-visited a number of areas across the wider study area during 2019 to undertake additional surveys. These survey visits were made to ensure that there had been no significant new developments in receptor areas that may have changed the sound climate, and validate previous baseline measurements. Baseline sound level data reported is therefore all considered to be representative of the sound climate at receptor locations at times when the back-up generators can be expected to be periodically operating. The raw survey data for the receptor locations assessed has been provided in **Appendix D** to this report.

3.7 Surveys have been undertaken individually at the majority of the receptors identified in **Table 3.1** above. Survey data captured at Keepers Cottage is considered to be representative of the nearby receptors of Common Cottages and Reckham Lodge.

3.8 Surveys were all undertaken using Type 1 precision sound level meters. All meters were field-calibrated at the beginning and end of each survey and no significant measurement drift was noted. Measurements were all made with the microphone in free-field conditions and between 1.2 – 1.5 metres above ground.

3.9 All the survey locations have been attended by a consultant for varying periods. Where sites were not able to have equipment secured for a longer period, then attended measurements were made at intervals throughout a day and night. In some locations the equipment was able to be secured for a longer period and for these sites a typical 24-hour period is presented in the baseline survey reports.

3.10 The survey summary reports presenting the site location, survey dates and times, and sound level data are provided as **Appendix B** to this report. These reports also describe the main sound sources characterising the sound climate at each location. No statistical analysis of the survey data has been undertaken, but a professional judgement made of the background sound levels at the survey locations for daytime and night-time periods in the knowledge that levels would vary from day to day and seasonally. For example, sound levels and characteristics were noted to be variable at locations close to the coast dependent on weather and sea conditions.

3.11 From the baseline survey data reports, typical daytime and night-time background sound levels have been extracted and summarised in **Table 3.2**. The raw survey data has been tabulated and provided at **Appendix D** to this report.

Table 3.2 Summary table of background sound levels

Receptor Name	Typical Daytime background sound level ($L_{A90,T}$)	Typical Night-time background sound level ($L_{A90,T}$)
Sizewell Village	43 dB	40 dB
Rosery Cottage	45 dB	45 dB
Halfway Cottages	45 dB	35 dB
Keepers Cottage	35 dB	28 dB
Reckham Lodge*	35 dB	28 dB
Common Cottages*	35 dB	28 dB
Upper Abbey Farm	35 dB	28 dB
Ash Wood Cottages	39 dB	35 dB

*Note: Common Cottages and Reckham Lodge considered to be in proximity of, and therefore subject to similar sound climate as observed and measured at Keepers Cottage.

3.12 The majority of these receptors are characterised by low background sound levels during the daytime and night-time periods. Sizewell Village can be influenced by the wind and tide conditions at this coastal location where the sound of the sea on the shingle beach often dominates. Sound levels at Rosery Cottage include plant sound from the electrical sub-station facility close by and serving an off-shore wind farm facility.

Background sound survey – weather conditions

3.13 Surveys were undertaken through a combination of attended surveys and longer term monitoring stations. All surveys were commenced in weather conditions that were suitable for environmental sound level measurements. Attended survey work was therefore undertaken in dry conditions, with wind speeds of less than 5m/s and no precipitation.

3.14 At the set-up of all longer-term monitoring stations, weather conditions were also as described above. During these longer-term surveys, online weather resources were monitored for periods of weather conditions e.g. heavy rain or high wind speeds that could potentially invalidate sound level measurements during those periods. These periods could then be identified as required when the data was analysed, and removed from further use in subsequent assessments.

3.15 Any unusual/atypical events therefore observed during the baseline surveys have been removed from the survey data presented. All the background sound level data presented in **Appendix B** represent measurement periods as defined, when weather conditions were considered suitable for environmental sound surveys.

3.16 Validation surveys (described in **Section 3.6**) were undertaken during 2019. All these surveys were attended by a consultant, and all measurements taken in dry conditions with low wind speeds. Raw survey data is supplied in **Appendix D** at the end of this report.

3.17 Predicted sound levels later in this assessment report from the generator buildings are made assuming receptors to be in a light down-wind condition relative to the sound sources.

4.0 Assessment Methodology and Criteria

4.1 Sharps Redmore have taken account of the EA Guidance where noise impact assessments involve calculations or modelling work published in October 2018. (https://www.gov.uk/guidance/noise-impact-assessments-involving-calculations-or-modelling)

4.2 In predicting and assessing sound levels from the proposed back-up generator buildings, this assessment therefore includes the following elements:

- The site location and layout (including site maps)
- The proposed activities and sources of noise
- Grid references for the sound sources/buildings
- Building dimensions (see main application description)
- Generator operating regimes
- Sound power levels (L_{WA}) for the generator building sources including octave band (centre frequency) levels.
- Local receptors and the reasons for their selection (including maps and grid references)
- The noise remediation approach as necessary

4.3 The most appropriate methodology for assessing the predicted sound levels from the proposed generator buildings is to be found within the British Standard BS 4142:2014+A1:2019. This methodology has been used to develop magnitude of change, and then magnitude of effect thresholds to determine whether the proposed back-up generator facilities would result in any significant impacts from noise to any of the receptors/receptor areas.

4.4 This Standard is the most enduring of guidance relating to the effect of industrial and commercial sound. The scope of the 2014 Standard includes the rating and assessing of '*sound from fixed installations which comprise mechanical and electrical plant and equipment*'.

4.5 BS 4142 states that, to consider the effects of noise from such plant, subtracting the background sound level from the rating noise level, where both are determined in accordance with the procedures set out in that standard, will give the following initial outcomes:

- *"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."*
- *"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 have a low impact, depending on the context."*

4.6 A BS 4142 assessment is not therefore complete without a consideration of the sound rating level in context of the site and surroundings, and consideration of other relevant guidance and standards. Once the level difference is established, this must be considered in context, as described in BS 4142, to decide the overall significance. Matters which the standard recommends are relevant in order to consider context are, as shown in **Table 4.1** below.

Table 4.1 BS 4142 notes on contextual considerations

Factor	BS 4142 commentary	Notes
Absolute level of sound	For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.	Guidance on appropriate or significant absolute levels such as L_{Aeq} values for day or night or L_{Amax} values for night time can be found in the World Health Organisation's (1999) "Guidelines for Community Noise[5]" and in British Standard BS 8233: 2014 "Guidance on sound insulation and noise reduction for buildings[6]". When existing levels are low, particularly at night, absolute levels will often provide a better assessment tool. At night, the L_{Amax} factor will often be the key parameter to assess potential sleep disturbance.
The character and level of the residual sound compared to the character and level of the specific sound.	Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.	Experience and judgement will generally provide an excellent guide to determine the extent to which a specific sound might stand out or be in keeping with the existing surroundings. Whilst a technical assessment of character is sometimes desirable, it is also possible to consider character without the need for technical comparisons.

Factor	BS 4142 commentary	Notes
Sensitivity of receptor	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, such as: i) facade insulation treatment; ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and iii) acoustic screening.	If the existing noise sensitive premises (NSP) already have good quality windows (acoustically) and alternative means of ventilation or screening, then this needs to be considered. The intrinsic sensitivity of a particular use is also relevant. For example, whether the NSP is a school, office or dwelling is relevant.

4.7 Based on the approach as described, the initial magnitude of effect is defined by the difference between the rating and background sound levels as shown in **Table 4.2**, prior to any consideration of context. "BG" in this table is shorthand for background sound level, L_{A90} dB, assessed in accordance with the procedures in BS 4142. Daytime is taken to be 0700 to 2300 hours, and night-time to be 2300 to 0700 hours.

Table 4.2 Values to be used to assess the magnitude of impact for back-up generator facilities serving the proposed power station (all values are free-field).

Sensitivity of receptor	Period	Magnitude of impact				Parameter
		Very low	Low	Medium	High	
High	Any	Bespoke assessment method to be used				
Medium or Low	Day	<BG+0*	BG+0*	BG+5*	BG+10*	$L_{Ar\ 1\ hour}$, dB
	Night					$L_{Ar\ 15\ mins}$, dB
Very low	Any	No assessment normally required				

* All assessments of significance must be considered in the context in which the sound occurs, in accordance with the guidance in BS 4142:2014+A1:2019.

4.8 The scope of BS 4142 states that it is to be used, "*to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident*". All the receptors considered in this assessment are residential receptors and therefore regarded as having a medium sensitivity.

4.9 In general, background and ambient sound levels in the vicinity of the main development site are low and the absolute level of sound needs to be considered when looking at context in this situation. BS 4142 advises that:

"*Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night*."

5. World Health Organisation. (WHO). 1999. Guidelines for community noise.

6. BSI. BS 8233:2014. Guidance on sound insulation and noise reduction for buildings.

4.10 Therefore, where background noise levels are at or below 30dB, L_{A90}, an adverse effect would not occur below an absolute threshold that represents the onset of an adverse impact. Since this would only occur in locations where the existing levels are low, it is appropriate to select a level below which there is very little likelihood of sleep disturbance at night. According to the WHO's 'Night Noise Guidelines for Europe[7]', there is "*no sufficient evidence that the biological effects observed at the level below 40 dB $L_{night,outside}$ are harmful to health*". On this basis, a value of 40dB, L_{night} represents a level above which an adverse effect might begin to occur in locations with low background sound levels at night.

4.11 The assessment undertaken in this report therefore is made against the magnitudes of impacts set out in **Table 4.2** and then a consideration of these magnitudes is made in context of the existing sound climate at receptor locations. This assessment methodology aligns with the assessments of the operational station and other mechanical services plant also undertaken by Sharps Redmore as part of the Development Control Order application for the main development site. Initial estimates of the noise impact have been made in accordance with BS 4142:2014+A1:2014 (as per Example Table A1), these tables are provided as **Appendix C** to this report.

7. World Health Organisation. (WHO). 2009. Night noise guidelines for Europe.

5.0 SoundPLAN™ Predictive Sound Modelling

5.1 Sharps Redmore has developed an acoustic model of the study area with the SoundPLAN™ predictive software to include the development site and surroundings and the receptor locations described in **Section 3** of this report.

5.2 Sharps Redmore has been using SoundPLAN™ for many years and have considerable experience in applying it to a range of noise assessment situations. SoundPLAN™ implements predictive assessment of sound in accordance with the methodologies and recommendations of a range of published international standards. The standards and associated assessments and criteria are selected to suit each modelling task, and in this case the prediction methodologies of ISO 9613[8] were most appropriate.

5.3 Sharps Redmore has used the SoundPLAN™ version 8.0 noise modelling software package to predict the existing sound levels over the study area from the proposed back-up generator facilities to the proposed Sizewell C Nuclear Power Station. SoundPLAN™ calculates $L_{Aeq,T}$ levels at defined receptors in accordance with the appropriate standards. The calculation is based on a number of input parameters, including; source sound level data (see **Section 2**), barriers (both natural and buildings), receptor positions (See Section 3), topography and intervening ground conditions.

5.4 The location and dimensions of the physical elements of the model such as location and dimensions of buildings, have been taken directly from architectural drawings (supplied by SZC Co.). The sound contours can be plotted at defined intervals, and heights above ground level. For the residential receptors in this assessment sound levels have been predicted to ground (1.5 metres above local ground level) and first floor (4.5 metres above local ground level) positions.

5.5 For the modelling of sound emissions from these generator facilities, air absorption has been included in accordance with ISO 9613. With the exception of the proposed SZC station (where hard ground has been assumed), then soft ground has been assumed between the operating station and the receptors. Predictions of sound levels to each receptor are made assuming a slight downwind condition between sound sources and each receptor.

5.6 The sound sources, building elevations and topographical information have therefore been input into the predictive sound model and calculations run for the daytime (0700 – 2300 hours) and night-time (2300 – 0700 hours) periods.

5.7 Sharps Redmore have modelled a 'worst-case' scenario with the maximum possible number of generators operating; i.e. two EDG's in each building running simultaneously, a total of eight generators.

5.8 Predictive sound level modelling has been undertaken for the following scenarios:

- Daytime free-field sound level to receptors at 1.5 metres above local ground level ($L_{Aeq,T}$)
- Night-time free-field sound level to receptors at 4.5 metres above local ground level ($L_{Aeq,T}$).

8. ISO 9613 Acoustics – Attenuation of sound during propagation outdoors; Part 1:1993 Calculation of the absorption of sound by the atmosphere. Part 2:1996 General method of calculation.

5.9 The back-up generators are modelled as continuously operating sources and therefore the assessment time T, can be expressed in any reference time period.

5.10 The sound levels predicted from this scenario of eight operational generators (two per building) are set out in **Section 6** that follows. **Annex A and B** present the SoundPLAN^{TM} Noise Contours predicted at 1.5 metres above ground and 4.5 metres above ground respectively. The contours presented represent the sound rating level (L_{Ar}) at receptor locations. The derivation of the sound rating level is set out in **Section 7**.

6.0 Predicted Sound Levels at Receptor Locations

6.1 As discussed in **Section 5**, the predicted Noise Contours for the worst-case back-up generator operational scenario are presented in **Annex A and B**. These sound levels reflect LOOP conditions, i.e. when there has been a loss of off-site power and the back-up, or emergency generators have been required to supply station power. It is understood this would represent the worst-case scenario in terms of noise generation and may potentially never happen.

6.2 These contour plans illustrate sound rating level contours (L_{Ar}) at 1.5 metres (ground floor) and 4.5 metres (first floor) relative to local ground height.

6.3 The SoundPLAN™ model, calculated the free-field sound levels at the eight residential receptors considered in this assessment. Ground floor and first floor levels have been extracted from the model and are set out in **Table 6.1** below, all values have been rounded to the nearest whole dB.

Table 6.1 Worst case predicted free-field sound levels (specific sound level) with two EDG's running per generator building to operate station during LOOP.

Receptor	Floor	Free-field sound level dBA				
		Gen Building 1	Gen Building 2	Gen Building 3	Gen Building 4	Total
Sizewell Village	Ground	17	19	18	24	**27**
	First	18	20	19	25	**28**
Rosery Cottage	Ground	14	23	15	35	**35**
	First	15	24	16	36	**36**
Halfway Cottages	Ground	10	25	19	26	**29**
	First	16	26	20	28	**31**
Keepers Cottage	Ground floor only	26	30	26	33	**36**
Common Cottages	Ground	24	26	24	25	**31**
	First	24	26	24	26	**31**
Reckham Lodge	Ground	24	28	25	32	**34**
	First	26	29	25	33	**35**
Upper Abbey Farm	Ground	26	20	26	18	**30**
	First	27	21	27	18	**31**
Ash Wood Cottages	Ground	32	25	32	22	**36**
	First	33	25	33	23	**37**

6.4 Commissioning and routine testing are of limited duration as described in **Section 2**. During these scenarios, generators would likely be subject to testing on an individual basis only and from one generator building at a time. Sound levels from the commissioning and routine testing could therefore be represented by the individual generator building results above (Note: With the exception of test runs immediately after a station maintenance outage, routine testing would take place during daytime hours only).

6.5 In practice during these test scenarios, resultant sound levels at receptor locations from each building could be up to 3 dB lower than presented in **Table 6.1** as these values represent the two EDG generators running in each generator building. These values are considered to represent a conservative or robust sound level prediction.

7.0 Assessment Details

7.1 The assessment of the proposed back-up generator facilities compares the predicted sound rating levels with the magnitude of impact and significance thresholds described in **Section 4**.

7.2 The significance thresholds established in accordance with BS 4142:2014 are for free-field sound rating levels. This British Standard is a methodology for considering outdoor sound levels and their likely effects on people who then may be outside or inside a dwelling. During the day, noise levels are determined for a ground floor receptor, at night first floor is considered to all receptors other than Keepers Cottage which is known to have a ground floor only.

7.3 In terms of the sound rating level (L_{Ar}) from the back-up generators, the specific sound levels predicted in **Table 6.1** must be adjusted to account for any particular sound characteristics of the back-up generators.

7.4 In terms of the sound rating level (L_{Ar}) during LOOP events, it is not easy to determine how perceptible any generator sound would be at receptor locations in the context of the sounds from the operational SZC power station (and for a time the operational SZB station). The operation of the existing SZB station is observed to exhibit a tonal sound characteristic during its operation. The back-up generator facilities described here would not operate without the proposed SZC station also running. Generators potentially have tonal characteristics but the extent to which this would differ from, or be perceptible as distinct from the operational station is not known at this stage.

7.5 Weather conditions, and sea conditions (where receptors are close to the coast) would influence on a daily, and seasonal basis the perception of the tonality as experienced at each receptor location. There may be locations where the tonality would perhaps be clearly perceptible, but also receptor locations further away in the study area where at times tonality would be barely, if at all perceptible.

7.6 At this stage a precautionary approach has been adopted and an assumption that at times during the course of a year, tonality may be clearly perceptible (based on the subjective method of BS 4142) at all the receptors described in this assessment. On that basis, a +4 dB character correction has been applied to the predicted (specific) sound levels at all receptor locations to derive the sound rating levels (L_{Ar}) for comparison with significance thresholds in the assessments that follow.

7.7 The emergency, or LOOP event predicted sound rating levels for each receptor are compared with the existing background sound levels, and the magnitude of change of those predicted sound rating levels are established. Assessment tables are presented for ground and first floor heights, and for the daytime and night-time assessment periods respectively in **Tables 7.1 and 7.2** that follow.

Table 7.1 LOOP scenario back-up generator sound rating level (L_{Ar} dB) assessment - Daytime

Receptor	Predicted (free-field) sound rating level at ground floor (L_{Ar} dB)	Typical background sound level - Day (L_{A90} dB)	L_{Ar} minus L_{A90} dB)	Magnitude of Change
Sizewell Village	31	43	-12	Very low
Rosery Cottage	39	45	-6	Very low
Halfway Cottages	33	45	-12	Very low
Keepers Cottage	40	35	+5	Medium
Common Cottages	35	35	0	Low
Reckham Lodge	38	35	+3	Low
Upper Abbey Farm	34	35	-1	Very low
Ash Wood Cottages	40	39	+1	Low

Table 7.2 LOOP scenario back-up generator sound rating level (L_{Ar} dB) assessment – Night-time

Receptor	Predicted (free-field) sound rating level at first floor (L_{Ar} dB)	Typical background sound level - Night (L_{A90} dB)	L_{Ar} minus L_{A90} dB)	Magnitude of Change
Sizewell Village	32	40	-8	Very low
Rosery Cottage	40	45	-5	Very low
Halfway Cottages	35	35	0	Low
Keepers Cottage*	40	28	+12	High
Common Cottages	35	28	+7	Medium
Reckham Lodge	39	28	+11	High
Upper Abbey Farm	35	28	-7	Very low
Ash Wood Cottages	41	35	+6	Medium

*Keepers cottage prediction to ground floor only as no first floor

Daytime assessment (0700 to 2300 hours)

7.8 During a LOOP scenario, with the exception of Keeper Cottage, the predicted sound rating level (L_{Ar}) to all receptors represents a 'low' or 'very low' magnitude of change compared with typical existing background sound levels. This would result in a minor to negligible effect, and therefore not considered to represent a significant impact from noise.

7.9 At Keepers Cottage, the predicted level is on the boundary of a medium magnitude of change, and therefore on the threshold of a significant impact depending on context. The context here is that the LOOP scenario would only arise on an emergency basis, and therefore may not occur at all. In the event of the LOOP scenario being required, this would be on a temporary basis only, till either main site power is restored, or an alternative supply is put in place. Noise from the LOOP scenario therefore is not considered to represent a significant impact at any receptor during the day.

7.10 Commissioning testing of the back-up generators would be a one-off scenario prior to the operational phase of the proposed SZC power station. Daytime and night-time running is expected for the period as described in **Section 2**. Generators would however be tested individually and therefore resultant sound levels are likely to be lower than those presented in **Table 7.1** (where values represent two EDG generators running per generator building). During daytime commissioning testing therefore predicted sound rating levels (L_{Ar}) to all receptors represents a 'low' or 'very low' magnitude of change compared with typical existing background sound levels. This would result in a minor to negligible adverse effect, and therefore not considered to represent a significant impact from noise.

7.11 Finally, back-up generators would be subject to routine daytime testing, and daytime testing post-outage. Again, generators would be tested individually and sequentially and therefore resultant sound levels are likely to be lower than those presented in **Table 7.1** (where values represent two EDG generators running per generator building). During daytime routine or post-outage testing therefore predicted sound rating levels (L_{Ar}) to all receptors represents a 'low' or 'very low' magnitude of change compared with typical existing background sound levels. This would result in a minor to negligible adverse effect, and therefore not considered to represent a significant impact from noise.

7.12 It is noted that all external sound levels predicted during daytime scenarios would be well below the desirable upper guideline value for external amenity areas in BS 8233:2014 for new dwellings (50 dB $L_{Aeq,16hour}$). Levels would achieve WHO (1999) and BS 8233:2014 guideline values (35 dB indoors $L_{Aeq,16hour}$) at all residential receptors with windows slightly open.

Night-time assessment (2300 to 0700 hours)

7.13 During a LOOP scenario (emergencies only), generators within all buildings operating, at Sizewell Village, Rosery Cottage, Halfway Cottages and Upper Abbey Farm, the predicted rating level (L_{Ar}) to all receptors represents a 'low' or 'very low' magnitude of change compared with typical existing background sound levels. This would result in a minor to negligible effect, and therefore not considered to represent a significant impact from noise.

7.14 At Keepers Cottage, Common Cottages, Reckham Lodge and Ashwood Cottages the predicted rating levels would represent a medium or high magnitude of change, and therefore potential a significant impact depending on context. The context here is that the LOOP scenario would only arise on an emergency basis, and therefore may not occur at all.

In the event of the LOOP scenario being required, this would be on a temporary basis only, until either the main site power is restored or an alternative supply is put in place. Noise from the LOOP scenario therefore is not considered to represent a significant impact at any receptor during the night.

7.15 The only night-time running of the back-up generators outside of emergency situations, would be for the one-off commissioning period, and then periodically after scheduled fuel and maintenance outages at the station. These would take place once every 18 months. It is understood that each individual generator (twelve in total), would be run for a 24-hour period. Generators would be tested individually and sequentially and therefore resultant sound levels are likely to be lower than those presented in **Table 7.2** (where values represent two EDG generators running per generator building).

7.16 First floor heights (4.5m) have been considered for the night-time assessment period with the exception of Keepers Cottage which is known to be a single storey dwelling. For this receptor the ground floor values have been reviewed. Note that the magnitude of change has been considered against the existing background sound levels measured at ground floor, which may under-represent the level at a height of 4.5m for two-storey dwellings.

7.17 At the residential receptors of Sizewell Village, Rosery Cottages, Halfway Cottages, Common Cottages, Upper Abbey Farm and Ashwood Cottages, the predicted sound rating level (L_{Ar}) during commissioning and post-outage testing represents a 'low' or 'very low' magnitude of change compared with typical existing background sound levels. Predicted sound levels to these receptors during night-time testing would result in a minor or negligible effect, therefore not considered to represent a significant impact to these receptors.

7.18 To Keepers Cottage, and Reckham Lodge the predicted sound rating level (L_{Ar}) during commissioning or post-outage testing represents a medium or high magnitude of change compared with typical existing background sound levels.

7.19 In accordance with the BS 4141:2014+A1:2019 methodology, these magnitudes of change must be considered in context in order to conclude whether predicted sound levels represent a significant impact.

7.20 In general, background and ambient sound levels in the vicinity of the main development site are low. The absolute level of sound predicted from the operational station needs to be considered in context in this situation. BS 4142 advises that:

"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."

7.21 A significant effect may not occur unless the overall noise level exceeds an absolute level which represents a significant level, and it is appropriate to select a level below which there is very little likelihood of sleep disturbance at night. According to the WHO's '*Night Noise Guidance for Europe (NNGE)*', there is "*no sufficient evidence that the biological effects observed at the level below 40dB $L_{night,outside}$ are harmful to health*". On this basis, a value of 40dB, L_{night} represents a level above which an adverse effect might begin to occur and so should be avoided in locations with low background sound levels at night.

7.22 The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed) at all receptors where a medium or high magnitude of change is indicated and therefore these change in levels would not result in a significant adverse effect. This also applies to night-time levels that would arise in the unlikely event of a LOOP scenario.

7.23 In summary, it is considered that there would be no significant adverse noise effects resulting from the night-time operation of the proposed back-up generators either during commissioning testing, testing post-outage, or in the emergency LOOP scenario.

Other Contextual Considerations & Uncertainty

7.24 The diesel generators would be part of the site routine maintenance program, and, as such, would be maintained to a high standard that is reflective of the operational control required at a nuclear power station.

7.25 The opportunity exists for the proposed back-up generator facilities to be built to a high quality of sound insulation/building envelope performances. In part this will be inherent with the nature of a nuclear facility.

7.26 The diesel generators would not operate on a continual basis like the reactors. Periodic or routine testing and maintenance should be planned within daylight hours where possible to minimise any disturbance to receptors.

7.27 Post-commissioning, the time taken for Routine testing of the back-up generators represents a very small fraction of any operational year, less than 1% of the time that the proposed SZC power station would be operating.

7.28 It is understood that the design of the power station will be refined in association with other similar facilities elsewhere in the country. As part of this design refinement, and as the design of the back-up generator buildings in particular evolves, further reductions in noise emissions may be possible to mitigate and minimise adverse effects on health and quality of life.

7.29 The highest predicted sound levels from the proposed back-up generator facilities would occur during the LOOP or emergency scenario when the usual site power has failed or is not available. These sound levels therefore are not planned and would potentially arise during an emergency situation only. In such circumstances, it is expected that all practicable measures would be undertaken to restore the normal power supply to the power station as quickly as possible.

7.30 Sound levels have been predicted with SoundPLAN™ using recognised international standards for outdoor sound propagation with receptors in a light downwind condition with respect to the sound sources.

7.31 A precautionary approach has been taken in the consideration of the sound rating level from the back-up generator facilities, with a 4 dB acoustic correction being applied to the specific sound levels predicted for tonality that may be clearly perceptible. The back-up generators would not operate without the station itself and therefore tonality from the generators may not be perceptible at all as distinct from the operational station. Considering a 4 dB addition for an acoustic feature correction is therefore considered reasonable.

7.32 Some uncertainty may arise in the source sound levels input into the predictive sound model. As discussed in **Sections 2.17 to 2.19**, SZC Co. have supplied source data that will be subject to verification upon manufacture and testing of the generators. As a precaution however Sharps Redmore has considered resultant sound levels from commissioning and routine testing with an additional generator running in each building (i.e. two EDG generators running, rather than individually as is likely in these test regimes). The data presented and assessed are therefore considered to represent a robust, conservative approach.

8.0 BAT Noise Control

8.1 The assessment scenarios described in Section 7 indicates that for all of the residential receptors considered, sound levels from the back-up generators would not represent a significant adverse effect during any operational scenario.

8.2 The generator facilities assessed would be built and serve the proposed SZC power station for back-up/emergency purposes only. After commissioning testing, the back-up generator facilities will have minimal run-time in any given operational year of the proposed SZC station (less than 1%), and with the exception of testing post-outage, generators would be run during the daytime period only.

8.3 A Noise Management Plan to reduce sound levels from the back-up generator facilities is not considered necessary at this stage. Nonetheless, where any predicted sound levels may exceed the LOAEL, the operator should try to achieve sound levels at receptor locations as close to the LOAEL as practicable through application of BAT.

8.4 It is understood that the design of the power station will be refined in association with other similar facilities elsewhere in the country. As part of this design refinement, and as the design of the back-up generator buildings in particular evolves, further reductions in noise emissions may be possible to mitigate and minimise adverse effects on health and quality of life these could include additional attenuation to generator building ventilation systems and engine exhausts

8.5 The Environmental Permitting Regulations require installations to be operated in such a way that "*all the appropriate preventative measures are taken against pollution, in particular through the application of BAT*". The definition of pollution within the Sector Guidance Note includes "*emissions that may be harmful to human health or quality of the environment, cause offence to human senses or impair or interfere with amenities and other legitimate uses of the environment".*

8.6 Section 3 of the permit application report therefore sets out the indicative BAT requirements from relevant guidance with respect to noise, and how the proposed back-up generator operations would address the indicative BAT.

9.0 Conclusions

9.1 Sharps Redmore has undertaken a sound level assessment for proposed back-up generator facilities to serve the proposed SZC power station in Suffolk.

9.2 This assessment is supplied to SZC Co. to accompany an application for a combustion activities permit under the Environmental Permitting (England and Wales) Regulations 2016.

9.3 Sound levels from the proposed back-up or emergency generator facilities have been assessed for the following operational scenarios:

- Commissioning testing - one-off testing upon installation
- Routine testing – to ensure generators are maintained in good operational condition (daytime only), and 24-hour operation post-outage
- LOOP – Emergency operation only if the main station power supply should fail

9.4 After commissioning testing, each generator would operate for less than 1% of the year during the operational life of the proposed power station.

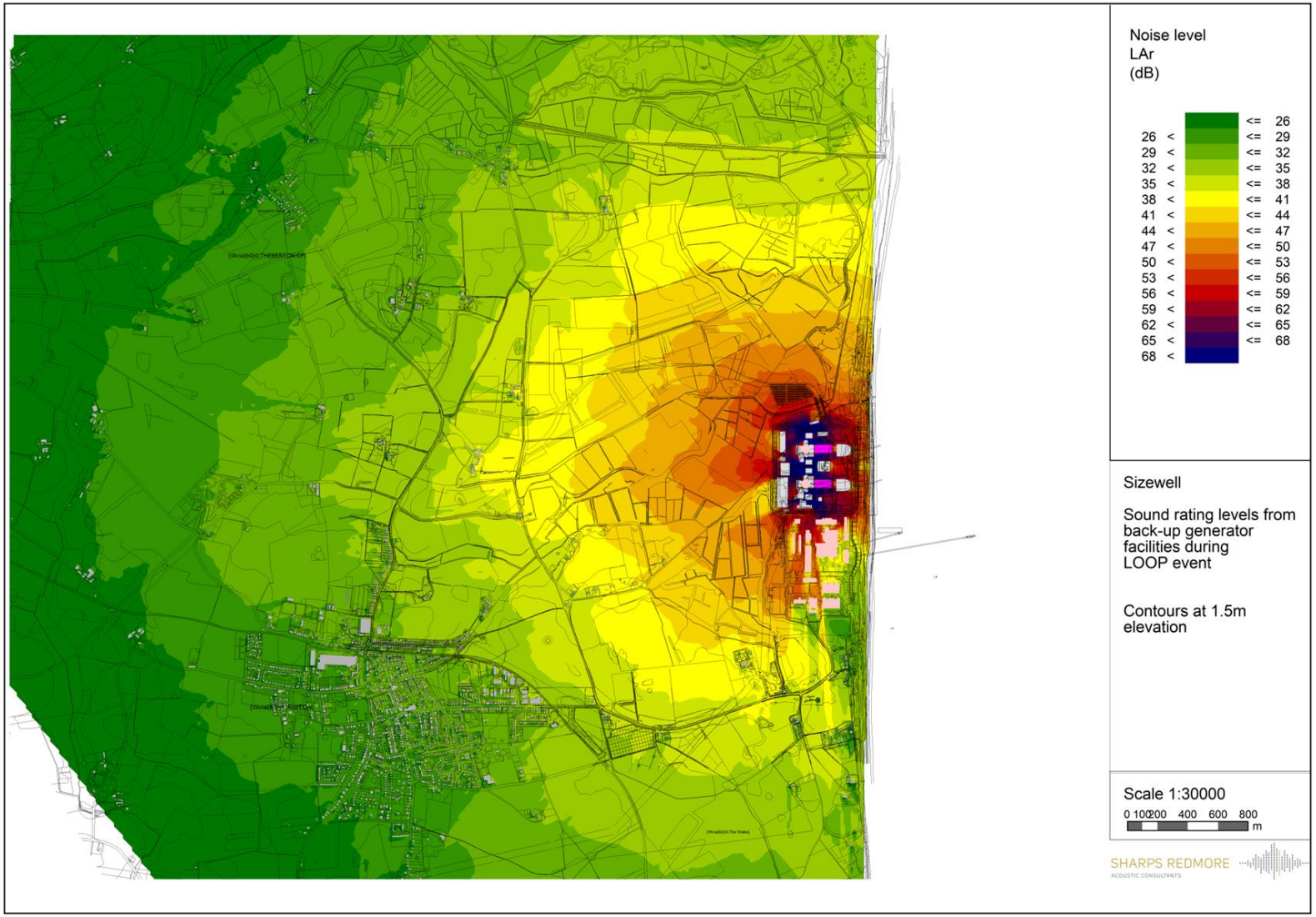
9.5 Sound levels and sound rating levels (L_{Ar}) have been predicted at residential receptor locations at a range of distances and compass orientations away from the proposed development site and assessed against established criteria.

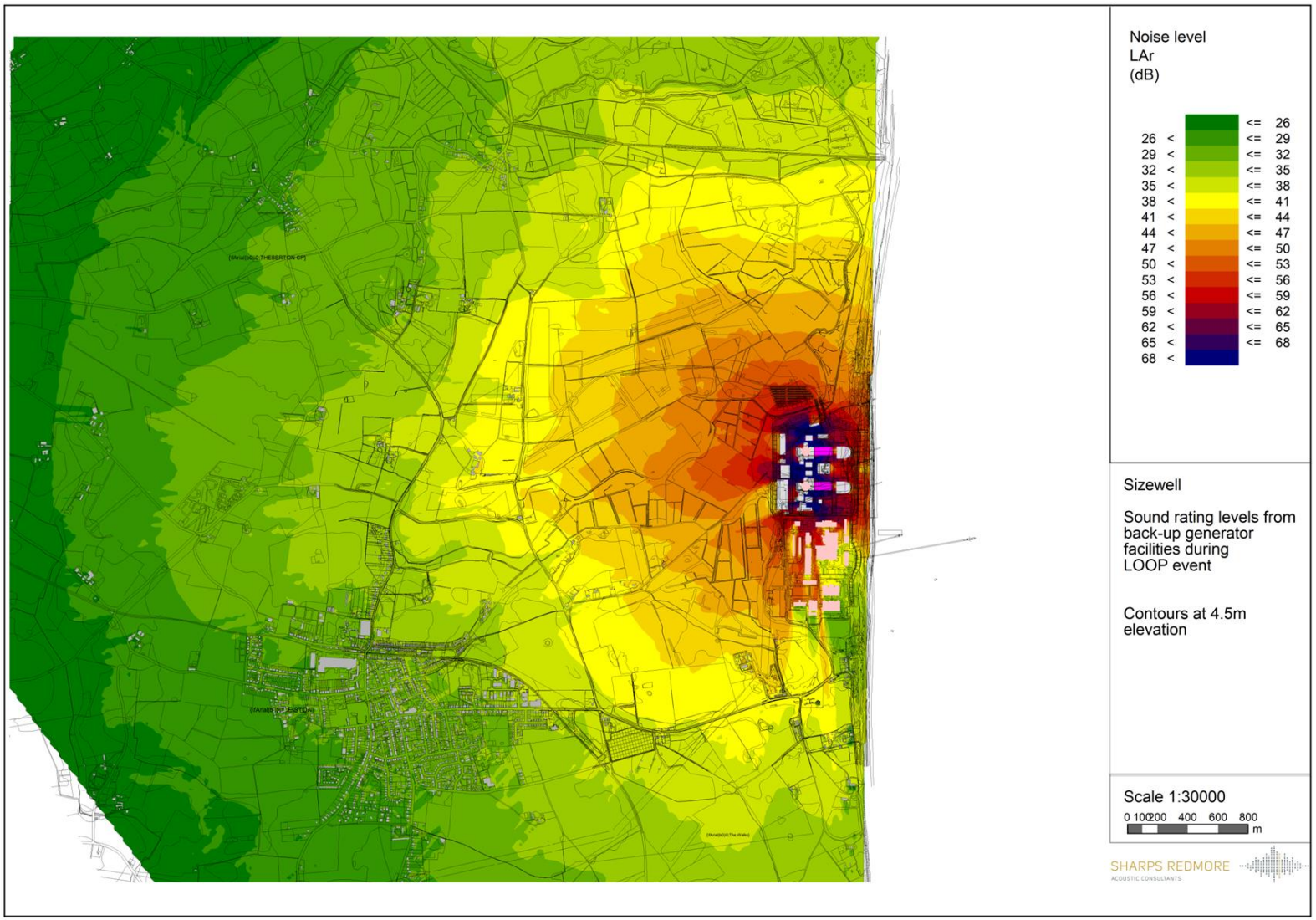
9.6 Noise levels from the proposed back-up generator facilities would result in negligible or minor effects for most receptors but some receptors would experience an increase in noise level at night with a medium or high magnitude. When levels are considered in context, predicted sound levels to all receptors would be below the threshold of a significant impact from noise. Although the magnitude of levels would be medium or high for some receptors, the effect would not be significant, as the predicted levels would be below the threshold at which there would be harm to sleep.

9.7 This BS 4142:2014+A1:2014 assessment concludes that with the application of BAT as described, sound levels from the proposed back-up generator facilities in any operational scenario represent a low impact from noise at all residential receptors considered.

ANNEXES

SOUNDPLAN^{TM} PREDICTED SOUND LEVEL CONTOUR DIAGRAMS


Noise level
LAr
(dB)
26 < <= 26
29 < <= 29
32 < <= 32
35 < <= 35
38 < <= 38
41 < <= 41
44 < <= 44
47 < <= 47
50 < <= 50
53 < <= 53
56 < <= 56
59 < <= 59
62 < <= 62
65 < <= 65
68 < <= 68
Sizewell
Sound rating levels from back-up generator facilities during LOOP event
Contours at 1.5m elevation
Scale 1:30000
0 100 200 400 600 800
m
SHARPS REDMORE
ACOUSTIC CONSULTANTS


Noise level
LAr
(dB)
26 < <= 26
26 < <= 29
29 < <= 32
32 < <= 35
35 < <= 38
38 < <= 41
41 < <= 44
44 < <= 47
47 < <= 50
50 < <= 53
53 < <= 56
56 < <= 59
59 < <= 62
62 < <= 65
65 < <= 68
68 <
Sizewell
Sound rating levels from back-up generator facilities during LOOP event
Contours at 4.5m elevation
Scale 1:30000
0 100 200 400 600 800
m
SHARPS REDMORE
ACOUSTIC CONSULTANTS

APPENDIX A

PLANS

Figure A1. Permanent site layout drawing (illustrative) showing proposed diesel generator buildings (courtesy of SZC Co.)

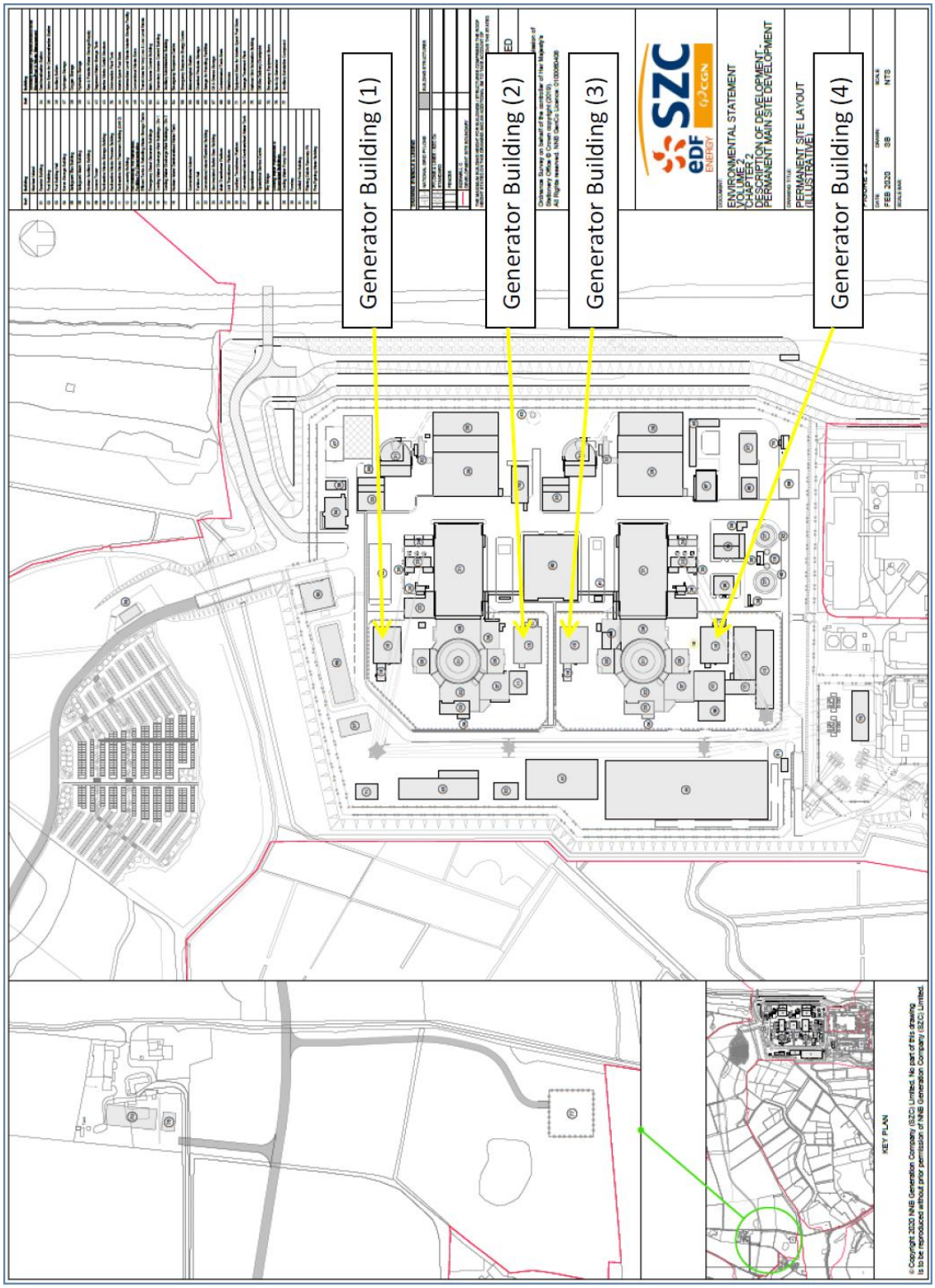


Figure A2. Proposed back-up generator building indicative internal layout (Courtesy SZC Co.)

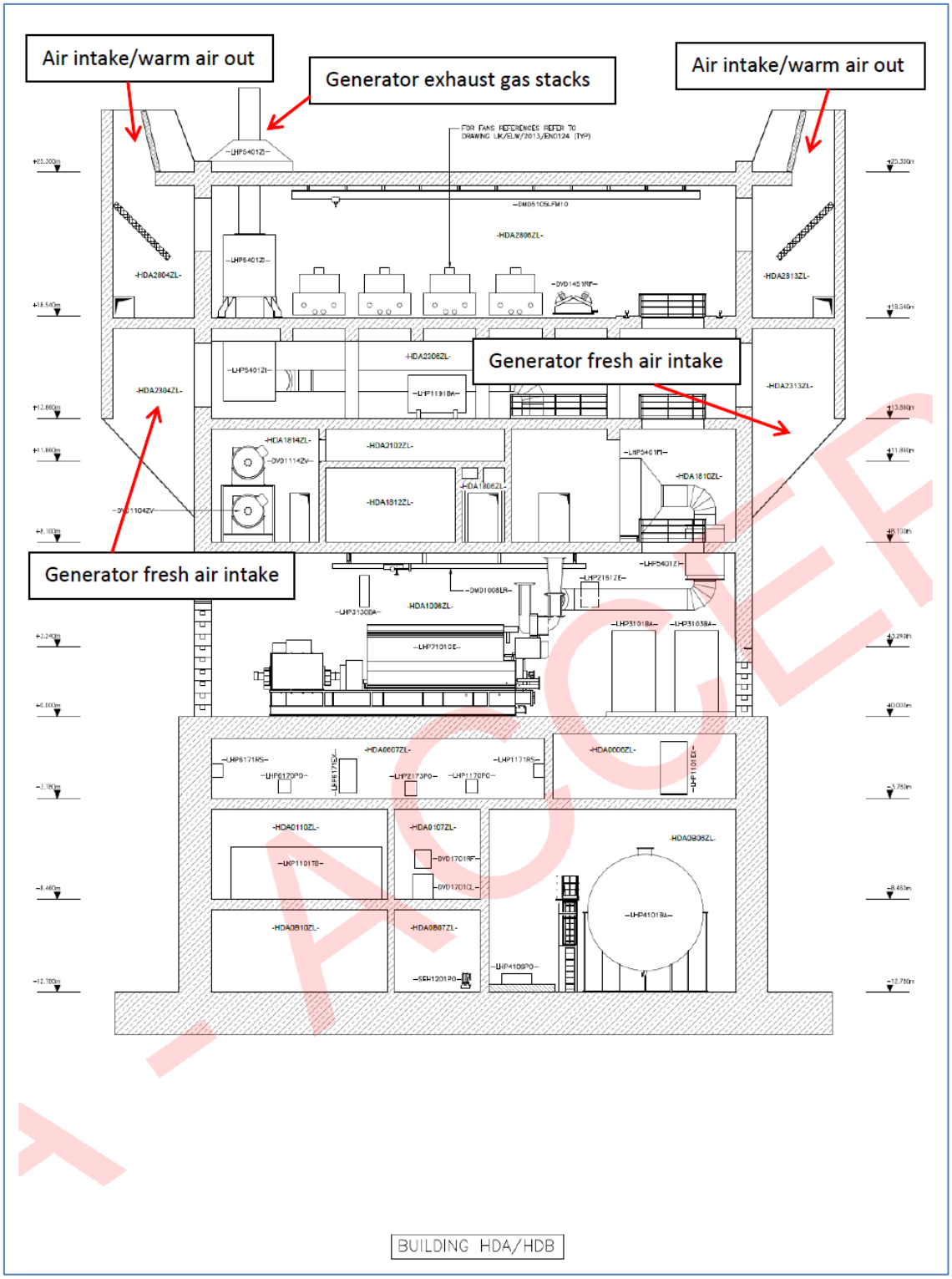
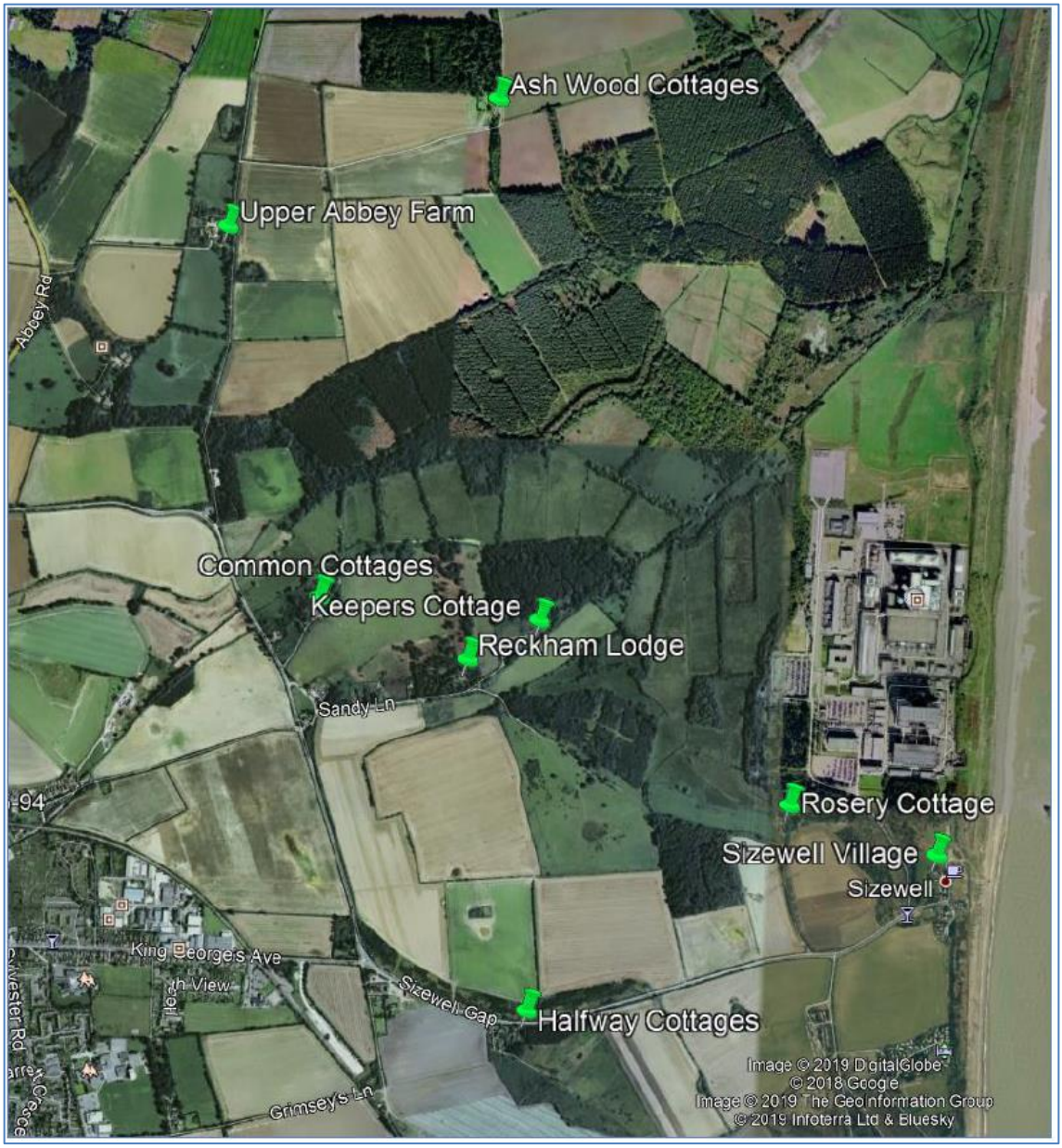


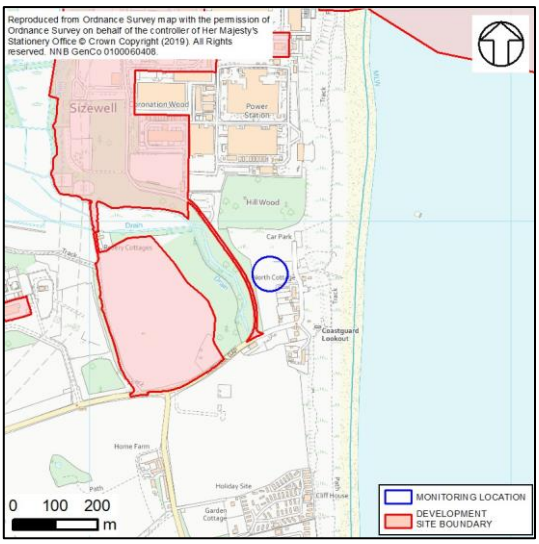
Figure A3. Location plan of noise sensitive receptors



APPENDIX B

BACKGROUND SOUND LEVEL SURVEY RESULTS

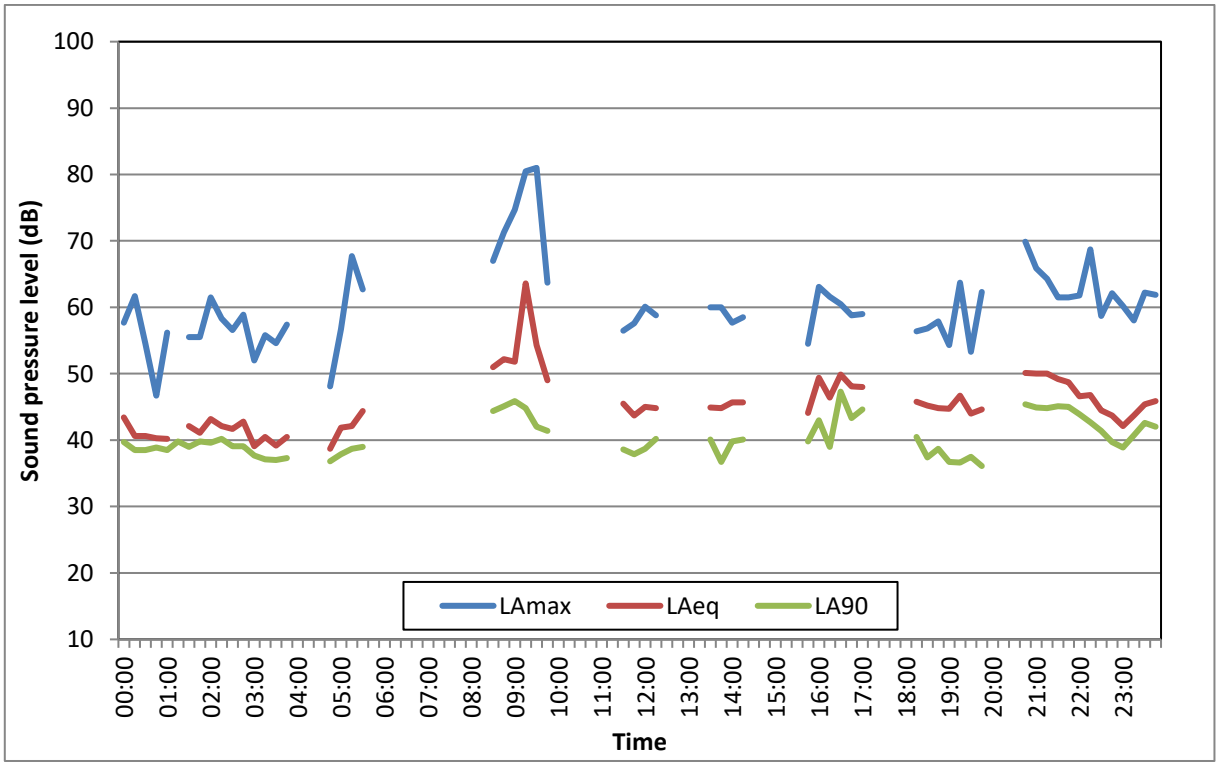
MS28 – Sizewell Village



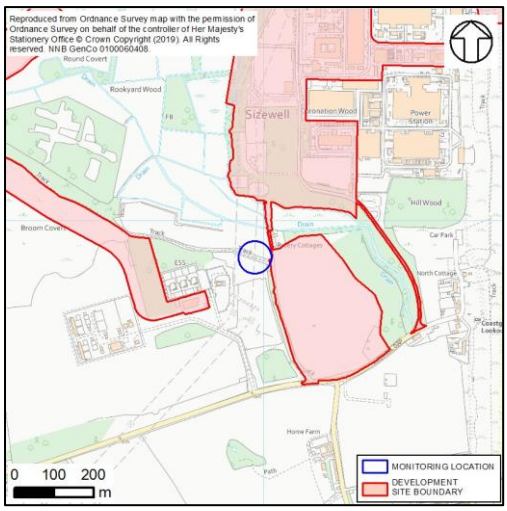
Site Description: Free-field location within grassed area at western end of Sizewell beach car park.

Dates: 30 September, 1, 9, 10 October 2014, 24 June, 2 July 2019

Notes: The sound climate was comprised of birdsong from various species, distant construction noise, occasional aircraft, vehicles and activity in the car, and vehicles on the Sizewell access road. The sound of the sea was also significant during quieter periods, particularly at night. Ambient sound levels were typically around 48dB during the day and 43dB during the night. Background sound levels were typically around 43dB during the day and 40dB during the night. L_{Amax} event of 80dB was from a construction site grinder. Levels at this site will vary depending on sea conditions.



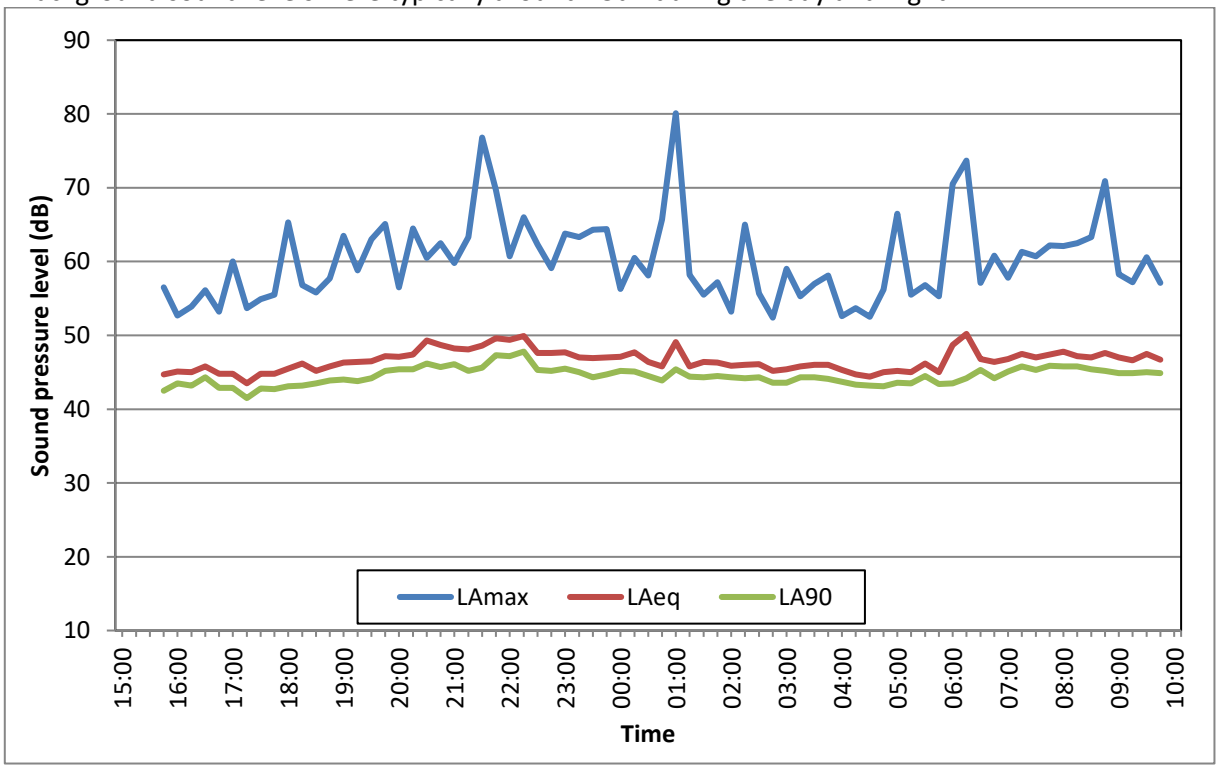
MS27 – Rosery Cottage



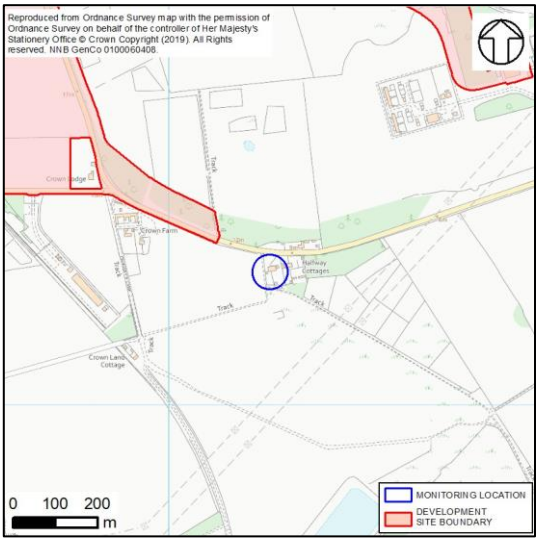
Site Description: Free-field location, just off path south of Rosery Cottage, approximately 250 metres from nearest road.

Dates: 29-30 September 2015, 24 June, 3 July 2019

Notes: The sound climate was comprised of operational sound and sources at the operating Sizewell B station, sound from the neighbouring electrical substation site, and birdsong from various species. Ambient sound levels were typically around 47dB during the day and night. Background sound levels were typically around 45dB during the day and night.



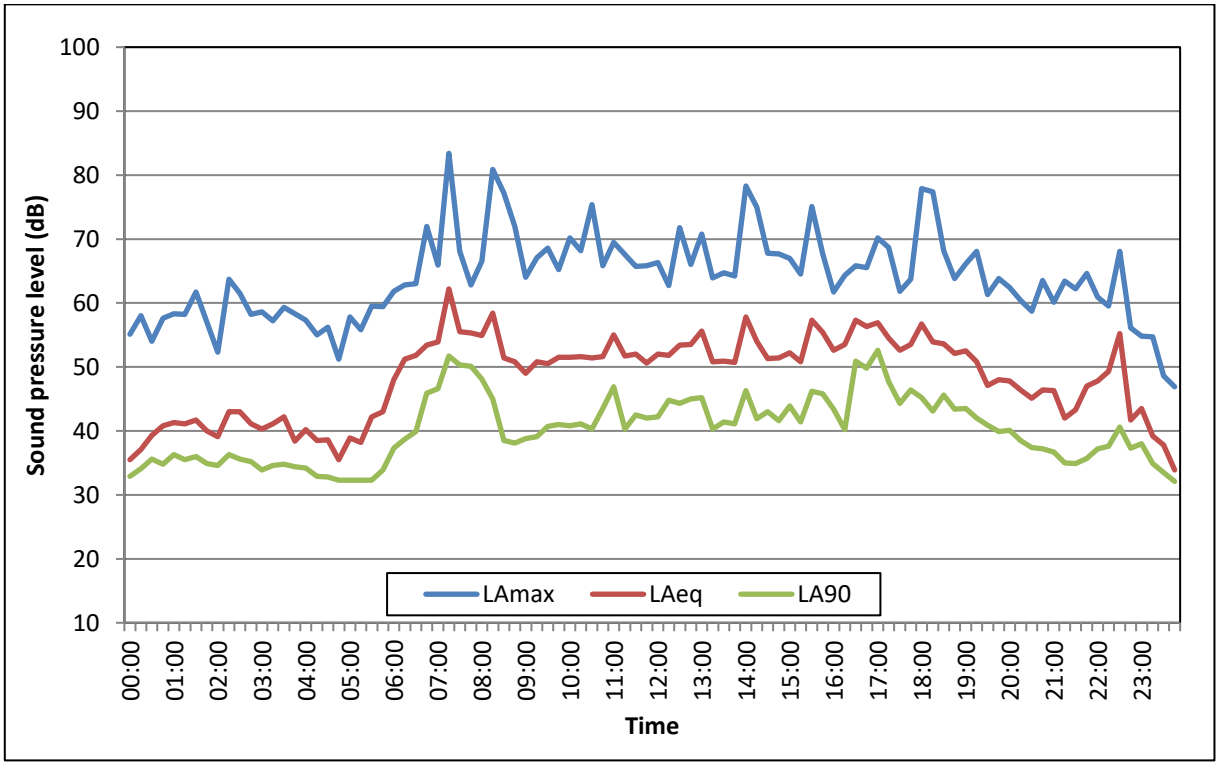
MS42 – Halfway Cottages



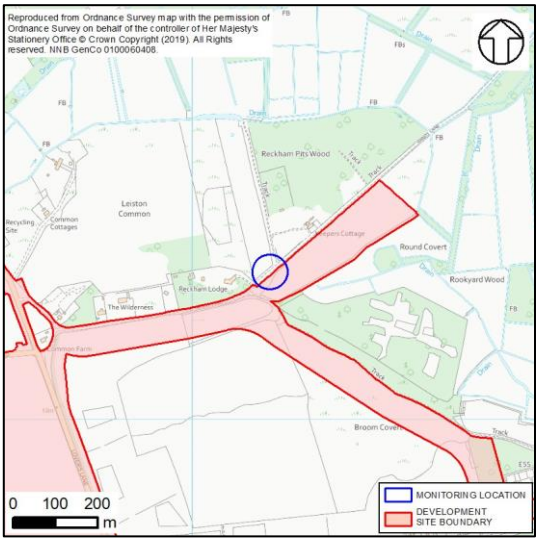
Site Description: Free-field location, 50 metres from road

Dates: 14 to 15 October 2015, 11 June, 10 July 2019

Notes: The main contribution to ambient sound levels was from road traffic on Sizewell Gap Road. Birdsong, agricultural activities and noise from pigs in a neighbouring field also contributed to measured levels. In 2019 it was noted that the neighbouring fields had crops rather than livestock, but tractors and sprayers in use. Typical ambient levels were 54dB during the day and 42dB at night. Background levels were typically 45dB in the day and 35dB at night.



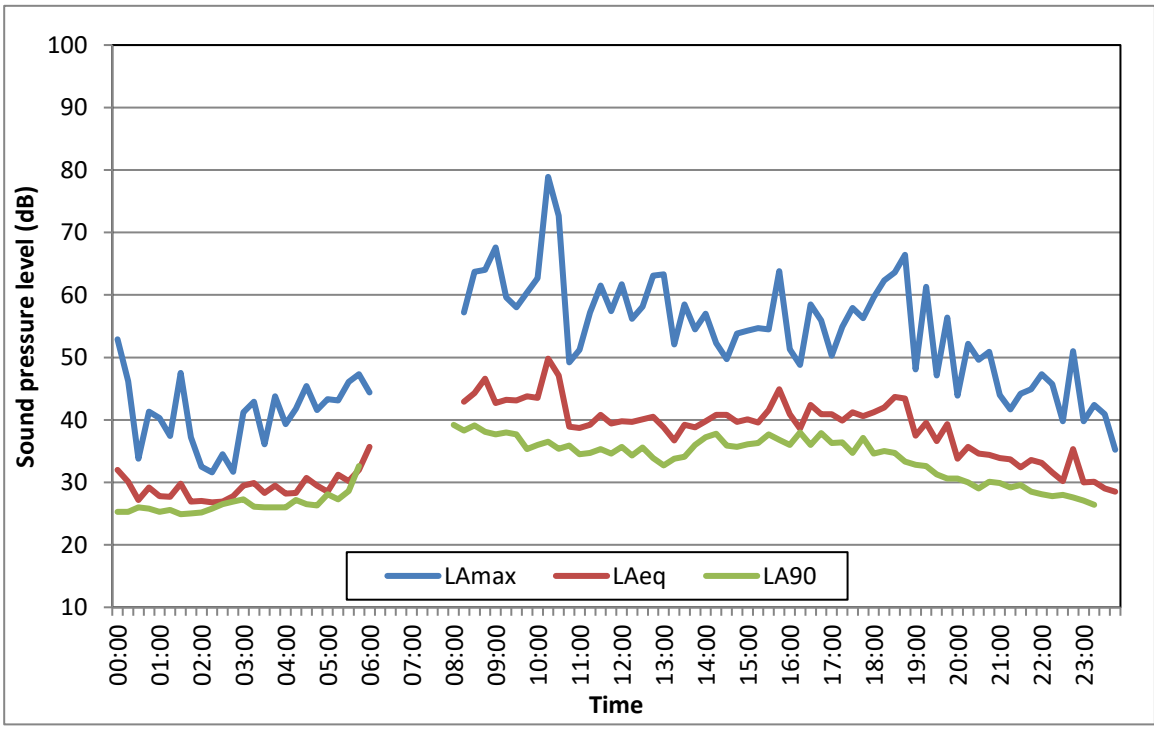
MS26 – Keepers Cottage



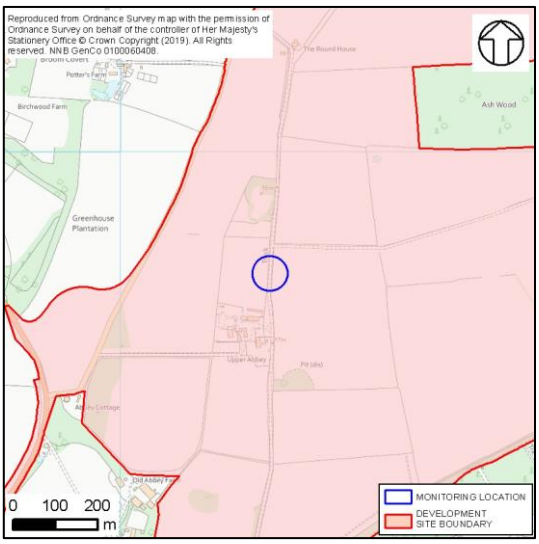
Site Description: Free-field location on track, near corner with driveway to cottage.

Dates: 30 September, 1 October 2014, 24 June, 2 July 2019

Notes: The sound climate was comprised of dog barking, birdsong of various species, cricket and other insect calls, distant reversing and excavator noises, and light DIY activity at a nearby dwelling. A low frequency humming sound was also detectable from the operational Sizewell B station. Ambient sound levels were typically around 42dB during the day and 30dB during the night. Background sound levels were typically around 35dB during the day and below 30dB during the night.



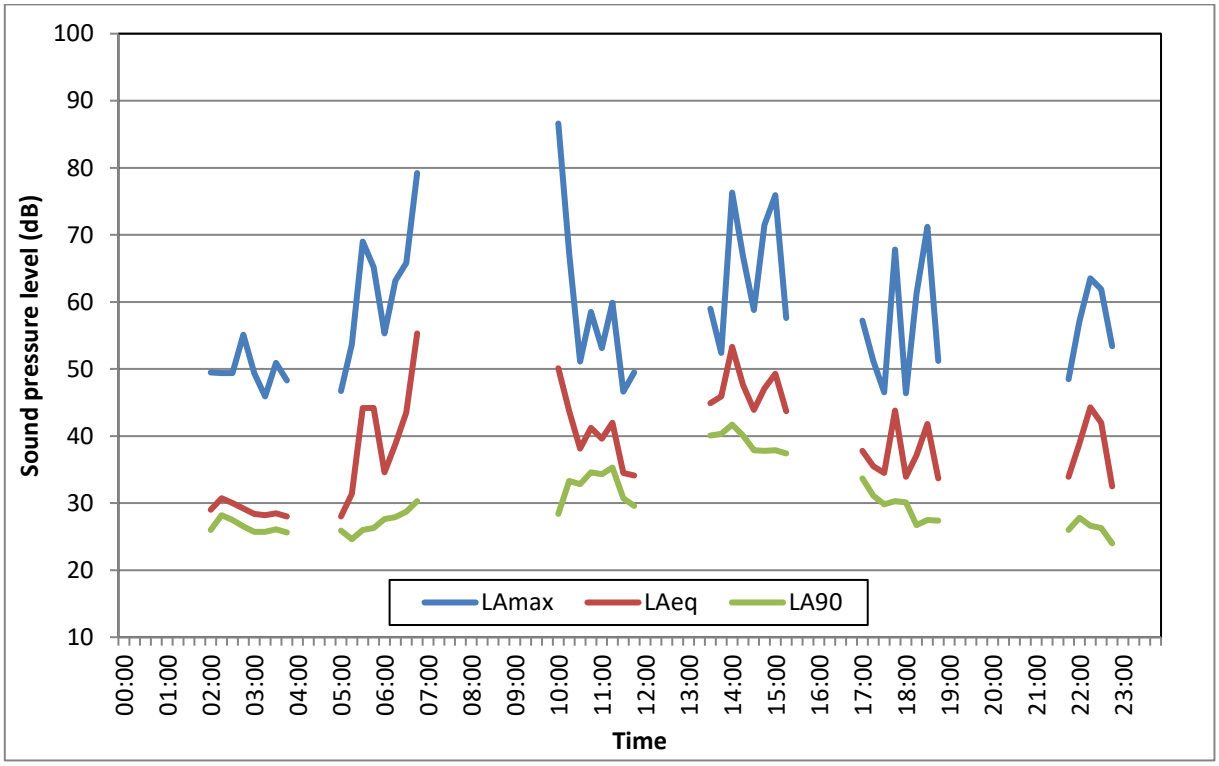
MS10 – Bridleway Centre



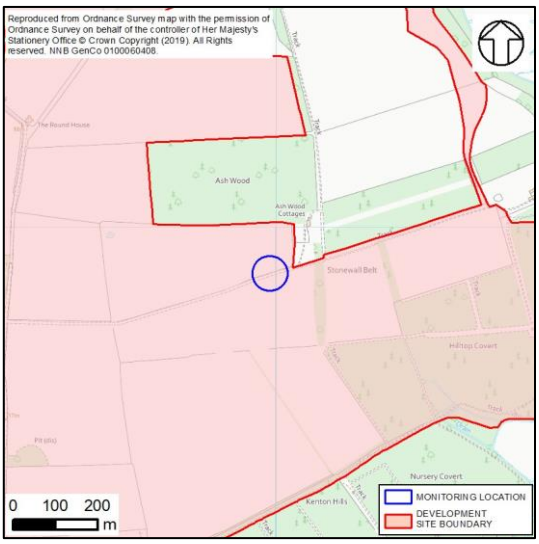
Site Description: Free-field location on edge of bridleway, adjacent to fields and at significant distance from any road.

Dates: 27 August, 1, 2, 3, 29 September 2014

Notes: The sound climate was comprised of birdsong from various species, distant road traffic, occasional aircraft, and vehicles on the bridleway. L_{Amax} up to 87dB were noted from car and tractor pass-bys on the bridleway. Ambient sound levels were typically around 45dB during the day and between 30-40dB at night. Background sound levels were typically around 35dB during the day and 28dB during the night.



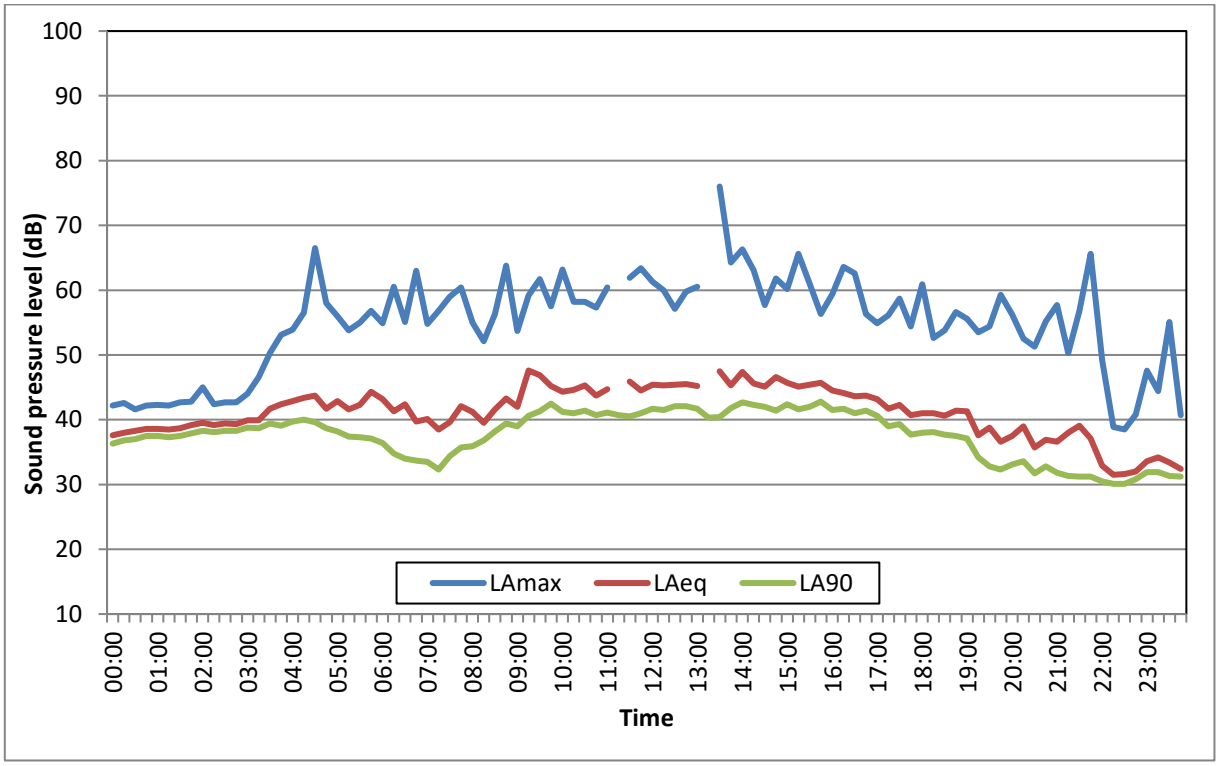
MS7 – Ash Wood Cottages



Site Description: Free-field location adjacent to fields down track at significant distance from any road. Approximately 60 metres from neighbouring property.

Dates: 17-18 September 2014

Notes: The sound climate was comprised of birdsong from various species, buzzing insects, occasional aircraft and barking dogs and a distant hum from Sizewell B station. L_{Amax} of 50-76dB were noted in the daytime coming from bird calls. Ambient sound levels were typically around 45dB during the day and 40dB during the night. Background sound levels were typically around 39dB during the day and 35dB during the night.



APPENDIX C

BS 4142:2014+A1:2014 Initial Estimate of Impact Tables (LOOP Scenario - night)

Table C1 – Sizewell Village receptors

Results		Relevant Clause	Commentary
Predicted free-field sound level first-floor	28 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	40 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	28 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	32 dB $L_{Ar,15minute}$	9.2	
Background sound level	40 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	-8 dB	11	
Initial estimate of impact	Low impact	11	*Where the rating level does not exceed the background sound level this is an indication of the specific sound source having a low impact, subject to context*
Uncertainty of the assessment	Not significant	10	The rating level is well below the typical background sound level and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment

Context:

- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed)
- The predicted specific level is therefore below that where an adverse effect might begin to occur

Overall assessment of noise impact when source considered in context: Low impact

Table C2 – Rosery Cottage receptor

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	36 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	45 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	36 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	40 dB $L_{Ar,15minute}$	9.2	
Background sound level	45 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	-5 dB	11	
Initial estimate of impact	Low impact	11	*Where the rating level does not exceed the background sound level this is an indication of the specific sound source having a low impact, subject to context*
Uncertainty of the assessment	Not significant	10	The rating level is well below the typical background sound level and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment

Context:

- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C3 – Halfway Cottages receptors

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	31 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	35 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	31 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	35 dB $L_{Ar,15minute}$	9.2	
Background sound level	35 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	0 dB	11	
Initial estimate of impact	Low impact	11	*Where the rating level does not exceed the background sound level this is an indication of the specific sound source having a low impact, subject to context*
Uncertainty of the assessment	Not significant	10	The rating level is at or below the typical background sound level. In this instance the uncertainty of the survey measurements or predicted source levels are considered unlikely to change the assessment outcome from a low impact

Context:

- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C4 – Keepers Cottage receptor

Results	Relevant Clause	Commentary

Predicted free-field sound level ground-floor	36 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	28 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	36 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	40 dB $L_{Ar,15minute}$	9.2	
Background sound level	28 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	+12 dB	11	
Initial estimate of impact	Significant adverse impact	11	*A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
Uncertainty of the assessment	Not significant	10	A low background sound level has been adopted and a worst case acoustic correction feature applied in deriving the sound rating level. The uncertainty here would likely reduce the initial estimate of impact down to an adverse impact.

Context:

- LOOP scenario may rarely if ever occur and be short duration till normal site power restored
- External sound level would be reduced to 24 dB $L_{Aeq,8hour}$ or below (with windows slightly open) therefore achieve BS 8233:2014/WHO (1999) Guidelines with respect to sleep
- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C5 – Reckham Lodge receptor

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	35 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	28 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	35 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	39 dB $L_{Ar,15minute}$	9.2	
Background sound level	28 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	+11 dB	11	
Initial estimate of impact	Significant adverse impact	11	*A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
Uncertainty of the assessment	Not significant	10	A low background sound level has been adopted and a worst case acoustic correction feature applied in deriving the sound rating level. The uncertainty here would likely reduce the initial estimate of impact down to an adverse impact.

Context:

- LOOP scenario may rarely if ever occur and be short duration till normal site power restored
- External sound level would be reduced to 23 dB $L_{Aeq,8hour}$ or below (with windows slightly open) therefore achieve BS 8233:2014/WHO (1999) Guidelines with respect to sleep
- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C6 – Common Cottages receptors

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	31 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	28 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	31 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	35 dB $L_{Ar,15minute}$	9.2	
Background sound level	28 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	+7 dB	11	
Initial estimate of impact	Adverse impact	11	*A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
Uncertainty of the assessment	Not significant	10	A low background sound level has been adopted and a worst case acoustic correction feature applied in deriving the sound rating level. Uncertainty is not likely to change the initial estimate from an adverse impact.

Context:

- LOOP scenario may rarely if ever occur and be short duration till normal site power restored
- External sound level would be reduced to 19 dB $L_{Aeq,8hour}$ or below (with windows slightly open) therefore achieve BS 8233:2014/WHO (1999) Guidelines with respect to sleep
- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C7 – Upper Abbey Farm receptor

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	31 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	28 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	31 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	35 dB $L_{Ar,15minute}$	9.2	
Background sound level	28 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	+7 dB	11	
Initial estimate of impact	Adverse impact	11	*A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
Uncertainty of the assessment	Not significant	10	A low background sound level has been adopted and a worst case acoustic correction feature applied in deriving the sound rating level. Uncertainty is not likely to change the initial estimate from an adverse impact.

Context:

- LOOP scenario may rarely if ever occur and be short duration till normal site power restored
- External sound level would be reduced to 19 dB $L_{Aeq,8hour}$ or below (with windows slightly open) therefore achieve BS 8233:2014/WHO (1999) Guidelines with respect to sleep
- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

Table C8 – Ash Wood Cottages receptors

Results	Relevant Clause	Commentary

Predicted free-field sound level first-floor	37 dB $L_{Aeq,15minute}$	7.1 7.1.3	External free-field predicted sound level from all back-up generator buildings operating during LOOP
Background sound level	35 dB $L_{90,15minute}$	8.1.3 8.3	Typical background sound level at night from surveys
Assessment made during the night-time so reference period is 15 minutes		7.2	
Specific sound level	37 dB $L_{Aeq,15minute}$	7.3.4 7.3.5	
Acoustic correction feature	+ 4 dB	9.2	Tonality judged to have the potential to be clearly perceptible at the receptor location
Sound rating level	41 dB $L_{Ar,15minute}$	9.2	
Background sound level	35 dB $L_{90,15minute}$	8	
Excess of rating over background sound level	+6 dB	11	
Initial estimate of impact	Adverse impact	11	*A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
Uncertainty of the assessment	Not significant	10	Uncertainty in survey data or predicted sound is not likely to change the initial estimate from an adverse impact.

Context:

- LOOP scenario may rarely if ever occur and be short duration till normal site power restored
- External sound level would be reduced to 25 dB $L_{Aeq,8hour}$ or below (with windows slightly open) therefore achieve BS 8233:2014/WHO (1999) Guidelines with respect to sleep
- The predicted L_{night} would be below 40dB (rating level with acoustic character correction of +4dB removed).
- The predicted specific level is therefore below that where an adverse effect might begin to occur.

Overall assessment of noise impact when source considered in context: Low impact

APPENDIX D

Baseline sound survey data (Raw)

Location	Date and Time	Duration	LAeq	LAfmax	LA90
MS7	(2014/09/18 00:00:02.00)	15min	41	45	39

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/18 00:15:01.00)	15min	40	43	38
	(2014/09/18 00:30:01.00)	15min	39	44	37
	(2014/09/18 00:45:01.00)	15min	42	45	40
	(2014/09/18 01:00:01.00)	15min	41	45	39
	(2014/09/18 01:15:01.00)	15min	42	45	40
	(2014/09/18 01:30:01.00)	15min	41	45	40
	(2014/09/18 01:45:01.00)	15min	42	46	40
	(2014/09/18 02:00:01.00)	15min	42	46	41
	(2014/09/18 02:15:01.00)	15min	42	46	41
	(2014/09/18 02:30:01.00)	15min	42	47	41
	(2014/09/18 02:45:01.00)	15min	43	45	42
	(2014/09/18 03:00:01.00)	15min	43	46	42
	(2014/09/18 03:15:01.00)	15min	42	45	41
	(2014/09/18 03:30:01.00)	15min	41	44	39
	(2014/09/18 03:45:01.00)	15min	40	44	39
	(2014/09/18 04:00:01.00)	15min	41	45	40
	(2014/09/18 04:15:01.00)	15min	42	45	41
	(2014/09/18 04:30:01.00)	15min	41	45	40
	(2014/09/18 04:45:01.00)	15min	41	44	40
	(2014/09/18 05:00:01.00)	15min	41	44	40
	(2014/09/18 05:15:01.00)	15min	41	45	39
	(2014/09/18 05:30:01.00)	15min	41	45	40
	(2014/09/18 05:45:01.00)	15min	41	62	39
	(2014/09/18 06:00:01.00)	15min	41	65	38
	(2014/09/18 06:15:01.00)	15min	41	54	37
	(2014/09/18 06:30:01.00)	15min	41	59	37
	(2014/09/18 06:45:01.00)	15min	42	63	39
	(2014/09/18 07:00:01.00)	15min	45	64	40
	(2014/09/18 07:15:01.00)	15min	46	76	39
	(2014/09/18 07:30:01.00)	15min	44	65	38
	(2014/09/18 07:45:01.00)	15min	42	63	37
	(2014/09/18 08:00:01.00)	15min	37	51	35
	(2014/09/18 08:15:01.00)	15min	40	58	35
	(2014/09/18 08:30:01.00)	15min	38	55	34
	(2014/09/18 08:45:01.00)	15min	35	57	33
	(2014/09/18 09:00:01.00)	15min	35	52	32
	(2014/09/18 09:15:01.00)	15min	34	46	31
	(2014/09/18 09:30:01.00)	15min	35	56	31
	(2014/09/18 09:45:01.00)	15min	36	55	32
	(2014/09/18 10:00:01.00)	15min	35	47	33
	(2014/09/18 10:15:01.00)	15min	37	55	33
	(2014/09/18 10:30:01.00)	15min	36	55	34
	(2014/09/18 10:45:01.00)	15min	36	52	34
	(2014/09/18 11:00:01.00)	15min	37	54	35
	(2014/09/18 11:15:01.00)	15min	37	50	35
	(2014/09/18 11:30:01.00)	15min	38	52	35

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/18 11:45:01.00)	15min	40	63	34
	(2014/09/18 12:00:01.00)	15min	39	58	34
	(2014/09/18 12:15:01.00)	15min	35	46	34
	(2014/09/18 12:30:01.00)	15min	36	49	34
	(2014/09/17 12:45:01.00)	15min	33	46	30
	(2014/09/17 13:00:01.00)	15min	33	50	30
	(2014/09/17 13:15:01.00)	15min	34	48	32
	(2014/09/17 13:30:01.00)	15min	50	76	33
	(2014/09/17 13:45:01.00)	15min	35	50	33
	(2014/09/17 14:00:01.00)	15min	39	53	34
	(2014/09/17 14:15:01.00)	15min	52	79	34
	(2014/09/17 14:30:01.00)	15min	36	61	33
	(2014/09/17 14:45:01.00)	15min	35	48	33
	(2014/09/17 15:00:01.00)	15min	35	50	32
	(2014/09/17 15:15:01.00)	15min	37	64	31
	(2014/09/17 15:30:01.00)	15min	42	60	31
	(2014/09/17 15:45:01.00)	15min	34	51	31
	(2014/09/17 16:00:01.00)	15min	41	59	32
	(2014/09/17 16:15:01.00)	15min	43	57	30
	(2014/09/17 16:30:01.00)	15min	34	47	31
	(2014/09/17 16:45:01.00)	15min	36	52	29
	(2014/09/17 17:00:01.00)	15min	33	49	28
	(2014/09/17 17:15:01.00)	15min	31	50	28
	(2014/09/17 17:30:01.00)	15min	36	62	28
	(2014/09/17 17:45:01.00)	15min	32	52	28
	(2014/09/17 18:00:01.00)	15min	38	66	28
	(2014/09/17 18:15:01.00)	15min	33	46	27
	(2014/09/17 18:30:01.00)	15min	34	48	26
	(2014/09/17 18:45:01.00)	15min	32	49	26
	(2014/09/17 19:00:01.00)	15min	36	56	29
	(2014/09/17 19:15:01.00)	15min	35	46	30
	(2014/09/17 19:30:01.00)	15min	40	68	27
	(2014/09/17 19:45:01.00)	15min	36	63	26
	(2014/09/17 20:00:01.00)	15min	26	35	25
	(2014/09/17 20:15:01.00)	15min	26	37	25
	(2014/09/17 20:30:01.00)	15min	27	34	26
	(2014/09/17 20:45:01.00)	15min	30	53	26
	(2014/09/17 21:00:01.00)	15min	27	34	25
	(2014/09/17 21:15:01.00)	15min	30	44	26
	(2014/09/17 21:30:01.00)	15min	30	35	28
	(2014/09/17 21:45:01.00)	15min	30	53	28
	(2014/09/17 22:00:01.00)	15min	31	36	29
	(2014/09/17 22:15:01.00)	15min	34	47	32
	(2014/09/17 22:30:01.00)	15min	36	39	33
	(2014/09/17 22:45:01.00)	15min	36	40	34
	(2014/09/17 23:00:01.00)	15min	37	40	35

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/17 23:15:01.00)	15min	38	47	36
	(2014/09/17 23:30:01.00)	15min	39	42	38
	(2014/09/17 23:45:01.00)	15min	39	42	37
MS10	(2014/09/03 02:00:02.00)	15min	29	50	26
	(2014/09/03 02:15:48.00)	15min	31	49	28
	(2014/09/03 02:31:24.00)	15min	30	49	28
	(2014/09/03 02:47:01.00)	15min	29	55	27
	(2014/09/03 03:02:37.00)	15min	28	49	26
	(2014/09/03 03:18:15.00)	15min	28	46	26
	(2014/09/03 03:33:50.00)	15min	29	51	26
	(2014/09/03 03:49:29.00)	15min	28	48	26
	(2014/09/03 05:00:03.00)	15min	28	47	26
	(2014/09/03 05:15:37.00)	15min	31	54	25
	(2014/09/03 05:31:08.00)	15min	44	69	26
	(2014/09/03 05:46:38.00)	15min	44	65	26
	(2014/09/03 06:02:08.00)	15min	35	55	28
	(2014/09/03 06:23:46.00)	15min	39	63	28
	(2014/09/03 06:39:27.00)	15min	44	66	29
	(2014/09/03 06:52:59.00)	15min	55	79	30
	(2014/09/02 10:00:02.00)	15min	50	87	28
	(2014/09/02 10:15:29.00)	15min	44	67	33
	(2014/09/02 10:30:55.00)	15min	38	51	33
	(2014/09/02 10:46:20.00)	15min	41	59	35
	(2014/09/02 11:01:50.00)	15min	40	53	34
	(2014/09/02 11:17:14.00)	15min	42	60	35
	(2014/09/02 11:32:48.00)	15min	35	47	31
	(2014/09/02 11:48:19.00)	15min	34	50	30
	(2014/08/27 13:30:02.00)	15min	45	59	40
	(2014/08/27 13:45:37.00)	15min	46	52	40
	(2014/08/27 14:01:06.00)	15min	53	76	42
	(2014/08/27 14:16:32.00)	15min	48	67	40
	(2014/08/27 14:32:27.00)	15min	44	59	38
	(2014/08/27 14:47:56.00)	15min	47	72	38
	(2014/08/27 15:03:25.00)	15min	49	76	38
	(2014/08/27 15:19:05.00)	15min	44	58	37
	(2014/09/01 17:00:03.00)	15min	38	57	34
	(2014/09/01 17:15:29.00)	15min	36	51	31
	(2014/09/01 17:30:56.00)	15min	35	47	30
	(2014/09/01 17:46:24.00)	15min	44	68	30
	(2014/09/01 18:01:51.00)	15min	34	46	30
	(2014/09/01 18:17:49.00)	15min	37	61	27
	(2014/09/01 18:33:40.00)	15min	42	71	28
	(2014/09/01 18:49:27.00)	15min	34	51	27
	(2015/04/08 18:50:30.00)		40	47	30
	(2015/04/08 18:50:38.00)		35	43	29
	(2015/04/08 18:50:46.00)		29	33	27

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2015/04/08 18:50:54.00)		32	39	28
	(2015/04/08 18:51:02.00)		36	44	29
	(2015/04/08 18:51:10.00)		51	62	26
	(2015/04/08 18:51:18.00)		36	43	31
	(2015/04/08 18:51:26.00)		32	37	29
	(2015/04/08 18:51:34.00)		32	37	30
	(2015/04/08 18:51:42.00)		33	42	30
	(2015/04/08 18:51:50.00)		31	33	30
	(2015/04/08 18:51:58.00)		34	41	32
	(2015/04/08 18:52:06.00)		33	36	31
	(2015/04/08 18:52:14.00)		31	33	30
	(2015/04/08 18:52:22.00)		32	35	31
	(2015/04/08 18:52:30.00)		31	33	29
	(2015/04/08 18:52:38.00)		31	35	30
	(2015/04/08 18:52:46.00)		29	32	28
	(2015/04/08 18:52:54.00)		29	32	28
	(2015/04/08 18:53:02.00)		42	48	30
	(2015/04/08 18:53:10.00)		50	58	38
	(2015/04/08 18:53:18.00)		31	43	27
	(2015/04/08 18:53:26.00)		27	29	25
	(2015/04/08 18:53:34.00)		29	36	26
	(2015/04/08 18:53:42.00)		28	32	26
	(2015/04/08 18:53:50.00)		34	43	27
	(2015/04/08 18:53:58.00)		31	37	27
	(2015/04/08 18:54:06.00)		31	38	26
	(2015/04/08 18:54:14.00)		29	35	25
	(2015/04/08 18:54:22.00)		32	37	27
	(2015/04/08 18:54:31.00)		32	39	30
	(2015/04/08 18:54:39.00)		39	43	36
	(2015/04/08 18:54:47.00)		48	54	44
	(2015/04/08 18:54:55.00)		45	48	44
	(2015/04/08 18:55:03.00)		48	55	43
	(2015/04/08 18:55:11.00)		41	44	39
	(2015/04/08 18:55:19.00)		50	60	39
	(2015/04/08 18:55:27.00)		52	59	39
	(2015/04/08 18:55:35.00)		44	52	38
	(2015/04/08 18:55:43.00)		41	46	38
	(2015/04/08 18:55:51.00)		35	40	32
	(2015/04/08 18:55:59.00)		36	46	31
	(2015/04/08 18:56:07.00)		37	45	30
	(2015/04/08 18:56:15.00)		32	38	28
	(2015/04/08 18:56:23.00)		34	40	29
	(2015/04/08 18:56:31.00)		32	35	29
	(2015/04/08 18:56:39.00)		33	39	29
	(2015/04/08 18:56:47.00)		35	43	29
	(2015/04/08 18:56:55.00)		43	49	32

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2015/04/08 18:57:03.00)		38	44	35
	(2015/04/08 18:57:11.00)		38	41	34
	(2015/04/08 18:57:19.00)		38	41	36
	(2015/04/08 18:57:27.00)		37	39	35
	(2015/04/08 18:57:35.00)		38	42	36
	(2015/04/08 18:57:43.00)		38	41	36
	(2015/04/08 18:57:51.00)		36	41	34
	(2015/04/08 18:57:59.00)		37	42	33
	(2015/04/08 18:58:07.00)		33	35	31
	(2015/04/08 18:58:15.00)		34	41	31
	(2015/04/08 18:58:23.00)		34	40	29
	(2015/04/08 18:58:31.00)		33	42	29
	(2015/04/08 18:58:39.00)		35	43	29
	(2015/04/08 18:58:47.00)		34	43	28
	(2015/04/08 18:58:55.00)		36	46	30
	(2015/04/08 18:59:03.00)		40	46	36
	(2015/04/08 18:59:11.00)		34	44	30
	(2015/04/08 18:59:19.00)		27	31	27
	(2015/04/08 18:59:27.00)		29	34	27
	(2015/04/08 18:59:35.00)		28	31	26
	(2015/04/08 18:59:43.00)		37	43	27
	(2015/04/08 18:59:51.00)		32	40	27
	(2015/04/08 18:59:59.00)		32	37	28
	(2015/04/08 19:00:07.00)		29	35	27
	(2015/04/08 19:00:15.00)		36	43	29
	(2015/04/08 19:00:23.00)		33	40	27
	(2015/04/08 19:00:31.00)		33	44	27
	(2015/04/08 19:00:39.00)		33	42	29
	(2015/04/08 19:00:47.00)		38	46	27
	(2015/04/08 19:00:55.00)		38	45	29
	(2015/04/08 19:01:03.00)		37	44	27
	(2015/04/08 19:01:11.00)		32	42	26
	(2015/04/08 19:01:19.00)		42	53	27
	(2015/04/08 19:01:27.00)		33	41	27
	(2015/04/08 19:01:35.00)		28	34	26
	(2015/04/08 19:01:43.00)		31	35	29
	(2015/04/08 19:01:51.00)		40	48	33
	(2015/04/08 19:01:59.00)		34	37	32
	(2015/04/08 19:02:07.00)		39	47	34
	(2015/04/08 19:02:15.00)		38	45	36
	(2015/04/08 19:02:23.00)		39	41	37
	(2015/04/08 19:02:31.00)		38	40	37
	(2015/04/08 19:02:39.00)		40	44	38
	(2015/04/08 19:02:47.00)		39	41	37
	(2015/04/08 19:02:55.00)		39	44	38
	(2015/04/08 19:03:03.00)		42	46	40

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2015/04/08 19:03:11.00)		40	44	39
	(2015/04/08 19:03:19.00)		40	47	38
	(2015/04/08 19:03:27.00)		41	50	35
	(2015/04/08 19:03:35.00)		37	47	34
	(2015/04/08 19:03:43.00)		39	45	34
	(2015/04/08 19:03:51.00)		39	47	32
	(2015/04/08 19:03:59.00)		32	36	30
	(2015/04/08 19:04:07.00)		31	36	29
	(2015/04/08 19:04:15.00)		30	35	28
	(2015/04/08 19:04:23.00)		34	43	29
	(2015/04/08 19:04:31.00)		28	33	26
	(2015/04/08 19:04:39.00)		30	35	27
	(2015/04/08 19:04:47.00)		28	33	26
	(2015/04/08 19:04:55.00)		28	33	26
	(2015/04/08 19:05:03.00)		30	39	26
	(2015/04/08 19:05:11.00)		28	31	27
	(2015/04/08 19:05:19.00)		28	32	26
	(2015/04/08 19:05:27.00)		29	35	27
	(2015/04/08 19:05:35.00)		31	40	27
	(2015/04/08 19:05:43.00)		34	40	27
	(2015/04/08 19:05:51.00)		35	44	28
	(2015/04/08 19:05:59.00)		35	45	30
	(2015/04/08 19:06:07.00)		35	43	30
	(2015/04/08 19:06:15.00)		30	34	27
	(2015/04/08 19:06:23.00)		30	34	27
	(2015/04/08 19:06:31.00)		31	33	29
	(2015/04/08 19:06:39.00)		35	46	31
	(2015/04/08 19:06:47.00)		35	45	31
	(2015/04/08 19:06:55.00)		32	36	30
	(2015/04/08 19:07:03.00)		32	34	30
	(2015/04/08 19:07:11.00)		37	44	28
	(2015/04/08 19:07:19.00)		35	43	28
	(2015/04/08 19:07:27.00)		33	42	27
	(2015/04/08 19:07:35.00)		32	39	29
	(2015/04/08 19:07:43.00)		38	47	28
	(2015/04/08 19:07:51.00)		28	34	26
	(2015/04/08 19:07:59.00)		31	42	26
	(2015/04/08 19:08:07.00)		29	37	27
	(2015/04/08 19:08:15.00)		28	30	26
	(2015/04/08 19:08:23.00)		40	48	33
	(2015/04/08 19:08:31.00)		32	36	28
	(2015/04/08 19:08:39.00)		31	36	29
	(2015/04/08 19:08:47.00)		31	34	30
	(2015/04/08 19:08:55.00)		39	44	31
	(2015/04/08 19:09:03.00)		33	36	31
	(2015/04/08 19:09:11.00)		32	33	31

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2015/04/08 19:09:19.00)		32	37	30
	(2015/04/08 19:09:27.00)		32	33	31
	(2015/04/08 19:09:35.00)		32	35	31
	(2015/04/08 19:09:43.00)		32	33	31
	(2015/04/08 19:09:51.00)		31	33	30
	(2015/04/08 19:09:59.00)		30	33	29
	(2015/04/08 19:10:07.00)		30	35	29
	(2015/04/08 19:10:15.00)		28	31	28
	(2015/04/08 19:10:23.00)		30	36	29
	(2015/04/08 19:10:31.00)		29	31	28
	(2015/04/08 19:10:39.00)		29	33	28
	(2015/04/08 19:10:47.00)		30	34	29
	(2015/04/08 19:10:55.00)		28	31	27
	(2015/04/08 19:11:04.00)		29	32	28
	(2015/04/08 19:11:12.00)		31	36	27
	(2015/04/08 19:11:20.00)		28	36	27
	(2015/04/08 19:11:28.00)		37	46	27
	(2015/04/08 19:11:36.00)		43	51	31
	(2015/04/08 19:11:44.00)		34	45	29
	(2015/04/08 19:11:52.00)		29	32	28
	(2015/04/08 19:12:00.00)		28	31	27
	(2015/04/08 19:12:08.00)		28	29	27
	(2015/04/08 19:12:16.00)		34	45	27
	(2015/04/08 19:12:24.00)		34	45	28
	(2015/04/08 19:12:32.00)		30	36	29
	(2015/04/08 19:12:40.00)		40	52	29
	(2015/04/08 19:12:48.00)		33	37	31
	(2015/04/08 19:12:56.00)		37	41	35
	(2015/04/08 19:13:04.00)		38	46	35
	(2015/04/08 19:13:12.00)		36	39	34
	(2015/04/08 19:13:20.00)		36	38	34
	(2015/04/08 19:13:28.00)		35	37	34
	(2015/04/08 19:13:36.00)		34	37	33
	(2015/04/08 19:13:44.00)		36	40	33
	(2015/04/08 19:13:52.00)		33	35	32
	(2015/04/08 19:14:00.00)		32	35	31
	(2015/04/08 19:14:09.00)		31	33	30
	(2015/04/08 19:14:17.00)		32	36	29
	(2015/04/08 19:14:25.00)		34	43	29
	(2015/04/08 19:14:33.00)		29	30	28
	(2015/04/08 19:14:41.00)		32	40	29
	(2015/04/08 19:14:49.00)		30	37	28
	(2015/04/08 19:14:57.00)		30	32	29
	(2015/04/08 19:15:05.00)		31	39	28
	(2015/04/08 19:15:13.00)		39	48	29
	(2015/04/08 19:15:21.00)		31	38	28

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2015/04/08 19:15:29.00)		29	34	28
	(2015/04/08 19:15:37.00)		39	45	31
	(2015/04/08 19:15:45.00)		41	47	34
MS26	(2014/10/01 00:00:00.00)	15min	32	53	26
	(2014/10/01 00:15:00.00)	15min	30	46	25
	(2014/10/01 00:30:00.00)	15min	27	34	25
	(2014/10/01 00:45:00.00)	15min	29	41	26
	(2014/10/01 01:00:00.00)	15min	28	40	26
	(2014/10/01 01:15:00.00)	15min	28	37	25
	(2014/10/01 01:30:00.00)	15min	30	48	26
	(2014/10/01 01:45:00.00)	15min	27	37	25
	(2014/10/01 02:00:00.00)	15min	27	33	25
	(2014/10/01 02:15:00.00)	15min	27	32	25
	(2014/10/01 02:30:00.00)	15min	27	35	26
	(2014/10/01 02:45:00.00)	15min	28	32	27
	(2014/10/01 03:00:00.00)	15min	30	41	27
	(2014/10/01 03:15:00.00)	15min	30	43	27
	(2014/10/01 03:30:00.00)	15min	28	36	26
	(2014/10/01 03:45:00.00)	15min	30	44	26
	(2014/10/01 04:00:00.00)	15min	28	39	26
	(2014/10/01 04:15:00.00)	15min	28	42	26
	(2014/10/01 04:30:00.00)	15min	31	45	27
	(2014/10/01 04:45:00.00)	15min	30	42	27
	(2014/10/01 05:00:00.00)	15min	29	43	26
	(2014/10/01 05:15:00.00)	15min	31	43	28
	(2014/10/01 05:30:00.00)	15min	30	46	27
	(2014/10/01 05:45:00.00)	15min	32	47	29
	(2014/10/01 06:00:00.00)	15min	36	44	33
	(2014/10/01 06:15:00.00)	15min	44	64	34
	(2014/10/01 06:30:00.00)	15min	44	67	37
	(2014/10/01 06:45:00.00)	15min	43	62	38
	(2014/10/01 07:00:00.00)	15min	42	58	39
	(2014/10/01 07:15:00.00)	15min	43	54	40
	(2014/10/01 07:30:00.00)	15min	44	58	41
	(2014/10/01 07:45:00.00)	15min	46	64	41
	(2014/10/01 08:00:00.00)	15min	45	65	40
	(2014/10/01 08:15:00.00)	15min	43	57	39
	(2014/10/01 08:30:00.00)	15min	44	64	38
	(2014/10/01 08:45:00.00)	15min	47	64	39
	(2014/10/01 09:00:00.00)	15min	43	68	38
	(2014/10/01 09:15:00.00)	15min	43	60	38
	(2014/10/01 09:30:00.00)	15min	43	58	38
	(2014/10/01 09:45:00.00)	15min	44	60	38
	(2014/10/01 10:00:00.00)	15min	44	63	35
	(2014/10/01 10:15:00.00)	15min	50	79	36
	(2014/10/01 10:30:00.00)	15min	47	73	37

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/30 10:45:00.00)	15min	39	49	35
	(2014/09/30 11:00:00.00)	15min	39	51	36
	(2014/09/30 11:15:00.00)	15min	39	57	35
	(2014/09/30 11:30:00.00)	15min	41	62	35
	(2014/09/30 11:45:00.00)	15min	39	57	35
	(2014/09/30 12:00:00.00)	15min	40	62	35
	(2014/09/30 12:15:00.00)	15min	40	56	36
	(2014/09/30 12:30:00.00)	15min	40	58	34
	(2014/09/30 12:45:00.00)	15min	41	63	36
	(2014/09/30 13:00:00.00)	15min	39	63	34
	(2014/09/30 13:15:00.00)	15min	37	52	33
	(2014/09/30 13:30:00.00)	15min	39	59	34
	(2014/09/30 13:45:00.00)	15min	39	55	34
	(2014/09/30 14:00:00.00)	15min	40	57	36
	(2014/09/30 14:15:00.00)	15min	41	52	37
	(2014/09/30 14:30:00.00)	15min	41	50	38
	(2014/09/30 14:45:00.00)	15min	40	54	36
	(2014/09/30 15:00:00.00)	15min	40	54	36
	(2014/09/30 15:15:00.00)	15min	40	55	36
	(2014/09/30 15:30:00.00)	15min	42	55	36
	(2014/09/30 15:45:00.00)	15min	45	64	38
	(2014/09/30 16:00:00.00)	15min	41	51	37
	(2014/09/30 16:15:00.00)	15min	39	49	36
	(2014/09/30 16:30:00.00)	15min	42	59	38
	(2014/09/30 16:45:00.00)	15min	41	56	36
	(2014/09/30 17:00:00.00)	15min	41	50	38
	(2014/09/30 17:15:00.00)	15min	40	55	36
	(2014/09/30 17:30:00.00)	15min	41	58	36
	(2014/09/30 17:45:00.00)	15min	41	56	35
	(2014/09/30 18:00:00.00)	15min	41	60	37
	(2014/09/30 18:15:00.00)	15min	42	62	35
	(2014/09/30 18:30:00.00)	15min	44	64	35
	(2014/09/30 18:45:00.00)	15min	43	66	35
	(2014/09/30 19:00:00.00)	15min	38	48	33
	(2014/09/30 19:15:00.00)	15min	40	61	33
	(2014/09/30 19:30:00.00)	15min	37	47	33
	(2014/09/30 19:45:00.00)	15min	39	56	31
	(2014/09/30 20:00:00.00)	15min	34	44	31
	(2014/09/30 20:15:00.00)	15min	36	52	31
	(2014/09/30 20:30:00.00)	15min	35	50	30
	(2014/09/30 20:45:00.00)	15min	34	51	29
	(2014/09/30 21:00:00.00)	15min	34	44	30
	(2014/09/30 21:15:00.00)	15min	34	42	30
	(2014/09/30 21:30:00.00)	15min	32	44	29
	(2014/09/30 21:45:00.00)	15min	34	45	30
	(2014/09/30 22:00:00.00)	15min	33	47	29

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/30 22:15:00.00)	15min	32	46	28
	(2014/09/30 22:30:00.00)	15min	30	40	28
	(2014/09/30 22:45:00.00)	15min	35	51	28
	(2014/09/30 23:00:00.00)	15min	30	40	28
	(2014/09/30 23:15:00.00)	15min	30	42	27
	(2014/09/30 23:30:00.00)	15min	29	41	26
	(2014/09/30 23:45:00.00)	15min	29	35	26
	2019/07/02 13:15:00	15min	39	32	58
	2019/07/02 13:30:00	15min	38	33	56
	2019/07/02 13:45:00	15min	37	32	50
	2019/07/02 14:00:00	15min	38	32	61
	2019/07/02 14:15:00	15min	37	32	47
	2019/07/02 14:30:00	15min	37	32	52
	2019/07/02 14:45:00	15min	37	32	51
	2019/07/03 20:15:00	15min	40	68	31
	2019/07/03 20:30:00	15min	43	64	30
	2019/07/03 20:45:00	15min	41	57	30
	2019/07/03 21:00:00	15min	38	54	30
	2019/07/03 21:15:00	15min	42	61	30
	2019/07/03 21:30:00	15min	34	52	29
	2019/07/03 21:45:00	15min	37	64	29
	2019/07/03 22:00:00	15min	39	56	28
	2019/07/03 22:15:00	15min	30	48	28
	2019/07/03 22:30:00	15min	35	51	28
	2019/07/03 22:45:00	15min	35	50	28
	2019/07/03 23:00:00	15min	31	45	29
	2019/07/03 23:15:00	15min	32	47	29
	2019/07/03 23:30:00	15min	32	40	30
	2019/07/03 23:45:00	15min	35	46	32
	2019/07/04 00:00:00	15min	35	60	33
	2019/07/04 00:15:00	15min	34	44	33
	2019/07/04 00:30:00	15min	34	44	33
	2019/07/04 00:45:00	15min	35	58	33
	2019/07/04 01:00:00	15min	34	38	33
	2019/07/04 01:15:00	15min	34	40	33
	2019/07/04 01:30:00	15min	35	40	33
	2019/07/04 01:45:00	15min	35	41	33
	2019/07/04 02:00:00	15min	35	39	34
	2019/07/04 02:15:00	15min	34	39	33
	2019/07/04 02:30:00	15min	36	47	34
	2019/07/04 02:45:00	15min	36	41	34
	2019/07/04 03:00:00	15min	36	48	34
	2019/07/04 03:15:00	15min	37	59	35
	2019/07/04 03:30:00	15min	38	50	35
	2019/07/04 03:45:00	15min	42	56	36
	2019/07/04 04:00:00	15min	49	67	37

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	2019/07/04 04:15:00	15min	49	67	38
	2019/07/04 04:30:00	15min	46	64	39
	2019/07/04 04:45:00	15min	47	67	38
	2019/07/04 05:00:00	15min	46	66	39
	2019/07/04 05:15:00	15min	45	65	39
	2019/07/04 05:30:00	15min	45	64	38
	2019/07/04 05:45:00	15min	48	61	39
	2019/07/04 06:00:00	15min	50	65	40
	2019/07/04 06:15:00	15min	41	57	35
	2019/07/04 06:30:00	15min	45	64	34
	2019/07/04 06:45:00	15min	41	57	32
	2019/07/04 07:00:00	15min	40	63	30
	2019/07/04 07:15:00	15min	38	59	29
	2019/07/04 07:30:00	15min	38	60	29
	2019/07/04 07:45:00	15min	42	65	31
	2019/06/24 10:01:00	1hour	40	63	35
MS27	(2014/10/01 00:00:00.00)	15min	33	44	31
	(2014/10/01 00:15:00.00)	15min	33	41	31
	(2014/10/01 00:30:00.00)	15min	32	40	31
	(2014/10/01 00:45:00.00)	15min	33	42	31
	(2014/10/01 01:00:00.00)	15min	32	36	31
	(2014/10/01 01:15:00.00)	15min	32	37	31
	(2014/10/01 01:30:00.00)	15min	33	39	31
	(2014/10/01 01:45:00.00)	15min	32	36	32
	(2014/10/01 02:00:00.00)	15min	32	36	31
	(2014/10/01 02:15:00.00)	15min	32	38	31
	(2014/10/01 02:30:00.00)	15min	32	38	31
	(2014/10/01 02:45:00.00)	15min	32	37	31
	(2014/10/01 03:00:00.00)	15min	33	40	32
	(2014/10/01 03:15:00.00)	15min	33	44	32
	(2014/10/01 03:30:00.00)	15min	32	36	32
	(2014/10/01 03:45:00.00)	15min	33	42	32
	(2014/10/01 04:00:00.00)	15min	32	42	31
	(2014/10/01 04:15:00.00)	15min	32	40	31
	(2014/10/01 04:30:00.00)	15min	33	38	32
	(2014/10/01 04:45:00.00)	15min	33	42	32
	(2014/10/01 05:00:00.00)	15min	33	42	32
	(2014/10/01 05:15:00.00)	15min	33	42	32
	(2014/10/01 05:30:00.00)	15min	34	52	32
	(2014/10/01 05:45:00.00)	15min	34	43	32
	(2014/10/01 06:00:00.00)	15min	36	59	32
	(2014/10/01 06:15:00.00)	15min	36	46	33
	(2014/10/01 06:30:00.00)	15min	39	51	35
	(2014/10/01 06:45:00.00)	15min	43	68	38
	(2014/10/01 07:00:00.00)	15min	42	64	38
	(2014/10/01 07:15:00.00)	15min	42	58	39

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/10/01 07:30:00.00)	15min	47	77	40
	(2014/10/01 07:45:00.00)	15min	45	61	41
	(2014/10/01 08:00:00.00)	15min	49	70	46
	(2014/10/01 08:15:00.00)	15min	49	71	46
	(2014/10/01 08:30:00.00)	15min	42	52	36
	(2014/10/01 08:45:00.00)	15min	40	55	37
	(2014/10/01 09:00:00.00)	15min	43	62	37
	(2014/10/01 09:15:00.00)	15min	40	52	37
	(2014/10/01 09:30:00.00)	15min	43	68	38
	(2014/10/01 09:45:00.00)	15min	41	52	36
	(2014/10/01 10:00:00.00)	15min	38	52	33
	(2014/10/01 10:15:00.00)	15min	42	65	34
	(2014/10/01 10:30:00.00)	15min	40	54	36
	(2014/10/01 10:45:00.00)	15min	40	58	38
	(2014/09/30 11:00:00.00)	15min	49	78	37
	(2014/09/30 11:15:00.00)	15min	40	52	37
	(2014/09/30 11:30:00.00)	15min	41	51	37
	(2014/09/30 11:45:00.00)	15min	39	49	35
	(2014/09/30 12:00:00.00)	15min	39	48	37
	(2014/09/30 12:15:00.00)	15min	41	46	36
	(2014/09/30 12:30:00.00)	15min	37	52	35
	(2014/09/30 12:45:00.00)	15min	38	57	35
	(2014/09/30 13:00:00.00)	15min	39	59	34
	(2014/09/30 13:15:00.00)	15min	40	71	32
	(2014/09/30 13:30:00.00)	15min	36	47	33
	(2014/09/30 13:45:00.00)	15min	38	54	33
	(2014/09/30 14:00:00.00)	15min	42	58	38
	(2014/09/30 14:15:00.00)	15min	42	54	38
	(2014/09/30 14:30:00.00)	15min	43	55	40
	(2014/09/30 14:45:00.00)	15min	42	54	38
	(2014/09/30 15:00:00.00)	15min	42	53	38
	(2014/09/30 15:15:00.00)	15min	42	56	38
	(2014/09/30 15:30:00.00)	15min	42	54	38
	(2014/09/30 15:45:00.00)	15min	41	57	38
	(2014/09/30 16:00:00.00)	15min	43	52	39
	(2014/09/30 16:15:00.00)	15min	41	52	36
	(2014/09/30 16:30:00.00)	15min	44	60	41
	(2014/09/30 16:45:00.00)	15min	42	52	38
	(2014/09/30 17:00:00.00)	15min	42	57	39
	(2014/09/30 17:15:00.00)	15min	41	52	37
	(2014/09/30 17:30:00.00)	15min	41	56	36
	(2014/09/30 17:45:00.00)	15min	42	59	35
	(2014/09/30 18:00:00.00)	15min	44	73	39
	(2014/09/30 18:15:00.00)	15min	43	57	35
	(2014/09/30 18:30:00.00)	15min	40	51	34
	(2014/09/30 18:45:00.00)	15min	41	59	35

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/30 19:00:00.00)	15min	40	57	33
	(2014/09/30 19:15:00.00)	15min	42	60	34
	(2014/09/30 19:30:00.00)	15min	39	50	34
	(2014/09/30 19:45:00.00)	15min	40	55	33
	(2014/09/30 20:00:00.00)	15min	36	50	33
	(2014/09/30 20:15:00.00)	15min	38	51	34
	(2014/09/30 20:30:00.00)	15min	37	51	33
	(2014/09/30 20:45:00.00)	15min	36	48	32
	(2014/09/30 21:00:00.00)	15min	35	48	32
	(2014/09/30 21:15:00.00)	15min	35	45	32
	(2014/09/30 21:30:00.00)	15min	34	45	32
	(2014/09/30 21:45:00.00)	15min	35	47	32
	(2014/09/30 22:00:00.00)	15min	35	47	32
	(2014/09/30 22:15:00.00)	15min	34	55	32
	(2014/09/30 22:30:00.00)	15min	33	41	32
	(2014/09/30 22:45:00.00)	15min	36	49	32
	(2014/09/30 23:00:00.00)	15min	33	45	32
	(2014/09/30 23:15:00.00)	15min	34	43	32
	(2014/09/30 23:30:00.00)	15min	33	39	32
	(2014/09/30 23:45:00.00)	15min	33	37	32
	(2016/01/08 06:01:56.00)	15min	67	100	39
	(2016/01/08 06:15:00.00)	13min	41	64	34
	(2016/01/08 06:30:00.00)	15min	40	51	35
	(2016/01/08 06:45:00.00)	15min	43	51	39
	(2016/01/08 07:00:00.00)	15min	44	54	41
	(2016/01/08 07:15:00.00)	15min	46	56	43
	(2016/01/08 07:30:00.00)	15min	46	55	44
	(2016/01/08 07:45:00.00)	15min	46	54	44
	(2016/01/08 08:00:00.00)	15min	59	86	46
	(2016/01/08 08:15:00.00)	15min	47	56	43
	(2016/01/08 08:30:00.00)	15min	44	60	41
	(2016/01/08 08:45:00.00)	15min	44	55	40
	(2016/01/08 09:00:00.00)	15min	43	63	40
	(2016/01/08 09:15:00.00)	15min	42	55	39
	(2016/01/08 09:30:00.00)	15min	41	50	38
	(2016/01/08 09:45:00.00)	15min	41	59	38
	(2016/01/08 10:00:00.00)	15min	43	66	37
	(2016/01/08 10:15:00.00)	15min	39	56	36
	(2016/01/08 10:30:00.00)	15min	42	64	37
	(2016/01/08 10:45:00.00)	15min	43	58	39
	(2016/01/08 11:00:00.00)	15min	43	59	40
	(2016/01/08 11:15:00.00)	15min	44	67	39
	(2016/01/08 11:30:00.00)	15min	44	60	40
	(2016/01/08 11:45:00.00)	15min	45	65	39
	(2016/01/18 15:30:00.00)	15min	66	96	37
	(2016/01/18 15:45:00.00)	15min	80	119	44

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2016/01/18 16:00:00.00)	15min	51	61	47
	(2016/01/18 16:15:00.00)	15min	51	61	46
	(2016/01/18 16:30:00.00)	15min	54	65	52
	(2016/01/18 16:45:00.00)	15min	52	63	49
	(2016/01/18 17:00:00.00)	15min	52	58	48
	(2016/01/18 17:15:00.00)	15min	48	56	45
	(2016/01/18 17:30:00.00)	15min	48	60	43
	(2016/01/18 17:45:00.00)	15min	47	59	43
	(2016/01/18 18:00:00.00)	15min	48	62	43
	(2016/01/18 18:15:00.00)	15min	46	58	41
	(2016/01/18 18:30:00.00)	15min	47	56	42
	(2016/01/18 18:45:00.00)	15min	47	59	42
	(2016/01/18 19:00:00.00)	15min	43	55	39
	(2016/01/18 19:15:00.00)	15min	44	59	40
	(2016/01/18 19:30:00.00)	15min	43	54	40
	(2016/01/18 19:45:00.00)	15min	44	56	40
	(2016/01/18 20:00:00.00)	15min	42	52	39
	(2016/01/18 20:15:00.00)	15min	43	58	40
	(2016/01/18 20:30:00.00)	15min	41	49	40
	(2016/01/18 20:45:00.00)	15min	43	54	40
	(2016/01/18 21:00:00.00)	15min	45	62	40
	(2016/01/18 21:15:00.00)	15min	49	79	40
	(2016/01/18 21:30:00.00)	15min	45	59	41
	(2016/01/18 21:45:00.00)	15min	44	57	41
	(2016/01/18 22:00:00.00)	15min	43	58	40
	(2016/01/18 22:15:00.00)	15min	43	56	40
	(2016/01/18 22:30:00.00)	15min	41	48	39
	(2016/01/18 22:45:00.00)	15min	41	47	40
	(2016/01/18 23:00:00.00)	15min	42	52	41
	(2016/01/18 23:15:00.00)	15min	42	48	40
	(2016/01/18 23:30:00.00)	15min	42	46	40
	(2016/01/18 23:45:00.00)	15min	43	61	41
	(2016/01/19 00:00:00.00)	15min	43	58	41
	(2016/01/19 00:15:00.00)	15min	41	49	39
	(2016/01/19 00:30:00.00)	15min	41	46	40
	(2016/01/19 00:45:00.00)	15min	41	45	40
	(2016/01/19 01:00:00.00)	15min	40	56	39
	(2016/01/19 01:15:00.00)	15min	40	55	39
	(2016/01/19 01:30:00.00)	15min	41	45	39
	(2016/01/19 01:45:00.00)	15min	40	47	39
	(2016/01/19 02:00:00.00)	15min	41	48	39
	(2016/01/19 02:15:00.00)	15min	41	49	39
	(2016/01/19 02:30:00.00)	15min	42	52	40
	(2016/01/19 02:45:00.00)	15min	44	56	41
	(2016/01/19 03:00:00.00)	15min	42	53	40
	(2016/01/19 03:15:00.00)	15min	42	51	41

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2016/01/19 03:30:00.00)	15min	42	50	41
	(2016/01/19 03:45:00.00)	15min	43	49	41
	(2016/01/19 04:00:00.00)	15min	44	50	42
	(2016/01/19 04:15:00.00)	15min	44	52	42
	(2016/01/19 04:30:00.00)	15min	44	51	42
	(2016/01/19 04:45:00.00)	15min	41	46	39
	(2016/01/19 05:00:00.00)	15min	41	49	40
	(2016/01/19 05:15:00.00)	15min	43	49	41
	(2016/01/19 05:30:00.00)	15min	43	51	41
	(2016/01/19 05:45:00.00)	15min	44	54	40
	(2016/01/06 10:45:03.00)	15min	42	60	35
	(2016/01/06 11:00:00.00)	15min	40	57	32
	(2016/01/06 11:00:00.00)	15min	40	57	32
	(2016/01/06 11:30:00.00)	15min	41	54	34
	(2016/01/06 11:45:00.00)	15min	40	59	34
	(2016/01/06 12:00:00.00)	15min	47	66	32
	(2016/01/06 12:15:00.00)	15min	36	57	32
	(2016/01/06 12:30:00.00)	15min	37	59	32
	(2016/01/06 14:00:10.00)	15min	38	55	36
	(2016/01/06 14:15:00.00)	15min	39	57	35
	(2016/01/06 14:30:00.00)	15min	46	65	36
	(2016/01/06 14:45:00.00)	15min	41	59	33
	(2016/01/06 15:00:00.00)	15min	36	54	32
	(2016/01/06 15:15:00.00)	15min	34	48	32
	(2016/01/06 15:30:00.00)	15min	38	48	35
	(2016/01/06 15:45:00.00)	15min	42	51	37
	(2016/01/06 16:17:00.00)	13min	46	53	42
	(2016/01/06 16:30:00.00)	15min	49	59	46
	(2016/01/06 16:45:00.00)	15min	46	59	42
	2019/07/02 15:30:00	15min	40	37	53
	2019/07/02 15:45:00	15min	41	38	53
	2019/07/02 16:00:00	15min	41	38	55
	2019/07/02 16:15:00	15min	41	39	59
	2019/07/02 16:30:00	15min	42	40	54
	2019/07/02 16:45:00	15min	41	38	55
	2019/07/02 17:00:00	15min	42	39	53
	2019/07/02 17:15:00	15min	39	36	49
	2019/07/02 21:15:00	15min	40	64	34
	2019/07/02 21:30:00	15min	38	48	35
	2019/07/02 21:45:00	15min	37	49	34
	2019/07/02 22:00:00	15min	37	48	33
	2019/07/02 22:15:00	15min	35	43	33
	2019/07/02 22:30:00	15min	37	50	32
	2019/07/02 22:45:00	15min	35	47	32
	2019/07/02 23:00:00	15min	37	53	34
	2019/07/02 23:15:00	15min	37	46	34

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	2019/07/02 23:30:00	15min	37	44	36
	2019/07/02 23:45:00	15min	38	49	36
	2019/07/03 00:00:00	15min	38	49	36
	2019/07/03 00:15:00	15min	40	50	37
	2019/07/03 00:30:00	15min	39	46	38
	2019/07/03 00:45:00	15min	39	50	36
	2019/07/03 01:00:00	15min	40	51	38
	2019/07/03 01:15:00	15min	40	50	39
	2019/07/03 01:30:00	15min	40	48	39
	2019/07/03 01:45:00	15min	40	46	38
	2019/07/03 02:00:00	15min	42	53	38
	2019/07/03 02:15:00	15min	43	53	40
	2019/07/03 02:30:00	15min	41	47	38
	2019/07/03 02:45:00	15min	40	48	37
	2019/07/03 03:00:00	15min	41	47	39
	2019/07/03 03:15:00	15min	39	45	37
	2019/07/03 03:30:00	15min	41	48	39
	2019/07/03 03:45:00	15min	43	57	39
	2019/07/03 04:00:00	15min	44	60	41
	2019/07/03 04:15:00	15min	45	56	40
	2019/07/03 04:30:00	15min	43	61	38
	2019/07/03 04:45:00	15min	43	56	40
	2019/07/03 05:00:00	15min	42	54	39
	2019/07/03 05:15:00	15min	44	57	41
	2019/07/03 05:30:00	15min	45	61	42
	2019/07/03 05:45:00	15min	42	52	40
	2019/07/03 06:00:00	15min	43	62	40
	2019/07/03 06:15:00	15min	42	61	39
	2019/07/03 06:30:00	15min	41	60	39
	2019/07/03 06:45:00	15min	41	58	38
	2019/07/03 07:00:00	15min	40	57	38
	2019/07/03 07:15:00	15min	41	54	38
	2019/07/03 07:30:00	15min	41	53	37
	2019/07/03 07:45:00	15min	39	59	36
	2019/07/03 08:00:00	15min	40	53	37
	2019/07/03 08:15:00	15min	40	50	38
	2019/07/03 08:30:00	15min	41	53	37
	2019/07/03 08:45:00	15min	40	57	37
	2019/07/03 09:00:00	15min	40	53	36
	2019/07/03 09:15:00	15min	41	57	37
	2019/07/03 09:30:00	15min	41	62	37
	2019/07/03 09:45:00	15min	42	58	35
	2019/07/03 10:00:00	15min	39	55	35
	2019/07/03 10:15:00	15min	39	57	35
	2019/07/03 10:30:00	15min	41	58	35
	2019/07/03 10:45:00	15min	41	54	37

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	2019/07/03 11:00:00	15min	40	49	37
	2019/07/03 11:15:00	15min	42	58	37
	2019/07/03 11:30:00	15min	41	58	37
	2019/07/03 11:45:00	15min	40	59	36
	2019/07/03 12:00:00	15min	41	49	37
	2019/06/24 12:32:00	1hour	41	67	36
MS28	(2014/10/09 23:59:59.00)	15min	43	58	40
	(2014/10/10 00:15:00.00)	15min	41	62	39
	(2014/10/10 00:30:00.00)	15min	41	55	39
	(2014/10/10 00:44:59.00)	15min	40	47	39
	(2014/10/10 01:00:00.00)	15min	40	56	39
	(2014/10/10 01:14:59.00)	15min	49	71	40
	(2014/10/10 01:30:00.00)	15min	42	56	39
	(2014/10/10 01:45:00.00)	15min	41	56	40
	(2014/10/10 02:00:00.00)	15min	43	62	40
	(2014/10/10 02:15:00.00)	15min	42	58	40
	(2014/10/10 02:30:00.00)	15min	42	57	39
	(2014/10/10 02:45:00.00)	15min	43	59	39
	(2014/10/10 03:00:00.00)	15min	39	52	38
	(2014/10/10 03:15:00.00)	15min	41	56	37
	(2014/10/10 03:30:00.00)	15min	39	55	37
	(2014/10/10 03:44:59.00)	15min	41	57	37
	(2014/10/01 05:00:01.00)	15min	42	57	38
	(2014/10/01 05:15:01.00)	15min	42	68	39
	(2014/10/01 05:30:01.00)	15min	44	63	39
	(2014/10/01 05:46:15.00)	14min	64	97	39
	(2014/10/01 06:00:01.00)	15min	60	97	40
	(2014/10/01 08:30:01.00)	15min	51	67	44
	(2014/10/01 08:45:01.00)	15min	52	71	45
	(2014/10/01 09:00:01.00)	15min	52	75	46
	(2014/10/01 09:15:01.00)	15min	64	81	45
	(2014/10/01 09:30:01.00)	15min	54	81	42
	(2014/10/01 09:45:01.00)	15min	49	64	41
	(2014/09/30 11:30:00.00)	15min	46	57	39
	(2014/09/30 11:45:00.00)	15min	44	58	38
	(2014/09/30 12:00:00.00)	15min	45	60	39
	(2014/09/30 13:45:00.00)	15min	45	60	37
	(2014/09/30 14:00:00.00)	15min	46	58	40
	(2014/09/30 14:15:00.00)	15min	46	59	40
	(2014/09/30 15:50:28.00)	9min	44	55	40
	(2014/09/30 16:00:00.00)	15min	49	63	43
	(2014/09/30 16:15:00.00)	15min	46	62	39
	(2014/09/30 16:30:00.00)	15min	50	61	47
	(2014/09/30 16:44:59.00)	15min	48	59	43
	(2014/09/30 17:00:00.00)	15min	48	59	45
	(2014/09/30 18:30:00.00)	15min	45	57	37

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	(2014/09/30 18:45:00.00)	15min	45	58	39
	(2014/09/30 19:00:00.00)	15min	45	54	37
	(2014/09/30 19:15:00.00)	15min	47	64	37
	(2014/09/30 19:29:59.00)	15min	44	53	38
	(2014/09/30 19:45:00.00)	15min	45	62	36
	(2014/10/09 20:45:05.00)	15min	50	70	45
	(2014/10/09 21:00:00.00)	15min	50	66	45
	(2014/10/09 21:15:00.00)	15min	50	64	45
	(2014/10/09 21:30:00.00)	15min	49	62	45
	(2014/10/09 21:45:00.00)	15min	49	62	45
	(2014/10/09 22:00:00.00)	15min	47	62	44
	(2014/10/09 22:15:00.00)	15min	47	69	43
	(2014/10/09 22:30:00.00)	15min	45	59	41
	(2014/10/09 22:44:59.00)	15min	44	62	40
	(2014/10/09 23:00:00.00)	15min	42	60	39
	(2014/10/09 23:15:00.00)	15min	44	58	41
	(2014/10/09 23:30:00.00)	15min	45	62	43
	(2014/10/09 23:45:00.00)	15min	46	62	42
	2019/07/02 11:00:00	15min	48	39	68
	2019/07/02 11:15:00	15min	42	38	54
	2019/07/02 11:30:00	15min	42	37	61
	2019/07/02 11:45:00	15min	43	36	58
	2019/07/02 12:00:00	15min	43	36	56
	2019/07/02 12:15:00	15min	42	35	54
	2019/07/02 12:30:00	15min	41	35	60
	2019/07/02 12:45:00	15min	45	38	62
	2019/07/09 05:50:00	10min	47	40	63
	2019/07/09 06:00:00	15min	45	39	57
	2019/07/09 06:15:00	15min	48	43	64
	2019/07/09 06:30:00	15min	48	44	59
	2019/07/09 06:45:00	15min	50	44	68
	2019/07/09 07:00:00	15min	48	43	68
	2019/07/09 07:15:00	15min	47	44	60
	2019/07/09 07:30:00	15min	47	40	65
	2019/07/09 07:45:00	15min	44	39	59
	2019/07/09 08:00:00	15min	47	37	64
	2019/07/09 08:15:00	15min	42	35	63
	2019/07/09 08:30:00	15min	47	35	73
	2019/07/09 08:45:00	15min	43	36	60
	2019/06/24 15:19:00	30min	46	65	38
MS42	2019/07/10 13:00:00	15min	39	34	57
	2019/07/10 13:15:00	15min	38	33	52
	2019/07/10 13:30:00	15min	37	33	55
	2019/07/10 13:45:00	15min	40	33	59
	2019/07/10 14:00:00	15min	39	32	61
	2019/07/10 14:15:00	15min	41	34	61

Location	Date and Time	Duration	LAeq	LAfmax	LA90
	2019/07/10 14:30:00	15min	40	35	53
	2019/07/10 14:45:00	15min	40	35	58
	2019/06/11 09:40:00	1hour	42	66	32