

FS963 FALLOWFIELD SERVICE STATION, 385 WILMSLOW ROAD, MANCHESTER, GREAT MANCHESTER M14 6AH FORECOURT REDEVELOPMENT

Noise Impact Assessment

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1.0 Introduction

Motor Fuel Group has appointed SLR Consulting Limited to undertake a noise impact assessment for a proposed forecourt redevelopment at Fallowfield Service Station, 385 Wilmslow Road, Manchester, Great Manchester M14 6AH (the Site).

This document has been prepared to support a prospective planning application within Manchester City Council (MCC) for the proposed forecourt redevelopment as including the instatement of new forecourt plant and equipment at the Site. This has been proposed to include 4 No. electric vehicle (EV) charging bays along the northern boundary of the Site along with a 1500 kVA substation and 2 No. jet wash bays with screens to both and a canopy on one along the eastern boundary the Site.

This report has been prepared to inform noise impacts from the proposed development following the assessment principles of British Standard BS 4142:2014 + A1:2019 *Methods for rating and assessing industrial and commercial sound*.

Site operating hours have been understood as 24/7 where proposal for forecourt development, as including new forecourt plant and equipment, has been considered between these approved opening hours.

This report has been prepared and checked by suitably qualified persons as defined in **Appendix 01**. Whilst reasonable effort has been made to make this report easily understandable, it is technical in nature. To assist the reader, a glossary of acoustic terminology has been included in **Appendix 02**.

2.0 Site Description

Fallowfield Service Station has been noted of nominally 0.14 hectares on the corner of the B5093 Wilmslow Road and Whiteoak Road in Fallowfield, to the south of Manchester. The area subject to development of nominally 0.05 hectares has been noted within the Site boundary defining a portion of land to the north.

2.1 Proposed Development

The planned proposal has included for the instatement of new forecourt plant and equipment at the Site. This has been proposed to include 4 No. electric vehicle (EV) charging bays along the northern boundary of the Site along with a 1500 kVA substation and 2 No. jet wash bays with screens to both and a canopy to one of the units along the eastern boundary the Site.

The development has been proposed to facilitate modern EV variants across the forecourt intended for use during approved operating hours. The substation has been viewed as an entirely new plant type that has been necessary to support the proposed extension of EV charging facilities and by nature, would operate on a 24/7 basis. The ability for all proposed plant items to operate on a 24/7 basis, as including the EV charger, substation and jet washes, has been one subject of this assessment. It has been outwardly assumed that no jet washes would normally be used at night.

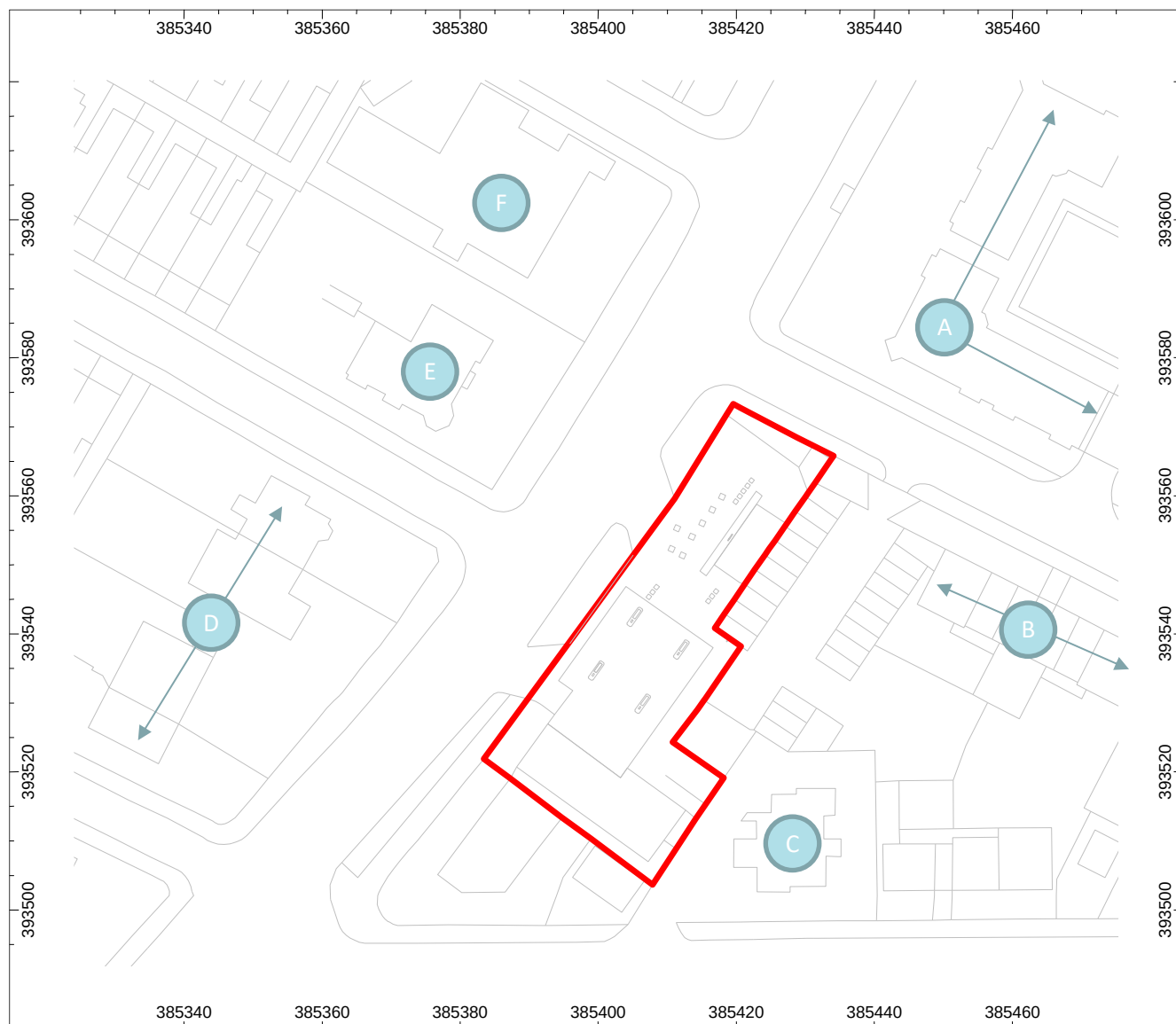
2.2 Noise Sensitive Receptors

The Site has been noted to reside in a predominantly residential area as surrounded on two sides. Noise sensitive receptors (NSRs) in the immediate vicinity to the proposals have been noted of residential use along Whiteoak Road and Wilmslow Road. Those NSRs of note within this assessment have been referenced as:

- A. The Deansgate. A four-storey residential apartment block to the north east of the site. The nearest south west facing windows are nominally 20 m from the nearest item of plant, an EV charger.
- B. Whiteoak Court. A three-storey residential apartment block to the east of the site separated from the site by single-storey garages. The nearest north west facing windows are nominally 25 m from the substation with ground floor windows having a blocked line of sight due to the garages.
- C. 1 Brook Road. A four-storey detached property now converted in student accommodation positioned south east of the site. The nearest item of plant is the rear of the jet washes nominally 30 m away.
- D. The Fallowfield Lodge. This hotel is an amalgamation of two separate three-storey properties on the west side the B5093 Wilmslow Road setback by nominally 20 m. The nearest windows are over 50 m from the nearest item of plant, the jet wash bays.
- E. 346-348 Wilmslow Road. A four-storey residential apartment block on the west side of the B5093 Wilmslow Road. South east facing windows are nearest to the EV charges nominally 38 m from the western most bay.
- F. OYO Hotel 346. A mixed-use three-storey building north of NSR E. Hospitality and commercial use on the ground floor with rooms for residential purpose on the two floors above.

All above-listed receptors have been identified within the site plan of Figure 2-1 below.

Figure 2-1
Location Plan and Identification of NSRs



3.0 Planning and Noise Guidance

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was introduced by The Department for Communities and Local Government in March 2012, with the latest revision dated July 2021.

The NPPF defines the Government's planning policies for England and sets out the framework, within which local authorities must prepare their local and neighbourhood plans, reflecting the needs and priorities of their communities. The Government's stated purpose in producing the NPPF was to streamline policy, so the planning process is less restrictive, to give a more easily understood framework for delivering sustainable development.

Under the heading of conserving and enhancing the natural environment and Paragraph 174 e), one aim of the NPPF is *"preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of... noise pollution..."*.

Paragraph 185 requires planning policies and decision to ensure that new development is appropriate for its location. It stipulates a need to account for the likely effects of pollution on health and other matters, requiring the planning process to *"mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life"*.

The NPPF acknowledges that there is a host of existing sources of national and international guidance which can be used, in conjunction with the Framework, to inform the production of Local Plans and decision making.

3.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010. It sets out the long-term vision of government noise policy, which is fundamentally to: *"Promote good health and good quality of life through the effective management and control of noise within the context of Government policy on sustainable development"*. The vision is supported by three key aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and reduce to a minimum, other adverse impacts on health; and
- Where possible, contribute to the improvement of health and quality of life.

The NPSE should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise but does not apply to noise in the workplace. The NPSE has adopted the following concepts, to help consider whether noise is likely to have "significant adverse" or "adverse" effects on health and quality of life:

SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available (Defra, 2010)."

3.3 National Planning Practice Guidance

Revised Planning Practice Guidance was released in March 2014 to support the NPPF and last updated in July 2019. The Guidance stipulates that Local Planning Authorities' plan making and decision making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

The guidance has also provided the following noise exposure hierarchy table *“when noise could be a concern”*.

Table 3-1
Planning Practice Guidance Noise Exposure Hierarchy Table

Response	Example of Outcomes	Increasing Effect Level	Action
NOEL – No observed effect level			
Not present	No effect	NOEL	No specific measures required
No observed adverse effect level			
Present and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
LOAEL – Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for sleep disturbance. Affects acoustic character of the area and creates a perceived change in quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
SOAEL – Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

3.4 BS 4142:2014 +A1:2019

The British Standard BS 4142:2014 +A1:2019 *Methods for Rating and Assessing Industrial and Commercial Sound* (BS 4142) notably describes methods for rating and assessing sound of an industrial or commercial nature. It has been referenced where required in policy and guidance documents to assess the potential impact of sound of an industrial and/or commercial nature, at existing and proposed noise-sensitive receptor locations within the context of the existing sound environment.

In this assessment, industrial/commercial sources have been present on the Site with respect to proposed development emission, where the onus lies with the developer to mitigate any associated impacts arising from existing and proposed sources of commercial noise.

Certain acoustic features can increase the significance of impact from a comparison of the specific sound level to the background sound level where these features are likely to affect perception and response. Where such features are present at the assessment location, a character correction (or penalty) to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.

- Tonality: A correction of 0 dB to + 6 dB for sound ranging from not tonal to prominently tonal.
- Impulsivity: A correction of up to + 9 dB can be applied for sound that is impulsive.
- Intermittency: A penalty of + 3 dB can be applied if on/off conditions are readily distinctive within the reference time interval over the period of the greatest amount of on-time.
- Other characteristics: A penalty of + 3 dB can be applied in the absence of all other defined characteristics, where the specific sound contains a distinctive feature in the residual acoustic environment.
- The rating sound level is equal to the specific sound level if there are no acoustic features present or expected to be present.

The significance of sound depends upon both the margin by which the rating level exceeds the background sound level and the context in which the sound occurs. An initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level.

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

BS 4142 has stipulated that context is important when assessing the impact of sound of a commercial and/or industrial nature. Amongst a range of advocated considerations, this can include mitigation, residual sound levels, location and absolute sound levels in the consideration of context.

The scope of BS 4142 recognises that human response to sound can be subjective as affected by many factors, both acoustic and non-acoustic. The significance of its impact can depend on various factors such as the exceedance to the background level, its absolute level, time of day and change in environment, as well as local attitudes to the source of sound and character of the neighbourhood.

3.5 Manchester City Council Planning and Noise Technical Guidance (October 2022)

The information below has been extracted from the Manchester City Council Planning and Noise Technical Guidance document. The guidance document provides help and advice in relation to noise in a planning context with encouragement for good acoustic design.

Pertinent sections for this assessment include '5.2.1 Noise Survey'. This section outlines the rationale and some specifics for conducting a noise survey;

"A noise survey is used to determine the existing noise environment on or around a particular development site. It is an important part of a noise assessment, as it is the baseline against which any predictions of the noise impact of a development will be compared. The date, time, and location used to measure noise levels and the methodology used are of the utmost importance to ensuring the survey is accurate and representative of the particular environment in question. It is important that the survey considers the noise environment around a development at the most appropriate times and on the most appropriate day of the week."

Section 3.7.1.5 more closely relates to the proposed development, mentioning ancillary plant such as refrigeration and HVAC. The criteria is set out below;

"Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location."

4.0 Environmental Sound Survey

To establish the prevailing sound climate at the Site, a baseline survey was undertaken over a weekday and weekend period between Friday 24th and Thursday 30th March 2023.

The period of surveying incorporated the deployment of a weather station to monitor meteorological conditions. These were generally conducive for sound surveying works throughout the site assessment in compliance with BS 4142, with an absence of rainfall and average windspeeds below 5 m/s. Where minor periods of excessive gusts above 5 m/s or rainfall have been identified these have been removed from the dataset in **Appendix 04**.

4.1 Equipment and Measurements

Sound pressure level measurements were carried out using the following equipment listed in Table 4-1, confirming to Class 1 acoustic accuracy for sound level meters and matched calibrators.

The sound level meters were calibrated before the measurements using the handheld acoustic calibrator and the calibration was checked upon completion of the survey. No significant drift was observed with calibration offsets of ≤ 0.4 dB. The calibration chain of equipment has been maintained to traceably to national standards, no greater than one year for sound calibrators and two years for sound level meters.

Table 4-1
Sound Monitoring Equipment

Location	Description	Serial No.
Location 1	Cirrus CR:831B Class 1 Sound Level Meter	G061094
	Cirrus CR:511E Acoustic Calibrator	72210
	Davis Instruments – Vantage Vue Weather Station: 6250UK	MT211213028

Sound level measurements at Location 1 were viewed to be a directly representative of all overlooking premises to the north of the forecourt. This location at the junction of Wilmslow Road and Whiteoak Road, recorded in free field conditions, as measured in-situ 1.5 m above ground level on the northern boundary fence.

The monitoring protocol consisted of substantially unattended readings over the survey period with nominal 1-hour attendances at the start and end of the monitoring periods, covering nominally 120-hours.

The following sound level indices have been reported at 15-minute intervals in decibels (dB):

- $L_{Aeq,T}$ – The A-weighted equivalent continuous noise level over the measurement period.
- $L_{A90,T}$ – The A-weighted noise level exceeded for 90% of the measurement period.
- $L_{A10,T}$ – The A-weighted noise level exceeded for 10% of the measurement period.
- $L_{Amax(F)}$ – The maximum A-weighted noise level during the measurement period.

Full survey results describing unattended monitoring periods have been provided for the above-listed metrics within **Appendix 04**.

Figure 4-1
Monitoring Location



4.2 Sound Climate

The sound climate at the measurement location consisted mainly of constant road traffic movements along Wilmslow Road and vehicle movements about the forecourt, as well as slow traffic on Whiteoak Road to and from Wilmslow Road. High altitude aircraft were noted as audible at site along with birdsong. The unattended time history of data recorded has generally reflected an expected, diurnal pattern of transportation sources amongst other activities.

Existing forecourt operations were present at the time of site attendances, comprising the arrival and departure of vehicles, filling operations and use of forecourt equipment including a drive-through car wash, a vacuum cleaner and an air/water machine. The service station was understood to be in typical function during the times of assessment as operational over its approved usage times.

4.3 Residual and Background Sound Levels

Daylight saving time began at 01:00 hours on Sunday 26th March, to account for the lost hour of time, the noise data collected has been adjusted accordingly. This results in the shifting of the data set from 01:00 to 02:00 hours on Sunday 26th March.

The ‘typical’ background sound levels have been reported in this section in accordance with BS 4142 as established from histograms of the recorded dB $L_{A90,15min}$ data at Location 1, shown in **Appendix 04**. The measurement locations have been used to describe the underlying sound climate at NSRs during proposed operating periods.

In line with Section 8.1.4 of BS 4142, the monitoring duration should reflect the range of background sound levels for the period assessed. In practice, there is no single level for background sound as this is a fluctuating parameter, although a representative value of the period should be used. Note this has not been either the lowest or mean average value of dB $L_{A90,T}$ according to the assessment standard.

Table 4-2
Summary of Measured Sound Levels

Measurement Details				Residual sound level dB $L_{Aeq,15min}$		Background sound level dB $L_{A90,15min}$	
Date Range	Location	Period	Time HH:MM	Range	Typical*	Range	Typical*
Fri 24/03/2023 - Tue 28/03/2023	1	Day	07:00 – 19:00	59 – 73	64	45 – 62	53
		Evening	19:00 – 23:00	60 – 70	63	46 – 58	52
		Night	23:00 – 07:00	52 – 67	59	34 – 56	39**
<i>* Typical values of background sound level have been established from counts of data from Appendix 04. Typical residual sound levels have been equated at times of typical background sound.</i> <i>**Night-time levels have been determined following the MCC Planning and Noise guidance example in Appendix A, calculations shown in Appendix 04.</i>							

5.0 Noise Impact Assessment

The impact of noise from the proposed development on the surrounding environment will depend on several factors, including (but not limited to) the time of day, frequency of occurrence and nature of sound source. Development activities will naturally pose greater noise risk where permissible during noise sensitive periods of the evening and night where the likelihood of annoyance or sleep disturbance increases. Human response to noise depends on sociological factors, attitudes and perceptions which can be difficult to define and account for any individual case.

The recognised methodology for assessment has been taken from BS 4142:2014 + A1:2019 *Methods for rating and assessing industrial and commercial sound* which includes consideration of sound from fixed plant installations. The numerical assessment has been provided below for relevant periods of proposed operation, following the definition of specific sound levels.

5.1 Plant Sound Power levels

The following input data of Table 5-1 has been summarised from manufacturers data sheets for all plant items provided in **Appendix 03**.

Table 5-1
Input Data Summary for Noise Modelling

Type	Detail	Quantity	Sound power level dB L_{WA} re. 1 μ W	On time	Period
Rapid Charging Point	Alpitronic HYC 150 EV Chargers	4	70	50 %	24 hours
Substation	1500kVA transformer Envico TR7 housing	1	61	100 %	24 hours
Jet Wash	Istobal 4CA2000	2	78	50 %	Day & Evening

The on-time assumptions have been provided on SLR's experience of similar and successful applications for development elsewhere and as not to underpredict the resulting impacts. The on-time assumptions have been made to reflect a realistic in-situ use, but with tendency towards the worst-case.

5.1.1 Substation Sound Power Levels

The upper limit of sound power level for the distribution transformer has been referenced from the Energy Networks Association Technical Specification TS 35-1 (ENA TS 35-1). Further reference has also been taken from IEC 60076-10 Power transformers Part 10: Determination of sound levels, where it has been understood that the substation would also need to comply with all sections of this standard.

According to the standard method ENA TS 35-1, a transformer with a rating of 1500 kVA must comply with a standard maximum sound power level of 61 dB L_{WA} . This has been noted to relate to the reduced maximum sound power level of IEC 60076-10 for a transformer of this size. Reference has been made to empirical spectra¹ for transformers located indoors and in small rooms, to provide an engineering estimate of spectral sound level. This

¹ Bies, D., Hansen, C., Engineering Noise Control pp554-556

has been noted to describe prominent sound energy at low frequency, typically seen as primary components of 100 Hz (or 125 Hz octave band) with harmonics at higher frequency bands, per Table 5-2 below.

Table 5-2
Transformer Octave Band Sound Power Level, dB

Equipment Description	Sound Power Level dB L_w per Octave Band Centre Frequency Hz								Sum L_{wA}
	63	125	250	500	1000	2000	4000	8000	
1500 kVA Indoor Transformer	61.2	66.2	61.2	61.2	52.2	44.2	39.2	32.2	60.5

As the exacting type and manufacturer of the transformer remains unknown at this stage of planning, only a referenced estimate can be provided on the likely emission. The above information of Table 5-2 has been provided as the best available for planning stage works.

The type of GRP enclosure for the substation has been initially reviewed as an Envico Engineering TR7 housing. Given the open nature of this enclosure as primarily instated for weather protection, any acoustic sound insertion loss value has been ignored to represent a worst case.

5.2 Specific Sound Level Calculations

To understand specific sound levels for the purposes of assessment, a noise model has been created using CadnaA with input sound power level data in **Appendix 03**. All sources have been modelled at their proposed locations and heights shown, and at provided maximum duties.

The modelling process has followed the technical requirements of ISO 9613 Parts 1 and 2, accounting for all plant items at their developed location. The format of calculations has included all noise sources at least 1 m above ground with receptor locations of 1.5 m and +3.0 m per upper floor as appropriate to the receptor, following propagation over mixed ground ($G = 0.5$) with a reflection order of 2.

The on-time for all equipment has been considered in consistent operation, despite the realisation that all plant would not be continuously operational and at maximum capacity during day and night assessment periods. This on-time assumptions have been made to reflect a tendency towards the worst-case to appraise the potential for 24/7 operation of relevant plant items.

Two scenarios have been considered to understand the level of sound in relation to different plant items that might be expected through different times of the day:

- 1) All proposed plant in operation.
- 2) All plant except the jetwash in operation.

The following specific sound levels have been estimated from this process, with results tabulated in Table 5-3 and illustrated in Figure 5-1 and Figure 5-2. Results have highlighted the highest level on the façade, at either ground or upper floor level appropriate to the height of the receptor.

Table 5-3
Model Outputs of Specific Sound Levels, Highest at Building Façade

NSR Reference	NSR Street Name	Model Predicted Sound Pressure Level dB $L_{Aeq,T}$	
		All Plant	Jet Wash Off
A	The Deansgate	≤ 25	≤ 24

NSR Reference	NSR Street Name	Model Predicted Sound Pressure Level dB $L_{Aeq,T}$	
		All Plant	Jet Wash Off
B	Whiteoak Court	≤ 28	≤ 28
C	1 Brook Road	≤ 25	≤ 24
D	Fallowfield Lodge	≤ 27	≤ 26
E	346- 348 Wilmslow Road	≤ 31	≤ 30
F	OYO Hotel 346	≤ 29	≤ 28

Figure 5-1
Model Outputs of Specific Sound Levels, Highest dB $L_{Aeq,T}$ at Building Façades – All Plant



Figure 5-2



5.3 BS 4142 Assessment

The following numerical assessments have been provided in accordance with BS 4142 to provide a comparison between rating sound levels of the proposal against the typical sound levels existing prior to development.

Table 5-4
BS 4142 Assessment of Proposed Development – Worst Case NSRs

Results	<i>All Plant Operational</i> Day 07:00 – 19:00	<i>All Plant Operational</i> Evening 19:00 – 23:00	Jet Washes Turned Off Night 23:00 – 07:00	Commentary
Residual sound level, dB $L_{Aeq,T}$	64	63	59	Representative residual and background sound levels from Location 1 of the assessment as directly representative of NSRs adjacent to the site.
Background sound level, dB $L_{A90,T}$	53	52	39	
Reference time interval	1-hour	1-hour	15-minutes	
Specific sound level, dB $L_{Aeq,T}$	28	28	28	Highest off-site values established from Table 5-3 relevant to NSR B during opening hours.
Acoustic feature correction, dB	+ 3	+ 3	+ 3	A 3 dB feature correction has been applied to account for a source that could have intermittent or other sound characteristics inherent to forecourt plant. No plant has been considered as impulsive or tonal within the assessment.
Rating level, dB $L_{Ar,Tr}$	31	31	31	Specific sound level plus acoustic feature correction.
Excess of rating over background sound level	- 22	- 21	- 8	MCC criteria of 5 dB below achieved
Assessment indicates likelihood of <i>*depending on context</i>	Low Impact*			Where the rating level does not exceed the representative background sound level this is an indication of low impact, depending on context.
Uncertainty of the assessment	Not significant			Uncertainty was minimised by measuring over an extended period, with low wind speeds at a location directly relevant to the nearest residential NSRs.

The numerical assessments have highlighted a low impact at the worst affected NSR, where the rating sound levels have been predicted to be below the representative background sound levels during the daytime, evening and night-time periods.

5.4 Context

It has been acknowledged that assessments in Table 5-4 need to be considered in context, following the requirements of BS 4142. The concept of “context” has been notably emphasised in Section 11 of BS 4142 when considering numerical impacts established from applying the standard.

During operational hours, predictions have provided large differences (i.e. greater than 10 dB) between the residual sound level over the specific sound level, such that in context, the ambient sound level should not change by a perceptible degree due to the development. It has subsequently been considered in context that these development activities will be largely indistinguishable for most of the time and masking will be afforded by the residual sound level.

The evening and night have been considered particularly sensitive periods of operation where it would normally be appropriate to consider that residents will likely be resting or sleeping within their homes. During this time, it could be expected that residents may choose to leave windows open, where a level difference of approximately 13 dB would normally be expected inside the dwelling through a partially open window. The nearest NSRs have not been noted to contain any sound insulation provisions that allow residences to keep windows closed (e.g. mechanical ventilation) therefore an open window assessment has been considered appropriate in context.

Internal ambient noise levels within the worst affected dwellings have been predicted to relate to the residual sound climate where this prevails beyond the specific sound levels of this assessment. In combination and at any time, the resulting ambient sound level would not change because of the development and comprise mainly of the residual sound from road traffic and extraneous activities, rather than that of the development as including new forecourt plant.

Where any industrial or commercial sound remains audible, as might be possible during periods of operation, then it has been considered possible in context for some very minor level of effect. This has been considered relevant for any source character that could have different temporal or spectral characteristics than the prevailing residual climate.

Predicted noise impacts have been supported as low when considering the context of the Site.

5.5 Statement of Uncertainty

Uncertainty has been considered as a limit to the accuracy of any noise assessment, including associated steps of measurement, calculation, or prediction. Factors have been considered to include (but not limited to) the following:

- The inherent accuracy limitation of methodology in Standards and guidance.
- Variability in meteorological conditions.
- The accuracy of sound source input data of a calculation.
- Use of noise modelling software.

It has been a requirement of the assessment standard BS 4142 to minimise uncertainty to a level commensurate with the intention of the assessment objective. Measures taken in this assessment to minimise uncertainty have included:

- Baseline sound levels have been measured over a reasonably long period and therefore provide a good indication of representative background and residual sound levels.
- Baseline sound level measurements undertaken in accordance with recognised Standards, using a tall environmental windshield and during acceptable weather conditions e.g. low wind speeds and precipitation.
- A direct measurement location was used to provide a representative basis for background sound levels at the nearest receiver locations.
- Field calibration checks were undertaken before and after measurements to record very low levels of equipment drift.
- The calculations have been conservative as not to under-predict the resulting impacts.

These measures have been considered to reduce uncertainty to a level considered not to have any significance to the outcome of this assessment.

5.6 Predicted Noise Impacts, Planning and Mitigation

The evaluated noise impacts in this report should be considered by MCC mindful of the National Planning Policy Framework and Noise Policy Statement for England that define policy and decision-making requirements for planning and noise.

It has been provided within Section 3.0 of this report, that the NPSE suggests noise levels above the SOAEL should be avoided and that if noise levels fall between the LOAEL and SOAEL all reasonable steps should be taken to minimise and mitigate adverse effects, while considering guiding principles of sustainable development.

The range of noise impacts for the proposed forecourt development have been deemed acceptable with respect to overarching requirements for planning and noise. Resulting impacts with suitable mitigation have been anticipated between the NOEL and LOAEL thresholds of the NPSE.

It is expected that the development sound would be largely unnoticeable, or just perceptible during the most noise sensitive periods of assessment. If it is possible for the sound to be audible, it is not expected to cause any change in behaviour or attitude. The development could marginally affect the acoustic character of the area but not to the extent that there is a perceived change in quality of life.

Commensurate measures have been considered to “mitigate and minimise adverse impacts on health and quality of life” which have been included within the detail of this proposal as:

- Jet wash bays enclosed on three sides by nominally 3.2 m high screens and a canopy over top the north most bay.
- Nominally 2.5 m high screen to the rear of the EV charges with a canopy overhead.

If necessary to grant planning approval, further considerations have been given in context to:

- Usage hours restriction to proposed jet wash plant.

Where context has been accounted for in the provided predictions, there has been viewed no practicable justification to provide further mitigating means, such as specific housing insertion loss for the proposed substation.

6.0 Conclusions

An assessment of environmental sound levels has been carried out for a proposed forecourt development at Fallowfield Service Station. Environmental sound levels have been taken from a site survey at a location representative of nearest noise sensitive receptors.

A noise impact assessment has been carried out in line with BS 4142 methodology by a suitably qualified acoustician. Cumulative rating sound levels have been predicted at nearest sensitive receptors using noise modelling techniques of all new plant and equipment defined by quantitative noise emissions.

The numerical assessment in Section 5.0 have predicted worst-case rating levels below the representative background sound levels. Predicted noise impacts have been supported as low when considering the context of the Site.

It has been concluded from the findings of this assessment that the range of noise impacts for the proposed forecourt redevelopment are acceptable with respect to overarching requirements for planning and so, noise should not present reasonable grounds for planning refusal.

The likely acoustic effects have been established below the LOEAL threshold of the NPSE, such that noise would not cause any change in behaviour or attitude or a perceivable change in the quality of life. Commensurate mitigation has been provided as necessary to include in the consideration of planning approval.

APPENDIX 01

Quality Assurance

	Name & Qualifications	Date
Prepared by:	M. Pratap BSc. (Hons) MIOA	30/03/2023
Reviewed and approved by:	S. Skingle BSc. (Hons) PgDip, MIOA MAES	31/03/2023

Revision	Date	Description	Prepared	Reviewed and approved
01	31/03/2023	First release	M. Pratap	S. Skingle
	Click or tap to enter a date.			

The assessment has required a suitable level of technical ability and has been undertaken by a Suitably Qualified Person (SQP). An individual with all the following credentials has been considered a SQP for this assessment:

- Has a minimum of three years' verifiable experience (within the last five years) of providing noise impact assessments in planning. Such experience has clearly demonstrated a practical understanding of factors affecting acoustics in relation to the proposed development use and in the built environment in general, including acting in an advisory capacity to provide recommendations and design advice in planning, and;
- Holds a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acoustics in the UK is the Institute of Acoustics.

This assessment has been led and managed by a SQP as defined above.

Where some elements of the assessment (e.g. measurements) have been carried out by an acoustician who does not meet the requirements above, this has been undertaken with the direct guidance and supervision of a SQP who has reviewed, agreed and overseen the measurement methodology and any results obtained.

The SQP confirms that the relevant measurements and calculations:

- Represent good industry practice in accordance with available guidance.
- Are appropriate given the development being assessed and scope of works proposed.
- Avoid invalid, biased and exaggerated claims.

The checker and author of this document confirm that they both comply with the definition of a SQP defined in this Appendix.

APPENDIX 02

Glossary of Terminology

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 02-01
Sound Levels Commonly Found in the Environment

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (of 20 μ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq, T}$	$L_{Aeq, T}$ is defined as the notional steady sound level which, over a stated period T, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
$L_{A10, T}$ & L_{A90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
$L_{Amax(F)}$	$L_{Amax(F)}$ is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

APPENDIX 03

Drawings and Plant

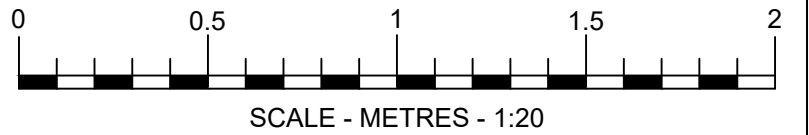
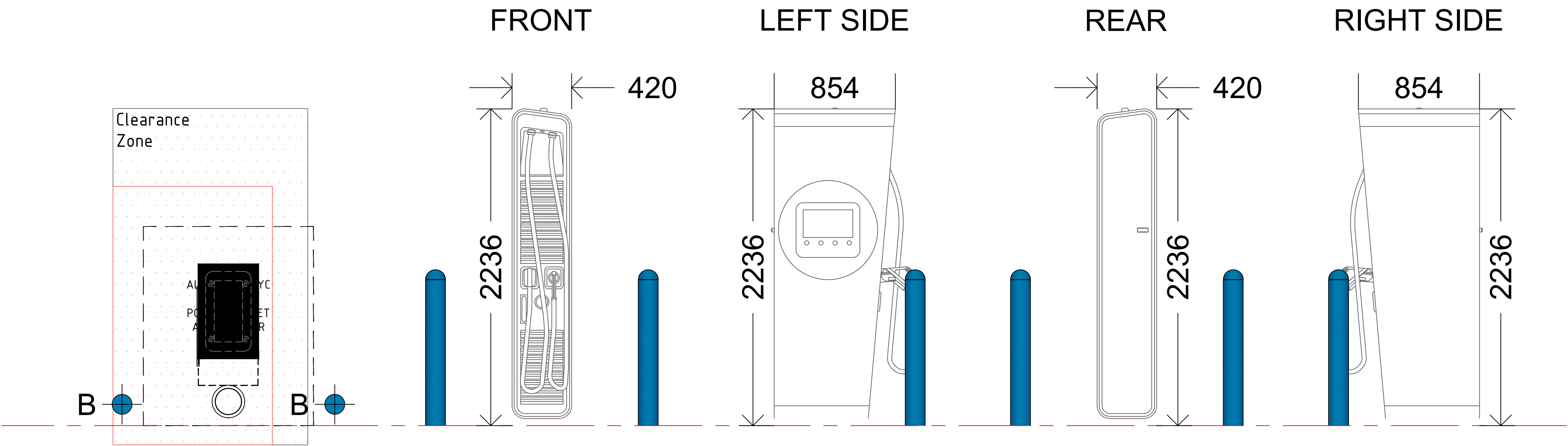
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ALPITRONIC 150 HYC CHARGER
SCALE - 1:20



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PLANNING			
mbh MBH Design Studio Ltd. Rosemount House, Rosemount Avenue, West Byfleet, Surrey, KT14 6LB www.mbhstd.com t: 01932 352 727 f: 01932 351 545 CLIENT mFg motor fuel group			
PROJECT FS963 FALLOWFELD SERVICE STATION WILMSLOW ROAD MANCHESTER, GRT MANCHESTER M14 6AH			
DRAWING TITLE EV CHARGER DETAILS			
DRAWN BY RRB	DATE 15.02.2023	SCALE 1:50	PAPER SIZE A1
CHECKED BY JR	DRAWING NUMBER 13664-963-22	REV. -	

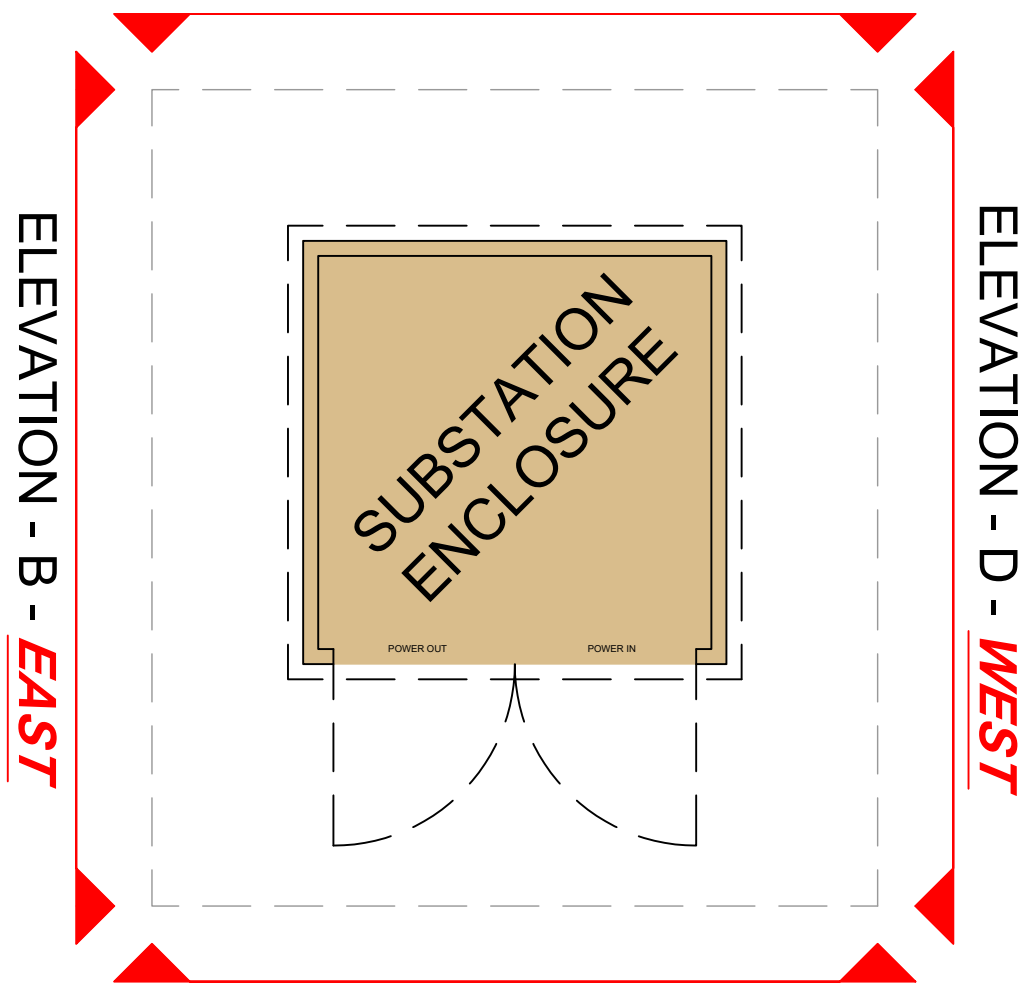
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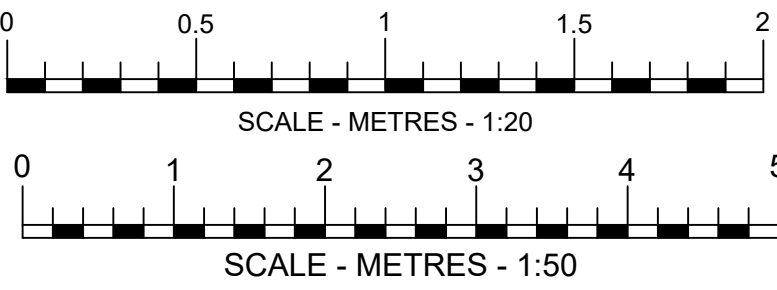
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ELEVATION - C - SOUTH



ELEVATION - A - NORTH

GRP SUBSTATION
SCALE - 1:50



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PLANNING



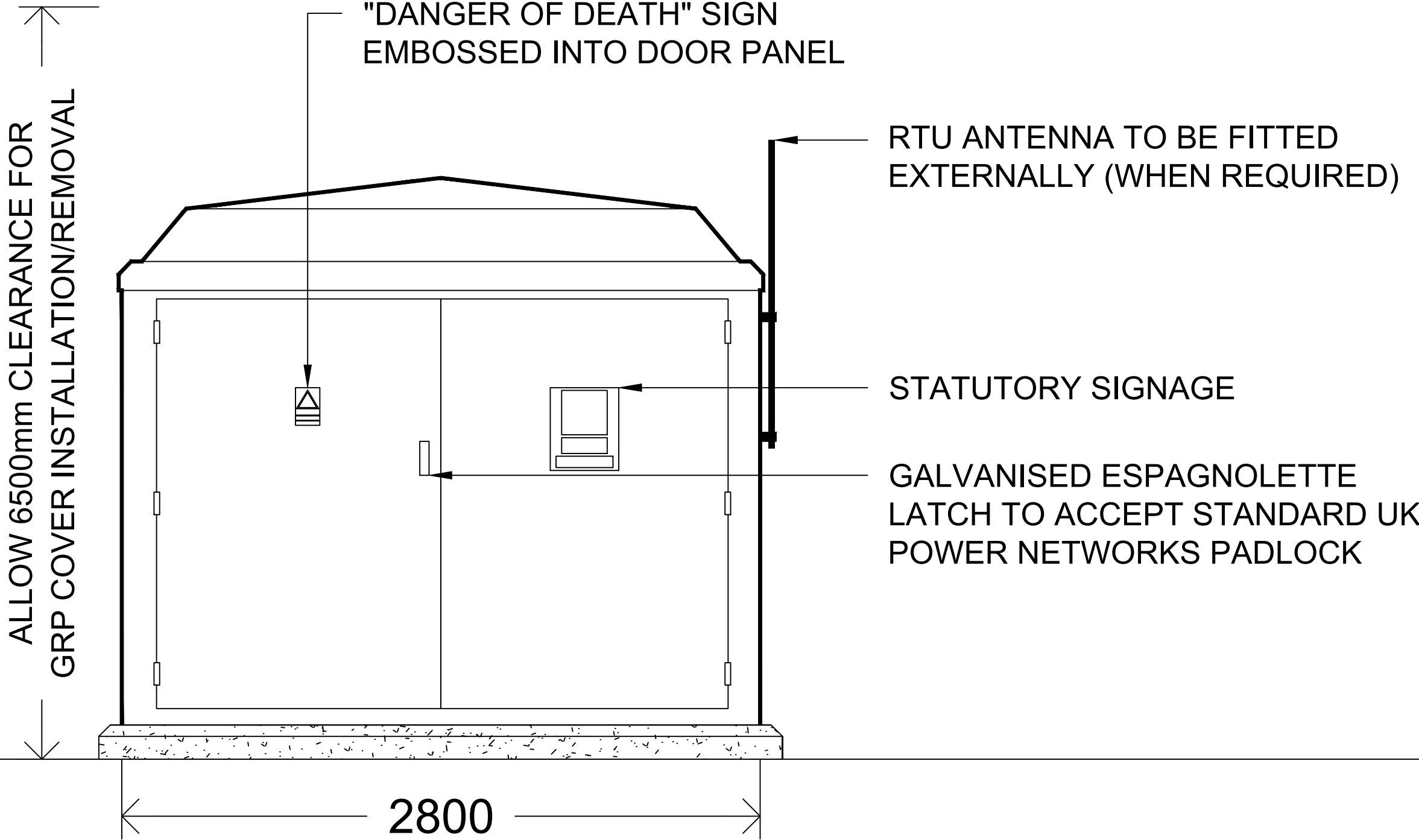
MBH Design Studio Ltd.
Rosemount House, Rosemount Avenue, West Byfleet, Surrey, KT14 6LB
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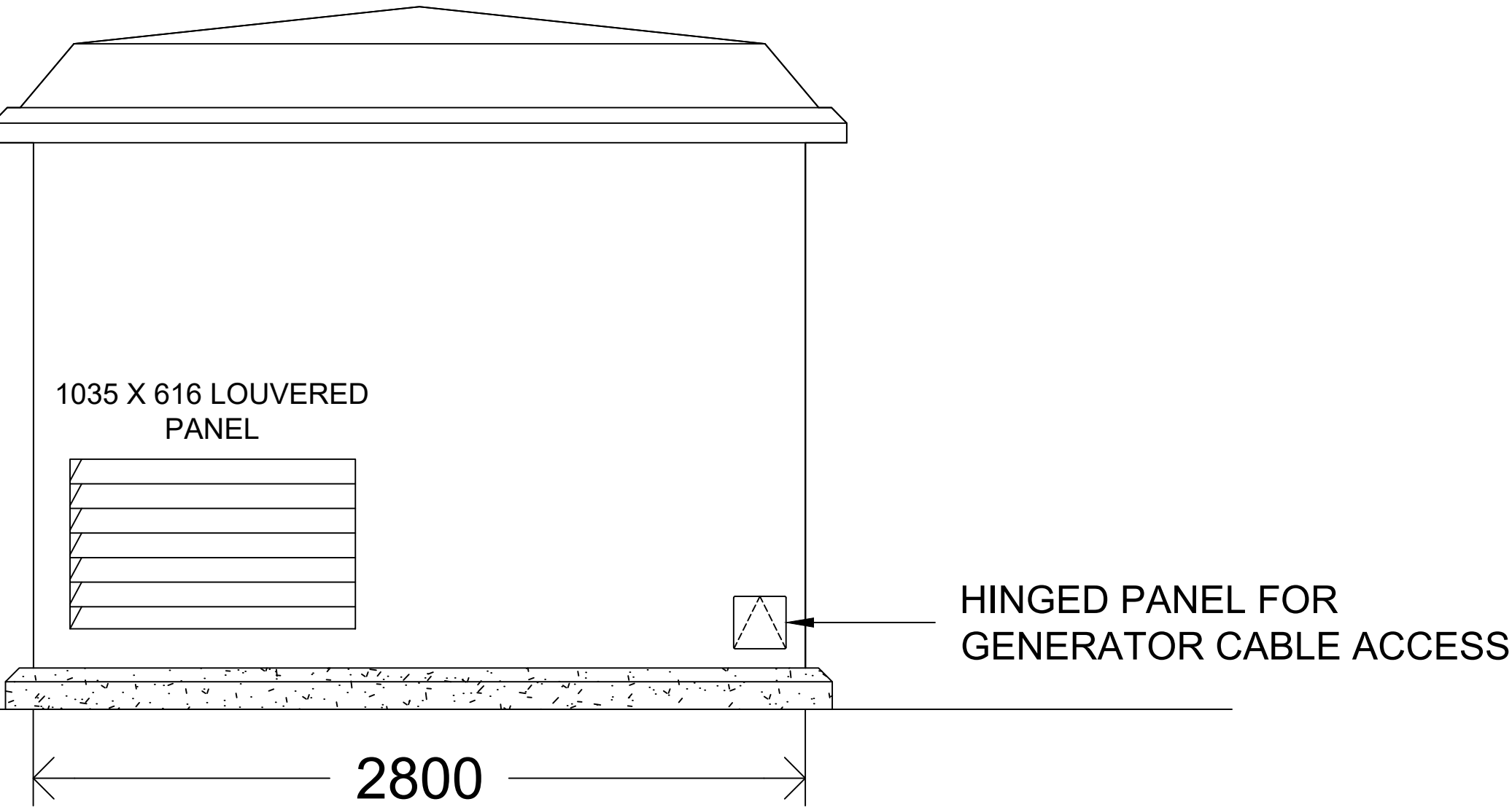
PROJECT
FS963 FALLOWFELD SERVICE STATION
WILMSLOW ROAD
MANCHESTER, GRT MANCHESTER
M14 6AH

DRAWING TITLE
SUBSTATION ENCLOSURE DETAILS

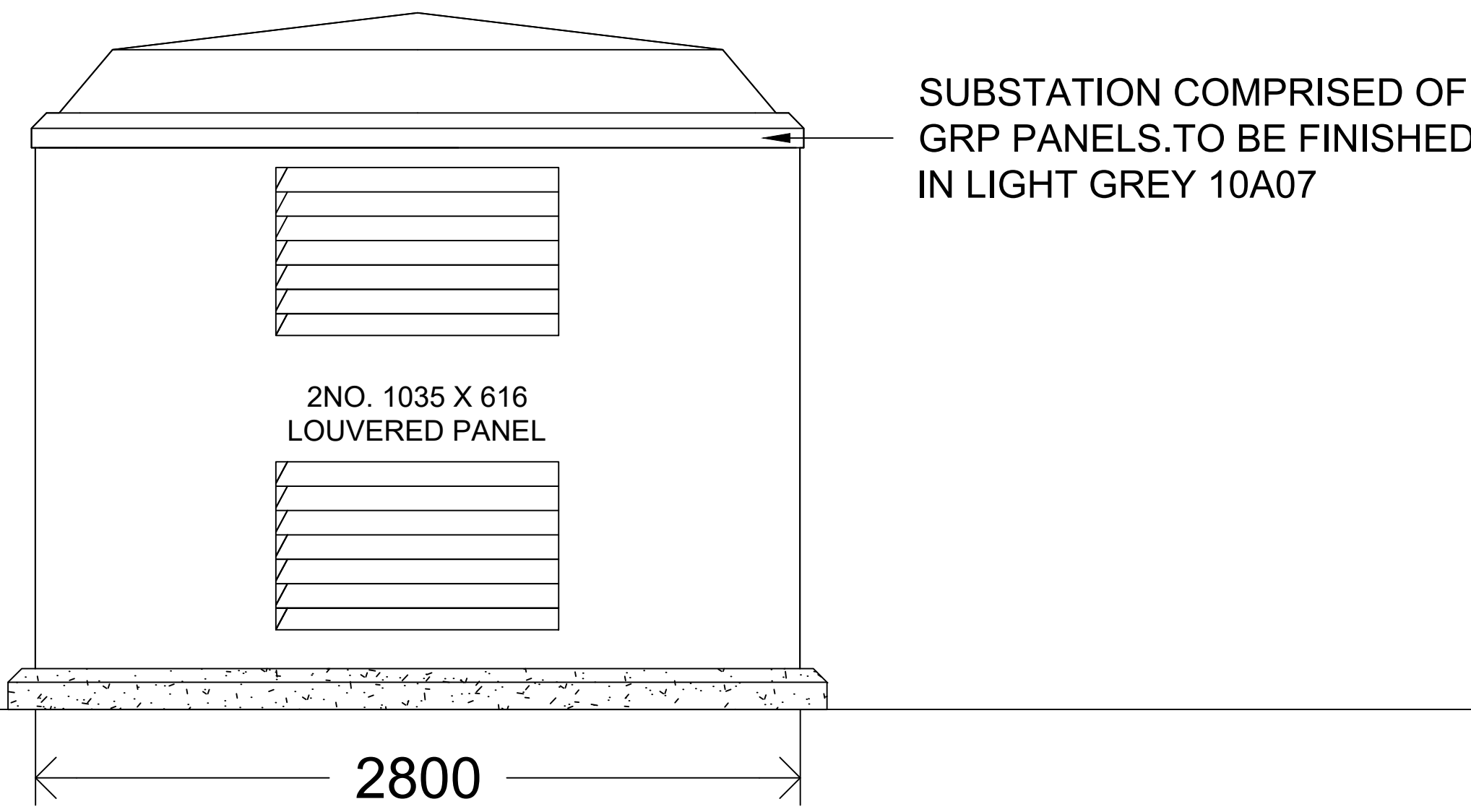
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JR	13664-963-23	-	



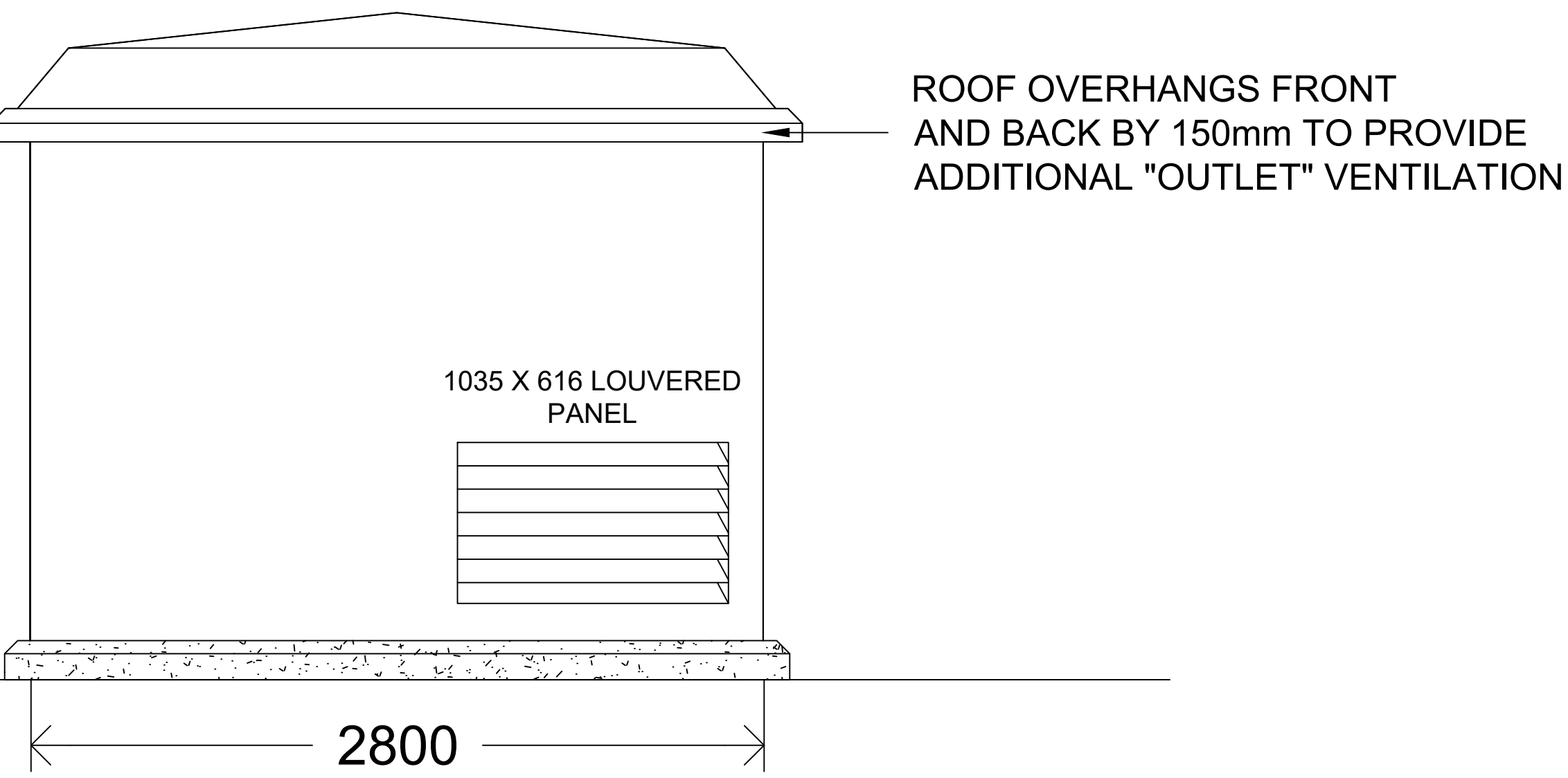
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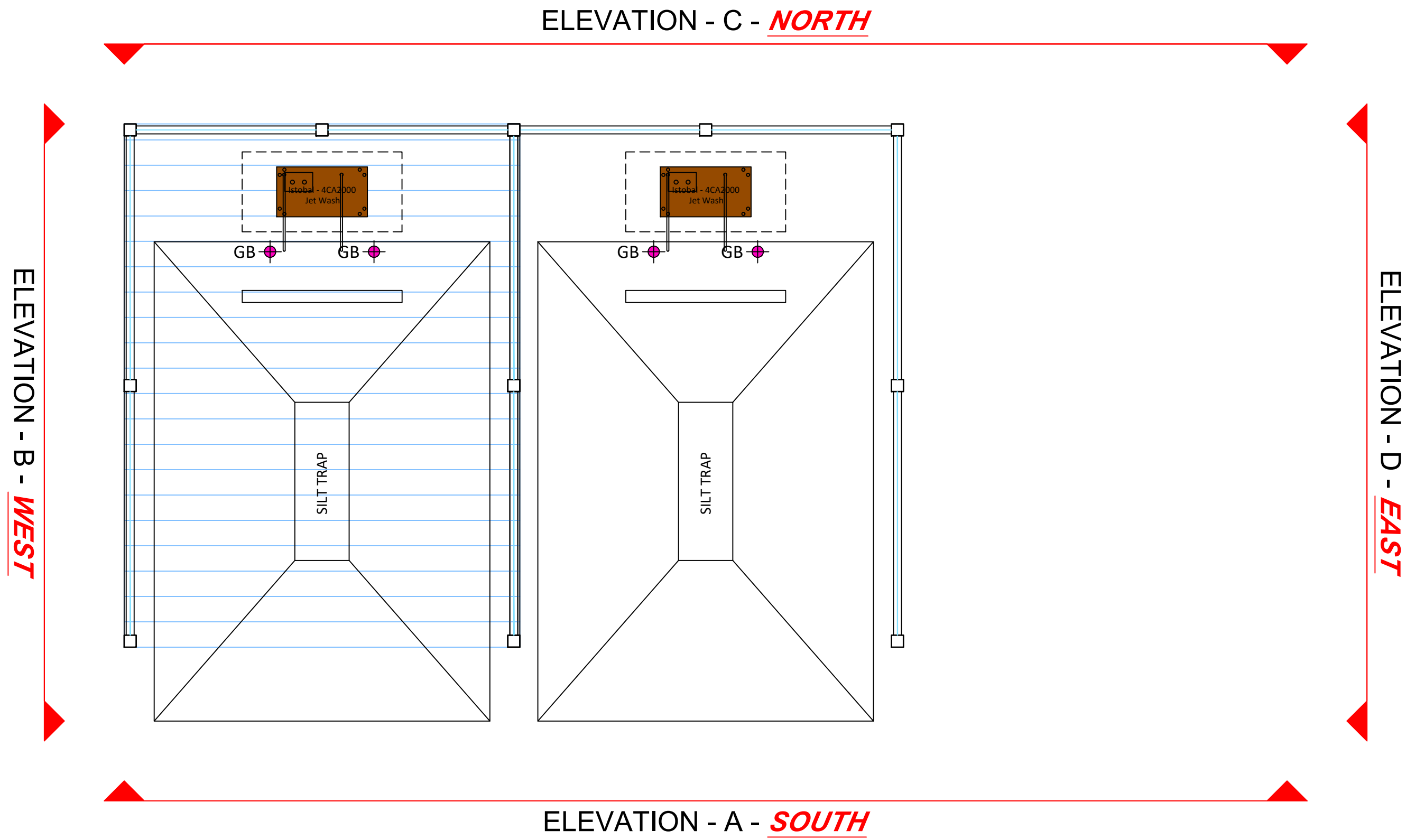
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ELEVATION B - EAST
SCALE - 1:20



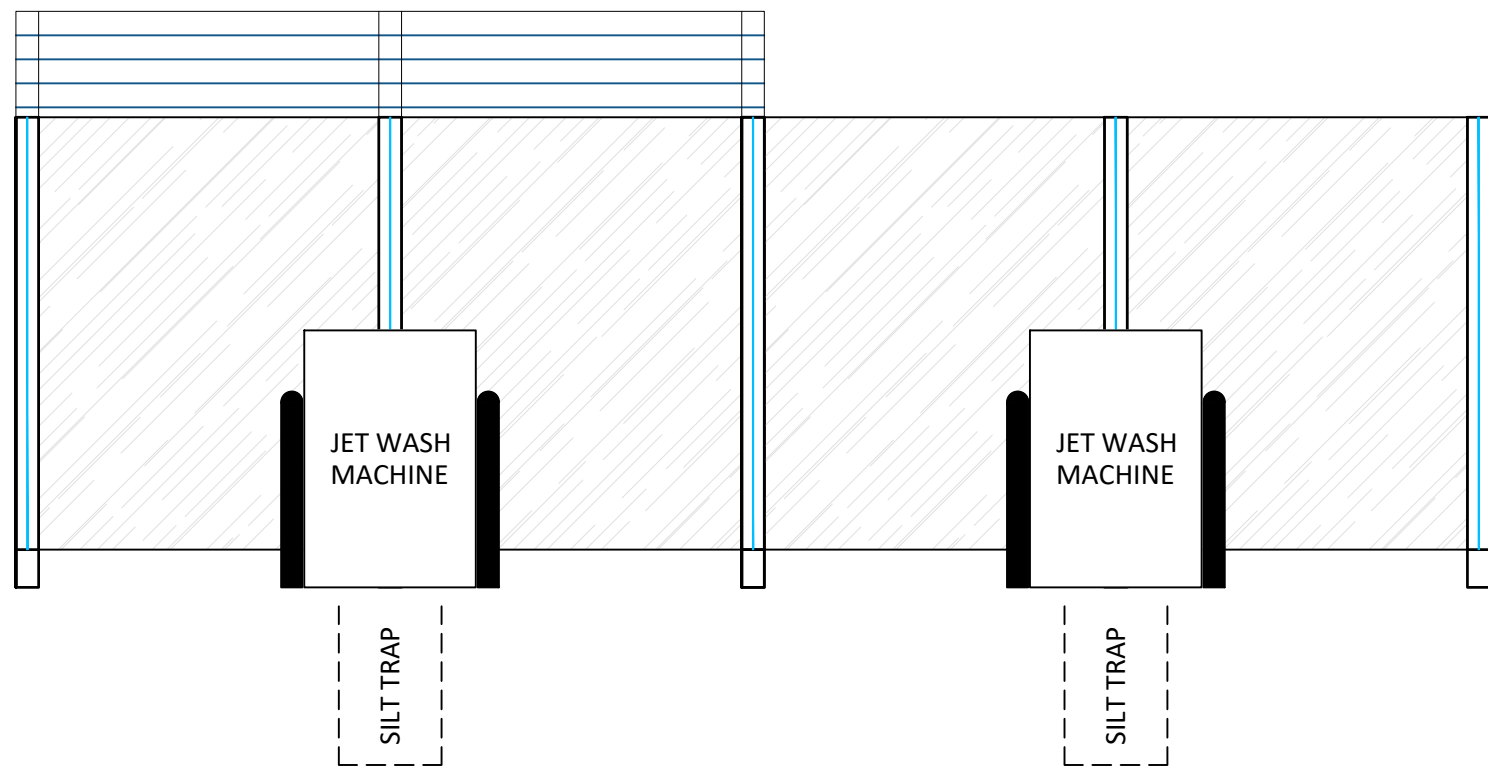
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ELEVATION C - SOUTH
SCALE - 1:20



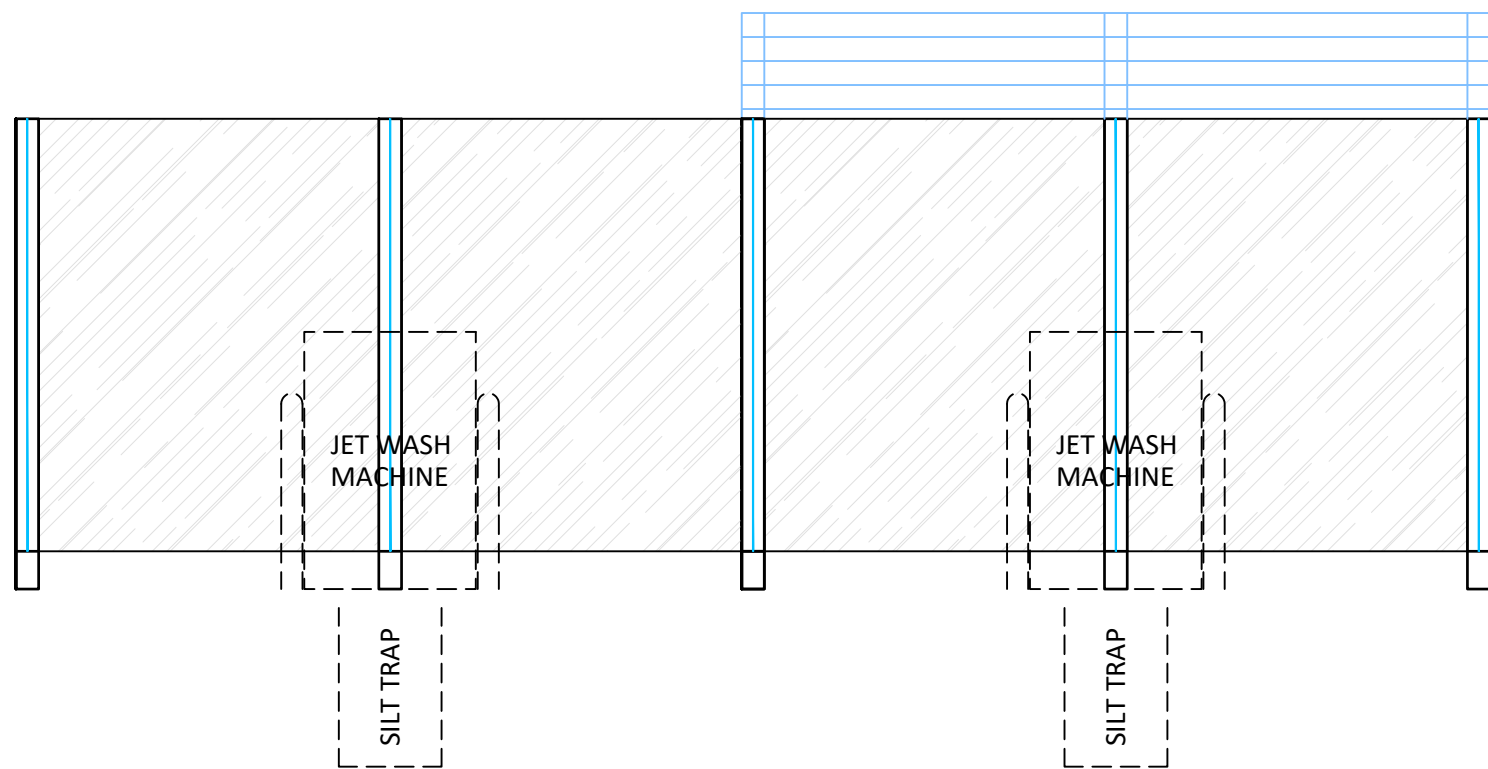
GRP SUBSTATION
ELEVATION D - WEST
SCALE - 1:20



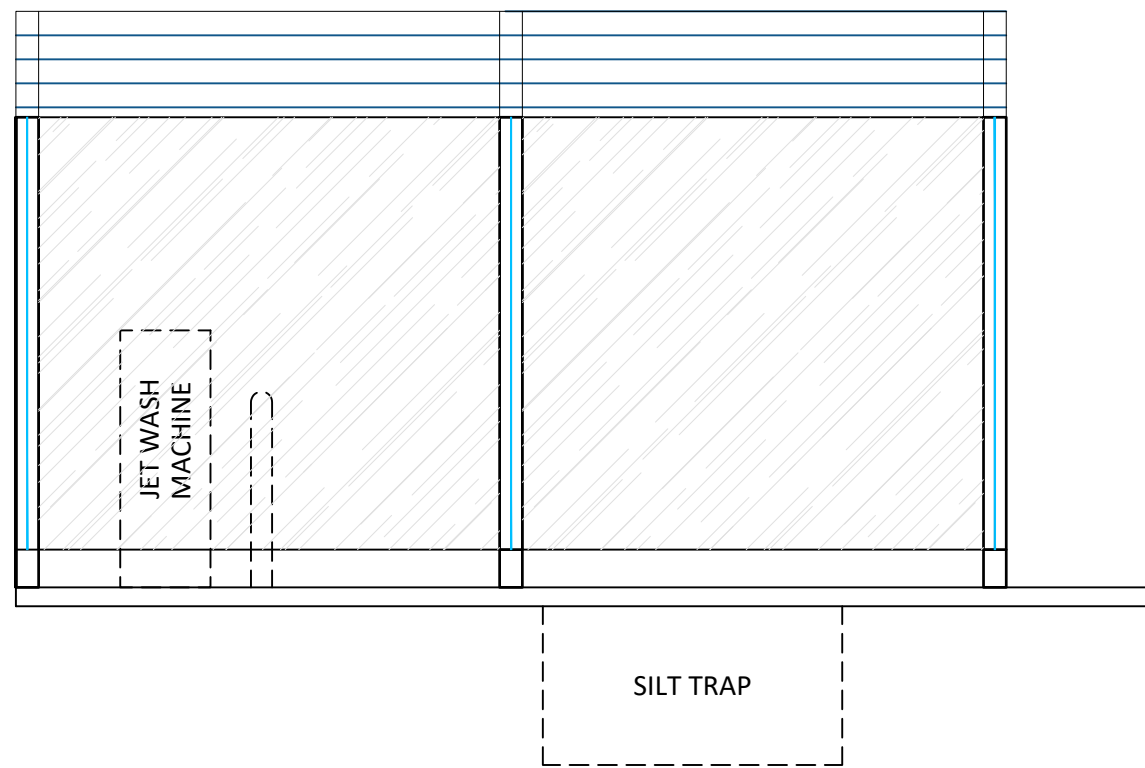
JET WASH
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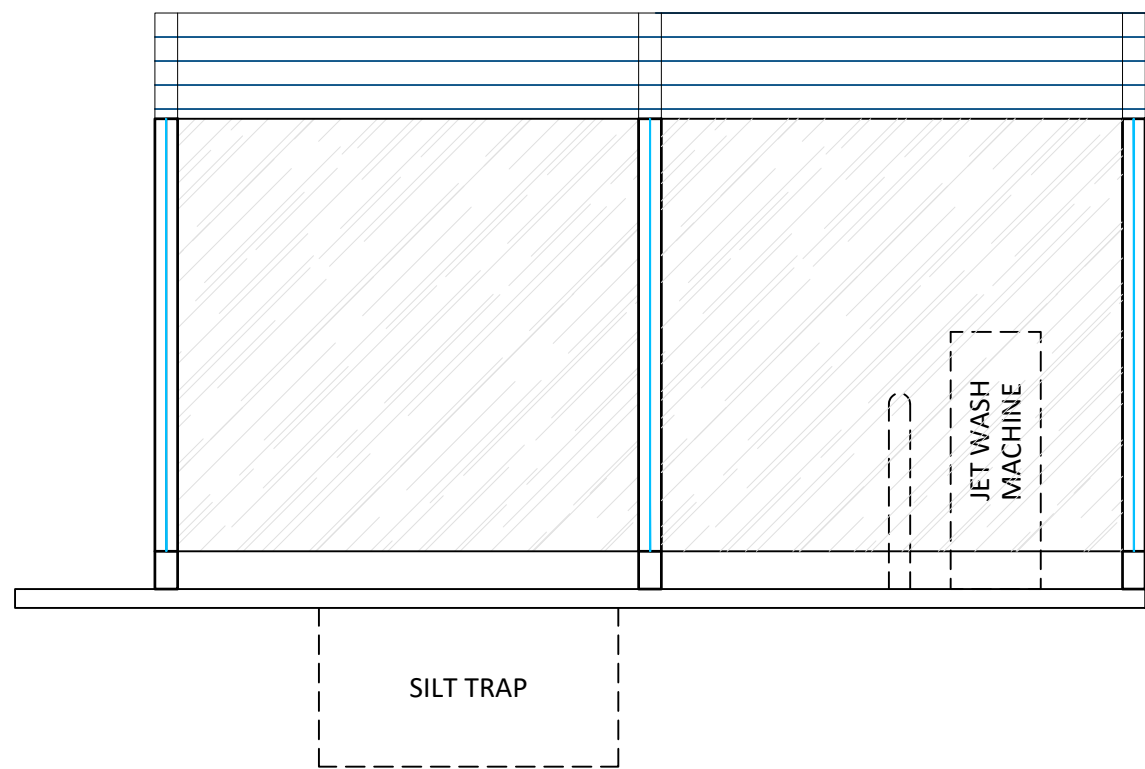
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SCALE - 1:50



JET WASH - ELEVATION C - *NORTH*
SCALE - 1:50



JET WASH - ELEVATION B - *WEST*
SCALE - 1:50



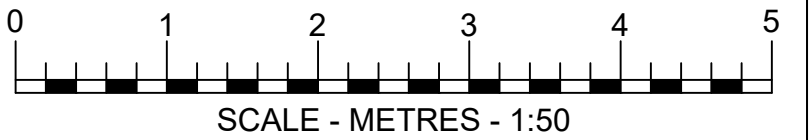
JET WASH - ELEVATION D - *EAST*
SCALE - 1:50

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CLIENT

mfg
motor fuel group

PROJECT

FS963 FALLOWFELD SERVICE STATION
WILMSLOW ROAD
MANCHESTER, GRT MANCHESTER
M14 6AH

DRAWING TITLE

JET WASH PLAN AND ELEVATIONS

DRAWN BY	DATE	SCALE	PAPER SIZE
RRB	15.02.2023	1:50	A1
CHECKED BY	DRAWING NUMBER	REV.	
JR	13664-963-24	-	

HYC150

75 kW / 150 kW Rapid charging point for electric vehicles

Key features



*Details in mm

- Maximum output current up to 500 A
- Full performance from 300 V battery voltage
- Future-proof output voltage range from 150 V to 1000 V
- Highly integrated power electronics in an ultra-compact design
- Option for parallel DC charging
- hypercharger Power-Stack concept enables scalable and retrofittable power levels

Product data sheet hypercharger 150

© 2021 alpitronic GmbH
Via di Mezzo ai Piani, 33
39100 Bolzano BZ, Italy

info@hypercharger.it
www.hypercharger.it
Tel.: +39 0471 096 450

HYC150

75 kW / 150 kW Rapid charging point for electric vehicles

Technical data

SYSTEM SPECIFICATIONS	
DC interfaces	CCS2 up to 500 A CHAdeMO up to 200 A
AC interfaces	22 kW AC socket/cable (optional)
Payment system	Choose between different card readers for credit cards or EC cards
Load and charging management	Smart, dynamic allocation of power modules and distribution of charging power to charging points
Environmental conditions, in operation	-30° up to +55° C (derating from 40° C), Operating height ≤ 2,000 m
Environmental conditions, in storage	-40° up to +55° C (1K22*/1Z2/1B1/1C1/1S10/1M10) * Minimum temperature in deviation from the standard
Environmental conditions, under transport	-40° up to +70° C (2K12*/2B1/2C1/2S1/2M4) * Minimum temperature in deviation from the standard
Humidity (in operation, storage)	0% - 95% relative (non-condensing)
Efficiency	>94% at full charge
Protective class	Class I (protective earth connection)
Degree of pollution	Class 3
Noise emission	<62 dB(A) at 1m distance @22° C, at full charging (average value throughout entire charging process) Option to set parameters for Silent Mode (reduction of noise emissions by means of power derating)
Installation location	Indoor and outdoor installation
Type of installation	Floor mounted on plinth or base (optional foundation base in concrete)
Protection rating	IP54
Impact resistance	IK10 in accordance with IEC 62262
Dimensions (H x W x D)	2235 x 420 x 663 mm (footprint)
Weight	325 kg up to 462 kg
Accessibility	optional, barrier-free design for the operating elements and plugs in terms of installation height (1,050 mm each) is possible (in accordance with DIN 18040-3)

1 BAY COMPACT JET WASH

MOD. 4CA2000



Documentación I+D+i V_03_19

ISTOBAL

ORIGINAL MANUAL

TECHNICAL SPECIFICATIONS

NOISE CONTROL

The level of sound pressure with equivalent weighing is less than 70 dB.

ELECTRICITY SUPPLY

ELECTRICITY CONSUMPTION		
OPTIONS	KW.	AMPS 230V
HIGH PRESSURE PUMPS PER BAY	2.2	9.64
	3	13.2
	4	17.1
HOT WATER ELECTRICAL GENERATOR (2.5 L)	4	26
HOT WATER ELECTRICAL GENERATOR (40 L)	6	26
HEATER 60 W	0.06	0.27

CONSUMPTION

CONSUMPTION OF PRODUCT

CONSUMPTION OF PRODUCT		
PRODUCT	LITRES/HOUR	WORKING PRESSURE - DOSING PUMP BAR
SHAMPOO	2.1	2.5
WAX		

SALT CONSUMPTION

CONSUMPTION OF SALT														
HARDNESS °HF	15	20	25	30	35	40	45	50	55	60	65	70	75	80
TREATED WATER (M³) BETWEEN REGENERATIONS	5.6	4.2	3.4	2.8	2.4	2.1	1.9	1.7	1.5	1.4	1.29	1.2	1.1	1.1
CONSUMPTION OF SALT (KG/M³)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
If daily volume of softened water is 0.5 m³														
Salt consumption per month (kgs)	3.5	4.7	6	7	8.4	8.4	10.5	10.5	10.5	14	14	14	14	14
If daily volume of softened water is 1 m³														
Salt consumption per month (kgs)	7	8.4	10.5	14	14	14	21	21	21	21	21	21	21	21
If daily volume of softened water is 1.5 m³														
Salt consumption per month (kgs)	10.5	14	14	21	21	21	21	21	21	42	42	42	42	42
If daily volume of softened water is 2 m³														
Salt consumption per month (kgs)	14	14	21	21	21	21	42	42	42	42	42	42	42	42

Voltage Ratio	Type	Phase	Rating (kVA)	Short-Circuit Impedance (%)	Sound Power Level (dBA)
6 600/250 or 11 000/250 or 20 000/250 (2-wire system)	3 3 3	Single	16 25 50	4.5 4.5 4.5	45 45 45
6 600/500-250 or 11 000/500-250 or 20 000/500-250 (2- or 3-wire system)	1 3 3	Single	25 50	4.5 4.5	45 45
6 600/250-0-250 or 11 000/250-0-250 or 20 000/250-0-250 (3-wire system)	1 3	Single	100	4.5	48
6 600/433-250 or 11 000/433-250 or 20 000/433-250	3 1 3 1 3 1 3 1 2 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2	Three	25 50 100 200 315 500 800 1 000 1 250 1 500 2 000	4.5 4.5 4.75 4.75 4.75 4.75 4.75 4.75 5.0 5.5 6.0	45 45 48 52 54 56 58 59 60 61 62
11 000-6 600/433-250 Dual ratio	1 1 2 1 2 1 2 1 2 1 2 1 2 1 2	Three	200 315 500 800 1 000 1 250 1 500 2 000	4.75 4.75 4.75 4.75 4.75 5.0 5.5 6.0	52 54 56 58 59 60 61 62

Notes:

1. The numbers 1-3 in the column headed "Type" refer to:

- 1 – Cable connected transformer
- 2 – Unit substation transformer
- 3 – Pole-mounted transformer

2. The above no-load secondary voltages are chosen so as to facilitate provision of the following nationally declared low voltages:

- Three-phase 400/230 V, 4-wire
- Single-phase 230 V, 2-wire
- 230-0-230 V, 3-wire

3. The above rated primary voltages of 6 600 V, 11 000 V and 20 000 V relate to highest voltage for equipment of 7.2 kV, 12 kV and 24 kV respectively.

4. The rated output of dual ratio transformers shall be available when either ratio is in use and on any tapping position.

5. The rated power shall be available when low voltage fusegear is mounted directly on transformers and also when high voltage switchgear is directly mounted on unit substation transformers.

6. Sound power levels are maximum values.

7. The column heading "impedance (%)" refers to the impedance voltage corrected to 75°C expressed as a percentage of normal voltage, and in the case of dual ratio transformers, shall refer to the 11 000 V connection.

Table 1 - Transformer Details

APPENDIX 04

Survey Results

Table 04-01
15-minute Unattended History Results – Location 1, dB

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Fri 24/03/2023 11:45	63.7	83.2	66.5	54.1	
Fri 24/03/2023 12:00	63.5	86.7	66.0	55.7	*
Fri 24/03/2023 12:15	64.7	83.9	67.8	55.8	*
Fri 24/03/2023 12:30	67.1	83.5	69.4	57.9	*
Fri 24/03/2023 12:45	69.4	80.8	75.1	57.2	*
Fri 24/03/2023 13:00	64.0	86.2	65.7	54.8	*
Fri 24/03/2023 13:15	65.0	85.2	67.7	54.9	*
Fri 24/03/2023 13:30	63.0	75.3	66.1	54.8	*
Fri 24/03/2023 13:45	70.2	83.6	75.6	58.7	*
Fri 24/03/2023 14:00	66.6	93.0	68.8	57.1	
Fri 24/03/2023 14:15	65.8	82.4	69.0	57.8	*
Fri 24/03/2023 14:30	69.9	89.1	75.2	59.9	*
Fri 24/03/2023 14:45	71.7	90.6	75.7	60.0	*
Fri 24/03/2023 15:00	64.3	77.6	66.9	56.6	*
Fri 24/03/2023 15:15	64.6	79.0	67.4	57.3	
Fri 24/03/2023 15:30	65.7	82.6	68.4	57.0	*
Fri 24/03/2023 15:45	68.8	79.8	74.5	58.0	*
Fri 24/03/2023 16:00	71.4	83.3	75.7	60.1	*
Fri 24/03/2023 16:15	66.5	86.8	69.4	56.4	*
Fri 24/03/2023 16:30	64.2	79.8	66.7	56.3	*
Fri 24/03/2023 16:45	66.9	83.9	69.6	58.6	*
Fri 24/03/2023 17:00	66.2	85.1	69.3	55.4	*
Fri 24/03/2023 17:15	74.1	100.5	67.1	56.0	*
Fri 24/03/2023 17:30	63.7	76.6	66.6	56.3	*
Fri 24/03/2023 17:45	67.2	82.9	69.5	57.0	*
Fri 24/03/2023 18:00	64.9	78.7	68.6	55.7	
Fri 24/03/2023 18:15	68.0	86.7	69.9	60.3	*
Fri 24/03/2023 18:30	64.3	83.0	66.6	55.3	
Fri 24/03/2023 18:45	62.5	77.5	65.6	53.0	*
Fri 24/03/2023 19:00	63.1	72.3	66.1	55.4	*
Fri 24/03/2023 19:15	63.9	79.8	66.8	54.7	*

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Fri 24/03/2023 19:30	66.0	85.7	69.2	54.7	*
Fri 24/03/2023 19:45	63.2	78.8	66.2	54.1	
Fri 24/03/2023 20:00	63.2	75.4	66.5	54.4	
Fri 24/03/2023 20:15	64.1	74.4	67.4	55.4	
Fri 24/03/2023 20:30	67.1	86.0	70.1	57.4	
Fri 24/03/2023 20:45	65.6	78.4	68.7	55.4	
Fri 24/03/2023 21:00	65.3	75.7	68.8	56.2	
Fri 24/03/2023 21:15	65.8	76.3	69.2	55.7	
Fri 24/03/2023 21:30	65.5	76.7	68.7	56.5	
Fri 24/03/2023 21:45	65.6	83.9	68.4	55.4	
Fri 24/03/2023 22:00	64.9	80.1	68.4	52.9	
Fri 24/03/2023 22:15	66.0	79.0	69.6	55.0	
Fri 24/03/2023 22:30	66.4	80.0	69.4	56.2	
Fri 24/03/2023 22:45	65.6	75.4	69.5	53.7	
Fri 24/03/2023 23:00	66.3	79.3	70.0	54.1	
Fri 24/03/2023 23:15	65.4	75.6	68.8	55.0	
Fri 24/03/2023 23:30	64.6	79.2	68.2	55.6	
Fri 24/03/2023 23:45	64.2	74.5	67.8	55.7	
Sat 25/03/2023 00:00	65.1	88.8	68.4	52.6	
Sat 25/03/2023 00:15	65.4	84.2	68.3	54.7	
Sat 25/03/2023 00:30	64.6	79.7	68.1	53.6	
Sat 25/03/2023 00:45	65.0	74.8	69.1	52.6	
Sat 25/03/2023 01:00	64.8	78.4	69.0	53.3	
Sat 25/03/2023 01:15	64.8	75.1	68.9	55.2	
Sat 25/03/2023 01:30	67.2	81.4	70.5	54.6	
Sat 25/03/2023 01:45	64.7	76.1	68.9	51.1	
Sat 25/03/2023 02:00	65.2	88.8	67.7	50.4	
Sat 25/03/2023 02:15	66.6	84.5	69.8	52.7	
Sat 25/03/2023 02:30	61.7	74.3	66.2	48.8	*
Sat 25/03/2023 02:45	62.7	81.3	66.8	48.7	
Sat 25/03/2023 03:00	62.3	76.1	66.6	48.8	*
Sat 25/03/2023 03:15	61.8	77.8	66.4	48.5	*

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sat 25/03/2023 03:30	60.5	73.3	65.1	48.3	*
Sat 25/03/2023 03:45	66.0	86.0	68.4	48.6	*
Sat 25/03/2023 04:00	61.1	74.1	65.9	48.5	*
Sat 25/03/2023 04:15	62.2	78.7	67.2	50.0	*
Sat 25/03/2023 04:30	61.7	73.2	67.0	48.7	*
Sat 25/03/2023 04:45	60.7	74.6	65.4	47.9	*
Sat 25/03/2023 05:00	61.5	77.4	66.3	49.4	*
Sat 25/03/2023 05:15	59.2	72.5	62.9	47.7	*
Sat 25/03/2023 05:30	60.3	75.3	64.6	48.1	*
Sat 25/03/2023 05:45	58.7	71.8	62.9	47.0	*
Sat 25/03/2023 06:00	60.4	77.5	64.7	46.3	*
Sat 25/03/2023 06:15	60.5	83.2	65.0	47.5	*
Sat 25/03/2023 06:30	60.2	79.9	64.4	44.7	*
Sat 25/03/2023 06:45	61.4	75.3	65.8	46.7	
Sat 25/03/2023 07:00	61.7	75.0	66.4	49.5	
Sat 25/03/2023 07:15	64.6	82.9	68.4	49.5	
Sat 25/03/2023 07:30	65.3	80.6	68.4	51.4	*
Sat 25/03/2023 07:45	61.8	76.7	66.2	50.2	
Sat 25/03/2023 08:00	66.6	83.1	69.7	53.7	
Sat 25/03/2023 08:15	62.7	72.1	66.5	53.4	*
Sat 25/03/2023 08:30	62.4	72.4	66.5	52.1	
Sat 25/03/2023 08:45	61.6	71.8	65.5	52.8	
Sat 25/03/2023 09:00	63.2	78.5	66.2	52.9	*
Sat 25/03/2023 09:15	66.6	83.7	69.3	53.9	*
Sat 25/03/2023 09:30	69.8	78.6	75.8	54.6	
Sat 25/03/2023 09:45	63.9	81.1	67.1	55.1	
Sat 25/03/2023 10:00	65.9	77.1	68.9	56.8	
Sat 25/03/2023 10:15	69.9	80.3	75.9	55.3	
Sat 25/03/2023 10:30	68.1	83.4	69.8	61.1	*
Sat 25/03/2023 10:45	70.7	84.9	75.5	59.8	*
Sat 25/03/2023 11:00	65.8	83.3	69.3	54.8	
Sat 25/03/2023 11:15	66.9	82.7	69.4	57.4	*

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sat 25/03/2023 11:30	66.6	82.8	69.2	56.8	
Sat 25/03/2023 11:45	64.2	80.8	67.3	54.3	*
Sat 25/03/2023 12:00	71.1	88.1	76.2	61.0	
Sat 25/03/2023 12:15	70.0	86.5	75.4	58.1	*
Sat 25/03/2023 12:30	65.3	76.8	67.1	57.8	*
Sat 25/03/2023 12:45	64.5	81.3	66.8	59.5	
Sat 25/03/2023 13:00	64.7	83.7	67.1	55.1	
Sat 25/03/2023 13:15	67.4	92.1	69.4	55.4	*
Sat 25/03/2023 13:30	64.4	77.5	67.3	58.5	
Sat 25/03/2023 13:45	63.1	72.3	66.3	54.8	
Sat 25/03/2023 14:00	63.8	78.1	66.3	54.2	
Sat 25/03/2023 14:15	64.4	80.5	67.0	57.9	*
Sat 25/03/2023 14:30	71.8	81.0	76.2	60.6	
Sat 25/03/2023 14:45	70.2	83.7	75.8	56.9	
Sat 25/03/2023 15:00	68.6	85.2	70.0	61.5	*
Sat 25/03/2023 15:15	67.8	86.4	69.9	57.3	
Sat 25/03/2023 15:30	63.5	73.8	66.8	56.4	
Sat 25/03/2023 15:45	66.5	88.3	69.3	55.9	
Sat 25/03/2023 16:00	68.1	87.0	69.1	56.8	
Sat 25/03/2023 16:15	70.7	88.5	75.4	58.5	
Sat 25/03/2023 16:30	65.7	86.6	68.0	55.7	
Sat 25/03/2023 16:45	64.8	88.6	67.7	55.2	
Sat 25/03/2023 17:00	67.6	85.8	69.4	57.9	
Sat 25/03/2023 17:15	69.8	90.3	69.8	54.3	
Sat 25/03/2023 17:30	66.8	87.8	69.0	54.9	
Sat 25/03/2023 17:45	69.0	87.8	70.1	59.8	
Sat 25/03/2023 18:00	72.9	95.1	76.2	62.4	
Sat 25/03/2023 18:15	69.0	85.0	70.4	60.4	
Sat 25/03/2023 18:30	64.0	75.7	67.2	53.1	
Sat 25/03/2023 18:45	63.2	78.9	66.3	50.9	
Sat 25/03/2023 19:00	61.7	76.1	65.1	51.6	
Sat 25/03/2023 19:15	63.5	77.5	66.5	52.9	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sat 25/03/2023 19:30	64.0	79.9	67.3	54.2	
Sat 25/03/2023 19:45	66.7	82.3	69.4	56.6	
Sat 25/03/2023 20:00	64.4	79.2	67.4	53.6	
Sat 25/03/2023 20:15	64.6	86.2	67.3	53.7	
Sat 25/03/2023 20:30	63.3	78.0	66.8	53.3	
Sat 25/03/2023 20:45	66.2	88.9	69.3	55.7	
Sat 25/03/2023 21:00	63.1	79.9	66.2	53.3	
Sat 25/03/2023 21:15	62.8	74.7	66.7	51.2	
Sat 25/03/2023 21:30	63.2	78.7	66.6	52.5	
Sat 25/03/2023 21:45	62.9	79.9	66.2	53.0	
Sat 25/03/2023 22:00	63.8	78.0	67.0	53.9	
Sat 25/03/2023 22:15	64.3	83.2	67.0	52.6	
Sat 25/03/2023 22:30	62.6	73.7	66.0	55.0	
Sat 25/03/2023 22:45	63.7	81.3	67.0	52.0	
Sat 25/03/2023 23:00	62.7	80.0	65.8	51.9	
Sat 25/03/2023 23:15	62.8	77.4	66.2	51.7	
Sat 25/03/2023 23:30	62.2	76.0	65.4	51.2	
Sat 25/03/2023 23:45	62.9	79.4	66.1	49.8	
Sun 26/03/2023 00:00	63.0	81.0	66.2	50.2	
Sun 26/03/2023 00:15	62.0	79.1	64.9	50.8	
Sun 26/03/2023 00:30	61.3	72.7	65.3	48.7	
Sun 26/03/2023 00:45	61.8	79.9	65.2	49.4	
Sun 26/03/2023 01:00	61.9	79.1	65.8	48.8	
Sun 26/03/2023 01:15	60.9	76.6	64.9	49.7	
Sun 26/03/2023 01:30	61.8	80.5	65.6	48.4	
Sun 26/03/2023 01:45	61.8	75.6	66.0	48.4	
Sun 26/03/2023 02:00	59.4	73.6	63.5	47.3	
Sun 26/03/2023 02:15	60.4	71.6	64.9	46.8	
Sun 26/03/2023 02:30	60.6	79.0	64.7	47.4	
Sun 26/03/2023 02:45	60.2	78.6	64.2	46.4	
Sun 26/03/2023 03:00	60.2	77.5	64.2	47.7	
Sun 26/03/2023 03:15	59.2	72.0	64.1	46.0	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sun 26/03/2023 03:30	58.9	77.3	62.5	45.4	
Sun 26/03/2023 03:45	58.8	71.6	63.3	44.8	
Sun 26/03/2023 04:00	58.4	73.6	62.9	43.5	
Sun 26/03/2023 04:15	57.6	71.1	62.7	42.6	
Sun 26/03/2023 04:30	57.7	71.1	62.2	45.6	
Sun 26/03/2023 04:45	56.7	72.4	60.5	43.0	
Sun 26/03/2023 05:00	56.7	71.2	61.0	43.5	
Sun 26/03/2023 05:15	58.5	76.0	62.6	45.8	
Sun 26/03/2023 05:30	60.1	76.2	64.5	45.6	
Sun 26/03/2023 05:45	60.7	84.0	63.7	45.9	
Sun 26/03/2023 06:00	59.2	72.8	63.5	44.8	
Sun 26/03/2023 06:15	60.2	73.8	64.6	46.3	
Sun 26/03/2023 06:30	60.7	73.4	64.9	46.6	
Sun 26/03/2023 06:45	59.8	71.5	64.3	49.0	
Sun 26/03/2023 07:00	59.8	71.5	64.0	48.6	
Sun 26/03/2023 07:15	58.8	70.1	63.0	47.2	
Sun 26/03/2023 07:30	60.3	73.9	64.3	49.3	
Sun 26/03/2023 07:45	59.7	70.5	64.0	46.2	
Sun 26/03/2023 08:00	59.7	73.2	64.1	45.4	
Sun 26/03/2023 08:15	60.5	71.7	64.8	49.5	
Sun 26/03/2023 08:30	61.4	77.8	65.2	49.3	
Sun 26/03/2023 08:45	60.8	71.7	64.7	50.6	
Sun 26/03/2023 09:00	61.8	72.8	65.1	51.0	
Sun 26/03/2023 09:15	62.3	80.5	66.2	50.9	
Sun 26/03/2023 09:30	66.1	87.5	68.6	55.0	
Sun 26/03/2023 09:45	61.9	79.6	65.3	50.7	
Sun 26/03/2023 10:00	64.2	77.0	68.1	54.1	
Sun 26/03/2023 10:15	68.7	85.6	70.2	58.4	
Sun 26/03/2023 10:30	63.1	81.2	66.6	53.4	
Sun 26/03/2023 10:45	64.9	81.0	68.5	52.3	
Sun 26/03/2023 11:00	64.7	82.2	68.3	55.3	
Sun 26/03/2023 11:15	70.0	79.2	75.2	54.9	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sun 26/03/2023 11:30	66.6	85.2	69.0	53.4	
Sun 26/03/2023 11:45	67.6	87.3	69.6	56.2	
Sun 26/03/2023 12:00	65.1	83.2	68.6	52.0	
Sun 26/03/2023 12:15	70.1	85.5	74.6	58.6	
Sun 26/03/2023 12:30	69.4	87.6	75.3	57.7	
Sun 26/03/2023 12:45	66.6	88.9	68.9	54.6	
Sun 26/03/2023 13:00	65.5	86.3	69.0	54.0	
Sun 26/03/2023 13:15	66.4	85.1	69.2	53.8	
Sun 26/03/2023 13:30	63.1	79.2	66.3	53.6	
Sun 26/03/2023 13:45	69.5	78.9	75.3	57.8	
Sun 26/03/2023 14:00	64.9	89.2	68.3	57.0	
Sun 26/03/2023 14:15	69.4	82.2	75.8	53.7	
Sun 26/03/2023 14:30	65.4	86.2	68.9	55.6	
Sun 26/03/2023 14:45	64.7	78.8	68.4	55.3	
Sun 26/03/2023 15:00	67.3	85.2	69.8	57.0	
Sun 26/03/2023 15:15	69.6	78.6	75.8	56.6	
Sun 26/03/2023 15:30	64.3	88.7	66.2	53.7	
Sun 26/03/2023 15:45	66.3	81.8	69.0	58.1	
Sun 26/03/2023 16:00	67.0	90.6	69.9	57.1	
Sun 26/03/2023 16:15	63.2	78.0	66.3	53.4	
Sun 26/03/2023 16:30	69.5	91.3	71.4	58.9	
Sun 26/03/2023 16:45	68.4	79.2	70.7	55.0	
Sun 26/03/2023 17:00	67.1	81.9	69.9	56.6	
Sun 26/03/2023 17:15	68.2	82.6	70.2	59.2	
Sun 26/03/2023 17:30	65.8	82.9	69.4	52.7	
Sun 26/03/2023 17:45	64.4	79.1	68.3	54.8	
Sun 26/03/2023 18:00	69.6	78.5	75.8	56.5	
Sun 26/03/2023 18:15	63.6	77.9	66.7	54.8	
Sun 26/03/2023 18:30	69.6	79.0	76.0	53.8	
Sun 26/03/2023 18:45	61.8	73.0	65.5	52.0	
Sun 26/03/2023 19:00	64.8	80.8	68.3	53.5	
Sun 26/03/2023 19:15	63.9	77.9	67.1	53.3	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Sun 26/03/2023 19:30	61.7	73.7	65.4	52.5	
Sun 26/03/2023 19:45	62.2	77.0	65.7	52.3	
Sun 26/03/2023 20:00	63.8	83.7	66.3	51.5	
Sun 26/03/2023 20:15	63.2	84.3	65.9	52.7	
Sun 26/03/2023 20:30	62.4	74.3	66.2	49.6	
Sun 26/03/2023 20:45	61.7	72.4	65.3	49.6	
Sun 26/03/2023 21:00	66.7	83.4	68.7	55.5	
Sun 26/03/2023 21:15	63.3	77.1	67.7	48.9	
Sun 26/03/2023 21:30	61.5	72.5	65.5	47.5	
Sun 26/03/2023 21:45	65.1	82.3	68.3	50.2	
Sun 26/03/2023 22:00	60.9	75.2	64.7	48.1	
Sun 26/03/2023 22:15	61.5	78.0	65.1	47.1	
Sun 26/03/2023 22:30	65.5	82.4	68.9	50.7	
Sun 26/03/2023 22:45	59.5	73.9	64.0	45.9	
Sun 26/03/2023 23:00	59.4	73.7	64.0	44.5	
Sun 26/03/2023 23:15	59.1	71.7	63.5	46.7	
Sun 26/03/2023 23:30	59.4	71.7	63.9	45.3	
Sun 26/03/2023 23:45	59.3	72.7	63.8	44.8	
Mon 27/03/2023 00:00	56.8	73.6	61.1	40.9	
Mon 27/03/2023 00:15	57.5	77.7	61.5	39.9	
Mon 27/03/2023 00:30	57.9	69.1	62.8	42.1	
Mon 27/03/2023 00:45	57.6	72.2	62.3	36.5	
Mon 27/03/2023 01:00					
Mon 27/03/2023 01:15					
Mon 27/03/2023 01:30					
Mon 27/03/2023 01:45					
Mon 27/03/2023 02:00	55.4	71.3	60.3	35.1	
Mon 27/03/2023 02:15	57.1	72.9	61.1	35.7	
Mon 27/03/2023 02:30	57.6	74.3	61.7	37.6	
Mon 27/03/2023 02:45	56.7	71.5	61.3	35.9	
Mon 27/03/2023 03:00	55.5	72.5	59.6	37.8	
Mon 27/03/2023 03:15	55.0	70.3	59.7	33.9	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Mon 27/03/2023 03:30	55.7	70.4	60.2	35.0	
Mon 27/03/2023 03:45	52.4	67.6	56.5	33.8	
Mon 27/03/2023 04:00	57.8	78.8	61.4	35.5	
Mon 27/03/2023 04:15	57.9	77.9	60.4	38.1	
Mon 27/03/2023 04:30	56.5	78.9	58.7	39.5	
Mon 27/03/2023 04:45	56.7	72.1	60.5	39.2	
Mon 27/03/2023 05:00	55.7	71.2	58.9	38.9	
Mon 27/03/2023 05:15	55.6	73.4	59.4	40.1	
Mon 27/03/2023 05:30	57.3	75.0	61.7	42.0	
Mon 27/03/2023 05:45	60.6	76.7	65.0	46.6	
Mon 27/03/2023 06:00	59.2	75.8	63.7	44.2	
Mon 27/03/2023 06:15	60.4	78.0	64.7	46.2	
Mon 27/03/2023 06:30	60.3	75.6	64.7	46.0	
Mon 27/03/2023 06:45	61.6	77.6	65.6	47.8	
Mon 27/03/2023 07:00	65.0	84.7	68.2	52.5	
Mon 27/03/2023 07:15	66.8	85.5	69.8	53.8	
Mon 27/03/2023 07:30	64.5	75.7	67.7	53.6	
Mon 27/03/2023 07:45	64.2	79.1	67.7	53.7	
Mon 27/03/2023 08:00	64.3	73.3	67.8	55.3	
Mon 27/03/2023 08:15	68.9	89.5	70.6	60.5	
Mon 27/03/2023 08:30	64.1	89.1	66.1	54.3	
Mon 27/03/2023 08:45	66.9	93.3	70.0	54.9	
Mon 27/03/2023 09:00	64.2	79.8	67.0	54.4	
Mon 27/03/2023 09:15	63.7	79.8	66.9	52.7	
Mon 27/03/2023 09:30	62.6	74.7	66.5	50.8	
Mon 27/03/2023 09:45	62.6	72.6	66.3	53.2	
Mon 27/03/2023 10:00	64.9	77.2	68.6	51.6	
Mon 27/03/2023 10:15	63.8	83.9	67.9	52.7	
Mon 27/03/2023 10:30	63.4	75.8	66.5	54.2	
Mon 27/03/2023 10:45	70.6	90.2	76.4	56.7	
Mon 27/03/2023 11:00	64.6	79.9	68.5	52.6	
Mon 27/03/2023 11:15	66.6	81.6	69.7	54.4	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Mon 27/03/2023 11:30	66.9	82.9	69.7	54.2	
Mon 27/03/2023 11:45	63.7	78.3	67.0	55.0	
Mon 27/03/2023 12:00	64.3	89.8	65.9	50.4	
Mon 27/03/2023 12:15	62.9	84.2	65.7	51.3	
Mon 27/03/2023 12:30	68.6	78.9	74.0	54.9	
Mon 27/03/2023 12:45	66.1	79.1	67.7	54.1	
Mon 27/03/2023 13:00	64.9	88.5	66.7	53.7	
Mon 27/03/2023 13:15	63.4	74.6	66.5	54.8	
Mon 27/03/2023 13:30	65.9	82.4	69.0	56.7	
Mon 27/03/2023 13:45	63.5	78.7	66.5	53.3	
Mon 27/03/2023 14:00	69.0	79.0	74.8	57.5	
Mon 27/03/2023 14:15	63.2	83.3	65.6	54.5	
Mon 27/03/2023 14:30	66.6	81.3	69.2	55.8	
Mon 27/03/2023 14:45	68.9	80.2	74.2	58.7	
Mon 27/03/2023 15:00	68.8	78.4	74.9	55.3	
Mon 27/03/2023 15:15	62.6	76.4	65.8	53.8	
Mon 27/03/2023 15:30	64.8	82.5	68.1	57.1	
Mon 27/03/2023 15:45	68.3	92.3	69.7	57.4	
Mon 27/03/2023 16:00	63.3	76.5	66.4	54.8	
Mon 27/03/2023 16:15	63.0	78.5	65.6	55.3	
Mon 27/03/2023 16:30	67.3	83.4	69.9	53.7	
Mon 27/03/2023 16:45	65.5	83.5	69.1	56.9	
Mon 27/03/2023 17:00	63.2	78.4	65.9	55.7	
Mon 27/03/2023 17:15	63.5	76.7	66.6	55.5	
Mon 27/03/2023 17:30	63.3	78.3	66.0	55.4	
Mon 27/03/2023 17:45	64.4	90.7	66.3	52.8	
Mon 27/03/2023 18:00	63.5	81.1	65.9	55.1	
Mon 27/03/2023 18:15	63.2	82.1	65.8	53.0	
Mon 27/03/2023 18:30	62.8	73.6	65.7	55.3	
Mon 27/03/2023 18:45	67.2	83.2	70.0	55.2	
Mon 27/03/2023 19:00	67.6	82.5	70.4	57.8	
Mon 27/03/2023 19:15	66.0	82.5	69.5	53.4	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Mon 27/03/2023 19:30	67.2	81.4	70.0	55.7	
Mon 27/03/2023 19:45	63.0	78.9	66.2	51.6	
Mon 27/03/2023 20:00	69.3	79.0	75.9	54.2	
Mon 27/03/2023 20:15	62.9	78.2	66.1	54.2	
Mon 27/03/2023 20:30	62.4	78.3	65.8	50.0	
Mon 27/03/2023 20:45	69.8	79.4	76.3	54.6	
Mon 27/03/2023 21:00	62.6	75.7	66.1	52.0	
Mon 27/03/2023 21:15	62.7	79.2	66.2	50.6	
Mon 27/03/2023 21:30	62.9	72.5	66.6	53.0	
Mon 27/03/2023 21:45	63.0	80.3	66.1	51.3	
Mon 27/03/2023 22:00	62.0	79.5	65.4	49.8	
Mon 27/03/2023 22:15	65.4	83.0	69.0	51.6	
Mon 27/03/2023 22:30	63.9	86.2	65.5	53.1	
Mon 27/03/2023 22:45	64.4	90.5	66.7	51.6	
Mon 27/03/2023 23:00	66.2	83.5	69.3	51.5	
Mon 27/03/2023 23:15	63.1	83.2	65.7	48.9	
Mon 27/03/2023 23:30	60.3	73.5	64.6	48.3	
Mon 27/03/2023 23:45	61.0	76.1	64.9	48.2	
Tue 28/03/2023 00:00	65.1	91.5	65.8	48.4	
Tue 28/03/2023 00:15	59.6	70.3	63.9	48.0	
Tue 28/03/2023 00:30	59.7	77.0	63.8	46.0	
Tue 28/03/2023 00:45	59.2	82.2	63.3	45.1	
Tue 28/03/2023 01:00	57.7	71.1	62.7	42.6	
Tue 28/03/2023 01:15	58.1	72.4	62.9	41.2	
Tue 28/03/2023 01:30	55.8	72.4	60.3	41.5	
Tue 28/03/2023 01:45	56.4	73.9	60.5	40.5	
Tue 28/03/2023 02:00	56.7	74.3	61.5	41.4	
Tue 28/03/2023 02:15	57.1	72.3	61.6	41.3	
Tue 28/03/2023 02:30	58.0	77.8	62.3	41.2	
Tue 28/03/2023 02:45	55.9	72.6	59.1	39.0	
Tue 28/03/2023 03:00	54.4	70.2	58.8	39.7	
Tue 28/03/2023 03:15	55.3	71.1	59.8	39.2	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Tue 28/03/2023 03:30	55.2	71.7	59.6	39.2	
Tue 28/03/2023 03:45	56.3	88.1	56.6	38.9	
Tue 28/03/2023 04:00	54.3	71.8	58.0	40.0	
Tue 28/03/2023 04:15	55.4	76.6	57.4	41.0	
Tue 28/03/2023 04:30	53.2	71.9	55.2	41.4	
Tue 28/03/2023 04:45	53.5	70.8	56.6	42.0	
Tue 28/03/2023 05:00	57.5	81.2	58.0	43.1	
Tue 28/03/2023 05:15	57.3	73.1	61.4	45.4	
Tue 28/03/2023 05:30	58.6	74.8	62.9	46.2	
Tue 28/03/2023 05:45	59.0	74.2	63.4	47.8	
Tue 28/03/2023 06:00	59.0	77.9	63.4	47.2	
Tue 28/03/2023 06:15	58.9	71.9	63.2	49.1	
Tue 28/03/2023 06:30	61.2	77.4	64.8	50.5	
Tue 28/03/2023 06:45	61.0	73.7	65.5	50.2	
Tue 28/03/2023 07:00	63.3	85.2	66.5	55.1	
Tue 28/03/2023 07:15	63.3	77.4	66.8	52.6	
Tue 28/03/2023 07:30	63.7	77.0	67.0	55.1	
Tue 28/03/2023 07:45	65.6	83.2	68.8	53.8	
Tue 28/03/2023 08:00	65.9	82.5	69.3	55.6	
Tue 28/03/2023 08:15	68.7	77.9	74.8	58.3	
Tue 28/03/2023 08:30	72.2	94.8	76.4	56.9	
Tue 28/03/2023 08:45	66.4	86.3	69.1	58.1	
Tue 28/03/2023 09:00	66.4	82.7	69.5	56.5	
Tue 28/03/2023 09:15	63.1	74.2	66.6	54.3	
Tue 28/03/2023 09:30	63.2	77.4	66.4	54.1	
Tue 28/03/2023 09:45	64.3	74.4	67.3	55.4	
Tue 28/03/2023 10:00	63.9	74.2	67.6	54.3	
Tue 28/03/2023 10:15	66.1	79.9	69.7	55.2	
Tue 28/03/2023 10:30	72.8	95.9	71.9	57.0	
Tue 28/03/2023 10:45	69.5	82.8	72.3	59.7	
Tue 28/03/2023 11:00	68.6	80.3	71.8	59.1	
Tue 28/03/2023 11:15	69.6	84.9	72.4	59.3	

Day, Date and Time	$L_{Aeq,15min}$	$L_{A90,15min}$	$L_{A10,15min}$	$L_{Amax(F)}$	Weather Excl.
Tue 28/03/2023 11:30	69.0	81.3	72.0	59.2	
Tue 28/03/2023 11:45	68.2	76.0	71.6	58.3	

Figure 04-01
Time History Graph – Location 1, dB

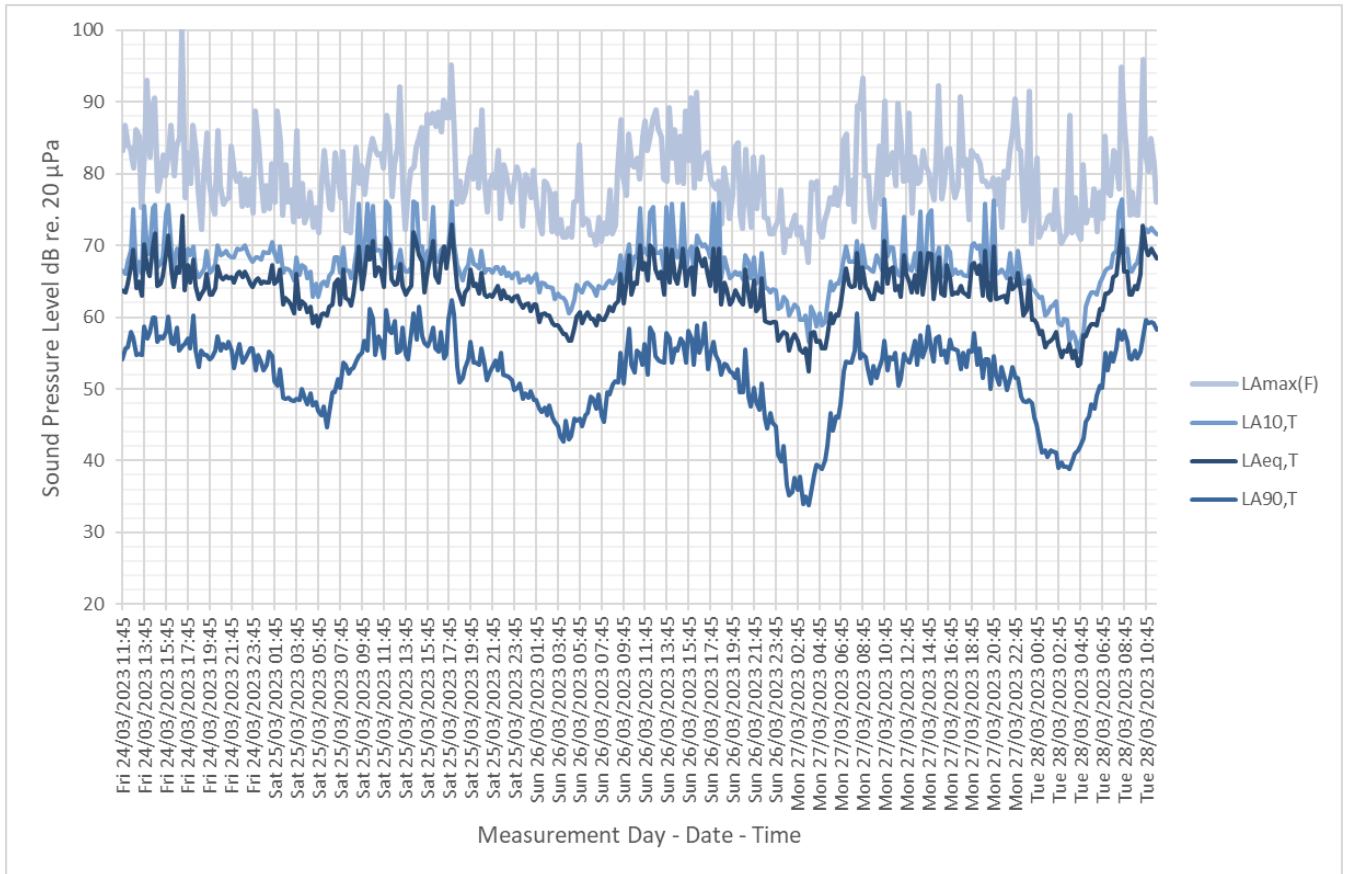


Figure 04-02
Background Sound Level Histogram – Day, Evening, Night – Weather Excluded – Location 1, dB

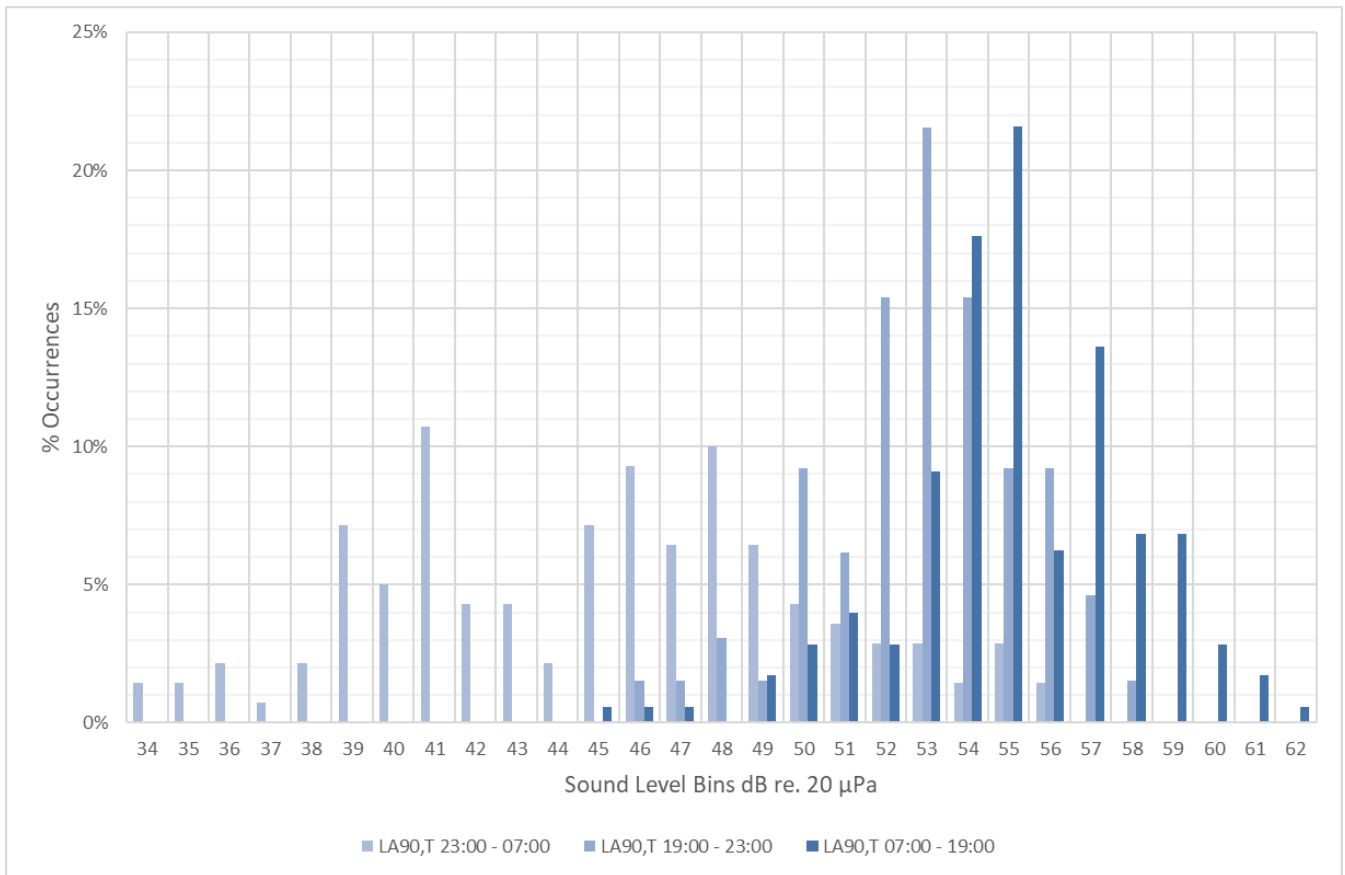
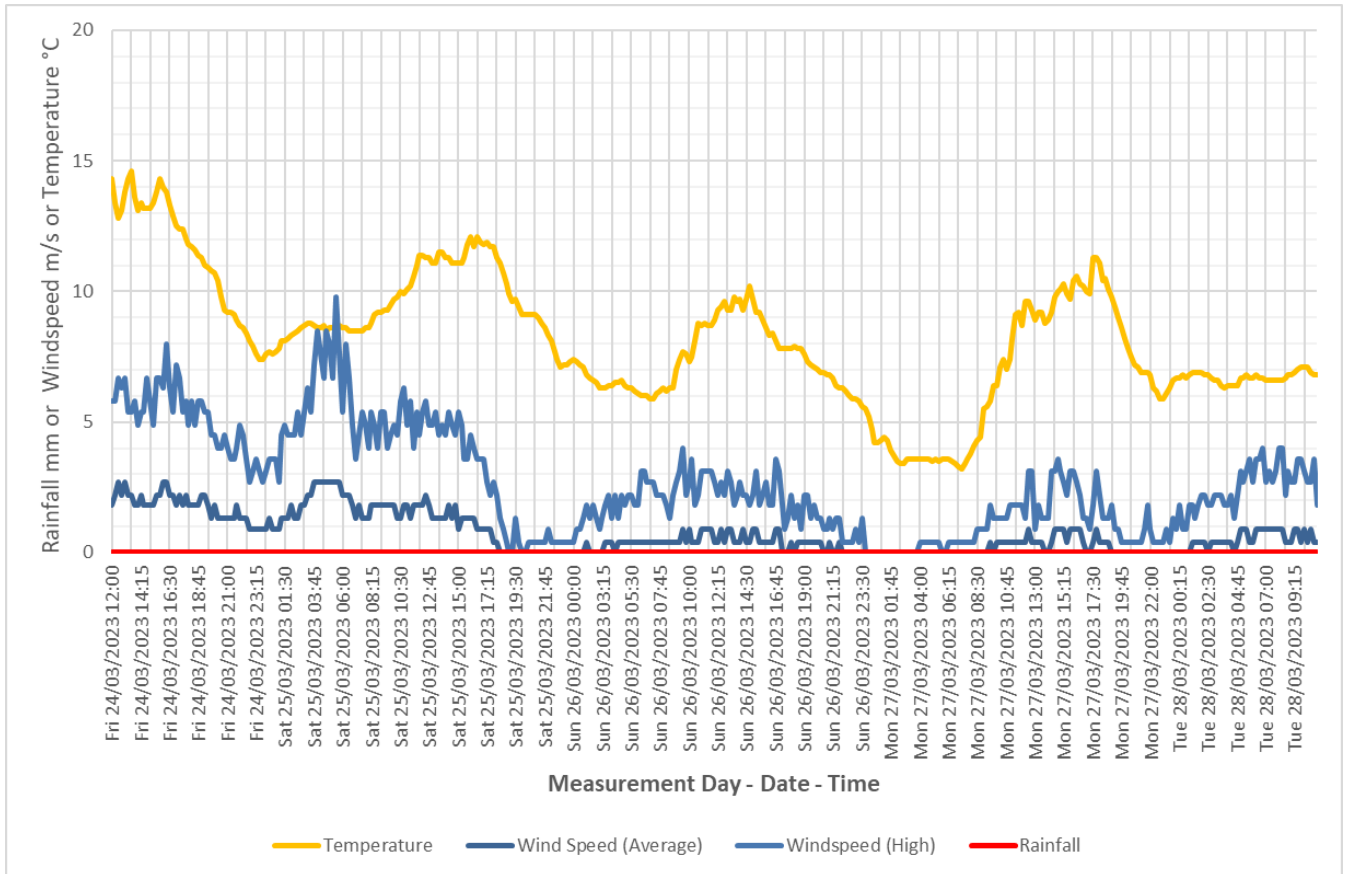


Figure 04-03

BS4142 'Typical' background noise level calculation – Night – Weather Excluded – Location 1, dB

Time	Measured LA90 levels				P			
	24 to 25 Mar	25 to 26 Mar	26 to 27 Mar	27 to 28 Mar	Arithmetic Average			
23:00	54.1	51.9	44.5	48.4	49.7	Arithmetic Average of column P		45.1
23:15	55.0	51.7	46.7	48	50.4	Minimum value of column P		39.2
23:30	55.6	51.2	45.3	46	49.5	Maximum value of column P		50.4
23:45	55.7	49.8	44.8	45.1	48.9			
00:00	52.6	50.2	40.9	48.4	48.0	Mean value of full data set		45.7
00:15	54.7	50.8	39.9	48.0	48.4	Minimum value full data set		33.8
00:30	53.6	48.7	42.1	46.0	47.6	Maximum value full data set		55.7
00:45	52.6	49.4	36.5	45.1	45.9			
01:00	53.3	48.8		42.6	48.2	39 dB is taken as the typical background as it is the minimum value of the averaged individual 15 minute periods		
01:15	55.2	49.7		41.2	48.7			
01:30	54.6	48.4		41.5	48.2			
01:45	51.1	48.4		40.5	46.7			
02:00	50.4	47.3	35.1	41.4	43.6	The struck through values have been removed due to influence from weather conditions		
02:15	52.7	46.8	35.7	41.3	44.1			
02:30	48.8	47.4	37.6	41.2	42.1			
02:45	48.7	46.4	35.9	39.0	42.5			
03:00	48.8	47.7	37.8	39.7	41.7			
03:15	48.5	46.0	33.9	39.2	39.7			
03:30	48.3	45.4	35.0	39.2	39.9			
03:45	48.6	44.8	33.8	38.9	39.2			
04:00	48.5	43.5	35.5	40.0	39.7			
04:15	50.0	42.6	38.1	41.0	40.6			
04:30	48.7	45.6	39.5	41.4	42.2			
04:45	47.9	43.0	39.2	42.0	41.4			
05:00	49.4	43.5	38.9	43.1	41.8			
05:15	47.7	45.8	40.1	45.4	43.8			
05:30	48.1	45.6	42.0	46.2	44.6			
05:45	47.0	45.9	46.6	47.8	46.8			
06:00	46.3	44.8	44.2	47.2	45.4			
06:15	47.5	46.3	46.2	49.1	47.2			
06:30	44.7	46.6	46.0	50.5	47.7			
06:45	46.7	49.0	47.8	50.2	48.4			

Figure 04-04
Weather Time History Graph – Location 1



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