



Noise Impact Assessment

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

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Basis of Report

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1.0 Introduction

Iron Mountain UK Data Centre Ltd. (IM) instructed SLR Consulting Ltd (SLR) to undertake a noise assessment for the operational Slough Data Centre (SDC) development (LON-01).

SDC LON-01 is located at 724-729 Dundee Rd, Slough SL1 4JU.

Emergency Standby Generators (SBGs) in use at the data centre require an environmental permit to operate in accordance with the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (EPR).

An Environmental Permitting Regulations (EPR) permit application is required to operate the SBGs based on the total generating capacity exceeding the Environment Agency guidance level of >50MWth.

The Environment Agency produced an EPR compliance assessment report (Ref: Report ID: LP3020MX/99999), dated 02 February 2026 detailed the following:

“Generators Inventory includes six MTU (HV) 4.75MWth, three Caterpillar 6MWth and two MTU 7.6MWth, aggregating to about 60MWth. Site exceeded the 50MWth in 2020 so must now apply for a permit. Although some are twenty years old, the generators appear well maintained, with low operating hours”.

The SBGs are subject to limited planned maintenance and testing (annually each generator will be operated for maintenance and testing purposes for less than 50 hours per year).

Furthermore, the generators are not operated for balancing services, demand side response or for the export of electricity.

A Noise Impact Assessment (NIA) is to be submitted as part of an environmental permit application.

For the purpose of this NIA, we have assumed that the SBGs will be used solely for emergency back-up purposes, providing power to a site in the event of an emergency situation such as a brown or black-out of the electricity transmission network.

1.1 Standby Generators

Electricity for operation of the LON-01 is provided from connections to the local electricity transmission network; however, given the nature of data centres and their requirement to have an available energy supply at all times, the SDC LON-01 also incorporates a number of emergency SBGs.

The SBGs will provide power to the data centre in the event of an emergency situation such as a brown-out or black-out of the local electricity transmission network where there are fluctuations or loss of the electrical power provided by the network.

The SBGs, in accordance with the manufacturer requirements, will be subject to planned maintenance and testing. There are currently no agreements in place for the elective generation of electricity for commercial export to the electricity grid and the SBGs do not operate except for programmed testing or emergency purposes.

1.2 Environmental Permitting Regulations (EPR)

In accordance with the EPR, there are two permitting routes for emergency back-up generators:

- Where the aggregated thermal rated input (MWth) of all the generators is 50MWth or greater, then these must be regulated as an installation activity, specifically a Section 1.1 A(1)(a) combustion activity.



or

- Where the aggregated thermal rated input (MWth) of all the generators is between 1MWth and <50MWth, a Medium Combustion Plant (MCP) permit will be required.

The final fitout is intended to provide 192MW IT power based on an incoming electrical supply of 275MW which will be made up of two redundant feeds and generator back-up.

1.2.1 Existing SBG Capacity

The data centre generators (all emergency backup use only) are understood to be >50MWth in total and are comprised of:

- 6 MTU DS3100 (HV) generators installed circa 2006
- 3 Caterpillar 3516E (LV) generators installed pre-2018
- 2 MTU DS3100 (LV) generators installed circa 2020.

Cooling will be provided by either:

- Dry air chillers with free cooling; or
- Adiabatic cooling with water treatment to suit the local incoming supply.

1.3 Report Structure

The assessment has been undertaken in accordance with the relevant EA and technical guidance and considers the potential impact at noise sensitive receptors (NSRs).

Due to the potential for the SBG plant to increase noise levels in the area this report includes:

- A description of the Site.
- A description of applicable guidance.
- An assessment of proposed operations undertaken in accordance with British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature; to assist the reader, a glossary of terminology is included in **Appendix A**.

2.0 Site Description

2.1 Existing Site

The installation is located at 724 – 729 Dundee Road, Slough, SL1 4JU. The location of the Site Red Line Boundary (RLB), nearest Noise Sensitive Receptors (NSRs) and baseline sound survey Noise Measurement Positions (NMPs) are detailed on **Figure 2-1**.

The area immediately surrounding the IM LON-1 site is of mixed use, with residential properties located 40m from the RLB to the north at Scafell Road, which runs from east to west. Further dwellings are situated at Sandown Road to the west approximately 25m from the applicant site RLB. The area to the south-west, south and east comprises of industrial and commercial premises, with the Slough to Burnham railway line and M4 motorway, around 500m and 2km from the southern boundary, respectively.

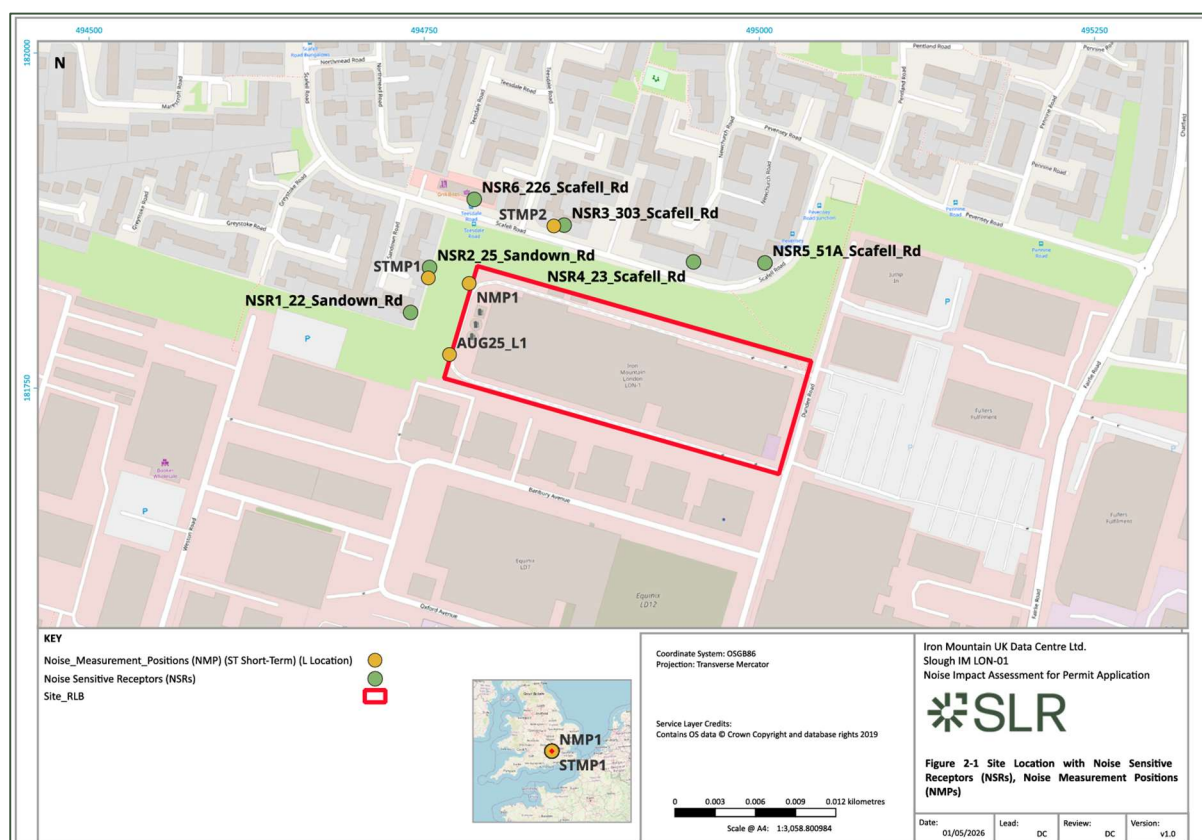
The assessment considers the NSRs detailed in **Table 2-1** and **Figure 2-1**.



Table 2-1: NSRs Included in NIA

NSR Identifier	Description	OSGB Coordinates	
		X	Y
NSR1	22 Sandown Road	494739.8	181806.3
NSR2	25 Sandown Road	494754.0	181840.0
NSR3	303 Scafell Road	494854.4	181871.5
NSR4	12 Scafell Road	494950.9	181844.1
NSR5	51A Scafell Road	495004.2	181843.3
NSR6	226 Scafell Road	494787.3	181890.7

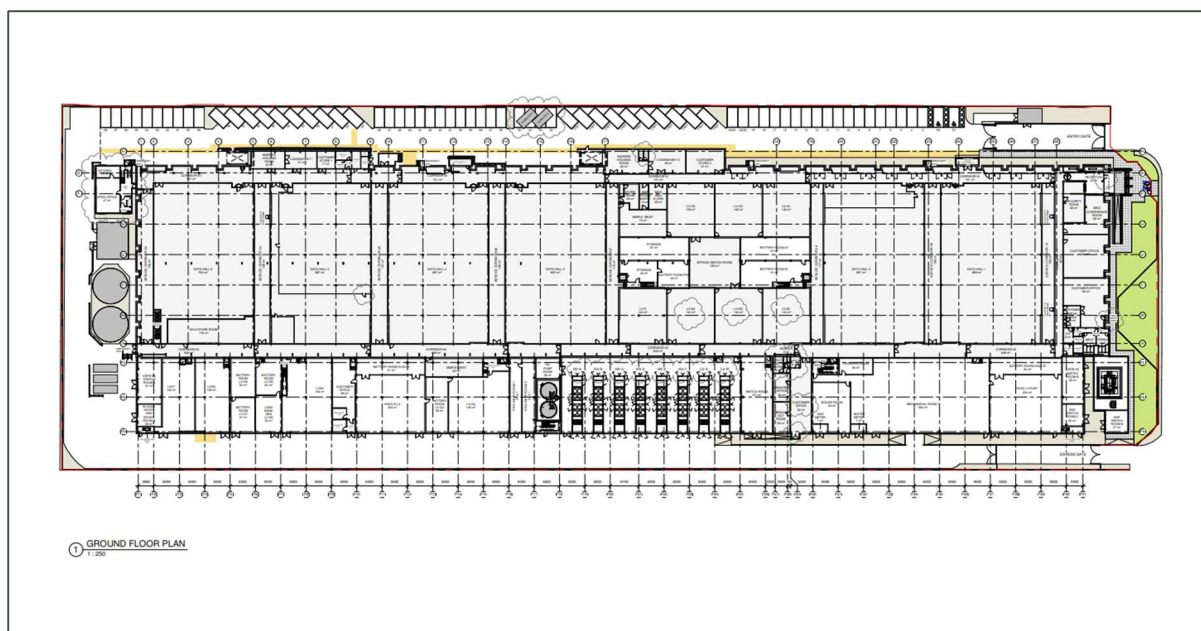
Figure 2-1: RLB with NSRs and NMPs



The existing ground floor site layout is detailed in **Figure 2-2** with the SBGs shown along the southern facade.



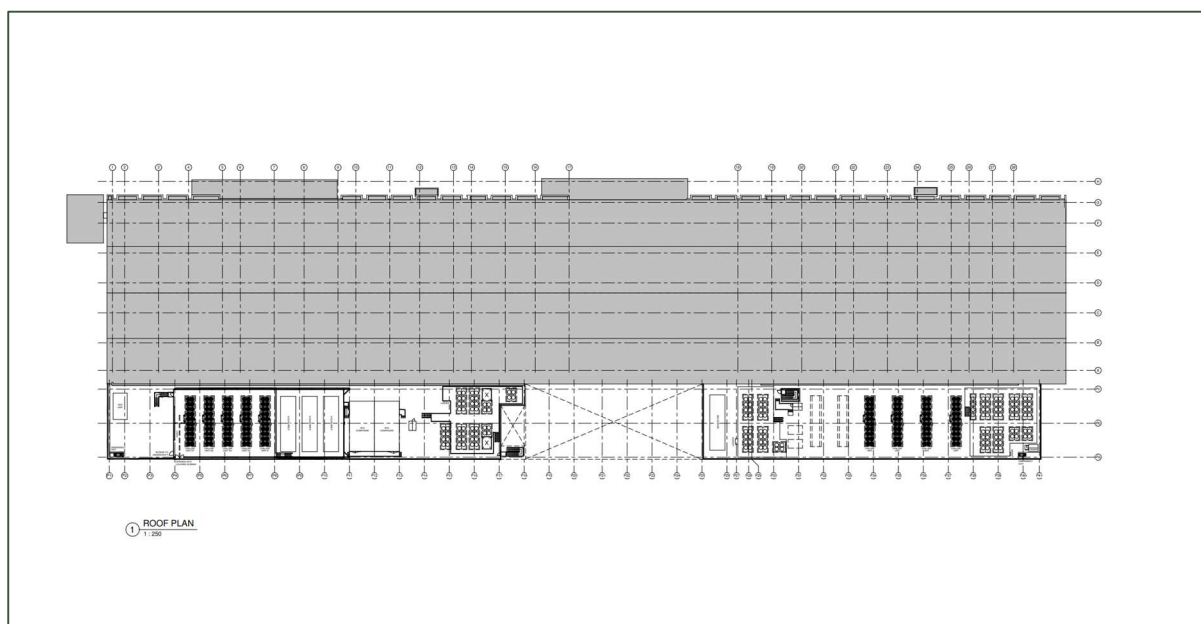
Figure 2-2: Existing Site Layout – Ground Floor Plan



Source: TPArchitects Ground Floor Plan Ref: 2947-TPA-MF-00-DR-A-20000 Rev. P02

The existing roof floor site layout is detailed in **Figure 2-3**.

Figure 2-3: Existing Site Layout – Roof Floor Plan



Source: TPArchitects Roof Floor Plan Ref: 2947-TPA-MF-RF-DR-A-20002 Rev. P01



3.0 Scope and Guidance

3.1 Legislative Context

There are legislative instruments which address the effects of environmental noise: the Environmental Protection Act 1990 (EPA), and The Control of Pollution Act 1974 (CoPA), The Environmental Noise (England) (Amendment) Regulation 2018.

3.1.1 Environmental Protection Act 1990¹

Section 79 of the Environmental Protection Act 1990 (the EPA 1990) defines statutory nuisance regarding noise and determines that Local Planning Authorities have a duty to detect such nuisances in their area. The EPA 1990 also defines the concept of 'Best Practicable Means' (BPM) as:

- *"Practicable" means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications;*
- *The means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures;*
- *The test is to apply only so far as compatible with any duty imposed by law; and*
- *The test is to apply only so far as compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances."*

Section 80 of the EPA provides a requirement for local authorities to investigate noise from industrial, trade or business premises, or vehicles, machinery or equipment in the street, and to determine if the noise is detrimental to health or constitutes a statutory nuisance. If the local authority determines that noise is detrimental to health or constitutes a statutory nuisance, the EPA gives the local authority the power to issue an abatement notice that requires the person responsible for producing the noise to prevent the noise from occurring.

3.1.2 Control of Pollution Act 1974²

The CoPA provides two means of controlling construction noise and vibration. Section 60 provides local authority with the power to impose, at any time, operating conditions on the development site. Section 61 allows the developer to negotiate a set of operating procedures with local authority consent prior to commencement of site works.

3.1.3 Environmental Noise Regulation 2006³

The Environmental Noise (England) (Amendment) Regulation 2018 directive is transposed into UK Law by The Environmental Noise (England) Regulations 2006, as amended 2018.

3.2 Guidance and Best Practice

This NIA has been undertaken with reference the following guidance and British Standards.

¹ Environmental Protection Act 1990 c.43. Available at URL: <https://www.legislation.gov.uk/ukpga/1990/43/contents>. Accessed 09 December 2025.

² Control of Pollution Act 1974 c.40. Available at URL: <https://www.legislation.gov.uk/ukpga/1974/40>. Accessed 09 December 2025.

³ Environmental Protection, England (2018). The Environmental Noise (England) (Amendment) Regulations 2018. HMSO, London



3.3 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* is intended to be used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby noise-sensitive receptor locations within the context of the existing sound environment.

3.4 ISO 9613-2:2024

The levels of sound generated by the operation of the proposed Plant has been predicted in accordance with the prediction framework within ISO 9613-2:2024 *Acoustics – Attenuation of Sound during Propagation Outdoors– Part 2 Engineering method for the prediction of sound pressure levels outdoors*. This method of calculation takes into account the distance between the sound sources and the closest receptors, and the amount of attenuation due to atmospheric absorption. The methodology also assumes downwind propagation, i.e. a wind direction that assists the propagation of sound from the source to the receiver.

3.4.1 Additional Guidance

Additional guidance and British Standards of relevance include:

- British Standard (BS) BS 7445: Part 1 – ‘Description and measurement of environmental noise - Guide to quantities and procedures’⁴
- British Standard (BS) BS 7445: Part 2 – ‘Description and measurement of environmental noise - Guide to the acquisition of data pertinent to land use’⁵
- British Standard (BS) BS 8233:2014 – ‘Guidance on Sound Insulation and Noise Reduction for Buildings’⁶
- British Standards Institution (BS) EN 61672-1:2003 ‘Electroacoustics. Sound level meters’⁷
- Environment Agency Guidance - Noise and vibration management: environmental permits (January 2022)⁸
- Environment Agency Guidance – Method Implementation Document (MID) for BS4142 (March 2023)⁹
- International Organization for Standardization ISO 9613-2:2024 ‘Acoustics — Attenuation of sound during propagation outdoors’¹⁰

⁴ BSI (2003). British Standards Institution BS7445-1 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures. BSI, London

⁵ BSI (1996). British Standards Institution BS7445-2 Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use. BSI, London

⁶ BSI (2014). British Standards Institution [BS] 8233: Sound Insulation and Noise

⁷ BSI (2003). British Standards Institution [BS] EN 61672-1:2003 Electroacoustics. Sound level meters. Specifications. BSI, London

⁸ Environment Agency Guidance - Noise and vibration management: environmental permits (January 2022). Available at URL: <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits>

⁹ Environment Agency Guidance – Method Implementation Document (MID) for BS4142 (March 2023). Available at URL: <https://www.gov.uk/government/publications/method-implementation-document-mid-for-bs-4142>

¹⁰ International Organization for Standardization (ISO) 9613-2:2024 *Acoustics – Attenuation of Sound during Propagation Outdoors– Part 2 Engineering method for the prediction of sound pressure levels outdoors*. International Organization for Standardization



- World Health Organization (WHO) (1999) 'Guidelines for Community Noise'¹¹
- World Health Organization (WHO) (2009) 'Night Noise Guidelines for Europe'¹²
- World Health Organization (WHO) (2018) 'Environmental Noise Guidelines for the European Region'¹³

3.4.2 Environment Agency Permit Related Guidance

Environment Agency guidance documents of significance for the NIA are:

Environment Agency Guidance - Noise and vibration management: environmental permits (January 2022)

This guidance presents how The Environment Agency will assess noise from certain industrial processes. It provides advice on what the law says an operator must do to manage noise and vibration and provides guidance on how to manage noise emissions. In particular, guidance is provided on how to conduct a noise impact assessment and what operators should include in a noise management plan.

Environment Agency Guidance – Method Implementation Document (MID) for BS4142 (March 2023)

MIDs set out how to use the relevant standards and guidance for regulatory monitoring when you are applying for a permit or demonstrating compliance with permit conditions. This latest MID (published 27 March 2023) supplements BS 4142:2014+A1:2019 Method for rating and assessing industrial and commercial sound (BS4142).

Pollution Prevention and Control (PPC) - Noise

Best practice suggests that the following procedure is adopted:

- Identify sensitive receptors;
- Review complaint history;
- Generate an inventory of the installation noise sources;
- Assess the breakout of noise from the installation and the impact of noise at the sensitive receptors;
- Identify noise sources relevant to the complaints or receptors;
- Demonstrate that Best Available Techniques (BAT) are being employed on the installation to control noise; and
- Measure and review the installation noise sources and overall installation impact on a regular basis.

¹¹ Berglund et al. (1999) - Guidelines for Community Noise. Geneva, World Health Organization (WHO)

¹² WHO (2009) – 'Night Noise Guidelines for Europe' World Health Organization (WHO)

¹³ WHO (2018) - Noise Guidelines for the European Region, World Health Organization (WHO)



4.0 Methodology

The EA published *Noise and vibration management: environmental permits (NVM) guidance* in January 2022 to help holders and potential holders of permits apply for, vary, and comply with their permits.

The NVM details when a noise assessment is required, the competency required to undertake an assessment and how to carry out a noise impact assessment, and references BS 4142 as the appropriate assessment methodology.

The NVM guidance outlines how context should be considered in the assessment and notes that:

“Whilst context allows you to interpret impact thresholds (to a degree), there are practical limits to the extent of the interpretation. It is unlikely you could adjust the assessment outcome beyond the next band (for example, modifying a BS 4142 outcome of more than 10dB to be less than an ‘adverse impact’).”

Different elements of the context of a situation may sway the assessment outcome in different directions, so all elements should be considered together. Context should consider:

- weekdays rather than weekends.
- what the sound ‘means’ – meaningful sound is one that conveys an unpleasant meaning beyond its mere acoustic content, for example noise from an abattoir.
- time of day.
- the absolute sound level.
- where the sound occurs.
- new industry or new residences.
- intrinsic links between the source and receptor, for example the source is the resident’s place of work.
- local attitudes.
- the residual acoustic environment.
- the land use at the receptor (for example, gardens rather than yards).
- the exceedance (traditional BS 4142).
- whatever else might be particular to that individual situation.

Based on the results of the BS 4142 assessment the NVM has three distinct requirements as detailed in **Table 4-1**.

Table 4-1: NVM Assessment

NVM Result	BS4142 Descriptor	Next Stage
Unacceptable level of audible or detectable noise	The closest corresponding BS 4142 descriptor is ‘significant adverse impact’	You must take further action or you may have to reduce or stop operations. The environment agencies will not issue a permit if you are likely to be operating at this level.
Audible or detectable noise	The closest corresponding BS 4142 descriptor is ‘adverse impact’	Your duty is to use appropriate measures to prevent or, where that is not practicable, minimise noise. You are not in breach if



NVM Result	BS4142 Descriptor	Next Stage
		you are using appropriate measures. But you will need to rigorously demonstrate that you are using appropriate measures.
No noise, or barely audible or detectable noise	The closest corresponding BS 4142 descriptor is 'low impact or no impact'	Low impact does not mean there is no pollution. However, if you have correctly assessed it as low impact under BS 4142, the environment agencies may decide that taking action to minimise noise is a low priority.

A summary of the requirements outlined in the EA MID, and the assessment methodology outlined in BS4142:2014+A1:2019 are provided below.

4.1 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* is intended to be used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby noise-sensitive receptor locations within the context of the existing sound environment.

Where the specific sound contains tonality, impulsivity and/or other sound characteristics, penalties should be applied depending on the perceptibility.

The assessment of impact contained in BS4142:2014+A1:2019 is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the noise-sensitive receptor location.

Consideration is then given to the context of the existing sound environment at the noise-sensitive receptor location to assess the potential impact.

BS 4142 (Section 3) provides the following definitions:

- **Ambient Sound:** Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. *NOTE: The ambient sound comprises the residual sound and the specific sound when present.*
- **Ambient Sound Level, $L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T. *NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.*
- **Background Sound Level, $L_{A90,T}$:** A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given interval, T, measured using time weighting F and quoted to the nearest whole number of decibels (dB).
- **Rating Level, $L_{AR,T}$:** Specific sound level plus any adjustment for the characteristic features of the sound.
- **Residual Sound:** Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.



- **Residual Sound Level, $L_r = L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
- **Specific Sound Level, $L_s = L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T.
- **Specific Sound Source:** Sound source being assessed.
- **Sound and Noise:** Careful distinction is made in BS 4142 between the terms “sound” and “noise”. Sound refers to a physical phenomenon that can be quantified using a sound level meter or other measurement system. In contrast, noise implies a human response—typically referring to sound that is perceived as intrusive, undesirable, or disruptive.

To account for the acoustic character of proposed sound sources, BS4142:2014+A1:2019 provides the following with respect to the application of penalties to account for *“the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention”*.

- **Tonality** – “For sound ranging from not tonal to predominantly tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of +2dB for a tone which is just perceptible at the noise receptor, +4dB where it is clearly perceptible and +6dB where it is highly perceptible;
- **Impulsivity** – A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of +3dB for impulsivity which is just perceptible at the noise receptor, +6dB where it is clearly perceptible, and +9dB where it is highly perceptible;
- **Intermittency** – When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied; and
- **Other Sound Characteristics** – Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied.”

The specific noise level along with any applicable correction is referred to as the ‘rating level’. The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact.

Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142:2014+A1:2019 states that the following should be considered:

- 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. It is an indication that the specific sound source has a **low impact**, depending on the context.

BS4142:2014+A1:2019 notes that:

“Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”

Finally, BS4142:2014+A1:2019 outlines guidance for the consideration of the context of the potential impact, including consideration of the existing residual sound levels, location and/or absolute sound levels.



5.0 Baseline Conditions

An understanding of the baseline noise environment is required to determine the significance of potential impacts during the proposed operational phases.

Noise is managed and driven by UK and local legislation and policies enacted through management at a local authority level. There is a policy trend towards the achievement and maintenance of the noise environment across the UK, which is reflected in current legislation, policy and guidance.

Predicted noise levels due to a change in land use, new developments and associated vehicles are generally assessed as part of the development planning and consent process.

Potential impacts to the prevailing soundscape should be minimised, avoided, or mitigated to suitable levels (in accordance with current legislation, policy and guidance), avoiding an adverse impact, where possible. Consequently, in relation to the SDC LON-01 site and its immediate vicinity, it is reasonable to predict a general steady baseline soundscape would be maintained.

5.1 Baseline Sound Surveys

Sound surveys included a combination of unattended and attended measurements conducted during August 2025 and March 2026.

5.1.1 Unattended Survey August 2025

Sandy Brown was commissioned by Foreman Roberts Consulting Ltd to provide acoustic advice in relation to the proposed development works at IMDC LON-01, 724-729 Dundee Road, Slough SL1 4JU. The proposed works include the potential replacement of existing roof mounted chiller units with new chillers and potential refurbishment of other plant.

Sandy Brown carried out an environmental noise survey to determine the existing sound levels in the area. The noise survey was carried out between 15:03 on Thursday 7 August 2025 and 13:18 on Monday 11 August 2025.

The representative background sound levels measured during the survey were $L_{A90,15min}$ 47 dB during the day and $L_{A90,15min}$ 46 dB at night.

The report is included in **Appendix B**.

5.1.2 Short Term Attended Survey March 2026

An attended baseline sound survey was undertaken by SLR in March 2026 to support the Permit application and to support and validate the unattended long term sound survey detailed in **Section 5.1.1**.

The attended baseline sound survey was undertaken at two locations representative of the nearest Noise Sensitive Receptors (NSRs) as detailed on **The installation** is located at 724 – 729 Dundee Road, Slough, SL1 4JU. The location of the Site Red Line Boundary (RLB), nearest Noise Sensitive Receptors (NSRs) and baseline sound survey Noise Measurement Positions (NMPs) are detailed on **Figure 2-1**.

The area immediately surrounding the IM LON-1 site is of mixed use, with residential properties located 40m from the RLB to the north at Scafell Road, which runs from east to west. Further dwellings are situated at Sandown Road to the west approximately 25m from the applicant site RLB. The area to the south-west, south and east comprises of industrial and commercial premises, with the Slough to Burnham railway line and M4 motorway, around 500m and 2km from the southern boundary, respectively.

The assessment considers the NSRs detailed in **Table 2-1** and **Figure 2-1**.



Table 2-1: NSRs Included in NIA

NSR Identifier	Description	OSGB Coordinates	
		X	Y
NSR1	22 Sandown Road	494739.8	181806.3
NSR2	25 Sandown Road	494754.0	181840.0
NSR3	303 Scafell Road	494854.4	181871.5
NSR4	12 Scafell Road	494950.9	181844.1
NSR5	51A Scafell Road	495004.2	181843.3
NSR6	226 Scafell Road	494787.3	181890.7

Figure 2-1. A time aligned SLM was placed (approximately the same location as the August 2025 SLM) at the IM LON-01 boundary for the duration of the attended measurements.

The baseline sound survey is summarised in this section with measurement equipment detailed in **Table 5-1**.

Table 5-1: Survey Equipment

Equipment ID	Description	Manufacturer	Type	Serial Number	Laboratory Calibration Date	Certificate Number
1	Sound Level Meter	Cirrus	CR:171B	G302667	17/12/2025	TCRT25/1944
	Pre-Amplifier	Cirrus	MV:200F	11288F		TCRT25/1947
	½" Pre-Polarised Microphone	Cirrus	MK:224	217661A		TCRT25/1944
	Outdoor kit	Cirrus	MK172	o957	17/12/2025	TCRT25/1944
	Calibrator	Cirrus	CR:515	94806	17/12/2025	TCRT25/1939
2	Sound Level Meter	Cirrus	CR:171B	G400059	12/02/2025	TCRT25/1139
	Pre-Amplifier	Cirrus	MV:200F	12872F		TCRT25/1139
	½" Pre-Polarised Microphone	Cirrus	MK:224	216587D		TCRT25/1139
	Outdoor kit	Cirrus	MK172	2546	13/02/2025	TCRT25/1143
	Calibrator	Cirrus	CR:515	94806	17/12/2025	TCRT25/1944

Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms⁻¹ at all times during the survey.

The calibration of the sound level meters was checked before and after each survey period, with no significant change in sensitivity observed (<0.2 dB).

For all static environmental measurements, the Sound Level Meter (SLM) was tripod mounted at approximately 1.5m above ground level and 3.5m away from any other reflective surface,



i.e., in free field conditions, in accordance with BS 7445:1991 “Description and Measurement of Environmental Noise”. For all surveys the microphone was covered with a windshield.

The time response of the SLM was set to fast (F), and the A-weighted sound pressure level and equivalent continuous A-weighted sound pressure level (L_{eq}) were measured. The SLM also measured spectral data in 1/3rd octave bands and statistical parameters including L_{A90} , L_{A10} , L_{AFmax} .

All measurements taken during the environmental sound survey were considered representative of the noise climate under ‘typical’ Site operations, i.e. without emergency generator plant on duty.

5.1.3 March 2026 Noise Survey Results

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. The measured sound levels are presented in **Table 5-2**, including $L_{Aeq,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 15-minute measurement over the stated survey period.

Table 5-2: Results of Baseline Noise Monitoring Survey 03 March 2026

Location	Reference Period	Duration (T) (mins)	Monitoring Times	Temp (°C)	Wind Speed (ms ⁻¹) and direction	$L_{Aeq,T}$ (dB)	$L_{AFmax,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
STMP1	Daytime	30	13:24 - 13:54	18	<1, SE	46	66	47	43
	Daytime	30	14:34 - 15:04	18	<1, SE	46	65	47	45
	Night-time	15	00:10 - 00:25	5	<1, S	46	54	47	44
	Night-time	15	00:51 - 01:06	5	<1, S	47	56	49	44
STMP2	Daytime	30	14:00 - 14:30	18	<1, SE	61	78	64	47
	Daytime	30	15:10 - 15:40	18	<1, SE	63	87	67	50
	Night-time	15	00:30 - 00:45	5	<1, S	54	71	57	47
	Night-time	15	01:11 - 01:26	5	<1, S	52	70	51	45
Boundary	Daytime	30	13:24 - 13:54	18	<1, SE	44	60	45	40
	Daytime	30	14:34 - 15:04	18	<1, SE	45	62	46	43
	Night-time	15	00:10 - 00:25	5	<1, S	45	59	46	44
	Night-time	15	00:51 - 01:06	5	<1, S	45	56	46	44
	Daytime	30	14:00 - 14:30	18	<1, SE	45	65	46	43
	Daytime	30	15:10 - 15:40	18	<1, SE	46	64	46	43
	Night-time	15	00:30 - 00:45	5	<1, S	45	52	46	44
	Night-time	15	01:11 - 01:26	5	<1, S	41	47	42	40
All values are sound pressure level in dBA re: 2x10 ⁻⁵ Pa.									

Table 5-2 shows the background ($L_{A90,T}$) sound level measured during the daytime and night-time reference periods at STMP1 was 44dBA. The $L_{A90,T}$ measured simultaneously at the boundary location was determined to be 41dBA and 44dBA during the daytime and night-time reference periods.



Table 5-2 shows the background ($L_{A90,T}$) sound level measured during the daytime and night-time reference periods at STMP2 was 49dBA and 46dBA respectively. The $L_{A90,T}$ measured in parallel at the boundary location was determined to be 43dBA and 42dBA during the daytime and night-time reference periods.

The measured sound levels are comparable with the longer-term data obtained during the August 2025 survey. The daytime and night-time reference periods were measured as 47dBA and 46dBA respectively.

5.1.4 Noise Survey Observations

The dominant noise sources during the March 2026 survey were observed to be from industrial sound sources within the wider surrounding area. Aircraft, HGV and forklift movements along with intermittent tools from construction activities south of the IM-LON-01 site, and bird calls were observed during the daytime reference period.

During the night-time reference period the soundscape at STMP1 was dominated by plant at other premises located to the south of IM-LON-01 site and an occasional train.

Occasional bus passes were observed along Scafell Road at STMP2 during the daytime. Construction noise was present during the night-time measurements at STMP2.

6.0 BS4142 Assessment

Section 8.1.3 of BS4142 states the sound survey should:

“Ensure that the measurement time interval is sufficient to obtain a representative value of the background sound level for the period of interest. This should comprise continuous measurements of normally not less than 15 min intervals, which can be contiguous or disaggregated.”

Furthermore, Section 8.1.4 of BS4142 highlights:

“The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no “single” background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.”

The sound levels measured during the attended August 2025 and March 2026 surveys are deemed representative of ‘typical’ receptor conditions and cover the BS4142 daytime (07:00hrs to 23:00hrs) and night-time (23:00hrs to 07:00hrs) reference periods.

Residential NSRs are considered to be high sensitivity.

6.1 Noise Sources

The SBGs at the LON-01 site are shown for ground floor and roof level with the relative location of each item of plant based on drawings Ref: TPArchitects Ground Floor Plan 2947-TPA-MF-00-DR-A-20000 Rev. P02 (**Figure 2-2**) and TPArchitects Roof Floor Plan 2947-TPA-MF-RF-DR-A-20002 Rev. P01 (**Figure 2-3**).

Source sound data for the MTU DS3100 SBG was provided by IM to SLR in a PDF report (Ref: 1.5.1.3.7_002-BRAD-15890_1_19-Containers-O-M_Manual) and elevations of the equipment in a drawing (Ref: 6.2.1_010-AVK-VIR_AVK_XX_MZ_DR_X_0611-Container_No_7_Layout_DS3100_NEA_Sheets_1_2-Drawing) extracted and reproduced in **Appendix C**.



Source sound data for the Caterpillar 3516E SBGs was provided by IM to SLR in a PDF report (Ref: Performance Data [GS900197]) and dimensions in a PDF (Ref: Redacted Quote) reproduced in **Appendix C**.

The sound pressure level design specification for the containerised SBGs was determined to be 75dBA at 1m. The MTU DS3100 sound survey measured levels were inclusive of all components including air inlet and outlet.

6.2 Noise Model Assumptions

The sound predictions in this assessment have been undertaken using a proprietary software-based noise model, Computer Aided Noise Abatement (CadnaA), which implements the full range of UK noise-based calculation methods. The calculation algorithms set out in ISO 9613-2:2024 '*Acoustics — Attenuation of sound during propagation outdoors*' have been used.

The modelling input parameters are presented in **Table 6-1**.



Table 6-1: CadnaA Noise Modelling Parameters

Parameter	Details
Ground effect coefficient (G)	• Outside Site G=0.5 Mixed Ground. • Site G=0 Hard ground. • Buildings are reflecting G=0
Propagation Methodology	• ISO9613-2:2024
Order of Reflections	• 3 • Maximum search radius source to receiver 1000m • Maximum search radius source 100m
Meteorology	• 10°C Temperature • 70% Relative Humidity • 3.0m/s windspeed for direction
Topography	• Lidar Composite DTM-2022-1-SU98se • Lidar Composite DTM-2022-1-SU98sw • Source: Available at https://environment.data.gov.uk/survey
Buildings and Infrastructure	• Lidar Composite Last Return DSM-2022-1-SU98se • Lidar Composite Last Return DSM-2022-1-SU98sw • OS OpenMap Local (SU) • Building Heights – Determined from DSM, DTM and OS data • Caterpillar SBG exhaust inlet and outlet measured in 3D Google Earth. • MTU DS3100 SBG HV1 to HV6 inlet and outlet measured in 3D Google Earth. • Floor Height 2.5m • Receptor Height Ground Floor 1.5m, 1st Floor 4m, 2nd Floor 6.5m.
Imagery	• Google Earth • Source: “Slough” 51°31’36.90” N and 0°37’58.77” W. Google Earth. 17/08/25. 9 December 2025.
Sound Sources	• Detailed in Table 6-2. 1/3rd Octave Band Spectral profile of plant provided in Appendix C.

Based on the accuracy of the prediction methodology, i.e. ISO9613-2, the uncertainty of the CadnaA model accuracy, i.e. barrier corrections for buildings, etc., it is considered that the results of the assessment are as accurate as reasonably practicable and considered to be within +/-3dB.



Table 6-2: Operational Fixed and Mobile Plant included in Assessment - Indicative

Plant Description Power Generation and Cooling Systems	Floor Level	Number of Plant/Model Attributes	Sound Data dBA
MTU_DS3100 SBG and Air Inlet/Outlet HV	Ground Floor	6 No. IDs: HV-1, HV-2, HV-3, HV-4, HV-5, HV-6	75dBA @1m
MTU_DS3100 SBG and Air Inlet/Outlet LV	First Floor	2 No. IDs: LV-6, LV-7	75dBA @1m
Caterpillar 3516E SBG and Air Inlet/Outlet LV	Ground Floor	2 No. IDs: LV-4, LV-R	75dBA @1m
Caterpillar 3516E SBG and Air Inlet/Outlet LV	First Floor	1 No. ID: LV-5	75dBA @1m
Note: 1/3 rd Octave Band Spectral profile of plant provided in Appendix C .			

6.3 Initial BS4142 Assessment

Operational scenarios covering Loss of Off-site Power (LOOP1) resulting in blackout buildings and scheduled routine SBG testing are detailed in this section.

6.3.1 Emergency SBG Blackout Operational Scenarios Assessed

The potential operational hours of the emergency SBGs during the LOOP1 scenario could occur anytime during the BS4142 reference daytime or night-time periods.

Predicted sound levels at NSRs in the following scenarios have been undertaken for the reference BS4142 daytime (07:00 to 23:00) and night-time (23:00 to 07:00) periods.

- Scenario 1 – Daytime Blackout Building (All SBGs operational 100% on-time)
- Scenario 2 – Night-time Blackout Building (All SBGs operational 100% on-time)

6.3.2 Emergency SBG Routine Testing Operational Scenarios Assessed

The range of SBG testing scenarios identified at IM LON-01 are provided in **Table 6-3**. These test scenarios are scheduled to occur during the BS4142 daytime reference period only.

Only one scenario is taken forward as an expected worst-case specific sound level; scenario MSM5. MSM5 represents a simulation of a blackout building, with testing typically lasting 30-minutes duration. All other scenarios represent a lower on time during the BS4142 reference period, or consecutive operation of a single SBG. The following scenario represents the programmed testing worst-case scenario over the BS4142 daytime reference period of 1-hour.

- Scenario 3 – Programmed Daytime Testing MSM5 (All SBGs operational 50% on-time of 1-hr reference period i.e. 30 minutes.)



The range of daytime only SBG testing scenarios identified at IM LON-01 are provided in **Table 6-3**.

Table 6-3: SBG Testing Operational Scenarios

Test Name ID	Test Scenario from Client	Test Description	Tested Generators	Frequency of Test	Duration (mins)	SBG Loading (%)	Testing Regime	Max No. SBGs on in any 1hr	Frequency per Annum	SBG IDs	On-Time in BS4142 Reference Period (%)
MSM1a	LV sets 400 minutes once annually.	On-load testing LV power train 4,5,6	Roof Level LV-5/LV-6/LV-7	Annual	400	100	Consecutively – Tested Individually	1	1	LV-4/LV-5/LV-6/LV-7/LV-R	100
MSM1b	LV sets 400 minutes once annually.	On-load testing LV power train 4,5,6	Ground Level LV-4/LV-R	Annual	400	100	Consecutively – Tested Individually	1	1	LV-4/LV-R	100
MSM2	HV sets half hour per quarter 3 sets at a time. Tested one at a time.	On-load testing HV power train 1,2,3	Ground Level HV-1 to HV-6	Once per Quarter	30	100	Consecutively – Tested 3 SBGs at a time	2	4	HV-1 to HV-6	50
MSM3a	05 mins monthly 2nd Wednesday per month LV and HV. Tested individually	Off-load testing LV power train 4,5,6	Roof Level LV-5/LV-6/LV-7	Once a month	5	100	Consecutively – Tested Individually	3	12	LV-5/LV-6/LV-7	8.3
MSM3b	05 mins monthly 2nd Wednesday per month LV and HV. Tested individually	Off-load testing LV power train 4,5,6	Ground Level LV-4/LV-R	Once a month	5	100	Consecutively – Tested Individually	2	12	LV-4/LV-R	8.3
MSM4	05 mins monthly 2nd Wednesday per month LV and HV. Tested individually	Off-load testing HV power train 1,2,3	Ground Level HV-1 to HV-6	Once a month	5	100	Consecutively – Tested Individually	6	12	HV-1 to HV-6	8.3
MSM5	Black building test occurs once a year and lasts approximately 30 minutes.	Black building test	All SBGs HV-1 to HV-6 LV-4/LV-R LV-5/LV-6/LV-7	Annual	30	100	Concurrently – all SBGs	11	1	HV-1 to HV-6 LV-4/LV-R LV-5/LV-6/LV-7	100



6.3.3 Representative Sound Levels

Measured sound levels at boundary locations STMP1 and STMP2 were analysed to obtain representative values complying to BS4142 reference time periods for daytime and night-time. BS4142 daytime reference period is 07:00 to 23:00hrs and night-time 23:00 to 07:00hrs.

Data was screened for compliance with BS4142 criteria, namely no precipitation and windspeeds <5m/s.

The representative ambient, residual and background sound level for each reference period are detailed in **Table 6-4**. Note the background sound level (L_{90}) from the August 2025 survey is considered representative due to the longer measurement duration and number of 15-minute samples per BS4142 reference time period.

In accordance with the standard, the ambient, residual and background sound levels have been rounded to the nearest decibel.

Table 6-4: Representative Sound Level Parameters at NSRs

NSR Identifier	Representative NMP	Daytime (07:00 to 23:00)			Night-time (23:00 to 07:00)		
		Ambient Sound Level $L_{Aeq,T}$ (dB)	Residual Sound Level $L_{Aeq,T}$ (dB)	Background Sound Level $L_{A90,T}$ (dB)	Ambient Sound Level $L_{Aeq,T}$ (dB)	Residual Sound Level $L_{Aeq,T}$ (dB)	Background Sound Level $L_{A90,T}$ (dB)
NSR1	STMP1	52*	52*	47*	49*	49*	46*
NSR2	STMP1	52*	52*	47*	49*	49*	46*
NSR3	STMP2	62	62	47*	53	53	46*
NSR4	STMP2	62	62	47*	53	53	46*
NSR5	STMP2	62	62	47*	53	53	46*
NSR6	STMP2	62	62	47*	53	53	46*
Note: * taken from measurement survey in August 2025.							

6.3.4 Acoustic Characteristics

The character of each noise source, and the sound correction that will be applied in the BS4142:2014+A1:2019 assessment, is detailed below. Aligning to BS4142, any acoustic characteristics corrections should be applied based on the perceptibility of the specific sound sources at the receiver (receptor) location.

The soundscape at the nearest receptors is dominated by other existing industrial processes and road traffic in proximity. There is no history of noise complaints from operation of the other site plant, or from operation of the SBGs and during routine testing scenarios.

Therefore, acoustic corrections are determined as:

- **Tonality:** SLR has undertaken the BS4142:2014+A1:2019 *Objective method for assessing the audibility of tones in sound: one third octave method*. No tonal correction is applied (**Refer to Appendix D**).
- **Impulsivity:** It is not anticipated that the SBGs black-out operation or routine testing would produce any impulsive noise. No penalty for impulsivity is applied.

- Other sound characteristics: When operating, it is not considered that the proposed operation will be readily distinctive against the residual soundscape. Therefore, no correction will be applied.
- Intermittency: It is reasonable to assume that other noise sources in the vicinity of receptors would provide masking for activities at the IM LON-01 site during routine testing scenarios; therefore, no intermittency correction is applied.

Based on the above, no acoustic character correction has been applied to the predicted specific sound level, to derive the corresponding rating levels.

6.3.5 Derived Rating Levels and NIA

Detailed BS4142 assessment tables are provided in **Appendix E**.

6.3.6 Scenario 1 – LOOP1 Daytime Blackout Building (All SBGs operational 100% on-time)

Predicted specific sound levels, and rating levels for Scenario 1 are detailed in **Table 6-5**. GF represents Ground Floor, F1 – First Floor, F2 – Second Floor.

Table 6-5: BS4142 Assessment – Scenario 1 Daytime Blackout

Receptor	Period	Specific Sound Level L _{Aeq,T} (dBA)	Rating Level L _{Ar,Tr} (dBA)	Baseline Background Sound (dBA)	Diff. (dBA)	BS4142 Initial Impact
Emergency Operations						
NSR1_GF	Daytime	48	48	47	1	No adverse Impact*
NSR1_F1		53	53	47	6	Adverse Impact*
NSR2_GF		49	49	47	2	No adverse Impact*
NSR2_F1		54	54	47	7	Adverse Impact*
NSR3_GF		51	51	47	4	No adverse Impact*
NSR3_F1		53	53	47	6	Adverse Impact*
NSR4_GF		50	50	47	3	No adverse Impact*
NSR4_F1		53	53	47	6	Adverse Impact*
NSR4_F2		55	55	47	8	Adverse Impact*
NSR5_GF		42	42	47	-5	Low Impact*
NSR5_F1		44	44	47	-3	Low Impact*
NSR5_F2		46	46	47	-1	Low Impact*
NSR6_GF		50	50	47	3	No adverse Impact*
NSR6_F1		53	53	47	6	Adverse Impact*
NSR6_F2		53	53	47	6	Adverse Impact*
*Depending on context						

A BS4142 Initial Impact for Scenario 1 is detailed in **Table 6-5** showing Low Impact to No adverse Impact (depending on the context) at the many of the closest residential NSRs. An adverse impact (depending on the context) was determined at some upper floor locations, including NSR4_F2.

6.3.7 Scenario 2 – LOOP1 Night-time Blackout Building (All SBGs operational 100% on-time)

Predicted specific sound levels, and rating levels for Scenario 2 are detailed in **Table 6-6**. GF represents Ground Floor, F1 – First Floor, F2 – Second Floor.

Table 6-6: BS4142 Assessment – Scenario 2 Night-time Blackout

Receptor	Period	Specific Sound Level L _{Aeq,T} (dBA)	Rating Level L _{Ar,Tr} (dBA)	Baseline Background Sound (dBA)	Diff. (dBA)	BS4142 Initial Impact
Emergency Operations						
NSR1_GF	Night-time	48	48	46	2	No adverse Impact*
NSR1_F1		53	53	46	7	Adverse Impact*
NSR2_GF		49	49	46	3	No adverse Impact*
NSR2_F1		54	54	46	8	Adverse Impact*
NSR3_GF		51	51	46	5	Adverse Impact*
NSR3_F1		53	53	46	7	Adverse Impact*
NSR4_GF		50	50	46	4	No adverse Impact*
NSR4_F1		53	53	46	7	Adverse Impact*
NSR4_F2		55	55	46	9	Adverse Impact*
NSR5_GF		42	42	46	-4	Low Impact*
NSR5_F1		44	44	46	-2	Low Impact*
NSR5_F2		46	46	46	0	No adverse Impact*
NSR6_GF		50	50	46	4	No adverse Impact*
NSR6_F1		53	53	46	7	Adverse Impact*
NSR6_F2		53	53	46	7	Adverse Impact*
*Depending on context						

A BS4142 Initial Impact for Scenario 2 is detailed in **Table 6-6** showing Low Impact to No adverse Impact (depending on the context) at the many of the closest residential NSRs. An adverse impact (depending on the context) was determined at some upper floor locations, including NSR4_F2.

6.3.8 Scenario 3 – Programmed Daytime Testing MSM5 (All SBGs operational 50% on-time)

Predicted specific sound levels, and rating levels for Scenario 3 are detailed in **Table 6-7**. GF represents Ground Floor, F1 – First Floor, F2 – Second Floor. An on-time correction of -3dBA is relevant as the typical testing duration is 30-minutes, 50% of the BS4142 daytime reference period.

Table 6-7: BS4142 Assessment – Scenario 3 Programmed Daytime Testing MSM5

Receptor	Period	Specific Sound Level L _{Aeq,T} (dBA)	Rating Level L _{Ar,Tr} (dBA)	Baseline Background Sound (dBA)	Diff. (dBA)	BS4142 Initial Impact
Emergency Operations						
NSR1_GF	Daytime	45	45	47	-2	Low Impact*

Receptor	Period	Specific Sound Level $L_{Aeq,T}$ (dBA)	Rating Level $L_{Ar,Tr}$ (dBA)	Baseline Background Sound (dBA)	Diff. (dBA)	BS4142 Initial Impact
NSR1_F1		50	50	47	3	No Adverse Impact*
NSR2_GF		46	46	47	-1	Low Impact*
NSR2_F1		51	51	47	4	No adverse Impact*
NSR3_GF		47	47	47	0	No adverse Impact*
NSR3_F1		50	50	47	3	No adverse Impact*
NSR4_GF		47	47	47	0	No adverse Impact*
NSR4_F1		50	50	47	3	No adverse Impact*
NSR4_F2		52	52	47	5	Adverse Impact*
NSR5_GF		39	39	47	-8	Low Impact*
NSR5_F1		41	41	47	-6	Low Impact*
NSR5_F2		43	43	47	-4	Low Impact*
NSR6_GF		47	47	47	0	No adverse Impact*
NSR6_F1		50	50	47	3	No adverse Impact*
NSR6_F2		50	50	47	3	No adverse Impact*
*Depending on context						

A BS4142 Initial Impact for Scenario 3 is detailed in **Table 6-7** showing Low Impact to No adverse Impact (depending on the context) at the closest residential NSRs.

6.3.9 Low-Frequency Noise

In accordance with EA requirements, an assessment should determine whether Low-Frequency Noise (LFN) could cause pollution at NSRs. LFN is generally considered to occur within the range of approximately 10 Hz to 160 Hz. This is the range most likely to be perceptible, interact with building structures, and/or give rise to disturbance inside dwellings.

NANR45¹⁴ guidance states:

“The procedure is intended to assist in the evaluation of existing problems. It is not intended as a means of predicting when disturbance might occur, for example in a planning situation, and would not be reliable to use as such. This is because disturbance by LFN depends on a number of factors, such as the character of the sound, whose effects are neither well understood, nor readily predictable. Levels of sound above criteria based on the average threshold of hearing are frequently found to be acceptable and levels falling marginally below can occasionally cause disturbance, so no generic approach to prediction of disturbance appears to be possible.”

Although the NANR45 guidance is usually suitable specifically for ‘existing problems’; the principles have been applied to assess the LFN content at NSRs from the operation of the SBGs during Scenario 2 LOOP1 (night-time) as this is considered worst-case as night-time is generally regarded as the most sensitive period for potential human disturbance.

A comparison of the predicted 1/3rd octave band sound levels at each NSR for Scenario 2 LOOP1 was assessed against the NANR45 criterion curve as detailed in **Table 6-8**.

¹⁴ University of Salford Manchester (2011). Procedure for the assessment of low frequency noise complaints Revision 1, December 2011.

Table 6-8: LFN NANR45 Assessment

NSR	Frequency (Hz)/Predicted Sound Level at NSR (dB) Assuming 15dB attenuation from open window								
	25	31.5	40	50	63	80	100	125	160
NSR1	43	30	35	38	38	38	36	35	29
NSR2	44	31	35	38	39	39	37	36	31
NSR3	45	31	36	38	39	39	36	36	30
NSR4	45	32	37	39	40	40	37	37	31
NSR5	36	22	26	28	28	27	24	22	17
NSR6	43	30	34	37	38	38	36	36	31
	NANR45 Reference Curve								
	64	56	49	43	42	40	38	36	34
NSR	Difference per 1/3 rd Octave Band Centre Frequency								
NSR1	-21	-26	-14	-5	-4	-2	-2	-1	-5
NSR2	-21	-25	-14	-5	-3	-1	-1	0	-4
NSR3	-20	-25	-13	-5	-3	-1	-2	0	-4
NSR4	-19	-24	-12	-4	-2	0	-1	1	-3
NSR5	-28	-34	-23	-15	-14	-13	-14	-14	-18
NSR6	-21	-27	-15	-6	-4	-2	-2	0	-4

The predicted specific sound levels covering the range of 25Hz to 160Hz are above the NANR45 spectral curve at certain frequencies for NSR4 for a partially open window attenuation, for the worst-case night-time Scenario 2 LOOP1 situation. Predicted internal sound levels would likely be lower during a closed window scenario and therefore no exceedances of the NANR45 curve would be expected.

The SBGs are located within acoustic enclosures specifically designed for the application and mounted on anti-vibration supports, which limits the transmission of low-frequency mechanical energy. The exhaust and ventilation systems are also fitted with silencers and attenuators, which further reduce the effects that could give rise to low-frequency noise.

On this basis, adverse effects from low-frequency noise are not anticipated at the NSRs.

6.4 NVM Outcome and Appropriate Measures

When context is considered, the BS 4142 assessment indicates **Low Impact to Adverse Impact**, with the rating level generally below or marginally above background at all NSRs, during the daytime and night-time periods.

In NVM terms Low Impact corresponds to “no, or barely audible or detectable noise”. For this outcome, the EA expects no further action is required beyond the implementation and demonstration of appropriate measures and BAT.

In NVM terms Adverse Impact corresponds to “adverse impact”. For this outcome, the EA expects ‘use appropriate measures to prevent or, where that is not practicable, minimise noise. You are not in breach if you are using appropriate measures. But you will need to rigorously demonstrate that you are using appropriate measures.’

The appropriate measures considered within this assessment include:

- Use of acoustic attenuators and silencers on exhaust flues, and ventilation emission points.
- Use of acoustic enclosures design criteria for the SBGs.
- SBGs positioned to maximise screening by buildings.
- SBG testing is limited in frequency and on-time over the calendar year.
- SBG testing is scheduled for the daytime hours only.
- Avoidance of concurrent testing across SBGs where practicable, except for testing Scenario 3.
- Preventative maintenance, and complaint response protocols as set out in the BATOT report.

6.5 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 which have been considered within this assessment 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.

6.6 BS4142 Modified Assessment

An initial BS4142 assessment of the impact can be modified due to the context to account for relevant site-specific information, including the absolute level of specific sound, the character and level of the residual sound, the sensitivity of the receptor and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions. It should be noted that there is no history of noise complaints from the operation of the IM LON-01 site.

6.7 Discussion

6.7.1 Context Discussion

The concept of “context” has been notably emphasised in Section 11 of BS 4142 when considering numerical impacts established from applying the standard.

A difference of around +5dB or more is likely to be an indication of an adverse impact, depending on the context. It is relevant to consider the absolute level of predicted plant emissions at the receptor. Notably from the standard it is stated:

“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.”

During the summer months, residents choosing to sleep with windows open, a level difference of around 10 – 15 dB would be expected inside the dwelling through a partially open window, following the guidance in BS8233.

The sound level measured during the August 2025 baseline (the existing night-time soundscape), was 49dBA to 53dBA. Following the guidance for openable window attenuation, the measured level would be approximately 43 to 38dBA inside at the nearest receptors considered in this assessment.

At NSR4 during the night-time period, the cumulative plant emissions rating level during Scenario 2 (LOOP1 Night-time blackout) has been predicted to be in the order of 57dBA at a second-floor window. The calculated ambient sound level change from combining the prevailing residual sound level and the rating level from site operations at NSR4 during the night-time period is a 4dBA increase and at NSR1 and NSR2 a +5dBA increase. During the daytime, the cumulative sound level from Scenario 1 (LOOP1) at NSR1 1st floor level is predicted to increase by up to 4dBA.

A benchmark of 3dBA where a change in the ambient sound level may be perceived¹⁵, it is considered that the operation of the site during daytime testing is not expected to provide a significant adverse impact. A short-term adverse impact may be experienced during night-time emergency LOOP1 scenarios.

Based on the contextual argument, as the change in the ambient sound level is largely expected to be low, and as the exceedance of the BS8233 recommended internal limit of 30dB(A) at night-time already occurs at some receptors, the rating level in the proposed context is not considered significant.

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.

It is a requirement of BS 4142 and NVM to consider and minimise uncertainty to a level appropriate with the intention of the assessment objective. Measures taken in this assessment to minimise uncertainty have included:

- Background sound level measurements undertaken in accordance with recognised Standards, using an environmental windshield and during acceptable weather conditions e.g. low wind speeds and precipitation.
- Background sound levels were measured over an extended duration, which provides a good indication of representative background and residual sound levels.
- Field calibration checks were undertaken before and after measurements, and low levels of equipment drift were recorded (no more than 0.5 dB).
- Source sound levels have been provided by the project team and is based on data of the existing and proposed plant, with no history of noise complaints from existing testing and operational scenarios of the SBGs.
- The modelling, predictions, and calculations have been undertaken on a conservative basis, to ensure a robust assessment which does not under-predict the resulting impacts. Further detail regarding the assumptions used in the noise model are detailed within **Section 6.2**.

Based on BS8233 guidance (Annex G.1), a typical building envelope for a closed window attenuation scenario (thermal glazing and trickle ventilators) is likely to provide a sound level difference (from outdoors to indoors) of at least 33dB. Therefore, indoor sound levels due to the night-time emergency operation would be expected to be no more than 24dB $L_{Aeq,T}$ with closed window attenuation.

¹⁵ Section 2.7 of IEMA Guidelines for Noise Impact Assessment “...a change or difference in noise level of 1 dB is just perceptible under laboratory conditions, 3 dB is perceptible under most normal conditions...”

The predicted daytime and night-time indoor sound levels with closed window attenuation are below the indoor noise level guidelines in BS 8233:2014 and are unlikely to result in any adverse effects on sleeping or relaxation.

Furthermore, while the general soundscape and area is defined by commercial and industrial premises, there is no history of noise complaints from the operation or testing schedule which is already in place at the IM LON-01 site.

Therefore, operational noise is not expected to result in any prolonged adverse effects at high sensitivity receptors.

7.0 Conclusion

Iron Mountain UK Data Centre Ltd. (IM) appointed SLR Consulting Ltd (SLR) to undertake a noise assessment for the operational Slough Data Centre (SDC) development (LON-01), London. The assessment is to be submitted as part of an Environmental Permit application.

SBGs in use at the data centre require an environmental permit to operate in accordance with the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (EPR).

In accordance with EA guidance, the NIA considers the noise emissions of back up energy generation and associated infrastructure only, rather than operations at the data centre itself. Therefore, this assessment considered the noise impact associated with the proposed SBGs.

For the purpose of this NIA, it was assumed that the generators will be used solely for emergency back-up purposes, providing power to a site in the event of an emergency situation such as a brown- or black-out of the electricity transmission network, and are subject to limited planned maintenance and testing (annually each generator will be operated for maintenance and testing purposes for less than 50 hours per year). Further, that the generators are not operated for balancing services, demand side response or for the export of electricity.

The assessment has been undertaken in accordance with BS 4142 and EA noise guidance (NVM and MID), and the predictions have been completed using ISO 9613-2, modelling with appropriate worst-case propagation assumptions, due to the combined simultaneous operation of all SBGs at LON-01, during emergency operations (Scenario 1 and Scenario 2) and during programmed routine testing (Scenario 3).

This initial BS4142 assessment for Scenario 1 to Scenario 3 concluded the operation of the existing SBG plant resulted in a rating level ranging from **Low Impact** to **Adverse Impact**, depending on the context at all assessed residential NSRs.

During scheduled routine testing (Scenario 3) the SBGs will typically be operated individually during daytime hours and avoid concurrent testing where practicable. Therefore, noise impact of a single SBG will be lower than emergency operations and thus considered **negligible**.

A modified BS4142 assessment considered context.

Sound levels are predicted to be below the indoor noise level guidelines in BS 8233:2014 and are unlikely to result in any adverse effects.

There is no history of noise complaints from the existing operation and from the testing of SBGs at IM LON-01.

The modified BS4142 assessment indicates a **Low Impact** or **No Adverse Impact**, at all receptors.

Overall, operation of the SBGs at the LON-01 site is not expected to give rise to significant adverse noise impacts and is therefore considered acceptable in the context of this Permit application.

8.0 Closure

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 Section.

Regards,

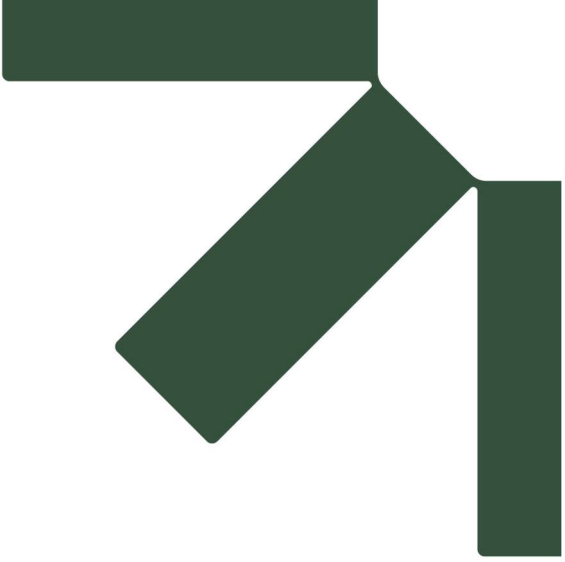
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Appendix A Glossary of Terminology

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

SLR Project No.: 410.066934.00001

Client Reference No: 00027

13 May 2026

Acoustic 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 A-1: 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

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_{A10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{A90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{A10} 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 B Survey Data

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

SLR Project No.: 410.066934.00001

Client Reference No: 00027

13 May 2026



SANDY BROWN

Consultants in Acoustics, Noise & Vibration

025761-R01-A

15 August 2025

IMDC-LON-1, Slough

Noise survey and plant noise egress limits

London, Manchester, Edinburgh, Birmingham, Leeds, Bristol

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Consultants in Acoustics, Noise & Vibration

Version	Date	Comments	Authors	Reviewer
A	15 Aug 25		JS, PDS	AL

Disclaimer

This report has been prepared for the sole benefit and use of our client based on their instructions and requirements. Sandy Brown Ltd extends no liability in respect of the information contained in the report to any third party.

Summary

Sandy Brown has been commissioned by Foreman Roberts Consulting Ltd to provide acoustic advice in relation to the proposed development works at IMDC LON-01, 724-729 Dundee Road, Slough SL1 4JU. The proposed works include the potential replacement of existing roof mounted chiller units with new chillers and potential refurbishment of other plant.

An environmental noise survey has been carried out to determine the existing sound levels in the area. The noise survey was carried out between 15:03 on Thursday 7 August 2025 and 13:18 on Monday 11 August 2025.

The representative background sound levels measured during the survey were $L_{A90,15min}$ 47 dB during the day and $L_{A90,15min}$ 46 dB at night.

Based on the policy intent and precedent working on similar schemes in the area, it is recommended that any new items of plant be designed such that the cumulative specific sound level, measured 1 m from the worst affected windows of the nearby noise sensitive premises, does not exceed $L_{Aeq,Tr}$ 40 dB during the day, and $L_{Aeq,Tr}$ 39 dB during the night. The cumulative rating sound level should not exceed $L_{Ar,Tr}$ 50 dB during the day, and $L_{Aeq,Tr}$ 49 dB during the night. The limits are facade levels and apply at 1 m from the worst affected windows of the nearest noise sensitive premises.

The noise limits are also cumulative, and apply with all new items of plant operating under normal conditions. Any new items of plant proposed as part of the development works will need to be designed to achieve the above recommended targets.

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1 Introduction

Sandy Brown has been commissioned by Foreman Roberts Consulting Ltd to provide acoustic advice in relation to the proposed development at IMDC LON-01, 724-729 Dundee Road, Slough SL1 4JU.

As part of this, an environmental noise survey is required, the purpose of which is to establish the existing background sound levels in the vicinity of nearby noise sensitive premises and to set appropriate limits for noise egress from building services plant.

This report presents the survey method and results, and a discussion of acceptable limits for noise emissions from building services plant.

2 Development proposals

IMDC LON-01 is a single storey data centre in Slough, located within the Slough Trading Estate. The current development proposals include the potential replacement of existing roof mounted chiller units with new chillers and potential refurbishment of other plant.

3 Site description

3.1 The site and its surrounding

The site location in relation to its surroundings is shown in Figure 1.



Figure 1 Aerial view of site (courtesy of Google Earth Pro)

3.2 Adjacent premises

The site is located on the north side of Slough Trading Estate, Slough and is highlighted in red within Figure 1. The site is bound by commercial premises to both the south and east and residential to the west and north.

The commercial receptors are highlighted yellow within Figure 1.

The residential receptors are highlighted blue within Figure 1.

The nearest noise sensitive premises are the residential premises located on Sandown Road to the west and Scafell Road to the north.

4 Building services noise egress criteria

4.1 Standard guidance

BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* (BS 4142) provides a method for assessing noise from items such as building services plant against the existing background sound levels at nearby noise sensitive premises.

BS 4142 suggests that if the rating noise level is 10 dB or more higher than the existing background sound level, it is likely to be an indication of a significant adverse impact. If the level is 5 dB above the existing background sound level, it is likely to be an indication of an adverse impact. If the level does not exceed the background sound level, it is an indication of having a low impact.

The rating noise level is the sum of the specific sound level and any necessary corrections for 'attention catching features' such as tones, bangs, etc. Further information in this regard is provided in Appendix C.

4.2 Local Authority criteria

Control of noise pollution – policy intent

Slough Borough Council's *Development plan core strategy 2006 – 2026*, Core Policy 8: *(Sustainability and the environment)* states the following policy intentions in relation to noise pollution:

3. Pollution

Development shall not:

- a) Give rise to unacceptable levels of pollution including air pollution, dust, odour, artificial lighting or noise...*

Although the document confirms the policy intent, there is no specific guidance on acceptable levels of noise breakout in this document nor in other Local Authority planning documents.

Simplified Planning Zone – Slough Borough Council

It is also important to note that the site is located within the Slough Trading Estate, which has been designated as a Simplified Planning Zone (SPZ) by Slough Borough Council. The SPZ is intended to simplify the planning process for developments within the industrial area. Defined types of development within the SPZ are assumed to have planning permission as outlined within *Slough Trading Estate, Slough, Simplified Planning Zone Scheme 2014-2024* and do not need to apply for planning permission in the normal way.

The assumed planning permission granted under the SPZ scheme outlines a number of planning conditions which will apply to the development. Those specifically related to acoustics are reproduced below:

11. All external plant and machinery for buildings constructed under the SPZ must be fully screened.

Part 4 *Informatives* states:

iii) The granting of the SPZ consent does not prevent the Borough council from taking action under Environmental Health Legislation against activities resulting in noise, smoke, odours, smells, dust, grit or litter. Action can also be taken under other environmental legislation where infringements occur.

Appendix 2 *Environmental Health Considerations* states:

These are the Environmental Health issues the Local Planning Authority would expect developers to consider when drawing up individual schemes. It is within the best interests of developers to confer with the Borough Council's Environmental Health Division over environmental matters, if in doubt. This may avoid the need to remedial action at a later stage...

Appendix 2 goes on to list “noise from plant/machinery, eg. ventilation systems, refrigeration plant etc” as one element which should be considered.

Proposed plant noise egress criteria

It is clear therefore that, whilst specific criteria are not defined within the Local Authority planning documents, and submissions in relation to noise egress control are not a requirement for planning permission, the Local Authority does still expect developers to take reasonable consideration of environmental noise emissions into account.

Based on the policy intent set out by Slough Borough Council and previous experience working on similar schemes in the area, it is recommended that all new plant is designed such that the ‘rating’ sound level does not exceed the existing representative background noise levels outside of the nearest/most affected noise sensitive receivers. The ‘specific’ sound level from all new plant should be 10 dB below the representative background noise levels outside of the nearest/most affected noise sensitive receivers.

Noise sensitive receivers would typically be considered to encompass residential properties, schools, hotels, hospitals and similar uses. Other industrial or commercial properties would not usually be considered specifically noise sensitive, though consideration should still be given to any impact that noise might have on the use of existing neighbouring sites.

The proposals outlined above, if implemented, would be sufficient to ensure that the development would not have any significant noise impact on existing noise-sensitive properties.

5 Noise survey method

The survey included unattended and attended noise measurements.

The measurements and information described in this report are provided in accordance with requirements of BS 7445, as referenced in Appendix A.

5.1 Unattended measurements

Unattended noise monitoring was undertaken at the site over 4 days.

The measurements were taken over 15-minute periods between 15:03 on Thursday 7 August 2025 and 13:18 on Monday 11 August 2025.

The microphone for the sound level meter was installed on the existing fence along the western edge of site using an extension pole. The microphone itself was installed approximately 4.5 m above ground level.

The measurement position is indicated in Figure 1, denoted by the letter 'L', and a photograph showing the measurement position is provided in Figure 2. This location was chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises. The microphone itself was installed to be clear of the existing foliage on the fence. Based on shorter-term, indicative spot measurements carried out further west of the logger position (on the bund, towards the residential neighbours to the west), it is considered that the foliage and any movement/rustling of leaves did not materially affect the measured noise results.

Details of the equipment used and the noise indices measured are provided in Appendix A.



Figure 2 Image of unattended monitoring location

5.2 Weather conditions

Weather conditions during the survey are described in Appendix A.

6 Noise survey results

6.1 Observations

The noise climate on site was noted to consist of noise from the neighbouring commercial premises, distant construction sites, and road traffic movements.

6.2 Noise measurement results

6.2.1 Unattended measurement results

A graph showing the results of the unattended measurements is provided in Appendix B. Ambient noise levels measured during the unattended survey are presented in Table 1. Measured minimum background sound levels are given in Table 2. The measurements are considered to be free-field measurements. A review of the time histories suggests that existing background noise levels in the vicinity are relatively consistent during the late afternoon and night-time periods. During the weekday early morning and daytime hours (up to 17:00), noise levels are seen to be elevated. This reflects the commercial nature of the area, with increased activity during these hours.

Table 1 Ambient noise levels measured during the unattended survey

Date	Day (07:00 – 23:00)	Night (23:00 – 07:00)
	$L_{Aeq,16h}$ (dB)	$L_{Aeq,8h}$ (dB)
Thursday 7 August 2025	- ^[1]	50
Friday 8 August 2025	54	47
Saturday 9 August 2025	51	47
Sunday 10 August 2025	50	51
Average	52	49

^[1] Measurement not made over full period due to monitoring start and end time; not included in the average.

Table 2 Minimum background sound levels measured during the unattended survey

Date	Day (07:00 – 23:00) $L_{A90,15min}$ (dB)	Night (23:00 – 07:00) $L_{A90,15min}$ (dB)
Thursday 7 August 2025	50 ^[1]	46
Friday 8 August 2025	46	46
Saturday 9 August 2025	46	46
Sunday 10 August 2025	45	46
Monday 11 August 2025	49 ^[1]	- ^[1]

^[1] Measurement not made over full period due to monitoring start and end time.

The lowest background sound levels measured during the survey were $L_{A90,15min}$ 45 dB during the day and $L_{A90,15min}$ 46 dB at night. In line with BS 4142:2014+A1:2019, representative background sound levels have been determined using statistical analysis of the continuous measurements.

Day and night statistical analysis of representative values for the site are given in Figure 3 and Figure 4.

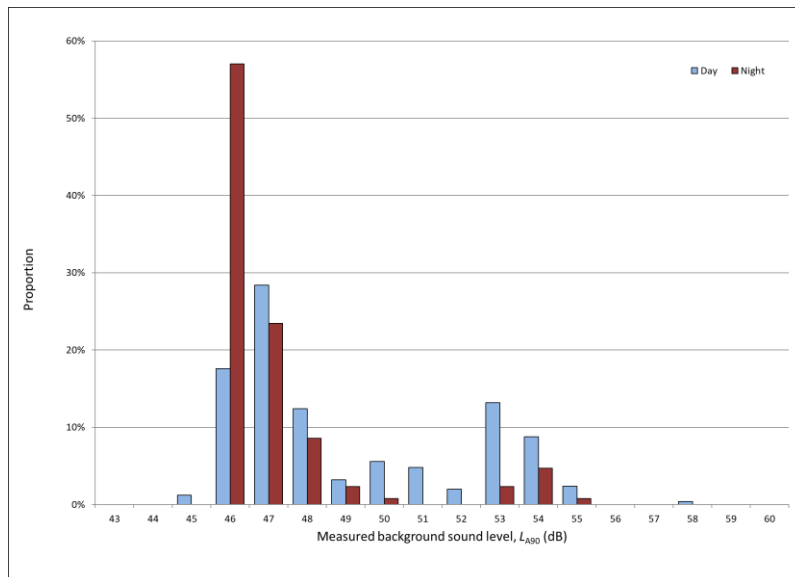


Figure 3 Measured background noise level histogram

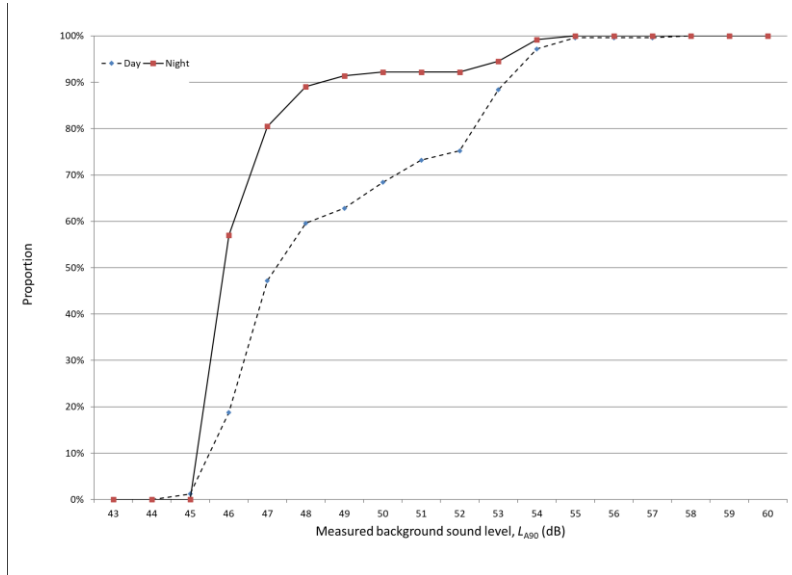


Figure 4 Measured background noise level cumulative

From this analysis, the representative background sound levels measured during the survey were $L_{A90,15min}$ 47 dB during the day and $L_{A90,15min}$ 46 dB at night.

7 Plant noise egress limits and future assessments

7.1 Basic limits

Based on the recommended plant noise egress criteria and the measurement results, the cumulative specific and rating sound level from the operation of all new plant should not exceed the limits set out in Table 3.

The limits apply at 1 m from the worst affected windows of the nearest noise sensitive premises and are presented as facade levels. These have been corrected relative to the measured free-field background sound levels by the addition of 3 dB (as per the guidance provided in BS 8233:2014 Section G.2.1). In this case these limits would apply at the residential premises on Sandown Road and Scafell Road.

Table 3 Plant noise limits at 1 m from the nearest noise sensitive premises

Time of day	Plant noise limit at 1m from the nearest noise sensitive premises	
	Specific sound limit, $L_{Aeq,Tr}$ (dB)	Rating sound limit, $L_{Ar,Tr}$
Day (07:00-23:00)	40	50
Night (23:00-07:00)	39	49

Compliance with limits shall be determined with reference to BS 7445: Part 3: 1991 *Description and measurement of environmental noise, Part 3. Guide to application to noise limits*.

7.2 Future plant noise assessment

All building services plant will be designed to achieve the noise limits set out above, including any corrections for attention catching features. At this stage, no information is available in relation to the proposed plant. This will need to be assessed as the design progresses.

8 Conclusion

The representative background sound levels from the noise survey were $L_{A90,15min}$ 47dB during the day, and $L_{A90,15min}$ 46 dB during the night.

Based on the suggested plant noise criteria, relevant plant noise limits have been established and these are set out in Table 3. These limits are cumulative, and apply with all plant operating under normal conditions.

Appendix A

Survey details

Reference standards

- BS 7445 Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*
- BS 7445: Part 2: 1991 *Description and measurement of environmental noise, Part 2. Guide to the acquisition of data pertinent to land use.*
- BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

Equipment

The unattended noise measurements were taken using a Rion NL-52 sound level meter.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	NL-52/00264531	Rion	15 Dec 25	TCRT23/1926
Microphone	UC-59/09678	Rion	15 Dec 25	TCRT23/1926
Pre-amp	NH-25/64656	Rion	15 Dec 25	TCRT23/1926
Calibrator	NC-75/35013664	Rion	14 Dec 25	TCRT23/1925

^[1] Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meter used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg, L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS 7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*.

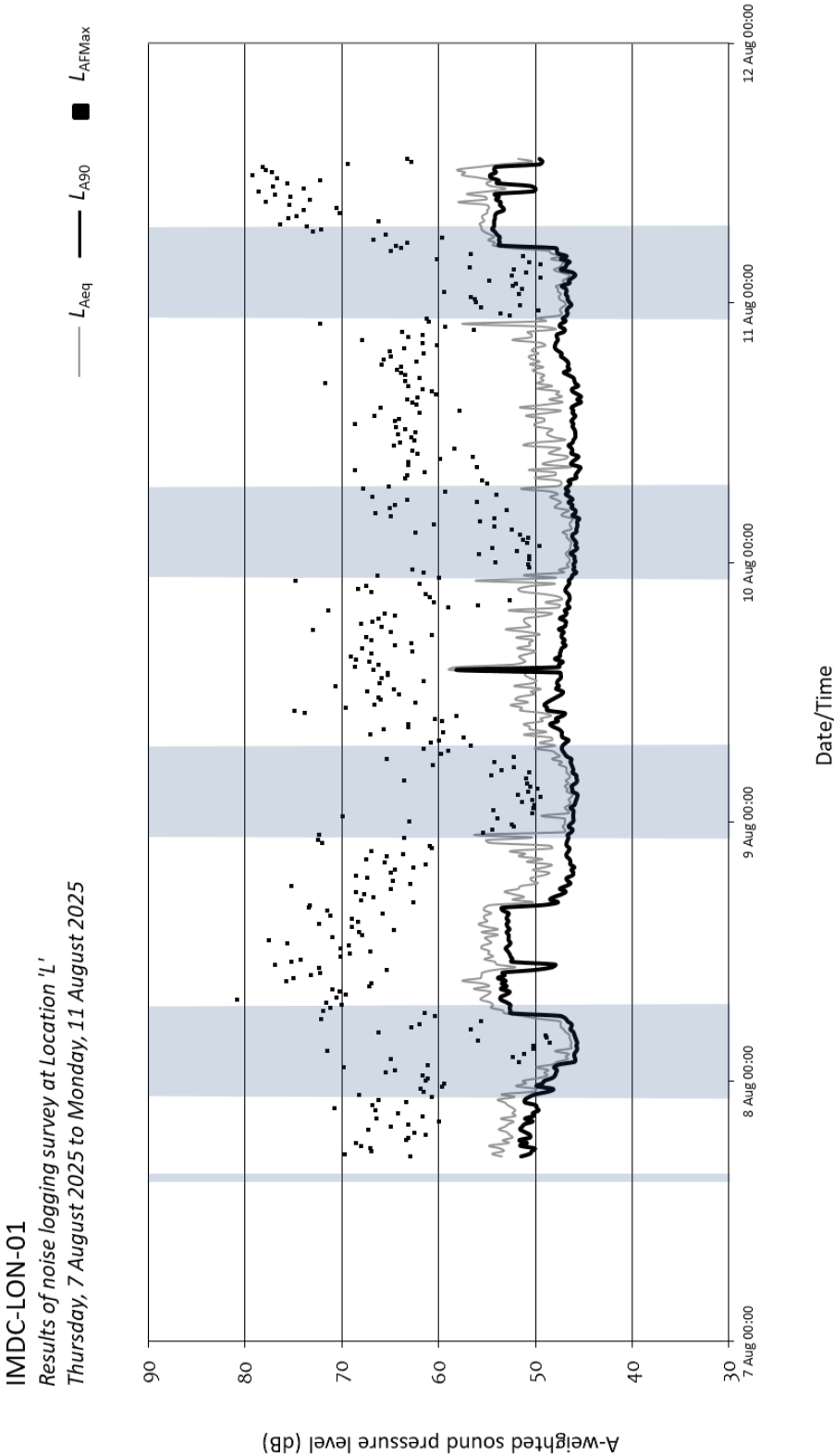
Weather conditions

During the unattended noise measurements, weather reports for the area indicated that temperatures varied between 16°C at night and 30°C during the day, and the wind speed was less than 5 m/s.

These weather conditions are considered suitable for obtaining representative measurements.

Appendix B

Results of unattended measurements at Position 'L'



Appendix C

BS 4142 corrections for attention catching features

The following applies where plant noise is assessed in accordance with BS 4142:2014+A1:2019.

If the proposed plant noise contains attention catching features (such as tonal elements, whines, whistles, bangs etc), penalty corrections should be applied based on the type and impact of the features.

If appropriate, a subjective assessment of the plant features can be adopted. Where the plant noise contains tonal elements, the following corrections can be made depending on how perceptible the tone is at the noise receptor:

- 0 dB where the tone is not perceptible
- 2 dB where the tone is just perceptible
- 4 dB where the tone is clearly perceptible
- 6 dB where the tone is highly perceptible.

Where the plant noise is impulsive, the following corrections can be made depending on how perceptible the impulsivity is at the noise receptor:

- 0 dB where the impulse is not perceptible
- 3 dB where the impulse is just perceptible
- 6 dB where the impulse is clearly perceptible
- 9 dB where the impulse is highly perceptible.

For noise which is equally both impulsive and tonal, then both features can be accounted for by linearly summing the corrections for both characteristics.

If the plant has other distinctive characteristics, such as intermittency, then a 3 dB correction can be made.

If a subjective assessment of tonality is not appropriate, an objective assessment can be made by analysis of time-averaged, third-octave band sound pressure levels. A noise source is deemed to be tonal if the level in a third-octave band exceeds the level in adjacent third-octave bands by the level differences given below:

- 15 dB in the low frequency third-octave bands (25 Hz to 125 Hz)
- 8 dB in the mid frequency third-octave bands (160 Hz to 400 Hz)
- 5 dB in the high frequency third-octave bands (500 Hz to 10000 Hz).

If an objective assessment identifies the plant noise to be tonal then a 6 dB correction must be made.



Appendix C Noise Source Data

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

SLR Project No.: 410.066934.00001

Client Reference No: 00027

13 May 2026



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AVK-SEG (UK) LTD

Container Test Certificate Dossier

Prepared by

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Bradgate reference

15890-1 & 2

Customer reference

57152 & 58556

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SECTION 1. TRANSPORT & GENERAL LIFTING INSTRUCTIONS

Referenced Documents	Drawing number
General Arrangement	15890-1-1-1
Rigging and Lifting	15890-1-3-1

1.1. Transport

The module must be tied down to the lorry trailer via suitable shackles /hooks and straps. Straps must be tensioned evenly and must not distort the housing. Place a suitable non slip medium between the housing and the trailer bed; rubber matting or similar. This is to prevent slippage during transit. Suitable End Stops - rubber matting may be fitted between the front of the housing and the trailer to prevent damage during braking.

1.2. Lifting

The module has designed for a single point lift using a four-leg sling. Refer to the above drawing. A spreader beam must be used.

On delivery of the module to site, a crane of suitable lifting capacity according to the building weight will be required. Remove all the module fixings to the trailer before attempting to lift.

The module has been designed to be lifted in accordance with BS 3951 part 1 section 1:5. It then becomes the sole responsibility of the lifting contractor to adjust and use this equipment in a safe manner, and to ensure a balanced and level lift.

The client is responsible for the correct alignment of any Bradgate supplied items attached to the site civil works.

SECTION 2. MODULE UNPACKING & INSTALLATION

Referenced Documents	Drawing number
General Arrangement	15890-1-1-1
Rigging and Lifting	15890-1-3-1

2.1. General

All protective packaging should remain in place until the module has been lowered onto the foundations.

Check that the module is in the correct position and of the correct orientation. Refer to General Arrangement and drawings for positions while the module is still on the delivery vehicle, positioned approximately in its final resting position. The module should then be lifted off the delivery vehicle and **GENTLY** lowered into position onto the base. An allowance of 25mm for packing and grouting has been made to ensure that the module is level to within a tolerance of +/- 2mm, make any adjustments. A minimum of two ground operatives is recommended for this activity. Once the alignment of the module has been completed, the hold-down brackets should be fixed to the lower module perimeter rail and the base.

Earth the module to the nearest main site earth system.

2.2. Packing List

Refer to the General Arrangement drawing.

2.3. Mechanical Installation

All protective packaging should remain in place until the module has been lowered onto the foundations.

Check that the module is in the correct position and of the correct orientation. Position the module as near as possible and remove the fixings /ties from the lorry. The module should then be lifted off the delivery vehicle and **GENTLY** lowered into position onto the support columns. An allowance of 25mm for packing and grouting has been made to ensure that the module is level to within a tolerance of +/- 2mm, make any adjustments. A minimum of two ground operatives is recommended for this activity.

Once the alignment and the bolting down of the module has been completed, the module can be released from the crane.

Fit end bracings

Remove any internal and external transport bracings if fitted.

Remove any remaining internal component packaging if fitted.

Remove shipping covers from all apertures.

All external tapped holes are to be plugged or fitted with screws to prevent corrosion.

Remove all metal particles, debris and loose steel from all surfaces.

Refit all cowls, guttering and external lighting (if removed for transport). It is recommended that fixing threads are coated with 'Copaslip' or a similar anti-seize compound.

Fit the infill mesh panels between the support columns, refer to the layout drawing.

Any remaining gaps between steelwork to be fully mastic sealed, including any removable transom or threshold panels on access doors (sealing gaskets to be fitted where supplied).

All paintwork to be inspected and made good, where necessary, with full paint process as described in section 8.

Due to the nature of sensitive electronic equipment housed within the building, it is recommended that, where possible, welding should be avoided during the erection procedure or during the life of the building.

After alignment and bolting down is complete, the module should be fully earthed to the nearest main site earth system.

SECTION 3. MAINTENANCE

3.1. Mechanical Maintenance

Door hinges are to be greased twice yearly (where grease nipples are fitted).

Door external/internal locking handles are to be tested for functionality, and any problems rectified.

Door emergency panic release bars are to be visually and dynamically inspected for correct operation, for both opening and latching. Any problems are to be rectified immediately.

Door seals are to be visually inspected for damage or missing sections; seals should be replaced as required.

A thorough annual inspection should be carried out checking for any external paint damage. Any damage found is to be rectified immediately. Reference should be made to the Paint touch-up procedure in section 8.3 of this manual.

Every two years, depending on site activity and conditions, internal and external surfaces should be washed down using a non-abrasive general purpose cleaning agent, any damaged areas to be made good.

All mechanical damage should be rectified as soon as possible with any bare metal treated immediately to prevent corrosion.

Any evidence of rust should be inspected, and where required, treated with commercial rust inhibitors to prevent further problems.

3.2. Maintenance Instructions for Hinged Doors

3.2.1. Operation

Do not wedge the door leaves open.

Safety note: Ensure there are no obstructions within the door leaf's closing area.

Latching positions in frame must be kept clear of debris.

Hinges must be kept free from paint.

Door opening mechanisms must be regularly tested for correct function and lubricated accordingly.

Door seals must be checked and, if damaged, replacement is recommended.

Recommendations: Seals to be replaced every 3 years.

3.3. Maintenance Instructions for Inlet & Extract Cowls

Inspect all inlet and extract cowls to ensure the throughput of air is not impeded in any way.

Remove any leaves, general debris or build up of dirt.

The rotating inlet louvres should be periodically checked for free rotation and pivot the points lubricated with a light machine oil.

Check for loose cables.

Make the circuit live and test the Earth loop Impedance.

Test socket outlets tripping times.

Check labelling.

SECTION 4. PAINT

4.1. Internal Paint

Walls	White Semi Gloss
Floor	Matt Black anti-slip

4.2. External Paint

Walls & Roof	RAL 7036 – Platinum Grey
Underfloor	Black Mercasol 3

4.3. Paint Touch Up

Bradgate Containers will accept no responsibility for any paint treatment rectification that may be undertaken by a customer or agent thereof and further advise that the following information is issued in good faith.

Surface Condition	Surface Preparation	Treatment
Basically sound paint with slight deterioration, but with no rusting or corrosion.	Wash down only if no coating is required. Bristle brush and dust down if re-coating is required by legislation or by appearance requirements	No coating required. Apply one or two finish coats as required.
Paint exhibiting marked chalking or exposing previous finish.	Wire brush and dust down.*	Finish coat as necessary.
Thin paint film, blistering, pinhead rusting or corrosion.	Scrape and wire brush affected areas.*	Prime affected areas, build up film thickness with undercoat and apply finish coat overall.
Sound paint film but with rusted or corroded areas affecting less than 10% of the surface.	A) Rusted/corroded areas: Clean to bare metal by best means available. B) Sound paint areas: Nil if patch painting is adequate. C) Sound paint areas: Wire brush if finish coat is required.	Patch prime bare metal. Apply undercoat and finish coat(s).** Apply one or two coats as necessary of finish coat paint. Apply one or two coats as necessary of finish coat paint.
Thin paint film, blistering, pinhead rusting or corroded areas affecting less than 20% of surface.	Remove all coatings and rust or corrosion by best means available.	Build up with new system of primer, undercoat and finish.
Sound paint film but with rusted or corroded areas affecting less than 20% of surface.	Remove all coatings and rust or corrosion by best means available.	Build up with new system of primer, undercoat and finish.
*For certain hard finishes, wire brushing may not be adequate.		
**It is a matter of judgement whether to patch areas or to patch and overcoat the whole. In the latter case, it is sometimes desirable, if time permits to apply additional undercoats to bring the patches to a similar thickness to the surrounding areas, before over-coating the whole surface.		

SECTION 5. DISPOSAL

5.1. Decommissioning

It is assumed that the decommissioning of the module will have been planned to provide disconnection of all electrical services and that the removal and disposal of the installed equipment will be covered by others.

5.2. Dismantling

The module is manufactured from composite panel modules welded together attached to a steel substructure.

Using appropriate personal protective clothing and access equipment, commence dismantling by removing guttering, external covers, cowls, doors and components that are fixed across section joints.

The roof panels should then be removed. These will require some form of mechanical handling equipment e.g. crane, fork lift. The module is of welded construction and should be cut as required.

A similar process should be adopted for the walls and floor panels, once removed this should leave only the base and support frame. Starting at the top using mechanical handling equipment the support frame should be cut into sections and removed.

If flame-cutting is employed, appropriate breathing equipment should be used as potentially toxic smoke will be produced when cutting painted steelwork.

5.3. Construction materials

Low carbon steel.

Adhesive sealant.

Mineral wool and PU foam insulation.

Plastic components, mainly in the domestic electrical system.

Electrical circuitry components.

5.4. Hazard Awareness

The current information on the above component part materials of the basic module structure concludes that there are no known environmental hazards, other than those noted above, present in their handling and disposal.

5.5. Personal safety

Personal safety should be down to the local company Health and Safety Policies. These may include a Permit to work system for Hot Work, Working at Height and a General

Works Permit. A list of personal Protective equipment should be provided before starting work and a list of local hazards provided.

5.6. Disposal

As with other non-hazardous waste materials, the component parts of the module may be disposed of in landfill waste sites. Dependent on economic considerations and available cleaning processes, the metal content can be recycled.

SECTION 6. CERTIFICATES

6.1. Certificate of Conformity



Containerised Equipment and
Noise Control Specialists
Bradgate Containers Limited,
Leicester Road, Shepshed, Near
Loughborough, Leicestershire.
LE12 9EG UK
Telephone : +44 (0)1509 508678
Fax : +44 (0)1509 503224
Email : sales@bradgate.co.uk
Web : www.bradgate.co.uk

CERTIFICATE OF CONFORMITY

Date: 29/09/20

Certificate Number: 2987

To: AVK-SEG (UK) Ltd
Power Systems House
Malvern road
Maidenhead
Berkshire
SL6 7RE

Customers order number: 57152

Contract number: 15890

Certified that, unless otherwise stated, the supplies/services detailed hereon have been processed / inspected in accordance with terms of the contract/order applicable thereto, and conform fully to the standards/specifications/drawings quoted hereon and relevant thereto.

<u>Contract No.</u>	<u>Description</u>	<u>Qty.</u>	<u>Drawing Issue No.</u> <u>Spec. Ref.</u>	<u>Material Cast No.</u>	<u>Test Report No.</u>
15890	Acoustic Enclosure & Base – Iron Mountain – D3100	1 off	15890-1 11 Sheets Issue: F,D,A,C,A,B,A,A,B,A,A	N/A	N/A

Condition of material as despatched:

Painted completed as per drawing specification.

Deviations (Major concessions/Production permits):

None.

Name: Steve Tatler **Position:** Technical Administrator **Signature:**

Date: 29/09/20



Containerised Equipment and
Noise Control Specialists
Bradgate Containers Limited,
Leicester Road, Shepshed, Near
Loughborough, Leicestershire.
LE12 9EG UK
Telephone : +44 (0)1509 508678
Fax : +44 (0)1509 503224
Email : sales@bradgate.co.uk
Web : www.bradgate.co.uk

CERTIFICATE OF CONFORMITY

Date: 27/11/20

Certificate Number: 2991

To: AVK-SEG (UK) Ltd
Power Systems House
Malvern road
Maidenhead
Berkshire
SL6 7RE

Customers order number: 57152

Contract number: 15890

Certified that, unless otherwise stated, the supplies/services detailed hereon have been processed / inspected in accordance with terms of the contract/order applicable thereto, and conform fully to the standards/specifications/drawings quoted hereon and relevant thereto.

<u>Contract No.</u>	<u>Description</u>	<u>Qty.</u>	<u>Drawing Issue No.</u> <u>Spec. Ref.</u>	<u>Material Cast No.</u>	<u>Test Report No.</u>
15890	Acoustic Enclosure & Base – Iron Mountain – D3100	1 off	15890-2 11 Sheets Issue: H,C,A,B,A,B,A,A,B,A,A	N/A	N/A

Condition of material as despatched:

Painted completed as per drawing specification.

Deviations (Major concessions/Production permits):

None.

Name: Steve Tatler **Position:** Technical Administrator **Signature:**

Date: 27/11/2

6.2. Electrical Test Certificate

**ELECTRICAL INSTALLATION
CERTIFICATE [BS 7671:2018 as
amended]**

41078 - Duplicate



Details of the Client

Client/Address Bradgate Containers Ltd, Leicester Road, Shepshed, Loughborough, Leics. , LE12 9EG

Details of the Installation

Address AVK-SEG Container 15890-1, Bradgate Containers Ltd, Leicester Road, Shepshed, Leics., LE12 9EG

Extent of the installation covered by this certificate Fixed installation in acoustic generator canopy AVK-SEG Container 15890-1 for power & lighting. NOTES; Earth loop testing cannot be carried out & will require testing by others when the unit is in place. Main supply details cannot be filled in & will require certifying by others.

The installation is:

New ☒

An Addition ☐ N/A

An Alteration ☐ N/A

Design

I being the person(s) responsible for the design of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the design hereby CERTIFY that the design work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

Details of permitted exceptions (Regulations 411.3.3):

N/A

Where applicable, a suitable risk assessment(s) must be attached to this Certificate:

N/A

Number of pages: N/A

The extent of liability of the signatory or signatories is limited to the work described above as the subject of this certificate.

For the DESIGN of the installation:

Signature Date N/A Name (CAPITALS) Designer 1

Signature Date N/A Name (CAPITALS) N/A Designer 2 **

**(where there is divided responsibility for the design)

Construction

I being the person(s) responsible for the construction of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the construction hereby CERTIFY that the construction work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

The extent of liability of the signatory is limited to the work described above as the subject of this certificate.

For the CONSTRUCTION of the installation:

Signature Date 06/01/2021 Name (CAPITALS) Tom Davis Constructor

Inspection and Testing

I being the person(s) responsible for the inspection and testing of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the inspection and testing hereby CERTIFY that the work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

The extent of liability of the signatory is limited to the work described above as the subject of this certificate.

For the INSPECTION AND TESTING of the installation:

Reviewed by

Signature Date 06/01/2021 Signature Date 06/01/2021

Name (CAPITALS) Tom Davis Inspector Name (CAPITALS) Graham Payne MIET Qualified Supervisor

Particulars of the Organisation(s) Responsible for the Electrical Installation

DESIGN (1)	Organisation	Bradgate Containers Ltd	
Address	Leicester Road	Registration Number	N/A
	Shepshed	Branch No.(If Applicable)	N/A
	Leics.		
	LE12 9EG	Tel	N/A
DESIGN (2)	Organisation	N/A	
Address		Registration Number	N/A
		Branch No.(If Applicable)	N/A
CONSTRUCTION	Organisation	Lowe Electrical Contractors Ltd	
Address	89 Wellington Street	NICEIC Enrolment Number	024879
	Leicester	Branch No.(If Applicable)	N/A
	Leicestershire		
	LE1 6HJ	Tel	0116 2545423
INSPECTION AND TESTING	Organisation	Lowe Electrical Contractors Ltd	
Address	89 Wellington Street	NICEIC Enrolment Number	024879
	Leicester	Branch No.(If Applicable)	N/A
	Leicestershire		
	LE1 6HJ	Tel	0116 2545423

Supply Characteristics and Earthing Arrangements

Tick boxes and enter details, as appropriate

Characteristics of primary supply overcurrent protective Device(s)

System Type(s)	Number and Type of Live Conductors	Nature of Supply Parameters	Characteristics of primary supply overcurrent protective Device(s)
TN-S	N/A	a.c. ☒ d.c. ☒	BS(EN)
TN-C-S	N/A	Nominal Voltage $U^{(1)}$ N/A V $U_o^{(1)}$ N/A V	N/A
TN-C	N/A	Nominal frequency $f^{(1)}$ 50 Hz	Type
TT	N/A	Prospective fault current $I_{pf}^{(2)}$ N/A kA	N/A
IT	N/A	External loop impedance $Z_e^{(2)}$ N/A Ω	Rated current N/A A
		Number of Sources 1	Short circuit Capacity N/A kA
			Confirmation of Supply Polarity N/A

Particulars of Installation at the Origin

Means of Earthing		Details of Installation Earth Electrode (where applicable)	
Distributor's facility	N/A	Type (eg rod(s), tape etc)	N/A
Installation earth electrode	N/A	Electrode resistance, R_A	N/A Ω
Main Switch/ Switch-Fuse/ Circuit-Breaker/ RCD		Maximum Demand (Load)	
Type BS(EN)	N/A	Voltage Rating	N/A V
No. of poles	N/A	Rated Current, I_n	N/A A
Supply Conductors material	N/A	RCD operating current, $I_{\Delta n}$	N/A mA
Supply Conductors CSA	N/A mm ²	RCD operating time at, $I_{\Delta n}$	N/A ms
		Rated time delay	N/A ms
Earthing conductor		Protective measure(s) against electric shock	
Conductor material:	N/A	N/A	
Conductor csa:	N/A mm ²		
Continuity verified	N/A		
Connection verified	N/A		
Main protective bonding conductors		Bonding of extraneous conductive parts (✓)	
Conductor material:	N/A	Water installation pipes ☒	
Conductor csa:	N/A mm ²	Lightning Protection ☒	
Continuity verified	N/A	Oil installation pipes ☒	
Connection verified	N/A	Structural Steel ☒	
		Gas installation pipes ☒	
		Other N/A	

Comments on Existing Installation:

In the case of an addition or alteration see regulation 644.1.2: None

Next Inspection

I, the designer(s) RECOMMEND that this installation is further inspected and tested after an interval of not more than 5 Years or change of tenancy.

Item No	Description	Outcome	Item No	Description	Outcome
1.0	External condition of electrical intake equipment (visual inspection only) (If inadequacies are identified with the intake equipment it is recommended the person ordering the report informs the appropriate authority.)		6.0	Basic and fault protection	
1.1	Service cable	N/A	a) SELV		N/A
1.2	Service head	N/A	b) PELV		N/A
1.3	Earthing arrangement	N/A	c) Double insulation		N/A
1.4	Meter tails	N/A	d) Reinforced insulation		N/A
1.5	Metering equipment	N/A	7.0	Distribution equipment	
1.6	Isolator (where present)	N/A	7.1	Working space/accessibility adequate/satisfactory	✓
2.0	Parallel or switched alternative sources of supply		7.2	Security of fixing	✓
2.1	Presence of adequate arrangements where generator to operate as a switched alternative:		7.3	Insulation of live parts not damaged during erection	✓
a)	Dedicated earthing arrangement independent of that of the public supply	N/A	7.4	Adequacy/security of barriers	✓
2.2	Presence of adequate arrangements where generator to operate in parallel with public supply system:		7.5	Suitability of enclosures for IP and fire ratings	✓
a)	Correct connection of generator in parallel	N/A	7.6	Enclosures not damaged during installation	✓
b)	Compatibility of characteristics of means of generation	N/A	7.7	Presence and effectiveness of obstacles	N/A
c)	Means to provide automatic disconnection of generator in the event of loss of public supply or voltage or frequency deviation beyond declared values	N/A	7.8	Main switch(es): presence and operation (functional check)	✓
d)	Means to prevent connection of generator in the event of loss of public supply or voltage or frequency deviation beyond declared values	N/A	7.9	Components are suitable according to manufacturers' assembly instructions or literature	✓
e)	Means to isolate generator from public supply	N/A	7.10	Circuit-breaker and RCDs operation to prove functionality	✓
2.3	Presence of alternative/additional supply warning notices at or near:		7.11	RCD(s) provided for fault protection where specified	N/A
a)	The origin	N/A	7.12	RCD(s) provided for protection against the risk of fire where present	N/A
b)	The meter position if remote from origin	N/A	7.13	RCD(s) provided for additional protection where specified	✓
c)	The consumer unit/distribution board to which the alternative/additional sources are connected	N/A	7.14	Confirmation overvoltage protection (SPDs) provided where specified	N/A
d)	All points of isolation of ALL sources of supply	N/A	7.15	SPDs functioning/operating as expected	N/A
3.0	Automatic disconnection of supply		7.16	Selection of protective devices(s) and base(s); correct type and rating	✓
3.1	Presence and adequacy of protective earthing/bonding arrangements as follows:		7.17	Single-pole protective devices in line conductors only	✓
a)	Distributor's earthing arrangement or installation earth electrode arrangement	N/A	7.18	Protection against mechanical damage where cables enter equipment	✓
b)	Earthing conductor and connections	N/A	7.19	Protection against electromagnetic effects where cables enter ferromagnetic enclosures	✓
c)	Main protective bonding conductors and connections	N/A	7.20	Confirmation that ALL conductor connections including connections to busbars are correctly located in terminals and are tight and secure	✓
d)	Earthing/bonding labels at all appropriate locations	N/A	7.21	Presence of RCD six-monthly test notice where required	✓
3.2	Accessibility of:		7.22	Presence of diagrams, charts or schedules at or near each distribution board where required	✓
a)	Earthing conductor connections	N/A	7.23	Presence of next inspection recommendation label	N/A
b)	All protective bonding connections	N/A	7.24	Presence of non-standard (mixed) cable colour warning notice at or near the appropriate distribution board where required	N/A
3.3	FELV-requirements satisfied	N/A	7.25	Presence of other required labelling	✓
3.4	Nominal line to line voltage does not exceed 110V and the nominal line to earth voltage does not exceed 63.5V	N/A			
4.0	Basic protection				
4.1	Provisions for basic protection where specified:				
a)	Insulation of live parts	✓			
b)	Barriers or enclosures	✓			
c)	Obstacles	N/A			
d)	Placing out of reach	N/A			
5.0	Additional protection				
5.1	The presence and effectiveness of additional protection methods used as follows:				
a)	RCDs should not exceed 30 mA	✓			
b)	Supplementary bonding	N/A			

Inspected By	
Name: Tom Davis	Date: 06/01/2021
Signature:	

The attached Schedules are part of this document and this Certificate is valid only when they are attached to it

Schedules of Inspections and

Schedules of Test Results

Board Details

TO BE COMPLETED IN EVERY CASE		ONLY TO BE COMPLETED IF THE DISTRIBUTION BOARD IS NOT CONNECTED DIRECTLY TO THE ORIGIN OF THE INSTALLATION	
Location of Distribution Board	AVK-SEG Container 15890-1	Supply to distribution board is from:	N/A
Distribution board designation	DB 1	No of phases	N/A
		Nominal Voltage	N/A V
		Overcurrent protective device for the distribution circuit	
		Type BS(EN)	N/A
		Rating	N/A A
		Associated RCD (if any)	
		BS(EN)	N/A
		RCD No of Poles	N/A
		RCD Rating	N/A mA

Circuit Details

Circuit number and phase	Circuit designation	Type of wiring	Reference method	No of points served	Circuit conductors csa		Max permitted disconnection times (s)	Overcurrent protective device					RCD	
					Live mm ²	cpc mm ²		BS(EN)	AFDD	Type	Rating (A)	Short circuit capacity (kA)	Operating current (Δn)	Maximum permitted Zs (Ω)
1/L1	Lighting	B	B	6	1.5	1.5	0.4	60898 MCB		B	6	10	N/A	7.28
1/L2	Socket Outlets	B	B	2	2.5	2.5	0.4	61009 RCD/RCBO		B	16	10	30	2.73
1/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L1	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L2	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L3	SPARE	-	-	-	-	-	-	-	-	-	-	-	-	-

Wiring Code

A	B	C	D	E	F	G	H	O
PVC/PVC cables	PVC cables in metallic conduit	PVC cables in non-metallic conduit	PVC cables in metallic trunking	PVC cables in non-metallic trunking	PVC/SWA cables	XLPE/SWA cables	Mineral insulated cables	Other

Board Tests

TO BE COMPLETED IN EVERY CASE		TEST INSTRUMENTS (SERIAL NUMBERS) USED	
Correct supply polarity confirmed	N/A	Phase sequence confirmed (where appropriate)	N/A
Supplementary Conductors	*	Earth fault loop impedance	N/A RCD 101203841 - 40
ONLY TO BE COMPLETED IF THE DISTRIBUTION BOARD IS NOT CONNECTED DIRECTLY TO THE ORIGIN OF THE INSTALLATION		Insulation resistance	101203861 - 39 Multi-function N/A
Zs	N/A Ω	Continuity	101203861 - 39 Other N/A
Operating times of associated RCD (if any) At I Δ n		N/A ms	

Details of circuits and/or equipment vulnerable to damage

LED Lighting

Circuit Tests

Circuit number and phase	Circuit Impedances Ω					Insulation resistance					Polarity (✓)	Maximum measured earth fault loop impedance Ω	RCD		AFDD Test button operation	Remarks see continuation sheet
	Ring final circuits only (measure end to end)			All circuits (At least one column to be completed)		Test Voltage	Live/ Live MΩ	Live/ Neutral MΩ	Live/ Earth MΩ	Earth/ Neutral MΩ			Disconnection time (ms)	Test button operation		
	r ₁ (Line)	r _n (Neutral)	r ₂ (cpc)	(R ₁ + R ₂)	(R ₂)											
1/L1	N/A	N/A	N/A	0.59	N/A	500	N/A	>100	>100	>100	✓	LIM	N/A	N/A		NO
1/L2	N/A	N/A	N/A	0.16	N/A	500	N/A	>100	>100	>100	✓	LIM	28.4	✓		NO
1/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/L3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tested By

Signature		Position	Electrician
Name	Tom Davis	Date of testing	01/09/2020

ELECTRICAL INSTALLATION CERTIFICATE [BS 7671:2018 as amended]

3200 - Duplicate



Details of the Client

Client/Address A.V.K-SEG Ltd, Power Systems House, Malvern Road, Maidenhead, Berkshire, SL6 7QY

Details of the Installation

Address Bradgate Number 15890-2, IRON MOUNTAIN

Extent of the installation covered by this certificate All Circuits on enclosed schedule of tests.

The installation is:

New ☒

An Addition ☐ N/A

An Alteration ☐ N/A

Design

I being the person(s) responsible for the design of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the design hereby CERTIFY that the design work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

Details of permitted exceptions (Regulations 411.3.3):

N/A

Where applicable, a suitable risk assessment(s) must be attached to this Certificate:

N/A

Number of pages: N/A

The extent of liability of the signatory or signatories is limited to the work described above as the subject of this certificate.

For the DESIGN of the installation:

Signature

Date 26/11/2020

Name (CAPITALS) Ben Butcher

Designer 1

Signature

Date N/A

Name (CAPITALS) N/A

Designer 2 **

**(where there is divided responsibility for the design)

Construction

I being the person(s) responsible for the construction of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the construction hereby CERTIFY that the construction work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

The extent of liability of the signatory is limited to the work described above as the subject of this certificate.

For the CONSTRUCTION of the installation:

Signature

Date 26/11/2020

Name (CAPITALS) Dave Taylor

Constructor

Inspection and Testing

I being the person(s) responsible for the inspection and testing of the electrical installation (as indicated by my signature(s) below), particulars of which are described above, have exercised reasonable skill and care when carrying out the inspection and testing hereby CERTIFY that the work for which I have been responsible is, to the best of my knowledge and belief in accordance with BS 7671 amended to July 2018 (date) except for the departures, if any detailed as follows:

Details of departures from BS 7671, as amended (Regulations 120.3, 133.1.3 and 133.5) None

The extent of liability of the signatory is limited to the work described above as the subject of this certificate.

For the INSPECTION AND TESTING of the installation:

Reviewed by

Signature

Date 26/11/2020

Signature

Date 26/11/2020

Name (CAPITALS) Paul Fisher

Inspector

Name (CAPITALS) Jon Boyle

Qualified Supervisor

Particulars of the Organisation(s) Responsible for the Electrical Installation

DESIGN (1)	Organisation	Bradgate Containers Ltd.	
Address	Leicester Road	NICEIC Enrolment Number	N/A
	Shepshed Leicestershire LE12 9EG	Tel	01509 508678
DESIGN (2)	Organisation	N/A	
	Address	Registration Number	N/A
Tel		N/A	Branch No.(If Applicable)
CONSTRUCTION	Organisation	Bradgate Containers Ltd.	
Address	Leicester Road	NICEIC Enrolment Number	N/A
	Shepshed Leicestershire LE12 9EG	Tel	01509 508678
INSPECTION AND TESTING	Organisation	Bradgate Containers Ltd.	
	Address	NICEIC Enrolment Number	N/A
Tel		01509 508678	Branch No.(If Applicable)

Supply Characteristics and Earthing Arrangements

System Type(s)				Number and Type of Live Conductors				Nature of Supply Parameters				Characteristics of primary supply overcurrent protective Device(s)	
TN-S	N/A	a.c.	☒	d.c.	☒	Nominal Voltage	U ⁽¹⁾	400	V	U _o ⁽¹⁾	230	V	BS(EN)
TN-C-S	☒	1-Phase (2 wire)	N/A	1-Phase (3 wire)	N/A	Nominal frequency	f ⁽¹⁾	50	Hz			LIM	
TN-C	N/A	2-Phase (3 wire)	N/A	3 Pole	N/A	Prospective fault current	I _{pf} ⁽²⁾	0.34	kA			Type	
TT	N/A	3-Phase (3 wire)	N/A	3-Phase (4 wire)	☒	External loop impedance	Z _e ⁽²⁾	0.35	Ω			Rated current	
IT	N/A	Other	N/A	Other	N/A	Number of Sources	1					LIM	
						(1) by enquiry (2) by enquiry or by measurement						Short circuit Capacity	
												N/A	
												Confirmation of Supply Polarity	
												☒	

Particulars of Installation at the Origin

Means of Earthing		Details of Installation Earth Electrode (where applicable)				
Distributor's facility	☒	Type (eg rod(s), tape etc)	N/A		Location	N/A
Installation earth electrode	N/A	Electrode resistance, R _A	N/A	Ω	Method of measurement	N/A
Main Switch/ Switch-Fuse/ Circuit-Breaker/ RCD			Maximum Demand (Load)		Protective measure(s) against electric shock	
Type BS(EN)	60947-3	Voltage Rating	415	V	30	Amps
No. of poles	4	Rated Current, I _n	125	A		
Supply Conductors material	Copper	RCD operating current, I _{Δn}	N/A	mA		
Supply Conductors CSA	6 mm ²	RCD operating time at, I _{Δn}	N/A	ms		
		Rated time delay	N/A	ms		
Earthing conductor		Main protective bonding conductors		Bonding of extraneous conductive parts (✓)		
Conductor material:	Copper	Conductor material:	Copper	Water installation pipes	N/A	
Conductor csa:	16 mm ²	Conductor csa:	16 mm ²	Lightning Protection	N/A	
Continuity verified	☒	Continuity verified	☒	Oil installation pipes	N/A	
Connection verified	☒	Connection verified	☒	Structural Steel	☒	
				Gas installation pipes	N/A	
				Other	N/A	

Comments on Existing Installation:

In the case of an addition or alteration see regulation 644.1.2: --See Additional Page--

Next Inspection

I, the designer(s) RECOMMEND that this installation is further inspected and tested after an interval of not more than 3 Months or change of tenancy.

Item No	Description	Outcome	Item No	Description	Outcome
1.0	External condition of electrical intake equipment (visual inspection only) (If inadequacies are identified with the intake equipment it is recommended the person ordering the report informs the appropriate authority.)		6.0	Basic and fault protection	
1.1	Service cable	N/A	a) SELV		N/A
1.2	Service head	N/A	b) PELV		N/A
1.3	Earthing arrangement	N/A	c) Double insulation		N/A
1.4	Meter tails	N/A	d) Reinforced insulation		N/A
1.5	Metering equipment	N/A	7.0	Distribution equipment	
1.6	Isolator (where present)	N/A	7.1	Working space/accessibility adequate/satisfactory	✓
2.0	Parallel or switched alternative sources of supply		7.2	Security of fixing	✓
2.1	Presence of adequate arrangements where generator to operate as a switched alternative:		7.3	Insulation of live parts not damaged during erection	✓
a)	Dedicated earthing arrangement independent of that of the public supply	N/A	7.4	Adequacy/security of barriers	✓
2.2	Presence of adequate arrangements where generator to operate in parallel with public supply system:		7.5	Suitability of enclosures for IP and fire ratings	✓
a)	Correct connection of generator in parallel	N/A	7.6	Enclosures not damaged during installation	✓
b)	Compatibility of characteristics of means of generation	N/A	7.7	Presence and effectiveness of obstacles	N/A
c)	Means to provide automatic disconnection of generator in the event of loss of public supply or voltage or frequency deviation beyond declared values	N/A	7.8	Main switch(es): presence and operation (functional check)	✓
d)	Means to prevent connection of generator in the event of loss of public supply or voltage or frequency deviation beyond declared values	N/A	7.9	Components are suitable according to manufacturers' assembly instructions or literature	✓
e)	Means to isolate generator from public supply	N/A	7.10	Circuit-breaker and RCDs operation to prove functionality	✓
2.3	Presence of alternative/additional supply warning notices at or near:		7.11	RCD(s) provided for fault protection where specified	✓
a)	The origin	N/A	7.12	RCD(s) provided for protection against the risk of fire where present	N/A
b)	The meter position if remote from origin	N/A	7.13	RCD(s) provided for additional protection where specified	✓
c)	The consumer unit/distribution board to which the alternative/additional sources are connected	N/A	7.14	Confirmation overvoltage protection (SPDs) provided where specified	N/A
d)	All points of isolation of ALL sources of supply	N/A	7.15	SPDs functioning/operating as expected	N/A
3.0	Automatic disconnection of supply		7.16	Selection of protective devices(s) and base(s); correct type and rating	N/A
3.1	Presence and adequacy of protective earthing/bonding arrangements as follows:		7.17	Single-pole protective devices in line conductors only	✓
a)	Distributor's earthing arrangement or installation earth electrode arrangement	✓	7.18	Protection against mechanical damage where cables enter equipment	✓
b)	Earthing conductor and connections	✓	7.19	Protection against electromagnetic effects where cables enter ferromagnetic enclosures	✓
c)	Main protective bonding conductors and connections	✓	7.20	Confirmation that ALL conductor connections including connections to busbars are correctly located in terminals and are tight and secure	✓
d)	Earthing/bonding labels at all appropriate locations	✓	7.21	Presence of RCD six-monthly test notice where required	✓
3.2	Accessibility of:		7.22	Presence of diagrams, charts or schedules at or near each distribution board where required	✓
a)	Earthing conductor connections	✓	7.23	Presence of next inspection recommendation label	✓
b)	All protective bonding connections	✓	7.24	Presence of non-standard (mixed) cable colour warning notice at or near the appropriate distribution board where required	N/A
3.3	FELV-requirements satisfied	N/A	7.25	Presence of other required labelling	N/A
3.4	Nominal line to line voltage does not exceed 110V and the nominal line to earth voltage does not exceed 63.5V	N/A			
4.0	Basic protection				
4.1	Provisions for basic protection where specified:				
a)	Insulation of live parts	✓			
b)	Barriers or enclosures	✓			
c)	Obstacles	N/A			
d)	Placing out of reach	N/A			
5.0	Additional protection				
5.1	The presence and effectiveness of additional protection methods used as follows:				
a)	RCDs should not exceed 30 mA	✓			
b)	Supplementary bonding	✓			

[illegible]

Inspected By	
Name: Paul Fisher	Date: 26/11/2020
Signature: 	

The attached Schedules are part of this document and this Certificate is valid only when they are attached to it

Schedules of Inspections and

Schedules of Test Results

TO BE COMPLETED IN EVERY CASE		ONLY TO BE COMPLETED IF THE DISTRIBUTION BOARD IS NOT CONNECTED DIRECTLY TO THE ORIGIN OF THE INSTALLATION	
Location of Distribution Board	Generator Room	Supply to distribution board is from: N/A	Associated RCD (if any)
Distribution board designation	DB 1	No of phases N/A	BS(EN) N/A
		Nominal Voltage N/A V	RCD No of Poles N/A
		Overcurrent protective device for the distribution circuit	RCD Rating N/A mA
		Type BS(EN) N/A	Rating N/A A

[illegible]

A	B	C	D	E	F	G	H	O
PVC/PVC cables	PVC cables in metallic conduit	PVC cables in non-metallic conduit	PVC cables in metallic trunking	PVC cables in non-metallic trunking	PVC/SWA cables	XLPE/SWA cables	Mineral insulated cables	Other

TO BE COMPLETED IN EVERY CASE				TEST INSTRUMENTS (SERIAL NUMBERS) USED			
Correct supply polarity confirmed	☒	Phase sequence confirmed (where appropriate)	☒	Earth fault loop impedance	4786090	RCD	4786090
Supplementary Conductors	☒			Insulation resistance	4786090	Multi-function	N/A
ONLY TO BE COMPLETED IF THE DISTRIBUTION BOARD IS NOT CONNECTED DIRECTLY TO THE ORIGIN OF THE INSTALLATION				Continuity	4786090	Other	N/A
Zs	N/A	Ω	Ip	N/A	kA		
Operating times of associated RCD (if any) At				Δt	N/A	ms	

LIGHTING

[illegible]

Signature		Position	Inspection & Testing
Name	Paul Fisher	Date of testing	26/11/2020

Comments on Existing Installation

NONE

DB 1, 1/L1, Internal Lighting - Remarks

THE ELECTRICAL INSTALLATION SHOULD BE FULLY TESTED ON SITE AS A TEMPORARY SUPPLY WAS USED FOR TESTING PURPOSES.

SITE VALUES WILL CHANGE FROM THE ONES GIVEN IN THIS TEST CERTIFICATE.

DB 1, 5/TP, SPARE - Remarks

THE ELECTRICAL INSTALLATION SHOULD BE FULLY TESTED ON SITE AS A TEMPORARY SUPPLY WAS USED FOR TESTING PURPOSES.

SITE VALUES WILL CHANGE FROM THE ONES GIVEN IN THIS TEST CERTIFICATE.

ELECTRICAL INSTALLATION CERTIFICATE
GUIDANCE FOR RECIPIENTS (to be appended to the Certificate)

This safety Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed, inspected and tested in accordance with British Standard 7671 (the IET Wiring Regulations).

You should have received an 'original' Certificate and the contractor should have retained a duplicate. If you were the person ordering the work, but not the owner of the installation, you should pass this Certificate, or a full copy of it including the schedules, immediately to the owner.

The "original" Certificate should be retained in a safe place and be shown to any person inspecting or undertaking further work on the electrical installation in the future. If you later vacate the property, this Certificate will demonstrate to the new owner that the electrical installation complied with the requirements of British Standard 7671 at the time the Certificate was issued. The Construction (Design and Management) Regulations require that, for a project covered by those Regulations, a copy of this Certificate, together with schedules, is included in the project health and safety documentation.

For safety reasons, the electrical installation will need to be inspected at appropriate intervals by a skilled person or persons, competent in such work. The maximum time interval recommended before the next inspection is stated on Page 1 under 'NEXT INSPECTION'.

This Certificate is intended to be issued only for a new electrical installation or for new work associated with an addition or alteration to an existing installation. It should not have been issued for the inspection and testing of an existing electrical installation. An 'Electrical Installation Condition Report' should be issued for such an inspection.

This Certificate is only valid if accompanied by the Schedule of Inspections and the Schedule(s) of Test Results.

These notes are based on those seen in Appendix 6 BS 7671:2018 (as amended)

6.3. Noise Test Survey Results



Bradgate Containers Ltd
Leicester Road
Shepshed
Leicestershire
LE12 9EG

56a Leabrooks Road
Somercoates
Derbyshire
DE55 4HB

Tel No: 01773 607483
Fax No: 01773 603331
E-mail: drk.nvc@btopenworld.com

Date: 24.09.20
Ref: R20.0910/DRK

For the attention of James Bexon

Ref: – Generator Set Compliance Noise Test – Iron Mountain

Further to our site noise survey we have pleasure in detailing below our findings relating to the Acoustic Container compliance noise test at Steve Foster Cranes site at Doveridge, Ashbourne.

Noise Survey Details

Date of Survey: Tuesday 22nd September 2020
Noise Source: MTU DS3100 AVK Generator Set (full load) inside an acoustic container fitted with acoustic lining, inlet & outlet attenuators and exhaust silencers.

Methodology

Noise meter with Type 1 microphone calibrated prior to and after the test.
Noise meter mounted on tripod to height of 1.2m and fitted with wind ball.

Noise measurements were undertaken at 1m distance at 6 positions, under the following test conditions:

- a) Load bank operating and ambient noise
- b) With the Generator Set with load banks in operation under full load

The 6 monitoring positions are indicated on Figure 1 attached and specifically as follows:

- 1. 45deg to Air Outlet end (LHS)
- 2. Centre of Container
- 3. 45deg to Air Inlet (LHS)
- 4. 45deg to Air Inlet (RHS)
- 5. Centre of Container (RHS)
- 6. 45deg to Air Outlet end (RHS)

Instrumentation details are provided below in Table 1.

Table 1: Instrumentation

Equipment Description	Type Number	Manufacturer	Serial Number	Date of expiration of calibration	Calibration Certification Number
Real Time Sound Analyser	118	Norsonic	31992	July 2021	2020-0802
Sound Calibrator	513A	Cirrus	031523	April 2021	141224

The following set-up parameters were used on the sound level meters during noise measurement:

Time Weighting: Fast
Frequency Weighting: 'A'
Measurement Period: 30 second (fixed position).
Measurement Indices: LA90, LAeq, 1/3 octave band centre frequencies

Calibration

Calibration Setting: 94dB Calibration Level: 94dB (See attached calibration certs).

The noise meter was calibrated with the electronic calibrator prior to commencement and on completion of the survey. No significant drift in calibration was observed.

Survey Dates and Personnel

Sound pressure levels were taken at 5 fixed positions (for the load test) at 1m distance from container (i.e. positions 1 & 3 to 6). Position 2 was too close to the adjoining container and HV cables on the floor meant it was unsafe to measure at this position during the load test.

The survey was undertaken on Tuesday 22nd September by Mr D. R. Kettlewell of Noise & Vibration Consultants Ltd.

Time of Test: 0719 to 1054 hours

Meteorological Conditions

Weather conditions were recorded during the period of the survey and are detailed below:

Tuesday 22nd September 2020

Dry conditions, clear skies with a light variable wind (1m/sec).
Temperature 12-19deg C.

The above climatic conditions were suitable for monitoring environmental noise levels in accordance with advice given in BS7445: 2003 'Description and measurement of environmental noise'

Assessment of Noise Operating Conditions

The acoustic container was located on the concrete service yard of the crane company as shown below in the photographs.

Under ideal test conditions the container would be placed in an open field with no reflective surfaces around the container (i.e. free field).

As the photographs below show the test conditions were not in free field conditions and therefore require adjustment for the reflective effects.

Site Test Condition Photographs:

Air Outlet End



LHS of Air Outlet End



RHS of Air Outlet End



RHS of Container (RHS of Air Inlet end)



Inlet End of Container



RHS of Air Inlet



LHS of Air Inlet Attenuator End



View down LHS of container



Load banks were located to the left of the generator container within their own enclosure.

Cable entry for load banks also allows some degree of 'break-out' noise, which is not representative of the installed unit.

The effects of the reflective elements are assessed as follows:

The attached figure shows theoretical directivity patterns of noise sources.
The effect of the directivity factor Q and increase in noise level is summarised below:

Source Location	Directivity Factor Q	Increase in noise level dB
In free space	1	0
On a flat plane	2	+3
Junction of 2 planes	4	+6
Junction of 3 planes	8	+9

Near Field Corrections:

As a result of the test location we have assessed the likely impact of the adjacent reflective surfaces to the test container and advise below our assessment of appropriate corrections (which, are considered to be slightly conservative) as follows:

		Assessed Correction
1.	45deg to Air Outlet end (LHS)	-3dB
2.	Centre of Container	not used
3.	45deg to Air Inlet (LHS)	-3dB
4.	45deg to Air Inlet (RHS)	-2dB
5.	Centre of Container (RHS)	-2dB
6.	45deg to Air Outlet end (RHS)	-2dB

Notes: 45deg Positions 1,3,4 & 6 are at the ends of the acoustic container and there is likely to be some reflective component from adjacent containers, fencing and vehicles. We have allowed a correction of between 2dB to 3dB for the purpose of the assessment. Positions 1 & 3 would be subject to slightly higher reverberant noise travelling down the 'corridor' between the containers.

Results of Noise Survey:

Overall noise levels recorded are provided below in Tables 1 and 2

Noise Survey Results

Date: Tuesday 22nd September 2020

Site: Steve Foster Cranes, Doveridge

Client: Bradgate Containers Ltd

Project: Compliance Noise Monitoring

Data: **Full Load Test Including Loadbanks & Ambient**

Instrumentation: Norsonic 118 real time analyser

Calibration: 94dB

TABLE 1

Start Time	Run Time (mins./secs.)	LAeq (dB)	LA90 (dB)	Position
07:19	00:30	76.5	76.2	Position 3 LHS 45deg at Inlet End
07:20	00:30	72.9	72.5	Position 4 RHS 45deg at Inlet End
07:21	00:30	76.3	75.9	Position 5 Centre on RHS
07:22	00:30	76.1	75.2	Position 6 RHS 45deg at Outlet End
07:23	00:30	78.4	77.5	Position 1 LHS 45deg at Outlet End
07:24	00:30			Position 2 Centre on LHS
Average (arithmetic mean)		76.0	75.5	
Average (logarithmic)		76.3	75.7	

Noise Survey Results

Date: Tuesday 22nd September 2020
 Site: Steve Foster Cranes, Doveridge
 Client: Bradgate Containers Ltd
 Project: Compliance Noise Monitoring
 Data: **Load Bank Noise & Ambient Noise Only**
 Instrumentation: Norsonic 118 real time analyser
 Calibration: 94dB

TABLE 2

Start Time	Run Time (mins./secs.)	LAeq (dB)	LA90 (dB)	Position
10:46	00:30	68.5	67	Position 3 LHS 45deg at Inlet End
10:48	00:30	68.2	67.3	Position 4 RHS 45deg at Inlet End
10:50	00:30	70.3	69.4	Position 5 Centre on RHS
10:52	00:30	76.5	75	Position 6 RHS 45deg at Outlet End
10:53	00:30	76.8	76.2	Position 1 LHS 45deg at Outlet End
10:54	00:30	69.4	68.7	Position 2 Centre on LHS
Average (arithmetic mean)		71.6	70.6	
Average (logarithmic)		73.2	72.2	

To correct the measured full load measured data with the effect of the ambient (which includes the operation of the load bank) Table 2 has been logarithmically subtracted from Table 1. The full load corrected levels for ambient influence described above are provided below in Table 3:

Noise Survey Results

Date: Tuesday 22nd September 2020
 Site: Steve Foster Cranes, Doveridge
 Client: Bradgate Containers Ltd
 Project: Compliance Noise Monitoring
 Data: **Corrected Noise for Ambient/Load Banks - Full Load Test**
 Instrumentation: Norsonic 118 real time analyser (31992)
 Calibration: 94dB

TABLE 3

Start Time	Run Time (mins./secs.)	LAeq (dB)	LA90 (dB)	Position
10:33	00:30	75.8	75.6	Position 3 LHS 45deg at Inlet End
10:34	00:30	71.1	70.9	Position 4 RHS 45deg at Inlet End
10:35	00:30	75.0	74.8	Position 5 Centre on RHS
10:37	00:30	?	?	Position 6 RHS 45deg at Outlet End
10:52	00:30	73.3	71.6	Position 1 LHS 45deg at Outlet End
10:53	00:30	75.0	74.8	Position 2 Centre on LHS
Average (arithmetic mean)		74.0	73.6	
Average (logarithmic)		74.3	73.9	

? Not able to correct the value as the ambient is too high

Position 2 assumed to be same as position 5

The results in Table 3 are then corrected for the near field reverberation effects as previously detailed on page 4, are presented in Table 4 below.

Noise Survey Results

Date: Tuesday 22nd September 2020

Site: Steve Foster Cranes, Doveridge

Client: Bradgate Containers Ltd

Project: Compliance Noise Monitoring

Data: **Noise Corrected for Reverberant Levels**

Instrumentation: Norsonic 118 real time analyser (31992)

Calibration: 94dB

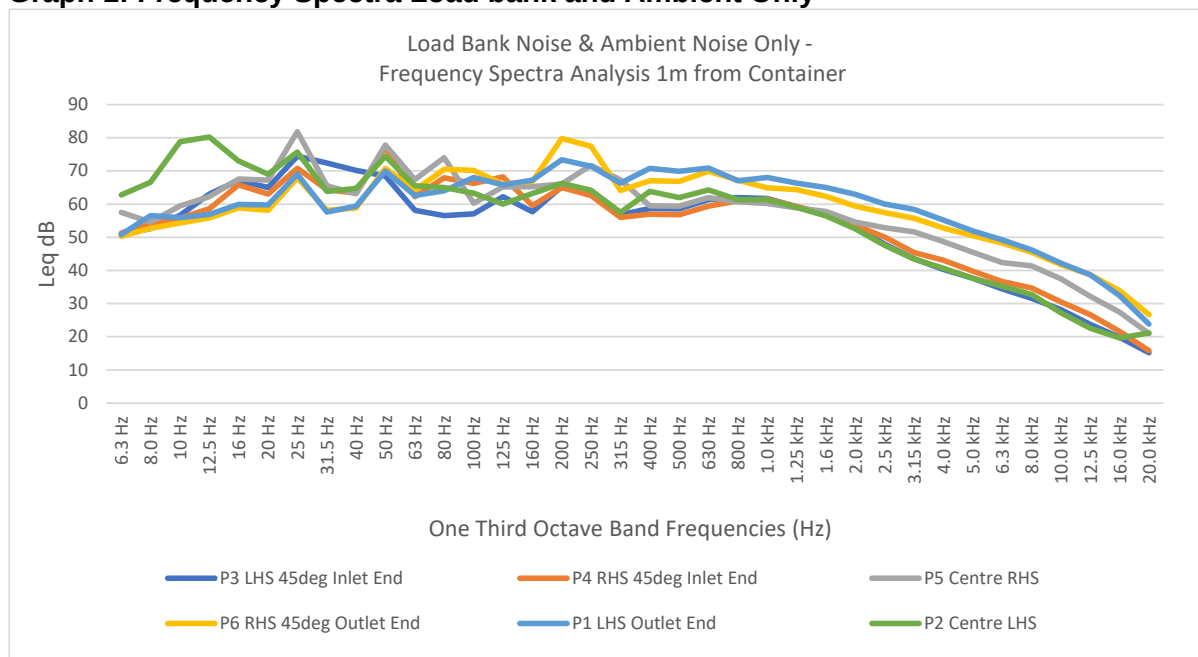
TABLE 4

Start Time	Run Time (mins./secs.)	LAeq (dB)	LA90 (dB)	Position
10:33	00:30	72.8	72.6	Position 3 LHS 45deg at Inlet End
10:34	00:30	69.1	68.9	Position 4 RHS 45deg at Inlet End
10:35	00:30	73.0	72.8	Position 5 Centre on RHS
10:37	00:30			Position 6 RHS 45deg at Outlet End
10:52	00:30	70.3	68.6	Position 1 LHS 45deg at Outlet End
10:53	00:30	73.0	72.8	Position 2 Centre on LHS
Average (arithmetic mean)		71.6	71.2	
Average (logarithmic)		71.9	71.5	

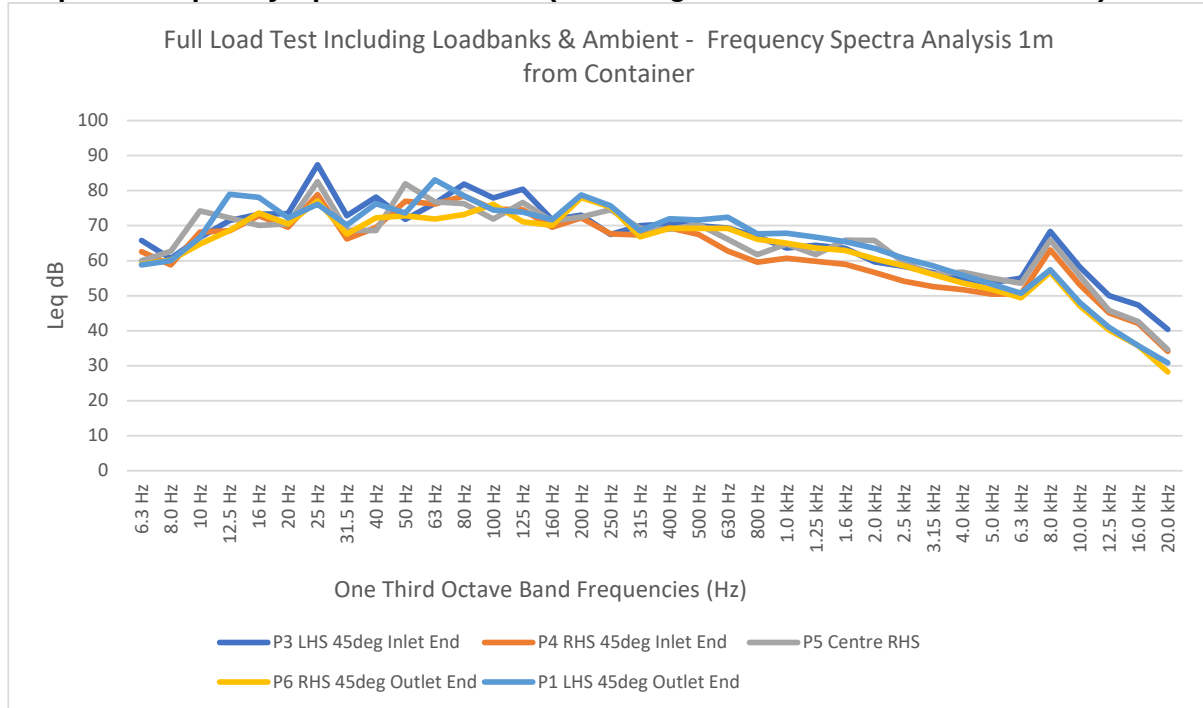
Position 2 assumed to be same as position 5

The results of frequency analysis of the full load test results including the ambient noise check are provided below in Graphs 1 and 2:

Graph 1: Frequency Spectra Load bank and Ambient Only



Graph 2: Frequency Spectra Full Load (including ambient and load bank noise)



Conclusions:

The results show that after appropriate corrections for the site location and ambient noise the average noise level at 1m from the acoustic container with the generator set operating under full load is 72dB LA90, which is within the design specification of 75dB(A) @ 1m free field.

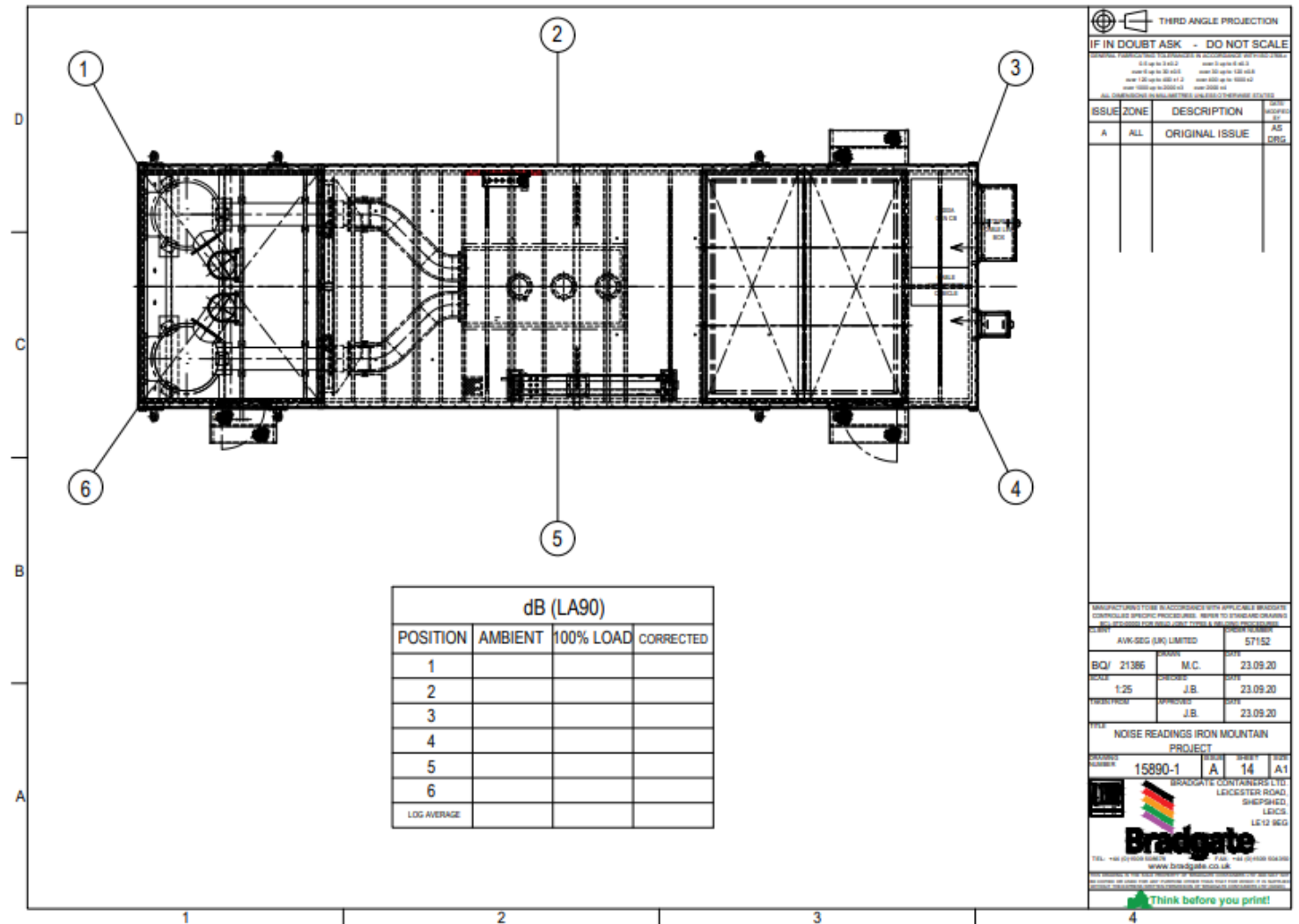
There is potentially some further reduction in noise level from 'break-out' from cable entry points and exhaust not being piped away etc when compared to the on-site installation. This has not been considered in the corrected noise level results.

We hope the above and attached information meets with your requirements, however should you wish to discuss any aspect in more detail or require further clarification, please feel free to contact the undersigned.

Yours faithfully

D R Kettlewell MSc MIOA MAE I.Eng
Managing Director
Principal Consultant

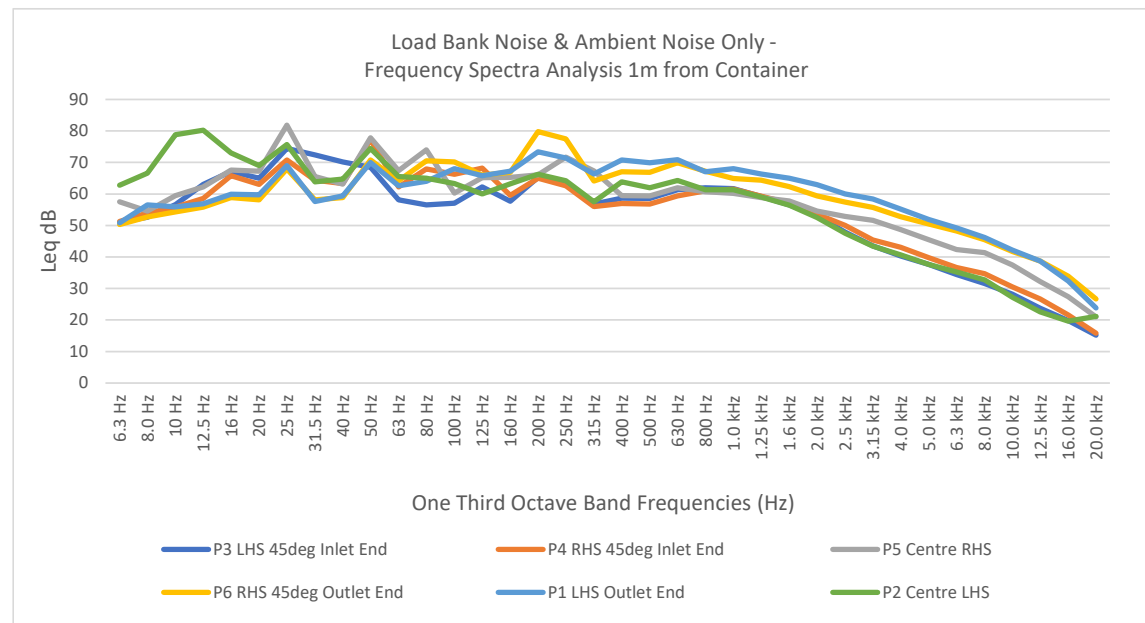
FIGURE 1: PLAN SHOWING FIXED MONITORING POSITIONS



Frequency Analysis:

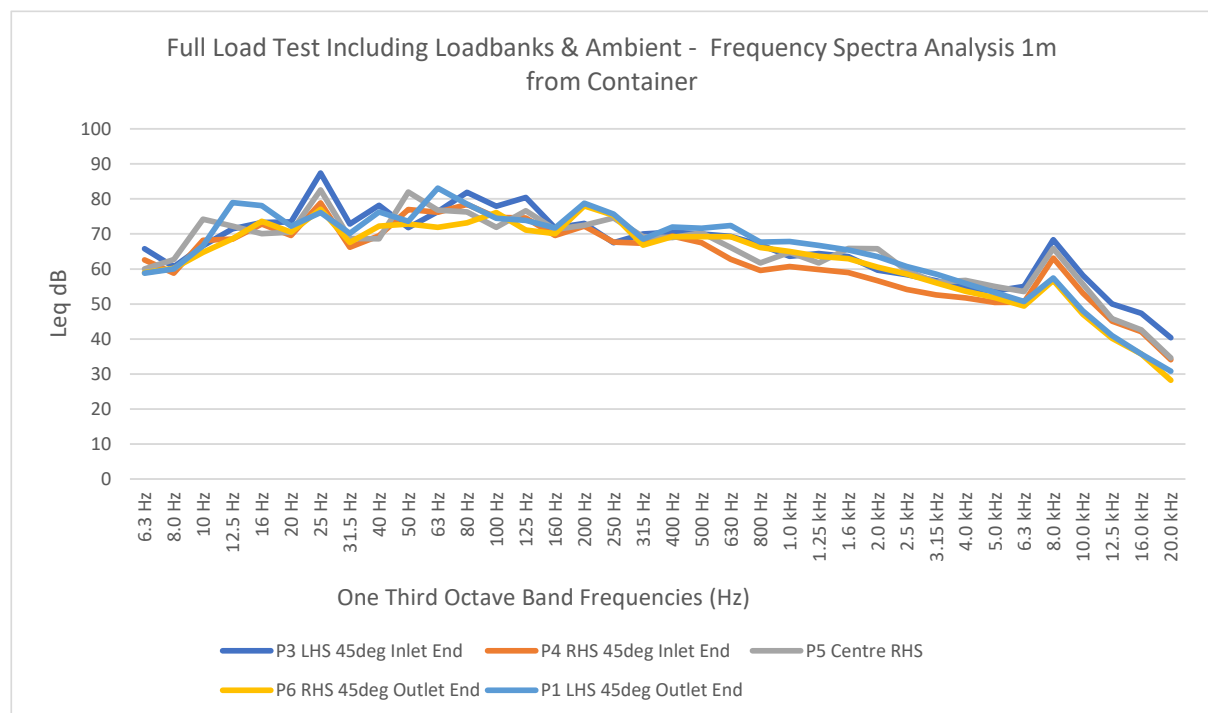
Loadbank & Ambient Noise Levels

6.3 Hz	51	51.3	57.5	50.3	50.8	62.8
8.0 Hz	52.6	53.9	54.6	52.7	56.5	66.6
10 Hz	56.6	55.8	59.5	54.3	55.9	78.8
12.5 Hz	63	58.6	62.2	55.8	56.9	80.2
16 Hz	67.1	65.8	67.6	58.8	59.9	73
20 Hz	65	63	67.2	58.1	59.7	69
25 Hz	74.4	70.8	81.8	67.9	69	75.7
31.5 Hz	72.4	64.4	65.5	58.1	57.6	63.8
40 Hz	70.2	63.3	63.1	58.8	59.4	64.7
50 Hz	68.5	77.2	77.8	70.8	70	74.4
63 Hz	58.1	62.2	67.4	64.2	62.6	65.5
80 Hz	56.5	67.9	74	70.5	64	65
100 Hz	57.1	66.2	60.3	70.2	68	63.3
125 Hz	62.2	68.2	65.2	66	65.8	60
160 Hz	57.7	59.6	65.3	66.9	67.2	63.2
200 Hz	65.3	65	66.1	79.8	73.4	66.2
250 Hz	63.5	62.6	71.7	77.5	71.4	64.2
315 Hz	56.8	56	67.3	64.1	66.3	57.5
400 Hz	58.7	57	59.5	67	70.8	63.8
500 Hz	58.6	56.8	59.4	66.9	69.9	62
630 Hz	61.3	59.4	62	69.9	70.9	64.3
800 Hz	62	61	60.7	67.2	67	61.3
1.0 kHz	61.7	61.5	60.2	64.9	68	61.3
1.25 kHz	59.2	59.3	58.8	64.4	66.3	59
1.6 kHz	56.5	57.1	57.8	62.3	65	56.4
2.0 kHz	53.1	53.6	54.6	59.4	62.9	52.5
2.5 kHz	47.9	50	52.9	57.4	60	47.5
3.15 kHz	43.5	45.4	51.6	55.7	58.4	43.4
4.0 kHz	40.3	43.1	48.7	52.8	55.2	40.7
5.0 kHz	37.6	39.8	45.5	50.5	51.9	37.6
6.3 kHz	34.4	36.7	42.4	48.2	49.2	35.2
8.0 kHz	31.6	34.7	41.4	45.5	46.2	32.7
10.0 kHz	28.2	30.5	37.5	41.7	42.2	27.2
12.5 kHz	23.7	26.7	32.2	38.7	38.7	22.6
16.0 kHz	19.8	21.6	27.4	33.9	32.4	19.6
20.0 kHz	15.2	15.8	21	26.7	23.8	21.2



Full Load Test Results

6.3 Hz	65.8	62.6	60	59	58.8
8.0 Hz	60.6	58.8	62.7	60.2	60
10 Hz	66.6	68.2	74.2	64.7	66.6
12.5 Hz	71.5	68.5	72.2	68.6	79
16 Hz	73.3	72.8	70.1	73.6	78.1
20 Hz	73.4	69.6	70.5	70.5	72.2
25 Hz	87.4	78.9	82.6	77.1	76.1
31.5 Hz	72.8	66.2	68.7	67.6	70.2
40 Hz	78.2	69.5	68.6	72.2	76.3
50 Hz	71.8	77	82	72.8	73.6
63 Hz	76.4	76.2	76.8	71.9	83.1
80 Hz	81.9	78.4	76.3	73.2	78.5
100 Hz	77.9	74.7	71.9	76.1	74.5
125 Hz	80.4	74.6	76.6	71.1	73.9
160 Hz	71.7	69.6	71.3	70.1	71.7
200 Hz	73	72.2	72.5	78	78.8
250 Hz	67.5	67.7	74.6	75.3	75.7
315 Hz	70	67.3	69.2	66.8	68.5
400 Hz	70.5	69.4	69	69.2	72
500 Hz	70	67.5	70.3	69.2	71.6
630 Hz	69.3	62.8	66.1	69.2	72.4
800 Hz	66.9	59.6	61.7	66.1	67.7
1.0 kHz	63.6	60.7	64.7	65	67.8
1.25 kHz	64.4	59.8	61.7	63.6	66.7
1.6 kHz	63.5	59	65.9	62.9	65.4
2.0 kHz	59.7	56.6	65.8	60.5	63.5
2.5 kHz	58.4	54.1	59.5	58.5	60.7
3.15 kHz	56.6	52.6	56.2	56	58.5
4.0 kHz	54.6	51.7	56.7	53.6	55.9
5.0 kHz	53.7	50.4	55	51.8	53.3
6.3 kHz	55	50.5	53.5	49.4	50.7
8.0 kHz	68.4	63.1	65.9	56.7	57.4
10.0 kHz	58.2	53.1	55.7	47.1	48
12.5 kHz	50	45.1	45.8	40.2	41
16.0 kHz	47.3	42.1	42.6	35.7	35.7
20.0 kHz	40.4	34.1	34.6	28.2	30.8



Directivity Patterns -

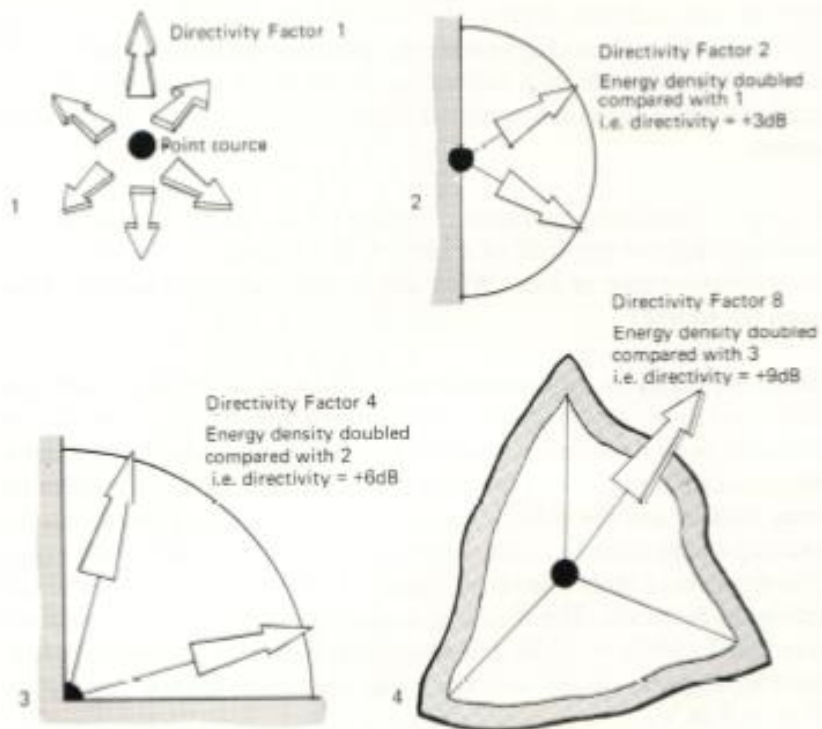


Figure 8. Directivity patterns of noise sources

Instrument Calibration Certificates

CERTIFICATE OF CALIBRATION			
ISSUED BY	Gracey & Associates	BSI CERTIFICATE	FS 25913
DATE OF ISSUE	25 July 2020	CERTIFICATE NUMBER	2020-0802
DATE OF CALIBRATION	22 July 2020		
CALIBRATION INTERVAL	24 months	PAGE 1 OF 1	
TEST ENGINEER	APPROVING SIGNATORY	Gracey & Associates Barn Court Shelton Road Upper Dean PE26 0NQ Tel: 01234 709835 Fax: 01234 252332 www.gracey.com	
Greg Rice 	Greg Rice 		
Equipment	Nor 118, s/n: 31992		
Description	Real Time Sound Analyser - class 1, Nonsonic AS		
Customer	Noise & Vibration Consultants 56A Leabrook Road, Somercotes, Derbyshire, DE55 4HB		
Standards	Conditions		
BS EN 60551 Class 1	Atmospheric Pressure 101.5 kPa		
BS EN 60604 Class 1	Temperature 25.2 °C		
Nonsonic Production Standards	Relative Humidity 41.2 %		

Calibration Reference Sources

Equipment	S/N	Last Cal	Equipment	S/N	Last Cal
Druck DPI 141 479		29-Oct-15	HP 34401	3146R29376	11-Feb-20
Vaisala HMP23 52430003		04-Nov-15			

Notes

We certify that the above product was duly tested and found to be within the specification at the points measured (except where indicated). Measurements are traceable to reference sources calibrated to National Standards. Where no national or international standards exist, traceability is to standards maintained by the manufacturer. Our Quality Management System has been assessed to comply with BS EN ISO 9001:2015 - BS Certificate number FS 25913. Tests were carried out in environmental conditions controlled to the extent appropriate to the instrument's specification. All relevant test certificates are available for inspection. The uncertainties are for a confidence probability of not less than 95%. Copyright of this certificate is owned by Gracey & Associates and may not be reproduced other than in full except with their prior written approval.

Gracey & Associates is the trading name of W T Gracey Ltd. Registered in Upper Dean England No 1176412. Est. 1972
 Hire and calibration of noise and vibration instruments under a BSI ISO 9001 quality management system, Cert No. FS 25913

CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc

DATE OF ISSUE 09 April 2020

CERTIFICATE NUMBER 141224



Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Page 1 of 2

Approved signatory

N Smith

Electronically signed:

Sound Calibrator : IEC 60942:2003

Instrument information

Manufacturer: Cirrus Research plc

Notes:

Model: CR.513A

Serial number: 31523

Class: 1

Test summary

Date of calibration: 09 April 2020

The sound calibrator detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC 60942:2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

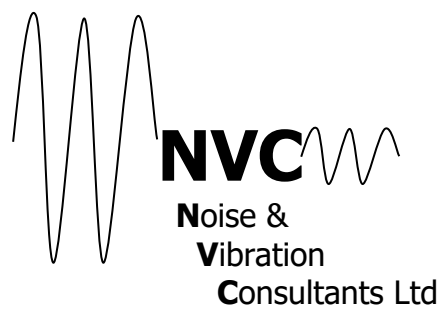
The sound pressure level was measured using a WS2F condenser microphone type MK224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

The sound calibrator has been shown to conform to the Class 1 requirements for periodic testing, described in Annex B of IEC 60942:2003 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed. However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of sound calibrator conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the sound calibrator to the requirements of IEC 60942:2003.

Notes:

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%.



SECTION 7. DATA SHEETS

7.1. Mechanical Data Sheets

KASON :: Walk-in Hardware

Inside Release Handles

- Required with walk-in latches
- Use the convenient tables in the "How To..." section on this page to choose and order the correct inside handle for each Kason latch selected
- See selection chart below

481 :: Safety-Glow™ Push Handle



- Glow-in-the-dark knob is always visible
- **Material:** Steel rod and flange; Safety-Glow™ plastic knob
- **Finish:** Kasonized
- **Mounting:** Holes drilled for 5.0mm (No. 10) screws

482 :: Hi-Temp Push Handle



- Provided with steel rod and tough iron knob for high heat applications
- **Material:** Steel rod and flange; iron knob
- **Finish:** Kasonized
- **Mounting:** Holes drilled for 5.0mm (No. 10) screws

487 :: Frost-Free Push Handle



- Furnished with low-conduction fiberglass rod for low-temp applications
- **Material:** Fiberglass rod, plastic flange; Safety-Glow™ plastic knob
- **Mounting:** Holes drilled for 5.0mm (No. 10) screws

483 :: Paddle Handle



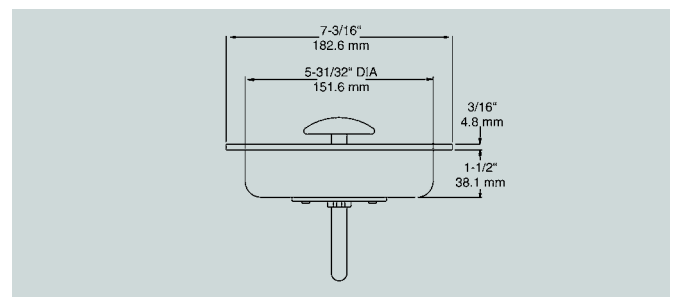
- **Material:** Steel
- **Finish:** Kasonized
- **Mounting:** Holes drilled for 5.5mm (No. 12) screws

Inside Release Handles :: Recessed

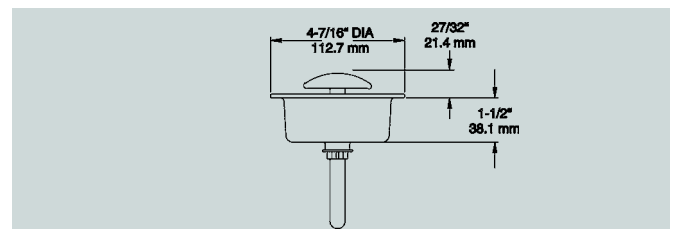


- **Material:** Kasonized steel rod, plastic recessed housing, Safety-Glow™ plastic knob
- **Option:** No.s 486 and 489 available with frost-resistant fiberglass rods
- **Mounting:** Holes drilled for 5.0mm (No. 10) screws

486 :: Wide Recessed Handle



489 :: Narrow Recessed Handle



CAUTION:

Proper selection and installation of Kason inside release handles can prevent entrapment inside coolers, freezers and other walk-in units when used with the appropriate Kason latches. Please select carefully for your application and use only as directed.

How To Select and Order Inside Release Handles

- 1 From Table A choose the appropriate inside release handle for each latch.
- 2 Refer to Table B for minimum door thickness required for each inside release model.
- 3 Specify exact thickness of your door. We will use this information to convert your requirements into our part numbers.

Table A :: Select by Latch Suitability

Latches	Inside Release Handles
55XXL	486D, 489D
56	483, 481A, 482A, 486A, 487A, 489A
58	481C, 482C, 486C, 487C, 489C

Table B :: Select by Door Thickness

Minimum Door Thickness	Inside Release Handles
38.1mm (1 1/2")	481C, 482C, 483, 487C
63.5mm (2 1/2")	481A, 482A, 487A
68.3mm (2 11/16")	486D
69.9mm (2 3/4")	489D
76.2mm (3")	481B, 482B, 486B, 486C, 487B
82.6mm (3 1/4")	489B, 489C
95.3mm (3 3/4")	486A
101.6mm (4")	489A

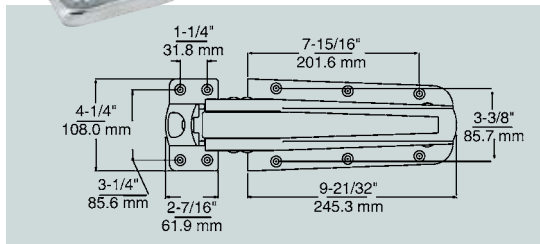
KASON :: Walk-in Hardware

55 :: Heavy Duty Latch



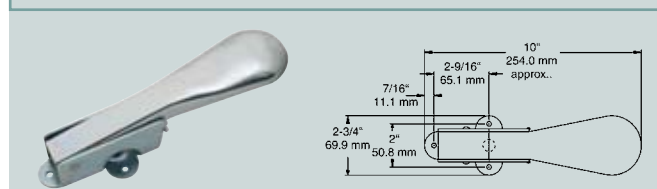
- This pioneering refrigeration equipment safety latch has been imitated but never matched in rugged mechanical features and value
- Designed to prevent accidental entrapment in walk-ins
- Completely equipped with surface-mounted paddle-style inside release lever
- Releases from outside or inside with minimum pressure or pull
- So easy and convenient to use that employees have no reason to leave doors ajar between loads
- Patented Kason micro-adjustable strike assures precise adjustment
- No. 55 bodies and strikes may be ordered separately

0055000020	Latch, Offset: 0mm to 4.8mm (Flush to 3/16"), Finish: Chrome
0055000024	Latch, Offset: 19.0mm to 28.6mm (3/4" to 1 1/8"), Finish: Chrome
0055000028	Latch, Offset: 28.6mm to 41.3mm (1 1/8" to 1 5/8"), Finish: Chrome
0550000032	Latch, Offset: 34.9mm to 47.6mm (1 3/8" to 1 7/8"), Finish: Chrome
0055000065	Latch, Offset: 0mm to 4.8mm (Flush to 3/16"), Finish: Tuffkote
0055000066	Latch, Offset: 19.0mm to 28.6mm (3/4" to 1 1/8"), Finish: Tuffkote
0055000068	Latch, Offset: 28.6mm to 41.3mm (1 1/8" to 1 5/8"), Finish: Tuffkote



- **Material:** High pressure die-cast zinc body and strike housing, malleable iron handle, cold rolled steel inside release paddle assembly
- **Finish:** See Order Information
- **Mounting:** Holes drilled and countersunk for 6.0mm (1/4") screws
- **Door Thickness:** Plunger rod for inside release handle fits 152.4mm (6") door. Specify other door thickness
- **Spring Options:** Specify preference as follows: 55XL - Latch with light spring. 55XXL - Latch with extra-light spring; use with Kason 486 or 489 push-type inside release

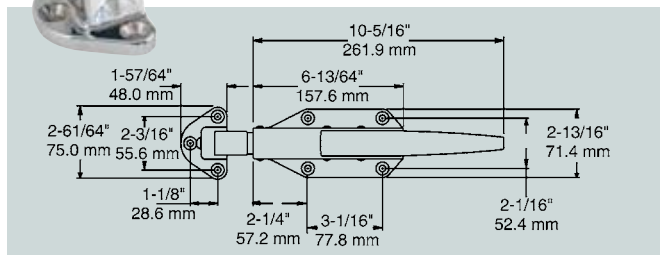
Inside Release Handle



58 :: Radial Latch :: Medium / Heavy Duty



- **For medium to heavy duty use**
- Bolt-type tongue provides positive locking action
- Proven, heavy-duty construction outlasts similar latches in hard commercial use
- Patented Kason adjustable strike assures precise adjustment
- Padlocking provision standard on all models
- Unsurpassed for long life and reliability



- **Material:** High pressure die-cast zinc body and strike housing, malleable iron handle
- **Finish:** See Order Information. Powder coated finish also available for severe environmental applications
- **Mounting:** Holes drilled and countersunk for 6.0mm (1/4") screws

Roller Strike

	• For smooth, easy closure order No. 59 Roller Strike with No. 58 Latch Body
0059005001	Roller Strike, Offset -3.2mm to 6.4mm (-1/8" to 1/4")
0059005002	Roller Strike, Offset 19mm to 38.1mm (3/4" to 1 1/2")
0059005003	Roller Strike, Offset 44.5mm to 63.5mm (1 3/4" to 2 1/2")

0058CH5020	Cylinder Locking Body, Heavy Spring
0058CL5020	Cylinder Locking Body, Light Spring
0058H05021	Body, Heavy Spring
0058L05021	Body, Light Spring
0058005001	Strike, Offset: -3.2mm to 6.4mm (-1/8" to 1/4")
0058005002	Strike, Offset: 19.0mm to 38.1mm (3/4" to 1 1/2")
0058005003	Strike, Offset: 44.5mm to 63.5mm (1 3/4" to 2 1/2")
0058005310035K	Flat Bottomed Plate (Does not accept Inside Release Handle)

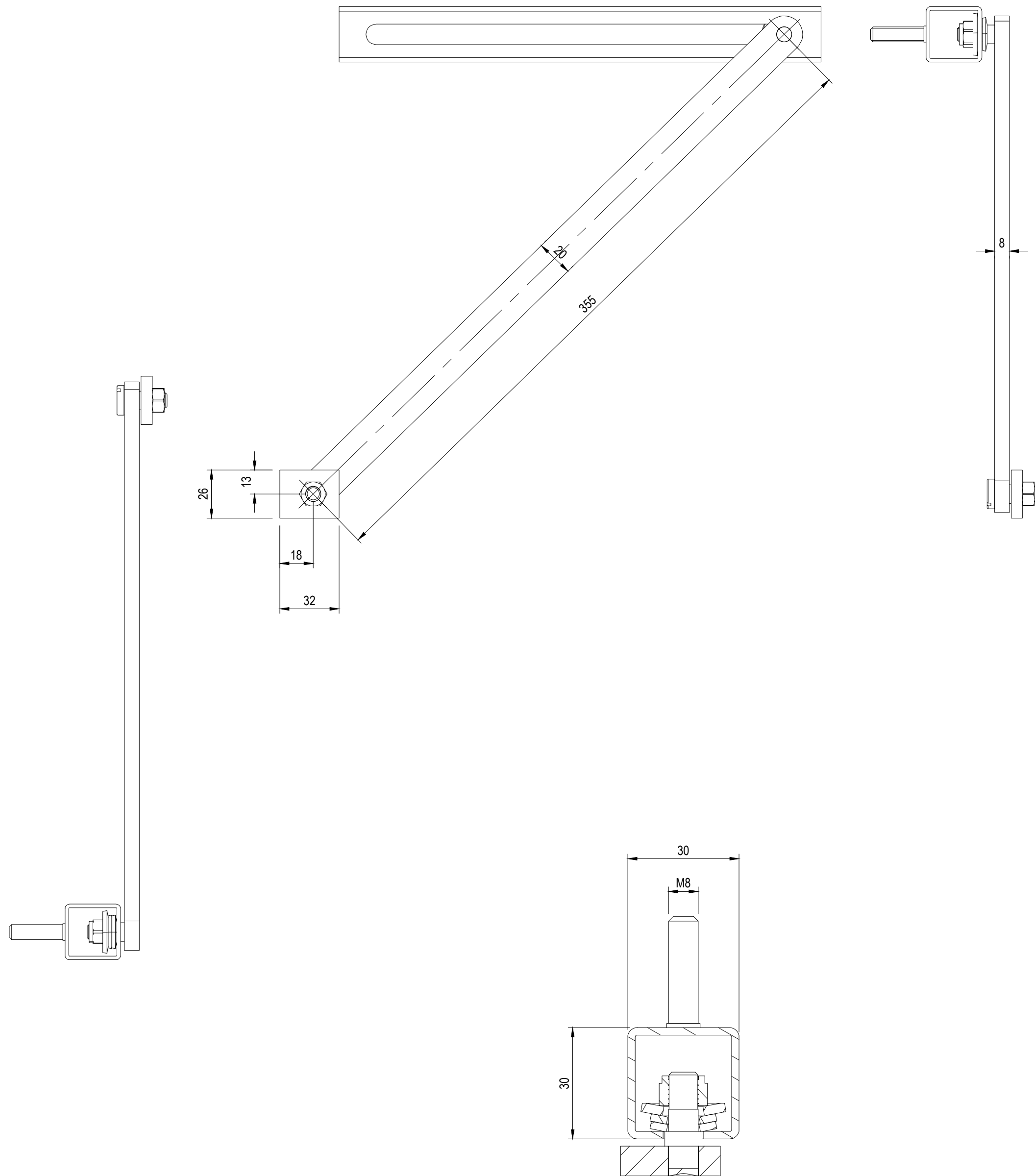
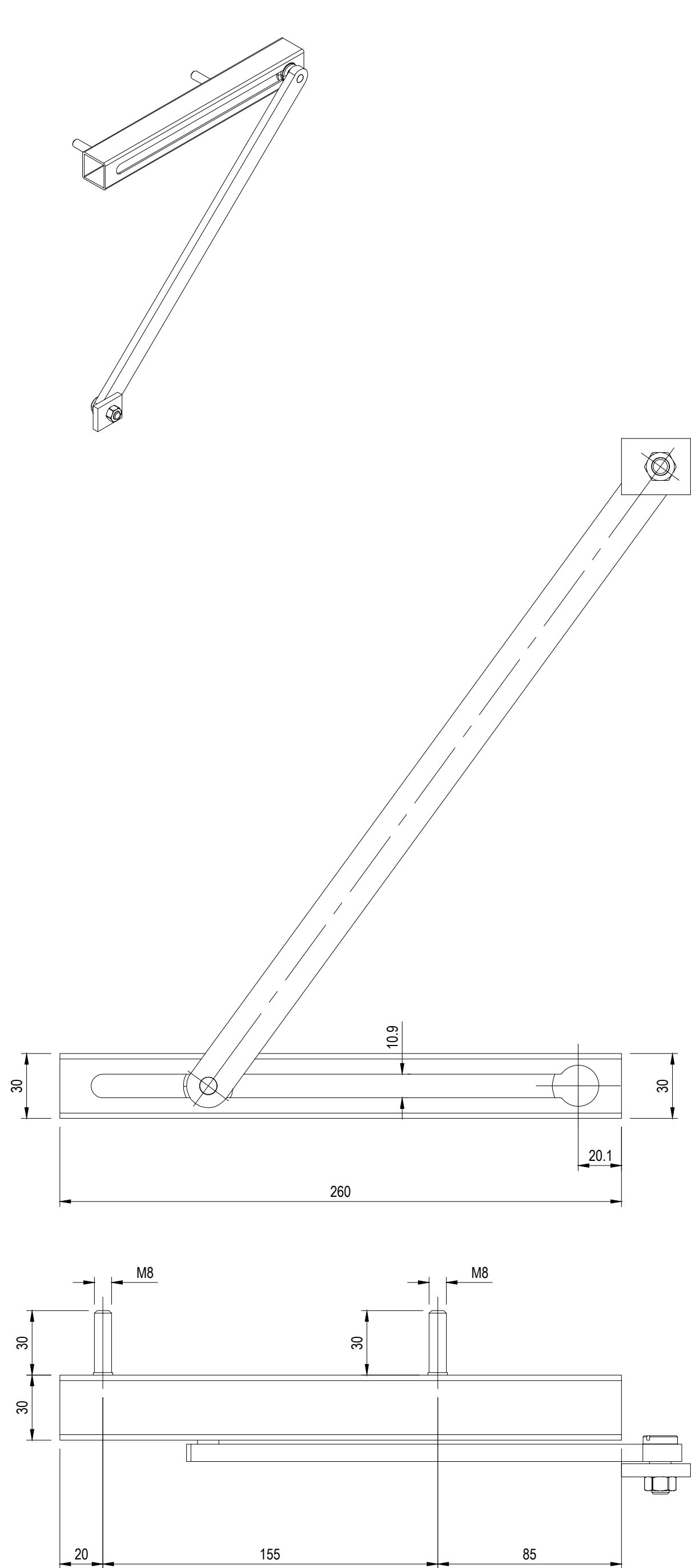
Cylinder locks may be keyed alike or differently; 5 key changes available; please specify.

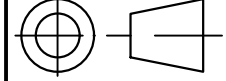
D

C

B

A



THIRD ANGLE PROJECTION

IF IN DOUBT ASK - DO NOT SCALE

GENERAL FABRICATING TOLERANCES IN ACCORDANCE WITH ISO 2768-c

0.5 up to 3 ±0.2	over 3 up to 6 ±0.3
over 6 up to 30 ±0.5	over 30 up to 120 ±0.8
over 120 up to 400 ±1.2	over 400 up to 1000 ±2
over 1000 up to 2000 ±3	over 2000 ±4

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

ISSUE	ZONE	DESCRIPTION	DATE
A	ALL	ORIGINAL ISSUE	AS DRG

MANUFACTURING TO BE IN ACCORDANCE WITH APPLICABLE BRADGATE CONTROLLED SPECIFIC PROCEDURES. REFER TO STANDARD DRAWING BCL-STD-00003 FOR WELD JOINT TYPES & WELDING PROCEDURES

CLIENT	ORDER NUMBER
BQ/	DRAWN J.Barter
SCALE 1:2	CHECKED
TAKEN FROM	APPROVED
	DATE

TITLE

BOX TYPE DOOR STAY

DRAWING NUMBER	418100109	ISSUE	A	SHEET	1	SIZE	A2
----------------	-----------	-------	---	-------	---	------	----



BRADGATE CONTAINERS LTD.
LEICESTER ROAD,
SHEPSHED,
LEICS.
LE12 9EG

Bradgate

TEL: +44 (0)1509 508678 FAX: +44 (0)1509 504350

www.bradgate.co.uk

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Think before you print!

1

2

3

4

Spring-return actuator with emergency control function for adjusting dampers in technical building installations

- Air damper size up to approx. 4 m²
- Nominal torque 20 Nm
- Nominal voltage
AC 24...240 V / DC 24...125 V
- Control Open-close
- with 2 integrated auxiliary switches



Technical data

Electrical data	Nominal voltage	AC 24...240 V / DC 24...125 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...264 V / DC 21.6...137.5 V
	Power consumption in operation	7 W
	Power consumption in rest position	3.5 W
	Power consumption for wire sizing	18 VA
	Auxiliary switch	2 x SPDT, 1 x 10% / 1 x 11...90%
	Switching capacity auxiliary switch	1 mA...3 (0.5 inductive) A, AC 250 V
	Connection supply / control	Cable 1 m, 2 x 0.75 mm ²
	Connection auxiliary switch	Cable 1 m, 6 x 0.75 mm ²
Functional data	Parallel operation	Yes (note the performance data)
	Torque motor	Min. 20 Nm
	Torque spring return	Min. 20 Nm
	Direction of motion motor	Selectable by mounting L / R
	Direction of motion emergency control function	Selectable by mounting L / R
	Manual override	By means of hand crank and locking switch
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited by adjustable mechanical end stop
	Running time motor	75 s / 90°
	Running time emergency control position	<20 s / 90°
	Running time emergency setting position note	<20 s @ -20...50°C / <60 s @ -30°C
	Sound power level motor	45 dB(A)
	Spindle driver	Universal spindle clamp 10...25.4 mm
	Position indication	Mechanical
	Service life	Min. 60,000 emergency positions
Safety	Protection class IEC/EN	II Protective insulated
	Protection class UL	II Protective insulated
	Protection class auxiliary switch IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2014/30/EU
	Low voltage directive	CE according to 2014/35/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1.AA.B
	Rated impulse voltage supply / control	4 kV
	Rated impulse voltage auxiliary switch	2.5 kV
	Control pollution degree	3
Weight	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
	Weight	2.4 kg

Safety notes



- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Caution: Power supply voltage!
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The two switches integrated in the actuator are to be operated either on power supply voltage or at safety extra-low voltage. The combination power supply voltage/ safety extra-low voltage is not permitted.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation	The actuator is equipped with a universal voltage feed module that can utilise supply voltages of AC 24 ... 240V and DC 24 ... 125V. The actuator moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the emergency position by spring force when the supply voltage is interrupted.
Simple direct mounting	Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
Manual override	By using the hand crank the damper can be actuated manually and engaged with the locking switch at any position. Unlocking is carried out manually or automatically by applying the operating voltage.
High functional reliability	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
Adjustable angle of rotation	Adjustable angle of rotation with mechanical end stops.
Flexible signalization	The actuator has one auxiliary switch with a fixed setting and one adjustable auxiliary switch. They permit a 10% or 11...90% angle of rotation to be signaled.

Accessories

	Description	Type
Electrical accessories	Auxiliary switch, 2 x SPDT	S2A-F
	Feedback potentiometer, 200 Ohm, incl. installation accessories	P200A-F
	Feedback potentiometer 1 kOhm, incl. installation accessories	P1000A-F
	Description	Type
Mechanical accessories	Shaft extension 250 mm, for damper spindles Ø 8...25 mm	AV8-25
	End stop indicator for NF..A / SF..A	IND-AFB
	Spindle clamp set for NF..A/SF..A (1", 3/4", 1/2")	K7-2
	Straight ball joint with M8, suitable for damper crank arms KH8	KG10A
	Angled ball joint with M8, suitable for damper crank arms KH8	KG8
	Damper crank arm, for damper spindles	KH8
	Damper crank arm for NF..A / SF..A, for 3/4" spindles	KH-AFB
	Form fit insert 10x10 mm, for spring return actuators NG	ZF10-NSA-F
	Form fit insert 12x12 mm, for spring return actuators NG	ZF12-NSA-F
	Form fit insert 16x16 mm, for spring return actuators NG	ZF16-NSA-F

Accessories

Description

Damper crank arm, for spring return actuators NG
Base plate extensions for NF..A/SF..A

Type

ZG-AFB
Z-SF

Electrical installation

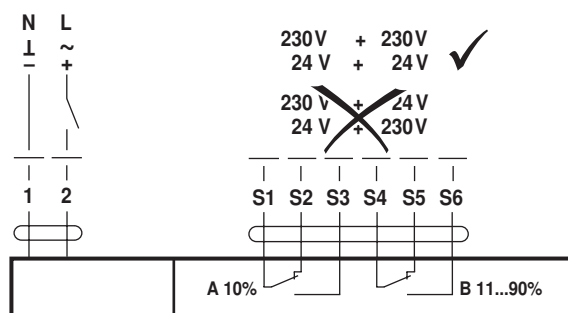


Notes

- Caution: Power supply voltage!
- Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

AC 24...240 V / DC 24...125 V, open-close

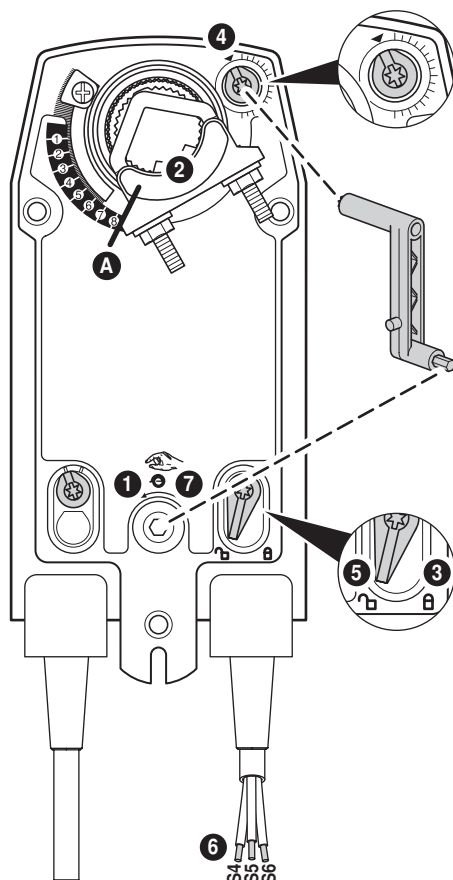


Cable colours:

- 1 = blue
2 = brown
S1 = violet
S2 = red
S3 = white
S4 = orange
S5 = pink
S6 = grey

Operating controls and indicators

Auxiliary switch settings



Note

Perform settings on the actuator only in deenergised state.

1 Manual override

Turn the hand crank until the desired switching position is set.

2 Spindle clamp

Edge line **A** displays the desired switching position of the actuator on the scale.

3 Fasten the locking device

Turn the locking switch to the "Locked padlock" symbol.

4 Auxiliary switch

Turn rotary knob until the notch points to the arrow symbol.

5 Unlock the locking device

Turn the locking switch to the "Unlocked padlock" symbol or unlock with the hand crank.

6 Cable

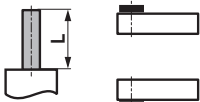
Connect continuity tester to S4 + S5 or to S4 + S6.

7 Manual override

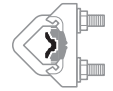
Turn the hand crank until the desired switching position is set and check whether the continuity tester shows the switching point.

Dimensions [mm]

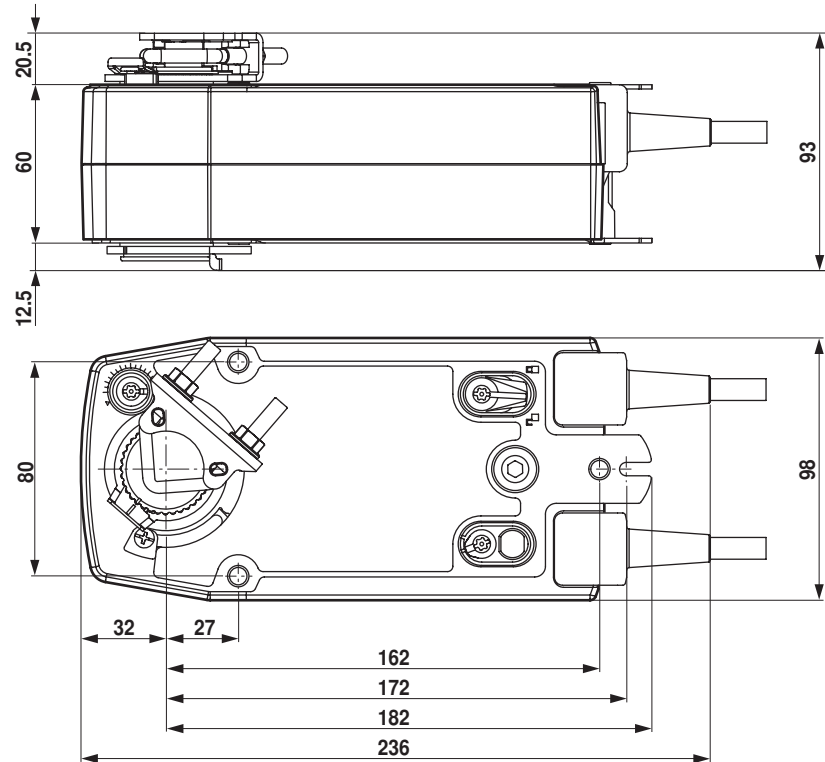
Spindle length

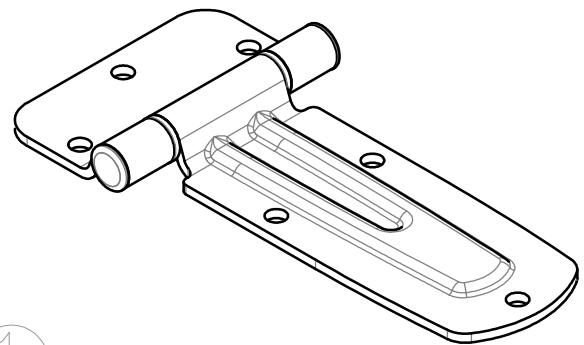
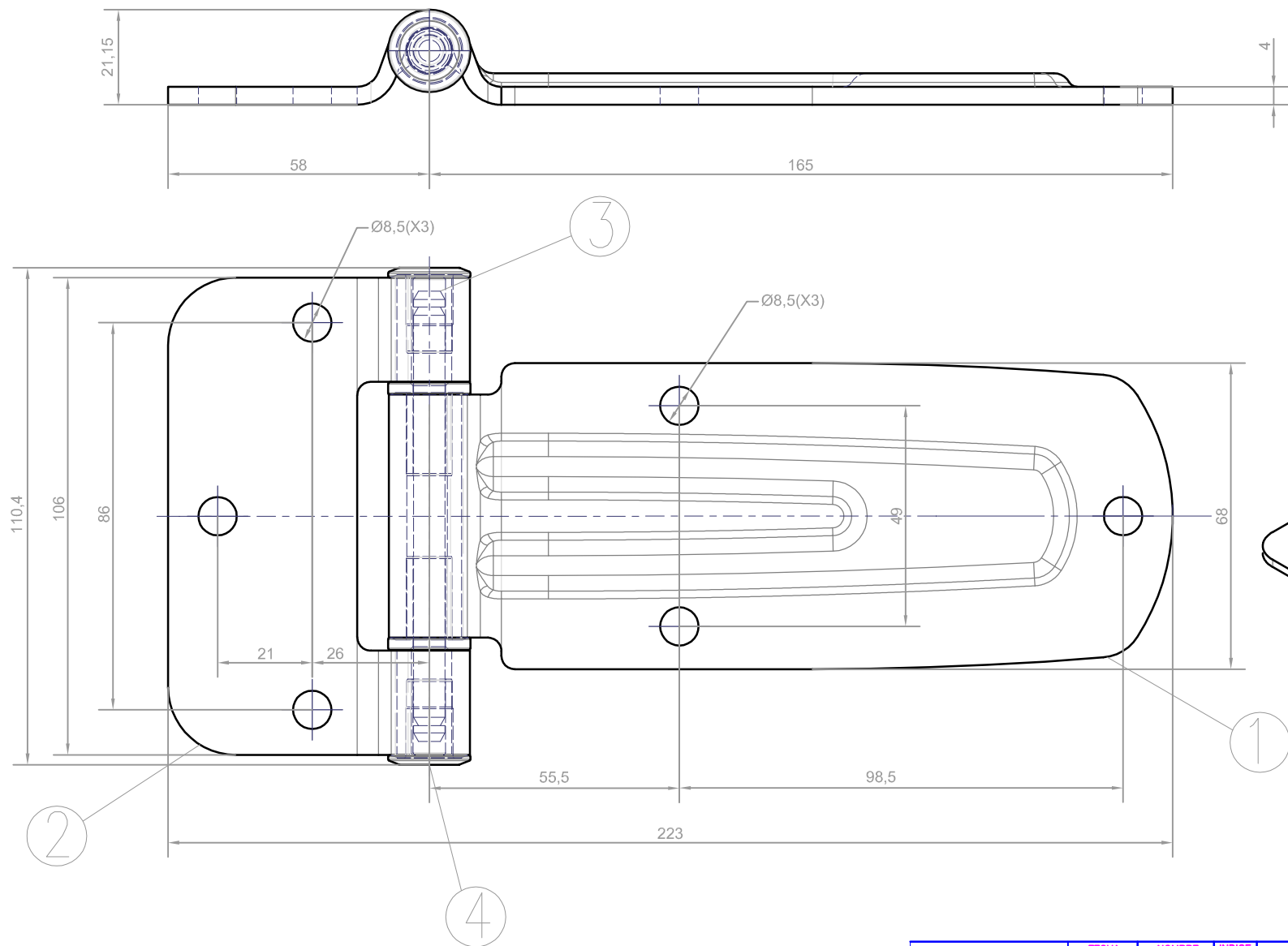
	Min. 85
	Min. 15

Clamping range

	 10...22	 10	 14...25.4
	 19...25.4	 12...18	

Dimensional drawings





Cantidad de piezas	Denominación	Código	Marca	Material	Tratamiento	Peso
2	CASQUILLO BIS LATERAL TAMBRE GDE SOP NYL	302010628	4			2 g.
1	PASADOR 7X100 P/BIS LAT TAMBRE GRD 180 I	205050247	3			30 g.
1	SOPORTE BISAGRA LATERAL PLANA DEZA INOX	218100202	2	.		205 g.
1	PALA LATERAL PLANA DEZA C/CASQ INOX	218100201	1	.		384 g.

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PUBLICACIÓN SIN PERMISO PREVIO DEL
PROPIETARIO

FECHA	NOMBRE	INDICE	SECTOR Y DESCRIPCION DE LA MODIFICACION	
07/01/2016	David Rodr	0	LIBERADO PLANO	
.	.	A		
.	.	B		
.	.	C		
.	.	D		
FECHA	NOMBRE	FIRMAS	NUMERO DE PLANO	REVISION
DIBUJADO	07/01/2016	DAVID RODRIGUEZ	418100201	
REVISADO	07/01/2016	MIGUEL PÉREZ		
APROBADO	07/01/2016	MIGUEL PÉREZ		
Escala:	Denominación:		Material:	
1:1	BISAGRA LATERAL PLANA DEZA INOX		AISI 304	
			Tratamiento:	
			Peso neto:	623g.

7.2. Electrical Data Sheets



ATORLED2X5/M3

Tornado IP65 LED Non-Corrosive - Self Test Emergency 58W Grey



Features

LED Performance allows point-to-point replacement of existing fluorescent luminaires.

Light output exceeds performance of T8 and T5 fluorescent.

Unique luminaire fixing clip design allows option of mounting onto BESA box.

Lockable heavy-duty stainless steel clips supplied as standard for added safety and security.

LED lifespan L70 30,000 hours.

Self-test emergency as standard.

General Information

Lamp Type	LED
Colour / Finish	Grey
Emergency	Yes
Self Test	Yes
IP Rating	IP65
IK Rating	IK07
Class Protection	1
Internal / External	Internal/External
Surface / Recessed / Suspended	Surface/Suspended
Warranty (Years)	5
CE Mark	Yes
Length (mm)	1566
Width (mm)	118
Height (mm)	75

Technical Information

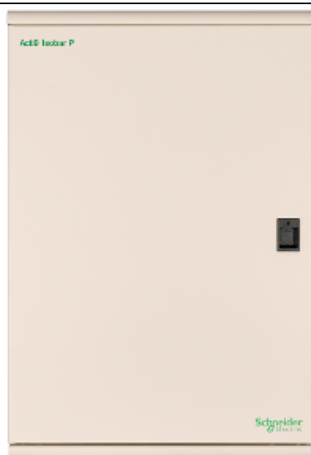
Wattage	58W
Lumens Delivered	6353lm
Lm/W	110lm
CRI	Ra 80
CCT	4000K
Input	230V
Hertz	50Hz
Operating Temp	-10°C to 40°C

Technical Data - ETIM - Ceiling-/wall luminaire (EC002892)

Suitable for wall mounting	No
Suitable for suspended mounting	Yes
Suitable for ceiling mounting	Yes
Suitable for built-in mounting	No
Suitable for surface mounting	Yes
Nominal voltage	230-230 V
Control gear included	Yes
No dim function	Yes
Degree of protection (IP)	IP65
Impact strength	IK07
Protection class	I
Suitable for emergency lighting	Yes
With movement sensor	No
With light sensor	No
Max. system power	58 W
Rated luminous flux acc. IEC 62722-2-1	6353 lm
Colour of light	White
Colour temperature	4000-4000 K
Colour rendering index CRI	80-89
Luminaire efficacy	110 lm/W
Width	118 mm
Height/depth	75 mm
Length	1566 mm

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	Code	A	B	C	D
	ATORLED4	1266	860	75	85
	ATORLED5	1566	960	75	85
	ATORLED6	1866	1030	80	85
	ATORLED2X4	1266	860	75	118
	ATORLED2X5	1566	960	75	118
	ATORLED2X6	1855	1030	80	118



Main

Range	Acti 9
Product name	Acti 9 Isobar P B
Product or component type	Distribution board
Device application	Distribution
Enclosure type	Standard
Provided equipment	Earth stud Enclosure Door Front cover Pan assembly Neutral terminal block Earth terminal block Blanking plate Removable gland plates
Colour	Cream (RAL 9001)

Complementary

Enclosure mounting	Surface
Poles description	3P + N
[Ie] rated operational current	250 A at 400/415 V AC 250 A at 230/240 V AC
Breaking capacity	25 kA
Overvoltage category	IV
[Ui] rated insulation voltage	500 V
[Uimp] rated impulse withstand voltage	6 kV
Incomer device options	Switch disconnecter - 3P + N Switch disconnecter - 4P MCCB - 4P Terminal block - 4P Contactor - 4P

RCCB - 4P

Protection device options at outgoer	Miniature circuit breaker (MCB) 63 A Residual current circuit breaker with overcurrent protection (RCBO) 45 A 100 mA Residual current circuit breaker with overcurrent protection (RCBO PoN) 45 A 100 mA
Number of ways	8 ways (3P) outgoer
Enclosure material	Steel
Surface treatment	Epoxy
Surface finish	Powder paint
Height	538 mm
Width	470 mm
Depth	138 mm
Net weight	11 kg

Environment

Standards	BS EN 61439-3
IP degree of protection	IP2x without cover internal conforming to BS EN 60529 IP3x with cover external conforming to BS EN 60529
IK degree of protection	IK05
Ambient air temperature for operation	-35...70 °C
Ambient air temperature for storage	-40...80 °C

Packing Units

Package 1 Weight	11.600 kg
Package 1 Height	1.700 dm
Package 1 width	6.820 dm
Package 1 Length	4.600 dm

Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Product out of China RoHS scope. Substance declaration for your information
Environmental Disclosure	Product Environmental Profile

Contractual warranty

Warranty	18 months
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Main

Range	Acti 9
Product or component type	Switch disconnecter
Device application	Distribution

Complementary

[Ie] rated operational current	125 A at 415 V AC
Poles description	4P
Product destination	Distribution board

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications



Main

Range	Acti 9
Product name	Disbo iC60
Product or component type	Miniature circuit-breaker
Device short name	IC60H
Poles description	1P
Number of protected poles	1
[In] rated current	6 A
Network type	AC
Trip unit technology	Thermal-magnetic
Curve code	B
Breaking capacity	20 kA Icu at 12...48 V DC conforming to EN/IEC 60947-2 10 kA Icu at 72 V DC conforming to EN/IEC 60947-2 10000 A Icn at 240 V AC 50/60 Hz conforming to EN/IEC 60898-1 42 kA Icu at 10...60 V AC 50/60 Hz conforming to EN/IEC 60947-2 30 kA Icu at 100...133 V AC 50/60 Hz conforming to EN/IEC 60947-2 15 kA Icu at 220...240 V AC 50/60 Hz conforming to EN/IEC 60947-2
Utilisation category	Category A conforming to EN/IEC 60947-2

Complementary

Network frequency	50/60 Hz
[Ue] rated operational voltage	240 V AC 50/60 Hz
Magnetic tripping limit	4 x In +/- 20 %
[Ics] rated service breaking capacity	21 kA 50 % conforming to EN/IEC 60947-2 - 10...60 V AC 50/60 Hz 15 kA 50 % conforming to EN/IEC 60947-2 - 100...133 V AC 50/60 Hz 7.5 kA 50 % conforming to EN/IEC 60947-2 - 220...240 V AC 50/60 Hz 10000 A 100 % conforming to EN/IEC 60898-1 - 240 V AC 50/60 Hz 20 kA 100 % conforming to EN/IEC 60947-2 - 12...48 V DC 10 kA 100 % conforming to EN/IEC 60947-2 - 72 V DC
Limitation class	3 conforming to EN/IEC 60947-2
[Ui] rated insulation voltage	500 V AC 50/60 Hz conforming to EN/IEC 60947-2
[Uimp] rated impulse withstand voltage	6 kV conforming to EN/IEC 60947-2

Contact position indicator	Yes
Control type	Toggle
Local signalling	Trip indicator
Mounting mode	Clip-on
Mounting support	Rail
9 mm pitches	2
Height	85 mm
Width	18 mm
Depth	78.5 mm
Net weight	0.125 kg
Colour	White
Mechanical durability	20000 cycles
Electrical durability	10000 cycles
Provision for padlocking	Padlockable
Connections - terminals	Single terminal (top or bottom) 1...25 mm² rigid Single terminal (top or bottom) 1...16 mm² flexible
Wire stripping length	14 mm for top or bottom connection
Tightening torque	2 N.m top or bottom
Earth-leakage protection	Separate block

Environment

Standards	EN/IEC 60947-2 EN/IEC 60898-1
IP degree of protection	IP20 conforming to IEC 60529
Pollution degree	3 conforming to EN/IEC 60947-2
Tropicalisation	2 conforming to IEC 60068-1
Relative humidity	95 % at 55 °C
Ambient air temperature for operation	-35...70 °C
Ambient air temperature for storage	-40...85 °C

Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Product out of China RoHS scope. Substance declaration for your information
Environmental Disclosure	Product Environmental Profile
Circularity Profile	No need of specific recycling operations
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

Contractual warranty

Warranty	18 months
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Main

Circuit breaker application	Distribution
Range	Acti9
Product name	Acti9 iC60 RCBO
Product or component type	Residual current breaker with overcurrent protection (RCBO)
Device short name	IC60H RCBO PoN
Poles description	1P + N _s
[I _n] rated current	16 A at 50 °C
Earthing system	TN
Curve code	B
Earth-leakage sensitivity	30 mA
Breaking capacity	10000 A I _{cn} at 240 V AC 50/60 Hz conforming to IEC 61009-2-2

Complementary

Neutral position	Left
Number of protected poles	1
Device location in system	Outgoer
Network type	AC
Network frequency	50/60 Hz
[U _e] rated operational voltage	240 V AC 50/60 Hz
Trip unit technology	Thermal-magnetic
Magnetic tripping limit	3...5 x I _n
Residual current tripping technology	Voltage dependent
Earth-leakage protection time delay	Instantaneous
Earth-leakage protection class	Type A
[I _{cs}] rated service breaking capacity	7500 A at 240 V AC 50/60 Hz conforming to IEC 61009-2-2
Electrical insulation class	Class II

Limitation class	3
[Ui] rated insulation voltage	400 V AC 50/60 Hz
[Uimp] rated impulse withstand voltage	4 kV
Surge current	250 A
Suitability for isolation	Yes
Contact position indicator	Yes
Control type	Toggle
Local signalling	ON/OFF indication Fault indication
Mounting mode	Plug-on
Mounting support	Isobar B Isobar A
Comb busbar and distribution block compatibility	NO
9 mm pitches	2
Height	110 mm
Width	18 mm
Depth	72 mm
Net weight	156 g
Colour	White
Mechanical durability	20000 cycles
Electrical durability	5000 cycles
Locking options description	Padlock in on or off position
Connections - terminals	Screw clamp terminal (top) 1...16 mm ² flexible Screw clamp terminal (bottom) 1...10 mm ² flexible Screw clamp terminal (top) 1...25 mm ² rigid Screw clamp terminal (bottom) 1...16 mm ² rigid Plug-on neutral (upstream)
Wire stripping length	14 mm for top connection 13 mm for bottom connection
Tightening torque	3.5 N.m top 2 N.m bottom
Earth-leakage protection	Integrated

Environment

Standards	BS EN 61009-1 IEC 61009-2-2 IEC 61009-1
Product certifications	CB
IP degree of protection	IP20 conforming to IEC 60529 IP40 (modular enclosure) conforming to IEC 60529
Overvoltage category	II
Tropicalisation	2
Relative humidity	95 % at 55 °C
Ambient air temperature for operation	-15...60 °C
Ambient air temperature for storage	-40...85 °C

Packing Units

Package 1 Weight	0.156 kg
Package 1 Height	0.880 dm
Package 1 width	0.180 dm
Package 1 Length	1.310 dm

Offer Sustainability

Sustainable offer status	Green Premium product
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EU RoHS Directive	Compliant EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Product out of China RoHS scope. Substance declaration for your information
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End of Life Information
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

Contractual warranty

Warranty	18 months
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Main

Range	Acti 9
Product name	Disbo iC60
Product or component type	Miniature circuit-breaker
Device short name	IC60H
Poles description	1P
Number of protected poles	1
[In] rated current	10 A
Network type	AC
Trip unit technology	Thermal-magnetic
Curve code	B
Breaking capacity	20 kA Icu at 12...48 V DC conforming to EN/IEC 60947-2 10 kA Icu at 72 V DC conforming to EN/IEC 60947-2 10000 A Icn at 240 V AC 50/60 Hz conforming to EN/IEC 60898-1 42 kA Icu at 10...60 V AC 50/60 Hz conforming to EN/IEC 60947-2 30 kA Icu at 100...133 V AC 50/60 Hz conforming to EN/IEC 60947-2 15 kA Icu at 220...240 V AC 50/60 Hz conforming to EN/IEC 60947-2
Utilisation category	Category A conforming to EN/IEC 60947-2

Complementary

Network frequency	50/60 Hz
[Ue] rated operational voltage	240 V AC 50/60 Hz
Magnetic tripping limit	4 x In +/- 20 %
[Ics] rated service breaking capacity	21 kA 50 % conforming to EN/IEC 60947-2 - 10...60 V AC 50/60 Hz 15 kA 50 % conforming to EN/IEC 60947-2 - 100...133 V AC 50/60 Hz 7.5 kA 50 % conforming to EN/IEC 60947-2 - 220...240 V AC 50/60 Hz 10000 A 100 % conforming to EN/IEC 60898-1 - 240 V AC 50/60 Hz 20 kA 100 % conforming to EN/IEC 60947-2 - 12...48 V DC 10 kA 100 % conforming to EN/IEC 60947-2 - 72 V DC
Limitation class	3 conforming to EN/IEC 60947-2
[Ui] rated insulation voltage	AC 50/60 Hz conforming to EN/IEC 60947-2
[Uimp] rated impulse withstand voltage	6 kV conforming to EN/IEC 60947-2

Contact position indicator	Yes
Control type	Toggle
Local signalling	Trip indicator
Mounting mode	Clip-on
Mounting support	Rail
9 mm pitches	2
Height	85 mm
Width	18 mm
Depth	78.5 mm
Net weight	0.125 kg
Colour	White
Mechanical durability	20000 cycles
Electrical durability	10000 cycles
Provision for padlocking	Padlockable
Connections - terminals	Single terminal (top or bottom) 1...25 mm² rigid Single terminal (top or bottom) 1...16 mm² flexible
Wire stripping length	14 mm for top or bottom connection
Tightening torque	2 N.m top or bottom
Earth-leakage protection	Separate block

Environment

Standards	EN/IEC 60898-1 EN/IEC 60947-2
IP degree of protection	IP20 conforming to IEC 60529
Pollution degree	3 conforming to EN/IEC 60947-2
Tropicalisation	2 conforming to IEC 60068-1
Relative humidity	95 % at 55 °C
Ambient air temperature for operation	-35...70 °C
Ambient air temperature for storage	-40...85 °C

Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	 REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)  EU RoHS Declaration
Environmental Disclosure	 Product Environmental Profile

Contractual warranty

Warranty	18 months
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Main

Range	Acti 9
Product name	Disbo iC60
Product or component type	Miniature circuit-breaker
Device short name	IC60H
Poles description	3P
Number of protected poles	3
[In] rated current	32 A
Network type	AC
Trip unit technology	Thermal-magnetic
Curve code	B
Breaking capacity	10000 A Icn at 415 V AC 50/60 Hz conforming to EN/IEC 60898-1 42 kA Icu at 12...133 V AC 50/60 Hz conforming to EN/IEC 60947-2 30 kA Icu at 220...240 V AC 50/60 Hz conforming to EN/IEC 60947-2 15 kA Icu at 380...415 V AC 50/60 Hz conforming to EN/IEC 60947-2 10 kA Icu at 440 V AC 50/60 Hz conforming to EN/IEC 60947-2 20 kA Icu at 100...133 V DC conforming to EN/IEC 60947-2
Utilisation category	Category A conforming to EN/IEC 60947-2

Complementary

Network frequency	50/60 Hz
[Ue] rated operational voltage	440 V AC 50/60 Hz
Magnetic tripping limit	4 x In +/- 20 %
[Ics] rated service breaking capacity	21 kA 50 % conforming to EN/IEC 60947-2 - 12...133 V AC 50/60 Hz 15 kA 50 % conforming to EN/IEC 60947-2 - 220...240 V AC 50/60 Hz 7.5 kA 50 % conforming to EN/IEC 60947-2 - 380...415 V AC 50/60 Hz 5 kA 50 % conforming to EN/IEC 60947-2 - 440 V AC 50/60 Hz 7500 A 75 % conforming to EN/IEC 60898-1 - 415 V AC 50/60 Hz 20 kA 100 % conforming to EN/IEC 60947-2 - 100...133 V DC
Limitation class	3 conforming to EN/IEC 60947-2
[Ui] rated insulation voltage	500 V AC 50/60 Hz conforming to EN/IEC 60947-2

[Uimp] rated impulse withstand voltage	6 kV conforming to EN/IEC 60947-2
Contact position indicator	Yes
Control type	Toggle
Local signalling	Trip indicator
Mounting mode	Clip-on
Mounting support	Rail
9 mm pitches	6
Height	85 mm
Width	54 mm
Depth	78.5 mm
Net weight	0.375 kg
Colour	White
Mechanical durability	20000 cycles
Electrical durability	10000 cycles
Provision for padlocking	Padlockable
Connections - terminals	Single terminal (top or bottom) 1...35 mm ² rigid Single terminal (top or bottom) 1...25 mm ² flexible
Wire stripping length	14 mm for top or bottom connection
Tightening torque	3.5 N.m top or bottom
Earth-leakage protection	Separate block

Environment

Standards	EN/IEC 60947-2 EN/IEC 60898-1
IP degree of protection	IP20 conforming to IEC 60529
Pollution degree	3 conforming to EN/IEC 60947-2
Tropicalisation	2 conforming to IEC 60068-1
Relative humidity	95 % at 55 °C
Ambient air temperature for operation	-35...70 °C
Ambient air temperature for storage	-40...85 °C

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Weight	358 g
Package 1 Height	5.4 cm
Package 1 width	7.5 cm
Package 1 Length	9 cm
Unit Type of Package 2	BB1
Number of Units in Package 2	4
Package 2 Weight	1.487 kg
Package 2 Height	8.5 cm
Package 2 width	9.5 cm
Package 2 Length	22 cm
Unit Type of Package 3	S03
Number of Units in Package 3	44
Package 3 Weight	16.934 kg
Package 3 Height	30 cm
Package 3 width	30 cm
Package 3 Length	40 cm

Offer Sustainability

Sustainable offer status	Green Premium product
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
Environmental Disclosure	Product Environmental Profile
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

Contractual warranty

Warranty	18 months
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K2946ALM

13A 2G DP SWITCHSOCKET



General

Brand	MK Electric
Range Name	Metalclad Plus
Product Type	Switchsocket Outlet

Technical

Finish	Aluminium
Material	Steel
Gangs	2
Knockouts	8 x 20mm
Amps	13
Width (mm)	146
Height (mm)	86
Depth (mm)	51
Standards	BS 5733:2010, BS 1363-2:1995
Information	Earth terminal fitted in boxes. One gang switchsockets, two gang outboard switchsockets, two gang integrated USB switchsockets and two gang unswitched sockets are fitted with two earth terminals to provide a double earth facility for use when installations require a high integrity protective connection as specified within BS 7671:2008. All switchsockets have double pole switching (neutral makes first, breaks last).

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K8891ALM

BOX-1 GANG WITH KNOCKOUTS



General

Brand	MK Electric
Range Name	Grid Plus
Product Type	Mounting Box

Technical

Knockouts	5 x 20mm
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K3701

1G GRID MOUNTING FRAME



General

Brand	MK Electric
Range Name	Grid Plus
Product Type	Mounting Frame

Technical

Material	Steel
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K3491ALM

1G SURFACE METAL FRONTPLATE



General

Brand	MK Electric
Range Name	Metalclad Plus
Product Type	Grid Plus Modular Frontplate

Technical

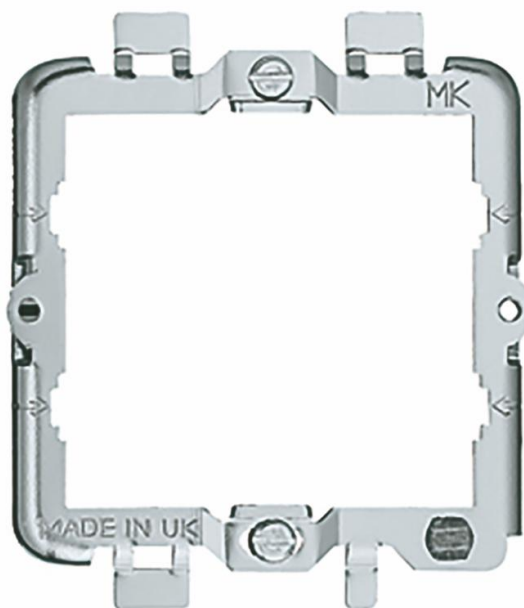
Finish	Aluminium
Material	Steel
Gangs	1
Modules	1
Width (mm)	86
Height (mm)	86
Standards	BS 5733:2010
Information	See Grid Plus page 189 for a complete selection of switching modules.

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K3702

2G GRID MOUNTING FRAME



General

Brand	MK Electric
Range Name	Grid Plus
Product Type	Mounting Frame

Technical

Material	Steel
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K3492ALM

2G SURFACE METAL FRONTPLATE



General

Brand	MK Electric
Range Name	Metalclad Plus
Product Type	Grid Plus Modular Frontplate

Technical

Finish	Aluminium
Material	Steel
Gangs	2
Modules	2
Width (mm)	86
Height (mm)	86
Standards	BS 5733:2010
Information	See Grid Plus page 189 for a complete selection of switching modules.

Datasheet generated from <https://onetimepim.com> last updated Tuesday, April 21, 2020 2:59:28 PM



K4892WWHI

20A SP 2 WAY SWITCH / WINDOW

Technical

Finish	White
Insert Colour	White
Ways	2
Amps	20
Standards	BS EN 60669-1:1999
Information	These switches do NOT have to be derated when used with fluorescent or inductive loads.

Datasheet generated from <https://onetimepim.com> last updated Tuesday, April 21, 2020 2:59:42 PM



K4917ELWHI

20A DP 1WAY SEC.KEY SW-EMG LTG



General

Brand	MK Electric
Range Name	Grid Plus
Product Type	Switch Module

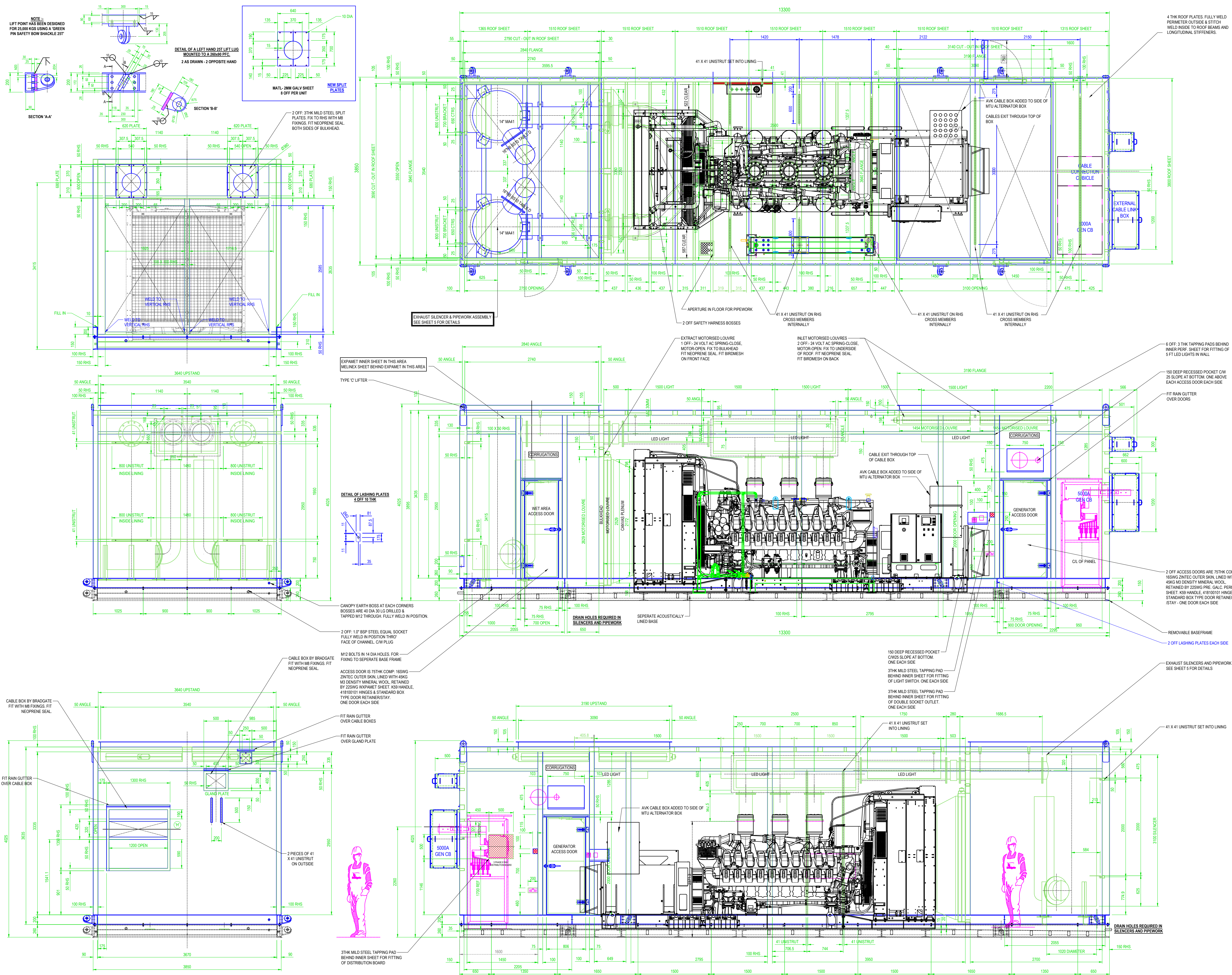
Technical

Finish	White
Material	Metal
Ways	1
Amps	20
Standards	BS EN 60669-1:1999
Information	These switches do NOT have to be derated when used with fluorescent or inductive loads. Key (3405ZIC) is supplied.

Datasheet generated from <https://onetimepim.com> last updated Tuesday, April 21, 2020 2:59:46 PM

NOTES:

- 1) GENERATOR CONTAINER No.7



R02	25/02/21	ALTERNATOR CABLE BOX ADDED. AVK SUPPLY
R01	16/02/21	AS BUILT ISSUE
Rev	Date	Description

AVK SEE UK LTD

IRON MOUNTAIN®

Project
PROJECT VIRGO

Drawing Title
CONTAINER No. 7 LAYOUT
DS3100 NEA
SHEET 1 OF 2

Checked by A.D.	Checked Date 07/10/2020	Drawn by M.F.	Status AB
Approved by I.C.	Approval Date 07/10/2020	Scale 1:40	Revision AS BUILT
Drawing No. VIR-AVK-XX-MZ-DR-X-0611			Revision R02

GRATTE BROTHERS LIMITED

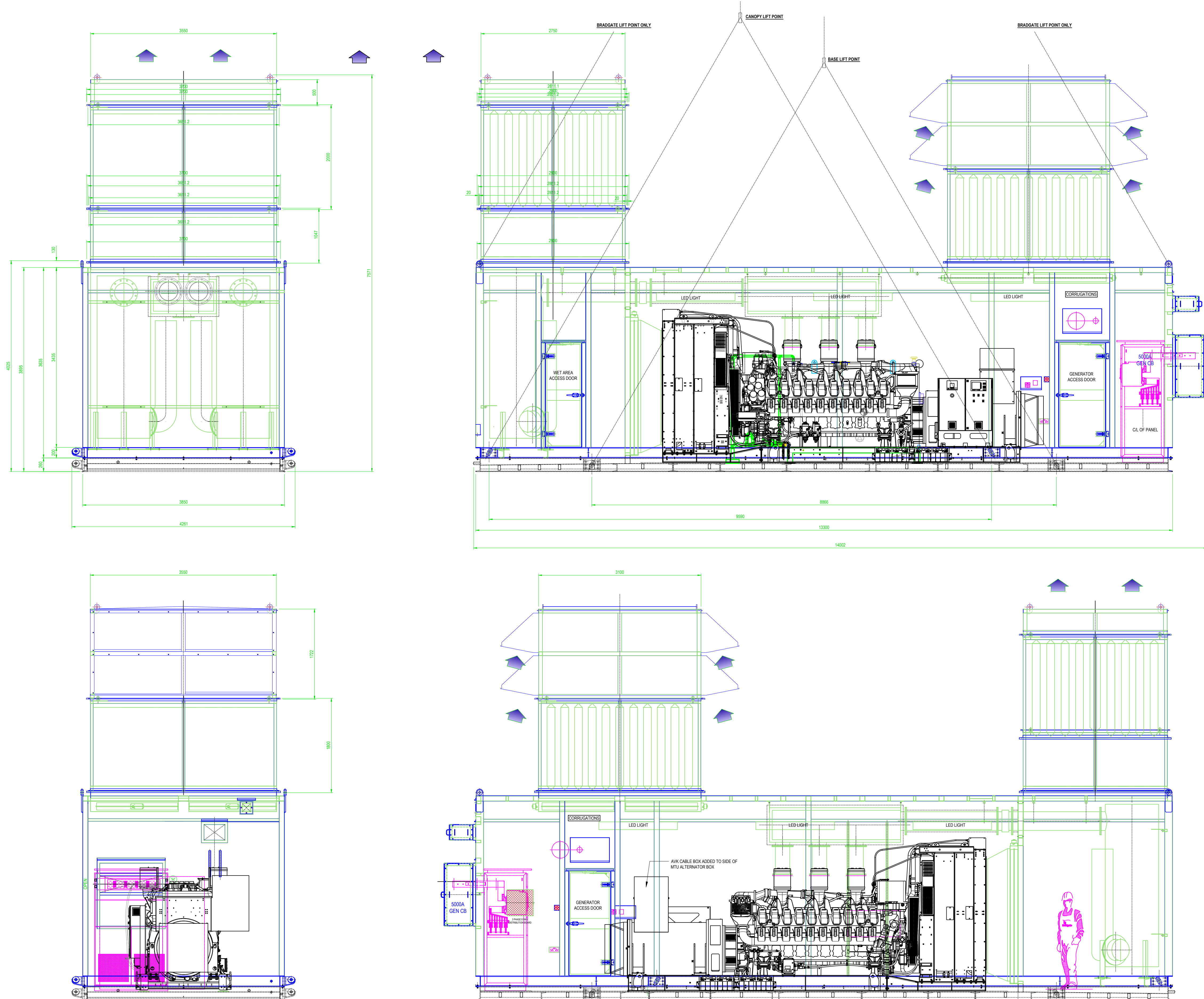


2 Regents Wharf
All Saints Street
London N1 9RL
Tel: 020 7837 6433
Fax: 020 7520 8100
email: cod@gratte.com

Building services
engineers

NOTES:

- GENERATOR
CONTAINER No.7



R02	25/02/21	ALTERNATOR CABLE BOX ADDED. AVK SUPPLY
R01	16/02/21	AS BUILT ISSUE
Rev	Date	Description

AVK SEG (UK) LTD

IRON MOUNTAIN®

Project
PROJECT VIRGO

Drawing Title

CONTAINER No. 7 LAYOUT
DS3100 NEA
SHEET 2 OF 2

Checked by A.D.	Checked Date 07/10/2020	Drawn by M.F.	Status AB
Approved by T.C.	Approval Date 07/10/2020	Scale 1:40	Reason for Issue AS BUILT
Drawing No. VIR-AVK-XX-MZ-DR-X-0611			Revision R02



GRATTE BROTHERS LIMITED

ISO 9001:2015

2 Regents Wharf
All Saints Street
London N1 9RL
Tel: 020 7837 6433
Fax: 020 7520 8100
email: cod@rotte.com

Building services engineers

Landscape

Performance Number: EM1314

Change Level: 01

SALES MODEL:	3516E	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,500
MACHINE SALES MODEL:		HERTZ:	50
ENGINE POWER (BHP):	3,522	FAN POWER (HP):	134.1
GEN POWER WITH FAN (EKW):	2,400.0	ASPIRATION:	TA
COMPRESSION RATIO:	14	AFTERCOOLER TYPE:	SCAC
RATING LEVEL:	STANDBY	AFTERCOOLER CIRCUIT TYPE:	JW+OC+1AC, 2AC
PUMP QUANTITY:	2	AFTERCOOLER TEMP (F):	118
FUEL TYPE:	DIESEL	JACKET WATER TEMP (F):	210.2
MANIFOLD TYPE:	DRY	TURBO CONFIGURATION:	PARALLEL
GOVERNOR TYPE:	ADEM5	TURBO QUANTITY:	4
ELECTRONICS TYPE:	ADEM5	TURBOCHARGER MODEL:	GTD5733BD-46T-1.26 A/R
CAMSHAFT TYPE:	STANDARD	COMBUSTION STRATEGY:	LOW BSFC
IGNITION TYPE:	CI	CRANKCASE BLOWBY RATE (FT3/HR):	3,531.1
INJECTOR TYPE:	EUI	FUEL RATE (RATED RPM) NO LOAD (GAL/HR):	8.2
FUEL INJECTOR:	3657436	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,116.1
REF EXH STACK DIAMETER (IN):	12		
MAX OPERATING ALTITUDE (FT):	5,906		

INDUSTRY	SubIndustry	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
2,400.0	100	3,522	390	0.323	0.317	160.3	157.2
2,160.0	90	3,183	353	0.322	0.316	144.4	141.7
1,920.0	80	2,844	315	0.322	0.316	129.1	126.6
1,800.0	75	2,675	296	0.323	0.317	121.7	119.4
1,680.0	70	2,506	278	0.324	0.318	114.4	112.3
1,440.0	60	2,167	240	0.328	0.322	100.2	98.3
1,200.0	50	1,828	203	0.335	0.328	86.2	84.6
960.0	40	1,489	165	0.347	0.340	72.8	71.4

720.0	30	1,150	127	0.361	0.354	58.5	57.4
600.0	25	981	109	0.370	0.363	51.2	50.2
480.0	20	812	90	0.383	0.376	43.8	43.0
240.0	10	473	52	0.439	0.431	29.3	28.7

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
2,400.0	100	3,522	87.7	140.7	1,229.9	44.5	904.5	93	435.2
2,160.0	90	3,183	74.1	137.6	1,215.3	36.9	924.0	79	392.7
1,920.0	80	2,844	63.3	136.1	1,188.0	31.6	924.2	68	359.4
1,800.0	75	2,675	58.3	134.8	1,174.9	29.5	922.0	62	343.5
1,680.0	70	2,506	52.7	134.8	1,170.3	26.9	925.7	56	325.0
1,440.0	60	2,167	42.1	134.8	1,159.4	22.2	934.8	45	287.6
1,200.0	50	1,828	32.9	133.6	1,135.7	18.3	940.1	36	253.6
960.0	40	1,489	23.9	134.7	1,120.9	14.6	951.6	26	221.9
720.0	30	1,150	15.7	133.3	1,057.8	11.1	920.0	18	184.7
600.0	25	981	12.0	132.9	1,003.4	9.4	883.7	14	165.6
480.0	20	812	8.7	133.6	932.2	8.0	832.1	10	147.4
240.0	10	473	2.9	131.9	744.1	5.8	683.9	4	117.5

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,400.0	100	3,522	6,897.4	18,132.2	29,913.5	31,049.3	6,535.0	5,966.9
2,160.0	90	3,183	6,140.3	16,294.1	26,484.4	27,507.7	5,789.8	5,279.4
1,920.0	80	2,844	5,577.9	14,673.6	23,846.5	24,762.0	5,213.5	4,757.1
1,800.0	75	2,675	5,308.7	13,890.4	22,619.3	23,482.6	4,942.9	4,512.1
1,680.0	70	2,506	4,991.0	13,039.1	21,178.1	21,990.0	4,627.5	4,222.6
1,440.0	60	2,167	4,360.7	11,404.5	18,412.1	19,122.3	4,021.2	3,667.2
1,200.0	50	1,828	3,801.4	9,934.6	15,972.9	16,584.1	3,489.5	3,184.5
960.0	40	1,489	3,216.7	8,483.8	13,525.9	14,042.6	2,955.6	2,697.4
720.0	30	1,150	2,691.9	6,939.9	11,331.5	11,747.4	2,473.1	2,264.8
600.0	25	981	2,464.0	6,164.4	10,353.4	10,717.1	2,256.2	2,072.7
480.0	20	812	2,267.4	5,407.1	9,464.8	9,775.8	2,058.0	1,898.6

240.0	10	473	1,912.9	4,001.6	7,945.1	8,152.5	1,720.5	1,607.6
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Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM 1ST STAGE AFTERCOOLER	FROM 2ND STAGE AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,400.0	100	3,522	57,430	8,968	131,673	73,139	18,561	12,577	23,833	149,356	348,482	371,221
2,160.0	90	3,183	53,986	8,725	119,543	67,209	16,730	10,530	17,419	134,989	314,099	334,595
1,920.0	80	2,844	49,323	8,365	107,215	60,496	14,952	8,393	13,764	120,622	280,724	299,042
1,800.0	75	2,675	46,509	8,152	101,453	57,134	14,095	7,372	12,180	113,439	264,623	281,890
1,680.0	70	2,506	44,216	8,176	95,729	53,876	13,254	6,088	10,595	106,255	248,847	265,085
1,440.0	60	2,167	39,791	8,182	84,500	47,629	11,602	3,667	7,700	91,888	217,818	232,031
1,200.0	50	1,828	34,734	7,824	73,830	41,686	9,985	1,975	5,716	77,522	187,464	199,697
960.0	40	1,489	28,498	7,693	65,163	36,013	8,435	747	4,170	63,155	158,375	168,709
720.0	30	1,150	23,440	7,115	53,117	28,434	6,779	-421	3,025	48,787	127,271	135,575
600.0	25	981	21,035	6,702	46,623	24,188	5,932	-992	2,493	41,604	111,380	118,648
480.0	20	812	18,457	6,220	40,452	19,818	5,077	-1,392	1,919	34,421	95,326	101,547
240.0	10	473	12,633	5,215	28,503	11,248	3,389	-1,894	1,392	20,054	63,629	67,781

Sound Data

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,400.0	100	1,500	3,522	128.4	98.9	102.8	104.9	111.9	117.4	113.0	114.6	118.4	116.0	117.0
2,160.0	90	1,500	3,183	127.4	106.1	102.1	105.0	109.7	114.9	113.3	113.7	118.3	116.4	115.5
1,920.0	80	1,500	2,844	126.7	106.4	102.1	104.2	107.8	114.7	111.3	114.7	117.7	115.8	114.7
1,800.0	75	1,500	2,675	126.5	105.7	102.1	104.0	107.1	116.1	110.4	113.1	117.9	115.1	114.6
1,680.0	70	1,500	2,506	126.0	105.1	102.2	103.5	106.7	115.9	110.6	112.6	117.5	114.8	114.5
1,440.0	60	1,500	2,167	124.8	105.0	102.3	102.2	106.6	111.4	110.4	111.8	115.9	113.8	113.8
1,200.0	50	1,500	1,828	123.9	104.8	101.4	101.5	105.6	110.9	109.0	110.7	115.2	113.0	113.1
960.0	40	1,500	1,489	122.5	104.3	95.8	100.9	104.9	107.4	107.1	109.4	114.0	112.1	112.1
720.0	30	1,500	1,150	120.5	101.9	92.9	101.4	105.6	103.0	104.0	106.5	111.3	109.8	110.3
600.0	25	1,500	981	119.4	100.4	92.4	102.7	105.9	101.9	102.0	104.9	109.6	108.3	109.4
480.0	20	1,500	812	118.6	99.6	92.4	105.0	105.3	101.0	101.2	103.4	108.2	106.9	108.5
240.0	10	1,500	473	117.3	98.4	90.0	100.9	101.6	98.1	100.7	101.7	106.9	103.1	105.2

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,400.0	100	1,500	3,522	118.8	117.3	120.0	119.0	116.8	114.8	110.5	104.4	98.7	93.1	92.9
2,160.0	90	1,500	3,183	117.2	116.4	118.9	117.8	115.8	114.2	109.3	102.9	97.1	91.4	94.5
1,920.0	80	1,500	2,844	116.5	115.2	118.2	116.9	114.8	113.4	107.9	101.4	95.6	90.2	95.1
1,800.0	75	1,500	2,675	116.1	114.8	117.9	116.6	114.3	112.8	107.3	100.7	95.0	90.5	95.4
1,680.0	70	1,500	2,506	115.6	114.3	117.5	116.1	113.7	112.2	106.7	100.1	94.5	91.1	93.4
1,440.0	60	1,500	2,167	114.8	113.7	116.7	114.8	112.5	110.9	105.3	98.8	93.5	90.7	88.6
1,200.0	50	1,500	1,828	113.8	113.1	115.6	113.5	111.1	109.5	104.1	98.0	93.0	90.4	84.0
960.0	40	1,500	1,489	112.5	111.8	114.3	111.9	109.4	107.9	102.5	97.5	92.7	87.9	82.0
720.0	30	1,500	1,150	111.0	109.8	112.6	109.7	107.6	105.7	100.6	96.5	92.1	85.6	81.3
600.0	25	1,500	981	109.8	108.5	111.9	108.9	106.6	104.6	99.4	96.0	91.1	85.0	81.7
480.0	20	1,500	812	108.4	107.3	111.9	108.6	105.6	103.4	98.2	95.7	90.0	84.9	81.6
240.0	10	1,500	473	104.7	105.2	112.7	108.8	102.3	100.1	96.4	94.7	89.5	85.1	80.5

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,400.0	100	3,522	123.8	98.9	91.3	94.2	99.7	101.2	104.3	103.0	106.3	110.3	111.1
2,160.0	90	3,183	123.3	98.0	91.0	93.8	99.3	100.2	103.5	102.3	106.1	109.0	110.8
1,920.0	80	2,844	123.0	97.7	90.1	92.8	98.8	99.5	103.3	102.5	105.5	109.0	110.6
1,800.0	75	2,675	123.0	97.5	89.8	92.5	98.7	99.1	103.2	102.3	105.2	108.7	110.7
1,680.0	70	2,506	122.5	97.3	89.6	92.1	98.7	99.0	103.3	102.2	105.0	108.5	110.9
1,440.0	60	2,167	121.3	96.9	89.3	92.0	98.3	98.8	103.5	101.2	103.9	107.1	110.0
1,200.0	50	1,828	120.7	96.3	89.0	91.9	97.4	98.7	103.1	100.5	103.4	106.1	109.2
960.0	40	1,489	120.4	95.7	88.7	91.1	96.5	98.5	102.5	100.7	103.4	106.3	109.1
720.0	30	1,150	120.2	95.1	88.3	90.6	95.5	98.3	102.2	101.2	103.6	106.7	109.1
600.0	25	981	120.1	94.7	88.0	90.4	94.8	98.3	102.0	101.5	104.1	107.0	109.3
480.0	20	812	120.1	94.2	87.7	90.3	94.2	98.2	102.2	101.8	104.5	107.8	109.7
240.0	10	473	120.2	93.0	88.0	88.9	92.2	98.0	103.0	101.7	105.4	109.2	110.0

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,400.0	100	3,522	114.3	114.6	115.9	115.7	113.2	111.2	110.5	109.1	106.0	105.1	110.4

2,160.0	90	3,183	113.9	113.8	115.1	115.0	112.7	110.7	109.9	108.9	105.4	104.6	112.5
1,920.0	80	2,844	113.3	113.4	114.6	114.4	112.1	110.3	109.2	108.2	104.9	104.7	113.2
1,800.0	75	2,675	113.2	113.3	114.5	114.2	111.9	110.2	109.0	107.8	104.7	105.7	114.0
1,680.0	70	2,506	112.8	112.9	114.4	114.0	111.7	110.1	108.8	107.5	104.5	106.4	110.9
1,440.0	60	2,167	111.7	111.5	113.4	112.9	110.3	109.2	108.2	107.4	104.1	106.0	105.0
1,200.0	50	1,828	111.0	111.5	112.4	111.8	109.4	108.8	107.9	107.9	104.2	105.4	100.4
960.0	40	1,489	111.0	111.4	112.1	111.0	109.1	108.6	108.0	108.7	104.9	102.6	98.5
720.0	30	1,150	110.7	111.3	111.8	110.8	108.8	108.8	107.8	109.1	104.2	100.5	98.1
600.0	25	981	110.4	111.0	111.5	110.6	108.7	108.7	107.4	108.8	103.3	100.1	98.6
480.0	20	812	110.4	111.0	111.4	110.1	108.6	108.9	107.1	108.4	102.8	100.0	98.4
240.0	10	473	110.7	111.6	111.4	108.9	108.5	109.0	107.0	107.9	102.6	99.8	96.7

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1500 RPM

GENSET POWER WITH FAN		EKW	2,400.0	1,800.0	1,200.0	600.0	240.0
ENGINE POWER		BHP	3,522	2,675	1,828	981	473
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	25,128	21,304	15,241	8,840	6,353
TOTAL CO		G/HR	1,310	3,015	2,217	1,472	833
TOTAL HC		G/HR	168	127	170	130	124
TOTAL CO2		KG/HR	1,625	1,229	871	516	296
PART MATTER		G/HR	59.6	69.2	76.2	70.1	25.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,581.7	4,008.3	4,044.9	3,972.6	5,239.9
TOTAL CO	(CORR 5% O2)	MG/NM3	190.4	567.1	591.2	663.0	643.6
TOTAL HC	(CORR 5% O2)	MG/NM3	20.4	20.6	39.3	52.1	89.5
PART MATTER	(CORR 5% O2)	MG/NM3	7.0	10.8	16.8	26.6	13.8
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	1,329.0	1,487.4	1,500.9	1,474.1	1,944.4
TOTAL CO	(CORR 15% O2)	MG/NM3	70.7	210.5	219.4	246.0	238.8
TOTAL HC	(CORR 15% O2)	MG/NM3	7.6	7.7	14.6	19.3	33.2
PART MATTER	(CORR 15% O2)	MG/NM3	2.6	4.0	6.3	9.9	5.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,745	1,952	1,970	1,935	2,552
TOTAL CO	(CORR 5% O2)	PPM	152	454	473	530	515
TOTAL HC	(CORR 5% O2)	PPM	38	39	73	97	167
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	647	724	731	718	947
TOTAL CO	(CORR 15% O2)	PPM	57	168	176	197	191
TOTAL HC	(CORR 15% O2)	PPM	14	14	27	36	62

TOTAL NOX (AS NO2)		G/HP-HR	7.18	8.00	8.36	9.03	13.46
TOTAL CO		G/HP-HR	0.37	1.13	1.22	1.50	1.77
TOTAL HC		G/HP-HR	0.05	0.05	0.09	0.13	0.26
PART MATTER		G/HP-HR	0.02	0.03	0.04	0.07	0.05
TOTAL NOX (AS NO2)		G/KW-HR	9.63	10.73	11.21	12.11	18.05
TOTAL CO		G/KW-HR	0.50	1.52	1.63	2.02	2.37
TOTAL HC		G/KW-HR	0.06	0.06	0.13	0.18	0.35
PART MATTER		G/KW-HR	0.02	0.03	0.06	0.10	0.07
TOTAL NOX (AS NO2)		LB/HR	55.40	46.97	33.60	19.49	14.01
TOTAL CO		LB/HR	2.89	6.65	4.89	3.25	1.84
TOTAL HC		LB/HR	0.37	0.28	0.38	0.29	0.27
TOTAL CO2		LB/HR	3,583	2,710	1,921	1,137	653
PART MATTER		LB/HR	0.13	0.15	0.17	0.15	0.06
OXYGEN IN EXH		%	9.7	9.7	9.7	10.8	13.5
DRY SMOKE OPACITY		%	0.1	0.8	2.1	2.7	0.8
BOSCH SMOKE NUMBER			0.69	0.75	0.88	0.98	0.75

RATED SPEED POTENTIAL SITE VARIATION: 1500 RPM

GENSET POWER WITH FAN		EKW	2,400.0	1,800.0	1,200.0	600.0	240.0
ENGINE POWER		BHP	3,522	2,675	1,828	981	473
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	30,154	25,565	18,289	10,608	7,624
TOTAL CO		G/HR	2,359	5,427	3,991	2,650	1,500
TOTAL HC		G/HR	223	169	226	173	164
PART MATTER		G/HR	83.4	96.8	106.7	98.1	35.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	4,298.0	4,810.0	4,853.9	4,767.1	6,287.9
TOTAL CO	(CORR 5% O2)	MG/NM3	342.8	1,020.9	1,064.2	1,193.4	1,158.4
TOTAL HC	(CORR 5% O2)	MG/NM3	27.2	27.5	52.3	69.3	119.0
PART MATTER	(CORR 5% O2)	MG/NM3	9.9	15.1	23.6	37.2	19.3
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	1,594.9	1,784.8	1,801.1	1,768.9	2,333.2
TOTAL CO	(CORR 15% O2)	MG/NM3	127.2	378.8	394.9	442.8	429.9
TOTAL HC	(CORR 15% O2)	MG/NM3	10.1	10.2	19.4	25.7	44.2
PART MATTER	(CORR 15% O2)	MG/NM3	3.7	5.6	8.8	13.8	7.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	2,093	2,343	2,364	2,322	3,063
TOTAL CO	(CORR 5% O2)	PPM	274	817	851	955	927

TOTAL HC	(CORR 5% O2)	PPM	51	51	98	129	222
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	777	869	877	862	1,137
TOTAL CO	(CORR 15% O2)	PPM	102	303	316	354	344
TOTAL HC	(CORR 15% O2)	PPM	19	19	36	48	82
TOTAL NOX (AS NO2)		G/HP-HR	8.62	9.60	10.03	10.83	16.15
TOTAL CO		G/HP-HR	0.67	2.04	2.19	2.71	3.18
TOTAL HC		G/HP-HR	0.06	0.06	0.12	0.18	0.35
PART MATTER		G/HP-HR	0.02	0.04	0.06	0.10	0.08
TOTAL NOX (AS NO2)		G/KW-HR	11.56	12.87	13.45	14.53	21.66
TOTAL CO		G/KW-HR	0.90	2.73	2.94	3.63	4.26
TOTAL HC		G/KW-HR	0.09	0.09	0.17	0.24	0.47
PART MATTER		G/KW-HR	0.03	0.05	0.08	0.13	0.10
TOTAL NOX (AS NO2)		LB/HR	66.48	56.36	40.32	23.39	16.81
TOTAL CO		LB/HR	5.20	11.97	8.80	5.84	3.31
TOTAL HC		LB/HR	0.49	0.37	0.50	0.38	0.36
PART MATTER		LB/HR	0.18	0.21	0.24	0.22	0.08

Regulatory Information

NON-CERTIFIED	1970 - 2100
THIS ENGINE RATING IS NOT EMISSIONS CERTIFIED BY ANY DOMESTIC OR FOREIGN AGENCY.	

Altitude Derate Data
STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,219	3,522
1,000	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,199	3,522
2,000	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,172	3,522
3,000	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,493	3,141	3,522
4,000	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,495	3,425	3,110	3,522
5,000	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,521	3,501	3,430	3,348	3,065	3,522
6,000	3,512	3,512	3,512	3,512	3,512	3,512	3,512	3,500	3,439	3,353	3,271	3,026	3,512
7,000	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,437	3,361	3,276	3,193	2,981	3,471

8,000	3,423	3,423	3,423	3,423	3,423	3,423	3,417	3,367	3,284	3,196	3,112	2,936	3,423
9,000	3,366	3,366	3,366	3,366	3,366	3,366	3,351	3,290	3,206	3,117	3,025	2,884	3,366
10,000	3,318	3,318	3,318	3,318	3,318	3,318	3,289	3,212	3,124	3,034	2,946	2,826	3,318
11,000	3,268	3,268	3,268	3,268	3,268	3,260	3,214	3,130	3,038	2,950	2,863	2,773	3,268
12,000	3,217	3,217	3,217	3,217	3,217	3,200	3,133	3,045	2,954	2,867	2,783	2,701	3,217
13,000	3,166	3,166	3,166	3,166	3,162	3,126	3,046	2,959	2,870	2,783	2,705	2,624	3,166
14,000	3,104	3,104	3,104	3,104	3,095	3,038	2,957	2,874	2,787	2,704	2,627	2,551	3,104
15,000	3,062	3,062	3,062	3,062	3,047	2,970	2,891	2,810	2,726	2,645	2,568	2,492	3,062

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
4486197	GG3607	4558016	GS894	-	LCK00001	
4150330	GG3615	4558016	GS894	XJ	GS900001	
4486197	GG3607	5387233	GS894	-	LCK00001	
4486197	LL8883	5387233	GS894	-	LCK00001	

Performance Parameter Reference

Parameters Reference: DM9600 - 15 PERFORMANCE DEFINITIONS PERFORMANCE DEFINITIONS DM9600 APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted. PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Specific fuel consumption (C7-C18) +/- 4% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10% Heat Rejection values based on using treated water. Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications. On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed. On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed. These values do not apply to C280/3600. For these models, see the tolerances listed below. C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5% TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS. REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp. FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature. MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions. REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available. REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal). GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas. ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions. ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the
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current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.
Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative. Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS: Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

WET & DRY EXHAUST/EMISSIONS DESCRIPTION: Wet - Total exhaust flow or concentration of total exhaust flow Dry - Total exhaust flow minus water vapor or concentration of exhaust flow with water vapor excluded

EMISSIONS DEFINITIONS: Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS: Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS: 3500: EM1500

RATING DEFINITIONS: Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS: Sound Power : DM8702
Sound Pressure : TM7080

Date Released : 03/12/24

ESION QUOTE NUMBER– EQ4754 R3A
CUSTOMER REF – 6267-18009 Iron Mountain, Slough
DATE – 07/12/2018

To: - Finning

Many thanks for your recent enquiry for **2 x Acoustic Containers** each to achieve a noise level of **75 dBA at 1m in assumed FFC** from your **Caterpillar 3516E** generator set.

This quotation is based upon the following engine data, whether supplied at enquiry stage, obtained from the engine manufacturer or taken from our database. The responsibility of verifying or confirming this data is entrusted to yourselves. If you do not supply Esion with information to the contrary, Esion will presume the data below to be correct.

Radiator Type	Ambient Temp	Combustion Air Flow	Cooling Air Flow	Duct Allowance
Standard	UK 30°C	3.27 m³/s	41.65 m³/s	180 Pa
Generator Dims	7538 mm L	2216 mm W	3391 mm H	

ACOUSTIC CONTAINER SPECIFICATION

Profile sheet steel outer skin.

Acoustically rated infill lining.

Perforated metal sheet steel inner skin.

Mono pitched water shedding roof.

4 point base lifting facility.

Standard chequer plate steel inner floor, fully welded to create internal bund and painted black.

Underside of the container base will be painted black using a bitumen based paint system.

2 x Single leaf access doors to generator compartment and 1 to discharge/exhaust compartment all supplied with lockable slam type door furniture, internal push button panic release & stainless steel restraining door stays.

One LV cable link box with single set of rated copper bus-bars and gland plates. Bus-bars to allow connection of incoming resin encapsulated bus-bars

Low level, hinged flap for connection of load bank cables on to switchgear breaker

Flanged coolant and lube oil drain connection with lockable valves

1 x Suitable copper earth bar complete with test link, typically 6mm x 50mm x 200mm long

Apertures in container floor above slab tank connection points, positions TBA, but generally at inlet and outlet ends of container, apertures to have upstands and outlet end one to have bolted/gasketed cover.

External/internal emergency stops (shielded type/latch off) at each door.

Fully seam welded assembly.

Removable end wall for installation of generator set.

Hard points for other's fire suppression system.

Integrated internal bend/chamber section approx. 3000mm long.

Note - Container requires a concrete plinth with flat float finish to +/- 3mm all over.

Note – Esion require yourselves to confirm structural and acoustic suitability of plinth.

CONTAINER DIMS (in mm) – 13800 L x 3850 W x 4100 H

Approx Weight – 15,000kg



Appendix D BS4142 Objective Method Tonal Assessment

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

SLR Project No.: 410.066934.00001

Client Reference No: 00027

13 May 2026



NSR1 Daytime
Scenario 1

NSR1 Daytime Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	58	45	49	52	53	53	50	49	43	46	43	39	39	38	39	38	40	39	39	37	32	28	24	19	12	12	5
left		-13	4.5	2.8	0.6	-0.3	-2.6	-1.1	-5.7	2.9	-2.6	-4.4	-0.1	-0.5	0.5	-0.7	1.5	-1.1	0	-1.8	-4.5	-4.2	-3.8	-5	-7.3	0.3	-7.1
right	13	-4.5	-2.8	-0.6	0.3	2.6	1.1	5.7	-2.9	2.6	4.4	0.1	0.5	-0.5	0.7	-1.5	1.1	0	1.8	4.5	4.2	3.8	5	7.3	-0.3	7.1	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	13	6	15	22	27	30	31	33	30	35	35	32	34	35	37	37	40	39	40	38	34	29	25	20	12	11	3
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	57.9	44.9	49.4	52.2	52.8	52.5	49.9	48.8	43.1	46	43.4	39	38.9	38.4	38.9	38.2	39.7	38.6	38.6	36.8	32.3	28.1	24.3	19.3	12	12.3	5.2

TONES

NSR1 Night-time
Scenario 1

NSR1 Night-time Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	58	45	50	53	53	53	51	50	44	49	47	42	43	43	44	43	44	44	44	42	38	34	31	25	17	14	7
left		-13	4.6	2.9	0.7	-0.2	-2.2	-1.1	-5.5	4.7	-2.4	-4.2	0.7	-0.2	1.5	-1.8	1.8	-0.8	0.1	-1.5	-4.1	-4	-3.5	-5.2	-8.3	-3.2	-7
right	13	-4.6	-2.9	-0.7	0.2	2.2	1.1	5.5	-4.7	2.4	4.2	-0.7	0.2	-1.5	1.8	-1.8	0.8	-0.1	1.5	4.1	4	3.5	5.2	8.3	3.2	7	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	13	6	15	22	27	31	32	34	31	38	38	36	38	40	43	42	44	44	45	43	39	35	32	26	17	13	4
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	58.1	45.1	49.7	52.6	53.3	53.1	50.9	49.8	44.3	49.0	46.6	42.4	43.1	42.9	44.4	42.6	44.4	43.6	43.7	42.2	38.1	34.1	30.6	25.4	17.1	13.9	6.9

TONES

NSR2 Daytime
Scenario 1

NSR2 Daytime Scenario 1	15dB							8dB					5dB															
	25 to 125							160 to 400					500 to 10,000															
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz	
	58	45	50	52	53	53	50	50	44	47	44	40	41	40	40	39	40	39	39	37	32	28	24	19	12	11	4	
paste here:																												

left		-12.9	4.6	2.6	1.1	-0.2	-2.7	-0.8	-5.7	2.8	-2.5	-4.5	1	-0.5	-0.3	-0.7	0.5	-1.1	0	-2	-4.5	-4.4	-3.9	-5	-7	-0.6	-6.8
right	12.9	-4.6	-2.6	-1.1	0.2	2.7	0.8	5.7	-2.8	2.5	4.5	-1	0.5	0.3	0.7	-0.5	1.1	0	2	4.5	4.4	3.9	5	7	0.6	6.8	

	Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	13	6	15	22	27	31	31	34	31	36	36	33	36	37	38	38	40	39	40	38	33	29	25	19	12	10	2
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	57.9	45	49.6	52.2	53.3	53.1	50.4	49.6	43.9	46.7	44.2	39.7	40.7	40.2	39.9	39.2	39.7	38.6	38.6	36.6	32.1	27.7	23.8	18.8	11.8	11.2	4.4

TONES

NSR2 Night-time
Scenario 1

NSR2 Night-time Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	59	46	50	53	54	54	52	51	46	50	48	44	45	45	45	44	45	44	44	43	39	35	31	26	17	14	7
left		-12.9	4.7	2.7	1.2	-0.2	-2.2	-0.8	-5.5	4.5	-2.3	-4.1	1.5	-0.2	0.3	-1.5	1.1	-0.9	0.3	-1.5	-4.2	-4	-3.7	-5.2	-8.2	-3.7	-6.7
right	12.9	-4.7	-2.7	-1.2	0.2	2.2	0.8	5.5	-4.5	2.3	4.1	-1.5	0.2	-0.3	1.5	-1.1	0.9	-0.3	1.5	4.2	4	3.7	5.2	8.2	3.7	6.7	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	14	6	16	23	28	32	33	35	32	39	39	37	40	42	43	43	45	45	45	44	40	36	32	26	17	13	5
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	58.5	45.6	50.3	53.0	54.2	54.0	51.8	51.0	45.5	50.0	47.7	43.6	45.1	44.9	45.2	43.7	44.8	43.9	44.2	42.7	38.5	34.5	30.8	25.6	17.4	13.7	7.0

TONES

NSR3 Daytime
Scenario 1

MSR3 Daytime Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	59	46	51	53	54	54	51	50	44	47	44	40	40	39	39	39	42	41	42	41	36	33	29	25	17	13	10
left		-13.2	4.5	2.5	0.6	-0.3	-2.8	-1	-5.6	2.7	-2.4	-4.2	-0.5	-0.3	-0.2	0	2.3	-0.1	0.7	-1.5	-4.2	-3.9	-3.4	-4.5	-7.2	-4	-3.5
right	13.2	-4.5	-2.5	-0.6	0.3	2.8	1	5.6	-2.7	2.4	4.2	0.5	0.3	0.2	0	-2.3	0.1	-0.7	1.5	4.2	3.9	3.4	4.5	7.2	4	3.5	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	15	7	16	23	28	31	32	34	31	36	36	34	35	36	37	38	42	42	43	42	38	34	30	25	17	12	7
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	59.4	46.2	50.7	53.2	53.8	53.5	50.7	49.7	44.1	46.8	44.4	40.2	39.7	39.4	39.2	39.2	41.5	41.4	42.1	40.6	36.4	32.5	29.1	24.6	17.4	13.4	9.9

TONES

NSR3 Night-time
Scenario 1

MSR3 Night-time Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	60	46	51	53	54	54	51	51	45	50	47	43	44	43	43	42	44	44	44	43	39	35	32	27	20	16	13
left		-13.2	4.6	2.5	0.8	-0.3	-2.5	-0.7	-5.5	4.4	-2.3	-4	0.3	-0.2	0	-1.3	2.1	-0.3	0.2	-1.4	-4	-3.8	-3.3	-4.4	-7.1	-4.5	-3.1
right	13.2	-4.6	-2.5	-0.8	0.3	2.5	0.7	5.5	-4.4	2.3	4	-0.3	0.2	7.11E-15	1.3	-2.1	0.3	-0.2	1.4	4	3.8	3.3	4.4	7.1	4.5	3.1	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	15	7	16	23	28	31	32	35	32	39	39	37	39	40	42	41	44	45	45	44	40	36	33	28	20	15	10
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	59.5	46.3	50.9	53.4	54.2	53.9	51.4	50.7	45.2	49.6	47.3	43.3	43.6	43.4	43.4	42.1	44.2	43.9	44.1	42.7	38.7	34.9	31.6	27.2	20.1	15.6	12.5

TONES

NSR4 Daytime
Scenario 1

NSR4 Daytime Scenario 1	15dB							8dB					5dB														
	25 to 125							160 to 400					500 to 10,000														
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:	60	47	51	54	54	54	51	50	44	47	44	40	40	40	39	39	40	41	42	41	37	33	30	25	19	15

left		-13.3	4.5	2.4	0.7	-0.5	-3.4	-0.8	-5.7	2.9	-2.6	-4.4	-0.2	7.11E-15	-0.5	0.2	1	0.2	1.6	-1.6	-4.1	-3.9	-3.1	-4.2	-6.7	-4	-2
right	13.3	-4.5	-2.4	-0.7	0.5	3.4	0.8	5.7	-2.9	2.6	4.4	0.2	-7.1E-15	0.5	-0.2	-1	-0.2	-1.6	1.6	4.1	3.9	3.1	4.2	6.7	4	2	

Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	15	7	17	24	28	31	31	34	31	36	36	33	35	37	37	39	40	41	43	42	38	34	31	26	19	14	10
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	60.1	46.8	51.3	53.7	54.4	53.9	50.5	49.7	44	46.9	44.3	39.9	39.7	39.7	39.2	39.4	40.4	40.6	42.2	40.6	36.5	32.6	29.5	25.3	18.6	14.6	12.6

TONES

NSR4 Night-time
Scenario 1

NSR4 Night-time Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	60	47	52	54	55	55	52	52	46	51	49	45	45	46	46	44	46	45	45	44	40	37	34	31	25	21	20
left		-13.1	4.5	2.6	0.9	-0.3	-2.9	-0.4	-5.3	5	-2.2	-4.1	0.4	0.8	-0.1	-1.7	1.2	-0.8	0.4	-1.3	-3.8	-3.3	-2.5	-3.5	-5.9	-3.8	-1.2
right	13.1	-4.5	-2.6	-0.9	0.3	2.9	0.4	5.3	-5	2.2	4.1	-0.4	-0.8	0.1	1.7	-1.2	0.8	-0.4	1.3	3.8	3.3	2.5	3.5	5.9	3.8	1.2	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	16	8	17	24	29	32	33	36	33	40	41	38	41	43	44	44	46	45	46	45	41	38	35	31	25	20	17
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	60.3	47.2	51.7	54.3	55.2	54.9	52.0	51.6	46.3	51.3	49.1	45.0	45.4	46.2	46.1	44.4	45.6	44.8	45.2	43.9	40.1	36.8	34.3	30.8	24.9	21.1	19.9

TONES

NSR5 Daytime
Scenario 1

NSRS Daytime Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000																				
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz							
	paste here:								49	35	38	40	40	39	35	34	28	31	29	34	35	34	34	33	34	32	33	31	27	23	20	15	7	4
left		-14.2	3.5	1.7	0.2	-1	-4.2	-1	-6.1	2.9	-2.3	5.8	0.5	-0.5	-0.5	-1.2	0.9	-1.1	0.2	-1.6	-4.1	-3.9	-3.4	-4.9	-8	-2.6	-8.6							
right	14.2	-3.5	-1.7	-0.2	1	4.2	1	6.1	-2.9	2.3	-5.8	-0.5	0.5	0.5	1.2	-0.9	1.1	-0.2	1.6	4.1	3.9	3.4	4.9	8	2.6	8.6								
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE							
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz							
A weighted	4	-5	4	10	14	17	16	18	15	20	20	28	30	31	32	32	34	33	34	32	28	24	21	15	7	3	-7							
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5							
Linear	49	34.8	38.3	40	40.2	39.2	35	34	27.9	30.8	28.5	34.3	34.8	34.3	33.8	32.6	33.5	32.4	32.6	31	26.9	23	19.6	14.7	6.7	4.1	-4.5							

TONES

NSR5 Night-time
Scenario 1

NSRS Night-time Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000																				
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz							
	paste here:								51	37	41	43	43	42	39	37	32	36	33	39	39	39	39	36	37	36	37	35	31	27	24	19	11	6
left		-14.1	3.6	1.7	0.2	-1	-2.4	-2.3	-5.6	4.3	-2.7	5.6	0.5	-0.2	-0.2	-2.4	1	-1	0.1	-1.5	-3.9	-3.8	-3.3	-5	-8.1	-4.7	-7.2							
right	14.1	-3.6	-1.7	-0.2	1	2.4	2.3	5.6	-4.3	2.7	-5.6	-0.5	0.2	0.2	2.4	-1	1	-0.1	1.5	3.9	3.8	3.3	5	8.1	4.7	7.2								
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE							
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz							
A weighted	7	-2	6	12	17	19	20	21	18	25	25	32	34	36	37	36	37	37	38	36	32	29	25	20	11	5	-4							
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5							
Linear	51.4	37.3	40.9	42.6	42.8	41.8	39.4	37.1	31.5	35.8	33.1	38.7	39.2	39.0	38.8	36.4	37.4	36.4	36.5	35.0	31.1	27.3	24.0	19.0	10.9	6.2	-1.0							

TONES

NSR6 Daytime
Scenario 1

NSR6 Daytime Scenario 1	15dB 25 to 125								8dB 160 to 400					5dB 500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
	paste here:																										
	57	44	49	51	52	52	50	49	44	46	44	40	40	40	40	42	41	42	40	35	31	28	22	14	10	3	
left		-13.2	4.3	2.7	1	0	-2.6	-0.6	-5.4	2.8	-2.4	-4.3	-7.1E-15	0.6	0	0	1.6	-1	0.6	-1.8	-4.3	-4.2	-3.7	-5.1	-8.1	-4.8	-6.1
right	13.2	-4.3	-2.7	-1	0	2.6	0.6	5.4	-2.8	2.4	4.3	7.11E-15	-0.6	7.11E-15	0	-1.6	1	-0.6	1.8	4.3	4.2	3.7	5.1	8.1	4.8	6.1	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	13	5	14	21	26	30	31	33	30	36	35	33	35	37	38	40	42	42	43	41	37	32	29	23	14	8	1
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	57.4	44.2	48.5	51.2	52.2	52.2	49.6	49	43.6	46.4	44	39.7	39.7	40.3	40.3	40.3	41.9	40.9	41.5	39.7	35.4	31.2	27.5	22.4	14.3	9.5	3.4

TONES

NSR6 Night-time
Scenario 1

Scenario 1	15dB								8dB					5dB													
	25 to 125								160 to 400					500 to 10,000													
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
paste here:	58	45	49	52	53	53	51	51	46	50	48	44	44	44	44	42	44	43	44	42	38	34	31	26	18	13	6
left		-13.1	4.5	2.9	1.1	0.1	-2.1	-0.2	-5.3	4.9	-2.2	-4.1	-7.1E-15	0.1	0	-1.8	1.6	-0.7	0.3	-1.5	-4	-3.8	-3.4	-4.9	-8	-5.5	-6.3
right	13.1	-4.5	-2.9	-1.1	-0.1	2.1	0.2	5.3	-4.9	2.2	4.1	7.11E-15	-0.1	7.11E-15	1.8	-1.6	0.7	-0.3	1.5	4	3.8	3.4	4.9	8	5.5	6.3	
Condition	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
A weighted	13	5	14	22	27	31	32	35	32	40	40	38	39	41	42	42	44	44	45	43	39	36	32	27	18	11	4
Correction A-wt	-44.7	-39.4	-34.6	-30.2	-26.2	-22.5	-19.1	-16.1	-13.4	-10.9	-8.6	-6.6	-4.8	-3.2	-1.9	-0.8	0	0.6	1	1.2	1.3	1.2	1	0.5	-0.1	-1.1	-2.5
Linear	57.6	44.5	49.0	51.9	53.0	53.1	51.0	50.8	45.5	50.4	48.2	44.1	44.1	44.2	44.2	42.4	44.0	43.3	43.6	42.1	38.1	34.3	30.9	26.0	18.0	12.5	6.2

TONES



Appendix E BS4142 Tables

LON01 Data Centre Permit Application

Iron Mountain UK Data Centre Ltd.

SLR Project No.: 410.066934.00001

Client Reference No: 00027

13 May 2026



Table C1: BS4142 Assessment NSR1

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	52	49	52	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	52	49	52	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	48	53	45	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	48	53	45	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	+1	+7	-2	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	No adverse impact*	Adverse impact*	Low impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.



Table C2: BS4142 Assessment NSR2

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	52	49	52	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	52	49	52	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	49	54	46	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	49	54	46	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	+2	+8	-1	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	No adverse impact*	Adverse impact*	Low Impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.



Table C3: BS4142 Assessment NSR3

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	51	53	47	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	51	53	47	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	+4	+7	0	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	No adverse impact*	Adverse impact*	No adverse impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.



Table C4: BS4142 Assessment NSR4

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	50 to 55	50 to 55	47 to 52	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	50 to 55	50 to 55	47 to 52	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	+3 to +8	+4 to +9	0 to +5	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	No adverse impact* to Adverse Impact*	No adverse impact* to Adverse Impact*	No adverse impact* to Adverse Impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.



Table C5: BS4142 Assessment NSR5

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	42 to 46	42 to 46	39 to 43	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	42 to 46	42 to 46	39 to 43	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	-5 to -1	-4 to 0	-8 to -4	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	Low impact*	Low impact* to No adverse impact*	Low impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.



Table C6: BS4142 Assessment NSR6

Results	Scenario 1 Blackout	Scenario 2 Blackout	Scenario 3 Daytime Testing Only MSM5	Commentary
	Daytime 07:00 – 23:00	Nighttime 23:00 – 07:00	Daytime 07:00 – 23:00	
Ambient sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.1. Specific sound not currently operational; therefore, residual sound level and ambient sound level equivalent.
Residual sound level, dB $L_{Aeq,T}$	62	53	62	BS4142 Section 7.3.2. Measure the residual sound in the absence of the specific sound. Specific sound not currently operational.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.2. Background measured at time period when specific sound is likely to be operational. Taken from August 2025 survey.
Reference time interval	1 hour	15 minutes	1 hour	BS4142 Section 7.2 Reference time intervals
Fixed Plant and Services Specific Sound Level dB $L_{Aeq,T}$	50 to 53	50 to 53	47 to 50	BS4142 Section 7.3.6. Based on plant details provided by engineers. Assumed 24hrs potential operation for all SBGs plant. Daytime routine testing only.
Acoustic feature correction, dB	0	0	0	BS4142 Section 9.2. An acoustic feature correction penalty is not warranted.
Rating level, dB $L_{Ar,Tr}$	50 to 53	50 to 53	47 to 50	BS4142 Section 9.2. Specific sound level plus acoustic feature correction.
Background sound level, dB $L_{A90,T}$	47	46	47	BS4142 Section 8.1.1a, 8.2. A new specific sound source is to be commissioned. Background measured at time period when specific sound is likely to be operational.
Excess of rating over background sound level	+3 to +6	+4 to +6	0 to +3	BS4142 Section 11. Rating level minus background.
Assessment indicates likelihood of *Depending on context	No adverse impact* to Adverse impact*	No adverse impact* to Adverse impact*	No adverse impact*	BS4142 Section 11. Where the rating level does not exceed the background sound level this is an indication of the specific sound having a low impact low impact, depending on context.
Uncertainty of the assessment	Not significant	Not significant	Not significant	BS4142 Section 10. Uncertainty was minimised by measuring over an extended period with no periods of adverse weather.





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