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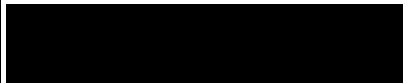
Desktop Study

Prepared: 24th September 2026

Report No	23588-2 (R2)
Client	Chaldicotts Ltd
Site	Chaldicott Barns Northern Expansion
	Chaldicotts Barns
	Semley
	SP7 9AW

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1. Quality Management

Report Number	23588 – 2 (R2)
Issue	Revision 2 ¹
Prepared	24 th September 2026
Prepared By	 Shaun Sloan BSc, MIOA
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¹ Internal layout plan and construction design details revision

3. Executive Summary

3.1.1. A desk-based study has been carried for a proposed industrial northern expansion at Chaldicotts Barns, Semley ("Proposed Development"). This report assesses the potential noise egress from the test room facility to other areas of the manufacturing plant process, together with the potential noise impact on nearby commercial and residential receptors, including consideration in support of BREEAM HEA 06 (Health & Wellbeing).

3.1.2. The assessment is based on measured noise survey data, used in conjunction with project drawings and construction details, to establish the sound insulation specification for the walls, roof, and access doors, together with the associated ducted supply and extract ventilation system. A noise model was developed to predict internal sound pressure levels within other areas of the manufacturing plant process, and external noise levels at nearby commercial and residential receptors.

3.2. Measurement, Assessment and Evaluation

3.2.1. The survey was carried out to BS7445-1:2003² and BS7445-2:1991³.

3.3. Scope

- 3.3.1. This report covers all aspects of the noise survey, including:
- the identification of acoustic design criteria;
 - an objective sound pressure level survey of the existing site;
 - predicted internal and external sound pressure levels using 3D noise modelling
 - assessment of the specific sound sources &
 - Where achieving noise criteria is identified to be at risk

3.4. Results Summary

3.4.1. Acoustic design input and modelling have been undertaken for the Test Room facility, covering internal personal noise exposure, sound insulation of the separating walls, roof and access doors, reverberation time, the ducted air ventilation system in support of BREEAM HEA 06 and external noise impact on nearby commercial and residential receptors.

3.4.2. All areas where personnel are expected to operate within the Proposed Development are predicted to remain below the Lower Exposure Action Value (80 dB(A)) under The Control of Noise at Work Regulations 2005 ("CNWR 2005"). Operatives working in and around these areas are therefore not expected to be at risk of elevated noise exposure under CNWR 2005, and no specific noise control measures are required on this basis.

3.4.3. Noise breakout from the Test Cells to other noise sensitive spaces within the building is also predicted to achieve the internal guideline values within industrial spaces (defined as dB L_{Aeq,T}) as set out in BS 8233⁴.

3.4.4. Predicted external noise levels are 17 dB below the background sound level at the nearest commercial receptor and 26–29 dB below at the nearest residential receptor, indicating very low impact due to plant noise at the receptor and no significant contribution to the overall noise climate.

3.4.5. Sound-absorptive finishes are recommended throughout to achieve target reverberation times and support speech intelligibility, and recommendations for the ducted supply and extract system have been provided, to be confirmed once ventilation and plant specifications are available.

² BS7445-1:2003 "Description and measurement of environmental noise – Part 1: Description of quantities and procedures"

³ BS7445-2:1991 "Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use"

⁴ 1999.

- 3.4.6. Where achieving noise criteria is identified to be at risk acoustic mitigation will be required and additional information and or discussions with the design team may be required to specify the treatment required.
- 3.4.7. Subject to implementation of the noise mitigation recommendations set out in this report, the development is considered capable of demonstrating compliance with the sound insulation, indoor ambient noise level and reverberation elements of BREEAM HEA 06 for the "All Other Buildings" category, in addition to demonstrating very low noise impact on nearby commercial and residential receptors.

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5. Background

5.1. Noise Policy Statement for England

- 5.1.1. The Noise Policy Statement for England (NPSE), published in March 2010, states the long-term vision of Government noise policy is to *“promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”*.
- 5.1.2. This long-term vision is supported by the following aims; through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- Avoid significant adverse impacts on health and quality of life;
 - Mitigate and minimise adverse impacts on health and quality of life;
 - Where possible, contribute to the improvement of health and quality of life.
- 5.1.3. The intention is that the NPSE should apply to all types of noise apart from noise in the workplace (occupational noise).

5.2. National Planning Policy Framework

- 5.2.1. The National Planning Policy Framework (NPPF) was published on the 27th of March 2012 and was most recently updated on the 5th September 2023; it sets out the Government’s planning policies for England and how these are expected to be applied. The framework states that the planning system should contribute to and enhance the natural and local environment by:

“preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.

- 5.2.2. The NPPF requires that new developments be appropriate to their locations such that the effects of pollution on health have been taken into account. Planning policies and decisions should aim to:
1. avoid noise giving rise to significant adverse impacts on health and the quality of life;
 2. mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development; and,
 3. identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value.
- 5.2.3. Existing businesses near to proposed development should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

5.3. National Planning Practice Guidance

- 5.3.1. The National Planning Practice Guidance (PPG) is a web-based resource, launched by the Department for Communities and Local Government (DCLG) which was published on the 29th November 2016 and is regularly updated to reflect the changes made to the NPPF and make it more accessible.⁵

⁵ <http://planningguidance.communities.gov.uk/>

- 5.3.2. There are a number of factors that determine whether a noise could be a concern to a receptor. These include: the absolute level of the noise and when it occurs, whether it is existing or new to the area, temporal characteristics, spectral content and the acoustic absorption in the area.

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

Table 1 – Noise exposure hierarchy

- 5.3.3. It is emphasised in the PPG that the planning process should be used to mitigate and minimise the impact of noise. This could include: engineering the noise sources to be quiet, minimising the impact of noise through layout, using conditions/obligations to restrict activities, mitigating the impact in places where noise is likely to be experienced (e.g. using facade sound insulation).

6. Introduction

6.1.1. A desk-based study has been carried for a proposed industrial northern expansion at Chaldicotts Barns, Semley ("Proposed Development").

6.2. Proposed Development

6.2.1. An image showing the location of the Proposed Development outlined in red is given in Figure 1.

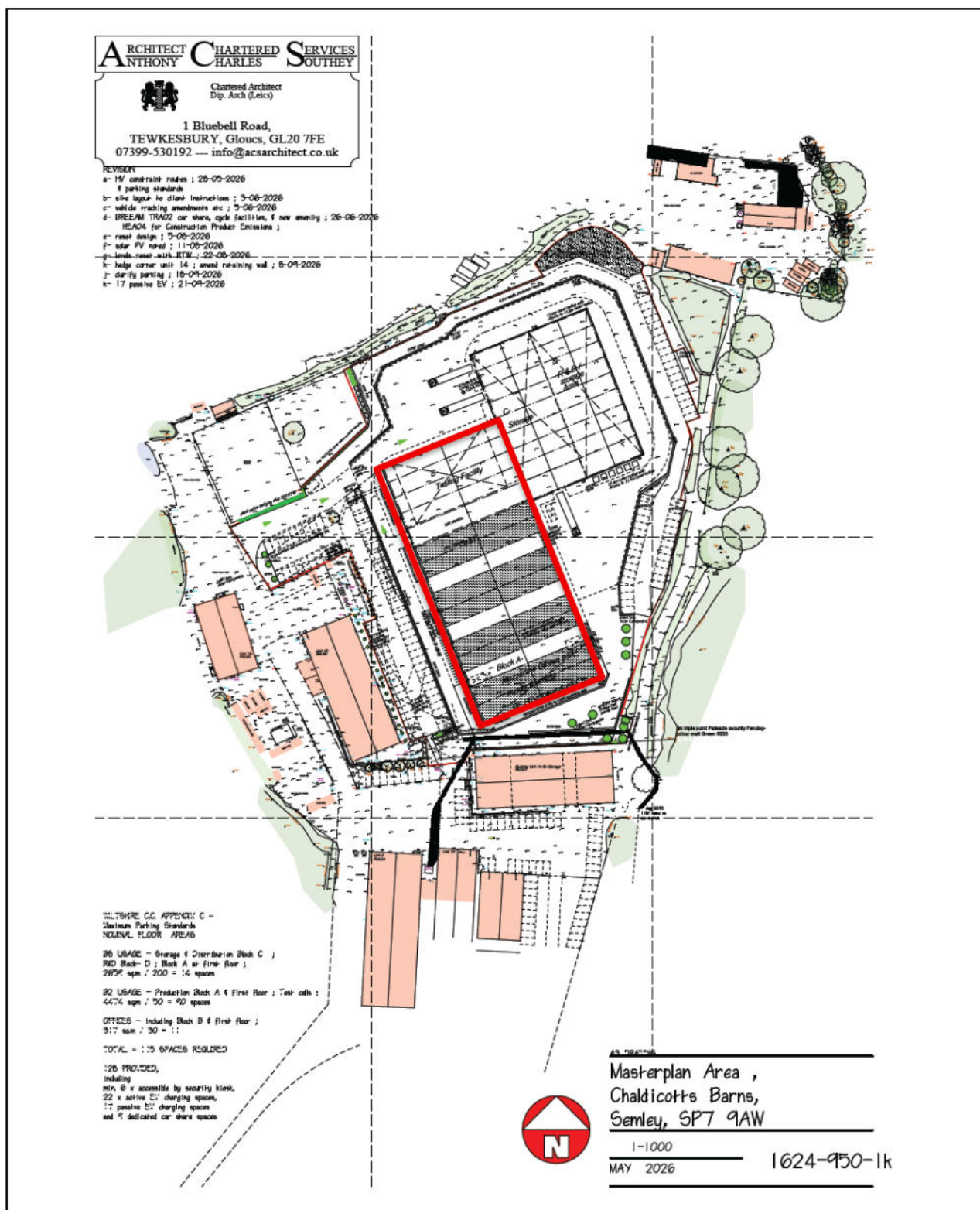


Figure 1 - Plan showing the location of the Proposed Development outlined in red

6.2.2. Plans showing the building elevations and general arrangement plans are shown in Figure 2 - Figure 6.

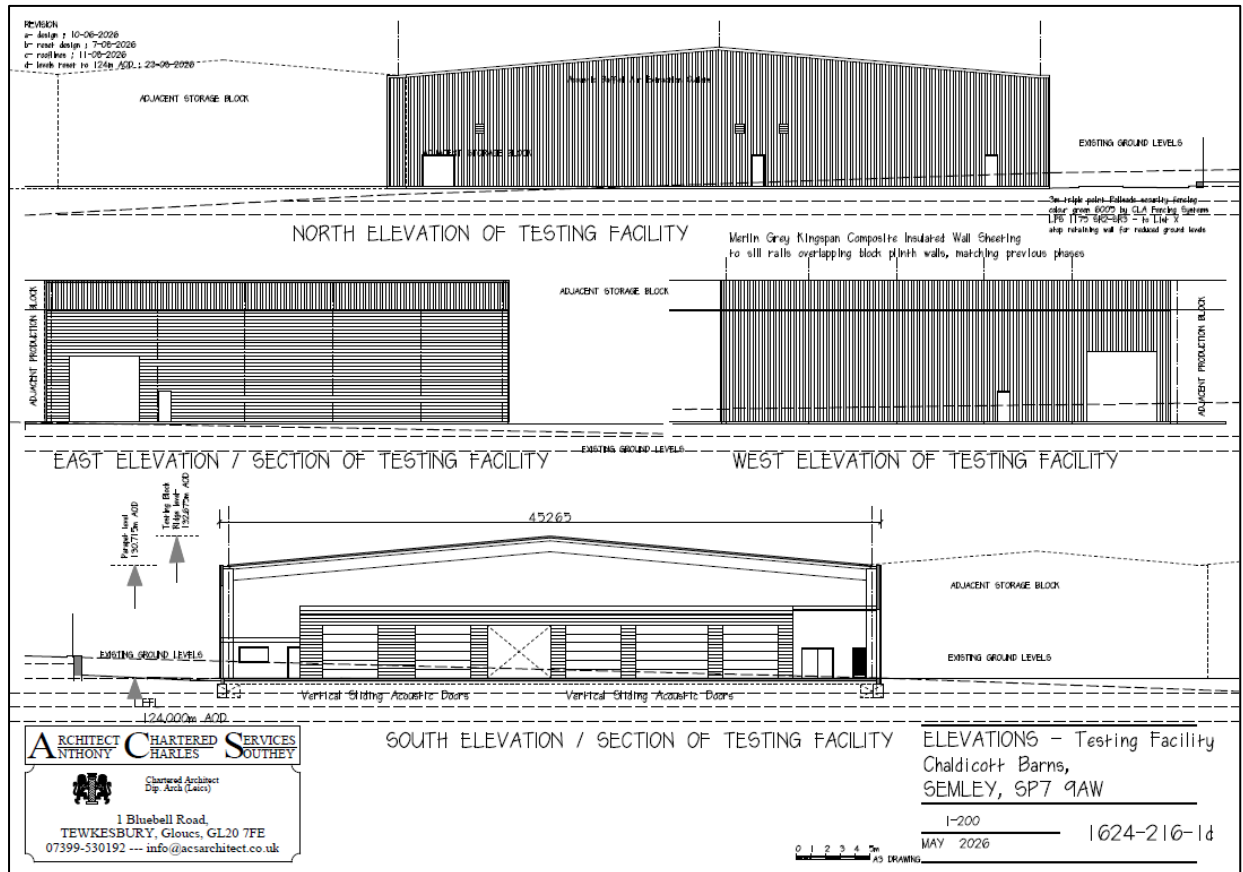


Figure 2 – Plan showing the north, east and west elevations of Testing Facility

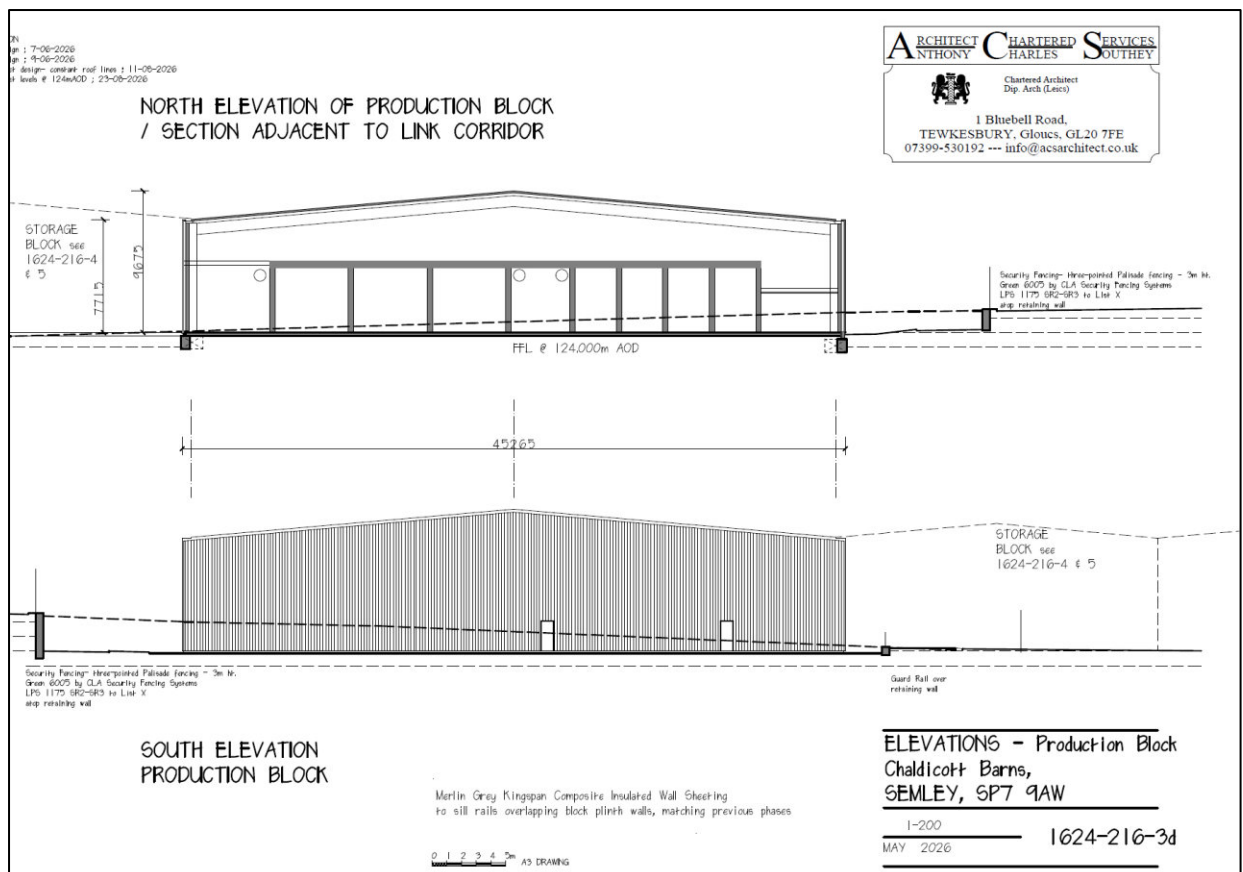


Figure 3 – Plan showing the north and south elevations of Production block

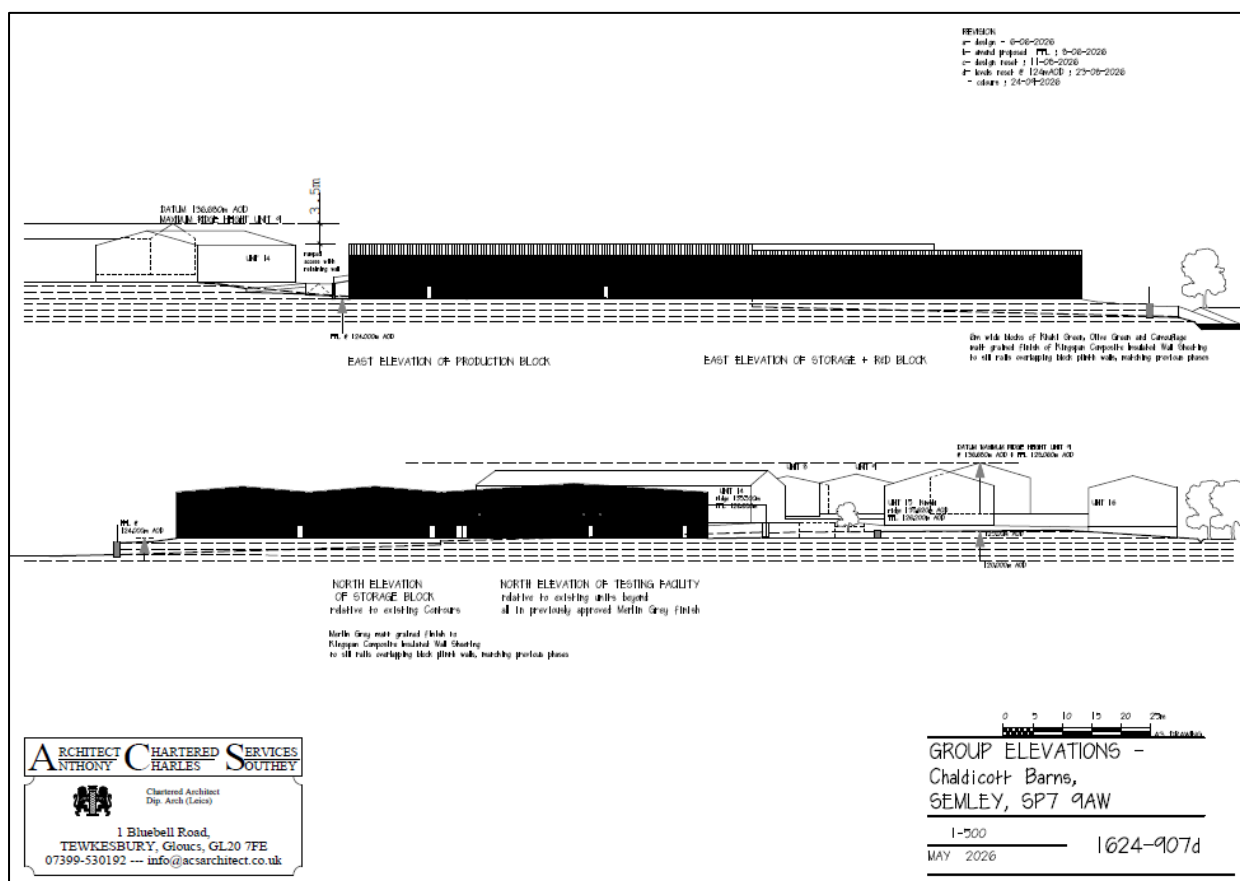


Figure 4 – Plan showing north and east elevations

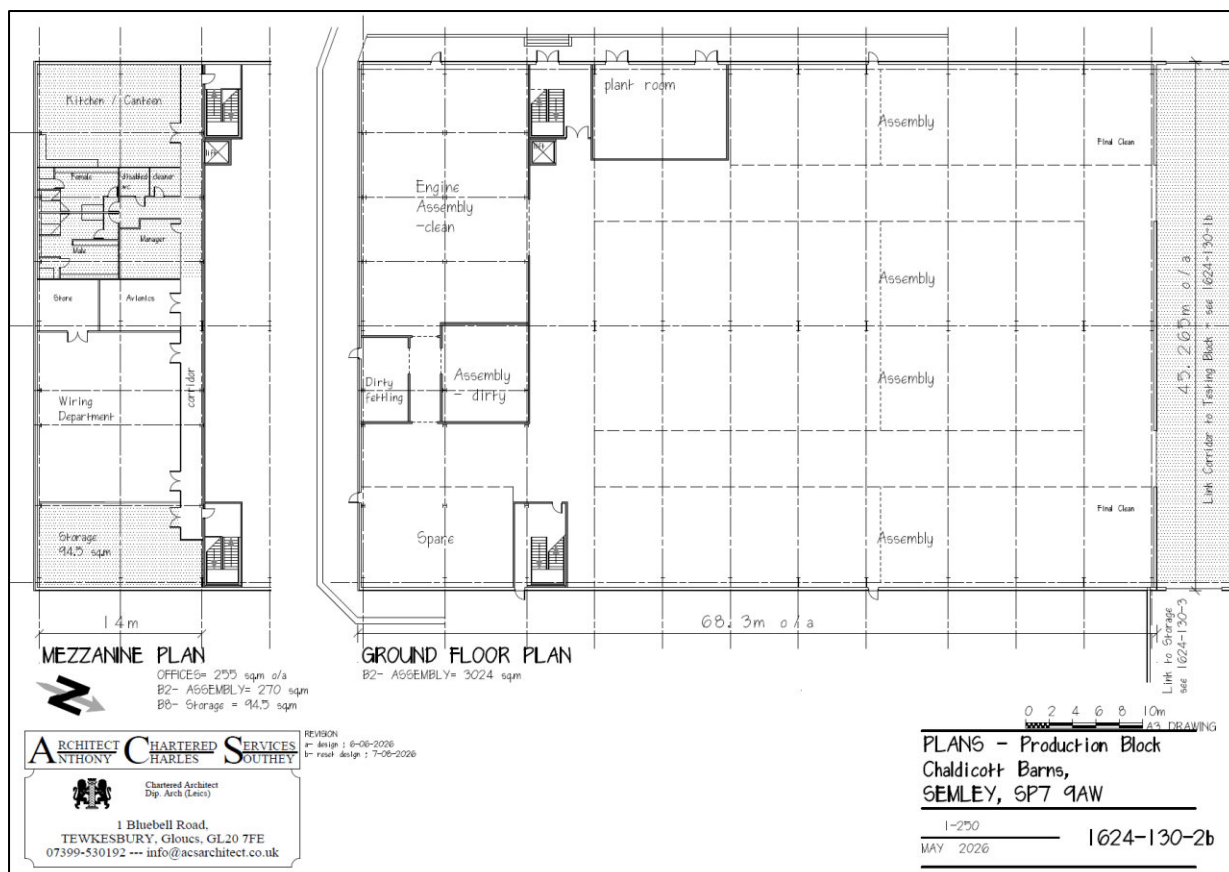
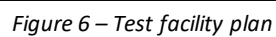


Figure 5 – Ground floor plan and mezzanine plan



6.2.3. Details of the proposed constructions are shown in Figure 7.

MASTERPLAN AREA –
Proposed Engineering Facility-
CHALDICOTT BARN – SEMLEY – SP7 9AW

Schedule of Materials & Specification

Revised for BREEAM notes ; and colours at 24-09-2026

All materials to optimise use of recycled contents-

And low Global Warming Potential in blowing agents for insulation

1.0- EXTERNAL WORKS –

*Proposed maximum ridge height- below existing Unit 9 highest ridge height –
 ALLOWING FOR SLOPE PERSPECTIVE -With single proposed FFL set at 124.000m AOD
 and at 2.68m below existing unit 14 FFL - see 1624-907d Group elevations -*

- 1.1- *-Car parking bays/ access roads, cycle parking area and lorry turning areas, plus Fire engine access ramped route between concrete retaining walls, all as site layout to be permeable hardstanding, such as permeable tarmac, block pavements for optimum attenuation within p.c / timber sleeper kerbs, with geo-textile fabric reinforcement where built up layers to spec. ;
 to BREEAM TRA02 for dedicated car share spaces>5% ; cycle facilities ; new amenity fitness trail- & HEA07 for bench seat ;*
- 1.2- *Security fencing to be 3m height to List X-
 CLA Security Fencing Systems triple point palisade –
 Colour ; Matt Green 6005 - to List X standard LPS 1175 SR2-SR3 ;
 - matching 7.2m width security gates, inward and outward one-way routes, with Hostile Vehicle Mitigation such as retractable ram bollards, secondary pedestrian gates, all at security Kiosk/s ; loading and un-loading at Storage Block C ;*
- 1.3- *-Supply and install fuel tank to Blue Book constraints with supply pipes to Testing Block Cells ;*
- 1.4- *-within security fence, form HGV hardstanding routes to necessary CBR loading, with 17.4m outer radius and Armco to 11.9m inner radius at building corners to suit adequate vehicle tracking ;*
- 1.5- *-prepare for cut and fill to Engineer's design to Production Block A, Corridor Links, Testing Facility Block B , Storage Block C and R&D block D ; with 2m wide sand/gravelled building surround ;*
- 1.6- *Retaining walls to be inter-locking blocks, with lateral restraints as designed, flat top copings to suit slopes, radius blocks for adjustable angles, and option for pattern printed facing stone effects, and drainage slots to relieve hydraulic pressure ;
 concrete retaining walls to secure cutting in of excavated ground levels, topped with Armco barriers alongside HGV routes and Kee-Klump guard-rails to pedestrian routes ;
 perforated drain-pipes to rear, wrapped in geo-textile fabric with outlets to relieve hydraulic pressure of ground waters ;*
- 1.7- *-prepare, supply and plant native species landscaping as proposed areas, and hedges, around adjacent dog-training area, car parking and Amenity space ;*

- 1.8- -form attenuation pond, with monk-pipe/throttled outfall, and storm water connections; to specialist design;
- 1.9- -form Security Kiosk steel box structure EITHER by Curtis Engineering Ltd to be bolted to mesh reinforced concrete slab - to receive insulated FSC-sourced 140mm CLS timber stud framework, FSC-sourced OSB skin, vapour barrier, and FSC-sourced battens to receive Black Eternit fibre-cement cladding, insulated FSC-sourced timber flat roofing, FSC-sourced ply decking, vapour barrier and composite insulation warm-roof decking to receive Glassfibre finish and Sedum roof trays;
OR Glasdon pre-fabricated Security Gatehouse to same design;
-perimeter of flat roof to have gravel sumped surround, with vertical retention trims, and RW outlets; Extensive Sedum Green Roof system finish; Filter Fleece; HDPE Root Barrier; Vermiculite drainage layer; All to BREEAM Certification;
- 1.10- -form external steps/ accessible ramp at Office Entrance doors, with Kee-Klump handrails to Building Regs;
- 1.11- -Likewise to Fire Exit doors where ground levels require with Kee-Klump handrails guarding;
- 1.12- -Security Kiosk - windows to be aluminium sliding double-glazed weather-stripped, and doors for pedestrian access / security checking;
- 1.13- -Supply and install drainage pumping station; see para. 8.2;
- 1.14- -Excavate and form storm water attenuation pond with filtered throttled outlet to existing ditches to avoid localised potential flooding, such as monk-pipe or similar to receive roof and surplus ground waters [hardstanding areas to be permeable generally for most rainwater, but have gullies connected to s.w drains for surplus storm water]; excavated volume to be calculated for anticipated storm capacity including forecast climate change up-lift;
- 1.15- -supply 'amenity area' bench, smoking shelter, and fitness trail equipment to design;

2.0- FOUNDATIONS - to achieve target U-value 0.15

Ensure no disruption to existing services by checking constraint routes on site before excavations, including CAT scanning for HV/LV; and ensuring keeping to agreed zones clear of Tree RPAs, as necessary;

- 2.1- -Strip out and reduce for floor levels for laying min.225mm. consolidated hardcore, in max. 300mm layers where filling layers; sand blinding to receive 50mm. Celotex insulation to unheated storage warehouse area; and 1200 gauge DPM; and Eng design of min. 200mm. C35P reinforced concrete slab with power float finish containing A 252 reinforcing mesh on chairs to give min. 40mm. clear, with crack inducement joints at 6m c/c; to achieve 15 kN/sq.m. loading;
-retained within blockwork masonry sub-structure walling, comprising -
External skin sub-structure; 225mm hollow blockwork [concrete-filled around reinforcement starter bars cast into concrete footings];
on concrete C20 deep strip foundations;
Pad foundations to Engineers design and drawings; to BCO inspection and approval;

3.0- External WALLS - to achieve target U-value 0.20 to Test block/offices & 0.23 to remainder

- 3.1- Range of cladding colours in 6m wide blocks of *Camouflage, Khaki Green and Olive Green*, articulating on the longer west and east elevations, and south elevations;
and *Merlin Grey* to north elevations, comprising Kingspan QuadCore KS1000 RW 80mm.

- thick insulated panels to current Regs, from eaves/verge to finished floor level, fixing to 200mm cladding rails and steel portal frames as Curtis Eng design ; Acoustic insulation to Testing Block to have 200mm infilled Rockwool, between choice of ---FSC-sourced studwork inner skin OR Z-bars, and plasterboard inner lining, sandwiching weld-mesh fixed for security against intrusion ;
and with Double sided Plastisol 'Highline' parapet type insulated gutters to internal rain-water down-pipes, all to Kingspan detail pages 17, 20, 21, 22, 25, 26, 39 – 42 as previously ;
- 3.2- Trim for door openings, to comply with fire escape Regs ; no windows for adequate List X security ;
- 3.3- Form 1 hour fire-resistant insulated proprietary FireMaster system compartment wall skin/s, under / over mezzanine, and unheated warehouse storage ; including fire protecting by intumescent painted steel standhions supporting First Floor ;
- 3.4- -internal acoustic Cell walls of 225mm hollow blockwork [concrete-filled around reinforcement starter bars cast into concrete footings] ;
latter insulated each side with 75mm Rockwool Batts to blockwork with Z-bars and plasterboard ; all to Noise consultant's specifications ;

4.0- STRUCTURAL TIMBER / Steel / Concrete---

All new timbers to be preservative treated pressure impregnated – FSC-sourced
Steelwork to be fire-protected as necessary to Regs ;

- 4.1- – OFFICE Floor – Engineer design of precast concrete decking, to steel floor structure, screeded floor finish ;
- test cell ceiling to be engineer design of 150mm precast concrete decking ;
- 4.2- -Production Block A & Storage Block ; -Testing Block, and Link Corridors ; -Storage Block and R&D block D ;
- Structural steel portal frame to design by Curtis Eng Ltd - eaves at 7.715m height, 5 degree roof pitch ; inclusive of cladding rails and roofing purlins, with bracing etc ;

5.0- ROOF FINISHES- to achieve target U-value 0.16

- 5.1- Production Block & Storage Block – Khaki Green insulated panels to be 115mm thick Kingspan QuadCore KS1000RW insulated roof sheeting to current Regs ; and matching Kingspan PowerPlus Solar PV System matt black panels ; all at 5 degrees ;
and with Double sided Plastisol 'Highline' type insulated parapet gutters fitted to rain-water down-pipes ; all to Kingspan detail pages 17, 20, 21, 22, 25, 26, 39 – 42 ;
- 5.2- Security Kiosk finish as para. 1.9 ;

6.0- FINISHES –

- to BREEAM Certification for HEAD4 low VOC materials--
indoor paints and coatings ; FSC-sourced wood-based materials/adhesives ; flooring materials ; ceiling, wall, & acoustic/thermal insulation ; interior adhesive/sealants ;
- 6.1- -Supply and fit 60min fire resistant suspended ceilings system or similar, under mezzanine first floor structure ;
- 6.2- -Testing Block & link to production Block- to have bonded 75mm Rockwool to each side of Cell walls, and decking soffits with Z-bar support to double layers of acoustic plasterboard ;

- top surface to have triple cross-banded layers of Rockwool batts infilled to cross-banded 75x50 timber joists to receive t&g chipboard maintenance decking ;
- Test block offices etc to have plasterboard finish to Rockwool insulated FSC-sourced timber studwork or similar, and Rockwool acoustic-insulated FSC-sourced timber structure ceiling ;
 - 6.4- Toilets / Store floor finish to client choice ;
All within 0.25 W/sq.mK ;
 - 6.5- Provide and apply intumescent coating such as fire-resistant 1 hour to soffits, and intumescent paint to structure ;
 - 6.6- Rub down preparation for application of 2 coat eggshell to woodwork, including emulsion Decoration to walls ;
 - 6.7- Fit ceramic tiling splashbacks to WBs/ kitchen fittings to client choice, with water-proof grout and bedding ;

7.0- JOINERY ---

- 7.1- Supply and fit kitchen units, worktop and wall units to clients choice ;
- 7.2- Provide and fix Fire escape doors ; manufacturer Metador, Defender Safeguard, with acoustic option at 1.4W/sq.mK, fitted with Exidor 297 emergency push pad panic latch ;
-entrance double doors to be Smart Wall door system triple-glazed ;
- 7.3- Supply and fit steel staircase by Curtis Engineering -
comprising 1350 mm. wide straight flights, landings etc. --
Treads to min. 250mm. going ; 2 x 12no. Riser flights at 175mm. each ;
overall 4200mm. floor to floor ;
Pitch at less than 38 degrees ;
Handrail to both sides --- Min. height above pitch and landing to be 900 mm. ;
min. clear headroom of 2000 mm. to be provided over pitch ;
Balustrade spacing at max. 100 mm. to obstruct passage of 100 mm. sphere ;
- 7.4- Supply and fit internal double fire doors ; FD60 doors in one hour partition with Perlo closers ;
- 7.5- Supply and install insulated acoustic folding shutter doors, to 0.13 U-value, matching to previously approved with fixings and operating gear to wind posts etc. ; likewise for roller shutter doors ;

8.0- SERVICES AND DRAINAGE --- new s.w. and FW drains to new pumping station and

- out-flow to existing recently enhanced FW treatment plant with new capacity ;
- 8.1- To sinks - ensure 38 mm. diam. uPVC waste with 75 mm deep / resealing traps [max. 3 m. long branch, or 4 m. if 50 mm combined branch] ;
-To wash basin - ensure 32 mm. diam. uPVC waste with 75 mm deep / resealing traps [max. 1.7 m. long branch, or 3 m. if 50 mm combined branch] ;
-To w.c. - 100mm. diameter outlets to slow bends, with access panel to enable rodding ;
all to 100mm. diameter SVP with slow bend to following ;
 - 8.2- Excavate for shallow 225mm. diameter manhole / inspection chambers to be proprietary uPvc laid in accord with makers instructions, to branch connection at adjacent depth and size by others to connect to existing FW system via new pumping station as para. 1.13 ;
 - 8.3- Supply and install Telecom extension to agreed position ;
-Extend existing electric supply with spare capacity for new sub-mains, CSU and RCB ;

- 8.4- R.w. goods to connect to existing storm water outlets to existing ditches / attenuation pond to be designed for maximum porous surfacing to limit outfall ;

9.0- PLUMBING --- -Sanitary pipework to B.S. 5572

- 9.1- **-HEATING SYSTEMS -** Design, supply and install ceiling mounted outlets to electric air-source heat pump system, by Parsons Refrigeration, to mezzanine office areas ; with vertical towel radiators to toilets ; Excluding unheated Storage warehouse ; Design, supply and install Trianco Aztec electric boiler or similar for kitchenette taps/toilet towel radiators ; and for Security Kiosk ;

9.2- HOT AND COLD WATER INSTALLATION ---

- Design, supply and install h & c w. distribution system, including all necessary components and parts for system ; instantaneous electric water heaters ;
-Also supply and fit plain chrome cross-head taps, and overflows ;
- 9.3- Supply and install plain white sanitaryware to Part M Disabled Access regs ; with all necessary fittings and w.c overflows to Water bye-laws ;

10.0- -ELECTRICAL INSTALLATION AND MECHANICAL VENTILATION

- 10.1- -To kitchen sink area - Extract ventilation to give min. 60 litre/sec. [216 cu.m./hr.] to be light-switch operated ;
-To Toilet - Extract ventilation to give min. 15 litre/sec. [54 cu.m./hr.] to be light-switch operated ;
both integrated with the MVHR system or locally controlled as the building services design determines ;
Design, supply and install mechanical ventilation with heat recovery (MVHR) serving the mezzanine office and welfare areas, and ducted supply and extract ventilation to the production, assembly and storage areas, to the building services engineer's design and to current Regs; ventilation rates and heat recovery efficiencies to be confirmed at technical design; test cell ventilation by dedicated acoustically baffled inlet and outlet air vents to specialist design as para. 10.4;
- 10.2- ;- To be carried out to BS 7671:2018 incorporating Amendment 2:2022 (18th Edition IET Wiring Regulations), or the latest edition current at the time of installation, for an Electrical Installation Certificate by a registered installer, comprising:
-Circuit for mains operated Optical smoke detectors to B.S. 5446 pt 1, and Fixed Rate Heat Detector for Production and Testing areas ; / battery back up / interconnected ; all in accord with Building Reg. B1, para. 1.8 - 1.15 for easy access and position ;
-power circuit ;
-lighting [such as designed by Dextra Lighting - 01747- 858110] including battery back-up to stairs exit route ;
Illuminating each stair tread ;
-External lighting to consultant design for dark night compliance ;
-switches & socket outlets :- at between 450 and 1200mm, from finished floor level ;
min. 75% provision of low energy lamps giving luminous efficiency > 40 lumens/ circuit watt ;
and external lighting to be PIR automatically extinguishing with latter low energy lamps, all to List X criteria ;

- including emergency escape lighting conforming to BS 5266 pt 1 latest edition, ISO 7010 ;
each fire escape door will have a back-up battery maintained LED mains-fitted emergency
exit lights, minimum 175mm overall height for up to 35m distance viewing, with standard
illuminated signage ;
- 10.3- Roof-top Kingspan QuadCore Power Panel Integrated solar PV to be connected to Battery /
inverter systems at plant rooms, including for power exporting when in surplus, and on-site
discharge during working hours; together with EV charging to 20% of parking spaces [22no.
] and 4no. bicycle charging points ;
- 10.4- -Test Cells to contain Inlet and Outlet powered Air Vents, including acoustic baffles to
specialist design ;
- 10.5- Fire alarm and Security systems to be fitted by Partnership Security ;
BAFE approved addressable fire alarm system to L3 standard with central station
communication, via grade 3 dual path monitoring, as previously approved for existing
adjacent unit 16 Niwaki warehouse unit ; with manual call points at exit doors ;

Figure 7 – Proposed construction details

7. Assessment Criteria

7.1. The Control of Noise at Work Regulations 2005 (“CNWR 2005”).

7.1.1. The exposure limit and action values are shown in Figure 8.

- 4.—(1) The lower exposure action values are—
- (a) a daily or weekly personal noise exposure of 80 dB (A-weighted); and
 - (b) a peak sound pressure of 135 dB (C-weighted).
- (2) The upper exposure action values are—
- (a) a daily or weekly personal noise exposure of 85 dB (A-weighted); and
 - (b) a peak sound pressure of 137 dB (C-weighted).
- (3) The exposure limit values are—
- (a) a daily or weekly personal noise exposure of 87 dB (A-weighted); and
 - (b) a peak sound pressure of 140 dB (C-weighted).
- (4) Where the exposure of an employee to noise varies markedly from day to day, an employer may use weekly personal noise exposure in place of daily personal noise exposure for the purpose of compliance with these Regulations.
- (5) In applying the exposure limit values in paragraph (3), but not in applying the lower and upper exposure action values in paragraphs (1) and (2), account shall be taken of the protection given to the employee by any personal hearing protectors provided by the employer in accordance with regulation 7(2).

Figure 8 – Exposure limit values and action values

7.2. BREEAM HEA 06 Acoustic Performance Requirements

7.2.1. The new development is to be designed to achieve the criteria under HEA 06 issue of BREEAM New Construction v7, which sets out the following requirements in order to target the credits available:

▼ Up to three credits – Acoustic performance

For all building types, except residential institutions (short term and long term stay) and hospitality, which have four credits available below.

1 The building meets the appropriate acoustic performance standards and testing requirements defined in the relevant table below. These tables define criteria for the acoustic principles of:

- 1.a: Sound insulation
- 1.b: Indoor ambient noise level
- 1.c: Room acoustics.

OR

2 A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building. The bespoke performance requirements use the three acoustic principles defined in criterion [1](#), setting out the performance requirements for each and the testing regime required.

Figure 9 - BREEAM New Construction v7 HEA 06 assessment criteria

7.2.2. In order to achieve the HEA 06 credits the development must comply with the following criteria from BS8233:2014:⁶

⁶ BS8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’

7.3. Credit 1: Sound insulation

- 7.3.1. BS8233 provides guidance on placing noise sensitive rooms next to rooms with the potential for high levels of activity noise. The standard uses a matrix to determine the appropriate level of sound insulation required for separating partitions based on the activity noise and privacy in one space compared to the sensitivity of another. The matrix is shown in Figure 10.

Table 3 Example on-site sound insulation matrix (dB $D_{nT,w}$)				
Privacy requirement	Activity noise of source room	Noise sensitivity of receiving rooms		
		Low sensitivity	Medium sensitivity	Sensitive
Confidential	Very high	47	52	57 ^{A)}
	High	47	47	52
	Typical	47	47	47
	Low	42	42	47
Moderate	Very high	47	52	57 ^{A)}
	High	37	42	47
	Typical	37	37	42
	Low	No rating	No rating	37
Not private	Very high	47	52	57 ^{A)}
	High	37	42	47
	Typical	No rating	37	42
	Low	No rating	No rating	37

NOTE Background noise can also influence privacy. See also 7.7.6.3.

^{A)} $D_{nT,w}$ 55 dB or greater is difficult to obtain on site and room adjacencies requiring these levels should be avoided wherever practical.

Figure 10 - Example on-site sound insulation matrix from BS8233:2014. Sound insulation evaluated as dB $D_{nT,w}$

7.4. Credit 2: Internal ambient noise level

- 7.4.1. HEA 06 refers to the internal guideline values in BS8233:2014. However, BS8233:2014 does not include criteria for some of the areas that appear on this development (specifically the areas that contain industrial operations). Therefore, BS8233:2014 and BS8233:1999 have been referred to for the criteria, as shown below in Figure 11 and Figure 12.

Table 6 Typical noise levels in non-domestic buildings		
Activity	Location	Design range dB $L_{Aeq, T}$
Speech or telephone communications	Department store	50 – 55
	Cafeteria, canteen, kitchen	
	Concourse	45 – 55
Study and work requiring concentration	Corridor, circulation space	
	Library, gallery, museum	40 – 50
	Staff/meeting room, training room	35 – 45
Listening	Executive office	35 – 40
	Place of worship, counselling, meditation, relaxation	30 – 35

Figure 11 – BS8233:2014 'Typical noise levels in non-domestic buildings guidance'

Table 5 — Indoor ambient noise levels in spaces when they are unoccupied

Criterion	Typical situations	Design range $L_{Aeq,T}$ dB	
		Good	Reasonable
Reasonable industrial working conditions	Heavy engineering	70	80
	Light engineering	65	75
	Garages, warehouses	65	75
Reasonable speech or telephone communications	Department store	50	55
	Cafeteria, canteen, kitchen	50	55
	Wash-room, toilet	45	55
	Corridor	45	55
Reasonable conditions for study and work requiring concentration	Library, cellular office, museum	40	50
	Staff room	35	45
	Meeting room, executive office	35	40
Reasonable listening conditions	Classroom	35	40
	Church, lecture theatre, cinema	30	35
	Concert hall, theatre	25	30
	Recording studio	20	25
Reasonable resting/sleeping conditions	Living rooms	30	40
	Bedrooms ^a	30	35

^a For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB L_{Amax} .

Table 6 — Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important

Criterion	Typical situations	Design range $L_{Aeq,T}$ dB
Reasonable acoustic privacy in shared spaces	Restaurant	40–55
	Open plan office	45–50
	Night club, public house	40–45
	Ball room, banquet hall	35–40
	Reception room	35–40

Figure 12 - BS8233:1999 'Indoor Ambient Noise Levels in Spaces when they are unoccupied'

7.5. Credit 3: Room Acoustics

- 7.5.1. HEA 06 refers to the guidance in Section 7 of BS8233:2014 in relation to sound absorption and reverberation times. Room acoustics are an important element of a suitable acoustic environment in the design for good speech communication. BS8233:2014 does not include RT guideline values; however, BS8233:1999 provides RT guideline values for speech, as shown in Figure 13.

Table 8 — Guide to reverberation time T at 500 Hz in unoccupied rooms for speech and music

Room volume m^3	Reverberation time T s	
	Speech	Music
50	0.4	1.0
100	0.5	1.1
200	0.6	1.2
500	0.7	1.3
1 000	0.9	1.5
2 000	1.0	1.6

Figure 13 - BS8233 Table 8 Guideline values for reverberation time for speech

7.6. Noise impact on nearby commercial and residential

- 7.6.1. The noise impact on nearby commercial and residential receivers has been assessed using the typical background sound levels measured and the noise egress from the Proposed Development.
- 7.6.2. A 1 dB change in level is very small and would not be noticed in day-to-day life; it is only just perceptible and represents a small change in perceived level, even though it is a doubling of energy. A 10 dB change in level is large; it is perceived as a doubling or halving in loudness and represents a tenfold increase in energy. These conditions have been considered in the assessment.

8. Survey

8.1. Measurement Location

- 8.1.1. Fixed position monitoring took place to characterise the existing ambient and background sound levels in the area.
- 8.1.2. Attended measurements were made of the existing engine and rotor test facility in operation to inform the new test room design.
- 8.1.3. The unattended monitoring positions are shown in Figure 14.

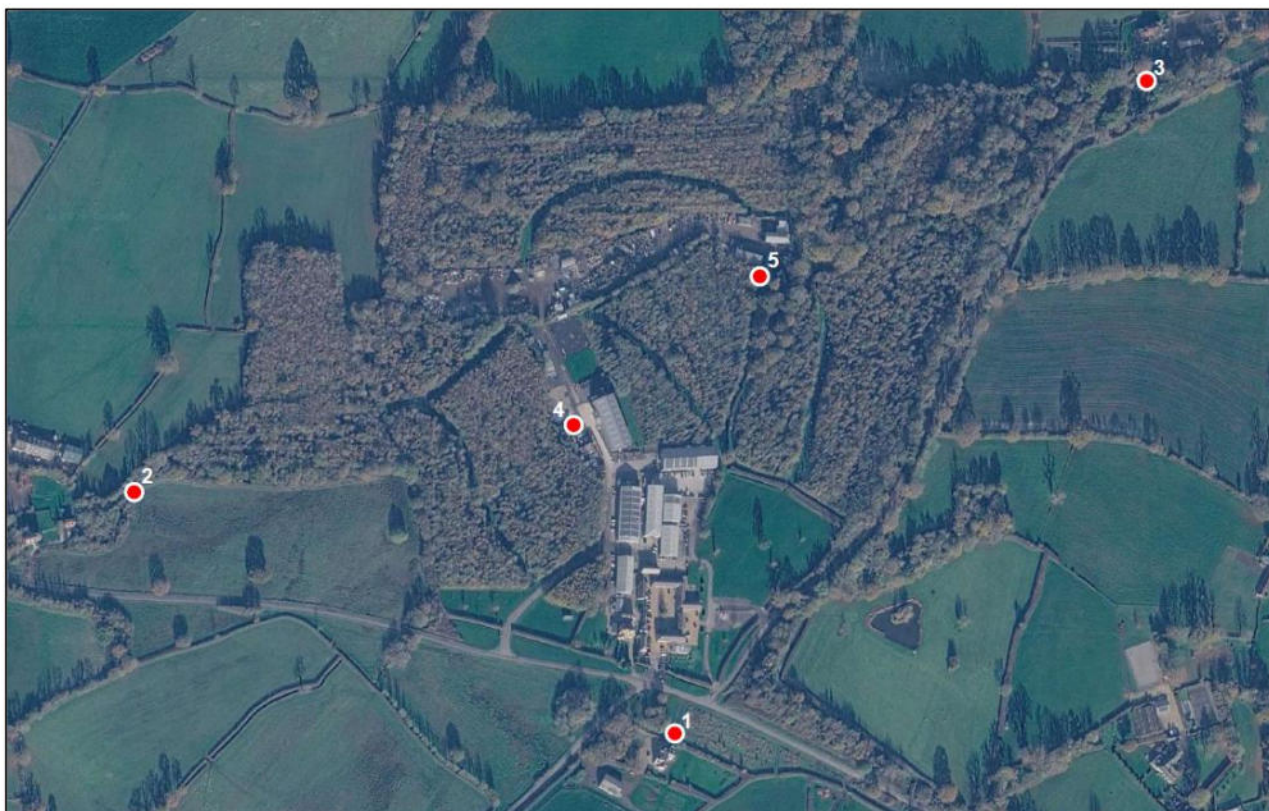


Figure 14 – Unattended noise monitoring locations on site

8.1.4. The attended monitoring positions are shown in Figure 15 and Figure 16.

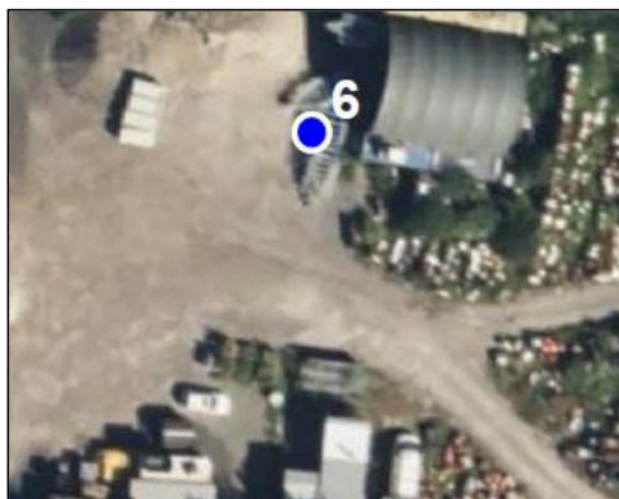


Figure 15 – Attended Monitoring Position 6

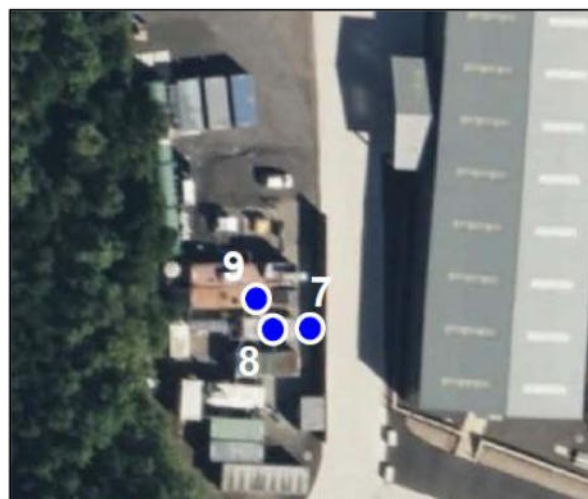


Figure 16 – Attended Monitoring Position 7, 8 & 9

8.1.5. A description of the noise monitoring locations has been summarised in Table 2.

Position	Description
1	Located to measure the existing ambient and background sound levels at a nearby residential property
2	Located to measure the existing ambient and background sound levels at a nearby residential property
3	Located to measure the existing ambient and background sound levels at a nearby residential property
4	Located to measure the noise egress from the existing test facility
5	Located to measure the existing ambient and background sound levels at the boundary of the development
6	Located to measure the sound pressure levels generated from an engine & prop shaft test (≈ 10 m from unit)
7	Located to measure the noise breakout from an engine test, approximately 1 m outside a test container
8	Located to measure the internal sound pressure levels from an engine test inside a test container
9	Located to measure the noise emissions from the extract fan at the duct termination

Table 2 – Descriptions of the noise monitoring locations

8.1.6. The measurement instrumentation used during the survey is detailed in the appendix. The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003⁷ before and after the surveys. The calibration details are also detailed in the appendix.

8.2. Noise Climate

8.2.1. At the time of the survey visits, the survey technician noted that the noise climate was typical of a rural area, characterised by low background sound levels with no dominant or intrusive noise sources, aside from occasional vehicular traffic on surrounding roads.

⁷ BS7445-1:2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures"

8.3. Measurement and Timescale

8.3.1. The measurements that have been made during the attended and unattended noise monitoring have been summarised in Table 3.

Monitoring Position	Date	Type	Quantity
1	18 th June 2026 – 24 th June 2026	Unattended	L_{AeqT} $L_{A90,T}$
2	18 th June 2026 – 24 th June 2026	Unattended	L_{AeqT} $L_{A90,T}$
3	18 th June 2026 – 24 th June 2026	Unattended	L_{AeqT} $L_{A90,T}$
4	18 th June 2026 – 24 th June 2026	Unattended	L_{AeqT} $L_{A90,T}$
5	18 th June 2026 – 24 th June 2026	Unattended	L_{AeqT} $L_{A90,T}$
6	28 th May 2026	Attended	$L_{Aeq,10sec}$
7	25 th June 2026	Attended	$L_{Aeq,30sec}$
8	25 th June 2026	Attended	$L_{Aeq,30sec}$
9	25 th June 2026	Attended	$L_{Aeq,30sec}$

Table 3 – Measurements made at the site of the Proposed Development

8.4. Meteorology

8.4.1. During the survey the weather information was noted. This is summarised in Table 4.

	28 th May 2026	18 th June 2026	24 th June 2026	25 th June 2026
Roads (Wet/Dry)	Dry	Dry	Dry	Dry
Wind Speed (ms^{-1})/Direction	4/S	5 / S	3 / S	5/E

Table 4 - Meteorological data noted during the survey

9. Results Summary

9.1. Unattended Survey

Average Sound Pressure Levels

9.1.1. The unattended average sound pressure levels measured have been summarised in Table 5.

Measurement location	Daytime dB, $L_{Aeq,16hr}$	Night-time dB, $L_{Aeq,8hr}$
1	49.1	44.6
2	49.1	44.3
3	56.5	47.8
4	54.9	49.7
5	49.8	41.1

Table 5 - Summary of the external sound pressure levels measured

Background Sound Levels

9.1.2. Figure 17 shows the results of the data analysis in terms of the frequency of occurrence of each data value during the daytime and the night-time respectively for each of the unattended monitoring positions.

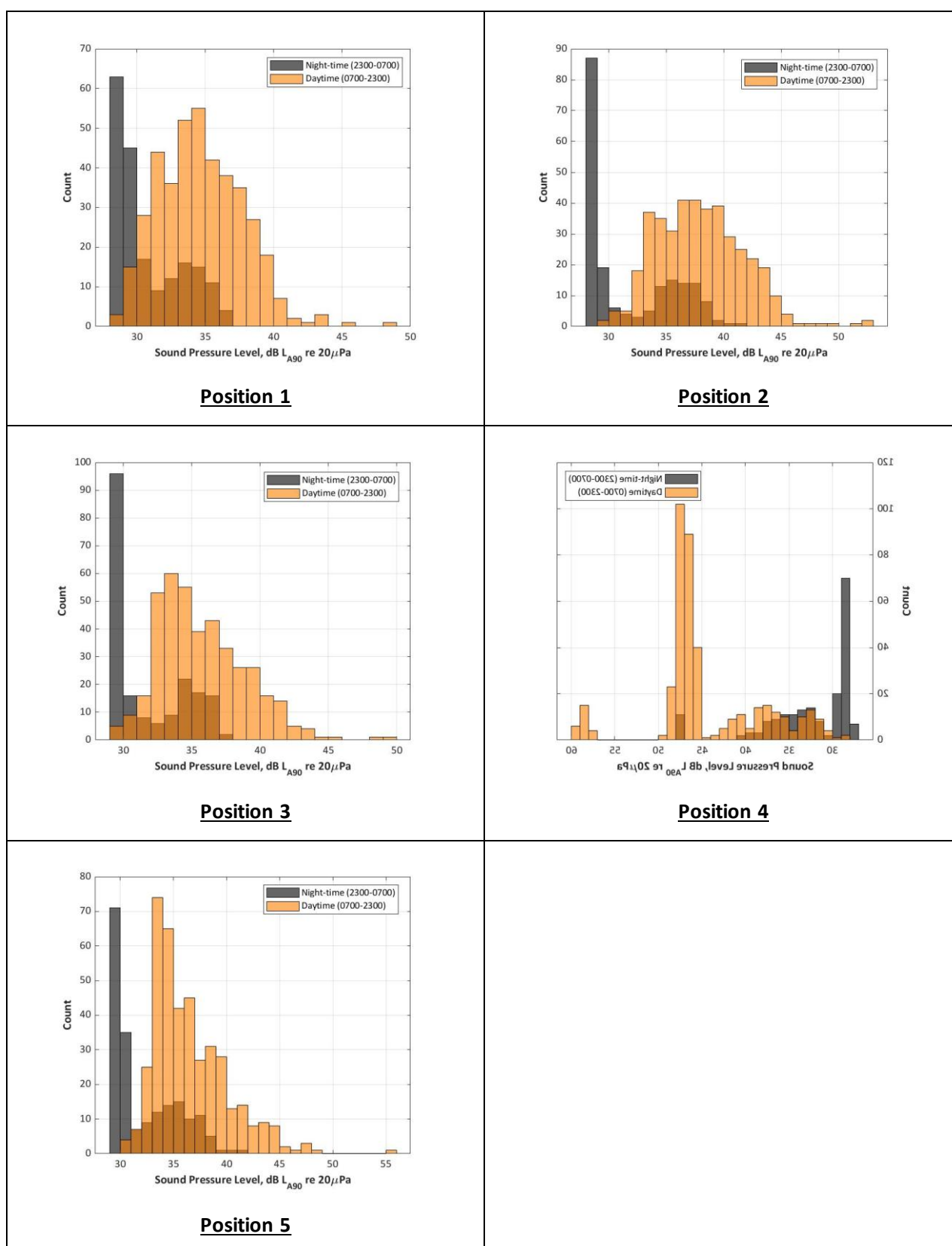


Figure 17 - Distribution of background sound levels during the daytime (0700-2300) and night-time (2300-0700) periods for each of the unattended monitoring positions

- 9.1.3. The typical background sound levels measured during the daytime and night-time at each of the positions have been summarised in Table 6.

Position	Daytime Period Range in dB(A)	Night-time Period Range in dB(A)	Typical Background Sound Levels dB L _{A90,T}	
			Daytime	Night-time
1	28-49	28-37	34	28
2	29-53	28-42	36	28
3	29-50	29-38	33	29
4	28-60	27-48	47	28
5	30-56	29-42	33	29

Table 6 – Summary of the typical background sound levels measured at each position

9.2. Attended Survey

- 9.2.1. The attended measurement results have been summarised in Table 7.

Position	Description	Measured levels in dB (A)
6	Engine & Prop Shaft Test	47 - 117
7	Engine Test Noise Breakout	73 - 85
8	Engine Test Internal Noise	94 - 123
9	Extract Fan Noise	82

Table 7 - Summary of the specific sound level measurements

- 9.2.2. It should be noted that during the attended measurements, the ambient sound pressure levels measured were dictated by the source being assessed, and therefore these have been taken to be representative of the specific sound level, with no correction for residual sound required.

10. 3D Noise Model

- 10.1.1. A 3D noise model has been constructed in SoundPLAN™ to determine the noise egress from the test room facility to other areas of the manufacturing plant process, together with the potential noise impact on nearby commercial and residential receptors. The internal sources have been calibrated to the upper-level values measured during the "Engine & Prop Shaft Test" and "Engine Test Internal Noise". It is understood that the building has no windows.
- 10.1.2. The internal sound pressure levels and noise breakout have been performed using the SoundPLAN™ Sound Particle Diffraction (SPD) model which is a geometrical (ray tracing) approach to predict the sound level assuming that the sound travels in straight lines.
- 10.1.3. The building element sound reductions built into the model have been summarised in Table 8.

Element	Source	Sound Reduction in dB							R _w
		63	125	250	500	1k	2k	4k	
Enhanced Lightweight Wall (Note 1)	INSUL Model (*See appendix)	23	41	54	64	73	62	71	62
Acoustic Vertical Door	See (Note 2)	47	46	49	54	59	64	67	58
Acoustic Door	See (Note 2)	46	45	48	53	58	63	66	57
Test Cell Wall (Note 3)	INSUL Model (*See appendix)	43	42	46	54	60	65	70	58
Test Cell Ceiling (Note 4)	INSUL Model (*See appendix)	41	37	46	55	60	74	85	57
Test Block External Wall (Note 5)	INSUL (*See appendix)	12	30	45	52	57	59	64	53
Lightweight Wall (Note 6)	INSUL (*See appendix)	15	20	38	47	53	56	50	45
Internal Room Ceiling (Note 7)	Noise Control in Buildings	15	18	25	37	39	45	45	37
Assembly Walls & Roof (Note 8)	INSUL Model (*See appendix)	13	16	21	24	20	25	42	24
Steel door single leaf without seal	SoundPLAN™ Library	9	12	13	14	16	18	24	17
Aluminium roller door	SoundPLAN™ Library	0	5	9	9	11	13	0	11

Note 1: 2x layers of 12.5mm Soundbloc either side of a double timber stud with a 200mm cavity and 25mm fibreglass (p:10 kg/m³)
 Note 2: Spectrum taken from Noise Control in Buildings "Acoustic Door" and adjusted to achieve Clark Acoustic R_w values (See appendix)
 Note 3: 225mm Concrete block (p:1905 kg/m³)
 Note 4: 150mm Concrete slab (p:2340 kg/m³) with a 225mm raised platform floor and rockwool infill p:33/kg/m³ (225mm total thickness).
 Note 5: Kingspan QuadCore KS1000 Rw Wall Panel + Lining & 200mm rockwool infill (33 kg/m³)
 Note 6: 2x layers of Gyproc Wallboard eitherside of a timber stud with a 75mm cavity and 25mm fibreglass (p:10 kg/m³)
 Note 7: Noise Control in Buildings Appendix 13B Sound Reduction Indices: T&G Boards, 12mm plasterboard ceiling under with 3mm plasterskim
 Note 8: Kingspan QQuadCore KS1000 80mm

Table 8 – Building element sound reductions (R_w)

- 10.1.4. The separating walls and door to the Office Space have been upgraded with the enhanced lightweight wall and acoustic door.
- 10.1.5. The absorption coefficients built into the model have been summarised in Table 9.

Element	Source	Absorption Coefficients					
		125	250	500	1k	2k	4k
Untreated wall and ceiling surfaces	SoundPLAN™ library	0.06	0.07	0.08	0.08	0.09	0.10
Suspended Ceiling	Noise Control in Buildings	0.25	0.55	0.85	0.85	0.75	0.75
Concrete	Noise Control in Buildings	0.02	0.02	0.02	0.04	0.05	0.05
Mineral Wool fixed to solid backing	Noise Control in Buildings	0.10	0.25	0.70	0.85	0.70	0.60
Plasterboard on studs	Noise Control in Buildings	0.30	0.15	0.10	0.05	0.04	0.05

Table 9 - Absorption Coefficients

- 10.1.6. The external sound pressure levels in the model have been calculated using the calculation procedure from ISO 9613-2 to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings. The terrain data has been taken from DEFRA. Open street maps and client plans have been used to create the buildings and walls.

10.1.7. The results of the model have been illustrated in Figure 18 and Figure 19.

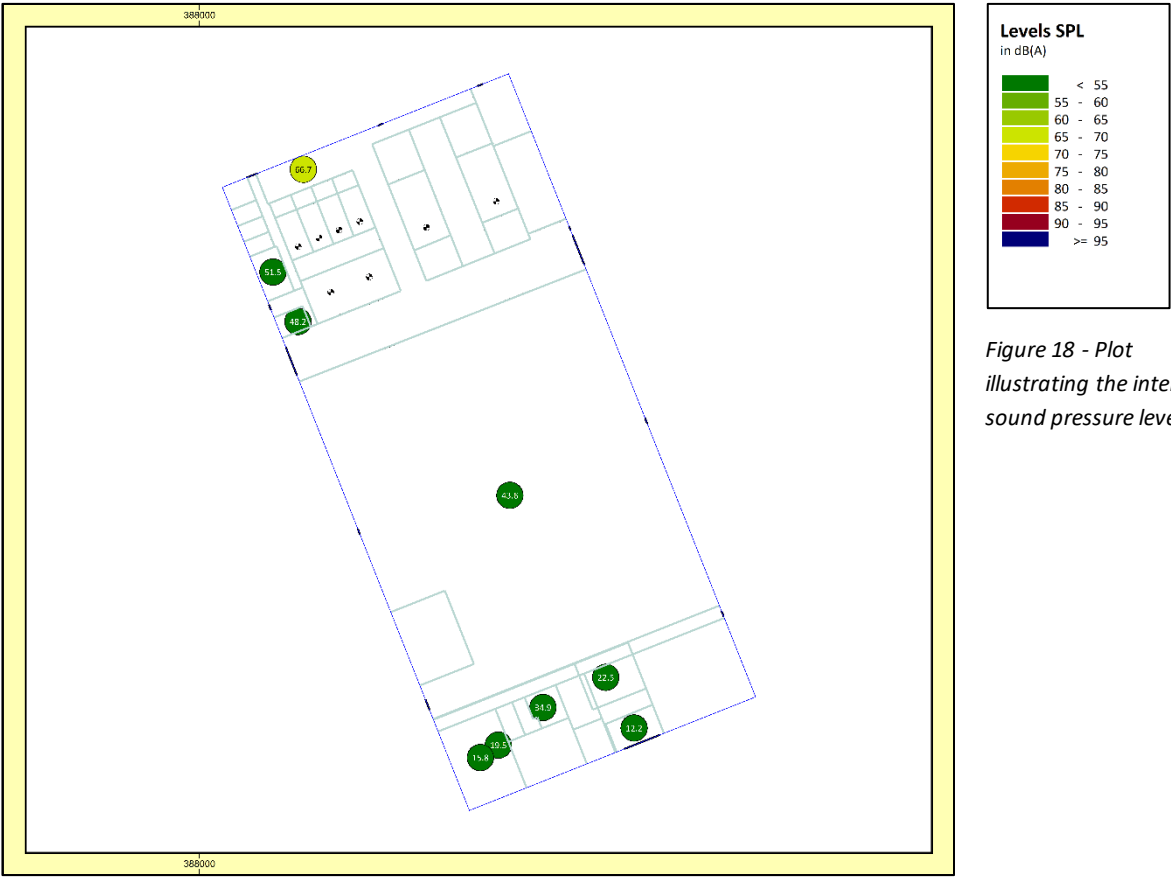


Figure 18 - Plot illustrating the internal sound pressure levels

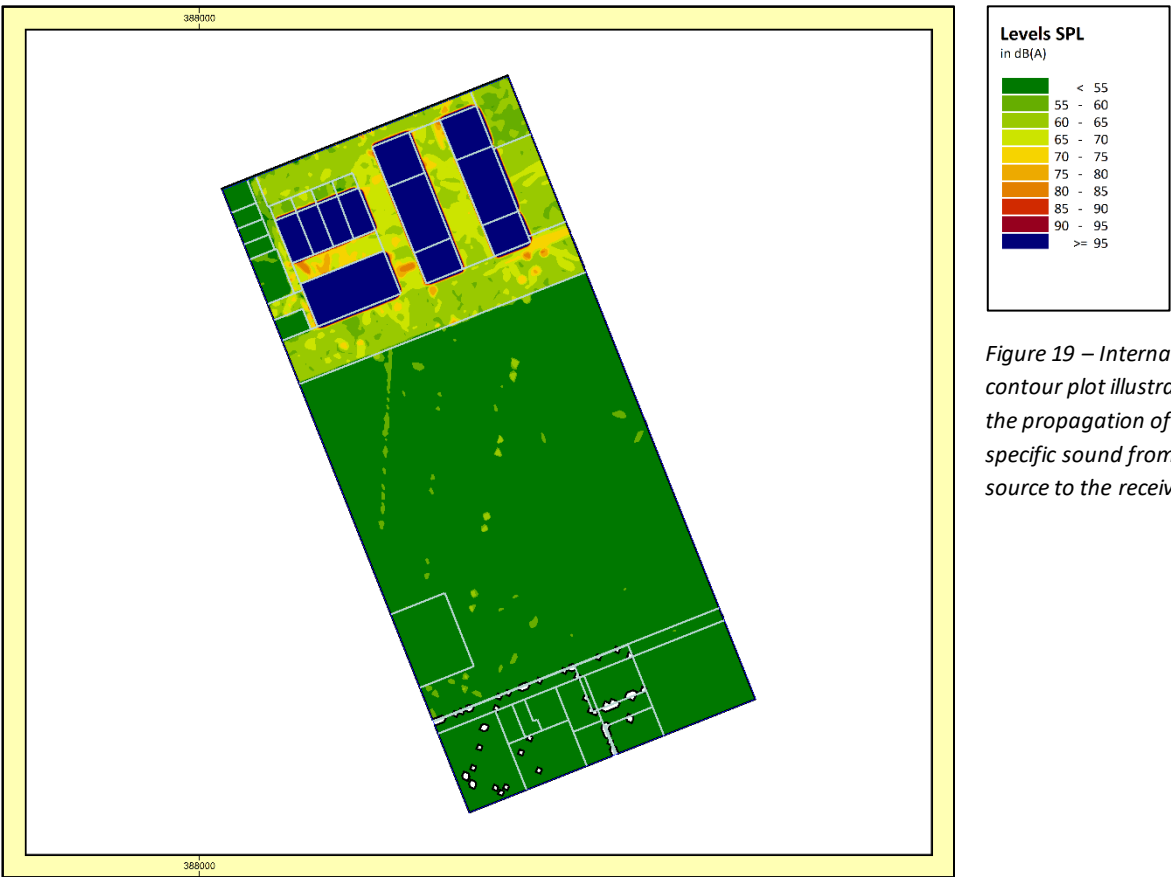


Figure 19 – Internal noise contour plot illustrating the propagation of the specific sound from the source to the receiver

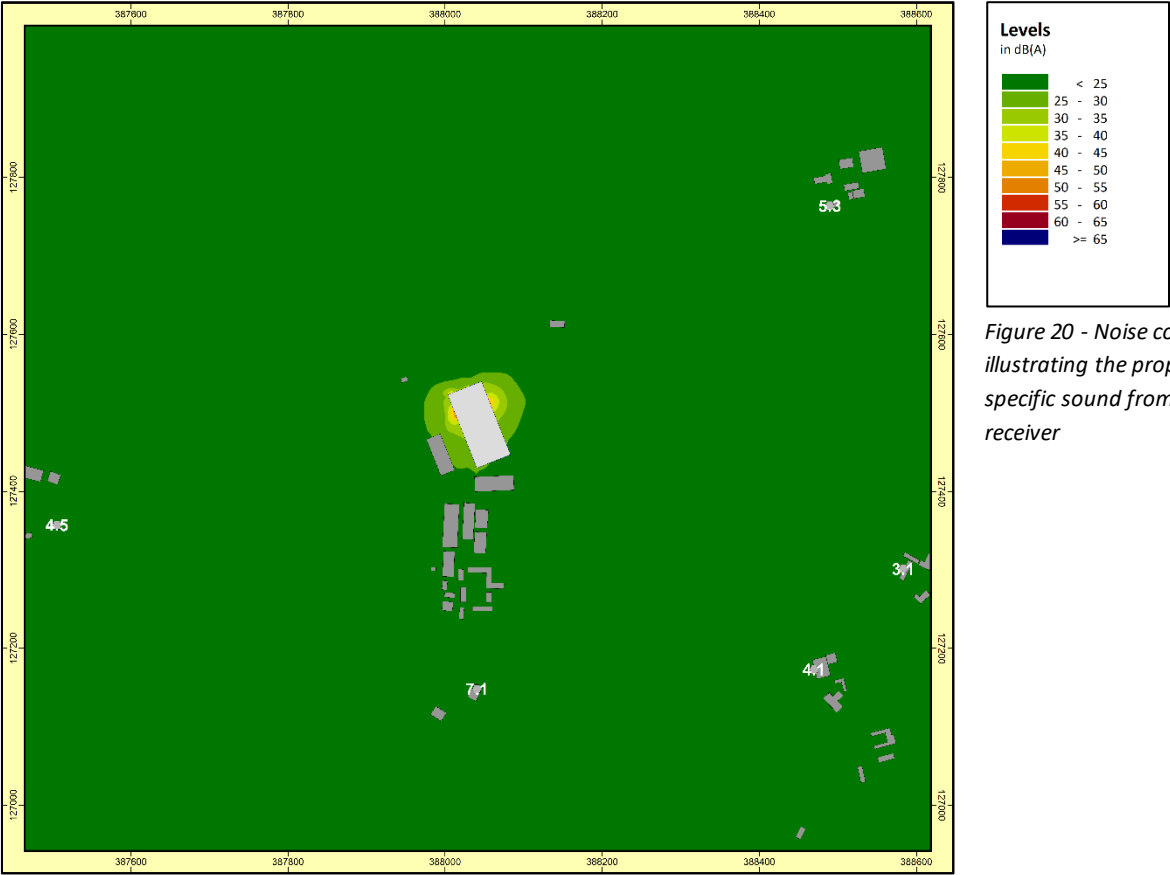


Figure 20 - Noise contour plot illustrating the propagation of the specific sound from the source to the receiver

11. Noise at Work Assessment

11.1.1. The following table assesses the predicted internal sound pressure levels against the exposure limit and action values prescribed under The Control of Noise at Work Regulations 2005 ("CNWR 2005").

Zone	Predicted Internal L_p in dBA	Outcome
Test Control Area	66.7	Below action values
Kitchen/ Break-Room	51.5	Below action values
Office	48.2	Below action values
Assembly area	43.6	Below action values
Manager Office	34.9	Below action values
Engine Assembly (Dirty)	22.5	Below action values
Engineer Assembly (Clean)	19.5	Below action values
Kitchen/Canteen	15.8	Below action values
Fettling Bay	12.2	Below action values

Table 10 – Predicted Internal Sound Pressure Levels Against CNWR 2005 Exposure Limit and Action Values

11.1.2. Table 10 shows that the internal sound pressure levels in areas where personnel are expected to operate within the Proposed Development are predicted to remain below the Lower Exposure Action Value (80 dB(A)) under The Control of Noise at Work Regulations 2005 ("CNWR 2005"). Operatives working in and around these areas are therefore not expected to be at risk of elevated noise exposure under CNWR 2005, and no specific noise control measures are required on this basis.

12. Internal Ambient Noise Level Assessment

12.1.1. The following table lists the rooms considered and assigns the internal guideline values based on the BS 8233 criteria and typical situations given for room type.

Room	BS 8233 Typical Situation	Criteria	Design Range $L_{Aeq,T}$ dB		Predicted Internal L_p in dBA	Achieves Criteria
			Good	Reasonable		
Test Control Area	Light Engineering	Reasonable industrial working conditions	65	75	66.7	✓
Assembly Area	Light Engineering	Reasonable industrial working conditions	65	75	43.6	✓
Engine Assembly (Dirty)	Light Engineering	Reasonable industrial working conditions	65	75	22.5	✓
Engine Assembly (Clean)	Light Engineering	Reasonable industrial working conditions	65	75	19.5	✓
Fettling Bay	Light Engineering	Reasonable industrial working conditions	65	75	12.2	✓
Kitchen/Break-Room	Kitchen/Canteen	Reasonable speech or telephone communications	50	55	51.5	✓
Kitchen/Canteen	Kitchen/Canteen	Reasonable speech or telephone communications	50	55	15.8	✓
Office	Cellular Office	Reasonable conditions for study and work requiring concentration	40	50	48.2	✓
Manager Office	Executive office	Reasonable conditions for study and work requiring concentration	35	40	34.9	✓

Table 11 - Internal Ambient Noise Level Assessment

12.1.2. Table 11 shows that the rooms are predicted to achieve the internal guideline values set out in BS 8233.

13. Internal Sound Insulation Assessment

13.1. Assembly Zones

- 13.1.1. The multiple assembly zones are expected to function as a singular, integrated workspace to facilitate continuous cross-traffic. Therefore, the sound insulation performance of the separating walls between these zones has been excluded.

13.2. Managers Office / Toilets

- 13.2.1. The manager's office shares a partition with the adjacent toilet area. The sound insulation performance of the separating wall has been considered for two reasons: the toilets are a potential source of mechanical/extract and sanitary noise which could affect concentration within the office, and confidential conversation within the office should not be intelligible from the adjoining toilet area.

13.3. Canteen/Toilets

- 13.3.1. The canteen shares a partition with the adjacent toilet facilities. These spaces are considered to be non-sensitive and therefore the sound insulation performance of the separating walls between these areas has been excluded

13.4. Office and Break Room

- 13.4.1. The office and break room are both enclosed by a buffer zone comprising the entrance lobby & corridors. (Noted: the break room also shares a partition with the lockers/change room. As these buffer spaces are transiently occupied, non-sensitive, and not associated with any significant internal noise source, the sound insulation performance of the separating walls between these areas has been excluded.

13.5. Separating floor

- 13.5.1. The sound insulation performance of the separating floor between the downstairs assembly zones and the upstairs manager's office has been evaluated, as the assembly areas represent a potential source of high internal noise that could disrupt concentration within the office.

13.6. Sound Insulation Performance Targets

- 13.6.1. Sound insulation performance targets have been derived from Table 3 of BS 8233:2014 and applied to the partitions where required, as shown in Table 12.

Privacy Requirement	Source Room	Activity noise of source room	Receive Room	Noise sensitivity of receiving room	Target Sound Insulation Performance ($D_{nT,w}$)
Separating Wall					
Not Private	Toilets	Typical	Manager Office	Sensitive	42
Separating Floor					
Not Private	Assembly Zones	High	Manager Office	Sensitive	47

Table 12 - Target sound insulation performances ($D_{nT,w}$)

- 13.6.2. Example details of proprietary wall and floor systems capable of achieving the Target D_{nTw} has been provided in Appendix.

13.7. Ventilation System

- 13.7.1. At this stage, the air ventilation requirements and air handling plant specifications are unknown. The recommendations below should therefore be reviewed and confirmed at detailed design stage, subject to further design development and client input.
- 13.7.2. To reduce the noise breakout from the ducted supply and extract systems serving the test rooms, the following measures are recommended:
- Install duct-mounted acoustic attenuators on supply and extract ductwork, close to the plant source and prior to breakout into occupied areas;
 - Apply acoustic lagging or internal lining to ductwork passing through or near noise-sensitive spaces;
 - Fit flexible connections between fans/plant and ductwork to limit vibration transmission;
 - Mount fans and rotating plant on anti-vibration mounts to reduce structure-borne noise;
 - Size ductwork to keep air velocities low, minimising aerodynamic noise at bends, branches, and terminals;
 - Select low-noise grilles and diffusers, and avoid excessive pressure drops at terminal units;
 - Ensure duct penetrations through partitions are acoustically sealed, avoiding direct breakout paths into sensitive areas.
- 13.7.3. Implementing these measures, particularly attenuation and lagging along duct routes serving noise-sensitive areas, will help ensure plant noise breakout does not adversely affect internal ambient noise levels.

14. Room Control Assessment

14.1. Reverberation Time

- 14.1.1. The following table lists the rooms considered and assigns their criteria based on the BS 8233 guideline values for reverberation time for good speech intelligibility. Room heights have been assumed to be a minimum of 2.4m.

Room	Room Volume (m3)	Reverberation Time (T) Criteria for Speech
Assembly Area	>2000	≤1.0
Engine Assembly (Clean)	≈765	0.7 - 0.9
Kitchen/Canteen	≈250	0.6 – 0.7
Engine Assembly (Dirty)	≈140	0.5 - 0.6
Break-Room	≈60	0.4 - 0.5
Fettling Bay	≈68	0.4 – 0.5
Manager Office	≈55	0.4 – 0.5
Office	≈30	≤0.4

Table 13 – Reverberation Time Assessment

- 14.1.2. To support good speech intelligibility and control reverberation, sound-absorptive finishes (such as acoustic ceiling tiles, wall panels, or baffles) are recommended, selected and positioned according to each room's volume and reverberation time target. Finishes should remain practical for their setting, particularly within the assembly and test areas where durability and ease of cleaning are important.
- 14.1.3. In occupied spaces such as the office, break-room, and canteen, softer furnishings and carpeting can further assist reverberation control. Larger volumes, such as the assembly and test facility, are likely to require greater absorptive treatment to ceiling and wall surfaces to achieve the target reverberation time, helping to limit background noise and support speech clarity.
- 14.1.4. These recommendations should be reviewed and confirmed at detailed design stage, subject to further design development and client input.

15. Noise Impact on nearby Commercial & Residential

- 15.1.1. The predicted external sound pressure levels have been compared to the measured background sound levels on site to determine the noise impact on nearby commercial and residential. The results have been summarised in Table 14. It should be noted that the Proposed Development is to operate within the daytime period (07:00–23:00); therefore, the assessment has been limited to the daytime period only.

Location	Typical Background Sound Levels dB LA90,T Daytime	Predicted External L _p in dB(A)	Level difference	Noise Impact
Commercial	47	≤30	17 dBA below	Negligible
Residential	33-36	≤7	26-29 dBA below	Negligible

Table 14 – Noise Impact on commercial and residential

- 15.1.2. Predicted external noise levels are 17 dB below the background sound level at the nearest commercial receptor and 26–29 dB below at the nearest residential receptor, indicating very low impact due to plant noise at the receptor and no significant contribution to the overall noise climate.

16. Conclusions

- 16.1.1. A desk-based study has been carried for a proposed industrial northern expansion at Chaldicotts Barns, Semley ("Proposed Development").
- 16.1.2. This report has provided acoustic design input and modelling for the Test Room facility, covering the separating walls, roof, access doors, and associated air ventilation system, to control noise egress and its impact on the nearby commercial and residential receptors. This assessment has been undertaken to address the requirements of BREEAM credit HEA 06.
- 16.1.3. All areas where personnel are expected to operate within the Proposed Development are predicted to remain below the Lower Exposure Action Value (80 dB(A)) under The Control of Noise at Work Regulations 2005 ("CNWR 2005"). Operatives working in and around these areas are therefore not expected to be at risk of elevated noise exposure under CNWR 2005, and no specific noise control measures are required on this basis.
- 16.1.4. Noise breakout from the Test Cells to other noise sensitive spaces within the building is also predicted to achieve the internal guideline values within industrial spaces (defined as dB $L_{Aeq,T}$) as set out in BS 8233⁸.
- 16.1.5. Predicted external noise levels are 17 dB below the background sound level at the nearest commercial receptor and 26–29 dB below at the nearest residential receptor, indicating very low impact due to plant noise at the receptor and no significant contribution to the overall noise climate.
- 16.1.6. Specification for absorptive treatment can be finalised once the rooms requiring good levels of speech communication have been finalised. Additional input may be required from the Client and or the BREEAM assessor to assist in identifying these areas.
- 16.1.7. Recommendations for the ducted supply and extract system (attenuation, lagging, and vibration isolation) have been provided; these should be reviewed once ventilation and plant specifications are confirmed at detailed design stage.
- 16.1.8. Where achieving noise criteria is identified to be at risk acoustic mitigation will be required and additional information and or discussions with the design team may be required to specify the treatment required.
- 16.1.9. Subject to implementation of the noise mitigation recommendations set out in this report, the development is considered capable of demonstrating compliance with the sound insulation, indoor ambient noise level and reverberation elements of BREEAM HEA 06 for the "All Other Buildings" category, in addition to demonstrating very low noise impact on nearby commercial and residential receptors.

⁸ 1999.

17. Appendix

APPENDIX A: Summary Information

Required ISO Test Report Information (cross referenced where required)			
		Measurements carried out to:	Analysed to:
A	Standards	BS 7445-1: 2003 BS 7445-2: 1991	BS 8233
B	Organisation performed the measurements	noise.co.uk Ltd, The Haybarn, Newnham Grounds, Kings Newnham Lane, Bretford, Coventry, CV23 0JU.	
C	Name of Client	Chaldicotts Ltd	
D	Full site address	Chaldicotts Barns Semley	
E	Date of surveys	Survey Date: 18 th June 2026 - 24 th June 2026 - 28 th May 2026 25 th June 2026	
F	Description & identification of Proposed Development	Noise egress from the test room facility to other areas of the manufacturing plant process, together with the potential noise impact on nearby commercial and residential receptors	
G	Brief Description of details of Procedure & equipment	See Section 8 of this report.	

APPENDIX B: Technical Appendix

17.1.1. Measurements were made using the following equipment:

Monitoring Position	Sound Level Meter (Serial Number)	Calibrator (Serial Number)
1	SoftdB Piccolo 2 (PO221070104)	BSWA CA114 (590010)
2	SoftdB Piccolo 2 (PO221070106)	BSWA CA114 (590010)
3	SoftdB Piccolo 2 (PO221070105)	BSWA CA114 (590010)
4	SoftdB Piccolo 2 (PO221070102)	BSWA CA114 (590010)
5	SoftdB Piccolo 2 (PO221070109)	BSWA CA114 (590010)
6 - 9	Norsonic 140 (1405560)	Norsonic 1251 (33824)

17.1.2. The equipment has traceable calibration. The sound level meter was calibrated immediately prior to and immediately after the measurements were carried out.

Sound Level Meter	Before	After
SoftdB Piccolo 2 (PO221070104)	94.0 dB	94.0 dB
SoftdB Piccolo 2 (PO221070106)	94.0 dB	94.0 dB
SoftdB Piccolo 2 (PO221070105)	94.0 dB	94.0 dB
SoftdB Piccolo 2 (PO221070102)	94.0 dB	94.0 dB
SoftdB Piccolo 2 (PO221070109)	94.0 dB	94.0 dB
Norsonic 140 (1405560)	114.0	114.0

Appendix C:

INSUL Sound Insulation Prediction

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

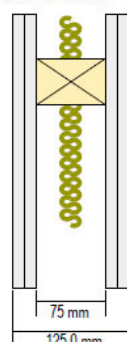
Job No.:

Page No.:

Date: 6 Aug 26

Initials:AdminSoundplan

File Name: Internal Wall.ixd

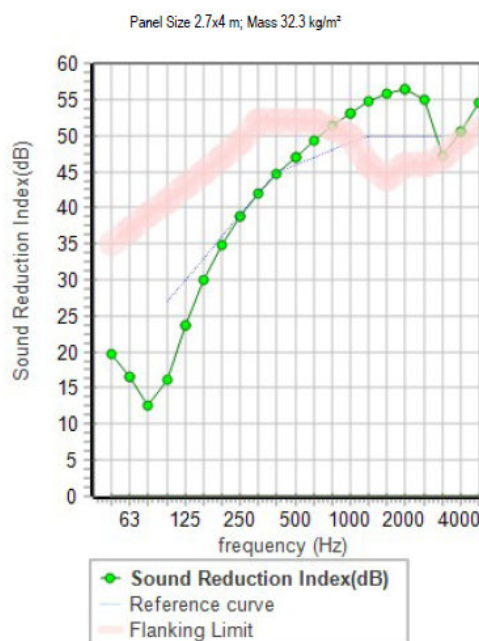

noise.co.uk
 noise and vibration consultants
 R_w 46 dB

C -4 dB

 C_{tr} -11 dB D_{nTw} 48 dB [v:50m]
[a:11m2]**System description**Panel 1 : 2 x 12.5 mm Gyproc Wallboard 12.5mm (ρ :640 kg/m³, E:1.6GPa, η :0.01, ρ_s :8 kg/m², f_c :3263 Hz)Cavity: Timber stud: Stud spacing 600 mm, Infill Fibreglass (10kg/m³) Thickness 25 mm (ρ :10 kg/m³, Rf:4000 Pa.s/m²)
Panel 2 : 2 x 12.5 mm Gyproc Wallboard 12.5mm (ρ :640 kg/m³, E:1.6GPa, η :0.01, ρ_s :8 kg/m², f_c :3262 Hz)

Mass-air-mass resonant frequency =68 Hz

frequency (Hz)	R(dB)	R(dB)
50	20	
63	17	15
80	13	
100	16	
125	24	20
160	30	
200	35	
250	39	38
315	42	
400	45	
500	47	47
630	49	
800	51	
1000	53	53
1250	55	
1600	56	
2000	56	56
2500	55	
3150	47	
4000	51	50
5000	55	



Enhanced Lightweight Wall

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

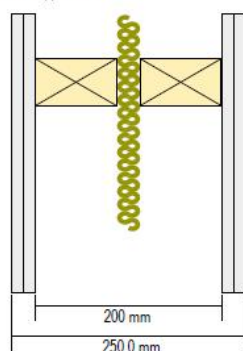
Job No.:

Page No.:

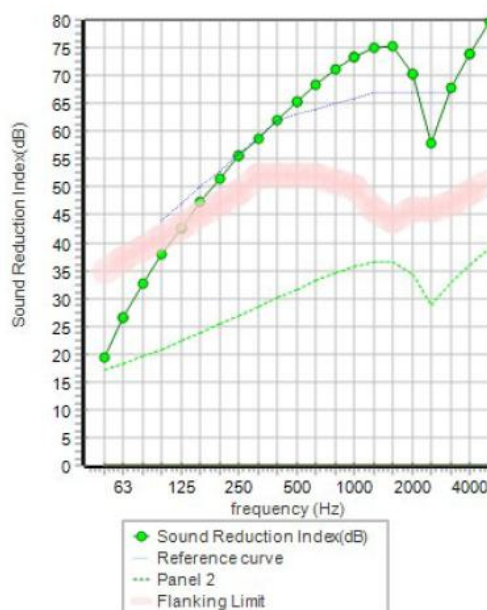
Date: 16 Sep 26

Initials: SoundPLANAdmin

File Name: Wall Type 4.ixl

 R_w 63 dB C -2 dB C_{tr} -8 dB D_{nTw} 65 dB[V:50m3]
[A:11m2]**System description**Panel 1 : 2 x 12.5 mm Gyproc SoundBloc 12.5mm (ρ :848 kg/m³, E :3.8GPa, η :0.01, ρ_s :10.6 kg/m², f_c :2462 Hz)Cavity: Double timber stud: Stud spacing 600 mm, Infill Fibreglass (10kg/m³) Thickness 25 mm (ρ :10 kg/m³, R_f :4000 Pa.s/m²)
Panel 2 + 2 x 12.5 mm Gyproc SoundBloc 12.5mm (ρ :848 kg/m³, E :3.8GPa, η :0.01, ρ_s :10.6 kg/m², f_c :2462 Hz)Mass-air-mass resonant frequency $\approx$ 35 Hz

frequency (Hz)	R (dB)	R (dB)
50	19	
63	27	23
80	33	
100	38	
125	43	41
160	47	
200	52	
250	56	54
315	59	
400	62	
500	65	64
630	68	
800	71	
1000	73	73
1250	75	
1600	75	
2000	70	62
2500	58	
3150	68	
4000	74	71
5000	80	

Panel Size 2.7x4 m; Mass 42.7 kg/m²

Test Cell Walls

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

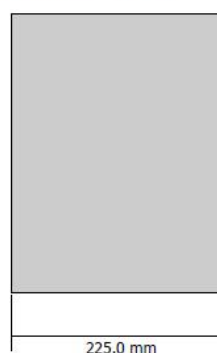
Job No.:

Page No.:

Date: 16 Sep 26

Initials: SoundPLANAdmin

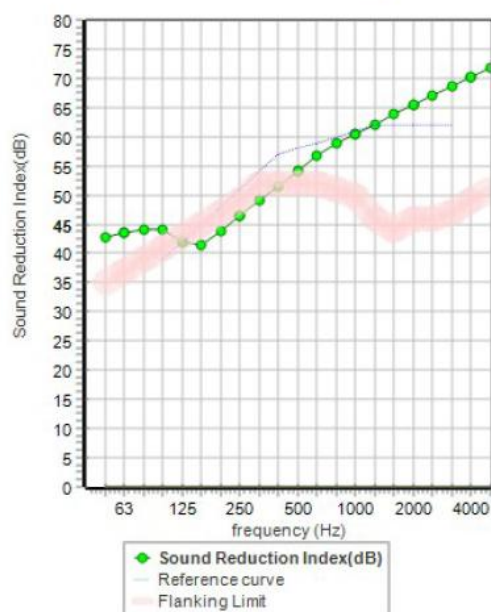
File Name: 225mm Concrete block.ixl



R_w 58 dB
 C -2 dB
 C_{tr} -6 dB
 D_{nTw} 60 dB [V:50m3]
[A:11m2]

System descriptionPanel 1 : 1 x 225.0 mm mm Concrete Block (ρ :1905 kg/m³, E :8.6 GPa, η :0.04, ρ_s :429 kg/m², f_c :135 Hz)

frequency (Hz)	R(dB)	R(dB)
50	43	
63	43	43
80	44	
100	44	
125	42	42
160	41	
200	44	
250	46	46
315	49	
400	52	
500	54	54
630	57	
800	59	
1000	61	60
1250	62	
1600	64	
2000	65	65
2500	67	
3150	69	
4000	70	70
5000	72	

Panel Size 2.7x4 m; Mass 428.6 kg/m²

Test Cell Ceiling

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

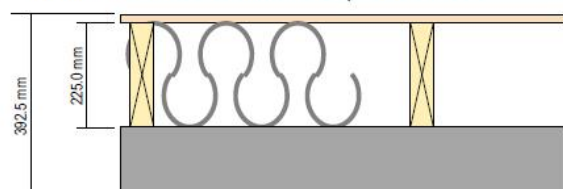
Job No.:

Page No.:

Date: 15 Sep 26

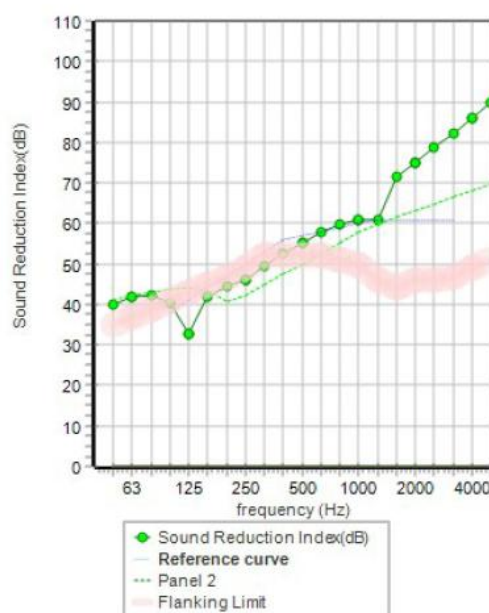
Initials: SoundPLANAdmin

File Name: 150mm concrete with 3x 75mm layers of rockwool.ixl

 R_w 57 dB C -2 dB C_{tr} -7 dB D_{nTw} 59 dB[V:50m3]
[A:11m2]**System description**Panel 1 : 1 x 17.5 mm Plywood (ρ :560 kg/m³, E :4.4 GPa, η :0.01, ρ_s :9.8 kg/m², f_c :1327 Hz)Cavity: Solid joist (timber or Twinplate): Stud spacing 600 mm, Infill: Rockwool (33 kg/m³) Thickness 225 mm (ρ :33 kg/m³, R_f :13400 Pa.s/m²)Panel 2 + 1 x 150.0 mm Concrete (ρ :2340 kg/m³, E :11 GPa, η :0.04, ρ_s :351 kg/m², f_c :199 Hz)

Mass-air-mass resonant frequency =35 Hz

frequency (Hz)	R (dB)	R (dB)
50	40	
63	42	41
80	42	
100	40	
125	33	37
160	42	
200	44	
250	46	46
315	50	
400	53	
500	55	55
630	58	
800	60	
1000	61	60
1250	61	
1600	71	
2000	75	74
2500	79	
3150	82	
4000	86	85
5000	90	

Panel Size 2.7x4 m; Mass 368.2 kg/m²

Kingspan KS1000RW

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

Job No.:

Page No.:

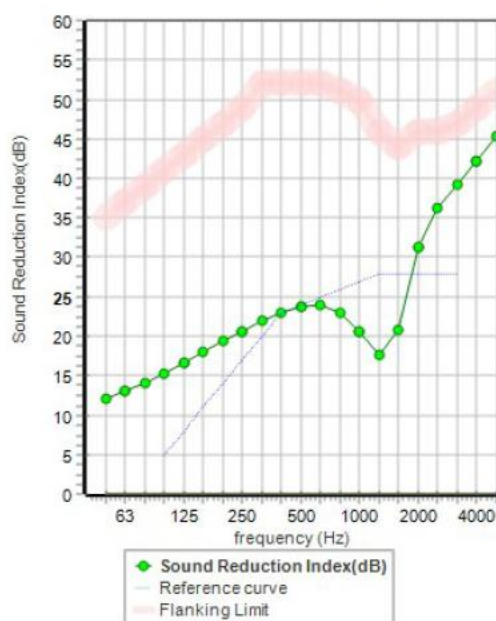
Date: 16 Sep 26

Initials: SoundPLANAdmin

File Name: 23588-1 Kingspan KS1000RW.ixl

 R_w 24 dB C -2 dB C_{tr} -3 dB D_{nTw} 26 dB [V:50m3]
[A:11m2]**System description**Panel 1 : 1 x 79.9 mm Kingspan KS1000 RW 80/100/120mm (ρ :7800 kg/m³, E :2.1E02 GPa, η :0.12, ρ_s :3.9 kg/m², f_c :2.5E4 Hz)

frequency (Hz)	R (dB)	R (dB)
50	12	
63	13	13
80	14	
100	15	
125	17	16
160	18	
200	19	
250	21	21
315	22	
400	23	
500	24	24
630	24	
800	23	
1000	21	20
1250	18	
1600	21	
2000	31	25
2500	36	
3150	39	
4000	42	42
5000	45	

Panel Size 2.7x4 m; Mass 11.0 kg/m²

Sound Insulation Prediction (v8.0.12)

Program copyright Marshall Day Acoustics 2015

- Key No. 2560

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Notes:

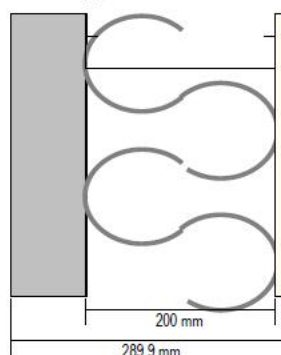
Job No.:

Page No.:

Date: 2 Jul 26

Initials: SoundPLANAdmin

File Name: 23588-1 Kingspan KS1000RW + 200mm Rockwool.ixl



R_w	53 dB
C	-4 dB
C_{tr}	-11 dB
D_{nTw}	55 dB

System description

Panel 1 : 1 x 79.9 mm Kingspan KS1000 RW 80/100/120mm (ρ :7800 kg/m³, E :2.1E02 GPa, η :0.12, ρ_s :3.9 kg/m², f_c :2.5E4 Hz)

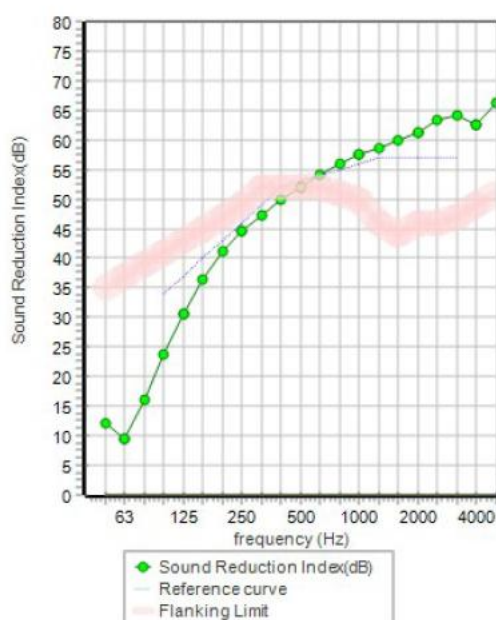
Cavity: Steel stud (0.55mm): Stud spacing 600 mm, Infill Rockwool (33kg/m³) Thickness 200 mm (ρ :33 kg/m³, R_f :13400 Pa.s/m²)

Panel 2 + 1 x 10.0 mm mm Plasterboard (ρ :710 kg/m³, E :2GPa, η :0.01, ρ_s :7.1 kg/m², f_c :3865 Hz)

Mass-air-mass resonant frequency =55 Hz

frequency (Hz)	R(dB)	R(dB)
50	12	
63	9	12
80	16	
100	24	
125	31	28
160	36	
200	41	
250	45	44
315	47	
400	50	
500	52	52
630	54	
800	56	
1000	57	57
1250	59	
1600	60	
2000	61	61
2500	63	
3150	64	
4000	63	64
5000	66	

Panel Size 2.7x4 m; Mass 24.7 kg/m²



Appendix D: Manufactures and referenced data

Noise Control in Buildings Spectrum

Element	Source	Sound Reduction in dB							R _w
		63	125	250	500	1k	2k	4k	
Acoustic Door	Noise Control in Buildings	37	36	39	44	49	54	57	48

Clark Acoustic Products

Website link: [Acoustic Doors | Industrial Sliding Soundproof Door Manufacturers](#)



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Vertical Sliding Acoustic Doors



The Clark Vertical Sliding Acoustic Door is a counter-weighted system designed for reliable and safe performance, making it especially suitable for corridors and spaces that have limited side room but ample headroom. Moreover, this design is ideal for applications where floor space must be kept clear.

Design

Furthermore, the vertical sliding system provides a completely unobstructed clear opening access, which makes it well-suited to demanding environments such as film studios, theatres, and music venues where both *high acoustic performance* and *fire resistance* are essential.

In addition, this smooth and quietly operating vertical sliding door is available with **acoustic performance up to rw 58 db** and it can be supplied with an optional two-hour fire rating to BS EN 1634-1 or other international fire standards.



Clark Steelman® Steel Hinged Acoustic Doors



Clark Steelman® steel hinged doors can provide high-performance acoustic, security and fire-rated properties. Additionally, they offer a mechanically robust, long life solution to closing a doorway to give easy, simple access.

Clark Door manufactures an extremely wide variety of steel hinged doors to suit nearly every requirement, with a wide variety of door furniture and locking systems.

Our acoustic doors provide exceptional soundproofing, with solutions ranging up to **Rw 57dB for maximum attenuation**, Rw 50dB for high performance, and Rw 40dB for medium sound reduction, all available with various fire ratings.

Acoustic Steel hinged doors are usually fitted into the opening, meaning that the door frame reduces the opening size by a small amount. They require space in the building in the direction of swing but offer a cost effective option to main doorway access requirements.

The standard finish consists of a factory applied polyester powder coat paint, in your choice of RAL colours; eliminating the time and labour of in-field priming and painting. Powder coating creates a hard finish that is tougher than conventional paint. A marine paint spec is also available on request, E.G for coastal locations.

In addition to fire and acoustic rated Steel Hinged doors, Clark Door now offers EMI/RFI Shielding to exacting customer requirements. Clark Door has provided doors with shielding from potential electromagnetic (EMI), and radio frequency (RFI), interference to protect assets, personnel, and the environment on varied applications including high voltage electrical substations, transmission buildings, as well as EMC chambers.

We provide acoustic pivot doors up to Rw 35 dB, visit our [Pivot Doors](#) page for more information.

Applications for Clark steel hinged doors:

- Acoustic

Appendix D: Example Constructions

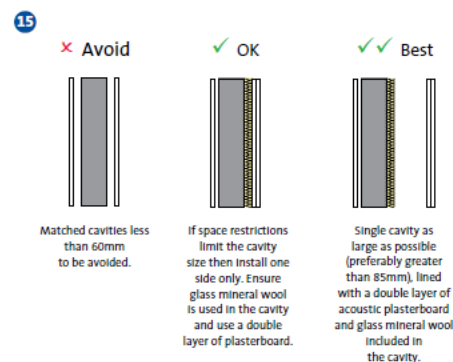
Separating wall (Target - 42 dB $D_{nT,w}$)

Technical performance and principles of system design

Building acoustics (continued)

critical low frequency zone. If a small cavity is required, one side only should be lined with a double layer of plasterboard. Optimum performance is achieved by lining one side only and having a cavity depth of at least 85mm.

► Refer to C02: S01, P32 for more information on service voids.



Optimum design of panel linings for C_{tr}

To increase the sound insulation of new or existing masonry walls, **Gyplyner** wall lining systems can be used in conjunction with Isover insulation and Gyproc plasterboard. The cavity depth of the **Gyplyner** lining should be as large as possible, and small, identical sized cavities to either side of the wall should be avoided.

For lightweight separating floors, partially de-coupling the plasterboard ceiling from the floor structure, using Gypframe RB1 Resilient Bars, helps to achieve the required performance. Floating floor treatments, for example timber battens, should have a cavity depth of at least 70mm to avoid low frequency resonance effects in the critical low frequency zone. Performance can be further enhanced by specifying Gyproc Plank within the walking surface.

Floating floor and resilient bar ceiling systems should be tested in a UKAS laboratory to ensure good low frequency performance. The Robust Details handbook outlines a benchmarking procedure for this purpose (robustdetails.com) to support specification of such systems to meet the requirements for new-build residential construction.

A method of determining the achievable site $D_{nT,w} + C_{tr}$ performance is to refer to a laboratory $R_w + C_{tr}$ rating. Depending on the wall specification, a minimum drop of 4dB is typical when comparing $R_w + C_{tr}$ and $D_{nT,w} + C_{tr}$. However, we recommend that a safety margin of + 9dB should be used to reduce the risk of failure to comply with Building Regulations. This assumes all flanking paths are appropriately detailed, ideal site lay-out exists and a high quality of workmanship is applied.

For purpose-built dwelling houses and flats requiring $D_{nT,w} + C_{tr}$ 45dB for separating walls, separating floors and stairs, we recommend specifications capable of achieving $R_w + C_{tr}$ 54dB.

For purpose-built rooms for residential purposes requiring $D_{nT,w} + C_{tr}$ 43dB for separating walls, and $D_{nT,w} + C_{tr}$ 45dB for separating floors and stairs, we recommend specifications capable of achieving $R_w + C_{tr}$ 52dB for separating walls, and $R_w + C_{tr}$ 54dB for separating floors and stairs.

For dwelling houses, flats and rooms for residential purposes formed by material change of use requiring $D_{nT,w} + C_{tr}$ 43dB for separating walls, separating floors and stairs, we recommend the use of specifications that are capable of achieving $R_w + C_{tr}$ 52dB. Refer to table 10 for more information.

Achieving a $D_{nT,w}$ performance on site

Similar to the principles of achieving a $D_{nT,w} + C_{tr}$ performance on site, a realistic safety margin should be incorporated when designing to meet a $D_{nT,w}$ requirement, to reduce the risk of failure. We recommend a safety margin of + 7dB when comparing site performance, $D_{nT,w}$ to laboratory performance, R_w .

For example, to comply with Scottish Technical Handbook Section 5 in Scotland for a requirement of $D_{nT,w}$ 56dB, a system capable of achieving R_w 63dB under laboratory conditions should be specified. Refer to table 11 for more information.

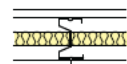
Achieving a $L'_{nT,w}$ performance on site

A minimum reduction of 5dB is typical when comparing site performance, $L'_{nT,w}$ to laboratory performance, $L_{n,w}$. However, when designing separating floors to reduce the risk of impact sound flanking transmission, in particular timber joist, the walking surface should be de-coupled from the joists, for example using **GypFloor SILENT** or a battens floating floor system. This is in addition to the de-coupling of the ceiling, using **CasoLine MF** ceiling or Gypframe RB1 Resilient Bar, for example.

Therefore, in some cases the safety margin in the laboratory for timber joist separating floors is likely to be in the region of + 10dB, rather than the typical minimum + 5dB for concrete floors.

Up to:
 R_w 50 dBSolutions up to R_w 50 dB

1



One layer of board each side of Gypframe 70 AS 50 AcouStuds. 25mm Isover APR 1200 in the cavity. Linings as in table.

2



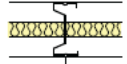
One layer of board each side of Gypframe 92 S 50 C Studs at 600mm centres. 25mm Isover APR 1200 in the cavity. Linings as in table.

3



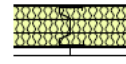
One layer of board each side of Gypframe 92 S 50 C Studs at 600mm centres. 50mm Isover APR 1200 in the cavity. Linings as in table.

4



One layer of board each side of Gypframe 92 AS 50 AcouStuds. 25mm Isover APR 1200 in the cavity. Linings as in table.

5



One layer of board each side of Gypframe 70 AS 50 AcouStuds. 3 x 25mm Isover APR 1200 in the cavity. Linings as in table.

Heavy

Table 2.6 - GypWall classic specification solutions up to R_w 50 dB

Heavy	System name (GypWall)	Board type	Available with ACTIVair technology ²	Lining thickness mm	Sound insulation R _w dB		Partition thickness mm	Approx. weight kg/m ²	Max. partition height (mm) BS EN ¹		System reference	
					Any finish ⁴	Skim only ⁵					Any finish ⁴	Skim only ⁵
	30 minutes fire resistance ² EN BS											
1	CLASSIC	SoundBloc		1 x 15	48		102	26	4000	4000	A206A253	
2	CLASSIC	SoundBloc		1 x 15	49	50	124	27	4700	4000	A206262	A206262S
3	CLASSIC	SoundBloc		1 x 15	50	51	124	27	4700	4000	A206263	A206263S
4	CLASSIC	SoundBloc		1 x 15	50	51	124	27	4900	4000	A206A282	A206A282S
60 minutes fire resistance ² EN BS												
1	CLASSIC	SoundBloc F		1 x 15	48		102	27	4000	4000	A206A302	
2	CLASSIC	SoundBloc F		1 x 15	49	50	124	27	4700	4000	A206306	A206306S
5	CLASSIC	SoundBloc F		1 x 15	50	51	102	27	4000	3000	A206A304	A206A304S

¹ The maximum heights quoted are limited by the fire state field of application or by limiting deflection of L/240 at 200 Pa, whichever is the more onerous.

² Please see Severe Duty solutions overleaf for 60, 90 and 120 minute fire resistant solutions.

³ These systems have an ACTIVair board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the Indoor air quality section in Background and theory.

⁴ Sound insulation performance for partitions finished using jointing or plaster skim.

⁵ Sound insulation performance for partition finished with a 2mm skim finish of Thistle Multi-Finish.

Solutions up to R_w 50 dB



- 1** One layer of board each side of Gypframe 70 S 60 'C' Studs at 600mm centres. 50mm Isover APR 1200 in the cavity. Linings as in table.
- 2** One layer of board each side of Gypframe 70 S 60 'C' Studs at 600mm centres. 60mm Isover **ULTIMATE** Piano Plus 20 kg/m³ in the cavity.
- 3** One layer of board each side of Gypframe 70 S 60 'C' Studs at 600mm centres. 80mm Isover Modular Roll in the cavity. Linings as in table.
- 4** Two layers of board each side of Gypframe 70 S 50 'C' Studs at 600mm centres. Linings as in table.
- 5** Two layers of board each side of Gypframe 70 S 50 'C' Studs at 600mm centres. 25mm Isover APR 1200 in the cavity. Linings as in table.
- 6** One layer of board each side of Gypframe 92 S 60 'C' Studs at 600mm centres. 25mm Isover APR 1200 in the cavity. Linings as in table.
- 7** One layer of board each side of Gypframe 70 AS 50 AcouStuds at 600mm centres. 25mm Isover APR 1200 in the cavity. Linings as in table.
- 8** Two layers of board each side of Gypframe 70 AS 50 AcouStuds at 600mm centres. Linings as in table.
- 9** One layer of board each side of Gypframe 92 AS 50 AcouStuds at 600mm centres. 25mm Isover APR 1200 in the cavity. Linings as in table.

Selecting
partitions

Up to:
 R_w 50 dB

Severe

Table 2.7 - GypWall CLASSIC and ROBUST specification solutions up to R_w 50 dB

System name (GypWall)	Board type	Available with ACTIVair technology ²	Lining thickness mm	Sound insulation R_w dB	Partition thickness mm	Approx. weight kg/m ²	Max. partition height (mm) BS	System reference
				Any finish ⁴ Skim only ⁵				Any finish ⁴ Skim only ⁵
60 minutes fire resistance EN BS								
7	ROBUST	DuraLine	1 x 15	48	102	29	4000	Q606A044 Q606A044S
6	ROBUST	DuraLine	1 x 15	48	124	29	4900	A206258 A206258S
5	CLASSIC	WallBoard	2 x 12.5	49	122	35	4600	A206047
4	CLASSIC	SoundBloc	2 x 12.5	49	122	43	4600	A206166
3	ROBUST	DuraLine	1 x 15	50	102	29	4000	Q606047
9	ROBUST	DuraLine	1 x 15	50	124	29	4900	A206A278 A206A278S
120 minutes fire resistance EN BS								
8	CLASSIC	FireLine	2 x 12.5	49	49	40	4600	A206A079 A206A079S

¹ The maximum heights quoted are limited by the fire state field of application or by limiting deflection of L/240 at 200 Pa, whichever is the more onerous.

² 30 minutes fire resistance to BS EN 1364-7: 1999.

³ These systems have an ACTIVair board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the indoor air quality section in Background and theory.

⁴ Sound insulation performance for partitions finished using jointing or plaster skim.

⁵ Sound insulation performance for partitions finished with a 2mm skim finish of Thistle Multi-Finish.

Severe plus

Table 2.8 - GypWall EXTREME specification solutions up to R_w 50 dB

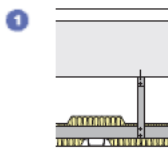
System name (GypWall)	Board type	Available with ACTIVair technology ²	Lining thickness mm	Sound insulation R_w dB	Partition thickness mm	Approx. weight kg/m ²	Max. partition height (mm) BS	System reference
30 minutes fire resistance EN BS								
1	EXTREME	Rigidur H	1 x 12.5	49	97	30	3800	X606011
60 minutes fire resistance EN BS								
2	EXTREME	Rigidur H	1 x 12.5	49	97	30	3800	X606012

¹ The maximum heights quoted are limited by the fire state field of application or by limiting deflection of L/240 at 200 Pa, whichever is the more onerous.

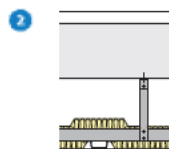
² These systems have an ACTIVair board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the indoor air quality section in Background and theory.

Separating Floor (Target – 47 dB DnT,w)

Solutions for concrete floors - dense slab



Minimum 25mm screed. Dense concrete minimum 365kg/m³.
CasoLine MF ceiling suspended beneath to give a 250mm cavity. 80mm Isover Modular Roll in cavity. Linings as in table.



Minimum 25mm screed. Dense concrete minimum 365kg/m³.
CasoLine MF ceiling suspended beneath to give a 250mm cavity. 80mm Isover Modular Roll in cavity. Linings as in table.

Table 5.1 - CasoLine MF

Detail	Board type	Available with ACTIVair technology ³	Ceiling lining thickness mm	R _w (Airborne) dB	Sound insulation L _{n,w} (Impact) dB	System reference
1	SoundBloc		1 x 12.5	62 ¹	53 ²	C100033
2	FireLine ²		2 x 12.5	63 ¹	50 ²	C100032

¹ These performances are estimates based on the guidelines given in BS 8233: 1999 and similar constructions tested by British Gypsum.

² 30 minutes fire resistance is provided by Gyproc FireLine. For fire performance of the system please contact your concrete block supplier.

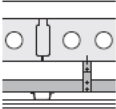
³ These systems have an ACTIVair board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the Indoor air quality section in Background and theory.

NB Concrete floors are inherently fire resisting and don't usually require a contribution from a ceiling lining. Advice should be sought from the supplier for fire resistance provided by the concrete.

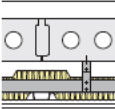
NB The ceiling cavity is the distance from the underside of the structural soffit to the back of the plasterboard ceiling lining.

Solutions for concrete floors - precast concrete planks

1



2



Screed, pre-cast concrete planks (300kg/m³). **CasoLine MF** ceiling suspended beneath to give a 140mm cavity. Linings as in table.

Screed, pre-cast concrete planks (300kg/m³). **CasoLine MF** ceiling suspended beneath to give a 140mm cavity. 80mm Isover Modular Roll in cavity. Linings as in table.

Table 5.2 - CasoLine MF and GypFloor SB								
Detail	Board type	Available with ACTIVair technology ¹	Ceiling lining thickness mm	Concrete plank thickness mm	Concrete plank weight kg/m ²	Sound insulation		System reference
						R _w (Airborne) dB	L _{n,w} (Impact) dB	
1	SoundBloc		2 x 12.5	150	300	54	57	C100035
2	SoundBloc		2 x 12.5	150	300	66	57	C10003

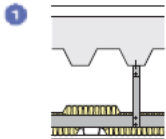
¹ These systems have an **ACTIVair** board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains **ACTIVair** technology. Refer to the Indoor air quality section in Background and theory.

- NB

The fire resistance performance is provided by the concrete plank, advice should be sought from the supplier.
- NB

The ceiling cavity is the distance from the underside of the structural soffit to the back of the plasterboard ceiling lining.

Solutions for concrete floors - trapezoidal decking



100mm thick concrete slab (2,200 kg/m³). Steel decking sheets.
CasoLine MF ceiling suspended beneath to give a 250mm cavity.
80mm Isover Modular Roll in cavity. Linings as in table.

Table 5.3 - CasoLine MF

Detail	Board type	Available with ACTIVair technology ¹	Ceiling lining thickness mm	Concrete slab density kg/m ³	Sound insulation R _w (Airborne) dB	Sound insulation L _{n,w} (Impact) dB	System reference
1	SoundBloc		1 x 12.5	2200	62	53	C100037

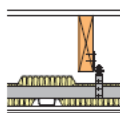
¹ These systems have an ACTIVair board option available for formaldehyde control to improve indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the indoor air quality section in Background and theory.

NB The fire resistance performance is provided by the trapezoidal decking, advice should be sought from the supplier.

NB The ceiling cavity is the distance from the underside of the structural soffit to the back of the plasterboard ceiling lining.

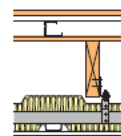
Solutions for timber floors

1



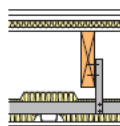
CasoLine MF ceiling² suspended beneath 195 x 45mm timber joists at 600mm centres with t&g chipboard flooring using Gyproframe Acoustic Hangers to give 277mm cavity. 80mm Isover Modular Roll in cavity. Linings as in table.

2



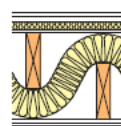
18mm chipboard and one layer of Gyproc Plank on Gyproframe 50 S 65 Steel Battens on 15mm OSB subdeck. CasoLine MF ceiling², incorporating Gyproframe Acoustic Hangers, to give 287mm cavity. 100mm Isover APR 1200 in the cavity. Linings as in table.

3



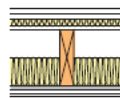
Floating floor¹ laid over joists. CasoLine MF ceiling² suspended beneath 195mm x 45mm timber joists at 600mm centres to give 277mm cavity. 80mm Isover Modular Roll in cavity. Linings as in table.

4



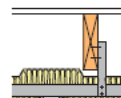
Separating sub-joist floor comprising of a floating floor¹ laid over timber joists (minimum 47mm) at 600mm centres. 100mm Isover APR 1200 in the cavity. Linings as in table.

5



Floating floor¹ laid over 38 x 195mm (minimum) timber joists at 600mm centres. Gyproframe RB1 Resilient Bars fixed to underside of joists at 450mm centres with ceiling linings (see table) fixed into the bars only. 100mm Isover SPACESAVER READY-CUT in the cavity.

6



CasoLine MF ceiling⁴ suspended beneath basic floor (ceiling removed) to give 277mm cavity. 100mm Isover SPACESAVER READY-CUT laid on ceiling boards. Linings as in table.

Table 5.4 - CasoLine MF

Detail	Board type	Available with ACTIVair technology ³	Ceiling lining thickness mm	Floor depth	Sound insulation R _w (Airborne) mm	L _{n,w} (Impact) dB	System reference dB
30 minutes fire resistance EN BS							
1	SoundBloc	ACTIV	2 x 12.5	320	63	54	C106013
3	SoundBloc	ACTIV	2 x 12.5	376	66	50	C106011
60 minutes fire resistance EN BS							
1	FireLine	ACTIV	2 x 12.5	320	62	55	C106022
2	SoundBloc	ACTIV	2 x 15	419	67	50	C106035
3	SoundBloc	ACTIV	2 x 15	381	66	50	C106025
4	SoundBloc	ACTIV	2 x 15	Variable	66	48	C106050
5	SoundBloc	ACTIV	2 x 15	315	64	55	C016040
90 minutes fire resistance EN BS							
6	FireLine	ACTIV	2 x 15	325	59	61	C106004

¹ Comprising walking surface of 18mm t&g chipboard flooring, spot-bonded with Gyproc Sealant at 300mm centres to a substrate of Gyproc Plank laid on 25mm Isover Sound Deadening Floor Slabs (Rigid Grade, laid on a minimum of 12mm wood-based sheet sub-deck nailed to the joists).

² Normal fixing centres for Gyproframe MF5 Ceiling Section and Gyproframe MF7 Primary Support Channel (450mm and 1200mm respectively).

³ Suspension method is Gyproframe MF8 Strap Hangers or Gyproframe GA1 Steel Angle unless otherwise stated.

⁴ These systems have an ACTIVair board option available for formaldehyde control to Improve Indoor air quality. Alternatively, all systems can be skim finished with Thistle PureFinish which contains ACTIVair technology. Refer to the Indoor air quality section in Background and theory.

⁵ Gyproframe MF7 Primary Support Channel at 900mm centres

NB The ceiling cavity is the distance from the underside of the walking surface to the back of the plasterboard ceiling lining.