

Noise Break-through Assessment

Westbury Court Care



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Country Court Care Homes 10 Ltd

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1 Introduction

Stantec is appointed by Country Court Care Homes 10 Ltd to provide an acoustic assessment of the proposed plant room relocation at Westbury Court Care Home (WCCC). The current plant room is proposed to be relocated to a ground floor of an adjacent house, which is also in WCCC's ownership.

It is noted that the house in WCCC's possession abuts another residential house located in the same building. The houses are late 19th / early 20th century, and it is understood that WCCC's house has had limited maintenance over the last few decades, and as such its acoustic performance may be compromised.

The acoustic assessment has been undertaken to assess the existing sound insulation performance of the current party wall, with the proposed plant room in operation. Mitigation measures have specified in order to upgrade the sound insulation performance of the wall to meet the to minimise noise disturbance to the adjacent residents.



2 Outline Description of the Site and Development

2.1 Existing Development

The site is located within a room off Station Road, adjacent to Westbury Care Home within a semi-detached property. The dwelling closest to the care home is owned by the client, whilst the other is residentially owned.

The site in question comprises a room within the client-owned property that is currently used as a plant room which is a largely empty but several units of plant equipment. The room shares a party wall with the neighbouring occupied dwelling.

2.2 Proposed Development

The proposed scheme includes the modification and extension of the existing room to increase its overall dimensions. Multiple items of plant are proposed to be installed within the room, which are discussed in further detail in **Section 4.1**.

Figure 2-1 shows the proposed plant room area.

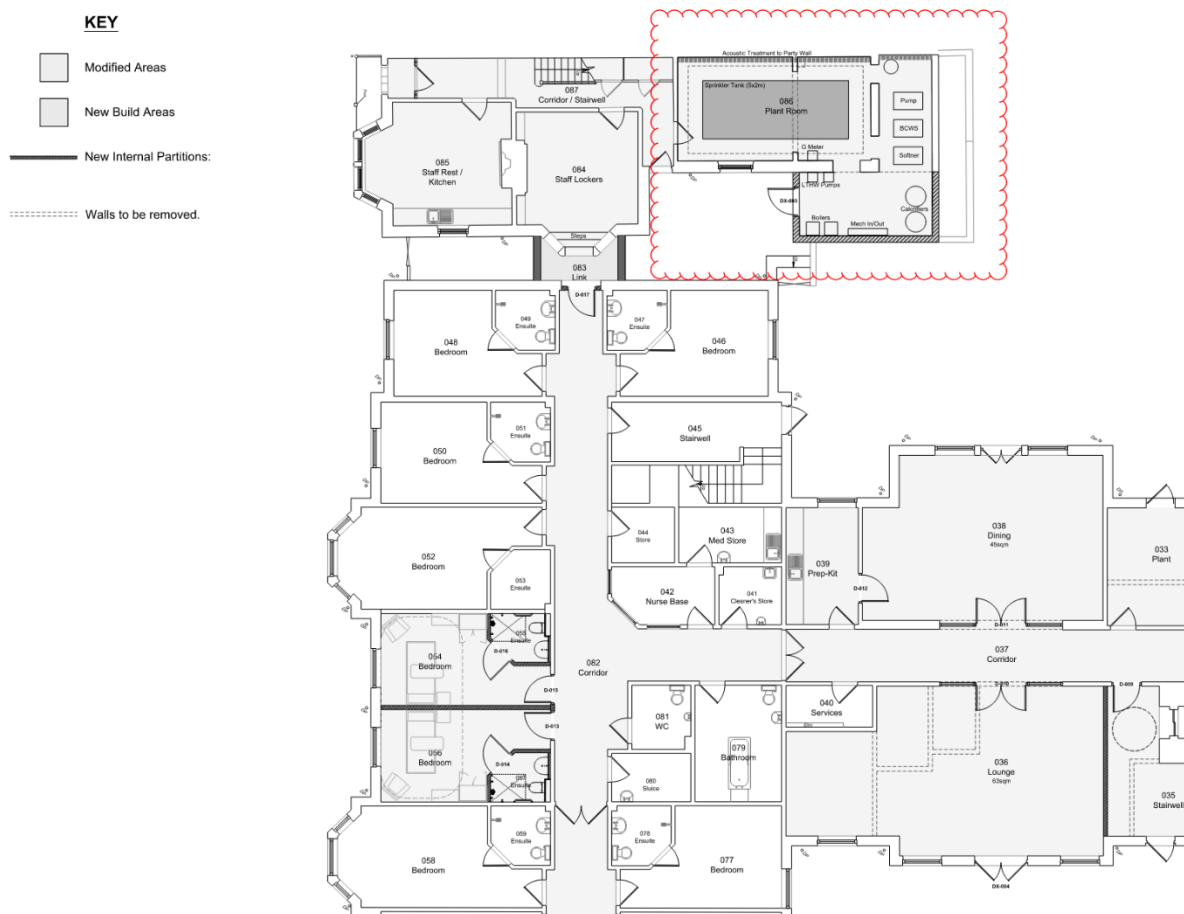


Figure 2-1: Proposed Plant Room



3 Relevant Guidance and Criteria

3.1 Policy, Guidance & Applicable Legislation

The assessment methodology is based on the following policy, guidance and legislation:

- National Planning Policy Framework (NPPF).
- Noise Policy Statement for England (NPSE).
- World Health Organisation “Guidelines for Community Noise”, Berglund et. al., 1999 (WHO Guidelines).
- BS 8233:2014 – “Guidance on sound insulation and noise reduction for buildings”.

A review of the relevant planning policy and acoustics guidance is provided in **Appendix A**

3.2 Local Policy

The Local Planning Authority responsible for the proposed development is Wiltshire Council.

The Wiltshire Core Strategy is an document setting out policies relating to development across the county, including policies relevant to noise protection for existing amenities.

Core Policy 57 reference some general guidance on noise and it states the following:

Ensuring high quality design and place shaping

A high standard of design is required in all new developments, including extensions, alterations, and changes of use of existing buildings. Development is expected to create a strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through:

- vii. having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, **noise**, smoke, fumes, effluent, waste or litter).*

The Wiltshire Council Environmental Health Officer (EHO), Nadine Cahill, has also been consulted regarding this assessment. The response is as follows:

“I can confirm that a desktop assessment should be sufficient to evaluate structure borne noise. We would expect the predictions to reflect a worst case scenario - for example, when all plant items are operating simultaneously at full capacity. The noise assessment report should also include information on the uncertainties associated with desktop studies.

The noise assessment report should demonstrate that structure borne noise and vibration will not result in any observed adverse effects in the adjoining residential dwelling. If adverse effects are likely, appropriate mitigation measures should be identified, and the effectiveness assessed.”



This report has been prepared to demonstrate that appropriate consideration has been given to potential noise impacts in accordance with the requirements of Core Policy 57 and guidance provided by the Wiltshire Council EHO.

3.3 Residential Intrusive Noise Criteria

3.3.1 BS 8233:2014

BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings' provides criteria for acceptable levels of noise ingress within dwellings based on the World Health Organisation (WHO) Guidelines for Community Noise, Berglund et. al., 1999 (WHO Guidelines).

Section 7.2.2 of the standard, entitled 'Internal ambient noise levels in dwellings' states that

"... In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4 [of BS8233]"

The internal noise criteria from Table 4 of BS8233:2014 are reproduced below, in Table 3-1.

Table 3-1. BS 8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35dB L _{Aeq} , 16 hours	-
Dining	Dining room / area	40dB L _{Aeq} , 16 hours	-
Sleeping (daytime resting)	Bedroom	35dB L _{Aeq} , 8 hours	30dB L _{Aeq} , 8 hours

The BS8233:2014 criteria (Table 3-1) are in terms of the A-weighted equivalent continuous noise level (L_{Aeq}) over the entire day or night. This is similar to an average.

The NR15 design limit used in this assessment has been derived with reference to the night-time internal noise limit of 30dB L_{Aeq} in BS 8233.

The NR15 limit is approximately 5 dB lower than the BS8233 night-time internal ambient noise level criterion; this allows headroom for the existing environmental noise ingress while still maintaining the BS8233 criterion when the plant room is operational.



4 Plant Room

4.1 Plant Room Equipment

The plant room will contain equipment including booster sets, pumps, calorifiers and pressurisation units, all of which generate a degree of operational noise. Additional plant items, such as tanks, dosing pots and expansion vessels are also present; however, these are not considered-noise-generating.

A drawing of the proposed plant in situ is summarised below in **Figure 4-1**.

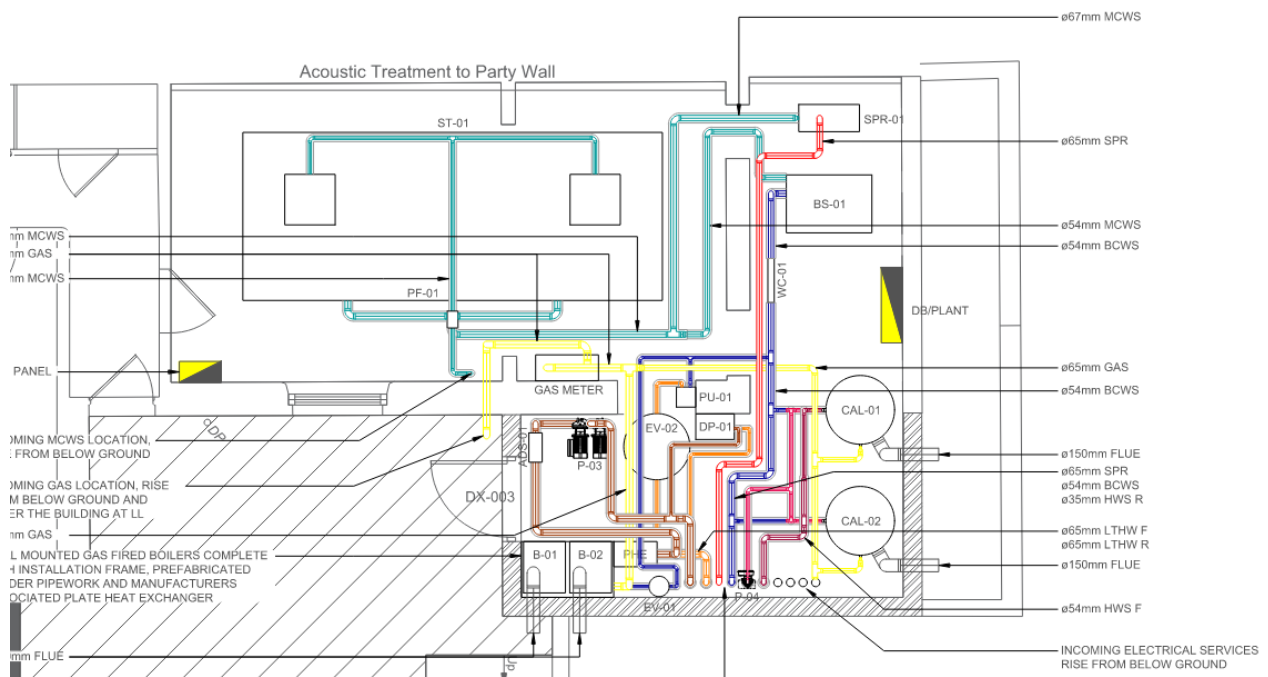


Figure 4-1: Proposed Plant Units

A list of the noise-generating plant room equipment is stated below in **Table 4-1**.

The technical data sheets are presented in Appendix B.

Table 4-1. Plant Equipment Data

Plant ID	Type	Manufacturer	Model	L _P dBA	L _w * dBA
BS-01	Booster Set	Grundfos	Hydro Multi-E 3 CME 5-6	68	76
CAL-01 / CAL-02	Calorifier	Andrews Water Heaters	EcoFlo EC96/380	51	59
PU-01	Pressurisation Unit	Flamco	FlexFiller Midi 125D	75	83
P03	Pump	Grundfos	TPE3 D 32-390	64	72
P04	Pump	Grundfos	Magna1 25-120N	39	47
B-01/ B-02	Boiler	Ideal	Evomax 2	59	67

*The L_w has been derived by calculation using the distance at which the L_P of a unit was measured at, and the radiation directivity; this is either stated numerically on data sheets or measured in accordance with ISO 3745 and ISO 2203, Method Q2.



The total sound power level of all the units is shown below in Table 4-2.

Table 4-2. Plant Sound Power Levels (L_w)

Plant	L_w dB							dBA
	63	125	250	500	1000	2000	4000	
BS-01*	46	56	64	69	74	69	63	76
CAL-01 / CAL-02*	55	63	59	57	51	49	51	59
PU-01*	53	53	71	76	81	76	70	83
P03	42	52	60	65	70	65	59	72
P04*	17	27	35	40	45	40	34	47
B-01 / B-02*	63	71	67	65	59	57	59	67
All plant	67	75	74	78	82	77	71	84

*In instances where octave band data was not available, a suitable spectrum from a matching plant unit has been applied to the broadband band value of each plant.

4.2 Plant Room Reverberation Time

A model of the reverberation time (RT) of the plant room has been produced based on a visual inspection of the space. Absorption coefficients were assigned to the identified surface materials across the relevant octave bands, allowing the total absorption within the room to be determined.

The room acoustic model was used to estimate the existing reverberation time. The room dimensions and the reverberation time (RT) values for each surface are presented in the following tables.

Photographs of the current plant room surfaces are presented in Appendix C.

Table 4-3. Room Dimensions and Surface Material

Surface	Area (m ²)	Material
North / Party Wall	26	Tiles
East Wall	11	Plaster
South Wall	34	Plaster
West Wall	19	Plaster
Ceiling	40	Plaster
Floor	40	Tiles
North / Party Wall	26	Tiles

Table 4-4. Surface Material Absorption Coefficients

Plant	Materials & Absorption Coefficients							Coef.
	63	125	250	500	1000	2000	4000	
Tiles	0.02	0.02	0.02	0.03	0.04	0.05	0.07	0.05
Plaster	0.15	0.15	0.10	0.06	0.04	0.04	0.05	0.05

The RT of the room was calculated using the Sabine equation for each octave band. The Sabine method estimates the RT within a space. It is derived from the room volume and the total equivalent absorption area of each internal surface.



The source room RT is present below in Table 4-5.

Table 4-5. Current Source Room Reverberation Time

Room	Reverberation Time							RT
	63	125	250	500	1000	2000	4000	
Plant Room	1.2	1.2	1.8	2.5	3.0	2.8	2.1	2.1

4.3 Current Wall Performance

In lieu of Stantec being able to test the current sound insulation performance of the party wall, a conservative assumption has been made of the build-up of the wall.

Online research supported by chartered surveyors and experienced construction professionals shows that Victorian and other pre-1930s UK dwellings were commonly constructed using solid brick walls, consisting of a single solid masonry structure rather than a cavity wall¹. Surveying guidance identifies the typical solid brick wall thickness as approximately 215 mm, representing the standard brick length of the era. Professional contractor evidence further indicates that internal party walls in Victorian terraced houses are commonly around 225 mm thick (9 inches), with slight variations depending on construction tolerances and plaster build-ups.

It is assumed that the construction of the current party wall is a single brick layer wall of 100mm as a worst-case scenario; in reality the thickness is expected to be much greater, though the brick and/or mortar may have degraded over time, lowering performance somewhat. Nonetheless, expected in-situ performance is expected to be greater than the assumed.

For this assessment, Insul², a sound insulation modelling software, has been adopted to model the acoustic performance of the separating party wall.

The assumed sound reduction index (SRI) of the party wall is outlined below in Table 4-6.

Table 4-6. Current Party Wall Performance

Room	Sound Reduction Index, R, at Octave Band Centre Frequency, Hz (dB)							R _w
	63	125	250	500	1000	2000	4000	
Assumed Party Wall Performance (100mm Brick)	35	38	34	38	46	53	59	40

The Insul chart is presented in Appendix E.

¹ <https://erikasgrig.com/how-house-walls-are-constructed-in-the-uk/>

² <https://www.insul.co.nz/>



5 Current Sound Insulation Assessment

5.1 Methodology

Stantec has undertaken an assessment of the existing party wall sound insulation performance. The assessment is based on calculations incorporating the total sound power level of the proposed plant within the source room, the reverberation time (RT) of the source room, the sound reduction index (SRI) of the party wall, and the RT of the receiving room.

5.2 Current Sound Insulation Performance

Stantec have conducted calculations on the sound insulation performance of the current wall.

The following assumptions have been considered during the calculation:

- The material and acoustic property of each surface in the plant room.
- The build-up of the party wall (100mm single brick layer)
- A flanking transmission path of an allowance of +15dB was assumed as a worst case.

An overview of the calculation elements, in lieu of any mitigation, is shown below in Table 5-1.

Table 5-1. Current Wall Assessment

Calculation Element	Octave Band Centre Frequency, Hz							dBA
	63	125	250	500	1000	2000	4000	
Total Plant Sound Power Level (L_w)*	67.3	75.1	74.8	78.1	82.2	77.5	71.8	84.7
Calculated Source Room RT Time	1.2	1.2	1.8	2.5	3.0	2.8	2.1	-
Total Source Room SPL at Separating Construction (L_P)	61.9	69.7	70.7	75.4	80.3	75.2	68.4	82.5
Current Wall Performance (R_w)	35.0	38.0	34.0	38.0	46.0	53.0	59.0	44.0

*Note that a 0.4 dB uncertainty has been added to the plant.

Based on current conditions, the noise level within the receiving room is **53 dBA**, approximately **NR50**.

This calculation is presented in further detail in Appendix D.

5.3 Summary Advice

The level in the receiver is significantly over the NR15 criterion and therefore mitigation is recommended. These mitigation requirements are outlined in the following Section.



6 Proposed Sound Insulation Mitigation

6.1 Methodology

A secondary calculation has been carried out to specify mitigation measures, such that internal noise levels within the receiver room achieve the NR15 criterion.

6.2 Mitigation

6.2.1 Upgraded Reverberation Control

Acoustic mitigation is proposed in the source room to reduce the reverberation time.

As an example, Stantec have use the Soundsorba Plantsorba 50mm Class A acoustic absorption product in calculations. The absorption performance of the product is outline below in Table 6-1:

Table 6-1. Acoustic Absorption Performance – Plantsorba 50mm

Calculation Element	Octave Band Centre Frequency, Hz							Abs-Co.	Class
	63	125	250	500	1000	2000	4000		
Plantsorba 50mm	0.2	0.35	0.9	0.95	0.9	0.9	0.9	0.95	A

The resulting reverberation time of the source room is presented below in Table 6-2.

Table 6-2. Upgraded Source Room Reverberation Time

Room	Reverberation Time						
	63	125	250	500	1000	2000	4000
Plant Room	1.0	0.9	0.8	0.9	1.0	1.0	0.9

Stantec specify that **15m² of Class A acoustic absorption** be implemented in the source room.

6.2.2 Upgraded Party Wall

Upgrades to the party wall is required to achieve sufficient sound insulation. An iterative process of designing an upgraded party wall was conducted to determine the necessary wall construction.

The following wall construction has been modelled in Insul and taken forward in calculations:

- Existing wall
- A Steel Stud Frame independent of the wall with a minimum 20mm gap to existing construction; 100mm cavity, Stud spacing 600mm, Fibreglass insulation 75mm (22kg/m³)
- 2x 15mm Gyproc Wallboard

The sound insulation performance of the upgraded wall is outlined overleaf in Table 6-3.



Table 6-3. Upgraded Wall Performance

Calculation Element	Octave Band Centre Frequency, Hz							R _w dBA
	63	125	250	500	1000	2000	4000	
Upgraded Party Wall Performance	33	53	62	81	87	98	97	76

6.3 Mitigation Sound Insulation Performance

Stantec have conducted calculations on the upgraded sound insulation performance of the wall.

The following assumptions have been considered during the calculation:

- The material and acoustic property of each surface in the plant room, including the additional absorption.
- The build-up of the party wall (100mm single brick layer) being the base of the upgraded wall
- A flanking transmission path of an allowance of +15dB was assumed as a worst case.

An overview of the calculation elements, including all mitigation measures, is shown below in Table 6-4.

Table 6-4. Mitigation Wall Assessment

Calculation Element	Octave Band Centre Frequency, Hz							dBA
	63	125	250	500	1000	2000	4000	
Total Plant Sound Power Level (L _w)*	67.3	75.1	74.8	78.1	82.2	77.5	71.8	84.7
Upgraded Source Room RT Time	1.0	0.9	0.8	0.9	1.0	1.0	0.9	-
Total Source Room SPL at Separating Construction (L _p)	60.6	68.1	68.1	71.6	76.0	71.3	65.1	78.4
Upgraded Wall Performance (R _w)	33.0	53.0	62.0	81.0	87.0	98.0	97.0	76

*Note that a 0.4dB uncertainty has been added to the plant.

Based on the scenario with all mitigation measures in place, the noise level from the plant room within the receiving room is **23 dBA** or **NR15**.

This calculation is presented in further detail in Appendix D.

6.4 Summary of Mitigation Advice

Provided that the aforementioned mitigation measures set out in **Sections 6.2.1** and **6.2.2** are implemented, the noise level within the receiving room is calculated to achieve the required criterion.



7 Vibration Isolation

Vibration isolation must also be considered upon installation of the plant units.

'CIBSE Guide B 2016;' should be used as guidance in specifying the appropriate vibration isolation. Within the guidance document, 'Table 4.56' recommends the appropriate minimum static deflection for a mount, mount type and base type based on the floor slab, which is understood to be concrete. However, further investigation may be required.

Stantec recommend following the guidance in the CIBSE Guide B Table 4.56 to specify the appropriate vibration isolation.



8 Summary and Conclusions

Stantec is appointed by Country Court Care Homes 10 Ltd to provide an acoustic assessment of the proposed plant room relocation at Westbury Court Care Home. The current plant room is proposed to be relocated to a ground floor of an adjacent house, which is also in WCCC's ownership.

The acoustic assessment has been undertaken to assess the existing sound insulation performance of the current party wall, with the proposed operation plant room. Mitigation measures have specified in order to upgrade the SRI of the wall to meet NR15 criterion, derived based on guidance on internal noise levels from BS8233.

Reverberation and sound insulation mitigation measures have been specified in the source room and to the party wall. Vibration isolation guidance has also been provided. These must be implemented in full to ensure that impact on neighbouring residents is sufficiently mitigated.

In conclusion, this report demonstrates that the proposals will be capable of meeting the NR15 criterion set out by Stantec, and therefore the requirements of National and Local Policy in relation to noise, as well as the guidance from the Wiltshire Council EHO, provided that the mitigation measures stated in this report have been implemented.



Appendices



Appendix A Guidance Documents

A.1 Noise Policy Statement for England (NPSE)

The NPSE is intended to apply to environmental noise and neighbourhood noise of all forms but excluding noise occurring in the workplace.

The NPSE cites concepts from toxicology and advises that impacts should be considered with regards to health effects and quality of life:

“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

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

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.”

The NPSE does not provide any numerical thresholds for determining the magnitude of a noise impact. Moreover, the document advises that it is not possible to have “a single objective noise-based measure...that is applicable to all sources of noise in all situations”. It further advises that the sound level at which an adverse effect occurs is “likely to be different for different noise sources, for different receptors and at different times.”



A.2 National Planning Policy Framework (NPPF)

Published in December 2024, this document sets out the Government's planning policies for England and supersedes the previous version of the NPPF published in 2023. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

"187. Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

It also makes the following references to noise in the Section entitled Ground conditions and pollution:

"198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life⁶⁹;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

69 See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

And

"200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities 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."



A.3 Planning Practice Guidance

The Ministry of Housing, Communities and Local Government publishes guidance on the internet in the form of the 'Planning Practice Guidance' (PPG). The guidance of PPG provides greater level of details in relation to the relevance of noise for planning following the introduction of the NPPF and NPSE.

The Planning practice guidance will be updated in due course to reflect changes to the National Planning Policy Framework. The most recent version of the noise guidance is from March 2014. Should this guidance be updated, the 2014 version will be superseded.

It is stated under the heading 'How to Determine the Noise Impact' that the following should be considered by local authorities:

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

The assessed noise should include the overall effect of the development, inclusive of the construction stage once completed.

The guidance process includes identifying where noise exposure is above or below the significant observed adverse effect level and the lowest observed adverse effect level for a given situation as required by the NPSE.

The observed effects are defined in Table 8-1 which is taken from the section headed 'How to Recognise when Noise could be a concern?'

Table 8-1. PPG Noise Guidance

Not noticeable	No Effect	No Observed Effect
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
		Lowest Observed Adverse Effect Level
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; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect
		Significant Observed Adverse Effect Level
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep	Significant Observed Adverse Effect



Not noticeable	No Effect	No Observed Effect
	windows closed most of the time, avoiding certain activities during periods of intrusion. 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.	

Under the section heading 'What factors influence whether noise could be a Concern?' the subjective nature of noise is discussed. It is stated that there is no simple relationship between noise levels and the impact on those affected. It is all dependent on how various factors combine situations, which include the next bullet points:

- The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day – this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- The spectral content of the noise (i.e. whether or not the noise contained particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features). The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.'
- 'Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation can be found in the Building Regulations;
- In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in noise may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.
- If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.'

Similarly, to the NPSE, no specific noise parameters are defined in the guidance or target noise levels established for comparison.



Appendix B Plant Data Sheets

BS01 CME

Sound pressure level

Motor [kW]	Maximum speed stated on nameplate [rpm]	Speed [rpm]	Sound pressure level ISO 3743 [dB(A)]	
			1-phase motors	3-phase motors
0.25 - 0.75	2000	1500	38	38
		2000	42	42
	4000	3000	53	53
		4000	58	58
	5900	4000	58	58
		5900	68	68
1.1	2000	1500		38
		2000		42
	4000	3000	53	53
		4000	58	58
	5900	4000	58	58
		5900	68	68
1.5	2000	1500		39
		2000		46
	4000	3000	57	57
		4000	64	64
	5900	4000	58	58
		5900	68	68
2.2	2000	1500		47
		2000		
	4000	3000		57
		4000		64
	5900	4000		58
		5900		68



CAL-01 / CAL 02

ECOflo Condensing Water Heater

			Model			
Product code			EC380/980	EC380/1220	EC380/1400	EC96/380
			A445	A446	A447	7763224
Energy	Heat input (gross)	kW	58.3	73.2	85	102.6
	Heat output	kW	57.1	71	79.1	96.4
	Gross thermal efficiency	%	98	97	93/96	94
	Standby heat loss	kW/1/day	0.00098	0.00115	0.00122	0.00128
ErP	NO _x emission (0% O ₂)	mg/kWh	40	40	55	40
	ErP efficiency rating		A	A	A	A
	Noise Level*	dB(A)	51	51	51	51
Gas data	Gas flow rate	m ³ /hr	5.43	6.82	7.92	9.91
	Supply pressure	mbar	20	20	20	20
Water	Storage capacity	litre	380	380	380	380
	Recovery rate through 50°C Δt	litre/hr	980	1,220	1,400	1,660
	Recovery rate through 56°C Δt	litre/hr	874	1,087	1,211	1,482
	Minimum working pressure	bar	0.8	0.8	0.8	0.8
	Maximum working pressure	bar	10	10	10	10
Electrical	Fuse Rating	amp	5	5	5	5
	Electrical power consumption	W	120	120	120	120
	Electrical supply		230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz
Misc	Weight full	kg	760	760	760	760
	Weight empty	kg	408	408	408	408
	Maximum flue runs (concentric)	m	16	16	16	16
	Maximum flue runs (conventional)	m	32	32	32	32
Flue diameter	Conventional	mm	100	100	100	100
	Concentric	mm	100/150	100/150	100/150	100/150
Shipping	Shipping width	mm	819	819	819	819
	Shipping depth	mm	889	889	889	889
	Shipping height	mm	2197	2197	2197	2197
	Shipping weight	kg	408	408	408	408
Accessories	Plinth (150mm, required for all ECOflo models**)		E923	E923	E923	E923
	Unvented system kit***		7703930	7703930	7703930	7703930
	LPG conversion kit		7697592	7697593	7697594	7763225
	BMS interface kit		n/a	n/a	n/a	B329
Flues	Horizontal flue kit		B343	B343	B343	B343
	Vertical flue kit		B345	B345	B345	B345
	1 metre cuttable flue length 100/150		5136159	5136159	5136159	5136159
	0.5 metre flue length 100/150		5136160	5136160	5136160	5136160
	87° bend 100/150		5136162	5136162	5136162	5136162
	45° bend 100/150		5136161	5136161	5136161	5136161
	Flat roof plate		E207	E207	E207	E207
	Angled roof plate		E208	E208	E208	E208
	Wall bracket		5136163	5136163	5136163	5136163
	Siphon kit c/w condensate trap		5136164	5136164	5136164	5136164
	Locking clamp		5136165	5136165	5136165	5136165
	Ø100mm flue seal		5136166	5136166	5136166	5136166

*Ø: 2m from flue terminal

**Unless 150mm high plinth is to be made or already exists in plant room

***Unvented system kit includes: Combined pressure reducing valve 3.5bar, check valve, pressure relief valve 6bar, 24 ltr expansion vessel c/w wall bracket, temperature/pressure relief valve 7 bar/95 °C, tundish TSP brass adaptor, noise assembly.

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PU-01

Expansion Systems › Topping Up › Pressurisation product range › Flexfiller Midi › 17460



☐ Add to comparison



Technical Specifications

- Operating Conditions:
- System temperature range at point of connection: 5 °C / 85 °C.
 - Ambient temperature range: 5 °C / 40 °C.
 - Pressure rating: PN 10.
 - Relative humidity 95% non-condensing.
 - Noise Rating Data: < 75 **dB(A)**

- Certifications and Standards Applied:
- PED 2014/68/EU Sound Engineering Practice.
 - IEE - Electrical Safety Guidance.
 - EMC 2004/108/EC.
 - BS 7074 Parts 1 to 3.
 - Machinery Directive 2006/42/EC.

17460 - Flexfiller Midi 125D

Article Information

Description	Flexfiller Midi 125D
Order Code	17460
GTIN	8712874174603
Predecessor	17491
Model	Flexfiller Midi
Pump quantity	1
Connections	System [mm] 15 (1/2" M)
	Mains Supply [mm] 15 (1/2" M)
	Overflow [mm] 22
Max. Delivery Pressure [bar]	3
Power Consumption [kW]	0.37
Full Load Current [A]	2.6
Weight [kg]	17.0

Description

Compact and totally enclosed digital pressurisation units with electronic pressure transducer and user-friendly microprocessor for use on sealed system in order to provide a minimum system pressure requirement.

The Flexfiller Midi is a wall mounted, flow rate (up to 12 l/min) top-up pressurisation unit with 4 litre internal break tank. Ideal for industrial, commercial or large domestic applications. Available in single or twin pump configuration.

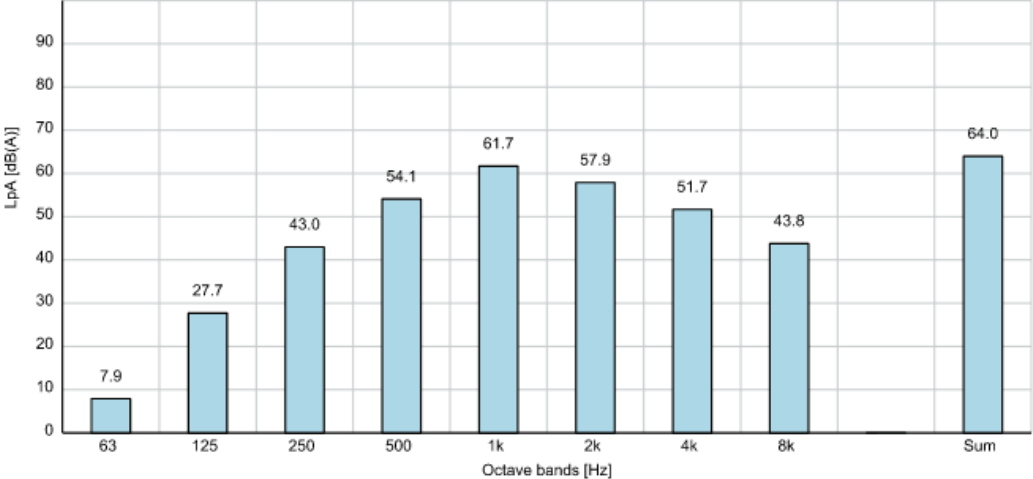
Show more

Classification General Data

Etim Group	Pressurization and expansion systems
Etim Class	Central heating refill installation
Product Name	Flexfiller Midi 125D press. unit
Brand	Flamco
Product Type	Top Up Units



P03

SOUND MEASUREMENT REPORT																							
ISO 3745																							
Object:	Motor type: MGE90LD	U:	3 x 380-500 [V]																				
		f:	50/60 [Hz]																				
		P2:	2.2 [kW]																				
		n:	2900 - 4000 [rpm]																				
Test conditions:	Load: No load / Idle	Sound test:	400 [V]																				
		f:	50 / 60 [Hz]																				
		P2:	0 [kW]																				
		n:	4000 [rpm]																				
Comments:																							
 <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Sound Pressure Level Data</caption> <thead> <tr> <th>Octave bands [Hz]</th> <th>LpA [dB(A)]</th> </tr> </thead> <tbody> <tr><td>63</td><td>7.9</td></tr> <tr><td>125</td><td>27.7</td></tr> <tr><td>250</td><td>43.0</td></tr> <tr><td>500</td><td>54.1</td></tr> <tr><td>1k</td><td>61.7</td></tr> <tr><td>2k</td><td>57.9</td></tr> <tr><td>4k</td><td>51.7</td></tr> <tr><td>8k</td><td>43.8</td></tr> <tr><td>Sum</td><td>64.0</td></tr> </tbody> </table>				Octave bands [Hz]	LpA [dB(A)]	63	7.9	125	27.7	250	43.0	500	54.1	1k	61.7	2k	57.9	4k	51.7	8k	43.8	Sum	64.0
Octave bands [Hz]	LpA [dB(A)]																						
63	7.9																						
125	27.7																						
250	43.0																						
500	54.1																						
1k	61.7																						
2k	57.9																						
4k	51.7																						
8k	43.8																						
Sum	64.0																						
Sound pressure level L_{pA} : 64.0 [dB(A)] Sound power level L_{WA} : 76.0 [dB(A)]																							
Notes: - Sound power values L_{WA} determined according to IEC 60034-9, ISO 3745 and ISO 4871. - Associated uncertainty $K_{WA} = 3$ [dB(A)] "The sum of measured noise emission values and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements". - Sound power evaluated at rated speed and no load as specified in IEC 60034-9. "The sound power levels, under full load condition, are normally higher than those at no-load. Generally, if ventilation noise is predominant the change may be small; but, if the electromagnetic noise is predominant the change may be significant". - Additionally - as outlined in IEC 60034-9 Amendment 1 - an increase in the noise level may also occur on variable speed drives due to increased level of higher harmonics and potential coincidence between these and structural resonances. - The equivalent sound pressure level L_{pA} at 1 m distance are determined from the sound power level via ISO 11203 method Q2 - The observer surface area S is given by a box shape enveloping the source – and here calculated for a specified distance of 1 m between the source and the observer surface. - The emission sound pressure level obtained with this method represents the average sound pressure level over the surface of area S in environmental conditions approximating to a free field over a reflecting plane".		References: (IEC 60034-9, ISO 3745 & 4871) (IEC 60064-9; Clause 8) (ISO 4871; Section B2) (IEC 60034; Clause 5.2) (IEC 60034-9; Clause 6, Note 2) (IEC 60034-9 and 1; Clause 7) (IEC 60034; Clause 5.2) (ISO 11203; Clause 6.2.3)																					

5/5



P04

Sound pressure level

The sound pressure level of the pump is dependent on the power consumption. Levels are determined in accordance with ISO 3745 and ISO 11203, method Q2.

Pump size	Maximum [dB(A)]
25-40/60/80/100/120	39
32-40/60/80/100/120	
40-40/60	
50-40	
32-120 F	45
40-80/100	
50-60/80	
65-40/60	
80-40	
40-120/150/180	50
50-100/120/150/180	
65-80/100/120	
80-60/80	
100-40/60	
65-150	55
80-100/120	
100-80/100/120	



B-01 / B02

GENERAL DATA

EVOMAX 2 30 - 150kW (Natural Gas and LPG)

MODEL		30/30P	40/40P	60/60P	80/80P	100/100P	120/120P	150
Gas supply		2H - G20 - 20mbar / 3P - G31 - 37mbar						
Gas supply connection		G ¾"						
Flow connection		G1 ¼"						
Return connection		G1 ¼"						
Max pressure (sealed system)	Bar (psi)	6						
Maximum static head	m	61						
Electricity supply		230V - 50Hz						
Fuse rating	A	4.0						
Power consumption	W	81	138	82	149	187	243	240
Ip rating		IPX4D						
Nominal flue size (concentric)	mm	80/125*				100/150		
Condensate drain	mm	25						
Water content	l	3.0		5.0		7.0		9.2
Dry weight	Kg	47.5		57.5		73		81
Weighted sound power level	dBA	55.2	57.7	59	59.9	62	62	59

*Optional kit available on 60kW and 80kW models for 100/150mm flue

INCLUDED AS STANDARD

BOILER	EVOMAX 2
Remote indication (run and alarm)	✓
Hours run	✓
BMS (0-10v) operation	✓
Pump overrun	✓
Large backlit LCD controls, including 5 line plain text display	✓
Dynamic control menu set up	✓

OPTIONAL KITS

BOILER	EVOMAX 2
Multi boiler frame and header kits (see pages 16-19)	✓
Varican Module Master Kit	✓
Varican Module Slave Kit	✓
Extension Module Kit	✓
OPENTHERM Room Control Kit	✓
Room Sensor Kit	✓
Tank Sensor Kit	✓
Outside Sensor Kit	✓
Header Flow Tank Immersion Sensor Kit	✓
Header Flow Tank Strap On Sensor Kit	✓
Safety Interlock Kit	✓
0-10V Pump Control Kit	✓
Condensate pump	✓



Appendix C Existing Plant Room Photos

Photo Direction Overview of the Plant Room

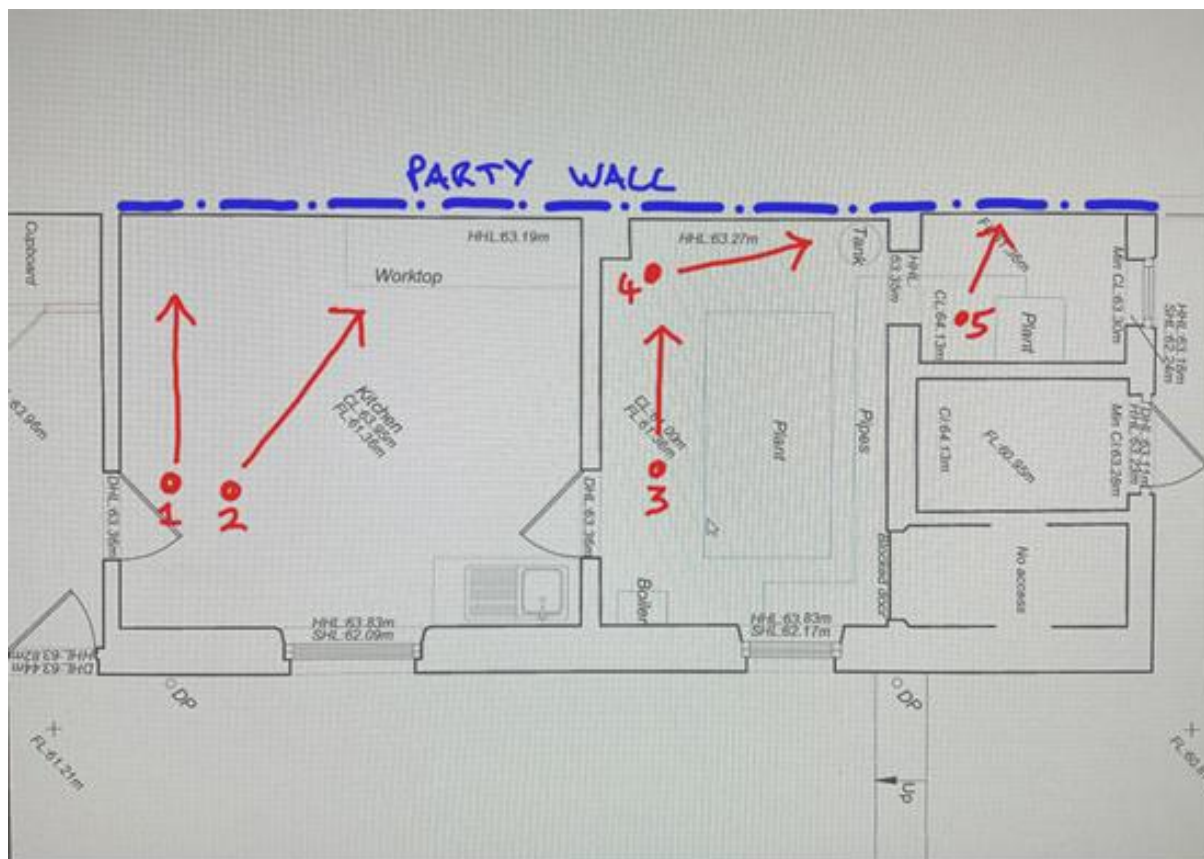


Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Appendix D Room to Room Calculations

Current Wall Performance

Project Name:	Westbury Court Care	Project Number:	333701962.0						
Source Room:	Plant Room	Date:	05/02/2026						
Receiver Room:	Nextdoor House	Calculation:	Current Wall Performance						
	Frequency Independent	Octave Band Centre Frequency, Hz							dBA
		63	125	250	500	1000	2000	4000	
Total Plant Sound Power Level (SWL, dB)		66.9	74.7	74.4	77.7	81.8	77.1	71.4	84.3
Plant SWL Uncertainty (dB)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Plant SWL + Uncertainty (SWL, dB)		67.3	75.1	74.8	78.1	82.2	77.5	71.8	84.7
Source Room Reverberation Time (RT, seconds)		1.2	1.2	1.8	2.5	3.0	2.8	2.1	2.1
Distance from separating construction and plant (m ²)	1.27								
Source Room Volume (m ³)	128.46								
Source Room Absorption (A, Sabine m ²)		16.8	16.8	11.6	8.2	6.8	7.4	9.8	
Source Room Reverberant Sound Pressure Level (SPL _{reverb} , dB)		61.1	68.9	70.2	75.0	79.9	74.8	67.9	82.1
Source Room Direct Sound Pressure Level (SPL _{direct} , dB)		54.2	62.0	61.7	65.0	69.1	64.4	58.7	
Total Source Room SPL at Separating Construction (SPL _{Total})		61.9	69.7	70.7	75.4	80.3	75.2	68.4	82.5
Separating Construction Sound Reduction Index (R / R _w , dB)		35.0	38.0	34.0	38.0	46.0	53.0	59.0	
Separating Construction Surface Area (m ²)	26.13								
Receiver Room Reverberation Time (RT, seconds)		1.0	0.5	0.5	0.5	0.5	0.5	0.5	
Receiver Room Volume (m ³)	75								
Receiver Room Absorption (A, Sabine m ²)		12.0	24.0	24.0	24.0	24.0	24.0	24.0	
Tolerance / Flanking		15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Receiver Room Sound Pressure Level (SPL, dB)		45.3	47.1	52.1	52.8	49.7	37.6	24.8	53.3
						Results	NR 50	53.3 dBA	



Noise Break-through Assessment

Mitigation Wall Performance

Project Name:	Westbury Court Care	Project Number:	333701962.0	
Source Room:	Plant Room	Date:	05/03/2026	
Receiver Room:	Nextdoor House			

	Frequency Independent	Octave Band Centre Frequency, Hz							dBA
		63	125	250	500	1000	2000	4000	
Total Plant Sound Power Level (SWL, dB)		66.9	74.7	74.4	77.7	81.8	77.1	71.4	84.3
Plant SWL Uncertainty (dB)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Plant SWL + Uncertainty (SWL, dB)		67.3	75.1	74.8	78.1	82.2	77.5	71.8	84.7
Source Room Reverberation Time (RT, seconds)		1.0	0.9	0.8	0.9	1.0	1.0	0.9	
Distance from separating construction and plant (m ²)	1.27								
Source Room Volume (m ³)	128.46								
Source Room Absorption (A, Sabine m ²)		19.8	22.0	25.1	22.4	20.3	20.9	23.3	
Source Room Reverberant Sound Pressure Level (SPL _{reverb} , dB)		60.4	67.7	66.8	70.6	75.2	70.3	64.2	77.5
Source Room Direct Sound Pressure Level (SPL _{direct} , dB)		54.2	62.0	61.7	65.0	69.1	64.4	58.7	
Total Source Room SPL at Separating Construction (SPL _{Total})		61.3	68.7	68.0	71.7	76.1	71.3	65.2	
Separating Construction Sound Reduction Index (R / R _w , dB)		33.0	53.0	62.0	81.0	87.0	98.0	97.0	
Separating Construction Surface Area (m ²)	26.13								
Receiver Room Reverberation Time (RT, seconds)		1.0	0.5	0.5	0.5	0.5	0.5	0.5	
Receiver Room Volume (m ³)	67.5								
Receiver Room Absorption (A, Sabine m ²)		10.8	21.6	21.6	21.6	21.6	21.6	21.6	
Tolerance / Flanking		15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Receiver Room Sound Pressure Level (SPL, dB)		47.1	31.5	21.8	6.5	4.9	-10.9	-16.0	22.7
						Results	NR 15	22.7 dBA	



Appendix E Insul Data Sheets

Current Wall Performance

Sound Insulation Prediction (v9.0.8)

Program copyright Marshall Day Acoustics 2017

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

Key No. 5565

Job Name

Job No.

Date: 02/03/2026

File Name: Insu

Initials: Immoore

Notes:



R_w 44 dB
C -1 dB
Ctr -3 dB

Panel Size = 2.7 m x 4.0 m

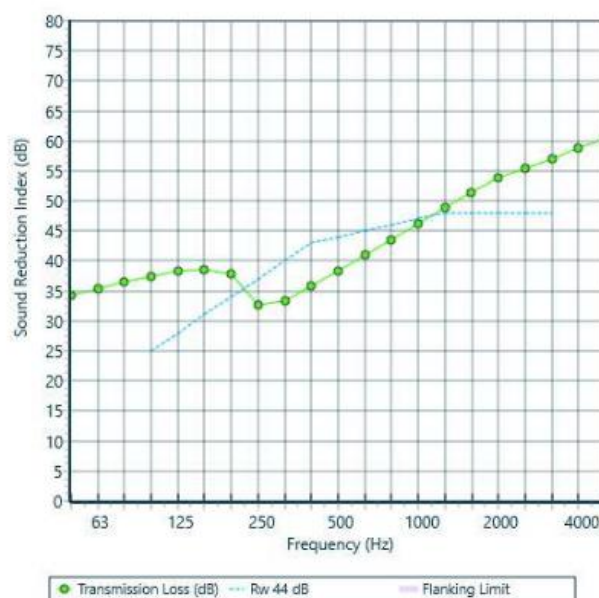
Partition surface mass = 160 kg/m²

System description

Panel 1 : 1 x 100 mm Brick

Floor Cover: Thickness 0.02 mm

freq.(Hz)	TL(dB)	TL(dB)
50	34	
63	35	35
80	36	
100	37	
125	38	38
160	39	
200	38	
250	33	34
315	33	
400	36	
500	38	38
630	41	
800	44	
1000	46	46
1250	49	
1600	51	
2000	54	53
2500	55	
3150	57	
4000	59	59
5000	60	



Mitigation Wall Performance

Sound Insulation Prediction (v9.0.8)

Program copyright Marshall Day Acoustics 2017

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

Key No. 5565

Job Name:

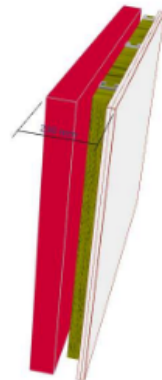
Job No.

Date: 06/03/2026

File Name: Insu

initials: Immoore

Notes



R_w 76 dB
C -3 dB
Ctr -9 dB

Mass-air-mass resonant frequency = 39 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 180 kg/m²

System description

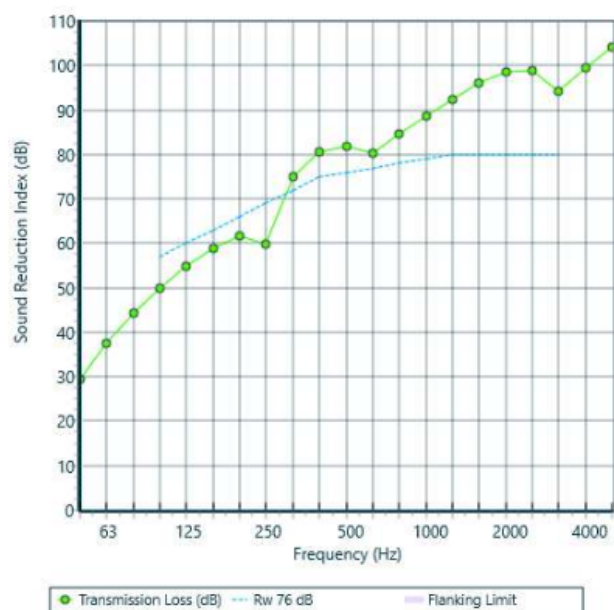
Panel 1 1 x 100 mm Brick

Frame: Right steel stud + air gap; Cavity Width 100 mm; Stud spacing 600 mm; 1 x Fibreglass (22kg/m³) Thickness 75 mm

Panel 2 2 x 15 mm Gyproc Wallboard 15mm

Floor Cover: Thickness 0.02 mm

freq.(Hz)	TL(dB)	TL(dB)
50	29	
63	38	33
80	44	
100	50	
125	55	53
160	59	
200	62	
250	60	62
315	75	
400	81	
500	82	81
630	80	
800	84	
1000	89	87
1250	92	
1600	96	
2000	99	98
2500	99	
3150	94	
4000	99	97
5000	104	



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