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FLOOR IMPACT NOISE ASSESSMENT

DecoLine Floors

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0	01/07/2025	Noise Assessment	RF	MF
1	02/07/2025	Add additional test information	RF	MF

CLIENT

Report Issued	Attention	Phone	Email
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Recommendations made in this report are intended to resolve acoustical problems only. We make no claim of expertise in other areas and draw your attention to the possibility that our recommendations may not meet the structural, fire, thermal, or other aspects of building construction

We encourage clients to check with us before using materials or equipment that are alternative to those specified in our Acoustical Report.

The integrity of acoustic structures is very dependent on installation techniques. For example, a small crack between the top of a wall and a ceiling can reduce the effective sound transmission loss of a wall from R_w 50 to R_w 40. Therefore, the use of contractors that are experienced in acoustic construction is encouraged. Furthermore, two insulation products may have the same thermal R rating but the sound absorption of one may be entirely deficient, therefore the use of materials and equipment that are supported by acoustic laboratory test data is encouraged.

CONTENTS

1 INTRODUCTION AND SITE DESCRIPTION

Alpha Acoustics Pty Ltd has been engaged by DecoLine Floors to carry out floor impact sound insulation performance tests of Vinyl and SPC Flooring. Field floor impact sound insulation testing was conducted by Alpha Acoustics on Friday 23rd May 2025. The floor impact tests were conducted between the Living Room of Apartment 2322, to the Living Room of Apartment 2224 at Arbour on Grey Apartments, 178 Grey Street, South Brisbane QLD 4101.

Figure 1.2 – Test setups

Decoline floor - CALM 5mm Vinyl acoustic plank

Decoline floor - PLANET 9mm hybrid floor (SPC)

Bare Slab (180mm thick no suspended ceiling below)

2 NOISE SURVEY AND INSTRUMENTATION

All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also calibrated prior to and after the noise survey. Calibration drift was found to be less than 0.1 dB during attended measurements. No adjustments for instrument drift during the measurement period were warranted.

Figure 2.1 Noise Instrumentation

Description	Model No.	Serial No.
Modular Precision Sound Analyser	B&K 2260	236 1157
Condenser Microphone 0.5" diameter	B&K 4189	237 8026
Acoustical Calibrator	Larson Davis CAL 200	2617
Microphone Windscreen	Acoustically transparent foam	
Tapping Machine	EM 50	TM 14142

The Bruel & Kjaer 2260 Sound Analyser is a real-time precision integrating sound level meter with octave and third octave filters that samples noise at a rate of 10 samples per second.

3 FLOOR IMPACT SOUND INSULATION TEST PROCEDURE

The field measurement of the impact sound insulation of the subject floor was made in third octave bands in accordance with AS/NZS ISO 140.7:2006 Acoustics - Measurement of sound insulation in buildings and of building elements (Field measurements of impact sound insulation of floors) and rated in accordance with AS/NZS ISO 717.2:2004 Acoustics - Rating of sound insulation in buildings and of building elements (Impact sound insulation).

The tapping machine was placed in 4 different orientations over the test floor. The average sound pressure level was obtained in receiving rooms. Four measurements were conducted in the receiver room using a sweeping motion with each measurement covering a number of traverses, and an averaging time of 60 seconds per sweep. The sound pressure levels were measured using one-third octave band pass filters from 50 Hz to 10 KHz.

Reverberation time was measured in the receiving room generally according to AS/NZS ISO 354:2006 (R2016) Acoustics - Measurement of sound absorption in a reverberation room.

The sound level meter has been calibrated to Australian Standards by a certified NATA laboratory. Further to this, a calibration was conducted prior to and subsequent to the measurements using a Bruel & Kjaer Type 4230 Acoustic calibrator. The sound level meter conforms to a Type 1 instrument as defined in AS 1259:1990 Acoustics - Sound level meters.

The impact isolation of the specimen was then calculated using the following relationship;

$$L_{nT} = L_i + 10 \log \left(\frac{T}{T_o}\right)$$

Where;

$L_i = Impact\ Sound\ Pressure\ Level\ receiver\ room\ (dB)$

$T = Measured\ reverberation\ time\ of\ the\ receiving\ room\ (sec)$

$T_o = Reference\ reverberation\ time\ (0.5\ sec)$

The Weighted Standardised Impact Sound Pressure Level ($L_{nT,w}$) and the adaptation term (C_I) were determined in accordance with AS/NZS ISO 717.2:2004.

4 FLANKING TRANSMISSION

No adjustment for flanking noise was made when testing as per the applicable standards.

5 MEASUREMENT OF FLOOR IMPACT SOUND INSULATION

The overall test result from the floor impact sound insulation tests are shown in Table 5.1 below. The graphical results from the field floor impact sound insulation tests are summarised in the Appendices.

Table 5.1 – Floor Impact Results

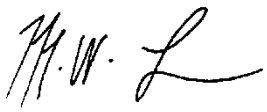
Test ID	Source	Receiver	Test Floor Composition	LnTw
1	Apt 2322 Living	Apt 2224 Living	Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over QUICK STEP	46
2	Apt 2322 Living	Apt 2224 Living	Decoline floor - PLANET 9mm hybrid floor (SPC) over QUICK STEP	49
3	Apt 2322 Living	Apt 2224 Living	Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)	46
4	Apt 2322 Living	Apt 2224 Living	Decoline floor - PLANET 9mm hybrid floor (SPC) over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)	47
5	Apt 2322 Living	Apt 2224 Living	Decoline floor - PLANET 9mm hybrid floor (SPC) over 4.5mm FC sheet over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)	43
6	Apt 2322 Living	Apt 2224 Living	Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over Bare Slab	52
7	Apt 2322 Living	Apt 2224 Living	Decoline floor - PLANET 9mm hybrid floor (SPC) over Bare Slab	49
8	Apt 2322 Living	Apt 2224 Living	Bare Slab (180mm thick), no suspended ceiling below	71

6 NOISE IMPACT STATEMENT

Alpha Acoustics Pty Ltd has been engaged by DecoLine Floors to carry out floor impact sound insulation performance tests of Vinyl and SPC Flooring.

This report shows the field floor impact sound insulation testing was conducted by Alpha Acoustics on Friday 23rd May 2025. The floor impact test results change from building to building and fixing the floor (glue versus unglued) can change the floor impact test results.

Please contact the undersigned for further information.



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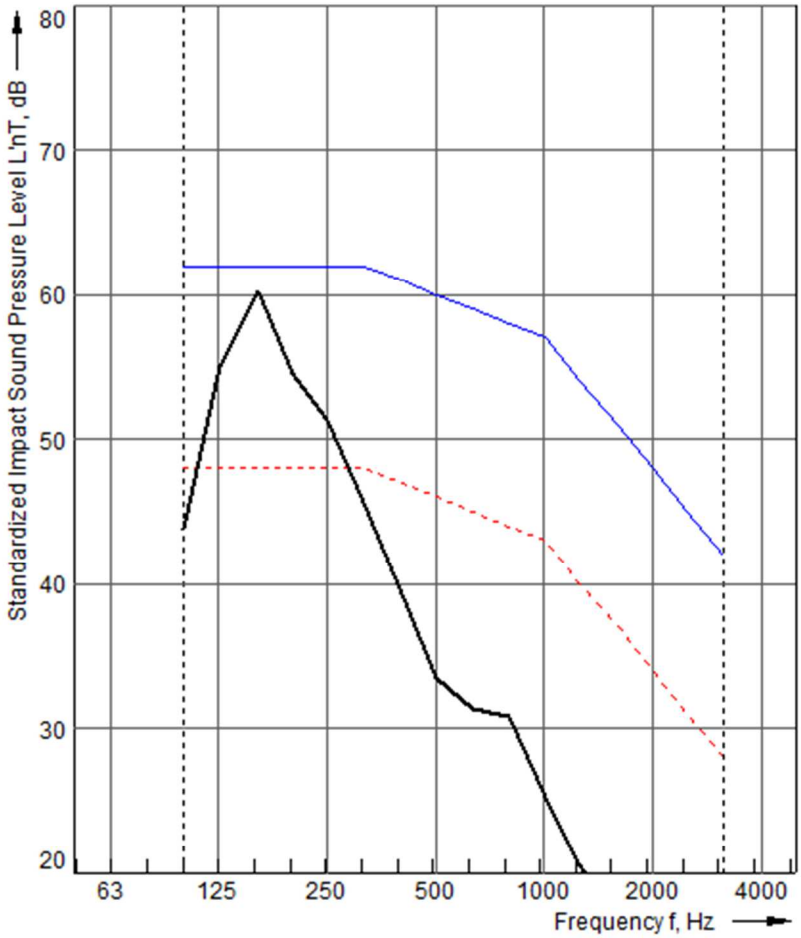
APPENDIX A – FLOOR PERFORMANCE RESULTS

Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over QUICK STEP

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	43.8
125	55.1
160	60.2
200	54.6
250	51.4
315	45.7
400	39.3
500	33.5
630	31.4
800	30.8
1000	25.3
1250	20.5 B
1600	16.4 B
2000	13.1 B
2500	10.5 B
3150	10.3 B
4000	
5000	

B: L'nT =< value shown



Rating according to ISO 717-2

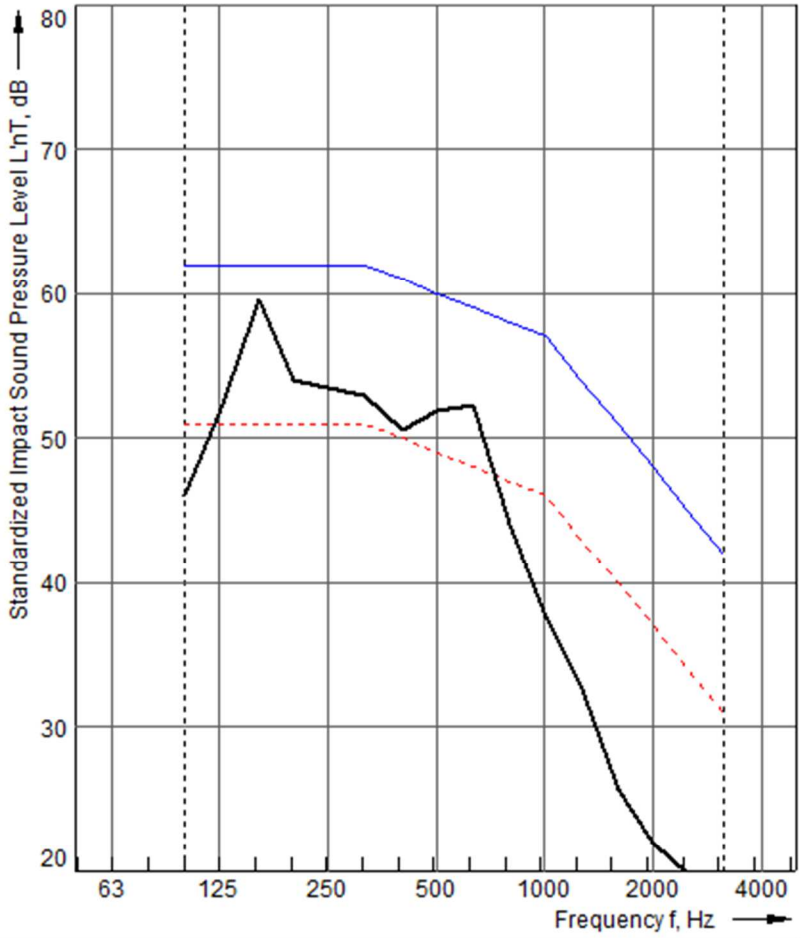
$L'_{nT,w}(C_i)$ = 46 (2) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - PLANET 9mm hybrid floor (SPC) over QUICK STEP

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	46.0
125	52.0
160	59.6
200	54.0
250	53.5
315	53.0
400	50.5
500	51.9
630	52.3
800	44.1
1000	37.6
1250	33.0
1600	25.7
2000	22.0
2500	19.9
3150	18.3 B
4000	
5000	

B: L'nT =< value shown



Rating according to ISO 717-2

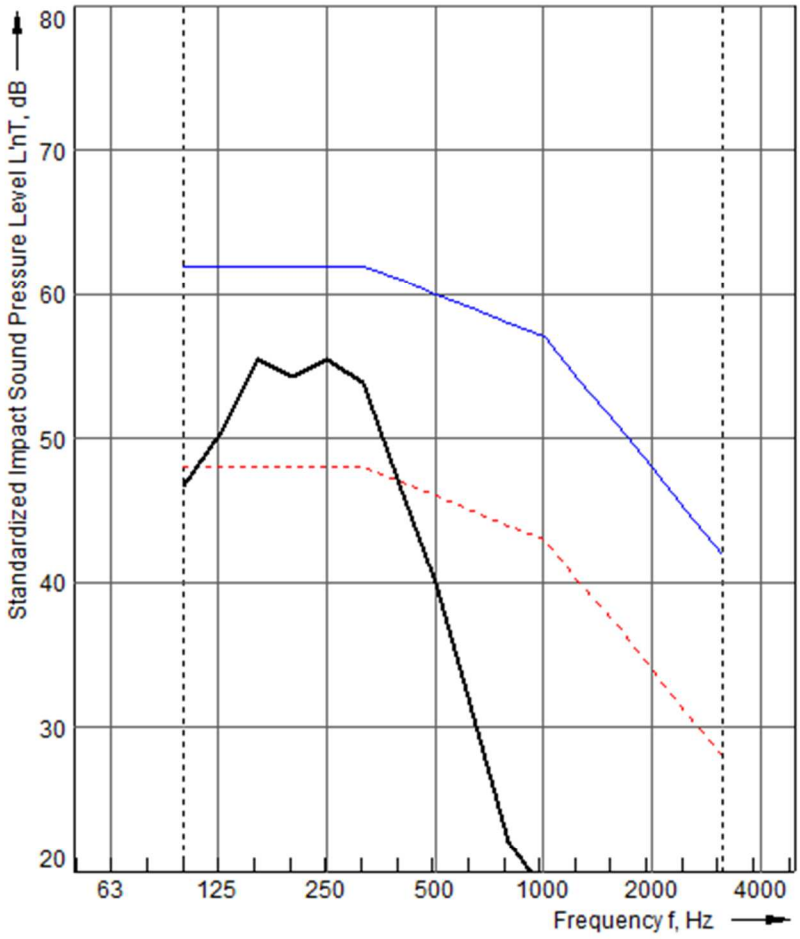
$L'_{nT,w}(C_i)$ = 49 (0) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	46.7
125	50.3
160	55.5
200	54.3
250	55.5
315	53.9
400	46.4
500	40.0
630	31.1
800	22.1 B
1000	18.6 B
1250	16.5 B
1600	16.8 B
2000	15.4 B
2500	13.7 B
3150	13.0 B
4000	
5000	

B: L'nT =< value shown



Rating according to ISO 717-2

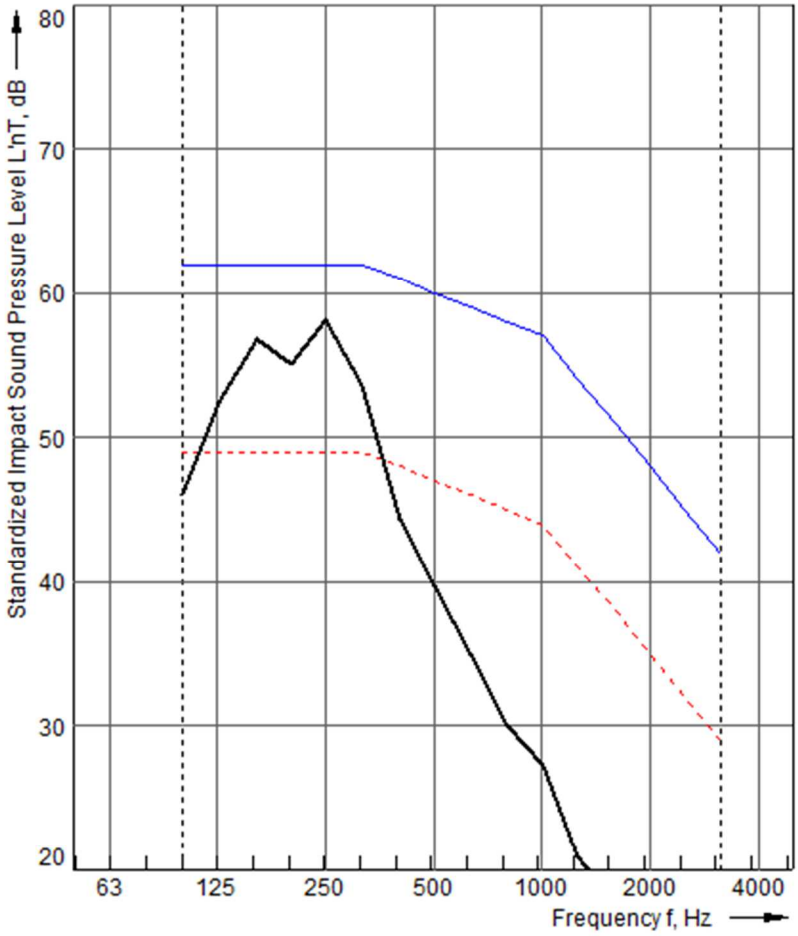
$L'_{nT,w}(C_i)$ = 46 (1) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - PLANET 9mm hybrid floor (SPC) over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	46.0
125	52.4
160	56.8
200	55.0
250	58.1
315	53.6
400	44.3
500	39.7
630	34.9
800	30.1
1000	27.2
1250	20.9 B
1600	17.6 B
2000	15.7 B
2500	14.2 B
3150	13.1 B
4000	
5000	

B: L'nT =< value shown



Rating according to ISO 717-2

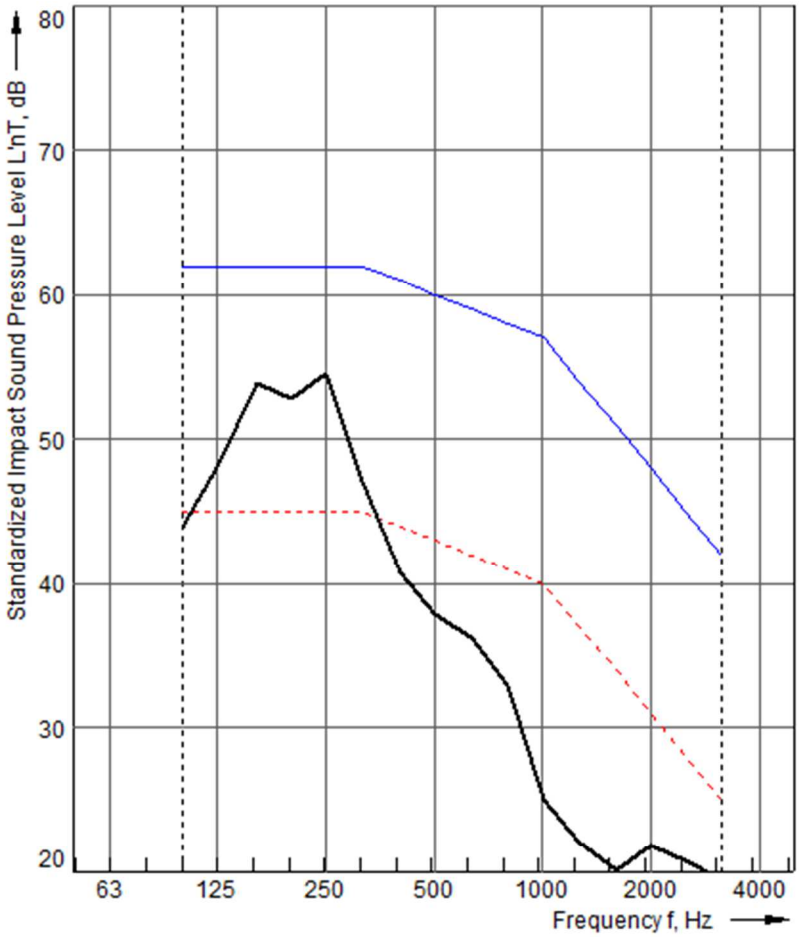
$L'_{nT,w}(C_i)$ = 47 (1) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - PLANET 9mm hybrid floor (SPC) over 4.5mm FC sheet over 6mm FC sheet over Pliteq - GenieMat FF06 (Maximum 6mm height)

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	43.9
125	48.3
160	53.8
200	52.8
250	54.6
315	47.1
400	40.8
500	37.9
630	36.2
800	33.0
1000	25.0
1250	22.1 B
1600	20.1 B
2000	21.8
2500	20.7
3150	19.4
4000	
5000	

B: L'nT =< value shown



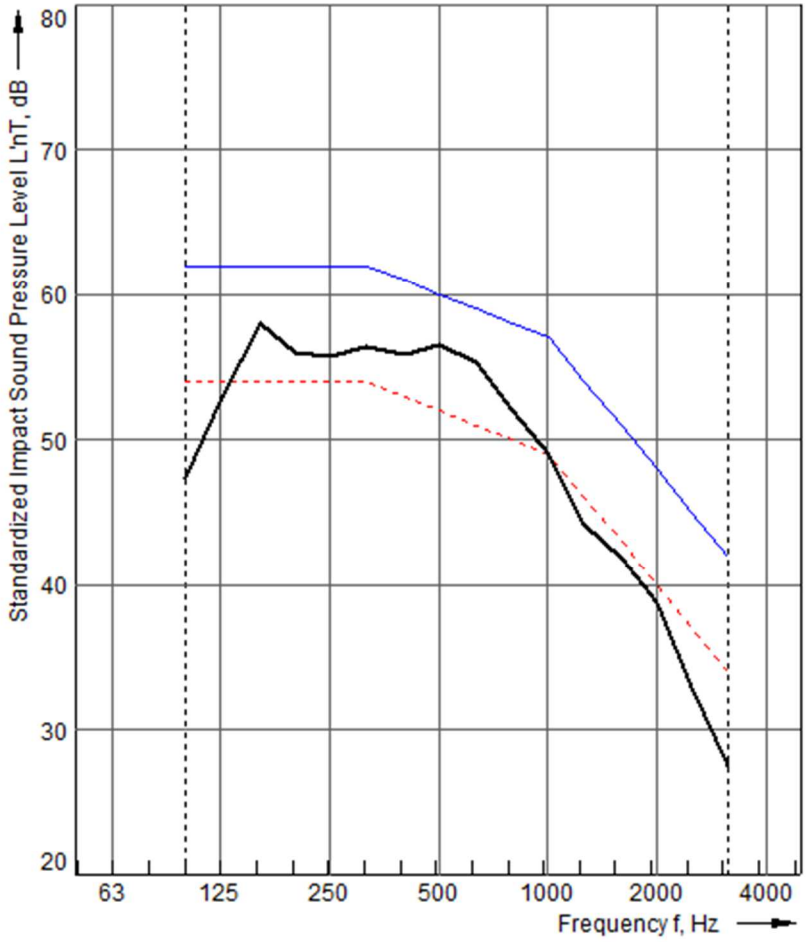
Rating according to ISO 717-2

$L'_{nT,w}(C_i)$ = 43 (1) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - CALM 5mm Vinyl acoustic plank (unglued) over Bare Slab

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	47.4
125	52.9
160	58.0
200	56.0
250	55.7
315	56.4
400	55.8
500	56.5
630	55.3
800	52.0
1000	49.0
1250	44.2
1600	41.8
2000	38.8
2500	33.0
3150	27.5
4000	
5000	



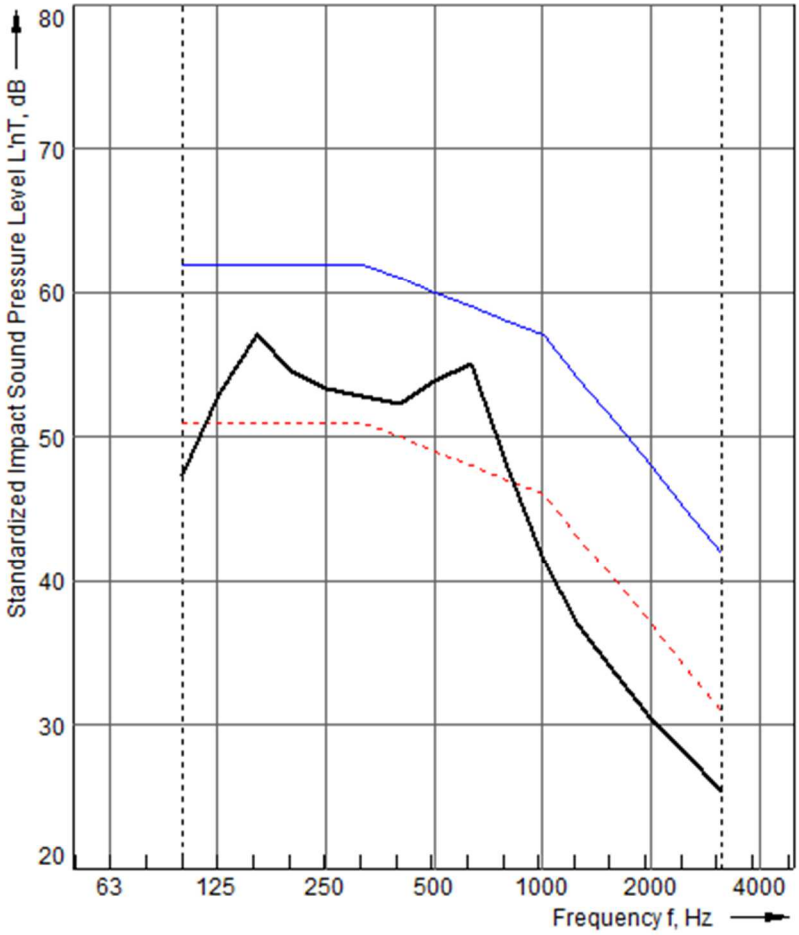
Rating according to ISO 717-2

$L'_{nT,w}(C_i)$ = 52 (-1) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Decoline floor - PLANET 9mm hybrid floor (SPC) over Bare Slab

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	47.4
125	53.0
160	57.0
200	54.5
250	53.3
315	52.8
400	52.3
500	53.8
630	55.1
800	47.9
1000	41.4
1250	36.9
1600	33.5
2000	30.5
2500	28.1
3150	25.4
4000	
5000	



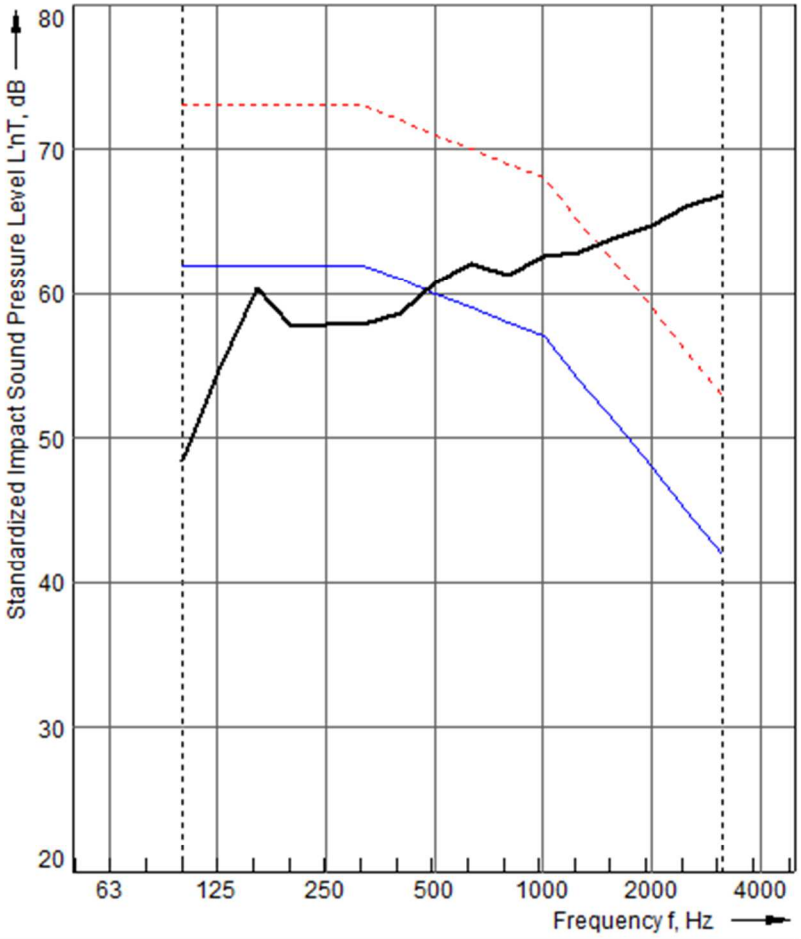
Rating according to ISO 717-2

$L'_{nT,w}(C_i)$ = 49 (0) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

Bare Slab (180mm) no suspended ceiling below

Frequency f Hz	L'nT 1/3 Octave dB
50	
63	
80	
100	48.5
125	54.7
160	60.3
200	57.7
250	57.9
315	57.8
400	58.6
500	60.7
630	62.1
800	61.3
1000	62.6
1250	62.8
1600	63.9
2000	64.8
2500	66.1
3150	66.9
4000	
5000	



Rating according to ISO 717-2

$L'_{nT,w}(C_i)$ = 71 (-13) dB $C_{i,50\text{-}2500}$ = N/A dB

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

APPENDIX B – GLOSSARY OF ACOUSTIC TERMS

The following is a brief description of the technical terms used to describe traffic noise to assist in understanding the technical issues presented in this document.

Event maximum sound pressure level (LA%,adj,T), L01

The L01 level is calculated as the noise level equalled and exceeded for 1% of the measurement time, for example 9 seconds in any 15 minute interval. L01 is an appropriate level to characterise single events, such as from impulsive or distinctive pass-by noise. In this Report, the measured L01 levels for day/evening/night are not averaged but are arranged from low to high in the relevant day/evening/night interval and the value that is found at the 90th percentile (L10 of L01 sample) in the interval is recorded as its "L01" level. The level can be adjusted for tonality or impulsiveness.

Average maximum sound pressure level (LA%,adj, T), L10

The "L10" level is an indicator of "steady-state" noise or intrusive noise conditions from traffic, music and other relatively non-impulsive noise sources. The L10 level is calculated as the noise level equalled and exceeded for 10% the measurement time, for example 90 seconds in any 15 minute interval. The measured L10 time-intervals for day/evening/night are arithmetically averaged to present the "average maximum" levels of the environment for day/evening/night. The level can be adjusted for tonality or impulsiveness.

Background sound pressure level (LA90,T), L90

Commonly called the "L90" or "background" level and is an indicator of the quietest times of day, evening or night. The L90 level is calculated as the noise level equalled and exceeded for 90% the measurement time. The measured L90 time-intervals are arithmetically averaged to present the "average background" levels of the environment for day/evening/night. The level is recorded in the absence of any noise under investigation. The level is not adjusted for tonality or impulsiveness.

Equivalent Continuous or time average sound pressure level (LAeq,T), Leq

Commonly called the "Leq" level it is the logarithmic average noise level from all sources far and near. The maximum 1-hour levels within the day/evening/night time intervals are referenced for building design. The level can be adjusted for tonality.

Façade-adjusted level

A sound level that is measured at a distance of 1.0 metre from a wall or facade. The level is nominally 2.5 dB higher than the free-field level.

Free-field level

A sound level that is measured at a distance of more than 3.5 metres from a wall or facade.

Weighted Sound Reduction Index, Rw

A single number value used to compare the sound reduction index of building elements. Similar to the Sound Transmission Class (STC) rating that is still in common use. Rw and STC are not identical though may be considered, for most applications, as being interchangeable. A high Rw indicates high sound reduction.