

**Trojan IQ Underlay Acoustic Test Results**  
Floor Impact Noise Insulation Field Test Report  
30 Festival Place, Newstead

Reference Number:	QA729-01F02 Floor Impact Test (r1)	
Date of Test:	Friday 13 <sup>th</sup> May 2016	
Address of Test Premises:	Skyring Apartments; 30 Festival Place, Newstead	
Test Instrumentation	<ul style="list-style-type: none"> <li>• Tapping machine, 01dB S/N 25131</li> <li>• Precision sound level meter, Norsosonic Nor140 S/N 1402770</li> <li>• Acoustical Calibrator: B&amp;K 4230 (S/N 1206747).</li> </ul>	
Form of Construction:	<p>Tested floor in Apartment 1306 consisted of approximately 1m x 1m sample area of interlocked 14.2mm thick Trojan Timber engineered timber flooring, loose lay over 3mm thick. Trojan Timber IQ acoustic underlay (manufactured from latex rubber, unknown density) on the bare concrete.</p> <p>Floor substrate consisted of:</p> <ul style="list-style-type: none"> <li>• 200mm thick reinforced concrete slab;</li> <li>• 100mm ceiling space; and</li> <li>• 13mm plasterboard ceiling in Unity 5306.</li> </ul> <p>Other specific construction details such as the distances between columns and the partition head details are unknown.</p>	
Source Room:	Apartment No: Unit 1306	Occupancy Type: Bedroom
Receiver Room:	Apartment No: Unit 1206	Occupancy Type: Bedroom
Measured Weighted Normalised Impact Sound Pressure Level and Spectrum Adaption Term	$L'_{n,w}$	Bare Concrete: 64
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 46
Measured Weighted Normalised Impact Sound Pressure Level and Spectrum Adaptation Term	$L_{r,n,w} + C_I$	Bare concrete: 54
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 46
Measured Weighted Standardised Impact Sound Pressure Level and Spectrum Adaptation Term	$L_{r,nT,w}$	Bare Concrete: 66
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 47

Please Note: the test result provided is not a guarantee that your site would automatically achieve the same results. Trojan in no way warrant that our vinyl floor will meet your building's requirements for acoustics as all buildings are constructed differently and have different body corporate requirements. If acoustics are critical to your project we would strongly recommend you engage an acoustic consultant.

Measured Weighted Standardised Impact Sound Pressure Level and Spectrum Adaptation Term	$L_{I,nT,w} + C_I$	Bare concrete: 55
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 47
Normalised Field Impact Isolation Class	$FIIIC$	Bare Concrete: 38
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 64

The rest results are presented in Appendix A.

The test methodology and associated test Standards are shown in Appendix B.

The test results presented in this report are strictly site specific. To achieve the  $L'_{n,w}$  and  $L_{I,nT,w}$  presented in this field test report on other sites, the sample must be installed on equivalent or better acoustic-rated floor substrate.

Measurements conducted in accordance with International Standard ISO 140-7 "Field measurements of impact sound insulation of floors"; International Standard ISO 717-2 "Impact sound insulation"; ASTM E492-90 "Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine" and, ASTM E989-89 "Determination of Impact Insulation Class (IIC)". Measurements and procedures documented in this report have been carried out in accordance with the Renzo Tonin & Associates Quality Assurance System. This quality system is based on AS/NZS ISO9001:1994.

Please Note: the rest result provided is not a guarantee that your site would automatically achieve the same results. Trojan in no way warrant that our vinyl floor will meet your building's requirements for acoustics as all buildings are constructed differently and have different body corporate requirements. If acoustics are critical to your project we would strongly recommend you engage an acoustic consultant.

# APPENDIX A Test results

## Normalised Impact Sound Pressure Level according to ISO 717.2

### Field measurements of impact sound insulation of floors using the tapping machine

Client: Trojan Timbers

Date of test: 13<sup>th</sup> May 2016

Description and identification of the building construction and test arrangement:

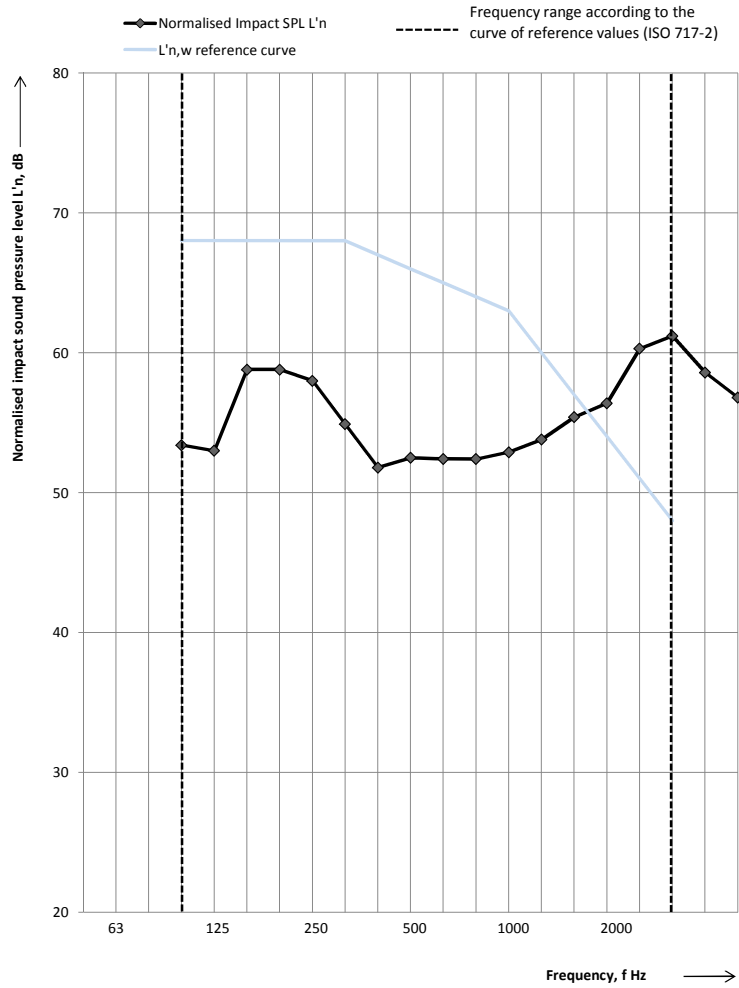
**Bare Concrete Slab Substrate**

Floor substrate consisted of:

- 200mm thick reinforced concrete slab;
- 100mm ceiling space; and
- 13mm plasterboard ceiling.

Receiving room volume: 23.4 m<sup>3</sup>

Frequency f Hz	L'n 1/3 octave dB
50	
63	
80	
100	53
125	53
160	59
200	59
250	58
315	55
400	52
500	53
630	52
800	52
1000	53
1250	54
1600	55
2000	56
2500	60
3150	61
4000	59
5000	57



Rating in accordance with ISO 717-2:

$$L'_{n,w}(C_1) = 64 (-10) \text{ dB}$$

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: Renzo Tonin & Associates (QLD) Pty Ltd

Date: 16/05/2016

Signature

### Standardised Impact Sound Pressure Level according to ISO 717.2

#### Field measurements of impact sound insulation of floors using the tapping machine

Client: Trojan Timbers

Date of test: 13<sup>th</sup> May 2016

Description and identification of the building construction and test arrangement:

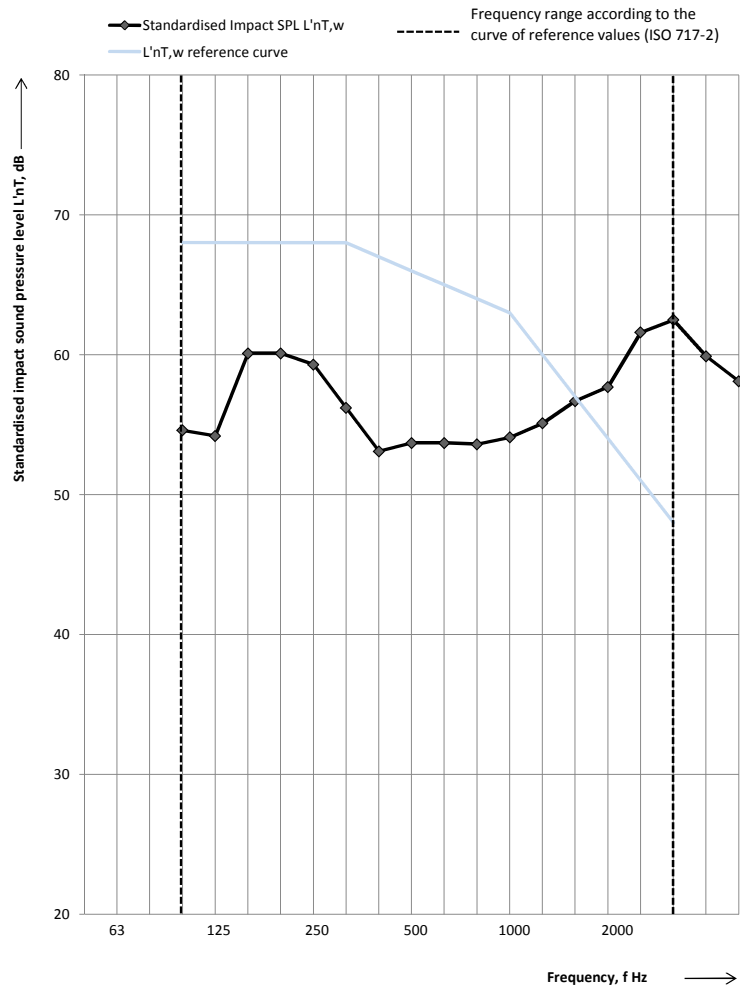
**Bare Concrete Slab Substrate**

Floor substrate consisted of:

- 200mm thick reinforced concrete slab;
- 100mm ceiling space; and
- 13mm plasterboard ceiling.

Receiving room volume: 23.4 m<sup>3</sup>

Frequency f Hz	L'nT,w 1/3 octave dB
50	
63	
80	
100	55
125	54
160	60
200	60
250	59
315	56
400	53
500	54
630	54
800	54
1000	54
1250	55
1600	57
2000	58
2500	62
3150	63
4000	60
5000	58



Rating in accordance with 717-2:

$$L'_{nT,w}(C_1) = 66 (-11) \text{ dB}$$

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: Renzo Tonin & Associates (QLD) Pty Ltd

Date: 16/05/2016

Signature

### Normalised Impact Sound Pressure Level according to ISO 717.2

#### Field measurements of impact sound insulation of floors using the tapping machine

Client: Trojan Timbers

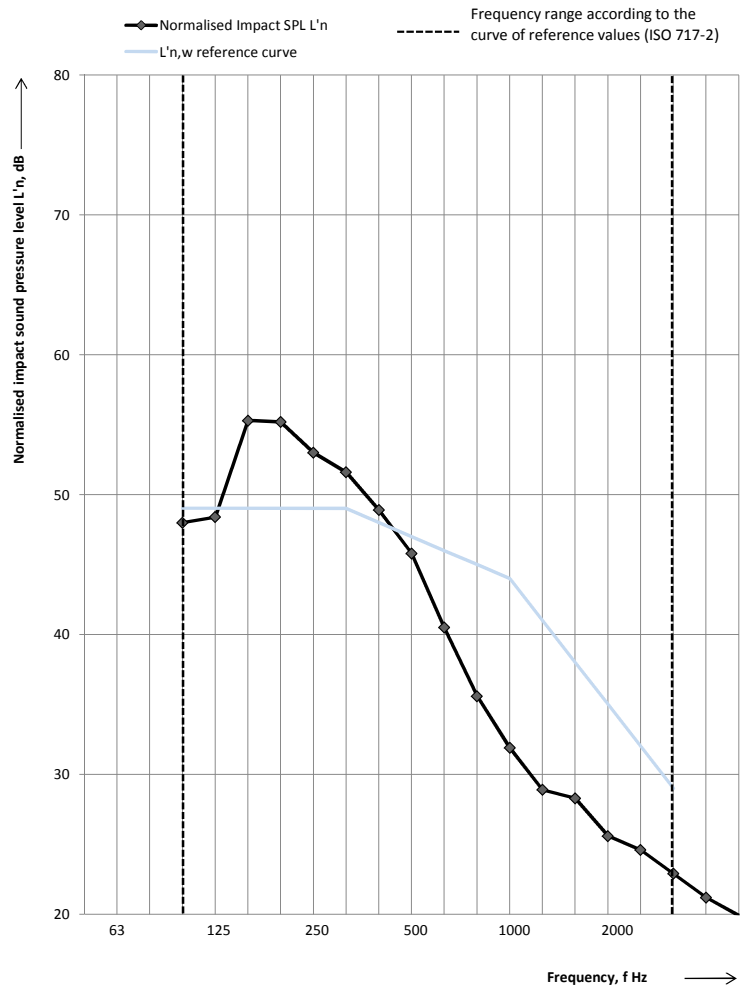
Date of test: 13<sup>th</sup> May 2016

Description and identification of the building construction and test arrangement:

- 14mm thick Trojan Timber engineered timber flooring (sample area approx. 1m x 1m), loose lay over
- 3mm thick Trojan Timber IQ acoustic underlay (manufactured from latex material, density unknown), loose lay over floor substrate.
- Tom Dooley Developments provided a description of the substrate:
- 200mm thick reinforced concrete slab, 100mm ceiling space and 13mm plasterboard ceiling.

Receiving room volume: 23.4 m<sup>3</sup>

Frequency f Hz	L'n 1/3 octave dB
50	
63	
80	
100	48
125	48
160	55
200	55
250	53
315	52
400	49
500	46
630	41
800	36
1000	32
1250	29
1600	28
2000	26
2500	25
3150	23
4000	21
5000	20



Rating in accordance with ISO 717-2:

$$L'_{n,w}(C_I) = 46 (0) \text{ dB}$$

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: Renzo Tonin & Associates (QLD) Pty Ltd

Date: 16/05/2016

Signature

### Standardised Impact Sound Pressure Level according to ISO 717.2

#### Field measurements of impact sound insulation of floors using the tapping machine

Client: Trojan Timbers

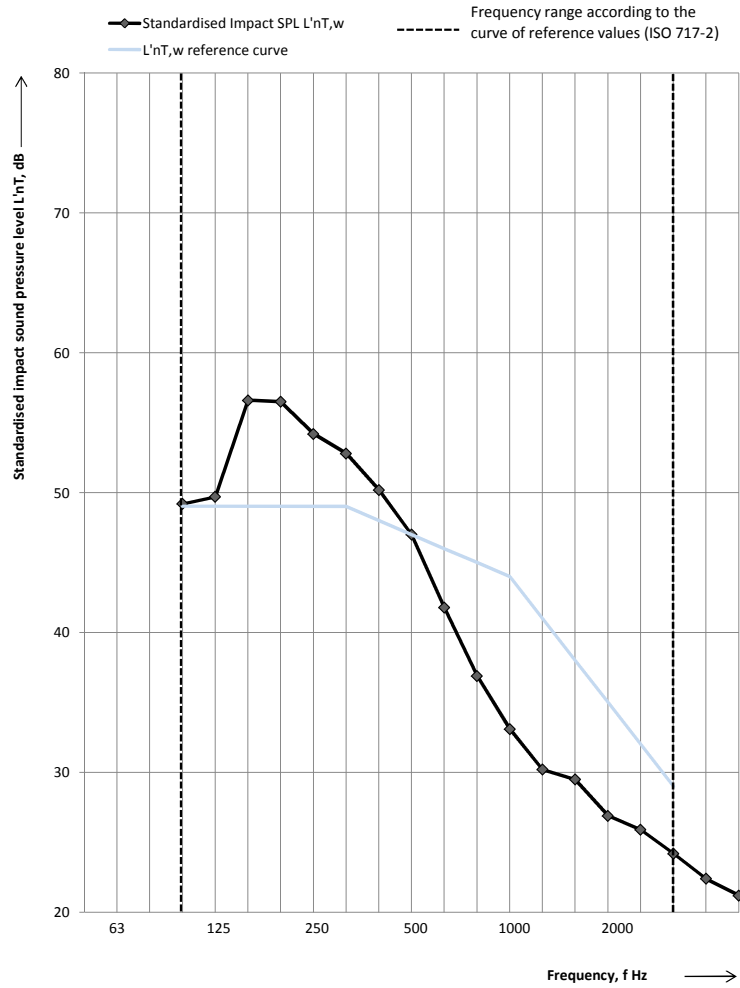
Date of test: 13<sup>th</sup> May 2016

Description and identification of the building construction and test arrangement:

- 14mm thick Trojan Timber engineered timber flooring (sample area approx. 1m x 1m), loose lay over
- 3mm thick Trojan Timber IQ acoustic underlay (manufactured from latex material, density unknown), loose lay over floor substrate.
- Tom Dooley Developments provided a description of the substrate:
- 200mm thick reinforced concrete slab, 100mm ceiling space and 13mm plasterboard ceiling.

Receiving room volume: 23.4 m<sup>3</sup>

Frequency f Hz	L'nT,w 1/3 octave dB
50	
63	
80	
100	49
125	50
160	57
200	57
250	54
315	53
400	50
500	47
630	42
800	37
1000	33
1250	30
1600	30
2000	27
2500	26
3150	24
4000	22
5000	21



Rating in accordance with 717-2:

$$L'_{nT,w}(C_1) = 47 (0) \text{ dB}$$

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: Renzo Tonin & Associates (QLD) Pty Ltd

Date: 16/05/2016

Signature

## APPENDIX B Glossary of Terminology

### A1 Introduction

There is no procedure specified in the BCA or in Australian Standards for the testing of floor and ceiling systems. In the absence of such provisions the testing procedure adopted is derived from the following standards;

- International Standard ISO 140-7 "Field measurements of impact sound insulation of floors";
- International Standard ISO 717-2 "Impact sound insulation";

### A2 Test Procedure

Tests were conducted according to the following procedure;

1. Before impact testing, it was established that there were no significant airborne flanking paths between the source and receiver rooms.
2. A standard tapping machine generating impact sound was placed in four different positions on the floor in accordance with ISO Standards indicated above.
3. While the tapping machine was operating, space and time averaged noise levels were recorded over a one minute period in the receiving room for each of the four tapping machine positions using the Nor140 sound level meter. The measured noise level was filtered simultaneously in all one-third octave frequency bands in real time. These values were recorded and subsequently statistically analysed to determine the average sound pressure levels for each room and to indicate the precision of the measurements.
4. The reverberation time of the receiving room was measured using the in-built software in the Nor140 instrument, using a balloon burst as the noise source and recording the decays in each one-third octave band.
5. The volume of the receiving room was measured and used along with the reverberation times to calculate the equivalent sound absorption area in accordance with the Code.

### A3 Instrumentation and Analysis

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 "Sound Level Meters".

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

$$L_n = L_i + 10 \log (A/A_o)$$

$$L_{nT} = L_i - 10 \log (T/T_o)$$

**Where;**

$L_i$  = Impact Sound Pressure Level receiver room dB

$A$  = Measured equivalent absorption area of the receiving room metric Sabines ( $m^2$ )

$A_0$  = Reference equivalent absorption area ( $10 m^2$ ) metric Sabines ( $m^2$ )

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

$T_0$  = Reference reverberation time (0.5 sec)

The Weighted Normalised Impact Sound Pressure Level  $L'_{n,w}$ , the Weighted Standardised Impact Sound Pressure Level  $L'_{nT,w}$  and the adaptation term  $C_1$  were determined in accordance with ISO 717-2.



## Document Control

Date	Revision History	Non-Issued Revision	Issued Revision	Prepared	Instructed	Authorised
18.05.2016	First issue	-	r0	BP	BP	PJ
30.09.2016	Revised issue including C <sub>1</sub>	-	R1	PJ	BP	PJ

### Important Disclaimer:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

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