

Baypark to Bayfair Rail relocation

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Project overview

- NZ Transport Agency:
 - Road/intersection upgrade project
 - Start of Tauranga Eastern Link
- Rail relocation:
 - Space for wider road corridor
 - Grade separation at SH29
 - Local road crossing away from SH2 intersection



Baypark to Bayfair – Rail relocation

BAYFAIR

Existing rail corridor

EVERSHAM ROAD

MAUNGANUI ROAD

BAYPARK

TRUMAN LANE

MAUNGANUI ROAD

STATE HIGHWAY 29

OMANU GOLF CLUB

MATAPIHI ROAD

New rail corridor

Criteria

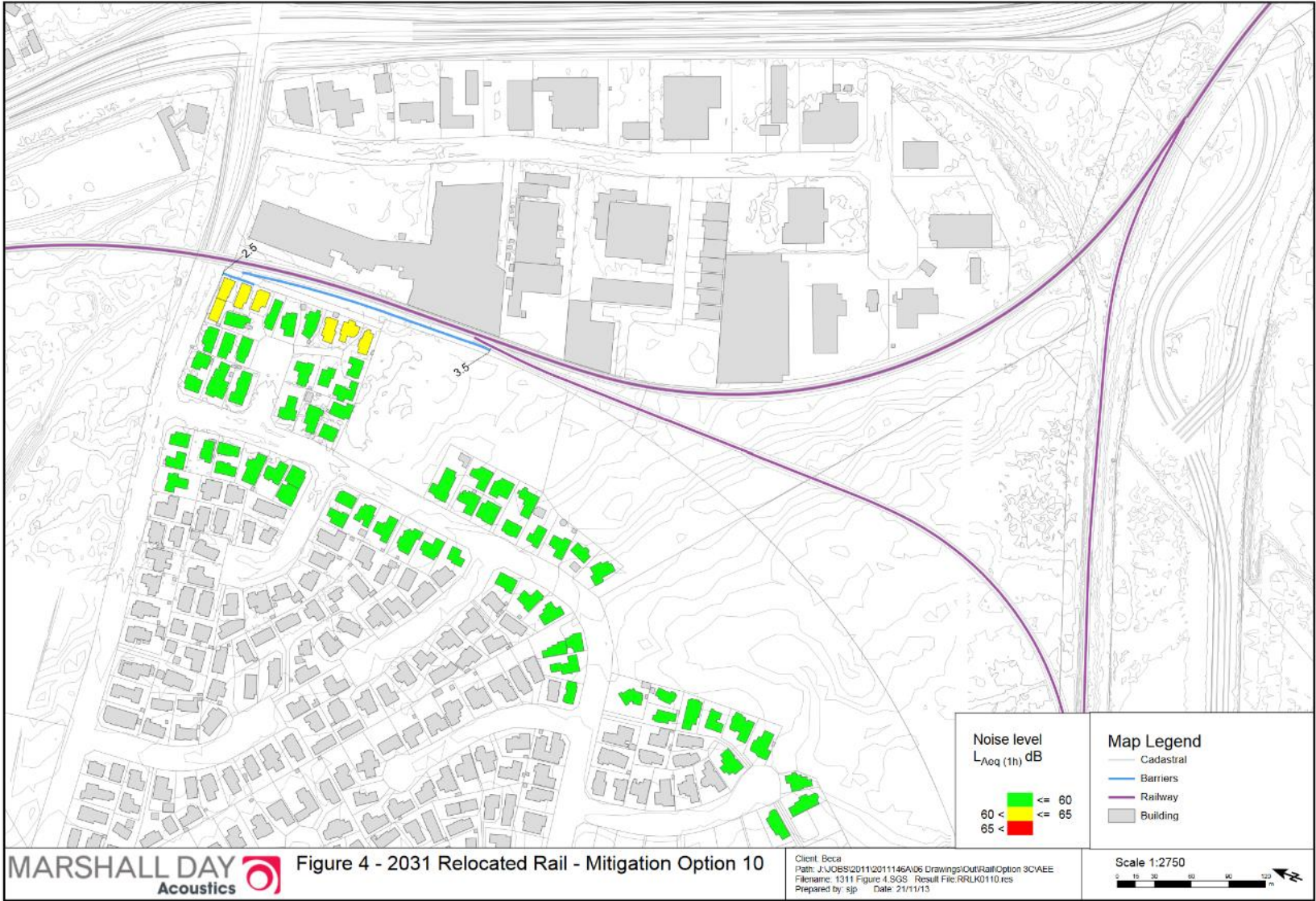
Noise

- Target – 60 dB $L_{Aeq(1h)}$, 80 dB L_{AFmax}
- Maximum – 65 dB $L_{Aeq(1h)}$

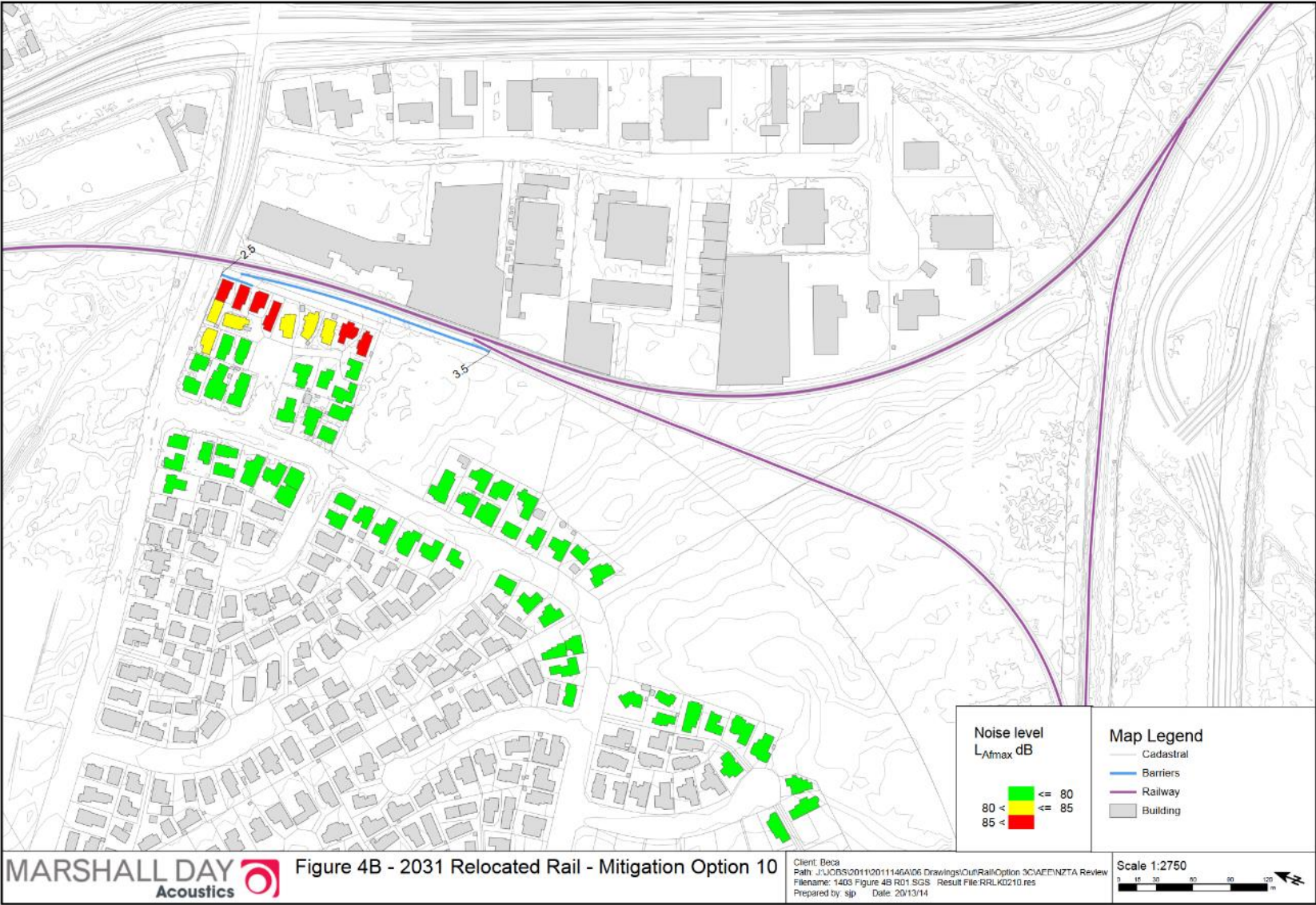
Vibration

- Target – 0.3 mm/s $v_{w,95}$
 - NS 8176 Class C or better
- Maximum – 0.6 mm/s $v_{w,95}$
 - NS 8176 Class D

Noise mitigation options

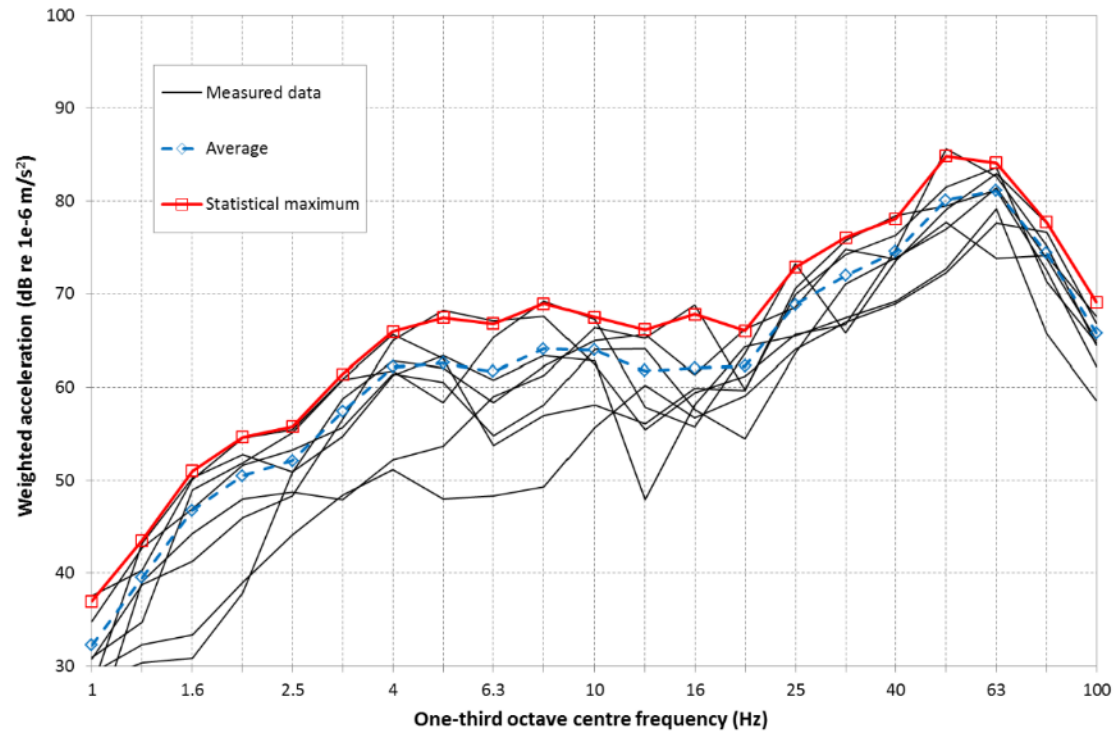


Noise mitigation options

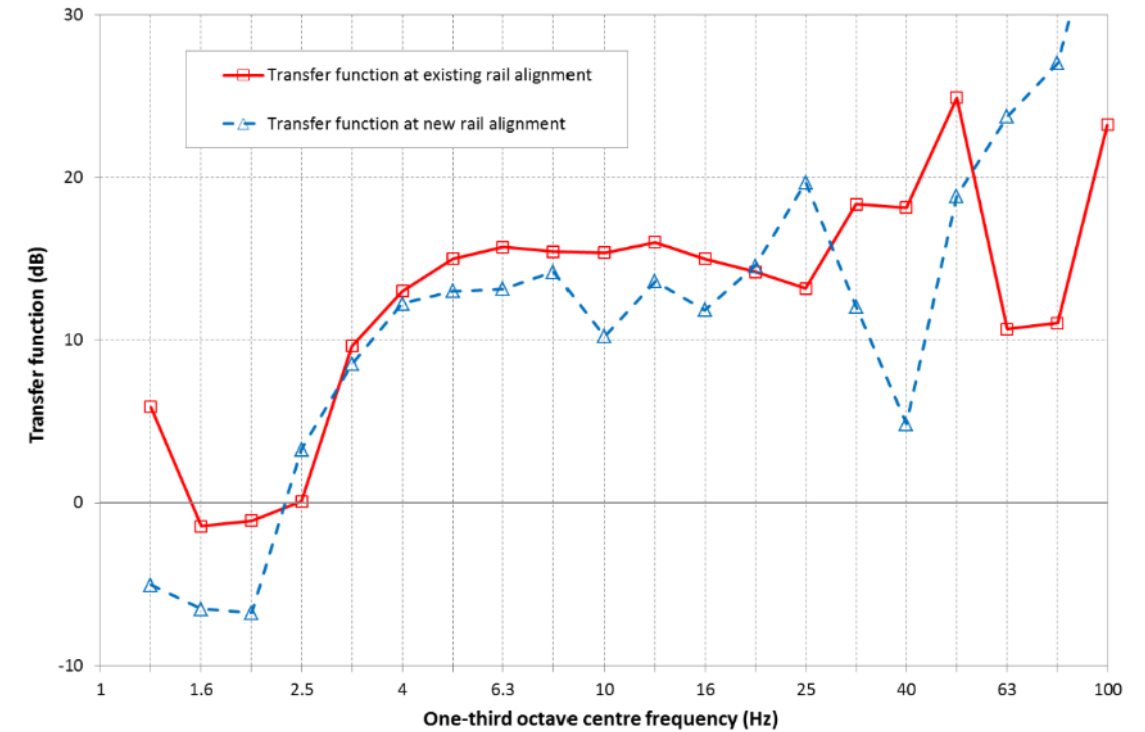


Vibration predictions

Source levels

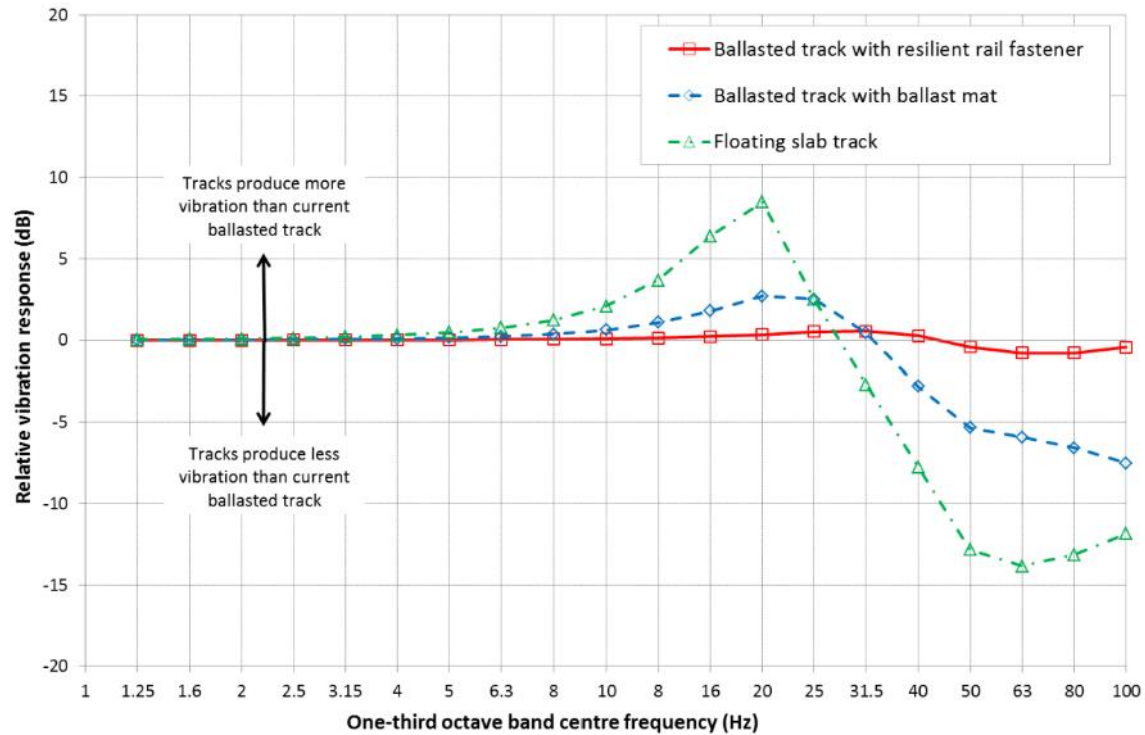


Transfer functions

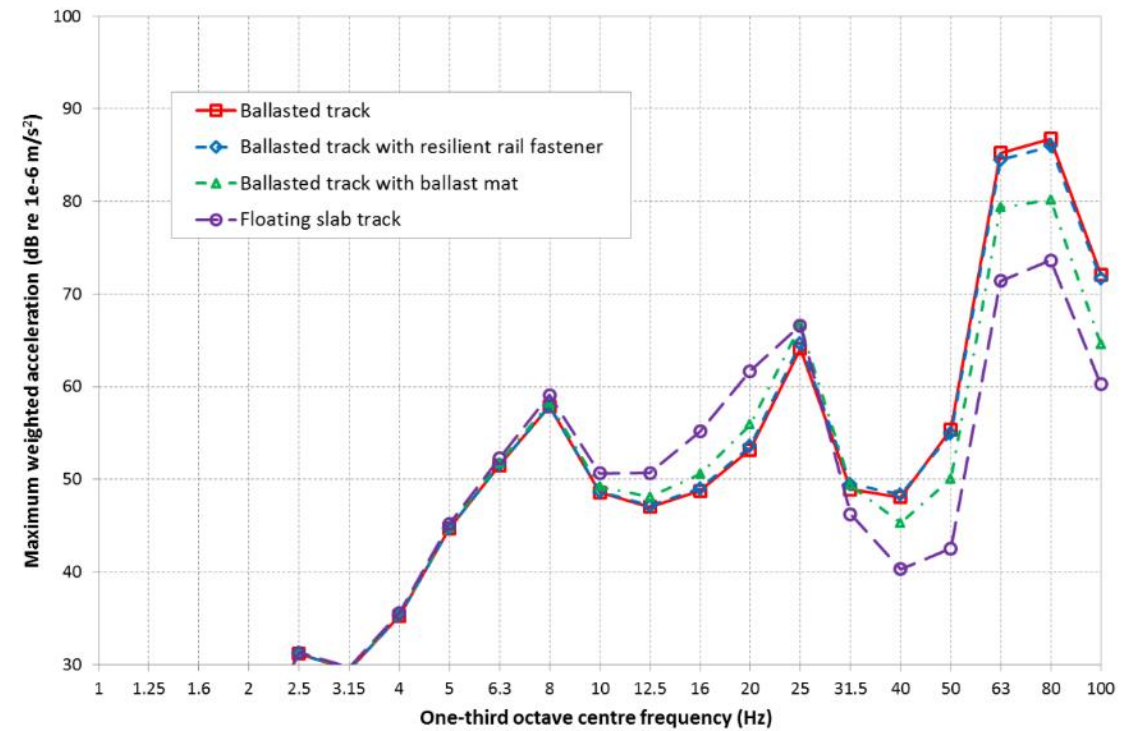


Vibration predictions

Track corrections

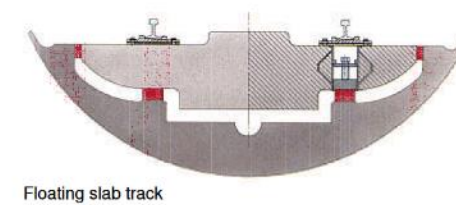
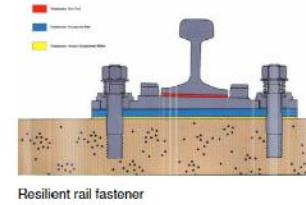


Predicted levels



Vibration mitigation options

		Do-minimum Ballasted track	Option 1 Ballasted track with resilient rail fastener	Option 2 Ballasted track with ballast mat	Option 3 FST
Number of properties	Class A	0	0	0	13
	Class B	0	0	0	7
	Class C	0	2	20	8
	Class D	18	18	8	0
	Class >D	10	8	0	0
	Total	28	28	28	28
Cost in addition to do-minimum cost			\$478,420	\$654,308	\$1,567,603
Benefit			\$96,306	\$582,859	\$876,114
BCR			0.2	0.9	0.6



Do minimum - Ballasted track



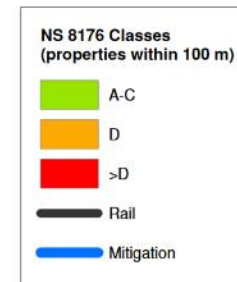
Option 1 - Ballasted track with resilient rail fastener



Option 2 - Ballasted track with ballast mat



Option 3 - Floating slab track



Ballast mat specification

		Ballast mat DN 1019	Ballast mat to meet Class D or better at all properties	Ballast mat DN 619	Ballast mat as specified in 42198440_L001_C	Ballast mat DN 325	Ballast mat DN 335
Number of properties	Class A	0	0	0	0	0	0
	Class B	0	0	0	0	0	9
	Class C	11	16	17	20	22	16
	Class D	14	12	11	8	6	3
	Class >D	3	0	0	0	0	0
	Total	28	28	28	28	28	28
Vertical rail displacement (mm)	Sleeper spacing 600mm	-	-	3.3	-	4.2	4.7
	Sleeper spacing 700mm	3.2	-	-	-	4.9	5.6

NS 8176 Classes

- A-C
- D
- >D
- Rail
- Ballast mat



Ballast mat DN 1019



Ballast mat to meet Class D
or better at all properties



Ballast mat DN 619



Ballast mat as specified in
42198440_L001_C



Ballast mat DN 325

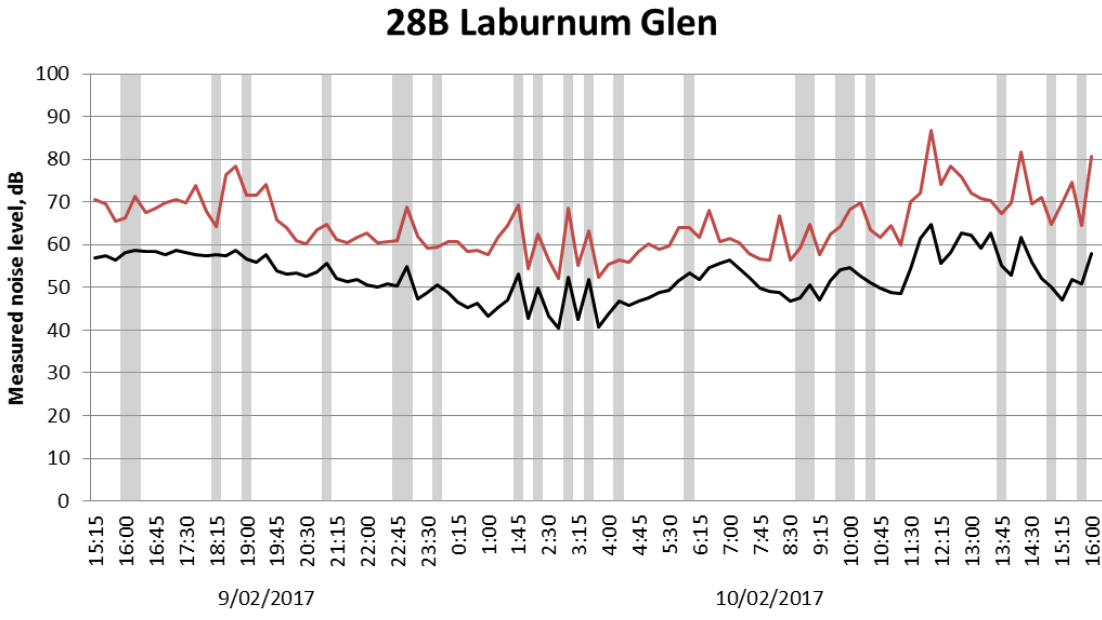
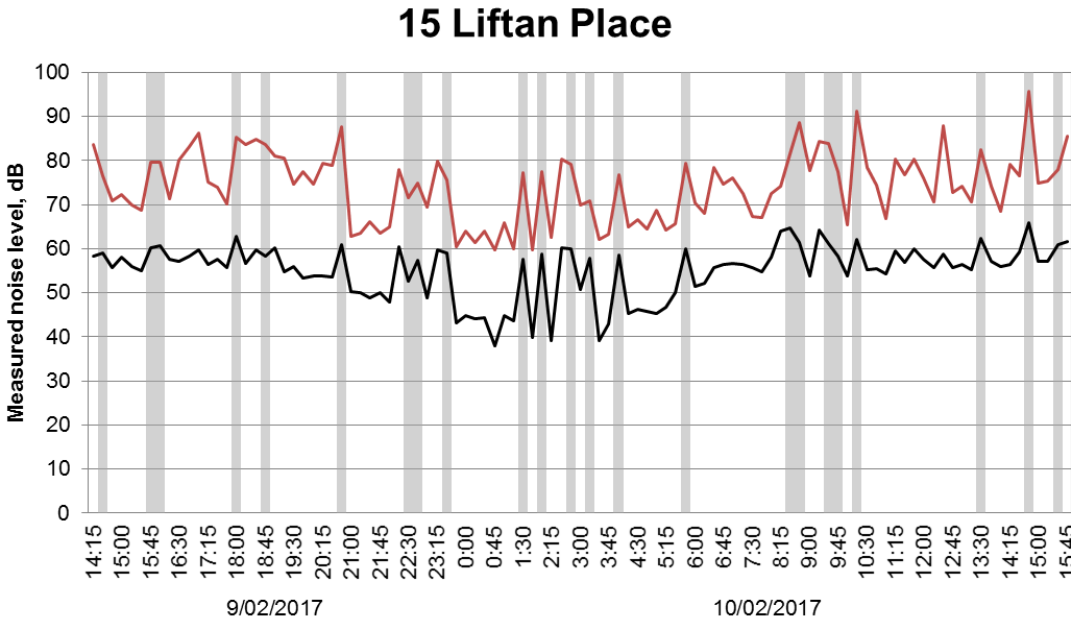
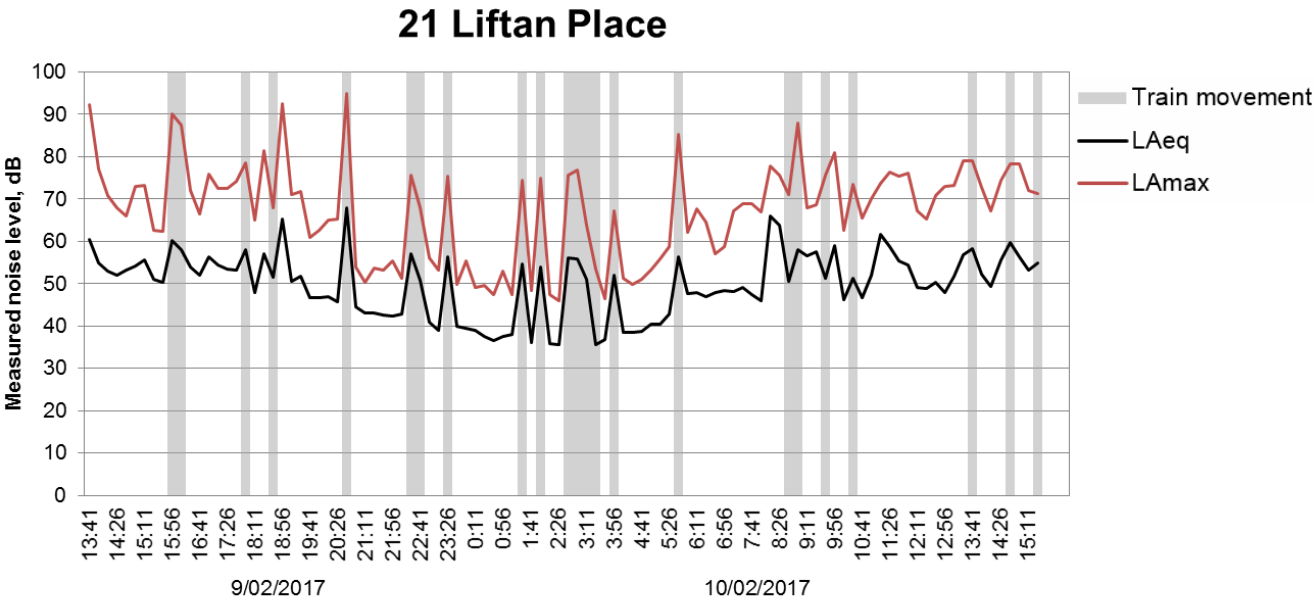
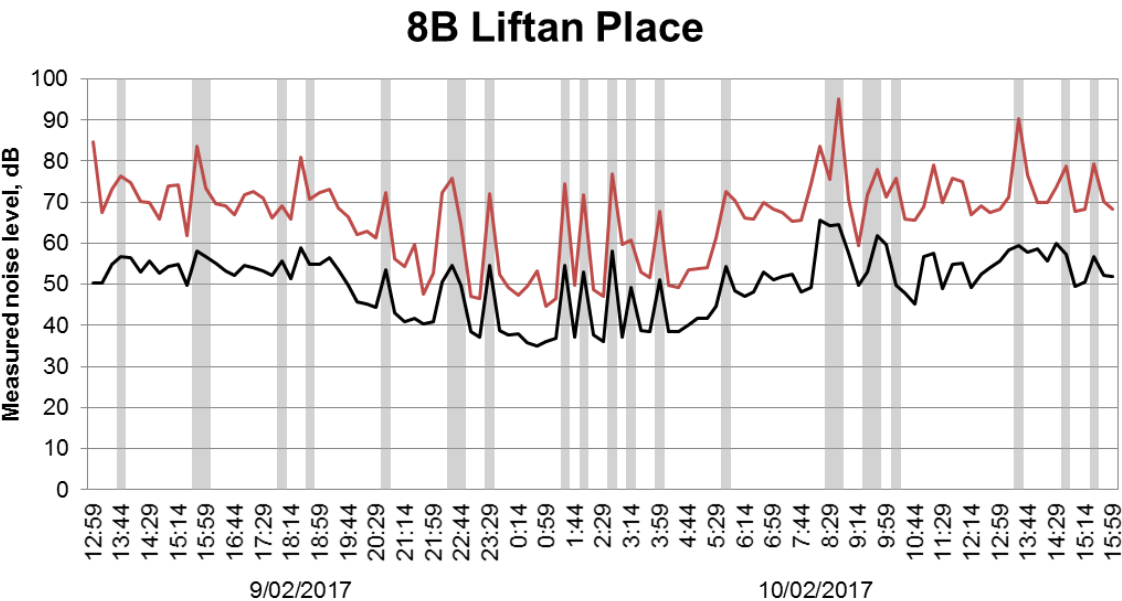


Ballast mat DN 335

Post Construction Noise Monitoring



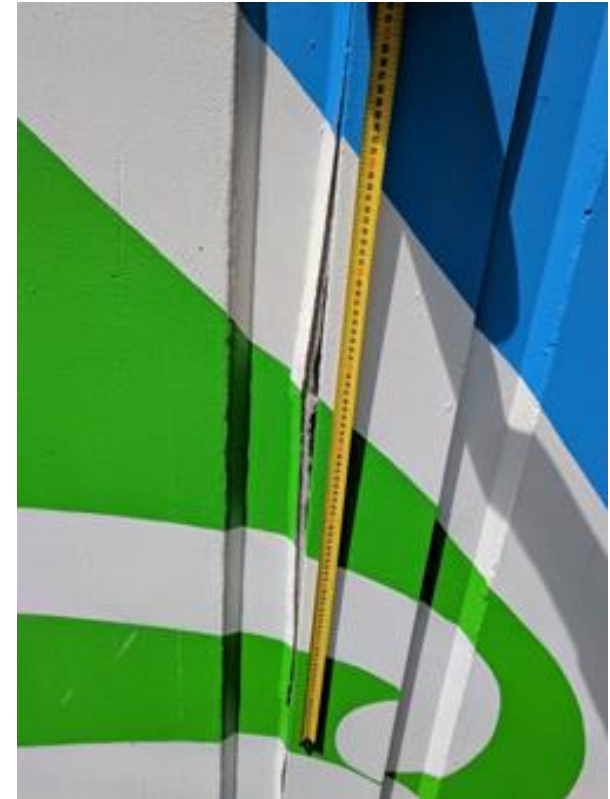
Noise Measurement Results



Noise Wall Inspection



Noise Wall Defects



Post Construction Vibration Monitoring



Vibration Measurement Results

Location	Measured Vibration Level, $v_{w,95}$ (mm/s)
21 Liftan Place	0.335
Adjacent to noise wall, 7m from the track	0.563

Receiver	Distance from Railway Track	Calculated Vibration Level	
		$v_{w,95}$ (mm/s)	NS 8176 Category
15 Liftan Place	15	0.478	Class D
17 Liftan Place	16	0.463	Class D
19 Liftan Place	18	0.437	Class D
21 Liftan Place	23	0.386	Class D
10A Liftan Place	25	0.370	Class D
12 Liftan Place	25	0.370	Class D
10B Liftan Place	26	0.363	Class D
8B Liftan Place	26	0.363	Class D
13 Liftan Place	30	0.338	Class D
11 Liftan Place	31	0.333	Class D
9 Liftan Place	41	0.289	Class C
8A Liftan Place	50	0.262	Class C
19 Matapihi	55	0.250	Class C
5 Liftan Place	58	0.243	Class C
7 Liftan Place	58	0.243	Class C
6A Liftan Place	65	0.230	Class C
4 Liftan Place	66	0.228	Class C
6B Liftan Place	68	0.225	Class C
21A Matapihi	78	0.210	Class C
5B Liftan Place	85	0.201	Class C
15 Russley Drive	86	0.200	Class C
9 Russley Drive	94	0.191	Class C
23B Russley Drive	95	0.190	Class C
7 Russley Drive	96	0.189	Class C
25B Russley Drive	98	0.187	Class C



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