

## Josephine Draper

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**From:** Roger Burra [roger.burra@opus.co.nz]  
**Sent:** Monday, 6 July 2009 5:02 p.m.  
**To:** Josephine Draper  
**Cc:** VINCE.DRAVITZKI@OPUS.CO.NZ; WAYNE.STEWART@OPUS.CO.NZ  
**Subject:** FW: SH1 and Kapiti - Noise comments

**Importance:** High

Jo,

As discussed, I attach a working paper outlining the potential noise affects of the Options 1, 2 & 3.

I have estimated ball-park costs for each option using the rates for noise mitigation included for the inner city bypass. These have been inflated from 2005 values. I have assumed that there is no relaxation from the existing standard (worst case). On this basis I have assumed:

- \$0.5M per kilometre for noise reduction surfacing, and
- \$1.5 per kilometre for a concrete noise wall (1.8 - 2.4m tall)

Given that the unit costs we initially used include some element of noise mitigation (although not explicitly), the addition of the above costs would be worst case.

On the basis of Vince's high level recommendations (see memo) and the above costs I estimate mitigation to cost:

Option 1 - in the order of \$10M - \$15M or 2% - 4% of estimated costs  
Option 2 - in the order of \$20M - \$25M or 3% - 7% of estimated costs  
Option 3 - in the order of \$20M - \$30M or 3% - 8% of estimated costs

I believe that these estimates are not outside the scope of the cost ranges already identified for Options 1, 2 & 3.

Regards

-----Original Message-----  
**From:** Tiffany Lester [mailto:Tiffany.Lester@opus.co.nz]  
**Sent:** Monday, 6 July 2009 2:34 p.m.  
**To:** Roger Burra (Wellington)  
**Cc:** 'Vince K Dravitzki'  
**Subject:** SH1 and Kapiti - Noise comments

Dear Roger,

Vince is in a meeting this afternoon but asked for me to send you this draft document.

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Best regards.

Tiffany.

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TO  
FROM Vince Dravitzki  
DATE 03 July 2009  
FILE  
SUBJECT Kapiti state highway options  
High level noise assessment



### Introduction

There are four main options proposed for alterations to the section of State highway 1 from Raumati to Waikanae.

- 1 A new expressway route that follows the designation of the Western Link Route from Raumati to Pekapeka, and the existing State highway 1 becomes a local arterial.
- 2 An expressway that follows the railway line from Paraparaumu overbridge to mid-Waikanae, and a short local arterial from Poplar Avenue to mid-Kapiti Road.
- 3 An upgrade to State highway 1, following the existing route, and a short local arterial from Poplar Avenue to Kapiti Road following the Western Link Route.
- 4 A "do minimum".

### Requirements for noise

The requirement of the Resource Management Act is that land owners must ensure that emissions of noise from their land are reasonable. At present this can be achieved by showing that noise limits meet the New Zealand Transport Agency (NZTA) noise guidelines<sup>1</sup> with supplement by the NZTA Environmental Plan. The noise guidelines take an "ambient + an increase" approach to setting noise limits.

For a built up area the effect of these noise guidelines is that noise levels can increase by 3 dBA but the noise level is not to exceed  $L_{eq}(24 \text{ hour})$  70 dBA; unless the current ambient level already exceeds 70 dBA in which case the noise level is not to change. The NZTA Environment Plan establishes a target of  $L_{eq}(24 \text{ hour})$  65 dBA as the noise level to which high noise levels should be reduced if it is practical and cost effective to do so.

For a rural area, the effect of the noise guidelines in practice is that noise levels at affected properties are to lie somewhere between 55 dBA and 62 dBA depending on whether it is currently fairly quiet and isolated (for a noise limit of 55 dBA) or whether there is more activity, such as a low/medium traffic volume rural road nearby, in which case the noise limits are usually 62 dBA.

Two of the alteration options and the "do minimum" option have rail traffic noise as part of the ambient noise level. Some designations have required that the train noise be disregarded in establishing the ambient noise level. This appears illogical but it does mean that at a Hearing an Applicant cannot be certain

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<sup>1</sup> Appendix 6 of the 1999 edition of the Planning Policy Manual "Transit New Zealand's Guidelines for the Management of Road Traffic Noise"

that the contribution of rail traffic to the overall noise can be taken into account and so reducing the allowable noise limit.

Alteration options following the Western Link Route designation will inevitably have many of the existing designation conditions as legacy conditions, even if a new designation is sought, as land owners can well argue that they have made plans based on the expectations of the existing conditions for this route. However, these conditions are written around a four lane expressway, more or less in the middle of the designation, with in excess of 20,000 vehicles travelling at least 70 km/h.

### **The draft noise standard**

A draft New Zealand Standards noise standard for road traffic noise has been circulated for comment. Caution should be used in applying this draft standard as change is likely. However at present the draft standard says that noise from new roads should be between 57 to 64 dBA and be as close as practically able to 57 dBA where the benefit-cost of achieving the noise limit is taken into account. Under the current draft standard, the noise from altered roads should have noise limits of 65 to 67 dBA.

As currently written, the draft standard has some implications for the alteration options.

For Option 1, the draft standard would invoke pressure for the noise limit for the new road to decrease from the current noise limit of approximately 62 dBA to a noise limit of 57 dBA for the section from Poplar Avenue to Otaihanga Road. This is more strict than the current designation conditions.

Option 2 would also have this limit (57 to 62 dBA) for the main new road section from the overbridge to mid-Waikanae.

Option 3 would probably have the more liberal 65 to 67 dBA noise limit assigned to an "altered road", but note that the draft standard needs clarification as to the precise definition of both "new" and "altered" roads. Some parts of Option 3 might be classed as "new" road.

### **Achieving the noise limits**

The noise impact of a road on the adjacent properties is highly dependent on the proximity and site features which might reduce exposure to noise. At present expressway designs are only indicative (four lanes with a median). With these constraints an indicative assessment of noise limits, and whether and how these could be achieved is as follows.

#### **Option 1:**

NZTA noise guidelines and Environmental Plan: A 100 km/h expressway this route would readily fit the existing designation noise limits as the designation already envisioned a 70 km/h expressway. However, the higher speed increases noise by about 4 dBA and some additional mitigation will be needed.

- The route should keep to the centre of the designation, as far as practical.
- Substantial bunding is allowed for, as was allowed for in the consented outline design. There is apparently ample material needing to be removed from the site that could be used for such bunding.
- Open Graded Porous Asphalt (OGPA) is allowed for as the road surface from Poplar Avenue to about 500 metres past Te Moana Road.
- The mitigation around the Waikanae Holiday Camp (of bridge wall, wall, and bund) as currently required is included.

If the New Zealand Standards road traffic noise standard was in place the same design would probably achieve the requirements of this standard with the exception that the OGPA probably needs to be extended to Pekapeka. Even though the noise limit for the road will be more stringent, it is likely that doing

more mitigation can be excluded because it is not practical with respect to the noise benefit to be delivered.

- The noise mitigation costs are for the OGPA and the noise mitigation structures over the Waikanae River and adjacent Waikanae Holiday Camp. The bunding is likely to be neutral in cost because of the large amount of local material needing to be moved for road formation.

### **Option 2:**

NZTA noise guidelines and Environmental Plan: Noise limits along this route will be primarily "ambient + 3 dBA" provided the train noise can be included within the ambient noise. If this is the case, using an OGPA road surface along this full route should be sufficient mitigation. If there is already OGPA on the existing road sections, then mitigation would be via increase to deep depth or double layer OGPA. In addition, it would be prudent to allow for a total of 5.0 kilometres of noise wall, at about 2.0 metres high, to treat selected local areas where the OGPA will not be sufficient on its own. Locations for these walls are expected to be the section from Poplar Street to Ihaka Street where road widening and fitting in a service lane will bring the road and properties close together. A similar 2.0 kilometre length of wall or bund is likely to be needed north of Kapiti Road to Bluewater Place (the edge of the residential area). North of Otaihanga Road a 1.0 kilometre long wall or bund is also likely to be needed for the Greendale Subdivision. A 300 metre section on entering Waikanae is probably also needed.

If the train noise cannot be included in the ambient noise level then the noise limit for much of the new section will be about 62 dBA. The OGPA will still be needed and the needed height of noise wall or bund north of Kapiti Road will increase from a typical height of 1.5 to 2.0 metres to approximately 3.0+ metres high.

If the draft noise standard is in place, the noise limits will be in part for an "altered" road and in part for a "new" road. North of Kapiti Road, mitigation required will be similar to the situation of the NZTA noise guidelines but without train noise included as above. South of Kapiti Road the mitigation will be OGPA plus approximately 1.5 kilometres of low noise wall or bund (about 1.5 to 2.0 metres high).

### **Option 3:**

NZTA noise guidelines and Environmental Plan: The noise mitigation for this option will be very similar to Option 2. The noise limits will be primarily "ambient + 3 dBA" but it will be of little consequence whether train noise can be included in the assessment of the ambient noise level.

The same length of OGPA and the same length of low height noise walls and bunds as for Option 2 will be needed, but the location for the walls or bunds will alter north of the reconstructed overbridge. Sections of noise wall or bund will be likely to be needed for the properties in the Lindale/Otaihanga section.

Draft noise standard: If the standard as currently written was in effect, the noise limits would probably be for an "altered" road, that is 65 to 67 dBA, but as stated earlier the definition of "altered" is vague. The status of the local service roads is also uncertain. These may be classed as "new" roads. It would be best to allow for OGPA as a full length treatment, but the low height noise walls could probably be reduced to 2.0 kilometres in total length.

## Josephine Draper

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**From:** Roger Burra [Roger.Burra@opus.co.nz]  
**Sent:** Wednesday, 14 October 2009 9:07 p.m.  
**To:** Josephine Draper  
**Subject:** Fire Service Travel Times  
**Attachments:** 091013\_Fire\_Travel\_Time.xls

Hi Jo,

Attached excel sheet gives forecast 2026 travel times for various journeys within the District for the following scenarios:

- 2006 Do Min
- 2026 Do Min
- 2026 Expressway Follows WLR Designation
- 2026 Expressway Follows Railway
- 2026 Expressway Avoids Future Town Centres

In each of the option scenarios the only expressway intersections are at Poplar Avenue, Otaihanga Road and Peka Peka Road.

The results show travel time reductions for both Expressway follows WLR designation and Follows Rail, but not for all routes in the Avoids Town Centres scenario with the intersection configuration tested.

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Travel Time Analysis

13 October 2009

Point Location

- A Intersection between Te Roto Drive and Birmingham Street
- B Intersection between Poplar Avenue and SH1
- C Peka Peka Road, close to SH1
- D Tutere Street, Waikanae Beach
- E Marine Parade, Mactean Street, Paraparumu Beach

Options 2, 3e & 4 (below) include grade separated expressway options only at Polar Avenue, on Otaihanga Road and at Peka Peka Road

Do Min	From	To	Route	Journey Time (Seconds)					
				2006 Base		2026 Do min			
				AM	IP	PM	AM	IP	PM
	A	B	via Te Roto Kapiti_SH1	420	339	367	694	615	840
	A	C	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga SH1 PekaPeka	726	725	742	1266	1139	1850
	A	C	via Te Roto Kapiti_SH1_PekaPeka	747	691	723	1154	1077	1590
	A	D	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga SH1_Te Moana Rauparaha Tutere	836	816	847	1337	1221	1924
	A	D	via Te Roto Kapiti_SH1_Te Moana Rauparaha Tutere	857	782	828	1224	1159	1664
	A	E	via Te Roto Kapiti Marine Pde	153	153	172	234	271	288

2026 Option 2 - SH1 Expressway Follows WLR Designation

From	To	Route
A	B	via Te Roto Kapiti_SH1
A	C	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga WLR PekaPeka
A	C	via Te Roto Kapiti_SH1_PekaPeka
A	D	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga SH1_Te Moana Rauparaha Tutere
A	D	via Te Roto Kapiti_SH1_Te Moana Rauparaha Tutere
A	E	via Te Roto Kapiti Marine Pde

2026 Option 3e - SH1 Expressway Follows Rail with 2 Lane WLR (Poplar to Kapiti + Otaihanga to Te Moana)

From	To	Route
A	B	via Te Roto Kapiti_WLR Poplar
A	C	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga expressway PekaPeka
A	C	via Te Roto WLR Otaihanga expressway PekaPeka
A	D	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga WLR_Te Moana Rauparaha Tutere
A	D	via Te Roto WLR_Te Moana Rauparaha Tutere
A	E	via Te Roto Kapiti Marine Pde

2026 Option 4 - SH1 Expressway Avoids Future Town Centre with WLR (Poplar to Kapiti)

From	To	Route
A	B	via Te Roto Kapiti_WLR Poplar
A	C	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga WLR expressway PekaPeka
A	D	via Te Roto Guildford Realm Mazenngarb Ratanui Otaihanga SH1_Te Moana Rauparaha Tutere
A	D	via Te Roto Kapiti_SH1_Te Moana Rauparaha Tutere
A	E	via Te Roto Kapiti Marine Pde

	2026 Journey Time			Change in Travel Time from			Change Range (Minutes)
	AM	IP	PM	AM	IP	PM	
	395	455	533	-5	-2.7	-5.1	-2.7
	640	639	681	-10.9	-8.3	-19.5	-8.3
	818	776	865	-5.6	-5	-12.1	-5
	837	837	905	-8.3	-6.4	-17	-6.4
	888	871	975	-5.6	-4.8	-11.5	-4.8
	259	249	260	0.4	-0.4	-0.5	0.4

	2026 Journey Time			Change in Travel Time from			Change Range (Minutes)
	AM	IP	PM	AM	IP	PM	
	344	379	439	-0.9	-1.3	-1.6	-0.9
	653	651	675	0.2	0.2	-0.1	0.2
	584	581	643	-3.9	-3.3	-3.7	-3.3
	522	520	544	-5.3	-5.3	-6	-5.3
	453	450	513	-7.3	-7	-7.7	-7
	238	234	275	-0.4	-0.3	0.3	-0.4

	2026 Journey Time			Change in Travel Time from			Change Range (Minutes)
	AM	IP	PM	AM	IP	PM	
	344	346	370	0	-0.6	-1.1	0
	655	660	798	0	0.2	2.1	0
	846	851	1043	5.4	5.5	8.3	5.4
	896	896	997	7.4	7.4	8.1	7.4
	248	268	270	0.2	0.6	-0.1	-0.1

2006 base AM

2006 base IP

2006 base PM

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2026 Do Min AM

2026 Do Min IP

2026 Do Min PM

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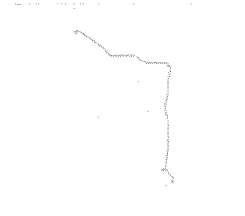
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2026 Option 2 PM

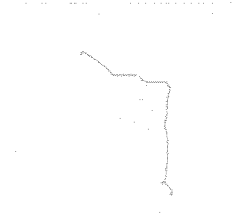
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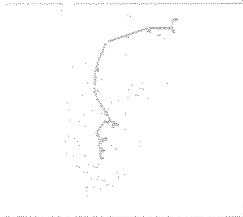
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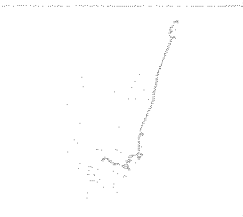
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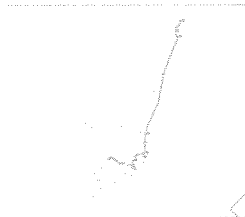
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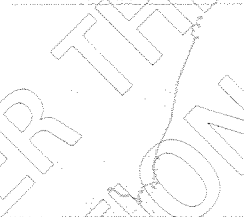
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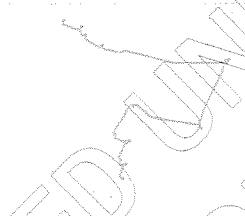
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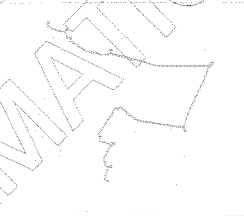
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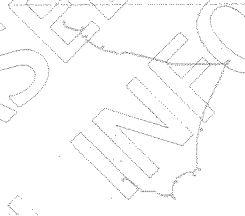
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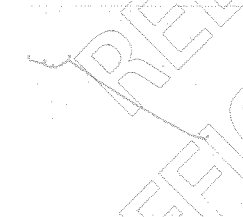
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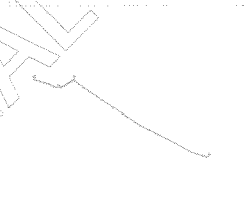
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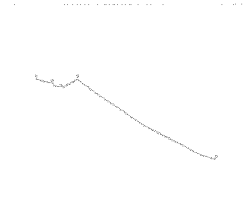
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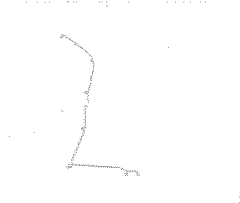
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2026 Option 3e AM

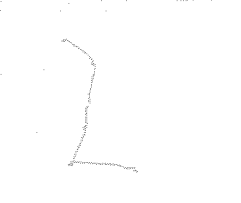
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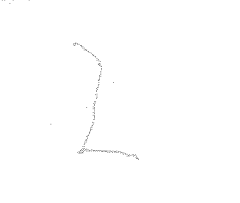
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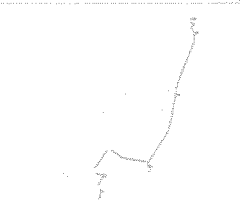
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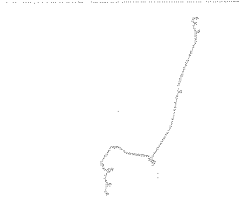
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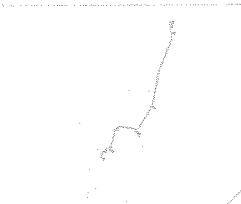
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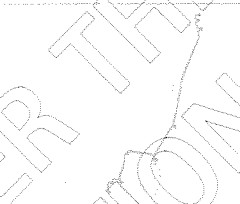
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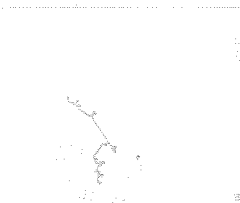
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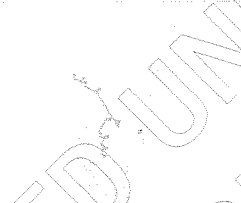
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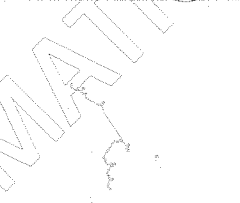
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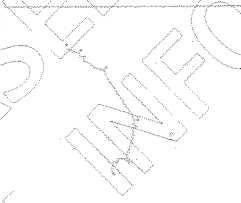
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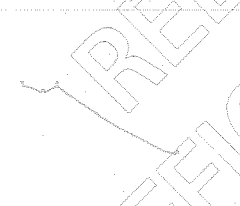
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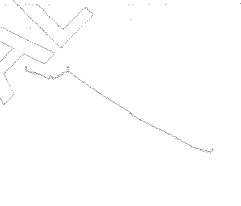
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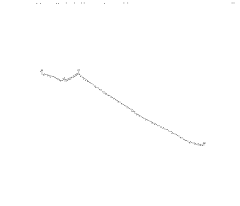
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2026 Option 4 AM

2026 Option 4 IP

2026 Option 4 PM

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