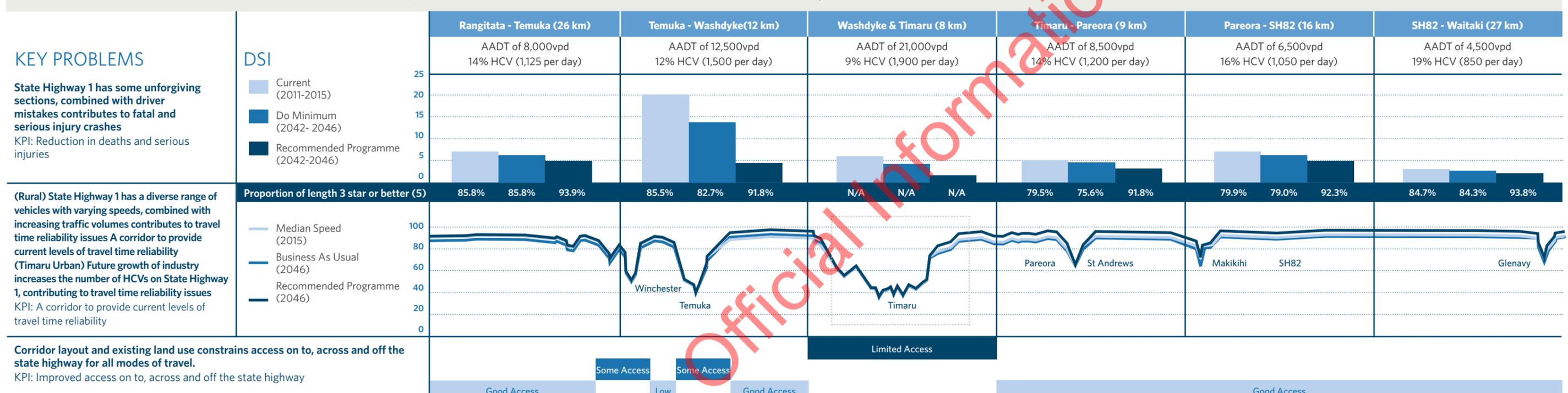


CHRISTCHURCH TO DUNEDIN: SOUTH CANTERBURY RECOMMENDED PROGRAMME



RANGITATA RIVER TO WAITAKI RIVER



Corridor layout and existing land use constrains access on to, across and off the state highway for all modes of travel. KPI: Improved access on to, across and off the state highway

RECOMMENDED PROGRAMME

PBC Outcomes

29-37
DSIs saved (10 yr period)

93%
Three star KiwiRAP rating or better

79-82
min average travel time (2015)

77-80
min travel time (recommended 2046)

Programme investment profile
H/H/1.4-1.8

ACTIVITY	Rangitata River - Temuka	Temuka - Washdyke	Washdyke to Port Washdyke & Timaru	Timaru - Pareora	Pareora - SH82	SH82 - Waitaki River
Short term 2017-2026	Safe Roads Alliance improvements (BAU funded)	Centreline Barrier installation and widening Intersection improvements and rationalisation	Localised Road Optimisation (including lengthening merges beyond signals)	Isolated hazard protection, shoulder widening, curve easing	Activated warning signs	Activated warning signs
Medium term 2027-2036	Safer corridors Treatments		Grants St Signalisation following Show Grounds development	Passing/overtaking improvements and safer corridors improvements	Safer corridors treatment (wide centreline, sealed shoulder widening and roadside hazard removal)	Safer corridors treatment (wide centreline, sealed shoulder widening and roadside hazard removal)
Long term 2037-2046		Implementation of 2+1 configuration	Monitor travel time and travel time reliability, and HCVs through Timaru for Four Lane timing			
Capital Cost (\$M)	\$20M	\$45-60M	\$55-65M	\$10M	\$15M	\$15M
Additional Operations and Maintenance Cost (\$k)	\$400k	\$650k	\$400k	\$100k	\$450k	\$250k
BCR	1-3	1-3	1-3	1-3	<1	1-3
Corridor Wide Activities	Short Term - Incident response planning and detour planning, promote use of rail with connections to Rolleston Inland Port. Medium and long term - rural intersection improvements.					

SH1 CHRISTCHURCH - DUNEDIN SOUTH CANTERBURY (RANGITATA - WAITAKI)

State Highway 1 (SH1) is of national significance for moving people and goods critical to the country, region and local communities. It is the primary roadbased transport route in the South Island and is a national route in the one network road classification (ONRC). The role of this journey connects the South Island's two largest population centres Christchurch and Dunedin for the purposes of freight, tourism, inter-regional and local travel.

The South Canterbury segment of the corridor is between the Rangitata River and the Waitaki River. North of Timaru the corridor is generally flat with few out-of-context curves and rolling terrain. South of Timaru there are rolling sections with notable out-of-context curves. This segment has sections of higher traffic volumes such as between Temuka and Timaru and within the Timaru urban area.

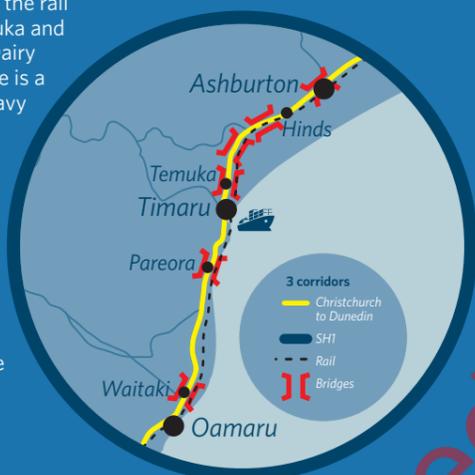
Timaru is the main service town in South Canterbury. The surrounding area of Timaru is farmland which is experiencing significant growth primarily driven by irrigation. There is a strong interaction between the Port, in the centre of Timaru and the industrial area in Washdyke to the north of the town, the rail head freight hub in Temuka and Fonterra's Clondebroye Dairy Factory. As a result, there is a significant volume of heavy vehicles travelling along SH1 between the Port, Washdyke and Temuka to the north.

The South Canterbury segment for this Programme Business Case has been split into 'Timaru urban' (between the racecourse and Saltwater Creek) and the rural sections

(north and south of Timaru). The key issues for the rural South Canterbury segment are road user safety, travel time reliability due to the diverse range of vehicles travelling at varying speeds along the corridor and access on to, across and off the state highway at some key rural intersections. The key issues for Timaru urban is travel time reliability issues from the future growth of industry increasing the number of heavy vehicles on SH1, and access on to, across and off the state highway for all modes of travel in Timaru.

There is also a major concern of possible failure of the state highway corridor at the Rangitata and Waitaki Rivers in the event of a high impact low probability (HILP) event, and the impact this would have on the South Canterbury economy. Inter-organisation response plans needs to be robust, scenario tested and up-to-date.

The recommended programme for both the Timaru urban and rural sections of the South Canterbury segment aims to address road user safety, provide a reliable and consistent corridor commensurate with the route classification, and ease of access to the state highway in urban areas and at key rural intersections.



PROGRAMME MULTI-CRITERIA ASSESSMENT AT 2046

		Programme 1 Business as Usual / Do Minimum	Programme 2 Target Safety and some Access Improvements	Programme 3 Corridor Safety (3 1/2 - 4 star safety)	Programme 4a Mixed Programme (Safety, Travel Time Reliability, Access and Timaru Road Optimisation)	Programme 4b Mixed Programme (Safety, Travel Time Reliability and Access) with extra Timaru Capacity (4 lane)	Programme 5 Consistent and Higher Standard (ONRC) State Highway Corridor (Safety, Travel Time Reliability, and Access)	Programme 6 Balanced High Level (Safety, Travel Time Reliability and Access)
Investment Objectives	Reduction in deaths and serious injuries Expected deaths and serious injuries in 2042-2046	20% increase on 2011-2015 30-40 DSI +	35-40 DSI +	25-35 DSI ++	40% decrease on BAU 20-25 DSI ++	40% decrease on BAU 20-25 DSI ++	15-20 DSI ++	10-15 DSI +++
KPI Outcomes	Road safety risk assessment rating (KiwiRAP) (Proportion of length 3 star or better)	82%	82%-85% 0	93% ++	93% ++	93% ++	97+% ++	98%+ +++
	Median travel time	82 mins --	82-85 mins --	82-85 mins -	78 mins +	75-77 mins ++	74-76 mins ++	74-76 mins ++
	Open road median speed	88 km/h -	85-88 km/h -	85-88 km/h -	92-94 km/h +	92-94 km/h ++	93-95 km/h ++	93-95 km/h ++
	Improve travel time reliability (Difference between programme 85th percentile and 2015 median travel times)	7¼ min --	7¼ min --	7½ min -	6½ min +	6 min ++	6½ min +	5½ min +++
	Intersection level of service	--	0	-	-	--	+	0
	Pedestrian and cyclist access	--	+	+	+	0	+	+
Other factors	Effectiveness	--	-	-	+	-	++	+
	Risk	++	+	-	0	-	-	--
	Public & Stakeholders	+	+	-	++	-	+	0
	Inter/ dependencies	++	+	0	0	-	-	-
	Feasibility	+++	+	-	0	-	-	--
	Affordability	+++	++	+	+	--	-	--
	Costs - including operations and maintenance	\$5 - \$15 M	\$20 - \$40 M	\$40 - \$70 M	\$150 - \$190 M	\$260 - \$320 M	\$250 - \$500 M	\$350 - \$650 M
	Benefit Cost Ratio	High	Medium/High	Medium	Medium	Low	Low	Low
	Programme Consideration	Short Listed	Not Short Listed	Not Short Listed	Recommended programme	Short Listed	Not Short Listed	Not Short Listed

The Recommended Programme is Programme Option 4a - Mixed Programme (Safety, Travel Time Reliability, Access, and Urban Road Optimisation Timaru). The programme includes short term isolated safety treatments with corridor wide safety treatments in the medium to long term. Alternating 2+1 configuration is proposed between Temuka and Timaru for safety and reliability benefits. It is noted that heavy vehicle numbers through Timaru must be monitored regarding their effect on travel time. 4 laning has been suggested but will be very expensive with environmental impacts. Programmes were not Short Listed if they did not meet Investment Objectives, or had adverse impacts on outcomes.

TRIGGER POINTS

Trigger, Risk and/or Uncertainty	Time	Impact level	Impact on programme	Comments
Population growth: There is a risk that the population growth is greater than predicted which leads to a reduction in travel time reliability (unlikely)	Ongoing	Medium	The increased growth would lead to increasing traffic volumes and would hit the trigger point to implement four lanes through Timaru	Unlikely that this trigger point is going to be met in the 30 year programme
Land Use: Changes to land use in Timaru, as well as to the south of Timaru, contribute, to significant increase in traffic volumes (unlikely)	2016-2020	High	Four lanes are implemented through northern Timaru, this will lead to a significant increase in the cost of the programme (i.e. \$200 M)	Public and stakeholder issues may result from the implementation of four lanes
Land acquisition: The price and the quantity of land required for four lanes through Timaru is unknown	2040-	High	Significant increase to the cost of the programme if four lanes is required	Four lanes is unlikely to be implemented within the 30 year programme
Consenting for re-alignments and widening: There will be a requirement for consenting for sections of the SH1 that are proposed to be realigned and widened	2020-2025	High	Consenting for the programme is not expected to impact programme delivery if unsuccessful but will impact the type of engineering and environmental design and implementation	There may be some infrastructure on the property side of the road corridor boundary which could be a constraint to some options
Full or partial Failure of SH1: There is a low risk that failure of critical assets (i.e. bridges) and sever the link between Christchurch and Dunedin (unlikely)	Ongoing	High	This would result in full or partial closure of the highway and major impact on the local communities	This is a serious risk, there have been no detailed studies to identify the probable occurrence and impacts

STAKEHOLDERS INVOLVED IN THE PBC

- NZ Transport Agency
- Timaru District Council
- PrimePort Timaru
- Timaru Container Terminal
- Automobile Association
- Waimate District Council
- NZ Trucking Association
- Hilton Haulage
- CTOC

IMPLEMENTATION PARTNERS

This section is to be completed / confirmed.
Funding is expected to be primarily NZTA.
Some TDC funding

FUNDING SPLIT

