

AusRAP Case Studies – Top 20 and Next 16 Programs

1. Introduction

Since 2014, a series of programs aimed at improving road infrastructure have been initiated or completed in Victoria, including the former Safe System Road Infrastructure (TAC funded, DTP delivered) investment program across the Top 20 and Next 16 rural highway networks. Pre- and post-treatment analysis of the Top 20 and Next 16 roads, using AusRAP star ratings demonstrates significant improvements along these key road corridors.

2. Safe Roads Top 20

The Top 20 roads were developed and delivered through the Safe System Road Infrastructure Program between 2017 and 2022. This program aimed to implement transformative safe system treatments along our highest-function roads.

2.1. Program Overview

Road Safety Victoria (RSV) partnered with the Transport Accident Commission (TAC) to improve safety features on 20 high-risk roads, covering over 1,700 km. Key treatments included over 2,300 km of flexible safety barriers (including motorcycle-friendly barriers), rumble strips, and roundabouts.

Figures 1 to 3 show examples of these treatments as applied in the Top 20 Program. These treatments are designed to prevent crashes or, where avoidance is not possible, reduce their severity.



Figure 1: Beechworth-Wodonga Road, wide centreline treatment



Figure 2: Audio tactile line marking (ATLM)



Figure 3: Western Highway, continuous median and roadside flexible barriers

2.2. Roads selected for the program

The Top 20 roads and their extents are shown in Table 1 below.

Table 1: Top 20 roads list and extents

Road	Extent
Anglesea / Great Ocean Road	Bellbrae to Anglesea
Bass Highway	Lang Lang to San Remo
Beechworth-Wodonga Road	Beechworth to Yackandandah Rd
Calder Freeway	M80 Ring Road/Keilor Park to Bendigo
Geelong Ring Road	Corio to Waurin Ponds
Goulburn Valley Highway	Yea to Molesworth
Hume Freeway / Highway	M80 Ring Road / Thomastown to Wodonga
Maffra-Sale Road	Sale to Maffra
Midland Highway	Ballarat to Creswick
Mornington Peninsula Freeway / Highway	Mount Martha to Rosebud
Princes Freeway East	Longwarry to Traralgon
Princes Freeway East	Traralgon to Sale
Princes Highway West	Little River to Corio
South Gippsland Highway	Leongatha to Meeniyan
Western Freeway	M80 Ring Road / Sunshine West to Ballarat
Geelong Bacchus Marsh Road	Heales Road to Woolpack Road
Melbourne-Lancefield Road	Sunbury Road to Chauncey Street
Paynesville Road	Main Road to Princes Highway
Midland Shepparton to Stanhope	Girgarre-Rushworth Road to Goulburn Valley Highway
Princes Highway East - Sale to Bairnsdale	Forster Street to Forge Creek Road

2.3. Top 20 Star Rating Map

The following figures compare the star rating results of the Top 20 road corridors, before and after treatments were installed.

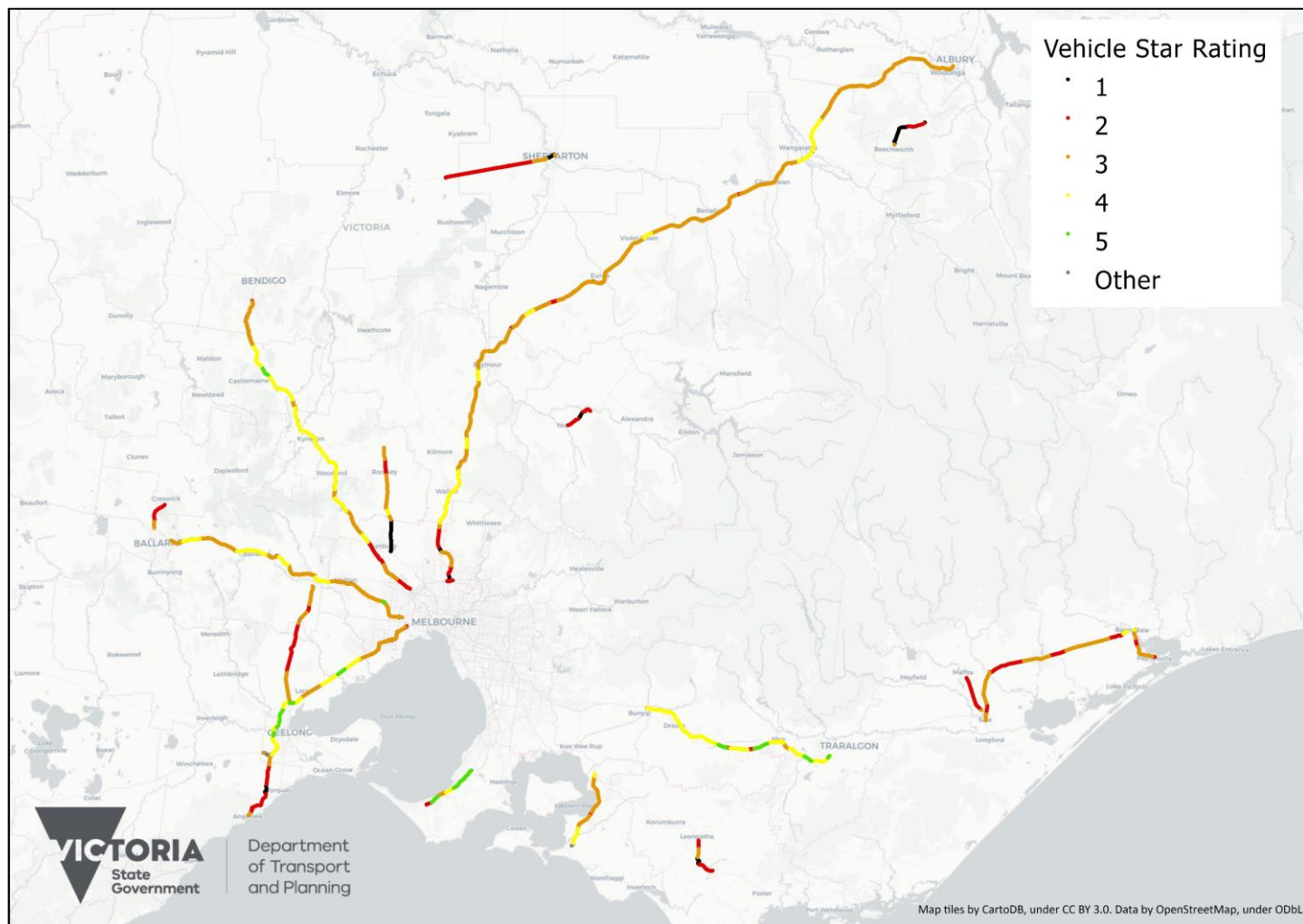


Figure 4: AusRAP star ratings map of Top 20 road corridors – before treatments

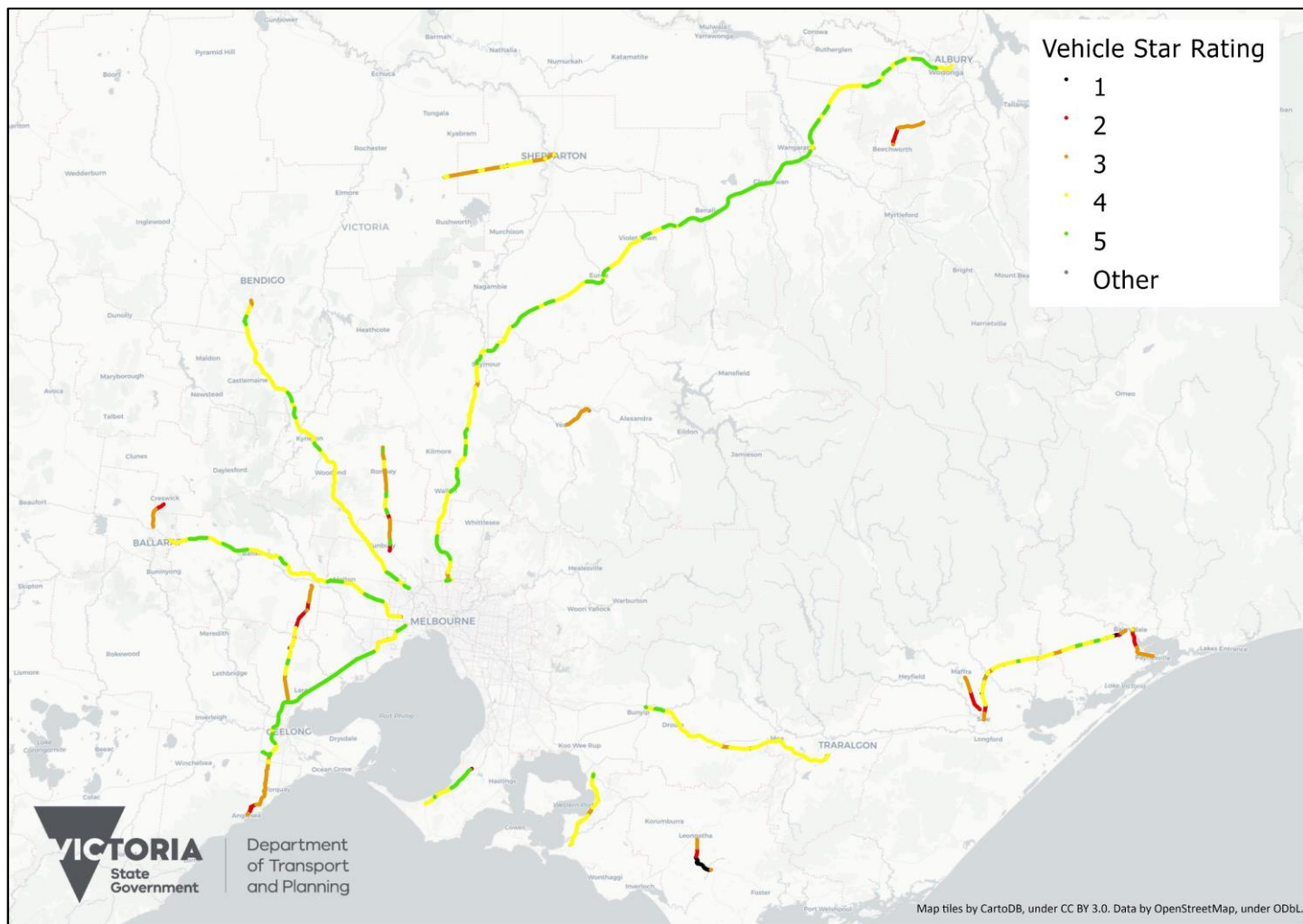


Figure 5: AusRAP star ratings map of Top 20 road corridors – after treatments

2.4. Top 20 Results

2.4.1. Road safety star ratings

Key statistics from the Top 20 before and after assessments are summarised in the following tables and figures. Table 2 summarises star ratings by percentage of road length, while Table 3 summarises them by percentage of travel.

Table 2: AusRAP star ratings by length, Top 20 roads – before and after

Star Ratings	Top 20 Roads – By Length				
	Before		After		
	Length (km)	Percent	Length (km)	Percent	% Change
5-star	37.1	2.1%	363.4	21%	+18.9%
4-star	366.5	21%	1,027.3	61%	+40%
3-star	932.4	53%	230.2	14%	-39%
2-star	320.9	18%	51.9	3.1%	-14.9%
1-star	72.2	4.1%	15.8	0.9%	-3.2%
Total	1,759.2	100%	1,691.1	100%	
3-star or better	1,336.0	76%	1,620.9	96%	+20%
4-star or better	403.6	23%	1,390.7	82%	+59%

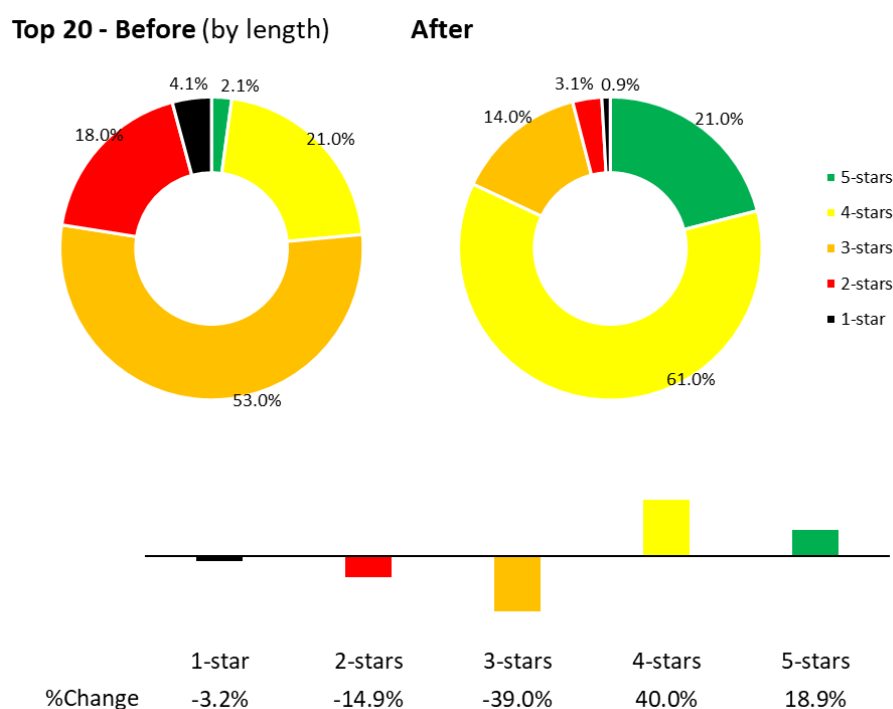


Figure 6: AusRAP star ratings by length, Top 20 roads – before and after

Table 3: AusRAP star ratings by travel, Top 20 roads – before and after

Star Ratings	Top 20 Roads – By Travel				
	Before		After		
	Million VKT (km)	Percent	Million VKT (km)	Percent	% Change
5-star	150.9	2.5%	2,193.1	28%	+25.5%
4-star	1,383.7	22%	4,587.2	58%	+36%
3-star	3,079.5	50%	869.1	11%	-39%
2-star	1,137	18%	137.5	1.8%	-16.2%
1-star	321.7	5.2%	56.7	0.7%	-4.5%
Total	6,153.8	100%	7,855.2	100%	
3-star or better	4,614.1	75%	7,649.5	97%	+22%
4-star or better	1,534.6	25%	6,780.4	86%	+61%

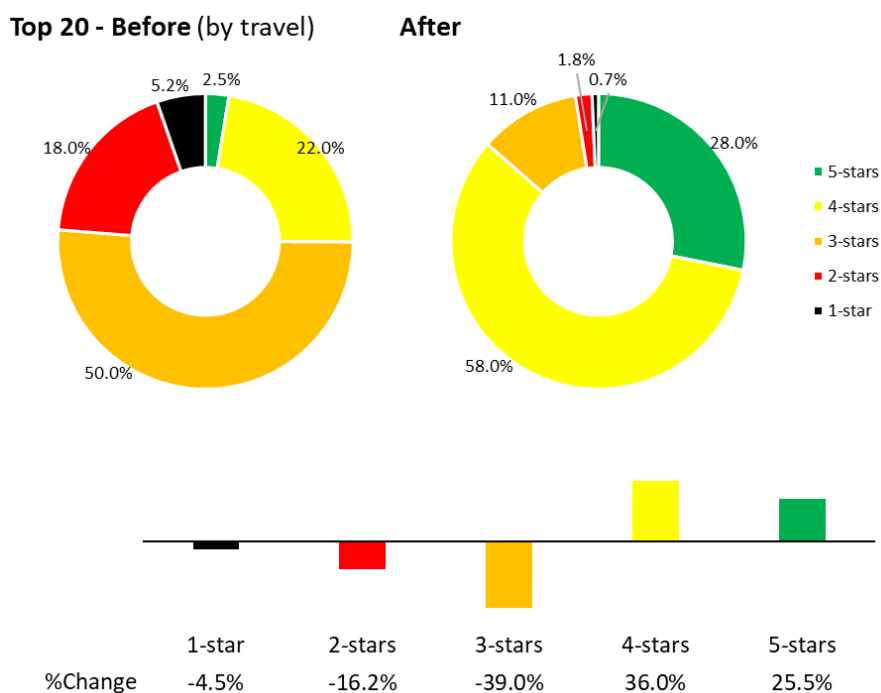


Figure 7: AusRAP star ratings by travel, Top 20 roads – before and after



These results show significant improvements in star ratings for the Top 20 roads. In summary:

- The percentage of road length rated 3-star or better increased from 76% (before treatments) to 96% (after treatments) for vehicle occupants.
- The percentage of travel rated 3-star or better has risen from 75% (before treatments) to 97% (after treatments).
- The percentage of travel rated 4-star or better has significantly increased from 25% (before treatments) to 86% (after treatments).

2.4.2. Road safety trauma evaluation

Victoria's rollout of continuous barriers has delivered significant safety benefits.

The Transport Accident Commission (TAC) conducted an analysis linking police reports and insurance claims to annual injury and hospitalisation data. The analysis found that, based on police-reported cases, the Top 20 Program improvements resulted in:

- 77% fewer fatalities
- 50% fewer serious injuries
- 45% fewer minor injuries

Additionally, TAC found that the Top 20 Program led to significant reductions in TAC claims, injury severity, and hospital stays per year for lane departure crashes, specifically:

- 94% fewer MAIS 3+ claims
- 39% fewer MAIS 2 claims
- 30% fewer MAIS 0–1 claims
- 74% fewer hospital bed days



3. Safe Roads Next 16

The Next 16 roads were developed and delivered through the Investment Plan (IP) 21 and IP 22. These initiatives were introduced to enhance safety on high-risk corridors using proven infrastructure treatments.

3.1. Program Overview

The IP 21 – Full Barrier on Divided High-Speed Roads program implemented approximately 436 km of linear flexible barrier on both the left-hand side and the median, covering over 176 km of the road length on ten high-risk road corridors.

The IP 22 – Full Barrier and Intersection Treatments on Undivided 100km/h Roads program treated intersections and installed at least 80 km of centreline flexible barriers, as well as flexible safety barriers on the left-hand side and overtaking lanes on six high-risk road corridors.

Figure 8 and Figure 9 show typical treatments on the selected road segments. These treatments aim to prevent crashes or mitigate their severity where avoidance is not possible.



Figure 8: Midland Highway, continuous median and roadside flexible barriers



Figure 9: Princes Highway West, continuous median and roadside flexible barriers

3.2. Roads selected for the program

The Next 16 roads and their extents are shown in Table 4 below.

Table 4: Next 16 roads list and extents

Road	Extent
Goulburn Valley Freeway	Seymour to end duplication (Ross Road)
Princes Highway West	Ziegler Parade to Mahoneys Road
Princes Highway West	Panmure to Allansford
South Gippsland Highway	Craig Road to Bass Highway
Bellarine Highway	Christies Road to Grubb Road
Frankston Freeway	Mornington Peninsular Freeway to Beach Street
Moorooduc Highway	Sumner Road to Balnarring Road
Mornington Peninsular Freeway	Springvale Road to Frankston Freeway
Princes Freeway East	Cardinia Road to Bunyip River
Surf Coast Highway	Feehans Road / Coastside Drive to Merrijig Drive
Westernport Highway	South Gippsland Hwy to North Road
Midland Highway	Clarendon to Buninyong
Midland Highway	Shepparton to Nalinga
Maroondah Highway	Coldstream
Fyansford-Gheringhap Road	Dog Rocks Road to Midland Hwy
Murray Valley Highway	Mystic Park to Lake Boga

3.3. Next 16 Star Rating Map

The following figures compare the star rating results of the Next 16 road corridors, before and after treatments were installed.

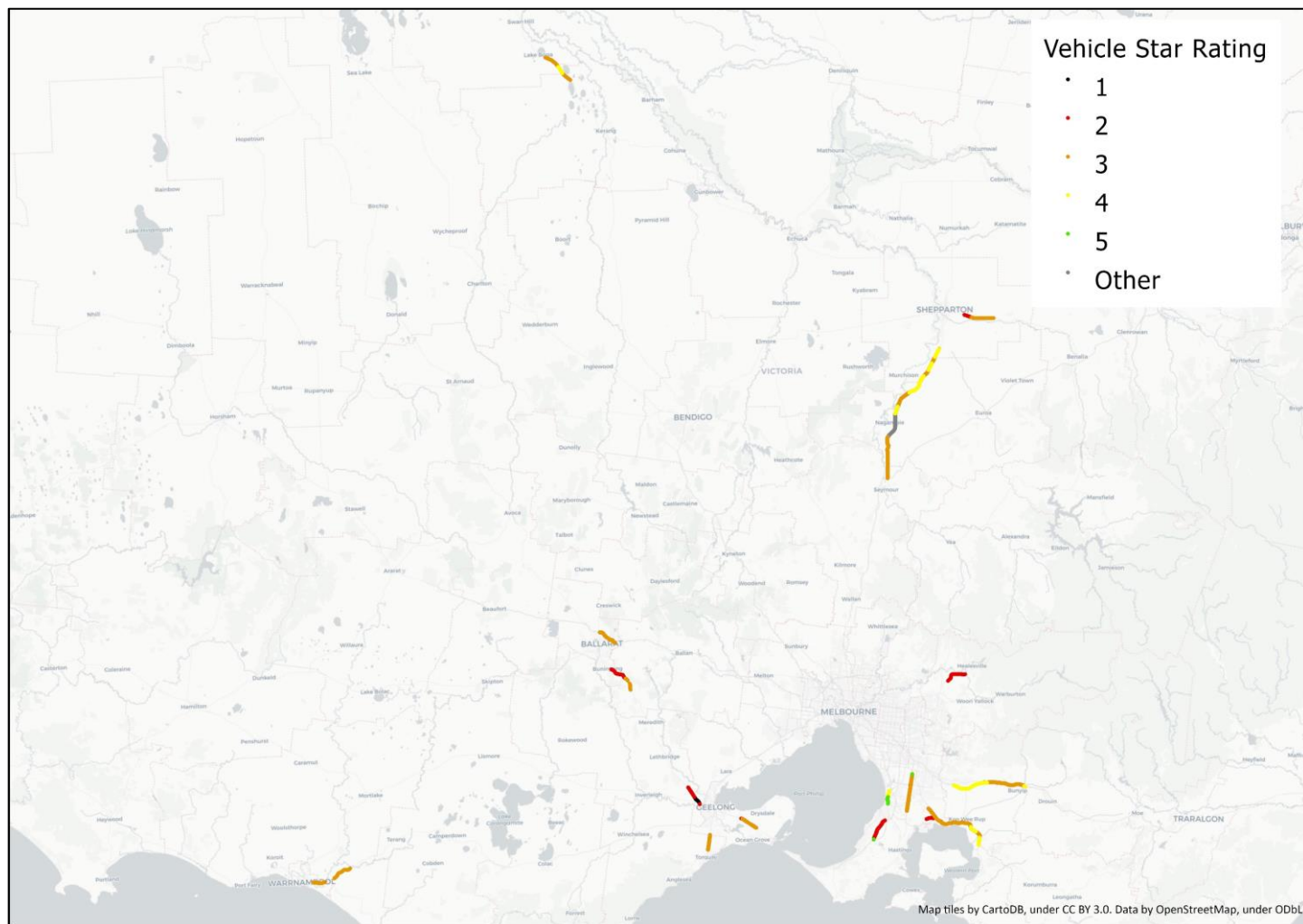


Figure 10: AusRAP star ratings map of Next 16 road corridors – before treatments

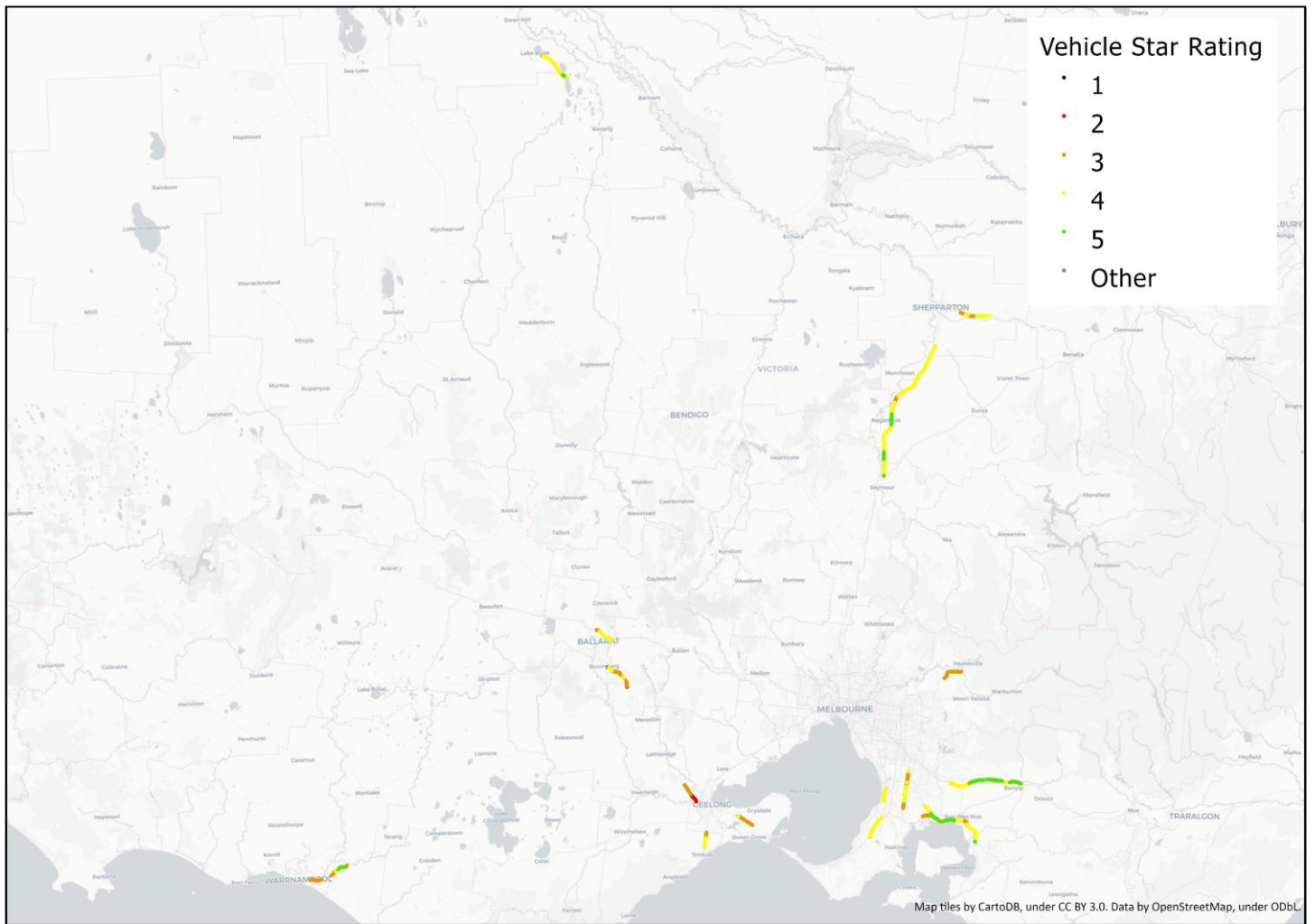


Figure 11: AusRAP star ratings map of Next 16 road corridors – after treatments

3.4. Next 16 Results

3.4.1. Road safety star ratings

Key statistics from the Next 16 before and after assessments are summarised in the following tables and figures. Table 5 summarises star ratings by percentage of road length, while Table 6 summarises them by percentage of travel.

Table 5: AusRAP star ratings by length, Next 16 roads – before and after

Star Ratings	Next 16 Roads – By Length				
	Before		After		
	Million VKT (km)	Percent	Million VKT (km)	Percent	%Change
5-star	5.6	1.3%	42.6	11%	+9.7%
4-star	64.2	15%	208.1	51%	+36%
3-star	220.5	53%	143.5	36%	-17%
2-star	82.4	20%	7.6	1.9%	-18.1%
1-star	10.4	2.5%	2.3	0.6%	-1.9%
Total	416.1	100%	404.1	100%	
3-star or better	290.3	70%	394.2	98%	+28%
4-star or better	69.8	17%	250.7	62%	+45%

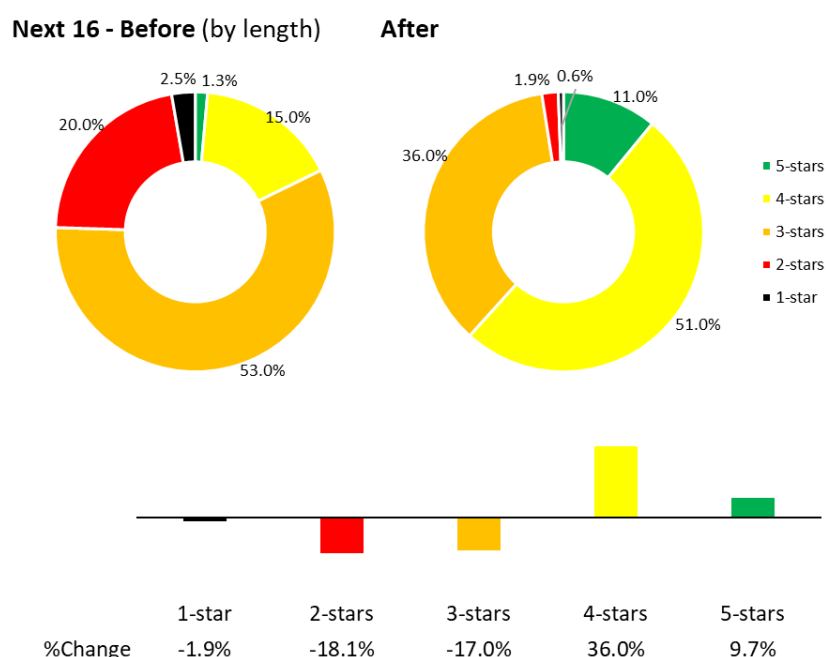


Figure 12: AusRAP star ratings by length, Next 16 roads – before and after

Table 6: AusRAP star ratings by travel, Next 16 roads – before and after

Star Ratings	Next 16 Roads – By Travel				
	Before		After		
	Million VKT (km)	Percent	Million VKT (km)	Percent	%Change
5-star	51.8	4.3%	151.1	12%	+7.7%
4-star	265.7	22%	701.6	56%	+34%
3-star	530	44%	384.1	31%	-13%
2-star	266.3	22%	17.4	1.4%	-20.6%
1-star	32.6	2.7%	5.2	0.4%	-2.3%
Total	1,192.2	100%	1,259.0	100%	
3-star or better	847.4	71%	1,236.9	98%	+27%
4-star or better	317.5	27%	852.7	68%	+41%

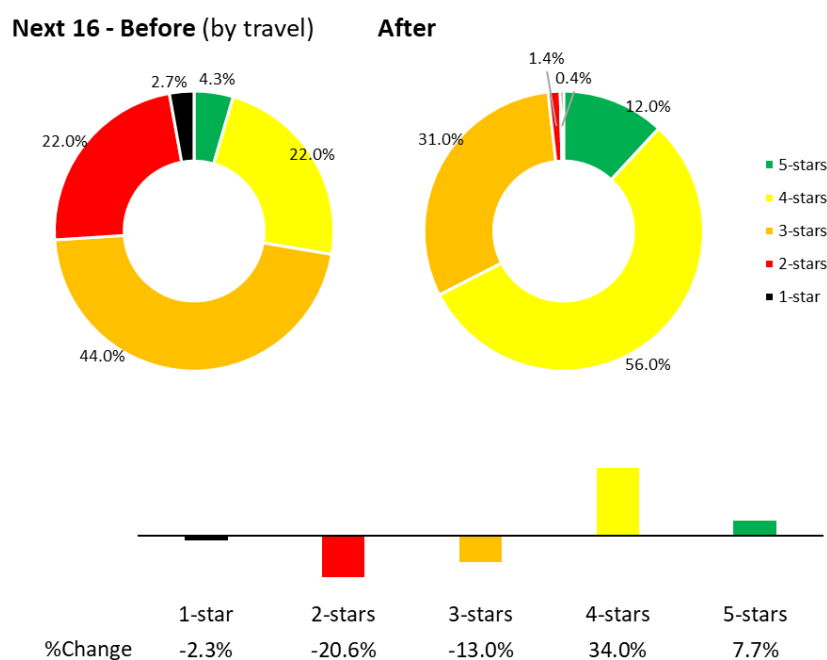


Figure 13: AusRAP star ratings by travel, Next 16 roads – before and after

These results show significant improvements in star ratings for the Next 16 roads. In summary:

- The percentage of road length rated 3-star or better has increased from 70% (before treatments) to 98% (after treatments) for vehicle occupants.
- The percentage of travel rated 3-star or better has risen from 71% (before treatments) to 98% (after treatments).
- The percentage of travel rated 4-star or better has significantly increased from 27% (before treatments) to 68% (after treatments).

3.4.2. Road safety trauma evaluation

This program will be assessed as part of the Safer Roads Program Evaluation. Based on the TAC study's findings, similar positive results are expected.