BEFORE TARANAKI REGIONAL COUNCIL AND NEW PLYMOUTH DISTRICT COUNCIL

MT MESSENGER BYPASS PROJECT

In the matter	of the Resource Management Act 1991
and	
In the matter	of applications for resource consents, and a notice of requirement by the NZ Transport Agency for an alteration to the State Highway 3 designation in the New Plymouth District Plan, to carry out the Mt Messenger Bypass Project

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STATEMENT OF EVIDENCE OF PETER TERENCE MCCOMBS (TRAFFIC AND TRANSPORT) ON BEHALF OF THE NZ TRANSPORT AGENCY

25 May 2018

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QUALIFICATIONS AND EXPERIENCE

1. My name is Peter Terence McCombs.

2. I am a registered Civil Engineer and hold a Bachelor of Civil Engineering degree from the University of Canterbury and a post-graduate qualification in traffic engineering and transportation planning awarded with Distinction by the University of New South Wales.

3. I am a Chartered Professional Engineer, a Distinguished Fellow of Engineering New Zealand, and a Fellow of the Institute of Transportation Engineers.

4. My background includes eleven years in traffic and transportation matters with local authorities in Christchurch and in Wellington. From 1976 I worked as Principal and as a Director and Chairman in the firm of Traffic Design Group Limited, practising as a traffic engineering and transportation specialist throughout all of New Zealand. I am now a Principal Consultant with Stantec.

5. I have been engaged by many local authorities to advise on urban and rural traffic and roading development issues covering strategic planning, safety, and management matters of many kinds.

6. I am familiar with the State Highway and local roading network in the vicinity of the Project, its performance, and the wider functions it serves.

7. In preparing this evidence, I have read all of the submissions about strategic transport matters and traffic effects lodged in relation to the Project.

8. I confirm that I have read the 'Code of Conduct' for expert witnesses contained in the Environment Court Practice Note 2014. My evidence has been prepared in compliance with that Code. In particular, unless I state otherwise, this evidence is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

EXECUTIVE SUMMARY

9. State Highway 3 ("**SH3**") to and from the north serves the key strategic purpose of connecting the Taranaki region through to the Waikato. As Taranaki's only arterial connection directly to and from the north, SH3 is of particular importance to the economic well-being and wider future of Taranaki. The route connects Taranaki's oil and gas, agricultural, forestry and engineering products and expertise through to the main economic and transport hubs at Hamilton, Tauranga and Auckland. These connections are vital to Taranaki's ongoing economic performance.

10. The Taranaki Regional Council, together with the Stratford District Council, New Plymouth District Council ("**NPDC**"), South Taranaki District Council and the NZ Transport Agency ("**Transport Agency**"), prepared the Regional Land

Transport Plan ("**RLTP**") 2015/16 - 2020/21. The Project is included in the RLTP as a key regional and inter-regional priority.

11. Continued strengthening and growth of the Taranaki economy and population has steadily added pressures and exposed shortcomings within the northern arterial roading connections serving New Plymouth and the wider Taranaki region. With continuing traffic growth and growing reliance on the route, there is an increasingly evident need to attend to the inadequacies and vulnerabilities of the Mt Messenger portion of the route in carrying freight and serving Taranaki's current and future needs.

12. These shortcomings arise from fundamental road design problems that are especially evident in the length of SH3 between Urenui and Piopio where the narrow widths, steep grades, lack of passing opportunities, rock falls, and a poor safety record cause closures and an overall inferior performance that is inconsistent with its wider strategic role.

13. These limitations affect both the existing Awakino Gorge section between Awakino and Mahoenui (where upgrading approvals have now been obtained), and the Mt Messenger length between Uruti and Ahititi that is the focus of this hearing and my evidence.

14. The practical limitations and vulnerability of the Mt Messenger length of SH3 have long been recognised with road closures brought by rockfalls, landslips, vehicle breakdowns and crashes. In its present form and reflecting the nature of the terrain, the existing road has steep grades, a narrow width, a winding alignment with tight curves, restricted forward visibility, and limited overtaking opportunities. There are significant lengths with no or only limited shoulders that allow little room for error, breakdowns or passing and bring a particular vulnerability to closure from crashes and weather-related events. The existing physical limitations imposed by the existing two-lane narrow tunnel and its approaches at Mt Messenger (and the single-lane tunnel at Awakino although upgrades for that section have been approved) physically constrain maximum load sizes.

15. The Mt Messenger Bypass ("the **Project**") will establish a new 6 km length of SH3 between Uruti and Ahititi, leading north from New Plymouth. The Project will enhance the safety, resilience and journey time reliability of travel on SH3.

16. The Project replaces the existing highway at Mt Messenger and overcomes its inadequacies with a new alignment with the following traffic and transport key benefits:

    (a) average journey time saving of 4.1 minutes for light vehicles and 6.5 minutes for heavy vehicles;

    (b) more, and safer, passing opportunities (improved forward visibility and opportunities along the whole length (excluding tunnel) versus the current substandard passing and climbing lanes); and

(c) greatly improved reliability (and reduced use of alternative routes which add significantly to travel times), with less closures from slips or crashes and reduced maintenance requirements.

17. Further benefits of the new alignment are:

(a) a shorter length (6km versus the current 7.4km);

(b) improved safety (Star 3 versus the current Star 2);

(c) wider lanes (3.5m throughout versus current of up to 3.4m) and wider shoulders (1.5m outside tunnel versus current 0.5-1.5m);

(d) improved road geometry with:

(i) eased curves with a design speed of 100km/h (many curves currently have an advised speed, down to 25km/h) and ensuring that trucks can keep within their lanes around the curves (there are a series of curves in the current road alignment including at the tunnel, where trucks have to track across into the opposite lane);

(ii) the summit of the road reduced by 79m and flatter grades (a maximum of 7.5% versus the current maximum of 12%; and 1.6km being steeper than 6% compared to 4.8km on the present highway);

(iii) improved forward visibility of 150m or more versus the current down to 30-40m);

(e) reduced journey times for over-dimension loads by enabling such loads to use SH3 as opposed to a significantly longer (3hr 45 min) journey via Whanganui;

(f) reduced driver frustration through the above benefits (including the key benefits);

(g) reduced vehicle operating costs and CO_2 emissions; and

(h) safer provision for active modes such as cycling and improved access to walking tracks.

18. As the only direct arterial highway connection to and from the north, enhancing the safety, resilience and journey time reliability of travel on SH3 will benefit the whole of the Taranaki region, and in particular the growing proportion of heavy traffic carrying freight to and from key economic and transportation hubs to the north. The Project will match the form of the road to its modern-day function and ensure that it can accommodate ongoing future growth.

19. The existing SH3 corridor north and south of Mt Messenger follows relatively open rural valleys. The Project area itself lies within the steep hill country at

the Tongaporutu River extending south through to the pastoral flats of the upper Mimi valley.

20. At a national level, the Project strengthens Taranaki's connection to the national network, assists growth and economic development, and improves safety for all of its users. In terms of the wider travel demands it serves, the Project markedly strengthens Taranaki's key regional connection to and from the north, while greatly improving its resilience and reliability.

BACKGROUND AND ROLE

21. The Transport Agency has engaged me to advise it on the traffic and transport effects of the Project to improve the section of SH3 between Uruti and Ahititi, to the north of New Plymouth.

22. I prepared the Strategic Transport Assessment included as Technical Report 1, Volume 3 to the Assessment of Environmental Effects ("**AEE**") for the Project. I also reviewed the Traffic and Transport Assessment included as Technical Report 2.

23. I have travelled this length of highway many times, have made a series of site visits in the course of my involvement with the Project, and participated in workshops and reviews with the wider Project team.

24. I am familiar with the travel demands served by this section of SH3, its operating characteristics, and the wider functions it provides as part of the national highway network.

SCOPE OF EVIDENCE

25. The purpose of my evidence is to set out the traffic and transport effects of the construction and operation of the Project. My evidence then goes on to discuss the broader strategic transport implications of the Project, and the traffic-related matters involved in its proposed construction.

26. The Project objectives are to:

    (a) enhance the safety of travel on SH3;

    (b) enhance resilience and journey time reliability of the state highway network;

    (c) contribute to enhanced local and regional economic growth and productivity for people and freight by improving connectivity and reducing journey times between the Taranaki and Waikato Regions; and

    (d) manage the immediate and long term cultural, social, land use and other environmental impacts of the Project by so far as practicable avoiding, remedying or mitigating any such effects through route and alignment selection, highway design and conditions.

27. My evidence addresses:

(a) the strategic importance of this part of SH3;

(b) the existing Mt Messenger section of SH3, and the fundamental problems with the existing road;

(c) the physical characteristics of the Project alignment;

(d) the direct traffic and transport effects of the replacement of the existing Mt Messenger section of SH3 with the Project alignment;

(e) the strategic transport implications of the construction of the Project;

(f) temporary traffic and transport effects during construction of the Project; and

(g) responses to submissions and the Section 42A reports.

STRATEGIC LOCATION

Strategic road network

28. **Figure 1** shows the wider strategic road network serving Taranaki as defined by the RLTP. The Mt Messenger summit is some 56 km north of New Plymouth with the Project itself being undertaken in the length of SH3 between Uruti and Ahititi.

Figure 1: Regional Land Transport Network[1]

29. As shown, SH3 north from New Plymouth and Waitara serves as the principal transport route joining the Taranaki region through to the Waikato and on to Hamilton, Tauranga and Auckland. It is Taranaki's only arterial route connecting directly to and from the north.

30. In this respect, SH3 is recognised as being of particular strategic importance to the economic well-being and wider future of Taranaki. The route serves to connect Taranaki's key industries of oil and gas, agricultural, forestry and engineering products and expertise, through to the main economic and transport hubs at Hamilton, Tauranga and Auckland.

31. The Project is part of a wider programme of highway improvements to be undertaken along the SH3 route. The Awakino upgrade has now been consented. Enabling better connection to the 'Golden Triangle' of Hamilton, Tauranga and Auckland is recognised as important to expanding Taranaki's regional contribution in both widening and further strengthening New Zealand's economic growth.[2]

[1] RLTP, Section 2.6, pg 12.
[2] Economic Development Study, Venture Taranaki, August 2012.

THE EXISTING MT MESSENGER SECTION OF SH3

32. The Project involves the construction and ongoing operation of a new 6km section of State Highway 3 ("**SH3**"), between Uruti and Ahititi to the north of New Plymouth. This new section of SH3 will bypass approximately 7.4km of the existing highway at Mt Messenger.

Operational characteristics

33. The principal operational characteristics of the existing Mt Messenger section of the SH3 route can be identified as:

    (a) Present volumes using this length of SH3 across Mt Messenger and through the Awakino Gorge amount to some 2,300 vehicles per day.

    (b) Of this total, up to 20% of all the traffic is heavy commercial vehicles carrying the products and services that are key to Taranaki's wider economy and outputs compared to the 12-14% more typical of the wider state highway network.

    (c) In its present form and reflecting the nature of the terrain, the existing highway at Mt Messenger has steep grades, a tortuous alignment, restricted forward visibility, and very limited overtaking opportunities.

    (d) There are significant lengths with no or only limited shoulders that allow little room for error, breakdowns or passing.

    (e) While the route is licensed for use by High Productivity Motor Vehicles ("**HPMVs**"),[3] the poor geometrics together with the present single lane tunnel at Awakino and the physical limitations of the existing Mt Messenger tunnel and its approaches restrict the maximum permitted length of vehicles. All over-dimension loads must travel via SH1 or SH4 and through Whanganui.

    (f) The route is especially vulnerable to interruption and closure by slips and rockfalls.

    (g) With only very limited alternatives, the route has poor resilience and is rated "not acceptable" as shown in **Table 5** (para 90 below) because it needs to be closed or severely restricted during events including breakdowns, land slips and crashes.

34. Fundamentally, this section of SH3 is of an inadequate standard in relation to its importance and function.

35. The shortest alternative route between Taranaki and the north via the SH43 connection through Whangamomona and SH4 at Taumarunui is severely limited and ill-suited to commercial loads. HPMVs are not permitted on SH43

[3] High Productivity Motor Vehicles ("**HPMV**") including 50MAX are trucks that are able to be operated under permit above the current 44 tonne maximum weight limit. Such vehicles display an identifying “H” sign on the front and rear.

and the route is unsealed over a section, has a one-way tunnel, and with its generally narrow width is unsuitable as a major detour route in the event of a closure of SH3.

Travel demands

36. The daily and hourly volumes using SH3 at Mt Messenger through the seven days of a typical week as measured in November 2017 are shown in **Figure 2**.

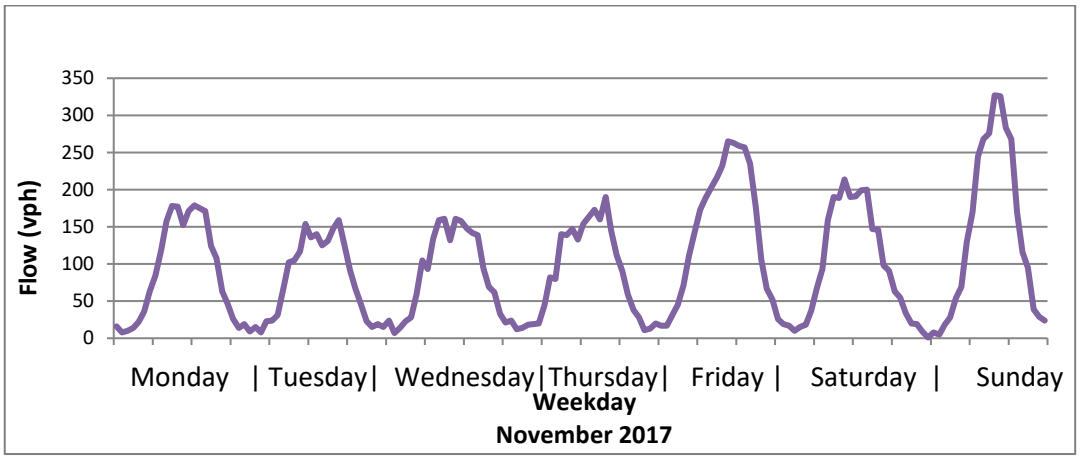

Figure 2: Daily and Hourly Volumes SH3, November 2017[4]

37. As is shown, weekday daytime volumes at Mt Messenger are generally in the range 130 to 160 vehicles per hour ("**vph**"). The busiest weekday hour of 265 vph was recorded at 3.00pm on the Friday. Weekend flows range from 215 to 270 vph through the middle periods of the day and up to a peak of some 320 vph at 3:00 pm on the Sunday afternoon. Such patterns are typical of a modestly loaded main regional connector.

38. The present annual average daily traffic count is 2,300 vehicles per day.

Ongoing growth

39. The long-term pattern of ongoing traffic growth as recorded at the permanent traffic counting station at Tongaporutu through the course of the past 40 years is shown in **Figure 3**.

[4] NZTA Traffic State Highway Traffic Count Data, November 2017.

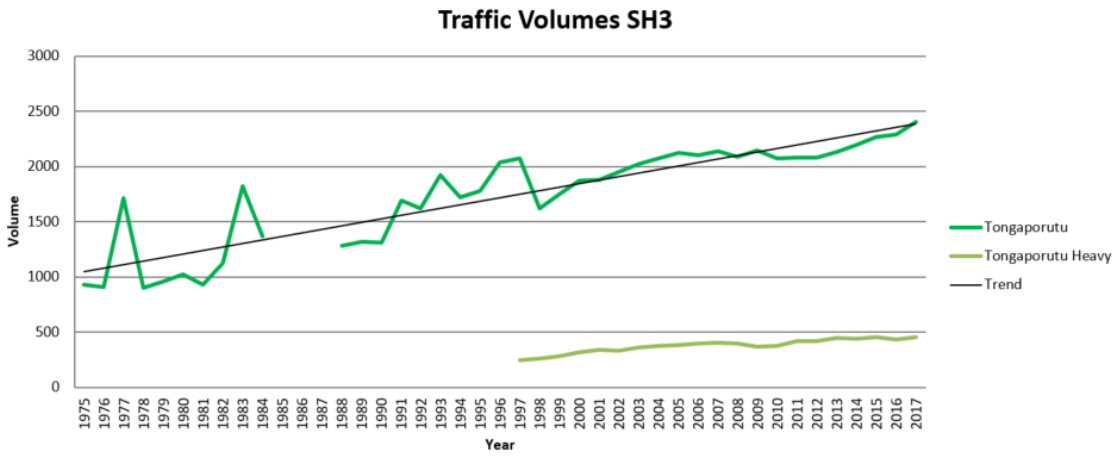

Figure 3: 40-year pattern of Traffic Growth 1975 - 2017 SH3 at Tongaporutu

40. The data shows the annual average daily volume of traffic using the Mt Messenger portion of SH3 having increased over the past 40 years at a continuing long term rate of between 2 and 3% per annum.

Heavy truck movements

41. **Figure 3** also shows the number of heavy truck movements included in the volumes using this Mt Messenger portion of the SH3 route through the years from 1997.

42. As shown, the route is currently carrying an average of some 460 heavy truck movements a day. The majority of these are long-distance journeys carrying commercial loads and freight to and from Taranaki to destinations across the Waikato, and in Hamilton, Tauranga and Auckland. In November 2009 KiwiRail decided to close the rail line between Taranaki and the Waikato. This has further emphasised the strategic relevance of this SH3 connection to and from the north.[5]

43. As the data shows, these truck volumes have approximately doubled over the last 20 years, reflecting that a principal pressure on serving ongoing traffic growth stems from the increasing numbers of heavy trucks. These patterns reflect the key importance of this SH3 route.

44. The route is also relied upon to carry hazardous goods such as LPG, and the length of SH3 across Mt Messenger introduces challenges for these vehicles. While currently relied upon for such transport to and from the north, its existing form with its steep grades and tortuous alignment is an obvious hazard for such loads.

Deficiencies of the existing route

45. This existing section of SH3 has a number of particular problems including:

    (a) a poor safety record;

[5] Taranaki Rail Link Closure, Sunday 8 November 2009, http://www.scoop.co.nz/stories/AK0911/S00144.html.

(b) frequent road closures;

(c) a lack of safe passing opportunities;

(d) substandard geometrics;

(e) continuing crashes; and

(f) poor reliability.

46. Each of these is addressed below.

Poor safety record

47. As noted above, the current road alignment is unforgiving, with driver mistakes leading to crashes and injuries.

48. The proportion of crashes due to factors such as loss of control and poor handling is higher than the national average.

49. Through all of this section, the existing roadway follows a narrow, winding alignment with steep grades of up to 12% in some locations. In many locations, the roadside environment is characterised as having steep vertical cliffs with the risk of an errant driver either colliding with or falling down the adjacent hillside. These physical features contribute to driver frustration and the severity of the crashes along the corridor. It also means that the physical challenge involved with vehicle recovery after a crash itself typically adds further to delays.

50. These existing road deficiencies result in this Mt Messenger section of SH3 being assessed as having a Safety Star Rating 2. Such Star Ratings assess the safety and engineering features of a road (such as lane and shoulder width or presence of safety barriers). Between 1 and 5 Stars are awarded, depending on the level of safety built into the road - the higher the Star Rating, the safer the road.

51. For undivided roads, a Safety Star Rating 2 is given where there are major deficiencies such as insufficient overtaking provisions, narrow lanes, and / or poorly designed intersections. The present Star Rating 2 assessment falls below the One Network Road Classification ("**ONRC**") SafetyNet desired minimum standard of a Star Rating 3 throughout all of the SH3 route.

52. In addition, and with much of the SH3 corridor to the north and south of Mt Messenger having Star Rating 3 (see **Figure 4** below), the poorer safety rating through the Project area is considered out of context with the surrounding network and introduces a risk of 'surprise', particularly for unfamiliar drivers.

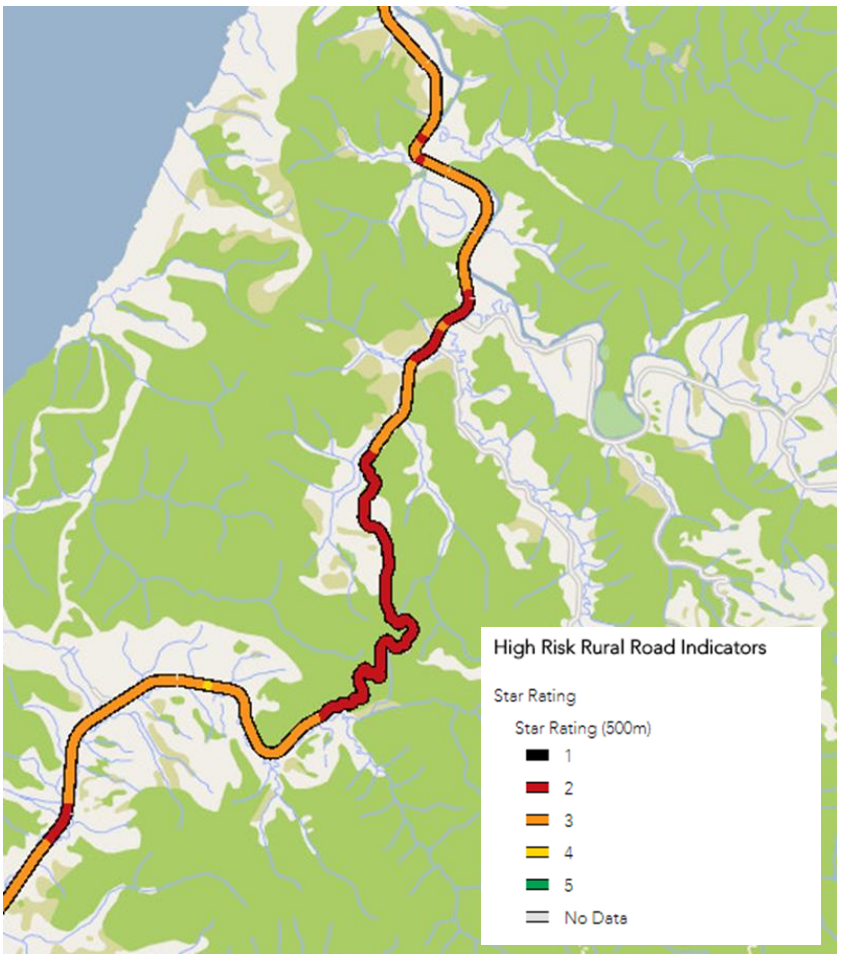

Figure 4: Mt Messenger Rating on SafetyNet

53. The overall objective is that drivers following a route will have a consistent driving experience along all of its length.

Road closures

54. Another of the identified problems of the existing SH3 corridor at Mt Messenger is that natural events, and some crashes, cause a high number of road closures, which with no suitable alternative route results in significant delays and adverse economic impact.

55. In this respect, travel along SH3 in the vicinity of Mt Messenger forms a part of a typically much longer journey, often between Hamilton and New Plymouth. Travelling via SH3 between Hamilton and New Plymouth takes approximately 3 hours 10 minutes under normal conditions. If and when the road is closed along any portion of the route, there are only a few detour routes that can be used.

56. With advance notice that the road is closed prior to leaving Hamilton or New Plymouth, the road user has a number of alternative route options to choose from, although these increase the journey time by at least 30%. However, if the user is unaware of this closure and has to turn around, the increase in journey time is significant. Such a scenario is significant for heavy vehicles which encounter a closure on the narrow Mt Messenger section of SH3 as

there are limited opportunities to turn around with the driver instead needing to wait until the road is cleared.

57. **Table 1** below shows the additional travel time if the Mt Messenger section of SH3 is closed.

Table 1: Travel Times (New Plymouth - Hamilton)

Route	Travel Time	Additional Travel Time (Average)	Additional Journey Length (km)
SH3 (241km)	3hr 14min	-	-
SH43	4hr 59min	1hr 45min	+ 95km
SH4 via Whanganui	6hr 23min	3hr 9min	+243km
SH1	6hr 58min	3hr 44min	+286km

58. Discussions with the Network Contract team members note that when there has been a storm affecting SH3 north of New Plymouth, it typically also affects SH43. In this scenario, journey times become substantially longer (over 3 hours) and may result in drivers deciding not to take the trip.

59. In any event, the alternative route via SH43 is a narrow route with a winding alignment and is unsealed over a section, making it unsuitable as a major detour route, as shown in **Figure 5** below:

Figure 5 - Existing SH43

60. Because of its narrow sections, one lane tunnel and bridges, and being partly unsealed, the alternative route via SH43 is not recommended by the vehicle rental, bus and heavy transport industries as a suitable and safe route. These groups are instead pointed to use the significantly longer route via either SH1 or SH4 and Whanganui.

61. The larger 50MAX/HPMV trucks, which carry high value goods, are not permitted to use SH43 and must use the longer detour via SH4. This SH4

(Primary Collector) detour route adds an additional 3 hours and 10 minutes, with a journey time of over six hours to and from Hamilton.

62. Such an assessment assumes that drivers are fully aware of any road closure before they depart. Those already on the highway in the vicinity of Mt Messenger have very poor cell phone reception and therefore to use an alternative route they will need to turn around (if possible) and backtrack some distance to access a diversion or detour route which will add further travel time and delay. For most trucks, this is not a viable option as there are few practicable turning areas because of the relatively narrow road, terrain and very few driveways or side roads.

Lack of passing opportunities

63. As discussed above, a particular problem of the existing corridor is the lack of safe passing opportunities which leads to driver frustration and a poor journey experience.

64. There is currently one formal passing lane and one slow vehicle bay within the length of the Mt Messenger route. These comprise:

    (a) a southbound uphill passing lane some 470m long on the northern approach to Mount Messenger; and

    (b) a northbound slow vehicle bay some 120m long near the summit of Mount Messenger.

65. While useful, both are sub-standard. In such settings, the uphill passing lane should have better forward visibility and be around 600 to 800m long, and the slow vehicle bay should be 200 to 300m long.

66. The remainder of the existing route has many tight corners with restricted forward visibility which significantly limits passing through all of the remainder of the length. The steep grades also make passing impracticable (or impossible) for smaller motor vehicles attempting to pass the longer heavy vehicle configurations. The Mt Messenger tunnel itself also often requires vehicles to stop and give way to on-coming vehicles - all of which contribute to driver frustration across the length of the route.

67. These present deficiencies as evident in the narrow lanes, absent shoulders, poor geometric alignment and lack of passing opportunities are evident in **Figure 6** below:

Figure 6: Present Deficiencies

68. At Mt Messenger, these deficiencies mean that its form and operation is not in keeping with its classification as a defined Regional Route and it is inadequately servicing the regional and national transport network.[6]

Poor geometrics

69. As will be evident, the alignment and geometrics of this existing 7.4km length of SH3 at Mt Messenger are substandard in many respects. The deficiencies include:

    (a) narrow lanes;

    (b) lack of shoulders;

    (c) poor geometric alignment (steep grades, tight curves);

    (d) limited side protection (including wooden sight rails which are not considered to be properly 'fit-for-purpose'); and

    (e) a substandard tunnel cross section.

Tunnel approaches

70. While some widening of the tunnel was undertaken during the 1980s, and although a mirror at its northern end provides some assistance, its restricted width is such that many drivers arriving at the tunnel stop and give way to any

[6] RLTP, Section 2.6, p12.

oncoming vehicle. This is accentuated by the numbers of heavy vehicles using the route.

71. In this respect, the following **Figures 7** and **8** show the tracking paths of a semi-trailer and a 99-percentile car travelling in opposing directions through the tunnel (and its approaches), allowing for a 1m offset of the truck to the tunnel walls (to account for the curvature of the arch).

72. Areas of conflict are highlighted in red:

Figure 7 - Southbound semitrailer and northbound 99% car through Mt Messenger tunnel

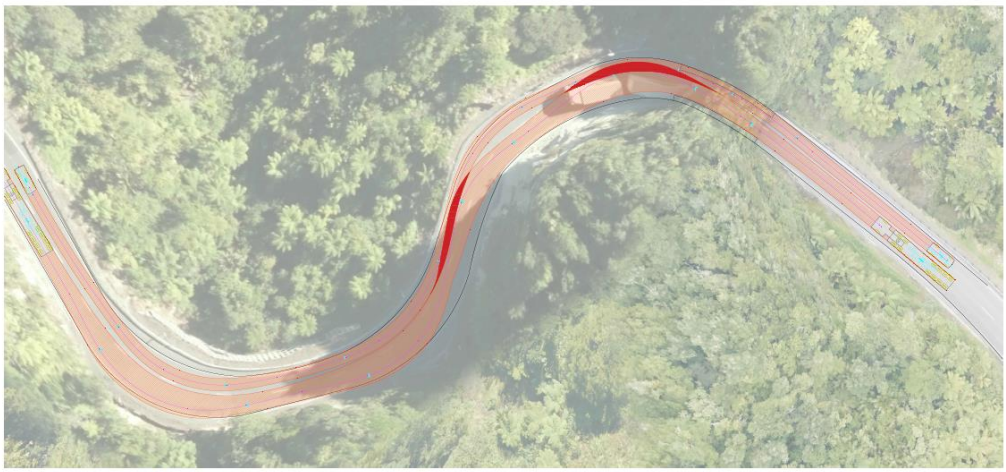

Figure 8 - Northbound semitrailer and southbound 99% car through Mt Messenger tunnel

73. As can be seen, areas of conflict occur in both situations, highlighting limitations of the existing corridor and the associated need for improvements.

Restricted width and alignment

74. **Figure 9** identifies three adjoining lengths of SH3 at Mt Messenger.

75. In place of the usual 3.5m lanes with 1.5m to 2.0m shoulders on each side which is the prevailing standard across the wider state highway network, most

of this portion of SH3 has 3.4m lanes in each direction with narrow or only minimal shoulders. Some sections have no usable shoulders at all.

76. The particular characteristics of each section can be summarised as follows:

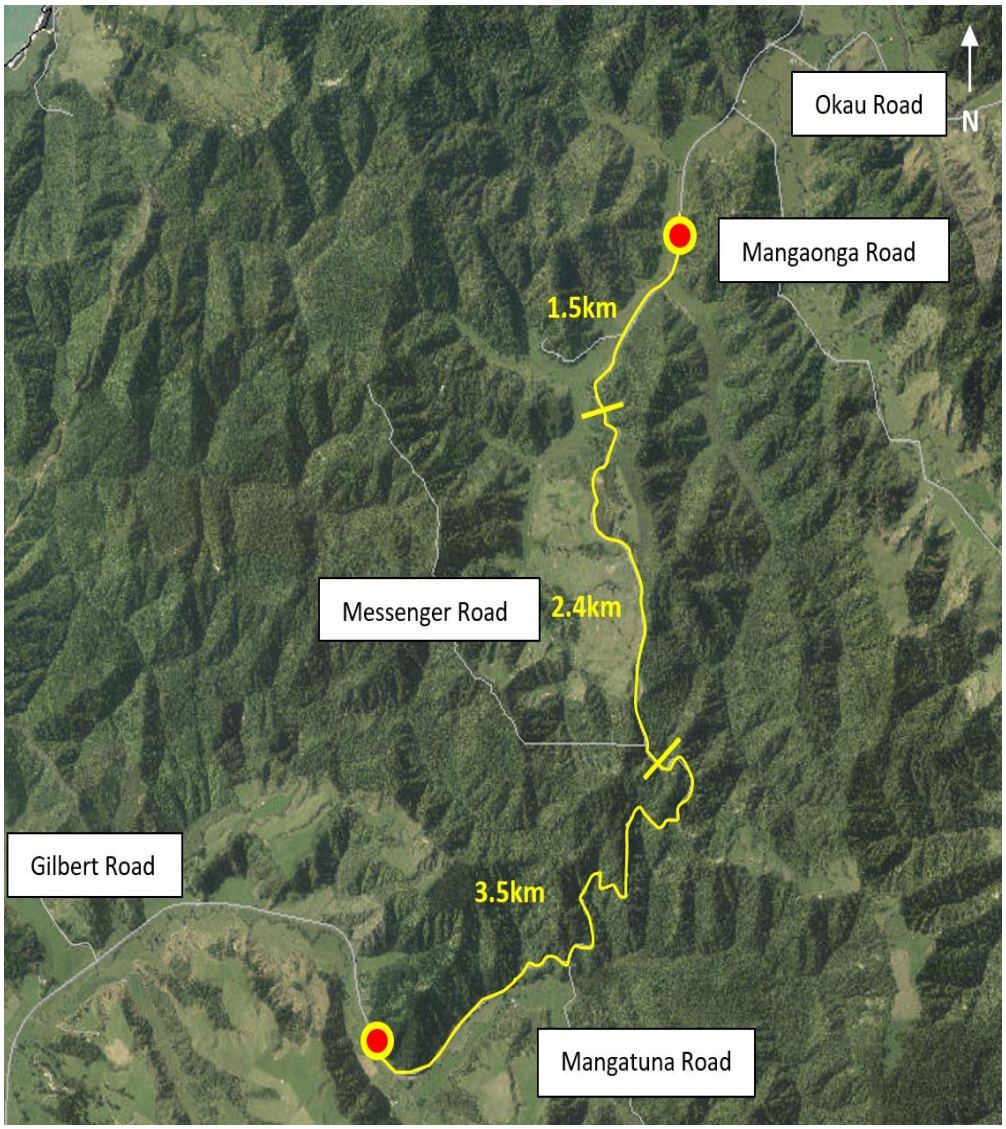

Figure 9: Characteristics of Existing Route

77. Heading north from Gilbert Road, there is an existing long 70 km/h curve which is scheduled to be realigned as part of a separate safety initiative. Beyond the start of the Project, the first 3.5 km length of SH3 follows a series of five curves on a generally flat alignment. Characteristics of the first length of SH3 are:

(a) Narrow sealed shoulders along all of its length, despite the open speed limit and limited forward visibility.

(b) A series of advisory 'Slippery when Wet' signs, with three of the curves posted with an advisory speed of 75 km/h.

(c) The inconsistent series of short straights and sharp curves through this section leads drivers to travel at inappropriate speeds with the most northern of the curves having a series of loss of control crashes.

78. Through the next 2.4km (second) length of the route north from about Mangatuna Road, the highway has a very different and steep, tortuous alignment. This portion of the SH3 corridor is the most challenging section through the Mt Messenger area. With the notably high proportion of heavy vehicles relying on this corridor in connecting Taranaki with the wider areas to the north, delays for following vehicles are both common and significant. In this section of the route:

(a) The existing grades are unusually steep, and up to 12% on some corners compared to the more typical maximum of 6 to 8% in such settings.

(b) With the combination of the mountainous setting, torturous alignment, and pavement wear, many of the curves are limited to advisory speeds of 25 or 35 km/h. A series of signs warn of 'Slippery when Wet' and "Falling Rocks".

(c) This section includes a northbound slow vehicle bay some 120m long near the summit of Mount Messenger. Although useful, its length is substandard.

(d) While there are a few further brief overtaking opportunities, there are slow speeds and notable delays behind trucks and other heavy loads.

(e) There are also several very short 'pull-over' areas, but which receive only occasional use as on these steep grades, trucks typically prefer to maintain both their line and their hauling speed.

(f) The steep terrain and no or only very limited shoulders on either side gives a generally poor and challenging driving environment with added risks in which mistakes and mis-judgements can have immediately severe consequences.

79. The alignment is still steep and winding through the next 1.5 km (third) length of the route from north of the Messenger Road intersection, with a series of closely spaced bends. This portion includes a 480m uphill passing lane which again while useful, its length remains substandard. Travel speeds through the bends are slow with advisory speeds between 35 and 55 km/h. The forward visibility remains limited.

80. Further north towards the Mangaonga Road intersection, the forward visibility for drivers begins to increase as the road flattens and curves with advisory speeds of up to 80 and 85 km/h. The available highway shoulders remain narrow.

Crash record

81. The safety performance through these lengths of SH3 is poor.

82. The most recent 6-year period of reported crash data for SH3 across Mt Messenger through the years 2012 to 2017 has been obtained from the Transport Agency's Crash Analysis System ("**CAS**"). The occurrence and severity of these crashes is summarised in the following **Table 2**.

Table 2: Crash Severity breakdown 2012-2017

Year	Fatal	Serious	Minor	Non-injury
2012	0	0	0	5
2013	0	2	0	1
2014	0	2	4	2
2015	0	2	2	3
2016	0	0	2	6
2017	0	0	0	5
Total	0	6	8	22

83. Two injury crashes have been reported so far this year.

84. A number of key factors can be noted from the CAS records:

(a) Loss of control on bends/head-on is involved in 85% of all crashes.

(b) This percentage is high compared to national rural state highway figures (32%). The Mt Messenger section of SH3 is characterised by steep grades, narrow lanes, no shoulder, poor geometric alignment and resulting poor forward visibility, leading to difficult and unsafe driving conditions.

(c) Poor handling is reported for 65% of crashes, compared to a national rural state highway figure of 30%. Too fast for conditions contributes to 39% of these crashes compared to 15% nationally.

(d) Road factors, for example potholes or pavement failure, contribute to 24% which is high compared to the national rural state highway figure of 18% (this reflects the surface rutting as a consequence of the poor geometry, in particular the effects of heavy trucks and the practical challenges of maintaining the road.

(e) Trucks are involved in 17% of all crashes which is above the national average of 13%.

(f) Motorcyclists were involved in 12% of all crashes compared to only 4% nationally.

85. Together, these factors emphasise the inadequacies and challenges brought by the poor geometric environment. The existing road environment is

unforgiving, with driver mistakes leading to crashes with continuing injuries, associated delays and repeated road closures.

Reliability

86. In determining the expected levels of performance for each of the elements of the national highway network, the Transport Agency has developed a national assessment tool centred on setting the level of reliability to be expected for a route. It is centred on the long-term performance of a route.

87. For SH3 at Mt Messenger, being classed as a Regional Arterial where there is no suitable alternate route, the performance expected of the highway in terms of the level of reliability to be provided for users is as shown in **Table 3**.

Table 3: Regional Arterial with no suitable alternate route[7]

Outage	**Frequency**		**Assessment**
2 - 4 hrs	0.5 pa	once in 2 years	Acceptable
5 - 12 hrs	0.05 pa	once in 20 years	Acceptable
13 hrs - 2 days	0.025 pa	once in 40 years	Acceptable
3 - 5 days	0.025 pa	once in 40 years	Acceptable
6 - 14 days	0.1 pa	once in 10 years	Not Acceptable
15 - 49 days	0.02 pa	once in 50 years	Not Acceptable
50 - 120 days	0.2 pa	once in 20 years	Not Acceptable
more than 120 days	0.02 pa	once in 50 years	Not Acceptable

88. In examining the present performance of SH3 at Mt Messenger against the criteria in Table 3, the detailed records[8] show that, during the most recent five-year period to May 2018, there have been seven occasions on which SH3 has been closed because of events occurring within this local length at Mt Messenger where improvements are to be made. The details are summarised in **Table 4** below:

[7] NZTA, Customer Levels of Service Assessment, June 2017.
[8] NZTA, TREIS (Traffic and Road Event Information System), February 2018.

Table 4: SH3 at Mt Messenger - route closures longer than two hours

#	Date	Time	Location	Event	Duration of Closure
1	15 Oct 2013	08:43	450 m north of tunnel	Slip	8:46 hrs
2	20 Jun 2015	17:13	750 m north of tunnel	Slip	16:53 hrs
3	27 Oct 2015	09:01	500 m south of summit	Tanker rolled	5:13 hrs
4	8 Jan 2016	14:29	4.5 km south of summit	M/bike v truck crash	2:35-4:00 hrs
5	13 Apr 2017	19:52	120 m north of summit	Rock fall in tunnel	3:20 hrs
6	22 Oct 2017	11:49	2 km north of summit	Crash	2:35 hrs
7	15 May 2018	15:43	350 m north of summit	Slip	3:30 hrs

89. Of these seven events, two were because of crashes, three because of slips that occurred following heavy rainfall, one rock fall, and one when a tanker rolled on a sharp curve. All reflect the current issues with safety, reliability and resilience of the existing Mt Messenger section of SH3.

90. When considered against each of the assessment criteria, records for this most recent five year period to May 2018 are set out in **Table 5**.

Table 5: SH3 at Mt Messenger

Outage	Expected Performance[9]	May 2013 - May 2018 Performance		Assessment
2 - 4 hours	0.5 pa	0.8pa	four in 5 years	Not Acceptable
5 - 12 hours	0.05 pa	0.4 pa	two in 5 years	Not Acceptable
13 hrs - 2 days	0.025 pa	0.2 pa	once in 5 years	Not Acceptable
3 - 5 days	0.025 pa	0.0 pa	none in 5 years	Acceptable

91. It is noted that the three events listed as having taken more than four hours to clear reflect the practical difficulties brought by the remoteness of this location.

92. As the data shows, the closure rates being experienced in the 5-12 hours and 13 hours - 2 day categories of performance within this Mt Messenger length of SH3 have been up to eight times greater[10] than should be delivered by way of the reliability performance expected for a Regional Route.

[9] Per annum ("**pa**").

[10] This calculation is the result of comparing the figures in Table 5 for Expected Performance and actual May 2013 - May 2018 Performance.

93. While being further to the north and beyond the scope of these works, the two days of disruption and marked inconvenience brought by the slip that occurred between Uruti and Urenui in August 2017 serves as a further reminder of Taranaki's reliance on this portion of SH3. A smaller slip south of Hawera similarly brought disruption and inconvenience to traffic later the same month.

THE PROPOSED BYPASS ROUTE

94. The Project intends to substantially improve the quality and performance of the existing Mt Messenger portion of SH3 by replacing it with a new 6km length of two-lane, undivided State Highway on a new alignment as shown in **Figure 10**: the yellow line is the proposed bypass route.

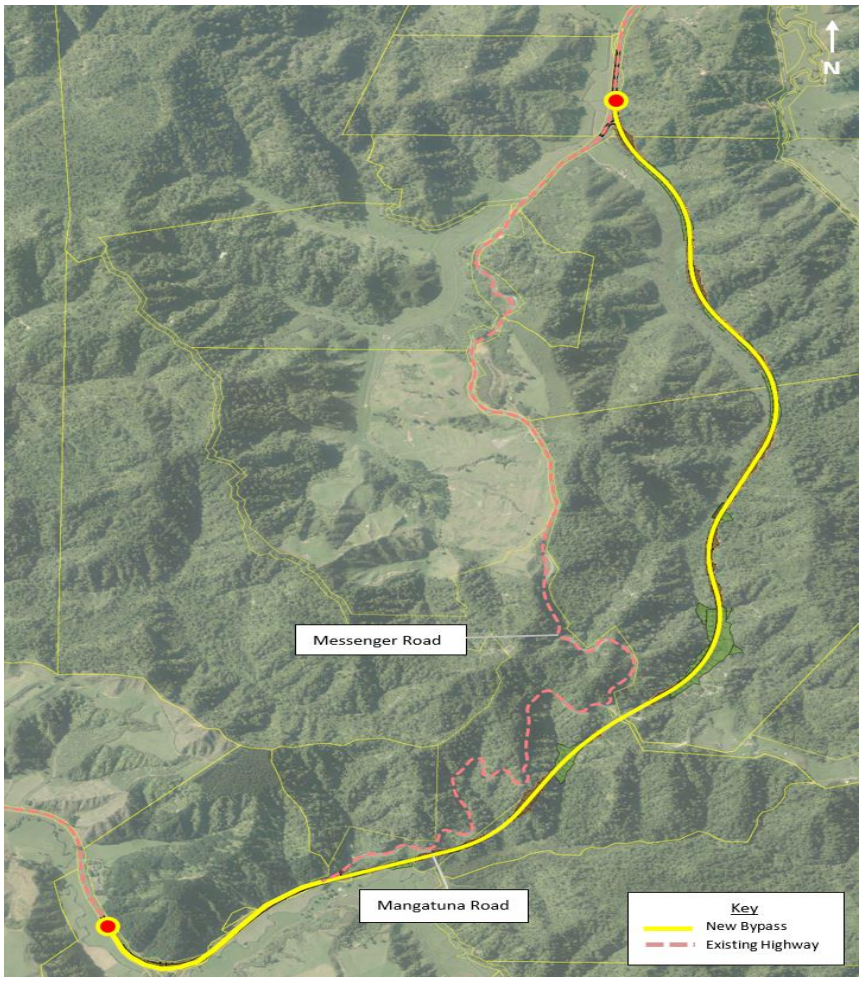

Figure 10: Existing and Upgraded Route

95. The length of new highway will have the following characteristics:

(a) An overall length of 6km (a reduction of 1.4km).

(b) Operating speed of 100 km/h.

(c) One tunnel 235m long.

(d) One bridge 120m long.

(e) 3.5m wide traffic lanes throughout.

(f) 1.5m shoulders throughout, except through the tunnel which will have 1.2m shoulders and a 0.6m central median using vertical delineator posts.

(g) Side barriers throughout. These are planned as wire rope safety barriers although consideration is being given to using steel 'W' section barriers in some areas. Concrete barriers will be used on the bridge and in the tunnel.

(h) Verges with widths between 3.0 to 4.7m are to be provided on both sides of the road along all the length of the new alignment.

(i) Of the 6km length, some 5.3km of the journey northbound and 5km of the journey southbound will be flatter than 6%.

(j) Within the remainder, the steepest portion of some 840m will have a 7.5% grade.

Design standards

96. The new alignment is designed to be safe, efficient and resilient with a safe operating speed of 100km/h.

97. With curve radii of 460m or greater, and forward visibility assuring a minimum safe stopping sight distance of 151m through all of its length, its design gives a safe, dependable, relatively open setting and a consistent driving standard.[11]

98. A particular benefit of the new alignment and modern geometrics is that its dependability will be greatly improved. This is assured by the full-standard lane and shoulder widths within a fully engineered environment. With such improvements, and as occurs elsewhere across the network, the possibility of any blockage or service interruption will be greatly reduced. If and when such interruptions may occur from whatever cause, there will most likely still be sufficient width for traffic movement to be continued while it is cleared.

[11] Mt Messenger Bypass AEE, Table 4.1 Project Design Standards, p 48.

New alignment

99. A typical view of the new alignment is shown in **Figure 11**.

Figure 11: Typical Road Cross-Section

100. The typical road cross-section provides 3.5m wide traffic lanes, 1.5m shoulders on both sides including side protection barriers where required. The new route will provide for a 100 km/h operating speed, and compared to the existing route, will significantly improve forward visibility, and increase safe overtaking opportunities.

New bridge and tunnel

101. The alignment includes provision of a new bridge across the across the Mimi River tributary and a tunnel through the ridge some 500m further north. The locations are shown in **Figure 12**.

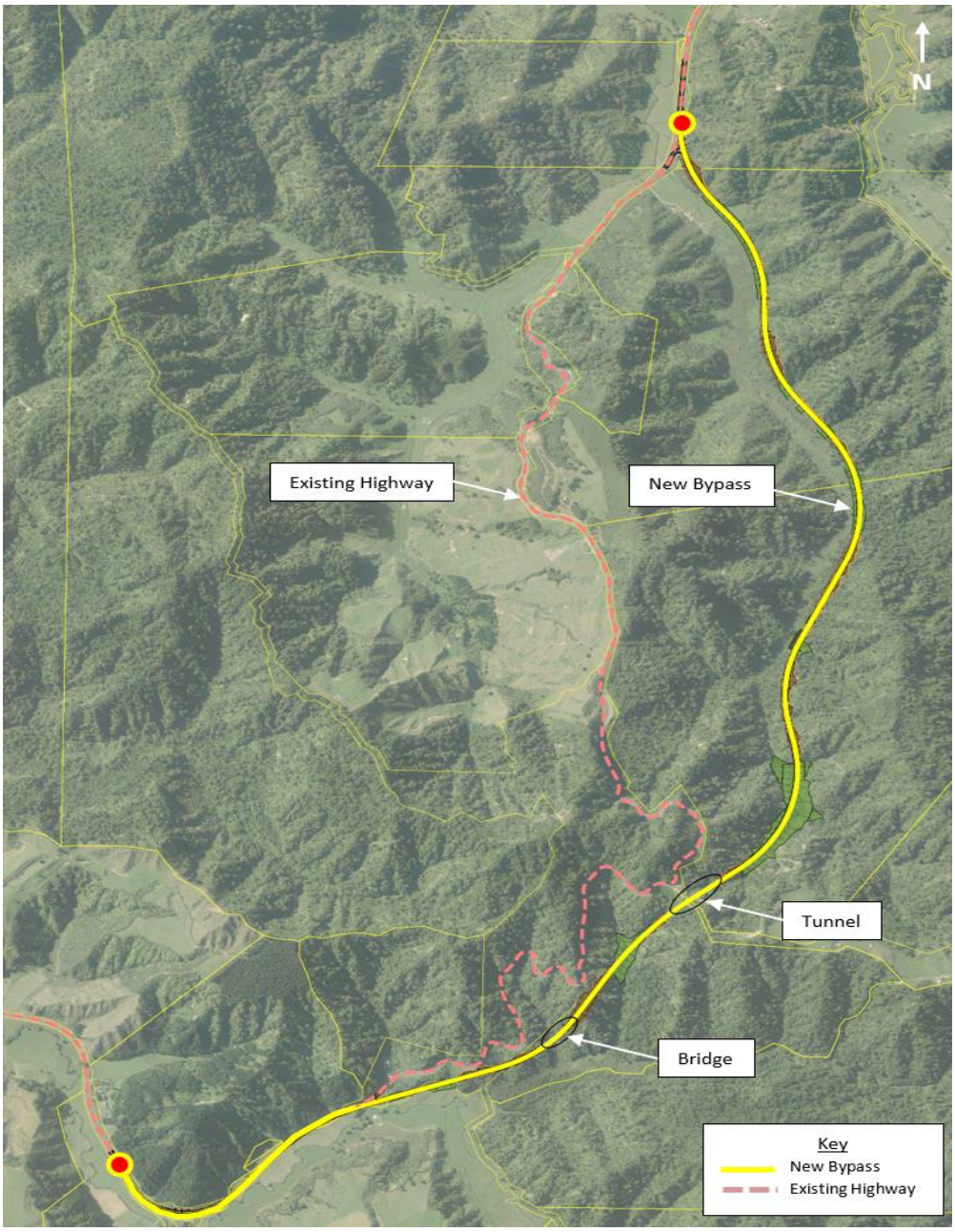

Figure 12: Bridge and Tunnel Locations

102. The bridge across the Mimi River tributary will be some 120m in length with standard 3.5m traffic lanes. The bridge will have an outside (southbound) shoulder width of 1.5m, and an inside shoulder width of 3.0m wide to provide the required sight distance around the curve.

103. A perspective view is shown in **Figure 13**.

Figure 13: Bridge Perspective looking north

104. The tunnel through the ridge some 500m further north will be some 235m in length. The same standard 3.5m lane widths will be used through the tunnel together with 1.2m sealed shoulders and a 600mm painted central median. Standard lighting and camera surveillance will be provided.

105. A perspective view of the tunnel approach is shown in **Figure 14**.

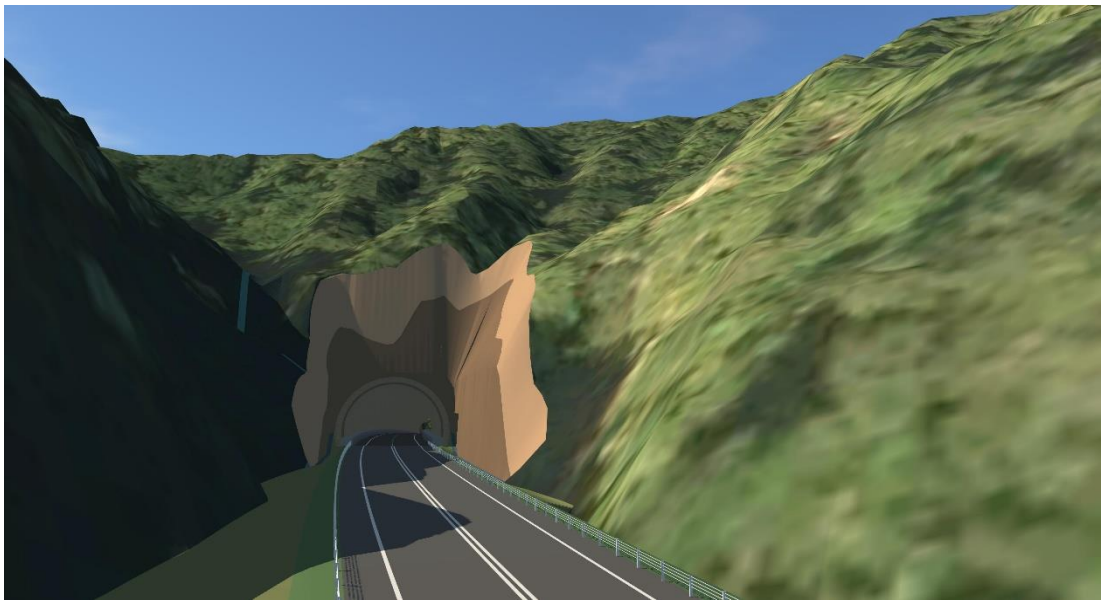

Figure 14: Tunnel Approach looking north

106. In contrast to the 8.1m width and 4.9m height limits of the existing tunnel, the clearances within the new tunnel will be able to handle over-dimensioned loads of up to a 10m x 6m envelope.

107. With regard to these dimensions of the new tunnel, between 140 and up to 170 over-dimension loads are carried to or from the north each year as a key aspect of Taranaki's manufacturing base, practically all of which instead

require the extra 240km and 6 to 12 hour detour via SH1 (or SH4) and Whanganui.

108. Together with the upgraded Awakino Gorge being actioned in a separate project, the very much better geometrics of the Mt Messenger Bypass and larger dimensions of the new tunnel will enable some two-thirds of these loads to instead be handled on this more direct route via SH3, reducing the associated transport costs and increasing the wider competitiveness of Taranaki's industrial and manufacturing abilities.

Property access

109. New intersections enabling access to and from the old highway are to be built at the northern and southern connections of the new bypass as part of the Project.

110. These intersections will enable continued connection to and from the private properties and the Department of Conservation walking tracks whose access is from the existing length of SH3 being bypassed by the new route, including Ngāti Tama's Parininihi land block. Two further properties to the south (at 2430 and 2528 Mokau Road) are each to be provided with new connections to SH3 itself.

111. The associated formal provisions, including consideration of revoking the State Highway status from the existing road and determining which parts remain public road, will be determined once the designation is approved.

Other modes

112. The route along SH3 between Hamilton and New Plymouth is considered to be a popular tourist route, with campervans, tourist buses and motorhomes frequently seen. The straighter / flatter new route grades will make travel easier for all drivers. The safety improvements from the Project are considered to be particularly positive for these road users.

113. Cyclists are not commonly seen along this route as the distance between major townships is considered significant for this travel type. Those cyclists who are currently riding over Mt Messenger are almost all on multi-day touring trips. While such cyclists are typically accustomed to a wide variety of road conditions including narrow shoulders, the added carriageway width with standard 3.5m traffic lanes and 1.5m shoulders except for the 1.2m shoulders within the tunnel, gives a considerable improvement over the existing road.

114. Being away from residential areas, it is rare for pedestrians to walk along this section of SH3 except in the vicinity of the access that serves both the Parininihi walkway leading up the southern side of the hill, and the Kiwi Road walkway that leads down to the Mimi wetland. Both will continue to be reached via the existing highway together with associated parking and connecting track.

115. This access will represent an improvement on the existing configuration where informal parking areas on the side of the road lack any safe connection to the start of the track and lack safe entry and exits.

116. The overall effect of the Project on tourist vehicles, buses, pedestrians and cyclists is positive.

TRAFFIC AND TRANSPORTATION OUTCOMES

117. The new road will deliver a very significant improvement to the function and reliability of the SH3 route connecting New Plymouth and Taranaki to and from the principal economic centres of the Waikato, Tauranga and Auckland.

Safety benefits

118. The new route will enable a greatly improved standard of safety for this key portion of the SH3 connection to and from the north.

119. The key safety benefits brought by the new route are summarised in **Table 6** below.

Table 6: Key safety benefits

Benefit	Measure
Improved Star Rating	An improved Safety Star Rating 3 matching the higher safety operating safety standards now sought across all of the rural state highway network.
Improved forward visibility	Lengthened forward visibility with 100 km/h operating speed throughout.
Passing opportunities	Increased passing opportunities throughout full length of Project.
Shorter travel distance	Route length reduced from 7.4km to 6km.
Improved geometry	Eased curves, widened lanes, flatter grades, full standard shoulders, flatter grades, side barriers throughout.
Reduced driver frustration	A properly consistent, fully dependable 'no surprises' operating environment provided to all users with faster travel speeds.

120. Together, these changes represent a significant improvement in the convenience and safety of this section of SH3 to the benefit of all users. A key outcome achieved by the Project is to support economic growth of the Taranaki region, through improved freight journey times.

Journey times

121. The new route has been designed to a 100km/h operating speed. Heavy vehicles will travel at slower speeds on steeper sections of the route.

Light vehicles

122. For light vehicle journey times, comparisons with the existing route can be provided as follows:

    (a) Without encountering trucks, light vehicle travel times across this existing 7.4km portion of SH3 section at Mt Messenger currently average some 8 minutes.

    (b) By comparison, light vehicle travel times on the new and shorter 6km length of the new bypass will be 3.9 minutes.

123. The new road will approximately halve the free travel times for light vehicles across Mt Messenger using the proposed new route. Compared with the existing route, this is a significant saving for travellers.

Heavy commercial vehicles

124. For heavy commercial vehicles, the average speed with the smoother alignment and easier grades will be 45km/hr. A comparison of truck travel times on this Mt Messenger section of SH3 can be summarised as follows:

    (a) HCV travel time over the existing 7.4km length on the present highway is currently in the order of 13 minutes.

    (b) HCV travel time over the new 6km length of the bypass with its flatter grades will be in the order of 6.5 minutes.

125. Accordingly, with the shorter length and easier grades across the Mt Messenger Bypass, the average travel times for Heavy Vehicles will be approximately halved with a saving of some 6.5 minutes on the new route. These savings and resulting overall lower freight costs on the route together represent a significant positive outcome of the Project.

Average speeds

126. Of course, not all vehicles will travel 100km/h through the Project route. In particular, trucks (and cars following trucks) will travel slower than this (see above).

127. The operating speeds expected along the new route have been assessed on a first principles basis. The analysis considered the grades of the new road as well as the vehicle composition. The operating speed across the

Mt Messenger section of SH3 has been assessed within the transport economics as follows:

Table 7: Average operating speeds - all time periods and all vehicles

Operating Speeds (km/hr)	**Existing road** (7.4 km length)	**New road** (6.0 km length)
Mt Messenger	56 km/h	77.6 km/h

128. Being conservative, these assessed operating speeds have assumed that there are no passing opportunities along the length of the new road with all light vehicles on the route being slowed by the presence of slower moving heavy vehicles in front (up and down grade). In practice, improved geometry of the new road will provide greater forward visibility along its length and, combined with the wider shoulders, will provide increased safe opportunities for drivers to pass trucks and other slower vehicles.

129. The Transport Agency Planning Policy Manual Appendix 3E - Passing and Overtaking provides guidance as to appropriate treatment with respect to future traffic volumes and terrain. In this respect, future traffic volumes in this corridor are assessed as being in the order of 4,000 vpd in the 20-year horizon. In rolling and mountainous terrain such as this, recommended treatments are noted as being sight distance improvements, overtaking enhancements, possible isolated shoulder widening / crawler shoulders, and slow vehicle bays with short passing lanes being provided at 10km intervals.

130. With this new bypass at Mt Messenger being less than 10 km in length, the design matches the recommended treatments. Looking forward beyond a 20-year horizon and with future volumes exceeding the 4,000 vpd threshold, the recommendations point to full passing lanes being provided at 5km intervals. The designation being adopted for this Project provides sufficient width to allow such facilities to be provided at a later date as and when required.

Service to industry and trucking

131. Trucking and heavy vehicle haulage is a key aspect of Taranaki's regional economy in serving the needs and outputs of Taranaki's regional economy.

132. Significantly, and for the year 2016, the heavy vehicle volumes using SH3 at Mt Messenger average a reported total of some 460 trucks/day carrying an annual total of some 2,000,000 tonnes of freight to and from the north. These substantial freight movements underpin the wider patterns of growth and industry that shape Taranaki's growth and development.

133. The shorter route, flatter grades, faster speeds and improved reliability of the new route will all be of considerable benefit to the established and future

industries and key production that are so important to Taranaki's continued prosperity.

134. At an operational level, another particular benefit of the Project stems from its contribution, along with other consented (and some currently being built) projects, towards bringing trucking depots in Auckland into the horizon of the 5½ hour maximum driving time that commercial drivers are required to observe between breaks. Such a cumulative outcome would have considerable benefit to trucking companies and the timing of delivery for goods to and from the region.

Reliability

135. An important gain of the Project will be the significantly improved reliability of Taranaki's key SH3 connection to and from the north. In this respect, the SH3 corridor is important to the regional economy, connecting goods and produce with the northern ports.

136. As has been noted, the route currently carries an average of 460 heavy truck movements per day. The majority of these movements are long-distance journeys involving articulated and truck-trailer combinations hauling commercial loads and freight to and from Taranaki to destinations across the Waikato, and in Hamilton, Tauranga and Auckland. In addition, the corridor is often used to carry hazardous goods (such as LPG). For all of these vehicles, the existing portion of SH3 across Mt Messenger introduces particular challenges, with steep grades slowing their journey and the tortuous route being hazardous for their travel.

137. In this respect, and with only two much longer alternatives in terms of travel time and distance, the continuing lack of reliability in the SH3 route imposes a particular cost affecting freight and the transport of goods to and from the region.

138. Because of the relative remoteness of this area, there is a particular and understandable reliance on travel by private vehicle. The corridor does provide some inter-city bus transport (typically two trips in each direction daily). With no readily suitable alternative route (as described above), improvements to the reliability of SH3 at Mt Messenger will result in significant benefits to all road users.

139. In this respect, and where the existing route has these significant shortcomings, the new route provides a well-engineered alignment with full lane widths, standard shoulders, proper forward visibility, and secure batters. All retaining walls and rock and fill faces both above and below the road will be designed and stabilised assuring users of a properly dependable standard to the completed route.

140. The design also provides for maintenance areas to be located away from the live carriageway enabling such activities to be organised and managed so as

to minimise interference on through traffic. This includes providing maintenance access to the various bridge and culvert structures.

141. Taken together with the alignment and safety works being actioned elsewhere along the highway, these aspects of the Project are all part of NZTA's action list directed at providing Taranaki with a safer, modern and reliable state highway connection to and from the north.

Other transport benefits

142. In addition to these gains, the Project also enables other economic and environmental gains to be realised by way of lower operating costs and reduced emissions.

143. In terms of economics, and through its shorter length and flatter grades, the new route will lower vehicle operating costs to the advantage of all users. Given the route's strategic importance in both serving and underpinning Taranaki's industrial and commercial investments, this is an important and regional benefit being delivered by this Project.

144. The new route with its shorter length, reduced climb and flatter grades not only enables smoother travel and reduced fuel consumption but importantly also reduces CO_2 and NO_X emissions to the advantage of the wider environment.

STRATEGIC TRANSPORT IMPLICATIONS OF THE PROJECT

National priorities

145. At a national level, the most recently published draft Government Policy Statement on Land Transport (**GPS**), released for public comment in March 2018[12] is prepared around four strategic priorities being safety, access, environment and value for money. It can be noted that these include:

    (a) under Safety, an increased ambition in delivering a land transport free of death and serious injury including *"a greater focus on investing in safety improvements on high risk state highways …"*;

    (b) and under Access, an increased focus on prioritising New Zealander's access to opportunities and markets including *"nationally important freight and tourism connections that are safe, efficient, resilient, and minimise greenhouse gas emissions"*; and

    (c) within these overarching goals, the draft GPS 2018 particularly seeks to ensure the forward economic development of regions is supported by safer and better transport connections. This includes an infrastructure focus on projects that enable *"a land transport system that provides increased access for economic and social opportunities".*

[12] Draft Government Policy Statement on Land Transport, NZ Government, 14 March 2018.

146. For its part, investment in the Project is consistent with advancing these wider national intents.

Regional Land Transport Plan

147. At a regional level, the Land Transport Management Act 2003 ("**LTMA**") requires the development of a Regional Land Transport Plan ("**RLTP**") consistent with the GPS.

148. Within Taranaki, the RLTP ranks the priority inter-regional transportation issue as being improving the future route efficiency, safety and reliability of SH3 travelling north over Mt Messenger, through the Awakino Gorge to Te Kuiti, Hamilton and beyond.[13]

149. By enabling these outcomes, the Project is recognised as important to New Plymouth and the wider Taranaki economy, not only in terms of better serving existing needs but also in providing for and supporting forward growth and investment.

150. In making this assessment, the RLTP ranks the Project as contributing positively to each of the following regional policies:[14]

2. Facilitating growth and regional development	
G1	Removal of constraints to growth in freight, tourism and people movement, particularly on inter-regional corridors.
G2	Focus on effective and efficient strategic road and rail corridors, particularly between inter-regional ports.
G3	Ensure those roads in the region serving tourism and the productive sector are fit for purpose.
3. Reducing the safety risk on Taranaki's transport network	
S1	Promote infrastructure improvements on strategic corridors.
S3	Support the aims of Roadsafe Taranaki.
S4	Support the aims of Safer Journeys.
4. Maintaining and improving accessibility and travel options throughout the region	
A1	Protect and enhance the accessibility of the land transport system to all people in the region to enable community participation and ensure appropriate access to services.
5. Ensuring network resilience and responsiveness in the context of internal and external pressures	
R1	Improve the resilience of transport infrastructure.
R2	Protect routes with lifeline functions.

[13] Regional Land Transport Plan for Taranaki 2015/16 - 2020/21, Section 2.8, p18.
[14] Regional Land Transport Plan for Taranaki 2015/16-2020/21, Section 5.3, Table 3, p44.

7. Addressing these issues amongst constrained funding and affordability, and rising costs.	
F1	Maximise efficiency and optimisation of existing capacity across the transport system.

151. Against each of these regional policies, the transportation improvements brought by the Project are assessed as making a significant contribution to the ongoing social, investment and economic development of the wider community. All are directed at supporting and advancing Taranaki's forward strategic vision for the future.

152. As regards improved resilience, the RLTP further lists the gains in relation to strategic transport benefits as including:

    (a) enabling better disaster response and recovery and minimising disruption through better event preparedness, and fuller achievement of infrastructure standards;

    (b) better support for economic growth through improved public and business confidence in route availability, and improved availability of key routes; and

    (c) reduced risk of harm to road users as seen by the decreased number of incidents.

153. The better resilience and improved reliability brought by the Mt Messenger Bypass is directed at contributing across all of these matters.

154. Strategically, and in contributing positively across each of these RLTP policies directed at Taranaki's forward strategic vision, the Project as a whole is ranked as making a significant contribution to the ongoing social, investment and economic development of the wider community.

Service performance

155. The length of SH3 through the Project area is classified as a Regional Route under the Transport Agency's One Network Road Classification ("**ONRC**") and critical to address the challenges of Taranaki's land transport infrastructure.[15]

156. Within the performance expectations listed for this classification of road in a rural environment is that the route would be carrying a daily traffic volume of greater than 20,000 vehicles per day ("**AADT**").

157. The fact that the daily traffic flows at Mt Messenger are only 10% of this figure reflects how critical the route is in a regional sense as the key route for the Taranaki region to connect with the northern regions - it carries a classification usually reserved for much busier roads.

[15] One Network Road Classification - the ONRC divides NZ roads into six categories being National, Arterial, Regional, Primary collector, Secondary collector, and Access. These categories are based on traffic volumes, connections, or lack of alternative routes.

158. In terms of service performance, SH3 is not currently used by significantly over-dimensioned vehicles as the existing Awakino and Mt Messenger tunnels are constraints along SH3 between New Plymouth and Hamilton to physical travel by these large loads. These constraints will be removed by this programme of works for the overall SH3 corridor.

TEMPORARY TRAFFIC AND TRANSPORT EFFECTS DURING CONSTRUCTION

159. Most of the construction will take place away from the existing state highway so that it is able to be built with a minimum of disturbance to other traffic.

160. Construction will involve additional traffic movements on portions of the adjoining SH3 corridor while the work is being done. The advanced construction planning being undertaken by the Alliance has sought and identified opportunities to minimise these effects.

161. The principal elements are as follows:

(a) Staff:

The number of staff employed at the site will vary as the work progresses involving an average over the course of the project of some 120 vehicles (240 movements) per day to and from the site, and up to 500 movements per day at busiest times. Minibuses, work vans, and car-pooling will be used where practicable.

(b) Site parking:

On-site parking for staff and for contractor vehicles will be provided for each work location as the work progresses, away from the existing highway. Individual access points will be positioned and constructed so as to ensure sufficient visibility and proper safety is assured for all entering and exiting traffic. Flagman supervision will be provided where required.

(c) Cut and Fill:

During the early periods of the construction phase, some 87,000m3 will be excavated from the southern portion of the site and transported as fill to the northern end along the existing highway. This phase of the work will involve truck movements of around 40 per day in each direction (80 movements) over the initial six months.

(d) Aggregates:

Aggregate will be sourced from quarries elsewhere in the Taranaki region using standard truck and trailer units. Aggregate deliveries averaging 10 vehicles per day (20 movements) will be required through the duration of the works, with an anticipated peak of 60 vehicles per day (120 movements).

(e) Concrete:

Concrete will be brought to the site as part of the tunnel lining phase. Deliveries of around 8 vehicles per day (16 movements) will be needed over a 12-month period.

(f) Paving:

The delivery of paving materials to the site will involve up to some 60 vehicles per day (120 movements) over 120 days.

(g) Deliveries of Components:

As the work advances, other occasional truck movements to and from portions of the site will be involved with the delivery of culverts and steel barriers and the like, and similarly with machinery and plant. Some will require over dimension permits.

(h) Servicing:

Other movements such as couriers, daily delivery of fuel and water, and the routine servicing of staff needs and the like will amount to a further 10 to 20 vehicles per day (20 - 40 movements), mostly to and from Waitara and New Plymouth.

162. Taken together, and in considering the overlap of activities through the four years these works will take to complete, the total amount of truck traffic associated with the project is expected to vary between 30 and 80 trucks per day (160 movements) as the work advances, with an overall average of around 40 trucks per day (80 movements).

163. Considering the existing daily volumes of 2,300 vpd including the present proportion of heavy vehicles, these added movements are able to be accommodated within the availability spare capacity of the existing SH3 with minimal disturbance to other traffic.

Local site access and parking

164. As noted above, particular site access points will be needed to and from the existing SH3 corridor as the work advances. The locations are shown in **Figure 15**.

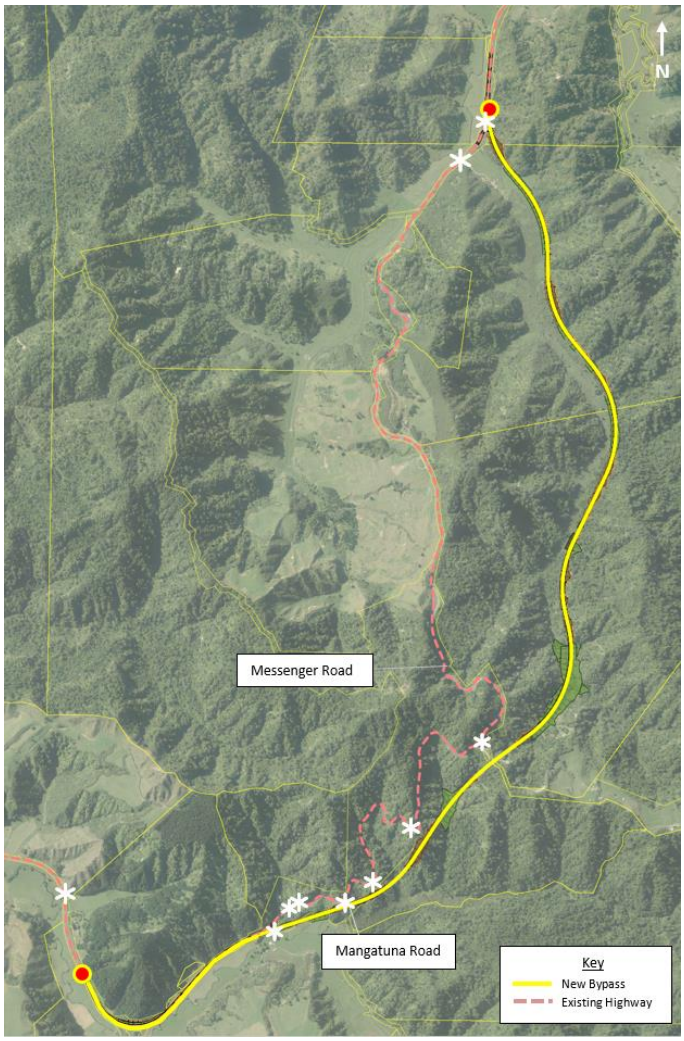

Figure 15: Proposed Site Access Locations

165. Each site access will be controlled, so that entry will only be possible for those authorised to access the site (including workers, and movement of materials and plant).

166. The individual locations have each been positioned to ensure good visibility so as to not impact the safety of the existing route. All truck and machinery manoeuvring, and parking, will all be provided for clear of the highway and within the area of the construction zone itself.

167. Where appropriate, the access will be sealed for the first 10m to prevent detritus spreading onto the road. All will be locked overnight.

Stopping bay

168. The construction is to include provision of a stopping bay beside the existing highway on the southern approach to the site. This will provide a location

where trucks can pull over and wait if access to the site is not immediately available.

169. Truck drivers will have radio contact with site crews from this point and be able to check that the access point and laydown they are heading to are clear, and wait if need be.

Joins with existing highway

170. There will be lengths of the existing SH3 road at each end of the new construction where online works will be needed as part of the overall construction, and as such will have a temporary effect on passing traffic.

171. At the northern end, a section of the existing SH3 roadway will need to be rebuilt as part of the works. This relatively short portion will be controlled using stop/go control or temporary signals while the work is done.

172. At the southern end, a longer length of the existing SH3 roadway will be rebuilt as part of the overall improvement works. To minimise effects on other traffic, it is planned that the new southbound lane be constructed first. The live traffic will then be moved across to enable the new northbound lane to be constructed. Again, local controls will be used as needed.

173. All of the on-line construction will be undertaken in accordance with best practice to ensure a safe worksite, and to minimise delay and inconvenience to other traffic.

Construction Traffic Management Plan

174. A draft Construction Traffic Management Plan ("**CTMP**") was included within the set of application documents provided within Volume 5, Appendix G for this consent application.

175. The CTMP was developed to 'manage, mitigate and monitor the effects of construction activities and construction traffic on other road users and the State highway network'.[16]

176. The CTMP focuses on how construction traffic will be managed to protect public safety; minimise delays to other road users; minimise disruption to property access; and keep the public informed about possible impacts on the network.

177. The document covers in detail:

    (a) construction methodology (including construction zones, staging and sequencing);

    (b) identification of activities that may generate traffic effects;

[16] Pg 1, Construction Traffic Management Plan (draft), Volume 5 Appendix G of application bundle.

(c) the overall Construction Traffic Management Philosophy;

(d) identification of roles and responsibilities;

(e) management procedures (of site staff; construction and temporary traffic planning; and implementation);

(f) mitigation measures;

(g) monitoring;

(h) complaints and incidents;

(i) training;

(j) reporting and reviewing; and

(k) review process (reasonable and material amendment).

178. A review of the CTMP will be undertaken by the Project management team and Transport Agency representatives at least annually. This will take into consideration:

(a) compliance with the Project consent and designation conditions, the Construction Environmental Management Plan and management plans;

(b) any significant changes to construction activities or methods;

(c) key changes to roles and responsibilities within the Project team;

(d) results of inspections, monitoring and reporting procedures associated with the monitoring of adverse effects during construction;

(e) comments or recommendations from NPDC, or the NOC Contractor; and

(f) unresolved complaints and any response to complaints and remedial action taken to address the complaint.

179. The CTMP may be amended at any time subject to the conditions of consent. 'Reasonable Amendment' (where the amendment results in an adverse environmental effect is the same or less that that previously anticipated) requires the management plan is updated and replaced onsite before the relevant works commence. 'Material Amendment' (which results in an adverse environmental effect that exceeds that anticipated in the original finalised management plan) requires certification by NPDC and that the management plan is updated and replaced on site again before the relevant works subject to the amendment commence.

RESPONSE TO SUBMISSIONS AND SECTION 42A REPORT ON TRAFFIC AND TRANSPORT EFFECTS

180. In this section, I respond to traffic and transport issues raised in submissions on the Project and in the NPDC's Section 42A report on the Project.

Submissions in support

Addition of walking or cycling track

181. In her submission of support for the project, Christine Cambie[17] asks whether a walking or cycling track could be built alongside the new route.

182. Again, and as with passing lanes, in this terrain and with traffic volumes being in the order of 2,500 vpd, the provision of a separate marked cycle lane of footpath is not warranted. In these circumstances, the full shoulder widths and extended forward sight distances are judged a sufficient provision and are a considerable improvement over the present situation.

183. While subject to the revocation process, the existing highway will likely become a local road enabling parking and access to the nearby walking tracks.

Contribution to growth and improved community benefits

184. A number of submissions from Taranaki based organisations support the Project and emphasise the importance of this highway upgrade at Mt Messenger, its importance to local industries, and the positive contribution it will make to growth and wider community gains.[18]

185. The submission by the SH3 Working Party[19] emphasises the strategic importance of this northern connection to the wider economic strengths of Taranaki and its continuing economic growth and productivity improvements, along with improved social and community effects. It points to the new route being significantly safer with improved resilience together with gains in reliability and savings in travel time and fuel consumption.

186. The submission from the Automobile Association emphasises the manner in which Taranaki's future economic, safety and social prosperity relies on a robust and resilient highway connection to and from the north that this application seeks to provide. Their submission tells of their active involvement in the investigation and design studies and investigations.

187. The Road Transport Association submission speaks of their service to the Taranaki region across a wide range of industries, and their long advocacy for SH3 north from New Plymouth to be upgraded into a route that can better serve the demands of a modern society. They describe the existing route at Mt Messenger as being no longer 'fit for purpose', and see the Project delivering notable benefits through reduced travel times, easier gradients, and straighter alignments.

[17] Christine Lambie (19/3030).
[18] SH3 Working Party (1/3206), NZ Automobile Association Taranaki (2/3122), Western Central Districts Branch Road Transport Association (3/3116).
[19] Representatives from each of the local authorities together with the police, NZTA, the road transport association and the Automobile Association. The NZTA stood aside from preparation and lodgement of this submission.

188. For the reasons set out in my evidence above, I agree with the comments made in these submissions as to the benefits of the Project.

Benefits to production and efficiency

189. Four further submissions[20] in support of the Project are from companies directly involved in production and transportation sectors.

190. The submission from Tegel Foods describes it as the second largest employer in the Taranaki region and sets out the manner in which this portion of State Highway 3 directly affects the operation of their business. In this respect, Tegel has a particular reliance on SH3 and Mt Messenger for product distribution as well as transport of live birds, feed, eggs and raw supplies for feed and meat manufacture in Taranaki.

191. The submissions from New Plymouth based companies TIL Logistics Ltd and J D Hickman Ltd, who each operate major trucking and logistics fleets across New Zealand, similarly emphasise the importance of the SH3 connection to and from the north to their operations and the delivery of freight and products to and from Taranaki. J D Hickman Ltd describe the extent to which they currently experience significant disruption being caused directly by issues with the existing highway. J Swap Contractors Ltd similarly convey their support and emphasise the need for dependable infrastructure.

192. These submissions reinforce the points made earlier in my evidence as to Taranaki's dependence on this northern link and its wider correlation with production and efficiency and growth of the region.

193. Another group of submissions[21] support the Project and with its design and layout enabling increased safety, better dependability, and greatly improved convenience for all users.

194. These gains reflect the benefits of the Project in replacing a section of SH3 moulded by the steep terrain and built originally by hand with a new road designed to modern standards. The upgrade delivers a significantly better road built to modern standards and designed to a 100 km/h operating speed brought about by clear forward visibility, full standard lane widths, widened shoulders, and a flatter alignment.

195. The same and similar points as to the safety, economic and social benefits of the Project are made by many individuals and organisations in the 'standard form' public submissions.

196. Together, these submissions support the associated gains in productivity, shortened travel times, higher level of service, much better dependability, and reduced operating costs raised in my evidence above. They emphasise the

[20] Tegel Foods Limited (5/3118), TIL Logistics (6, 3209), J D Hickman Ltd (7/3113), J Swap Contractors (8/3191).
[21] Steve Barham (11/3207), Scott Prestidge (12/3205), Adam Jasinski (13/3123), Kevin Thomas (14/3197), John Hill (15/3193), Judith Mullin (16/3195), Kevin Mullin (17/3196), Christine Brown (18/3180).

route's importance to businesses and families. They further note the particular benefits the Project will make to the trucking services that ply this route.

197. Such submissions reinforce the points made earlier in my evidence as to the wider gains this Project brings in strengthening Taranaki's connection to the national network and assisting the forward growth and economic development of the region, together with the improved service it delivers in enabling better safety and increased convenience for all of its users.

Submissions in opposition

Other matters

198. Regarding the provision of passing lanes included with Mr Lobb's[22] submission, and as I say in my evidence above, NZTA policy provides that for traffic volumes above 4,000 vpd in rolling and mountainous terrain such as this, recommended treatments are noted as being sight distance improvements, overtaking enhancements, possible isolated shoulder widening / crawler shoulders, and slow vehicle bays with short passing lanes being provided at 10 km intervals.

199. With this new bypass at Mt Messenger being less than 10 km in length and carrying some 2,500 vpd, the Project matches these recommended treatments. Looking forward, the designation sought for the Project provides sufficient width to allow such facilities to be provided at a later date as and when required.

200. Ronald Newman[23] submits that the state of the current Mt Messenger road is rarely the cause of the road being blocked. For the reasons set out in my evidence above, and **Table 4**, I disagree that the state of the current road is not related to closures. The reliability of the route also falls well short of the standards sought by NZTA and the wider community.

Tunnel will restrict large loads in and out of Taranaki

201. Several submissions[24] variously say the new tunnel will impose restrictions and the route would be better without it. Helen Piper says that large vehicles would not be able to pass through the new tunnel, and Sydney Baker says that it will restrict large cargo passing in and out of Taranaki. Brenda Lacy expresses a concern that where it is proposed the existing Mt Awakino tunnel be removed, a tunnel will still be included at Mt Messenger.

202. As set out in my evidence above, the new tunnel will be able to handle loads up to 6m high and 10m wide. This is a significant gain on the 5.1m height and 8.1m width of the existing Mt Messenger tunnel.

[22] Evan Lobb (19/3108).
[23] Ronald Newman (17/3035).
[24] Helen Piper (10/3025), Sydney Baker (11/3027), Brenda Lacy (12/3028), Ross Soffe (15/3032), Saralie Cryer (16/3033).

203. Currently, some 150 over-dimension loads are carried north annually to or from the region, almost all of which require the extra 240 km and associated 6 to 12-hour detour via Whanganui and SH4. The very much better geometrics of the bypass and larger dimensions of the new tunnel will enable two-thirds of these loads to instead be handled on the more direct route via SH3 with considerable benefits to Taranaki and everyone involved.

New route through the valley not ideal

204. Dawn Bendall[25] submits that the new route through the valley will not be ideal for travellers and will cause more fatalities.[26]

205. With the summit lowered by 79m and an alignment having fewer bends, flatter grades, standard shoulder and lane widths, lengthened sight distances and proper geometrics providing for a standard 100km/h operating speed, the new route will provide a more convenient and safer driving environment of all users in place of the severely compromised sub-standard performance of the existing route.

Section 42A Report

Traffic and transport

206. At paragraph 231 of the NPDC's s 42A Report, reference is made to an earlier query as to whether the intended 1.2m wide shoulders within the tunnel are of sufficient width to provide for mobility impaired access and egress, and the applicant's response that this will be designed in accordance with the Building Code. The Council's Building Services Coordinator has since confirmed that a 1.2m wide shoulder would comply with the Building Code provided no more than 170 people were within the tunnel.

207. At peak traffic flows and with a tour bus included, the likely number of people expected to be in the tunnel at any one time is approximately 65 persons.[27]

208. In addition, the NPDC s 42A Report, in response to concerns from submitters, refers to black ice and fog noting that this is an operational matter for NZTA to address if the need arises.[28] Having examined records spanning the past ten years, I confirm that ice or fog has not been identified as a causing factor in any of the crash or incident reports from the existing highway.

209. Finally, I note that at paragraph 235 of the NPDC s 42A Report, the officer concludes the improved geometrics, straighter alignment and provision of increased shoulders will improve the safety of SH3 at Mt Messenger, being a key outcome sought by the road upgrade. She goes on to express confidence

[25] Dawn Bendall (12/3026).
[26] Dawn Bendall also says the existing tunnel has restricted Taranaki from moving houses and has affected other industries which I have addressed above.
[27] This calculation is based on: the length of the tunnel, 235m; a closest slow speed spacing of 25m per vehicle (which gives maximum of 9 vehicles in each direction); inclusion of a bus with 40 persons and 17 cars with 1.4 persons per vehicle = 40 + 17*1.4 = 65 persons.
[28] NPDC, s 42A Hearing Report, para 210.

that the NZTA would manage operational concerns if and as they may arise *"…as they do in a range of locations with a variety of weather conditions"*. It is a view I endorse from my own working experience.

Peter McCombs
25 May 2018