Attachment Two: Te Ahu a Turanga Tolling Assessment Summary

GATE ONE – LEGISLATIVE REQUIREMENTS AND PRACTICALITY TEST			
The road is new or a significant upgrade	**A feasible free alternative route is available**	**Not less than 10,000 vehicles are likely to travel the road per day**	**Tolling infrastructure can be installed in a manner that is cost-effective to the project and reasonable; And within time periods required by the LTMA, 2003**
Yes	**Yes**	**Yes**	**Yes**
Te Ahu a Turanga is considered a new road until the time it is opened for general use (currently scheduled for 2025). State Highway 3 through the Manawatū Gorge has been closed indefinitely since slips caused major damage to the road in April 2017. In 2011 a slip closed the Gorge for 14 months. Te Ahu a Turanga replaces SH3 in this location.	There are two feasible free alternative routes available: • Saddle Road (via Ashhurst), which is largely used as the replacement for the Gorge; and • Pahiatua Track (for southern origins or destinations).	Modelling indicates the forecast 2025 traffic volume on Te Ahu a Turanga is 9,700[1] per day, increasing to 14,250 per day in 2048.	It is likely that tolling would start when the road opens. An Alliance contract has been awarded for designing and constructing Te Ahu a Turanga. If tolling is approved, the infrastructure could be delivered under this contract or by a third party. The costs for purchase and installation cost of tolling infrastructure are estimated at s 9(2)(j) gantry and roadside equipment, s 9(2)(j) installation, s 9(2)(j) for Te Ahu a Turanga specific toll system assets).
This is a legislative requirement under Section 46 of the *Land Transport Management Act, 2003.*	This is a legislative requirement under Section 46 of the *Land Transport Management Act, 2003.*	This is a test that may be indicative of the likely viability of the toll road, but may be taken into consideration with other criteria.	This is a test to ensure that tolling can physically be installed on the road in way that is: • cost effective • not unreasonably onerous to the project in terms of delivery and time • within the time constraints of the requirements of the *Land Transport Management Act, 2003.*

[1] The traffic volume is estimated based on traffic volumes before the Gorge was closed.
[2] Infrastructure includes pre-implementation and implementation of a new mainline gantry and roadside equipment similar to Tauranga Eastern Link. A tubular gantry structure would reduce this cost.

GATE TWO – A: VALUE FOR MONEY TESTS AND INVESTMENT RATIONALE TESTS

The toll tariff is reasonable and does not result in a traffic volume change that unduly impacts the wider network			Tolling infrastructure costs no more than 20% of anticipated revenue			Estimated tolling revenue will result in a meaningful contribution			Tolling delivers value for money and public good to New Zealanders and the Transport Agency		
S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3

Toll rates assessed

Three scenarios have been assessed:

1. $2.40 light / $4.80 heavy – similar to current toll tariffs in NZ;
2. $0.70 light / $3.30 heavy – tariffs that result in zero diversion;
3. $1.00 light / $4.70 heavy – tariffs that produce revenues that cover the cost to set up tolling and the maintenance and operation of the road.

The wider network includes the alternative routes of Saddle Road and Paihiatua Track, however, almost all diverted traffic would use Saddle Road and the detour through Ashhurst (which was upgraded temporarily to cope with the Manawatu Gorge traffic).

In 2025, the light and heavy traffic volumes on Te Ahu a Turanga at a range of toll rates are:

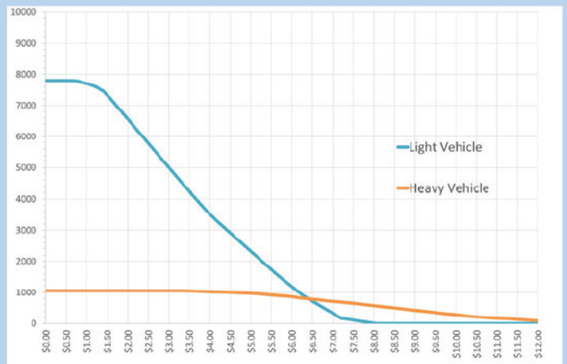

Figure 1 - Diversion vs toll rate

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Capital investment versus revenue

The tolling infrastructure costs are $8.2m NPV (2020$).

	PV Net Revenue ($ millions 2020)[3]	Tolling infrastructure costs as a proportion of revenue	Payback period (years)
Scn 1	s 9(2)(j)		
Scn 2			
Scn 3			

Table 2 -Tolling infrastructure

Summary Result

- Scenario 1 meets this criterion as the infrastructure costs represent less than 20% of the revenue;
- Scenario 2 does not meet this criterion as the infrastructure costs represent more than 20% of the revenue;
- Scenario 3 does not meet this criterion as the infrastructure costs represent more than 20% of the revenue.

Revenue per scenario

The estimated toll revenue collected differs between scenarios:

	Net Revenue ($ millions)	PV Net Revenue ($millions 2020)[3]
Scn 1	s 9(2)(j)	
Scn 2		
Scn 3		

Table 3 - Revenue per scenario

Contribution of revenue

Toll revenue could cover different costs in each scenario:

	PV Contribution to... ($millions 2020)			
	PV Net Revenue ($millions 2020)[3]	Tolling infrastructure & maintenance	Maintenance & operation of Te Ahu a Turanga	Construction costs of Te Ahu a Turanga
Scn 1	$66.6	$10.3 (100%)	$6.5 (100%)	$49.7 (9%)
Scn 2	$12.1	$10.3 (100%)	$1.8 (27%)	-
Scn 3	$18.9	$10.3 (100%)	$6.5 (100%)	$2.0 (0%)

Table 4 - Revenue contribution

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Construction application

Toll revenue could reduce the cost of construction by (NPV):

- s 9(2)(j) for Scenario 1;
- s 9(2)(j) for Scenario 2; and
- s 9(2)(j) for Scenario 3 (Table 3)

Te Ahu a Turanga's construction funding agreement sets out funding from the NLTF. Loans of these values could be secured against the toll revenue stream, providing increased confidence for the delivery of the road, and reduce reliance on the NLTF, as any toll revenue would replace NLTF funding, rather than being supplementary.

Maintenance and Operations

Toll rates could be set to cover the maintenance and operation of Te Ahu a Turanga, and the tolling infrastructure set-up and operating costs (Scenario 3), however the traffic on Saddle Rd and via Ashhurst would be higher than before the Gorge was closed (Table 1).

Social cost shift

The safety dis-benefits associated with traffic diverted to the existing alternative routes are about $2.6m and $0.3mm for every dollar in light vehicle toll tariff, and heavy vehicle toll tariff respectively[5].

	Safety benefits ($ millions NPV 2017$)	% decrease in safety benefits
Not tolled	$24.2	-
Scn 1	$17.0	30%
Scn 2	$24.2	-
Scn 3	$20.7	15%

Table 6 - Safety disbenefits

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[3] 35-year tolling period, 8% discount rate

[5] The economic evaluation in Te Ahu a Turanga's Detailed Business Case (Appendix F) identifies safety benefits of $24.2 m (PV 2017$). The changes in safety were derived by interpolating between the full safety benefits of $24.2 m for a tariffs of $0, and zero safety benefits for a tariff of $8.10 for light vehicles and $14.60, the tariffs at which zero vehicles are forecast to use Te Ahu a Turanga. The safety benefits for Scenario 2 are assumed to be the same as for the not tolled scenario as zero diversion is expected for Scenario 2.

Diversion/network considerations

In 2025, the amount of traffic on Te Ahu a Turanga and Saddle Rd per day in each scenario is:

	Te Ahu a Turanga		Saddle Rd	
	Light	Heavy	Light	Heavy
Not tolled	7,800	1,059	349	47
Scn 1	6,017	984	1,821	111
Scn 2	7,800	1,059	349	47
Scn 3	7,718	990	405	106

Table 1 - network impact

About 395 vehicles per day are expected on Saddle Rd once Te Ahu a Turanga opens. This is a similar volume to when the Gorge road was in use.

Summary Result

- Scenario 1 results in significantly higher traffic volumes on Saddle Rd (and through Ashhurst) than before the Gorge was closed. Therefore Scenario 1 is considered to significantly impact the wider network and not meet this criterion;
- Scenario 2 results in zero diversion and therefore meets this criterion;
- Scenario 3 results in a minor increase in traffic on Saddle Rd and is considered to meet this criterion, however the impact of increased heavy vehicle impact may reduce its viability;

This is a test to identify any potential negative impacts caused by the diversion rate associated with charging a toll. There are mitigations that may reduce the diversion rate, however these are not considered within this test.

This is a test to ensure the investment of tolling infrastructure is proportional to the anticipated revenue.

Financial internal rate of return

The return on investment is measured by considering the internal rate of return for the following costs: capital, operating, maintaining and replacement costs for the tolling gantry and roadside equipment.

	Return on investment
Scn 1	42%
Scn 2	10%
Scn 3	14%

Table 5 - FIRR per scenario

Scenario One NZ toll road context

If all toll revenue for Scenario 1 is applied to the construction cost of the road, toll revenue provides an 13% contribution[4], which is low compared to the proportion revenue contributes to New Zealand's current toll roads:

- Northern Gateway Toll Road: 38%
- Tauranga Eastern Link Toll Road: 22%
- Takitimu Drive Toll Road: 100%

Summary Result

- Scenario 1 meets this criterion as it provides a meaningful contribution to the construction cost of the road, however it is low compared to current NZ toll roads;
- Scenario 2 does not meet this criterion as the toll revenue does not cover the maintenance and operation costs of the new road;
- Scenario 3 meets this criterion as it covers the cost of the maintenance and operation of the new road.

This is a test to ensure that the investment into tolling infrastructure will result in a positive return, and that this return will result in a contribution towards the road costs that is considered 'meaningful': where 'meaningful' is considered to be in-line with other toll roads in New Zealand.

Revenue vs Operational cost

Scenario 1 toll tariff of $2.40 for light vehicles would result in toll revenue collected by the Transport Agency of $1.34 per vehicle (GST of $0.36, and transaction cost of $0.70) = a proportional value of 56 / 44;

A toll tariff of $4.80 for heavy vehicles, which would result in toll revenue of $3.38 per vehicle (GST $0.72, and a transaction cost of $0.70) = a proportional value of 75 / 25.

Scenario 2 toll tariff of $0.70 for light vehicles would result in negative toll revenue (an estimated -$0.11 per vehicle);

This scenario would therefore only include a heavy vehicle tariff of $3.30, which would result in toll revenue collected by the Transport Agency of $2.10 per vehicle (GST of $0.50, and a transaction cost of $0.70) = a proportional value of 64 / 36.

Scenario 3 toll tariff of $1.00 for light vehicles would result in toll revenue of $0.15 per vehicle (GST of $0.15, and transaction cost of $0.70) = a proportional value of 15 / 85; And

A toll tariff of $4.70 for heavy vehicles, which would result in toll revenue of $3.29 per vehicle (GST $0.71, and a transaction cost of $0.70) = a proportional value of 75 / 25.

Summary Result

- Scenario 1 meets this criterion as it performs well in all tests, except for relatively high social cost shift;
- Scenario 2 meets this criterion for heavy vehicles only, however benefits are partially off-set by social cost shift;
- Scenario 3 meets criterion however benefits are partially off-set by social cost shift.

This is a test to ensure that the public and the Transport Agency will be receiving value for money in terms of:

- Social costs shift in terms of safety;
- Clarifying how the money will be applied (and how much money would be available for re-allocation);
- The proportion of toll revenue collected in comparison to operating costs

[4] This is the proportion of revenue to cost of Te Ahu a Turanga (both in NPV 2020$) at 8% discount rate.

GATE TWO – B: POLICY AND PROJECT ALIGNMENT TESTS

Tolling does not significantly or unduly reduce project outcomes

S1

Social

- Te Ahu a Turanga's Detailed Business Case identifies significant positive effects for the Ashhurst community, as the alignment will remove traffic from Salisbury St[i];
- Tolling at levels higher than $3.30 for heavy vehicles and $0.70 for light vehicles will result more traffic in Ashhurst than before the Gorge was closed;
  - Scenario 1 – results in a significant increase of traffic moving through Ashhurst;
  - Scenario 2 – results in no change to Te Ahu a Turanga in comparison to the untolled counterfactual;
  - Scenario 3 – results in a minor increase of traffic moving through Ashhurst.

Safety

- Tolling may moderately reduce the safety benefits of Te Ahu a Turanga, depending on the scenario;
- Te Ahu a Turanga untolled identified project safety benefits of $24.2m;
  - Scenario 1 - These benefits are expected to decrease to $17.0m;
  - Scenario 2 - No decrease in safety benefits is expected if tolled at $3.30 for heavy vehicles and $0.70 for light vehicles, as no diversion is expected at these tariffs.
  - Scenario 3 - If tolled to cover the maintenance and operation of Te Ahu a Turanga, and the tolling infrastructure set up and operating costs, these benefits decrease to $20.7m;

Improved travel times

- Tolling is not expected to impact the improved travel time benefits of Te Ahu a Turanga;
- Travel times on both Te Ahu a Turanga and the alternative routes are not expected to change.

Economic

- It is considered tolling will not impact the economic benefits of Te Ahu a Turanga. If a debt is raised against the toll revenue stream and applied to the construction cost, then increased confidence for the delivery of the road may result – which may improve wider economic benefits which increase as the length of time SH3 link is broken decreases (refer Appendix E of Te Ahu a Turanga's Detailed Business Case).

Resilience

- It is considered tolling will not impact the resilience of Te Ahu a Turanga;
- The operating conditions of Te Ahu a Turanga and tolling can react to changing demands, for example, if a severe weather event prevents the use of the alternative route the toll level can be reduced to $0.

This is a test to identify any impact tolling may have on the original intent of the road project.

Tolling is not contrary to the GPS priorities

S1

Safety

- Tolling may moderately reduce the safety benefits of Te Ahu a Turanga, depending on the scenario;
- Te Ahu a Turanga untolled identified project safety benefits of $24.2m;
  - Scenario 1 - If tolled at $2.40, it is estimated that these benefits will decrease to $16.6m;
  - Scenario 2 - No decrease in safety benefits is expected if tolled at $3.30 for heavy vehicles and $0.70 for light vehicles, as no diversion is expected at these tariffs.
  - Scenario 3 - If tolled to cover the maintenance and operation of Te Ahu a Turanga, and the tolling infrastructure set up and operating costs, these benefits decrease to $21.1m;

Access

- It is considered that tolling will not result in any significant change to access, however this may change in line with the network impact on Ashhurst.

Value for money

- May deliver value for money, depending on the scenario:
  - Scenario 1 is considered to deliver value for money as the proportion of infrastructure costs to revenue is considered reasonable, and it performs well in all tests;
  - Scenario 2 requires a high level of upfront investment, and, when taking into consideration the social cost shift, may only 'break-even'; Yet it still provided a positive FIRR;
  - Scenario 3 requires a high level of upfront investment, however performs well in other tests.

Environment

- Tolling is expected to have no impact on environmental priorities of the GPS;
- There may be minor impacts with people travelling less however these are not considered material to the environmental priorities of the GPS.

This is a test to identify any impact or alignment tolling may have with the current *Government Policy Statement for Land Transport.*

[i] Refer Te Ahu a Turanga Detailed Business Case page 58