APPENDIX 2:

TRANSPORTATION REPORT
(BLOXAM BURNETT AND OLLIVER)

KAWERAU DISTRICT COUNCIL
Industrial Zone Plan Change

Integrated Traffic Assessment
Addendum Report

January 2012

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Addendum Report

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Report Prepared by: Cameron Inder 13/1/12
Tara Hills/ Cameron Inder — Date

Checked by: Cameron Inder 13/1/12
Cameron Inder — Date

Approved for issue by: 13/1/12
Tony Keyte — Date

Bloxam Burnett & Olliver Ltd
Level 5, 18 London Street
Hamilton

Ph: 07 838 0144
Fax: 07 839 0431
Email: cinder@ bbo.co.nz

Job Number: 140110

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CONTENTS

GLOSSARY OF TERMS

AADT	Average Annual Daily Traffic
ADT	Average Daily Traffic
BBO	Bloxam Burnett and Olliver Ltd
GFA	Gross Floor Area
GLA	Gross Leaseable Area
Ha	Hectare
HCV	Heavy Commercial Vehicle
KDC	Kawerau District Council
NZTA	NZ Transport Agency
PT	Public Transport
OD	Origin to Destination
SH 34	State Highway 34
s/veh	Seconds per Vehicle (delay)
Trip	A one way journey
Vpd	Vehicles per day
Vph	Vehicles per hour

1.0 EXECUTIVE SUMMARY

Kawerau District Council is advancing a change to their District Plan to provide for future light to medium industrial development on 113 ha of land adjoining State Highway 34, just north of Kawerau, near the existing timber mill. The land is owned by a single owner, the Putauaki Trust. This proposed increase in industrial area in Kawerau has been recommended by the Whakatane Transportation Study.

A previous Traffic Impact Assessment (TIA) for the plan change, dated December 2009, was based on an Industrial zone of 29 ha. This ITA Addendum report considers the additional traffic implications of increasing the plan change area by a further 84 ha. As a part of the plan change proposal, 11.2 ha of existing Industrial zoned land nearby will be changed back to a Rural zone, due to being unsuitable for industrial development.

The transport effects of the additional rezoned industrial land have been assessed in this report. The primary conclusion is that the proposed rural T intersection with State Highway 34 recommended in the 2009 ITA remains supported for access to Area A (plan 140110/P/01 in Appendix C). The construction of an additional intersection, a rural roundabout, is required to service the additional development area (Area B). The roundabout is required approximately 9 years after Stage 1 commences, assuming linear uptake of land, or from the outset if Area B is developed as Stage 1. At that time the right turn out movement at the Area A intersection should be permanently closed and this traffic diverted internally in the site to the roundabout when the Area A intersection performance degrades from LOS D to E.

Any adverse transport effects from development relating to this plan change are expected to be no more than minor provided access is based on the following recommendations of this ITA addendum report.

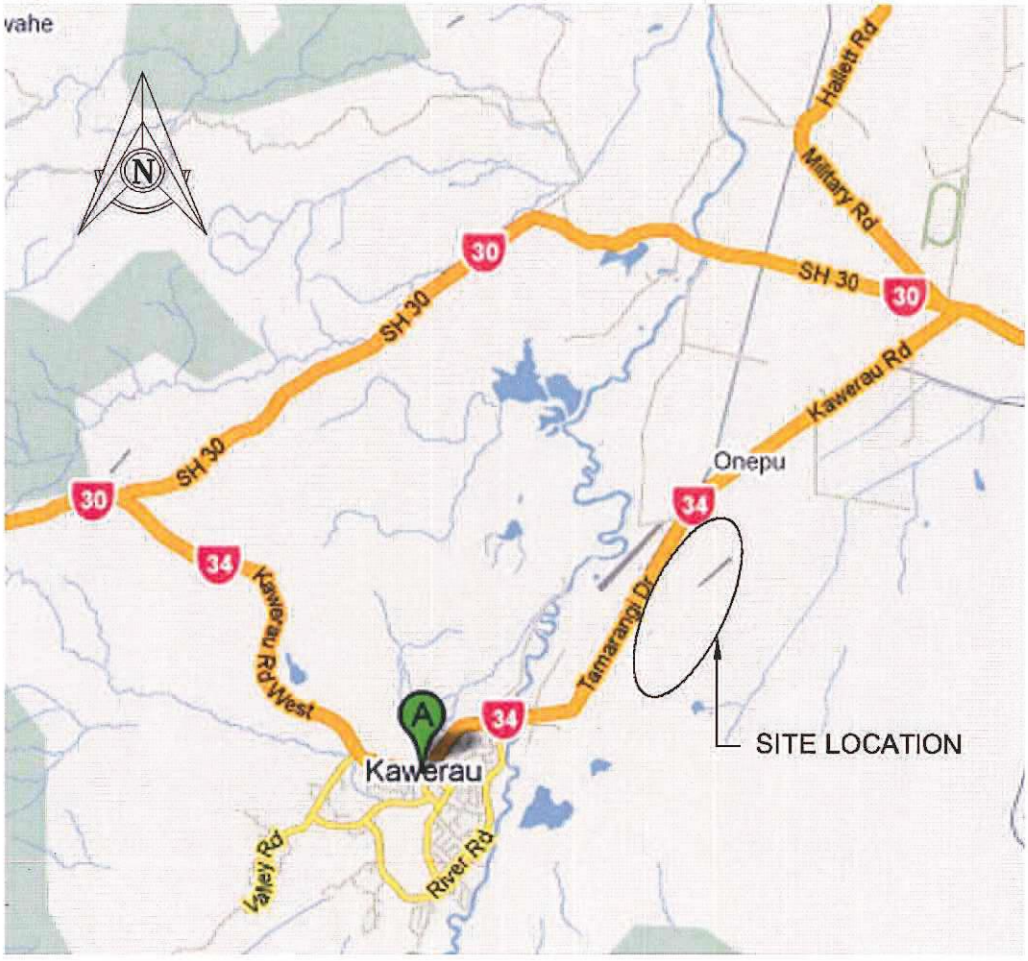
- Access to Area A (refer to Appendix C, Plan Change Areas) is recommended by a standard rural Right Turn Bay 'T' Intersection in accordance with MOTSAM Figure 3.25 standard, as indicated in Diagram 1 of Appendix D. The preferred location for the intersection is approximately 340 m north of the Tarawera Road overbridge.
- Access to Area B is recommended by a rural roundabout of at least 30m inscribed diameter and designed to current Austroads standards. The roundabout should be located approximately 500-600m north of the Super Skid railway underpass structure, subject to any detailed design constraints or Road Safety Audit recommendations.
- Provide an internal road connection with level crossing over the railway siding between Area A and Area B. The position of the level crossing is to be confirmed as a component of the subdivision scheme plan and detailed design.
- Permanently close the right turn out movement at Area A intersection after confirmation by turning count surveys and appropriate traffic assessment that the Area A right turn out performance has passed the Highway Capacity Manual performance threshold from LOS D to E. Right turn out traffic diverts to the Area B roundabout via the internal road crossing the rail siding.
- The rural roundabout should be constructed from the outset in its preferred location north of the SH 34 rail underpass if Area B is progressed as Stage 1 of the development. The form of Area A intersection thereafter should be constructed to a modified MOTSAM Figure 3.25 standard rural Right Turn Bay Intersection that excludes provision for right turn out movements.
- A speed limit reduction from 100 kph to 70kph or 80kph should be investigated to enhance safety and reflect the changed environment on SH 34 from the north end of the site to Manukorihi Drive following construction of one or both access intersections.
- Provide suitable facilities for walking and cycling throughout the internal road network of the development, including crossing of the rail line siding between the development areas. Safe facilities for crossing SH 34 from the Mill near the Area A intersection should be integrated with the intersection design from the outset. Walking and cycling facilities should seek to provide efficient connections for users as well as safety.

2.0 INTRODUCTION

2.1 OVERVIEW

Kawerau District Council proposes a plan change to rezone approximately 113 ha of land north of Kawerau, near the existing timber mill, for future light and medium industrial uses. The location of this land is shown in Figure A. All of the land in the proposed Industrial Zone is owned by a single owner, the Putauaki Trust.

Figure A: Site Locality Plan



The industrial zoning proposal presented in this report is an outcome of the Whakatane Transportation Study (by NZTA and Whakatane District Council), which considered the best location for future industrial development in the Whakatane District. The study concluded that Kawerau was the most appropriate site, as industrial development is already well established and serviced by road and rail infrastructure in this area.

Kawerau District Council has identified Eastern Bay of Plenty logistics and distribution as a possible development opportunity for Kawerau, due to its direct rail link with the Port of Tauranga.

This Addendum report to the 2009 ITA considers the transport impacts of Kawerau District Council's revised proposal to increase the industrial zoned area to a total of 113 hectares, and ultimately tests whether or not the conclusion and recommendation of the ITA are still valid.

This site is expected to provide for light and medium sized industries. There is already some provision for light industries in Kawerau in the Manukorihi Drive industrial area, to the south of the Plan Change site. Manukorihi Drive has relatively small lot sizes (most less than 2 ha), providing for light industries. The Plan Change site is proposed to predominately provide for medium sized industries requiring larger lots

where significant areas of storage are required. There is no predicted demand for further heavy industry development in Kawerau such as the existing timber mill, and such developments are therefore not expected at this site.

2.2 AGREED ACCESS FORM

An assessment of the traffic impacts and access opportunities for a distribution and logistics hub at this site was provided in the December 2009 Traffic Impact Assessment (TIA) by Bloxam Burnett & Olliver Ltd (BBO). The total area considered in the 2009 TIA to be zoned Industrial was approximately 27 ha, located between State Highway 34 (SH 34) and the existing Super Skid site opposite the Kawerau timber mill.

The main conclusion of the 2009 TIA was that the traffic effects of the proposed 29 ha industrial development would be more or less the same as the 25.5 ha of industrial zoned land being returned to rural. On that basis there was little predicted increase in permitted traffic volumes, and overall the adverse effects were considered to be no more than minor. The 2009 TIA recommended that access to the industrial area be located approximately 430 m north of the existing Tarawera Road overbridge (Refer Figure A1 in Appendix A), and that it be constructed as a rural right turn bay intersection to MOTSAM rural design standard with a left turn in deceleration lane. This location and intersection design concept was approved by the NZTA by letter dated 28 January 2010, which is provided in Appendix B.

The agreed location of the access intersection provides 330 m separation from the railway yard access on the opposite side of the road. Sight distance from the proposed access intersection to the north is 300 m, and to the south is 400 m, this exceeds NZTA's minimum requirement of 282 m for a posted speed limit of 100 kph (PPM, 2007 Table App 5B/1). This report recommends that this access location be retained to service Area A of the larger, 113 ha, industrial area now proposed. Further access capacity for the increased industrial area is discussed in detail in Section 6 of this report.

It should be noted that another option has been considered for traffic access to the plan change area, which involves sharing the existing private road over bridge used by the mill, and gaining access to SH 34 by creating on and off ramps on either side of the bridge. Key benefits include reducing the number of intersections on SH 34 and providing the highest form of intersection safety possible. However the option is ultimately unfeasible due to some significant practical issues that exist. Creating interchange ramps requires significant works on land that is presently privately owned on the mill side of the road, and the works would cause a large disruption and rearrangement of the mill operation including railway sidings. The road bridge presently spans over the highway and well into the mill site over the railway sidings, so the on and off ramps intersection on the mill side of the bridge would need to be on the bridge rather than an embankment. Perhaps the most problematic issue aside from engineering matters is that the over bridge is a private road carrying many heavy logging vehicles that are not legal on public roads. The mixing of this heavy off road logging traffic with light public road traffic from the industrial site is highly undesirable from a safety perspective and is not supported by the mill operators. There are also legal implications in doing this.

2.3 SITE DESCRIPTION AND ADJOINING ROAD NETWORK

The site and surrounding environment is described in detail in the 2009 TIA, and is only briefly described in this section.

The southeast corner of the site contains a Super Skid log handling site and associated stormwater ponds. Railway spur lines from the Super Skid site cross the proposed industrial area in an east/west direction, and high voltage overhead transmission lines and a high pressure gas main cross the proposed industrial area in a north/south direction.

The proposed industrial area has SH 34 frontage of approximately 1,700 m. State Highway 34 is a Limited Access Road and is classified as a Regional Connector in the NZTA Draft State Highway Classification. Figure A1 in Appendix A shows the location of key features including existing accessways, the mill access overbridge, railway underpass, and intersections. The speed limit on SH 34 in

the vicinity of the site is 100 kph and reduces to 70 kph approximately 1.5 km south of the overbridge, on the approach to Kawerau.

The annual average daily traffic volume (AADT) measured in 2010 was 5,257 vpd at NZTA count station 34/11, located about 5.5 km north of the overbridge. The Heavy Commercial Vehicle (HCV) content was 11.5%. This AADT is similar to that of 2008 and 2009 however the AADT in 2006 and 2007 was higher at 5,730 vpd. According to NZTA count information, SH 34 traffic growth over the period 2003 to 2010 declined at the rate of 1% per annum.

2.4 Crash History

The latest 5 year crash record and collision diagram for SH 34 in the vicinity of the site is included in Appendix E. This shows five non-injury crashes occurred from 2006 to 2010, of which one involved a right turn movement at the Mill access intersection of SH 34 / Tarawera Road (truck vs truck). The other crashes include two loss of controls, one unsecured load, and one rear end crash. No common location or causes are apparent.

Similarly for the 'S' bends to the north of the site (discussed further in Section 7) the crash record is two injury accidents and 5 non-injury accidents in the 2006-2010 period (included in Appendix E). All seven crashes are due to loss of control of vehicles on the curves, which indicates a common failure by the drivers to reduce their speeds for the sudden change in road geometry from the long straight sections either side.

3.0 UPDATED PROPOSAL

3.1 Proposed Plan Change Area

The proposed Industrial zone within the plan change area is approximately 113 ha, to be zoned for light to medium industrial development. This area is shown on drawing 140110/P/01, in Appendix C.

The proposed plan change area includes approximately 25 ha of land already zoned for industrial use and not developed (road front of areas A1, B1 and D1 on the plan in Appendix C). This provides a baseline of permitted activity.

For reasons outlined in the previous TIA it is proposed to return the zoning on area D1 (11.2 ha) back to Rural zone. Therefore the area of land to be zoned Industrial at the completion of the Plan Change is shown as areas A, B, C and E, with the net new area (the total less A1 and B1) being 99 ha. Areas C and E (28.3 ha) are already operating in an industrial capacity under an existing resource consent as a Super Skid logging site, and so the industrial rezoning includes this area.

The proposed Industrial area assessed by the previous TIA was 29 ha (Area A), with the net *new* area being 16.4 ha (A-A1). This Addendum report considers the transport effects of increasing the proposed Industrial zone by a further 84 ha (areas B, C and E). Table 1 below summarises the areas.

Table 1: Plan Change Areas

Industrial Areas	Area (ha)
Total Proposed Industrial Zone Area (A, B, C, E)	113
Proposed Industrial Zone already developed (C, E)	28
Proposed Industrial Zone undeveloped (A, B)	85
Existing Industrial Zone to remain (A1, B1)	14
Undeveloped New Industrial Zone (A-A1, B-B1)	71

3.2 NET DEVELOPABLE AREA

Within areas A and B exists an easement corridor for Transpower transmission lines that cannot be built on with industrial activities. The total area of this corridor is approximately 13 ha, leaving a net developable area for Industrial activities of (85 – 13) 72 ha.

3.3 STAGING OF DEVELOPMENT

Development of the site is expected to be undertaken in at least two primary stages. The basis of this assessment is for full occupancy of the new 72 ha being achieved by 2041 (30 years).

Although the precise amount of land per stage remains to be determined, the Putauaki Trust's current preferred sequence is Stage 1 as Area A (22 ha) and Stage 2 as Area B (50 ha). Area B as Stage 1 is a remote possibility although the Putauaki Trust advises that this would only be economically viable if sufficient market demand for large areas (in excess of 15-20ha) of industrial land were to exist.

The location and form of the access intersection configurations for Stage 1 and Ultimate Development are addressed further in Sections 6.

4.0 TRAVEL DEMAND MANAGEMENT OPPORTUNITIES

4.1 HEAVY GOODS TRANSPORT

The access of goods to and from the new industrial land is expected to be predominantly by road although the opportunity is recognised for another rail siding off the existing privately owned spur line to service Area B industrial land north of the Super Skid site. The core industry of the Super Skid site is facilitating the export of logs by rail to Tauranga, and this is expected to grow over the long term therefore reducing the volume of logs being carried by road. The Master Plan for development of the site will accommodate the rail connection opportunities.

4.2 GENERAL TRAFFIC

The only public bus route in the area is from Whakatane to Kawerau, and it currently runs twice a week only. The provision for at least one bus stop within the proposed site is recommended in order to help increase the use of public transport by commuters. Most visitor trips to the site will be via car. Employee trips from the surrounding areas to the site could in future be via car-pooling or a work-sponsored bus or van as reasonable alternatives to individual cars.

Cycling between the site and Kawerau town should be promoted and encouraged for employees, as the distance is just over 1.5 km from the edge of town over flat terrain. Road shoulder widths on SH 34 north of the intersection with Fletcher Avenue are between 1.5 and 2.0 m, which provides adequate space for road cycling. The addition of painted cycle symbols in the road shoulder, together with signs reminding motorists of the presence of cyclists would be beneficial in promoting cycling to commuters. The intersection of SH 34 and Fletcher Avenue would also benefit from advanced cycle stop boxes and cycle lanes to promote the presence of cyclist to motorists. However, it is acknowledged that both this intersection and SH 34 are not within Kawerau District Council's control to improve, but rather the NZTA.

New industrial activity in the area is likely to create some pedestrian and cycling trips between the site and the mill, crossing over SH 34. A source of such trips could be lunch bars serving employees of the industrial area. Walking and cycling trips should be anticipated with footpaths and pedestrian facilities along key access roads and at desirable crossing points on SH 34 to ensure that safety as well as efficiency is maximised. Provision for such trips could include a pedestrian refuge islands, located in an area with good sight lines, and with footpaths on either side. A pedestrian refuge island would only be appropriate in an area with a speed restriction in place.

5.0 PREDICTED TRIP GENERATION

5.1 CONTRIBUTING AREAS OF DEVELOPMENT

For the purposes of this assessment we have ignored any reduction in vehicle trip numbers due to car-pooling and cycling. Traffic relating to the Super Skid site (28 ha) is not anticipated to change as a result of the rezoning, and access will continue to be via Tarawera Road. Therefore these trips have not been considered further in the effects assessment of this report.

The area of industrial land that will generate new trips is approximately 72 ha (with the Transpower corridor excluded). This includes the permitted baseline traffic for the undeveloped existing Industrial zoned land (14 ha). Split into the respective areas, traffic will be generated by 23 ha in Area A and by 49 ha in Area B.

5.2 TRIP GENERATION RATE

Trip rate data considered for this site has included traffic counts taken at a nearby industrial development (Manukorihi Drive), and data from the Institute of Transportation Engineers (ITE) "Trip Generation" references.

Manukorihi Drive is a developed industrial area off SH 34, approximately 1 km south of this site. Manukorihi Drive is a cul-de-sac road serving only industrial lots, and was surveyed over a period of two weeks in September 2009. The total developed area (ie built on) including road reserve was 11.6 ha. The Institute of Transportation Engineers (ITE) "Trip Generation" references (volume 2, pages 151, 152 and 153) allow the size of the development to be taken into consideration, and gave slightly lower trip rates than those obtained from the Manukorihi Drive traffic counts. A summary of these trip generation rates is provided in Table 2 below.

The two data sources provided very similar results. This site is not expected to be as intensively developed as Manukorihi Drive, due to larger lots with areas of storage expected. Therefore the lower trip rate from the ITE data is considered to better represent this site, and has been used in this report.

Table 2: Trip Generation Rate Comparison (ITE adopted)

Reference	Trip Rate			Trips Predicted for this Site		
	Per Day (vpd/ha)	AM Peak (vph/ha)	PM Peak (vph/ha)	Per Day (vpd)	AM Peak (vph)	PM Peak (vph)
Manukorihi Drive	168.6	16.8	14.05	12,139	1,210	1,012
ITE	125.4	13.7	12.8	9,029	986	922

5.3 DIRECTIONAL SPLIT

The site inbound/outbound traffic split has been based on ITE data for industrial parks. This data shows a 83:17 inbound/outbound traffic split in the am peak period, and a 21:79 in/out split for the pm peak period. The northbound/southbound directional split has been based on the Manukorihi Drive data. This data shows a 35:65 northbound/southbound split in the am peak, and a 65:35 northbound/southbound split in the pm peak. This reflects the significant proportion of workers travelling from Whakatane.

5.4 TRAFFIC GROWTH

Count data from 2009 for SH 34 in the location of the site recorded weekday flows of 6,123 to 6,963 vpd, and weekend flows of 3,601 to 4,067 vpd. The peak hour flows were about 10% of the AADT. Traffic

growth on SH 34 has been assumed to be 0.5% per year from 2011, which is considered conservative given the historic information presented in Section 2.3 of this report.

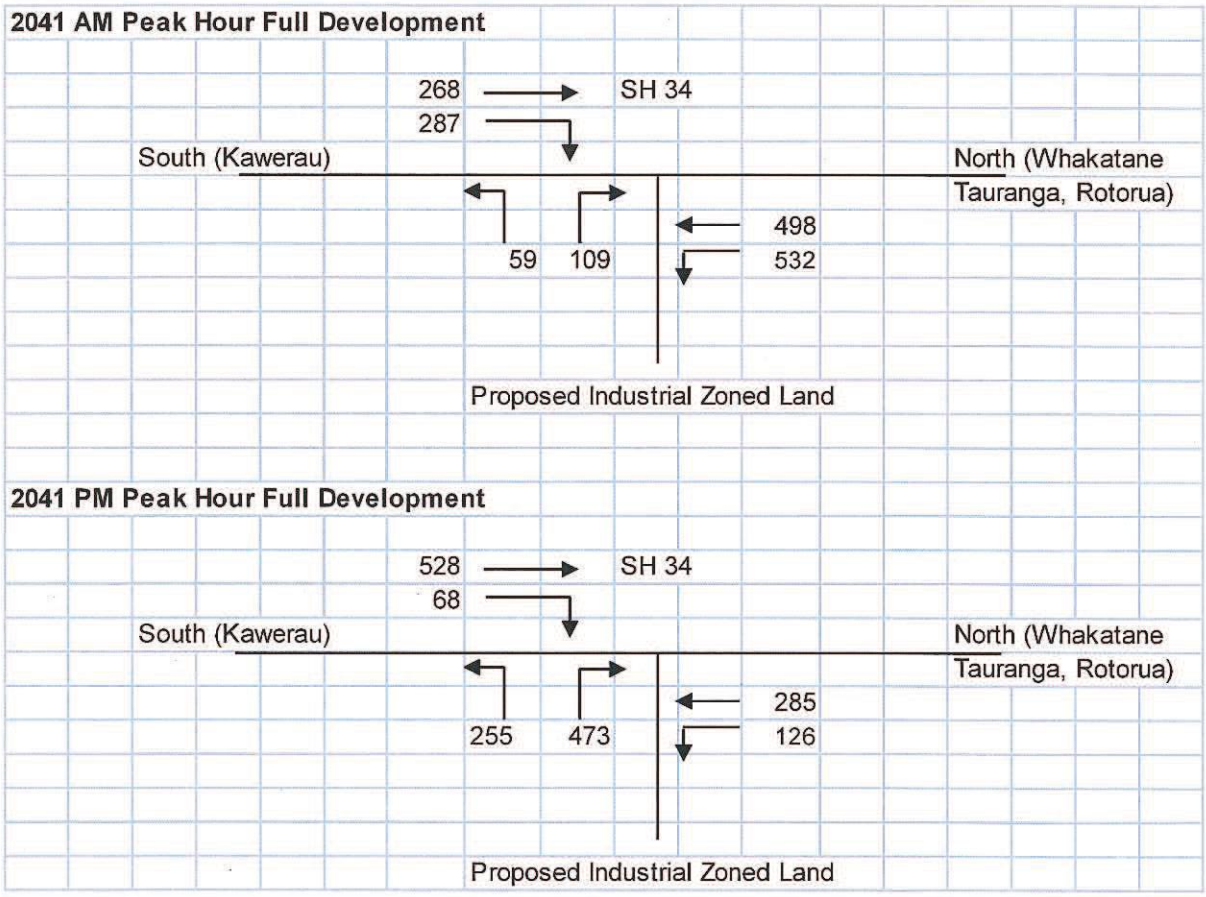
Given the stagnant growth shown in NZTA data for the highway, a weekday ADT of 7,000 vpd in 2011 has been used for assessment purposes for SH 34, with am and pm peak hour flows of 660 vehicles per hour (vph) and 700 vph respectively (taken from the surveyed flows).

The peak hours on SH 34 and the peak flows generated by the proposed industrial area are expected to coincide (typically 7am-8am and 4pm-5pm), and it is these periods that the above flows relate to. It is likely there will be a smaller midday peak period for the site as normal for most industrial sites, but such flows have not been assessed as SH 34 midday volumes are approximately 60% of the pm peak hour volume.

5.5 Industrial Development Traffic Flows

Figure B summarises the predicted future peak hour flows on the basis of the inbound and outbound and directional splits above and that the subdivision is completed and fully occupied by 2041.

Figure B: Total Industrial Traffic / Predicted State Highway 34 Flows



6.0 ACCESS ASSESSMENT

6.1 Options for Ultimate Configuration

Preliminary SIDRA model assessments of the more critical pm peak scenario (due to right turn out movement) show that three separate right turn bay intersections could provide sufficient capacity for the full industrial development flows in 2041. The construction of three right turn bay intersections is technically possible in the straight section of road past the site, with one intersection serving Area A and

two intersections serving Area B, all at least 200 m apart and each with 282 m sight lines in either direction. However, given other feasible alternatives this layout is not recommended as the high density of conflicting movements is likely to impact significantly on the safety of this section of the regional connector highway.

Following discussions with NZTA staff in the regional office at Tauranga (October 2011) it was agreed that the size and spread-out context of the site together with the anticipated staging sequences (outlined in Section 3.3) makes it worth considering two access roads that intersect with SH 34; one access to Area A and one to Area B. In particular a rural roundabout access to Area B could be positioned to take advantage of the existing 'S' bend curves at the north end of the site, which already provides some slowing of traffic on the highway in the southbound direction. This option is considered later.

An internal road link between areas A and B is also recommended to facilitate business interaction within the site without loading internal trips on the highway. Due to existing constraints it is expected that only one level crossing will occur over the rail spur line between the areas. This is expected to be sufficient and will minimise the adverse safety risks of crossing live rail tracks. In addition the internal link would avoid the need to accommodate walking and cycling trips on SH 34 north of Area A, particularly if Area B intersection is a roundabout which typically causes safety difficulties for cyclists and pedestrians.

The appropriate intersection form for Area A is influenced by the staging sequence of the development, so two scenarios for Stage 1, being Area A or B, are considered in the following sections notwithstanding that the preferred Stage 1 option is Area A.

6.2 Stage 1 Preferred Scenario: Area A

Completion of Area A as Stage 1 is expected to take about 9 years assuming the average uptake of industrial land is linear over the 30 year development period. The peak hour traffic flow rate at full occupancy of Area A will be about 300 vph in the AM peak and 280 vph in the PM peak. **Figure C** sets out the predicted highway and turning volumes for Stage 1 at year 9 (2020).

A standard rural 'T' intersection has been tested to accommodate these flows, with the layout based on the Figure 3.25 design in MOTSAM with the addition of a 140m left turn in deceleration lane. Delays to State Highway traffic are minimised with this form of intersection as through traffic retains priority.

Although not specifically modelled, it is recommended that space for left and right turn out acceleration from the intersection is provided given the presence of turning trucks in the future traffic flows. However, the physical constraints of the present road environment with the Mill access intersection, Tarawera Road overbridge and rail underpass embankment means it is not feasible to achieve the full 910m lane lengths for trucks as recommended in the Austroads Guide to Road Design part 4a (to accelerate to 80kph). Accordingly it is proposed that the road shoulder for left out acceleration is widened to accommodate a truck for the maximum achievable length without interference with the Mill rail access intersection, a distance of approximately 300m. Similarly, it is proposed that the road shoulder in the northbound direction is widened for accelerating trucks from the intersection to the start of the rail underpass embankment, a distance of approximately 220m. Both of these lengths achieve the Austroads recommended acceleration length for cars and are deemed acceptable in this case for trucks due to the low volumes on SH 34. Diagram 1 in Appendix D illustrates this intersection layout.

The intersection performance and capacity has been assessed using SIDRA Intersection 5.0, for which the performance results for the pm peak hour (worst case) are summarised in **Figure D** below.

The results show that the 'T' intersection configuration operates satisfactorily. The worst case average delay in the pm peak hour is for turning right out movements at 30 seconds per vehicle (s/veh), which is Level of Service (LOS) D based on the Highway Capacity Manual definition. LOS E is generally considered to be the practical worst operational performance for this form of intersection as the potential to for significant congestion and safety issues develop as delays increase.

Figure C: Area A Stage 1 Intersection Flows (2020)

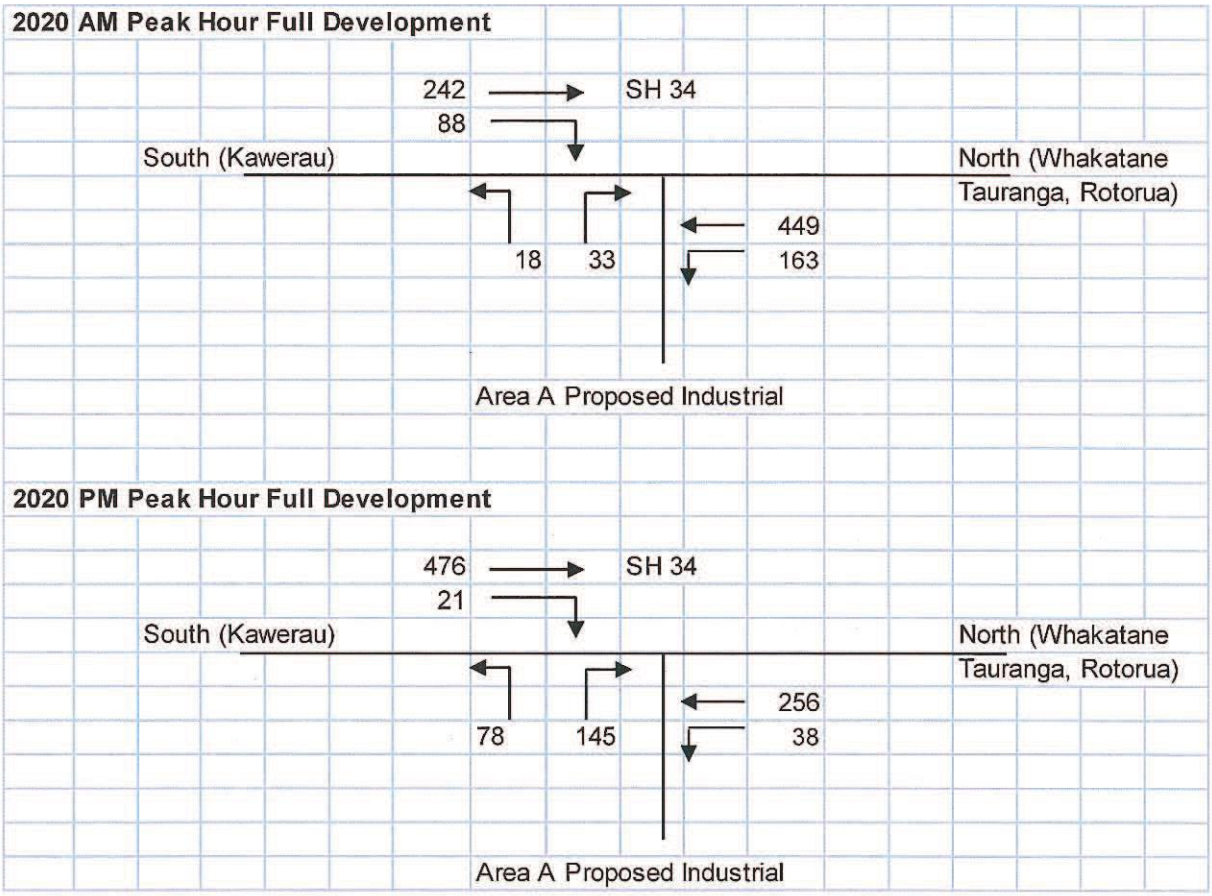


Figure D

MOVEMENT SUMMARY

Site: PM 2020 Area A GW

Kawerau Area A 'T' Intersection
2020 PM Peak Hour.
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop Queued	Effective Stop Rate per veh	Average Speed km/h
South: SH 34 South											
2	T	501	12.0	0.277	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	22	12.0	0.027	15.1	LOS C	0.1	0.9	0.40	0.71	66.8
Approach		523	12.0	0.277	0.6	LOS C	0.1	0.9	0.02	0.03	98.0
East: Industrial Site											
4	L	82	12.0	0.147	8.7	LOS A	0.5	3.7	0.41	0.67	41.6
6	R	153	12.0	0.644	30.0	LOS D	3.9	29.9	0.88	1.17	29.1
Approach		235	12.0	0.645	22.5	LOS D	3.9	29.9	0.71	1.00	32.5
North: SH 34 North											
7	L	40	12.0	0.023	13.6	LOS B	0.0	0.0	0.00	0.76	69.1
8	T	269	12.0	0.149	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		309	12.0	0.149	1.8	LOS B	0.0	0.0	0.00	0.10	94.6
All Vehicles		1067	12.0	0.645	5.8	NA	3.9	29.9	0.17	0.26	72.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

6.3 AREA A INTERSECTION: COMPLETED DEVELOPMENT

The peak hour volumes for Area A at completion of the industrial zone (2041) are illustrated below in **Figure E**. In this case the state highway flows include the additional turning volumes to and from Area B intersection to the north. The same standard rural 'T' intersection has been tested in SIDRA.

Figure E: Area A Completed Development Flows (2041)

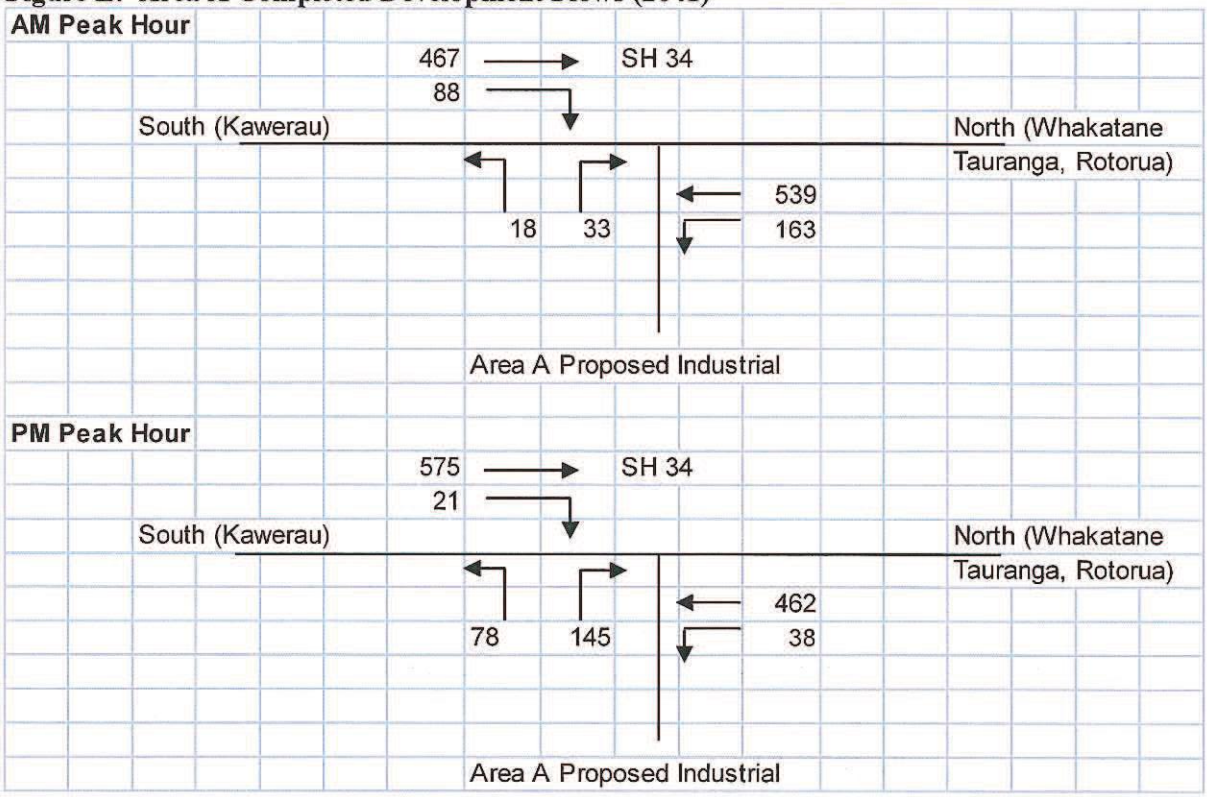


Figure F illustrates the SIDRA results summary. The assessment of 2041 flows indicates a very poor level of service for the intersection in the pm peak hour for right turns out of the site, with average delays in excess of 4 minutes/veh. This is LOS F which represents significant delays, queues and safety issues as a result of insufficient capacity for the demand flows. Therefore, capacity improvements to the intersection would be needed at a point sometime after Stage 2 development commences.

Figure F

MOVEMENT SUMMARY — Site: PM 2041 Area A GW

Kawerau Area A 'T' Intersection
2041 PM Peak Hour.
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop Queued	Effective Stop Rate per veh	Average Speed km/h
South: SH 34 South											
2	T	605	12.0	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	22	12.0	0.031	16.7	LOS C	0.1	1.1	0.52	0.78	64.4
Approach		627	12.0	0.335	0.6	LOS C	0.1	1.1	0.02	0.03	98.1
East: Industrial Site											
4	L	82	12.0	0.171	10.9	LOS B	0.6	4.9	0.54	0.80	39.8
6	R	153	12.0	1.221	268.8	LOS F	25.2	194.2	1.00	2.80	6.7
Approach		235	12.0	1.216	178.6	LOS F	25.2	194.2	0.84	2.10	9.4
North: SH 34 North											
7	L	40	12.0	0.023	13.6	LOS B	0.0	0.0	0.00	0.76	69.1
8	T	486	12.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		526	12.0	0.269	1.0	LOS B	0.0	0.0	0.00	0.06	96.8
All Vehicles		1388	12.0	1.216	30.9	NA	25.2	194.2	0.15	0.39	44.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

6.4 AREA A INTERSECTION CAPACITY UPGRADE

Delays at the Area A intersection right turn out would deteriorate to LOS E by approximately year 13 of development (2024). This is on the basis of Area A being completed, linear development traffic growth

and 5 years of Area B development (Stage 2) having also occurred. A capacity improvement will be necessary at this point, for which two feasible options exist.

- Option 1: Upgrade the intersection to the MOTSAM design in Figure 3.25a (refer Appendix D)
- Option 2: Permanently close the right turn out movement at the intersection to Area A.

Option 1 involves widening the road and remarking to provide a right turn acceleration lane and painted splitter island allowing right turn traffic to perform the movement without giving way to northbound through traffic. However, again the acceleration lane length cannot meet the full length required for trucks (910 m) but it can achieve Austroads standards for cars at approximately 210m for acceleration from 30kph to 80kph. **Figure G** provides a summary of the improved results for this intersection upgrade. The right turn acceleration lane is modelled in SIDRA by incorporating a "Dummy RT" one-way approach leg.

Figure G

MOVEMENT SUMMARY — Site: PM 2041 Area A GW w Merge

Kawerau Area A 'T' Intersection
2041 PM Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop Queued	Effective Stop Rate per veh	Average Speed km/h
South: SH 34 South											
2	T	605	12.0	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	22	12.0	0.031	17.3	LOS C	0.1	1.1	0.52	0.79	58.0
Approach		627	12.0	0.335	0.6	LOS C	0.1	1.1	0.02	0.03	98.2
South East: DUMMY RT Merge											
23	R	153	12.0	0.150	4.7	LOS A	0.6	4.5	0.46	0.59	32.0
Approach		153	12.0	0.150	4.7	LOS A	0.6	4.5	0.46	0.59	32.0
East: Industrial Site											
4	L	82	12.0	0.171	12.0	LOS B	0.6	4.9	0.54	0.82	46.7
6	R	153	12.0	0.392	16.8	LOS C	2.1	16.5	0.66	0.96	43.3
Approach		235	12.0	0.392	15.1	LOS C	2.1	16.5	0.62	0.91	44.5
North: SH 34 North											
7	L	40	12.0	0.036	14.2	LOS B	0.2	1.2	0.09	0.72	62.9
8	T	486	12.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		526	12.0	0.269	1.1	LOS B	0.2	1.2	0.01	0.05	96.8
All Vehicles		1541	12.0	0.392	3.4	NA	2.1	16.5	0.15	0.23	71.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

The SIDRA output shows a significant improvement to the average delay in the pm peak hour for right turning traffic, at 17 s/veh (LOS C). This is an efficient level of operation for peak flow conditions.

Under Option 2, the right turn out movement at Area A intersection would be physically closed off with a concrete traffic island. Affected traffic would be directed internally to the Area B intersection to turn right out. All other movements would remain at the Area A intersection, which means only minor modification work is required. However this option can only work if Area B intersection has sufficient spare capacity in its right turn out movement. This is assessed further below in section 6.6.

A point to note is that the intersection assessments include a number of key assumptions, so provides only an indication of when improvements would be needed. The actual timeframe for the capacity upgrade will depend on the rate of site development, levels of traffic generation and State Highway traffic flows. Accordingly, we recommend that any performance trigger for addressing the capacity constraints is based on actual traffic volumes and measured effects at the intersection. An appropriate trigger to proceed with the upgrade or closure of the right turn out movement would be when the average delay for the right turn out in peak periods is approximately 35 seconds.

6.5 Alternative Stage 1: Area B

Area B as Stage 1 would take approximately 20 years to develop and fully occupy, and generate a pm peak hour traffic flow of about 580 vph. Based on the expected flows, access from SH 34 could be

satisfactorily achieved by the high standard MOTSAM 3.25a 'T' intersection with northbound acceleration lane, or a rural roundabout. Both offer Level of Service C or better performance but the choice of intersection for Area B has a bearing on which capacity upgrade option for Area A is appropriate under the completed plan change development scenario.

Again in the case of the 'T' intersection, the north and southbound acceleration lanes could not meet the desirable 910 m length for laden trucks to achieve 80 kph from stationary. At most, both lane lengths could achieve 300 m if the intersection was located central between the 'S' bends to the north and the start of the rail underpass embankment to the south. For a roundabout such acceleration lanes are not necessary as all traffic exits the roundabout at similar speeds.

6.6 AREA B INTERSECTION: 2041 COMPLETED DEVELOPMENT

At completion of the industrial plan change area in 2041 the highway volumes through the Area B intersection include traffic generated by the Area A industrial land located to the south.

Further to section 6.4, if Option 1 capacity upgrade is preferred for Area A intersection then a MOTSAM 3.25a 'T' intersection at Area B access will remain operating at an acceptable LOS C at completion. The more basic Option 2 upgrade is only possible if there is sufficient long term capacity in the Area B intersection for the extra traffic. **Figure H** illustrates that approximately 145 vph would be redirected in the pm peak hour (again the critical period) to the Area B intersection as a result of the closure. **Figure I** summarises the SIDRA results on the basis that the Area B intersection is the MOTSAM Fig 3.25a right turn bay 'T' intersection.

Figure H

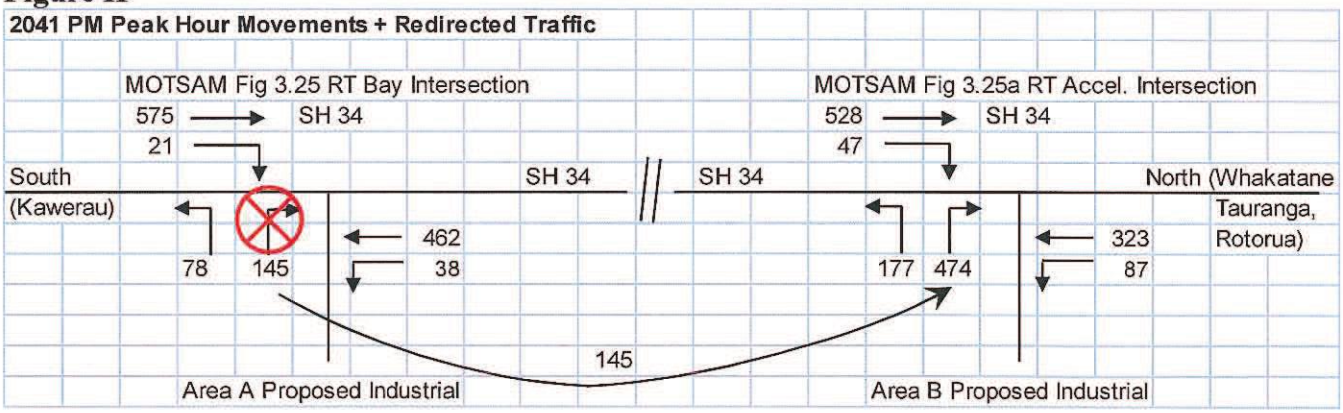


Figure I

Kawerau Area B 'T' Intersection w/ RTO Accel Lane
2041 PM Peak Hour. Redirected Zone A RTO traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: SH 34 South											
2	T	556	12.0	0.307	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
3	R	49	12.0	0.062	16.1	LOS C	0.3	2.0	0.44	0.76	60.0
Approach		605	12.0	0.307	1.3	LOS C	0.3	2.0	0.04	0.06	96.2
South East: DUMMY RT Merge											
23	R	499	12.0	0.466	5.6	LOS A	2.9	22.3	0.54	0.83	31.8
Approach		499	12.0	0.466	5.6	LOS A	2.9	22.3	0.54	0.83	31.8
East: Industrial Site											
4	L	186	12.0	0.354	11.6	LOS B	1.6	12.1	0.52	0.84	47.0
6	R	499	12.0	1.104	128.6	LOS F	47.7	368.3	1.00	3.72	15.9
Approach		685	12.0	1.104	96.8	LOS F	47.7	368.3	0.87	2.94	19.4
North: SH 34 North											
7	L	92	12.0	0.084	14.3	LOS B	0.4	2.9	0.15	0.70	62.5
8	T	340	12.0	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		432	12.0	0.188	3.0	LOS B	0.4	2.9	0.03	0.15	91.1
All Vehicles		2221	12.0	1.104	32.1	NA	47.7	368.3	0.40	1.14	35.8

Figure I shows that the addition of Area A redistributed traffic causes the right turn out movement at Area B 'T' intersection to degrade to LOS F, with average delays of over 2 minutes/veh, and queues up to 368m long. Accordingly, the MOTSAM Fig 3.25a right turn bay 'T' intersection at Area B cannot function with the Option 2 upgrade at Area A.

The following section tests the performance of a rural roundabout with the Option 2 upgrade traffic included.

6.7 AREA B INTERSECTION: RURAL ROUNDABOUT

The intersection form to achieve the necessary capacity to access Area B and provide future proofing for closure of the right turn out from Zone A, is a rural roundabout. A SIDRA model with the 2041 pm peak hour flows in Figure I demonstrates that a roundabout of approximately 50 m overall diameter would operate at Level of Service B with redirected zone A traffic included. This is a significant improvement over the results for the 'T' intersection in Figure J. An indicative roundabout layout and summary of the SIDRA performance results are shown below **Figure J** and **Figure K** respectively.

Drawing 140110 in Appendix E demonstrates the concept roundabout design and typical land area affected.

Figure J: Indicative Roundabout Layout

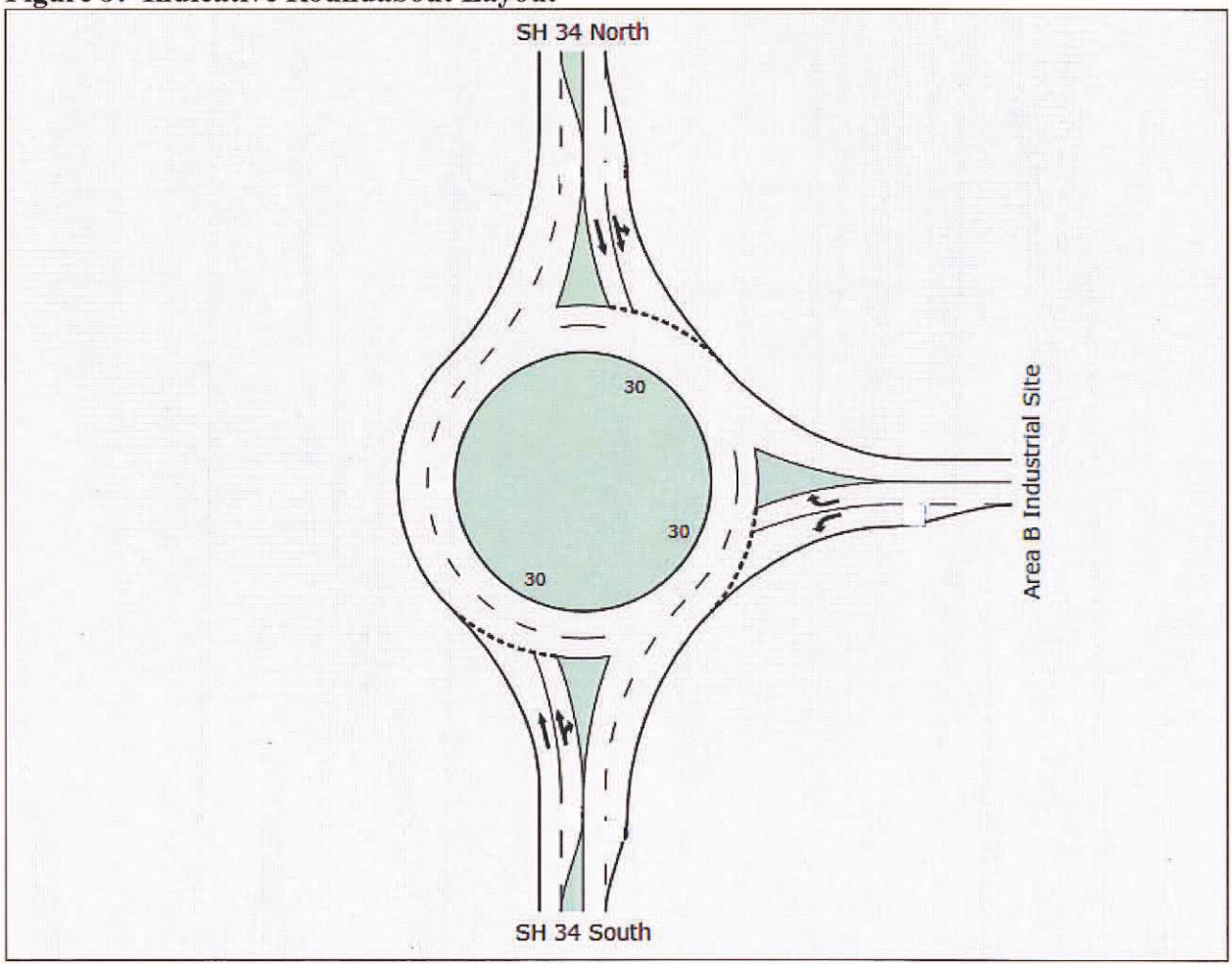


Figure K

MOVEMENT SUMMARY — Site: PM 2041 RAB Test

Kawerau Industrial Site
2041 PM Peak Hour; Area B Intersection
100% Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: SH 34 South											
2	T	556	12.0	0.365	15.7	LOS B	3.1	23.9	0.73	0.81	63.0
3	R	49	12.0	0.364	20.5	LOS C	2.9	22.7	0.74	0.91	54.7
Approach		605	12.0	0.365	16.1	LOS C	3.1	23.9	0.73	0.82	62.4
East: Area B Industrial Site											
4	L	186	12.0	0.241	9.0	LOS A	1.6	12.3	0.56	0.68	48.3
6	R	499	12.0	0.462	14.8	LOS B	3.9	29.9	0.62	0.76	45.5
Approach		685	12.0	0.462	13.2	LOS B	3.9	29.9	0.61	0.74	46.2
North: SH 34 North											
7	L	92	12.0	0.117	12.5	LOS B	0.7	5.0	0.23	0.60	64.7
8	T	340	12.0	0.235	12.5	LOS B	1.9	14.7	0.22	0.58	68.4
Approach		432	12.0	0.235	12.5	LOS B	1.9	14.7	0.22	0.58	67.8
All Vehicles		1722	12.0	0.462	14.0	LOS B	3.9	29.9	0.55	0.73	55.3

The effect of the roundabout will be to reduce operating speeds on SH 34 and therefore increase travel delay as a result of the intersection geometry and giving way to the circulating traffic flow. The SIDRA model results show that the average delays to SH 34 traffic will be 13-16 s/veh with the fully developed site. Just 2-3 seconds of this is stopped delay, meaning the remainder is geometric delay relating to traffic slowing to negotiate the roundabout.

This additional delay created by a roundabout is considered only minor in this case given the close proximity to the 'S' bends to the north on SH 34 causing traffic to slow already, the urbanised form that the industrial zone creates in this location and because of the lower hierarchy of state highway that exists. The increase in journey time by 13-16 seconds would not result in any significant adverse impacts for the timely transportation of goods or have any material effect on commuter travel times between Whakatane and Kawerau.

6.8 ACCESS ASSESSMENT SUMMARY

The development of Area A as Stage 1 is Putauaki Trust's current preference. This could be serviced by a standard right turn bay 'T' intersection (Diagram 1 Appendix D) up until approximately year 13, assuming the uptake of industrial land is linear over the 30 year period. Thereafter, the capacity of the right turn out from Area A at this intersection will be exceeded and therefore requires upgrading.

Two upgrade options exist:

1. Upgrade to a MOTSAM Figure 3.25a right turn bay intersection with right turn acceleration lane
2. Permanently close the right turn out movement and redirect traffic internally to Area B intersection, provided this is a rural roundabout.

Option 1 allows the Area B intersection to also take the form of a Figure 3.25a channelized right turn bay intersection.

Option 2 requires significantly less upgrade works at Area A intersection than Option 1, but Area B intersection must then be a rural roundabout in order to provide the necessary future-proofed capacity for the diverted traffic from Area A.

On balance, Option 2 is the recommended long term capacity solution for the industrial development as this ensures that the investment associated with the initial right turn bay construction at Area A is not lost. This option also provides the greatest future-proofed access capacity for the whole development.

Given the preference for Area A as Stage 1 of the development, the MOTSAM Figure 3.25 "T" intersection is recommended for providing access with the intent to close the right turn out movement permanently in future following construction of the Area B roundabout.

Should market conditions dictate that Area B is to be Stage 1 then the roundabout intersection should be constructed from the outset and the subsequent development of Area A should be accessed through a modified rural 'T' intersection design that excludes provision for right turn out movements.

7.0 INTERSECTION LOCATIONS

The recommended location of the Area A "T" intersection and Area B roundabout configuration is covered in this section of the report.

7.1 AREA A RIGHT TURN BAY INTERSECTION

As outlined in section 2.2, it is proposed that the intersection to Area A is built at the location agreed with the NZTA, which is 430 m north of the existing Tarawera Road overbridge. This position provides sight distances in excess of the minimum NZTA standard of 282m for 110kph design speed, and provides the best possible separation distance to the rail yard access intersection and the rail underpass.

7.2 AREA B ROUNDABOUT

The recommended position of the roundabout requires consideration in terms of compatibility with the geometry of SH 34. The existing 'S' bends to the north of the site involve a level crossing of the Kawerau branch line and horizontal curves with radius of between 50m and 140m. These correspond to design speeds of only 50 kph to 66 kph. The crash data (Appendix E) shows loss of control accidents occur as a result but the NZTA has confirmed that there is no programme or funding at present to improve the curves. On that basis an opportunity exists for the roundabout to be positioned to take advantage of, and also reinforce the reduced vehicle speeds through the curves. Southbound motorists approaching Kawerau would travel through the "S" bends and into the roundabout and then pass over the rail underpass and through the Area A access intersection, the Mill access intersection, and Tarawera Road overbridge. The message to drivers from this increased number of intersections and physical development on either side of the highway is that the road environment has changed from rural to peri-urban and this is now the beginning of Kawerau. Similarly, for northbound traffic exiting Kawerau the large roundabout would create a traffic calming feature that reduces vehicle speeds before the 'S' bends, in particular the 50m radius curve which has a design speed of only 50 kph.

The roundabout would be built "off line" from the existing SH 34 carriageway in order to limit construction effects on traffic flow, and to also create the necessary deflection to ensure low entry vehicle speeds. There is sufficient land area within the proposed industrial site boundaries and existing road reserve to provide this. Drawing 140110 in Appendix D demonstrates an indicative roundabout size, position and potential land area affected.

Fundamental to the safe operation of the roundabout is sufficient sight distance so that vehicles on SH 34 can safely observe and slow to a stop at the intersection if required. With the speed environment being 110 kph in the northbound direction the required Approach Sight Distance (ASD) for traffic is 193 m according to the Austroads Guide to Road Design Part 4a. The proposed intersection location provides ASD of 370 m from the north (at the 'S' bend), and 560 m from the south (at the rail underpass). Accordingly, ASD to the roundabout is easily achievable at this location on SH 34 and existing design guidelines for rural roundabouts ensure that the intersection is obvious and slows vehicles on approach.

Traffic exiting the industrial site will be in a 50 kph operating environment for which the ASD requirement is 55 m. This will be easily achieved due to the flat topography that exists. Sight distance at the roundabout for all approaches must meet Category 2 sightlines for roundabouts as a minimum, which is 70 m measured from each approach limit line. The detailed design phase will ensure this is achieved.

Given the large available stopping sight distances on SH 34 and because all of the land in the proposed Industrial Zone is owned by a single owner, the Putauaki Trust, the exact position of the roundabout need not be confirmed at this early scoping phase. The optimal location may be a little north or south of that shown between the rail underpass embankment and the 'S' Bends, and can be confirmed at the time of subdivision detailed design and subject to any safety audit recommendations.

8.0 STATE HIGHWAY 34 SPEED RESTRICTION

The increased number of intersections and development activity on this section of SH 34 is likely to support a future speed limit reduction from south of the 'S' bends through to Manukorihi Drive. This would enhance the safety for turning movements, cycle movements, and potential pedestrian trips across SH 34 between the mill and the industrial site. A destination for such trips could be lunch bars serving the industrial area. If there is to be a future speed reduction that includes the site accesses, then it is preferable that it be located near the "S" bends at the north end of the site. This would then reflect the changed road environment from that which is rural north of the 'S' bends. The initial reduced speed limit warrant is likely to justify 80 km/h but this may be reduced to 70 km/h to avoid a change from 70 km/h to 80 km/h on the outskirts of Kawerau. Alternatively, the speed reduction closer to Kawerau may need to reduce to 60 km/h.

A speed restriction in the area of the Industrial Plan Change access would help ensure safety in this area, but would increase travel times for through traffic. This adverse effect is considered to be less than minor given the proximity to Kawerau, the lower category of state highway, and because the majority of regional through traffic uses the alternative State Highway 30 that bypasses Kawerau altogether.

9.0 CONCLUSION

The proposal to rezone 113 ha of land opposite the Kawerau mill from rural to light/medium industrial will produce approximately 72 ha of new developable land to support industrial growth in the Kawerau and Whakatane Districts. The land is anticipated to be subdivided and developed as required over the next 30 years. The developable area is in two distinct parts where Area A is 22 ha and Area B is 50 ha.

The primary conclusions of this ITA addendum report with respect to access are:

- The rural right turn bay 'T' intersection and general location agreed with the NZTA remains appropriate for access to Area A. The exact location should be determined at detailed design of the subdivision and subject to resolving any Road Safety Audit concerns. The right turn bay stacking length should be sufficient for two semi-trailer trucks.
- With the proposed developable area increased to 72 ha, Area A intersection will need to be upgraded to provided increased capacity for the right turn out movement. This movement governs the capacity of the 'T' intersection and improvements should be undertaken once the performance crosses the threshold from LOS D to E (ie average delay = 35 s/veh).
- The preferred option for upgrading Area A intersection capacity involves closure of the right turn out movement to SH 34 from Area A and redirecting that traffic internally to the Area B intersection. An internal road with controlled level crossing over the rail siding is required for this.
- A large rural roundabout is necessary to provide the access capacity for Area B and the diverted Area A right turn out traffic.
- The land required for a rural roundabout can be provided from the existing road reserve and the balance from land within the plan change area. The plan change process will incorporate a structure plan, which will ensure that the land required for the rural roundabout is set aside from development.

- The roundabout should be positioned to take advantage of, and reinforce reduced vehicle speeds through existing 'S' bends on SH 34 at the north end of the site. The indicative location of the roundabout is shown on plan 140110 in Appendix E.
- Approach sight distances on SH 34 between the rail underpass and the 'S' bends are excellent and because all of the land bordering the stae highway in the proposed Industrial Zone is owned by a single owner, the Putauaki Trust, the proposed position of the roundabout can be confirmed at the time of subdivision detailed design subject to any safety audit recommendations.
- A future speed limit reduction on SH 34 past the site, to 70 or 80 kph is expected to be warranted due to the increased activity and turning movements in this location. This will help to enhance the safety at the new intersections.
- Walking and cycling trips to and from the proposed Industrial Zone are likely due to the close proximity of Kawerau township, the flat topography and the likelihood of lunch bars and other amenities in the development drawing employees over SH 34 from the mill at lunch times. This is also likely to further strengthen the warrant for lowering the speed limit on SH 34. Accordingly, appropriate provision for walking and cycling safety should be provided for on and across SH 34 from the outset of development. External walking and cycling trips should be directed to the Area A intersection via internal roads and the proposed level crossing over the rail spur rather than to a roundabout at Area B.

On the basis of providing the two access intersections on SH 34 as assessed, the proposed rezoning to Industrial is expected to cause no more than minor adverse transport related effects on the road network.

10.0 RECOMMENDATIONS

The following are the key access provisions recommended for the proposed Industrial Plan Change area on the Putauaki Trust land at Kawerau:

- Access to Area A (refer to Appendix C, Plan Change Areas) is recommended by a standard rural Right Turn Bay 'T' Intersection in accordance with MOTSAM Figure 3.25 standard, with a left turn in deceleration lane and shoulder widening as indicated in Diagram 1 of Appendix D. The preferred location for the intersection is approximately 340 m north of the Tarawera Road overbridge.
- Access to Area B is recommended by a rural roundabout of at least 30m inscribed diameter and designed to current Austroads standards. The roundabout should be located approximately 500-600m north of the Super Skid railway underpass structure, subject to any detailed design constraints or Road Safety Audit recommendations.
- Provide an internal road connection with level crossing over the railway siding between Area A and Area B. The position of the level crossing is to be confirmed as a component of the subdivision scheme plan and detailed design, and should include safe provision for walking and cycling trips.
- Permanently close the right turn out movement at Area A intersection after confirmation by turning count surveys and appropriate traffic assessment that the Area A right turn out performance has passed the Highway Capacity Manual performance threshold from LOS D to E (average delay = 35 s/veh). Right turn out traffic to be diverted to the Area B roundabout via the internal road crossing the rail siding.
- The rural roundabout should be constructed from the outset in its preferred location north of the SH 34 rail underpass if Area B is progressed as Stage 1 of the development. The form of Area A intersection thereafter should be constructed to a modified MOTSAM Figure 3.25 standard rural Right Turn Bay Intersection that excludes provision for right turn out movements.

- A speed limit reduction from 100 kph to 70kph or 80kph should be investigated to enhance safety and reflect the changed environment on SH 34 from the north end of the site to Manukorihi Drive following construction of one or both access intersections.
- Provide suitable facilities for walking and cycling throughout the internal road network of the development, including crossing of the rail line siding between the development areas. Safe facilities for crossing SH 34 from the Mill near the Area A intersection should be integrated with the intersection design from the outset. Walking and cycling facilities should seek to provide efficient connections for users as well as safety.

Appendix A

Plan of Road Network Features

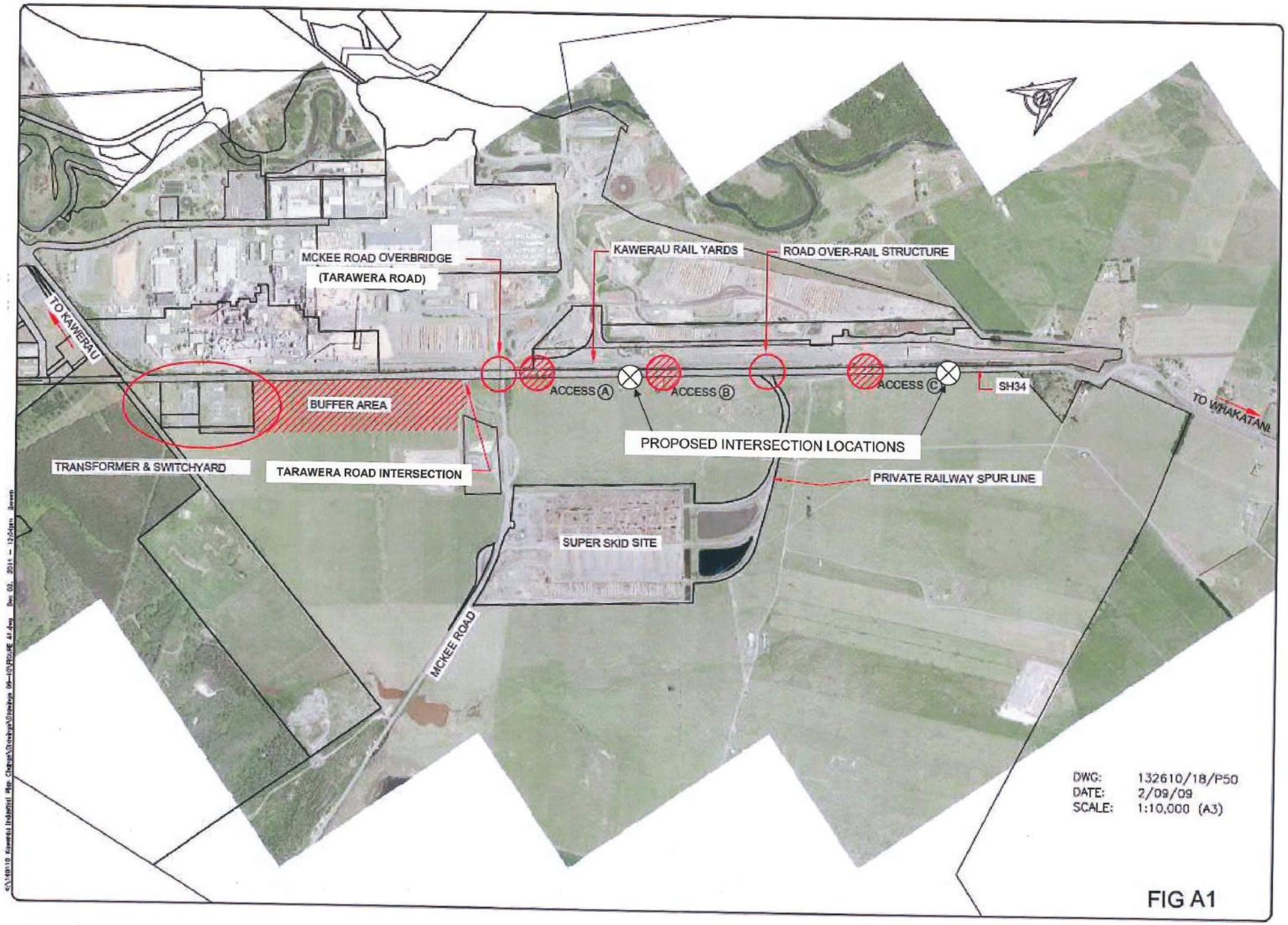

MCKEE ROAD OVERBRIDGE
(TARAWERA ROAD)
KAWERAU RAIL YARDS
ROAD OVER-RAIL STRUCTURE
TO KAWERAU
ACCESS A
ACCESS B
ACCESS C
SH34
TO WHAKATANE
BUFFER AREA
PROPOSED INTERSECTION LOCATIONS
TRANSFORMER & SWITCHYARD
TARAWERA ROAD INTERSECTION
PRIVATE RAILWAY SPUR LINE
SUPER SKID SITE
MCKEE ROAD
DWG: 132610/18/P50
DATE: 2/09/09
SCALE: 1:10,000 (A3)

FIG A1

Appendix B

NZTA Approval Letter for the 2009 TIA Recommendations

NZ TRANSPORT AGENCY
WAKA KOTAHI

405 Cameron Road
PO Box 430
Seventh Avenue
Tauranga 3140
New Zealand
T 64 7 927 6009
F 64 7 578 2909
www.nzta.govt.nz

28 January 2010

Chris Dawson
Senior Planner
Bloxham Burnett and Olliver Limited
PO Box 9041
Hamilton 3240

Dear Chris

KAWERAU INDUSTRIAL PLAN CHANGE

Thank you for meeting with the New Zealand Transport Agency (NZTA) to discuss the proposed Kawerau Industrial Plan Change.

In general terms, NZTA is supportive of the proposed new Industrial Zone that will help to provide for economic growth in the Kawerau and Whakatane Districts.

We support the findings of the Traffic Impact Assessment Report dated January 2010, and in particular the recommendation that the new Industrial Zone be serviced by a single T-intersection onto State Highway 34. As noted in the Traffic Impact Assessment, this intersection will need to be constructed to NZTA standards, and will be funded by the developer.

We would like to remain involved in any future consultation relating to the proposed plan change, and welcome the opportunity to discuss the re-zoning further when more details are available.

Please call me on (07) 927 7834 if you wish to discuss any aspect of this letter in more detail.

Yours sincerely

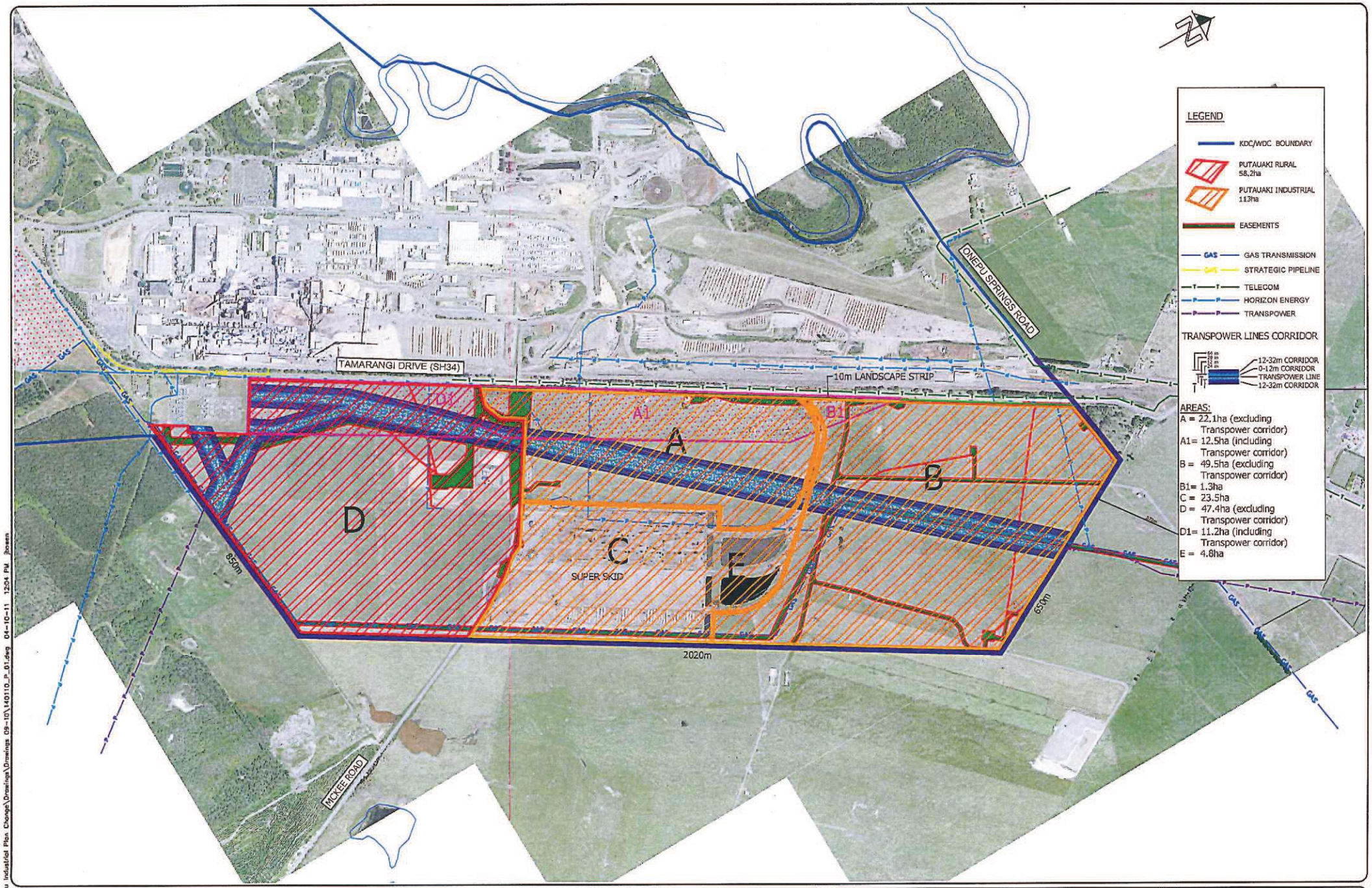
Alison Scott
Senior Resource Planner

Cc Chris Jensen, Regulatory and Planning Manager, Kawerau District Council, Private Bag 1004 Kawerau 3169
Tony Bullard, Senior Policy Planner, Whakatane District Council Private Bag 1002 Whakatane 3158

09-004-013

Appendix C

Plan Change Areas



no	date	issue/revision detail	by	chk	appr

design | checked
drawn | approved
date 21.09.11 | scale A1=1:5000

drawing status: PRELIMINARY
file: 140110_P_01.dwg
xrefs:

BLOXAM BURNETT OLLIVER
Level 5, 18 London Street
PO Box 9041, Hamilton, New Zealand.
Phone 64-7-838 0144, Fax 64-7-839 0431
Email consultants@bbo.co.nz

client

project: KAWERAU INDUSTRIAL PLAN CHANGE

drawing title: SITE PLAN

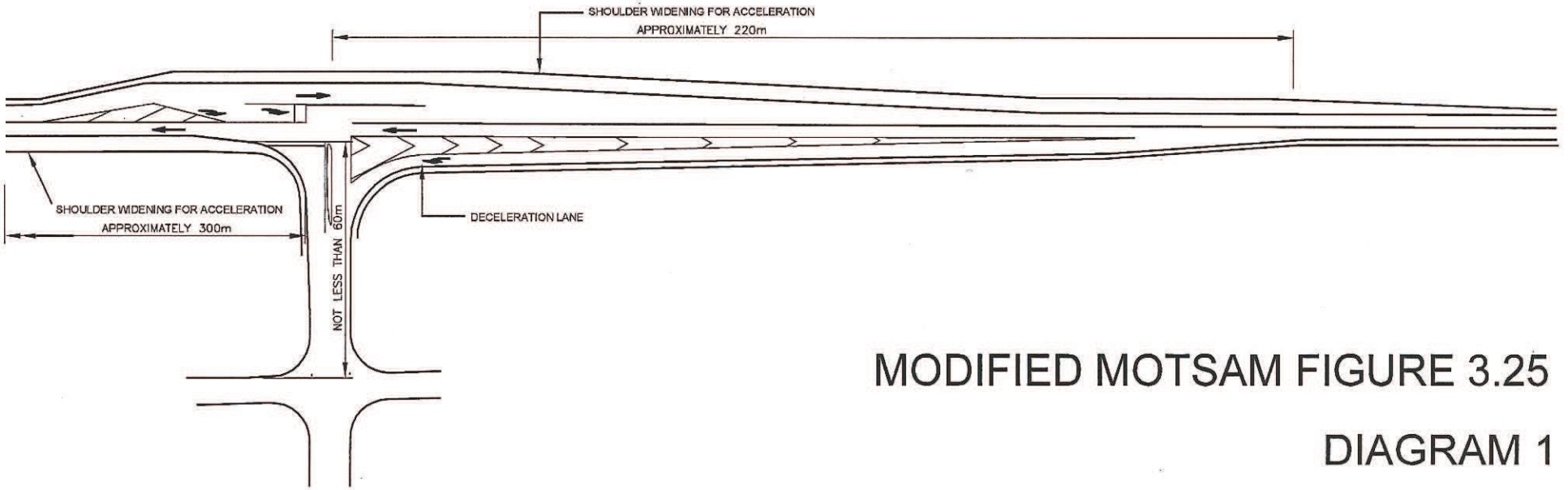
drawing number: 140110/P/01 | revision: A

original sheet size A1

Appendix D

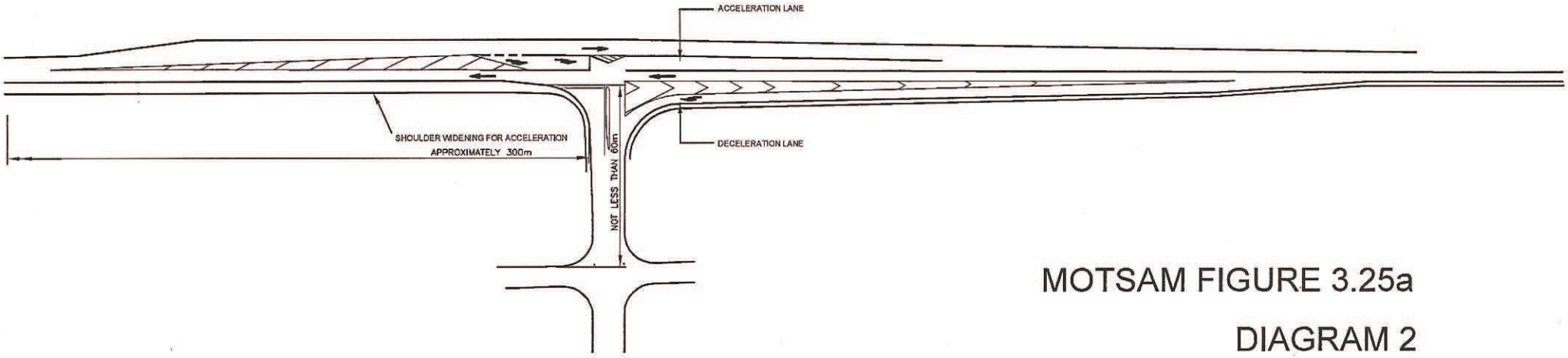
Concept Intersection Designs

- MOTSAM Rural 'T' Intersections
- Area B Rural Roundabout



MODIFIED MOTSAM FIGURE 3.25

DIAGRAM 1



MOTSAM FIGURE 3.25a

DIAGRAM 2

A1

rev	date	issue/revision detail	by	chkd	appd

design	checked
drawn	approved
drawing status	

BLOXAM BURNETT OLLIVER
ENGINEERS • PLANNERS • SURVEYORS
Level 5, 18 London Street
PO Box 9041, Hamilton, New Zealand.
Phone 64-7-838 0144, Fax 64-7-839 0431
Email consultants@bbo.co.nz

client
Karewau District Council

project
Karewau Industrial Plan Change

drawing title
Concept Roundabout Design Area B Access

scale	date
1:2000 (A3)	November 2011

file: 140110_P_03.dwg
xrefs:
xrefs:

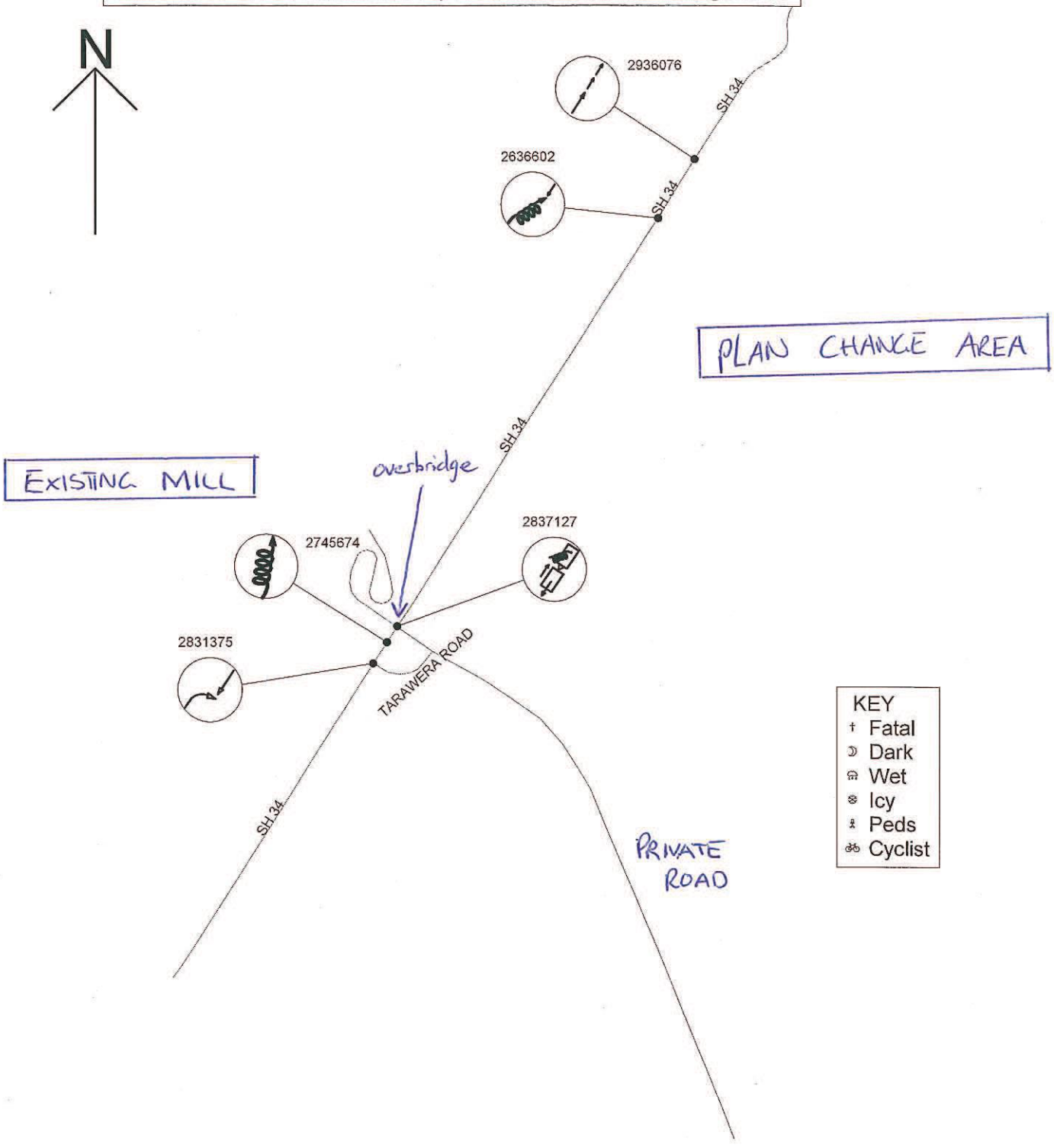
drawing number
140110/P/03 A

Appendix E

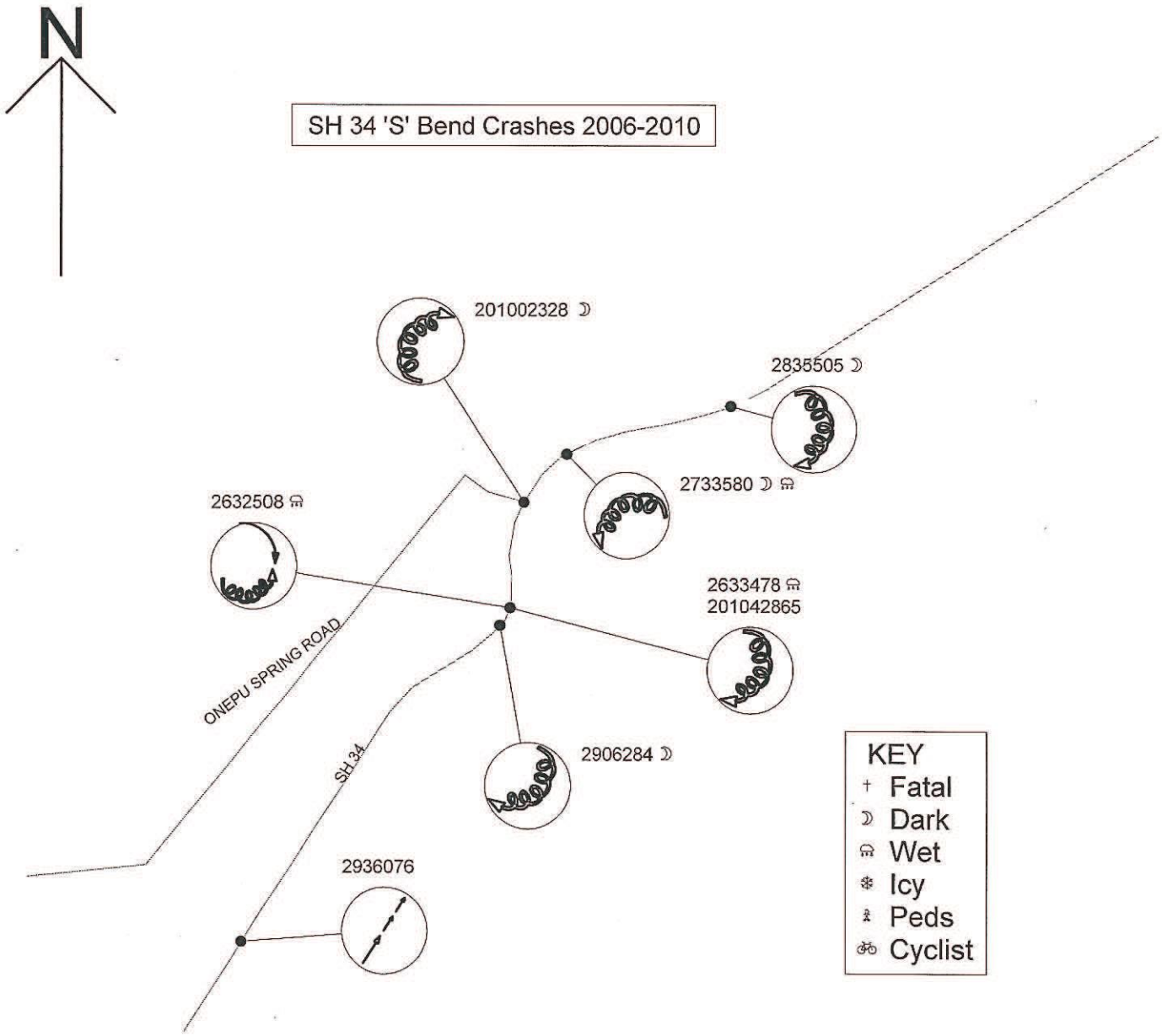
2006-2010 SH 34 Crash Data

First Street	D I R	Second street or landmark	Crash Number	Date DD/MM/YYYY	Day DDD	Time HHMM	Description of Events	Crash Factors (ENV = Environmental factors)	Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F S M A E I T R N
Non-Injury crashes														
34/15/0.086	1400N	TARAWERA ROAD	2636602	10/05/2006	Wed	1520	VAN1 NBD on SH 34 lost control on straight and hit CAR2 head on		Dry	Overcast	Fine	Unknown	N/A	
34/15/1.419	50S	TARAWERA OBR	2745674	01/12/2007	Sat	0945	VAN1 NBD on SH 34 lost control; went off road to left, VAN1 hit Post Or Pole	VAN1 lost control	Dry	Bright	Fine	Unknown	Nil	
34/15/1.486	I	TARAWERA ROAD	2831375	11/02/2008	Mon	1655	TRUCK2 turning right hit by oncoming TRUCK1 SBD on SH 34	TRUCK2 failed to give way when turning to non-turning traffic, attention diverted by other traffic	Dry	Overcast	Fine	T Type Junction	Nil	
34/15/1.369	A	TARAWERA OBR	2837127	09/06/2008	Mon	1535	load or trailer from TRUCK1 SBD on SH 34 hit CAR2 CAR2 hit Debris	TRUCK1 load	Dry	Overcast	Fine	Unknown	N/A	
34/11/4.384	500S	ONEPU SPRING ROAD	2936076	23/06/2009	Tue	1450	CAR1 NBD on SH 34 hit rear end of CAR2 stop/slow for queue	CAR1 following too closely	Dry	Bright	Fine	Unknown	Nil	

2006-2010 SH 34 Kawerau; Proposed Industrial Plan Change Area



First Street	D/I	Second street or landmark	Crash Number	Date	Day	Time	Description of Events	Crash Factors	Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F S M A E I T R N
Distance	R			DD/MM/YYYY	DDD	HHMM		(ENV = Environmental factors)						
Injury crashes														
34/11/4.003	1810W	PARK ROAD	2906284	24/12/2009	Thu	1758	MOTOR CYCLE1 SBD on SH 34 lost control turning right on right hand bend	MOTOR CYCLE1 lost control due to road conditions ENV: road slippery (loose material on seal)	Dry	Twilight	Fine	Unknown	Nil	1
34/11/3.884	I	ONEPU SPRING ROAD	201002328	17/04/2010	Sat	1922	CAR1 NBD on SH 34 lost control turning right, CAR1 hit Fence on right hand bend	CAR1 alcohol test above limit or test refused, lost control when turning, attention diverted by passengers	Dry	Dark	Fine	T Type Junction	Stop Sign	2
Non-Injury crashes														
34/11/3.984	100S	ONEPU SPRING ROAD	2632508	21/03/2006	Tue	0710	CAR1 NBD on SH 34 lost control on curve and hit BUS2 head on		Wet	Overcast	Light Rain	Unknown	N/A	
34/11/3.984	100S	ONEPU SPRING ROAD	2633478	25/04/2006	Tue	0900	TRUCK1 SBD on SH 34 lost control turning right, TRUCK1 hit Fence, Tree on right hand bend	ENV: heavy rain, strong wind	Wet	Overcast	Heavy Rain	Unknown	N/A	
34/11/3.824	60N	ONEPU SPRING ROAD	2733580	12/04/2007	Thu	1959	CAR1 SBD on SH 34 lost control turning left, CAR1 hit Fence, Ditch	CAR1 alcohol suspected, too fast entering corner ENV: road slippery (rain)	Wet	Dark	Light Rain	Unknown	Nil	
34/11/3.664	220N	ONEPU SPRING ROAD	2835505	11/05/2008	Sun	1930	CAR1 SBD on SH 34 lost control turning right, CAR1 hit Fence on right hand bend	CAR1 alcohol test above limit or test refused, too fast entering corner	Dry	Dark	Fine	Unknown	N/A	
34/11/4.384	500S	ONEPU SPRING ROAD	2936076	23/06/2009	Tue	1450	CAR1 NBD on SH 34 hit rear end of CAR2 stop/slow for queue	CAR1 following too closely	Dry	Bright	Fine	Unknown	Nil	
34/11/3.984	100S	ONEPU SPRING ROAD	201042865	05/11/2010	Fri	1538	SUV1 SBD on SH 34 lost control turning right, SUV1 hit Fence, Post Or Pole on right hand bend	SUV1 too fast entering corner, lost control when turning, driver over-reacted	Dry	Bright	Fine	Unknown	N/A	


N
SH 34 'S' Bend Crashes 2006-2010
201002328
2835505
2733580
2632508
2633478
201042865
2906284
2936076
ONEPU SPRING ROAD
SH 34
KEY
Fatal
Dark
Wet
Icy
Peds
Cyclist