Appendix E

# Transportation Report



www.beca.com

Report

# Tatua Co-Op Private Plan Change - Integrated Transportation Assessment

Prepared for Tatua Co-Op Dairy Co Ltd

Prepared by Beca Ltd (Beca)

5 September 2017

Revision Nº	Prepared By	Description	Date
1	Craig Richards	Internal Draft	28 Sept 2015
1.1	Craig Richards	Draft for client review	8 Oct. 2015
2	Craig Richards	Draft for NZTA review	19 Nov. 2015
3	Craig Richards	Final	22 July 2016
4	Craig Richards	Minor amendments following Council review	05 Sept. 2017

### **Revision History**

### **Document Acceptance**

Action	Name	Signed	Date
Prepared by	Craig Richards	Achordos.	22 Sept 2015
Reviewed by	Joe Phillips	TOP Philps.	25 Sept 2015
Approved by	Richard Douch	A dir.	17 Mar. 2016
on behalf of			

© Beca 2015 (unless Beca has expressly agreed otherwise with the Client in writing).

This report has been prepared by Beca on the specific instructions of our Client. It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.



## **Executive Summary**

This Integrated Transportation Assessment has been prepared by Beca Ltd with regard to a proposed private plan change being led by the Tatua Co-Operative Dairy Company Limited (Tatua) to enable expansion of their existing dairy factory at Tatuanui, Matamata-Piako District. The ITA has been prepared in accordance with New Zealand Transport Agency guidelines and informed by consultation with the Transport Agency and the Matamata-Piako District Council.

Tatua have been operating a dairy processing factory at the existing site in Tatuanui for over 100 years. The site is located on State Highway 26 near the intersection with State Highway 27 and is approximately 7km from Morrinsville. The site is subject to an existing Development Concept Plan within the Matamata-Piako District Plan. The plan change application will update the existing Development Concept Plan and enable expansion of factory facilities into land adjacent to the existing site and on the opposite side of State Highway 26.

Traffic volume data for the State Highway and turning movements at the Tatua site access intersections have been sourced to understand the existing traffic environment at the site. An assessment of intersection capacity at each of the two Tatua site access intersections on SH26 has found the intersections to be capable of accommodating a large increase in vehicular demand, up to 1,600 vehicles per day, without overly compromising Level of Service. There have been very few crashes recorded on the road network near the site with the majority of collisions occurring at the nearby State Highway 26 / SH27 roundabout.

The additional facilities that may be established if the plan change is approved include new administration offices, additional powder dryers, product processing facilities, relocated warehousing and storage and stormwater/wastewater management areas. The relocation of off-site storage onto the site will reduce some vehicle trips. These upgraded / additional facilities are expected to bring about an additional 200 vehicle movements per day, of which approximately 40 are expected to occur during the peak hours.

If the amended DCP is adopted, the Tatua administration offices may be relocated onto the opposite side of SH26. This will result in the re-routing of some vehicle trips from the existing site access into an access on the opposite side of the road. The effect of this has been assessed and the new access has been found to operate acceptably from a safety and capacity perspective. The relocation will reduce conflict between cars turning from the central median into the site and trucks turning to and from the tanker bay. A pedestrian underpass is proposed to provide safe pedestrian passage across the State Highway. Additional changes may result in some other minor vehicle re-routing and new driveways, which have been found to be acceptable. The proposed design of any new or modified intersections with the State Highway will be provided to the Transport Agency for approval prior to construction.

The ITA recommends that development be permitted up to a level of vehicle trip generation assessed and considered acceptable in this ITA (1,600 additional vehicle movements per day / 400 per hour) and identifies the following further recommendations:

- Pedestrian underpass to provide a safe crossing of SH26 should staff car parking be provided on the western side of the road.
- Plan for safe pedestrian routes through the site as the factory is expanded to reduce pedestrian / vehicle conflict.
- Construction traffic management plan for any new construction generating more than 25 additional vehicle arrivals per day.
- Extension of the flush median on SH26 past the driveway to the south of the site should this driveway need to accommodate more than 10 right turning movements per day in future.



Any new or modified intersections with the State Highway will be subject to Transport Agency design approval.

This ITA concludes that the proposed private plan change can be safely and efficiently accommodated by the transport environment given the implementation of the recommendations provided in this report.

# Contents

1	Intr	oduction	1								
2	Background										
3	Exi	sting Conditions	3								
	3.1	Location	3								
	3.2	Land Use	3								
	3.3	Site Operations	4								
	3.4	Traffic Volumes	5								
	3.5	Intersection Capacity	7								
	3.6	Road Safety	7								
	3.7	Summary	8								
4	Pro	9									
	4.1	Car Parking Supply	10								
	4.2	Additional Facilities	10								
	4.3	Traffic and Pedestrian Movement	12								
5	Tra	nsportation Effects	14								
	5.1	Existing Northern and Southern Intersection Capacity	14								
	5.2	Possible Alternative / Additional Intersections	15								
6	Miti	igation Strategy	19								
7	Sur	nmary and Conclusion	19								
	7.1	Summary	20								
	7.2	Conclusion	20								

# Appendices

Appendix A: Plan Change Land Use Diagram Appendix B: SIDRA Outputs

## 1 Introduction

This Integrated Transportation Assessment (ITA) report has been prepared by Beca Ltd (Beca) on behalf of the Tatua Cooperative Dairy Company Limited (Tatua). The ITA assesses the transportation effects of a private plan change application by Tatua for land surrounding the existing Tatua dairy processing facility in Tatuanui, Matamata-Piako District.

The private plan change will update the existing Tatua Development Concept Plan (DCP) and embed the revised planning provisions within the Matamata-Piako District Plan (District Plan). The revised DCP will include objectives, policies activity status and rules that will apply to land use within the amended DCP zone.

The DCP will be flexible in nature and enable Tatua to develop within land surrounding the existing facility which is currently zoned rural. Once the DCP is adopted, future use of the land will include dairy factory, administration and storage expansion as well as wastewater and stormwater treatment. A benefit of the DCP expansion is the ability to relocate existing off site warehousing onto the site, resulting in less handling and fewer vehicle trips.

The aim of the ITA is to determine the capacity of the local road network to accommodate additional vehicle movements that may eventuate as a result of the DCP and to identify any measures necessary to mitigate the effects of the additional development traffic. This will ensure that development within the DCP zone can be sustainably achieved from a transportation perspective.

This ITA has been prepared in accordance with the New Zealand Transport Agency (Transport Agency) ITA Guidelines 2010. The scope is based on a 'Moderate ITA'. As per the guidelines the effects of the project are expected to be low and limited to intersections with the adjacent road network, but as a plan change application a 'Simple ITA' is not recommended.

The ITA is set out in the following sequence:

- 2. Background to the site and recent developments,
- 3. Existing land use and transport context,
- 4. Description of the proposed development,
- 5. Assessment of transportation effects,
- 6. Mitigation strategy, and
- 7. Summary and conclusion.



## 2 Background

Tatua has been operating at is present site in Tatuanui for more than 100 years. The cooperative was established by a group of 11 farmers in 1914 and milk was transported to and from the site by horse and cart until 1926, when flatbed trucks became common. Milk was first transported by tanker in 1953. Tatua remains the largest dairy cooperative in New Zealand that has not been part of a merger or acquisition. Farmer shareholders now total 111 and all farms are located within 12km of the factory.

The Tatua factory has seen many developments over its 100 year history, the most recent of which was the D3 Dryer Project which included a new dryer, warehouse facility, container yard and car park expansion. Beca prepared an ITA to assess and mitigate the impacts of the Dryer development on the local road network (February 2014). That ITA found the additional vehicle movements associated with the dryer development to be easily accommodated by the local road network with very little change in delay and level of service at site access intersections. The ITA recommended minor changes to improve driver visibility at the southern access to the site which were implemented.

In scoping the requirements of this ITA, consultation meetings were held with Matamata-Piako District Council (MPDC) and the Transport Agency in February and November 2015. As all roads surrounding the site are State Highways, the Transport Agency is the relevant road controlling authority and the principal affected party with regard to traffic / transportation effects of the proposed plan change.



# 3 Existing Conditions

### 3.1 Location

The Tatua site is located adjacent to State Highway 26 (SH26) and close to the intersection of SH26 and State Highway 27 (SH27). The site is approximately 7km from Morrinsville.

The following figure shows the location of the site on the road network.

Figure 1: Location of Tatua Site on SH26



## 3.2 Land Use

The Tatua site is subject to a Development Concept Plan (DCP) within the MPDC District Plan. The DCP allows for activities associated with the operations of the factory (warehousing, distribution, offices, buildings, car parking, etc). The DCP extends around the existing factory site on the southern side of SH26. Land surrounding the DCP including land on the northern side of SH26 is zoned rural.

There is a mechanical workshop to the north of the Tatua factory and a farm supplies store opposite on the northern side of SH26. The supply store has approximately 22 car parking spaces accessed via an existing driveway approximately opposite the Tatua milk tanker bay.



### 3.3 Site Operations

Tatua employ over 300 staff with a mixture of office and operations employees. Office staff work typical office hours, 8am to 5pm, and operations staff work in two 12 hour shifts, 4am to 4pm and 4pm to 4am.

The existing factory has two vehicle entrances as well as a milk tanker bay with separate entry / exits on SH26. The following figure shows the general arrangement of these vehicle access points.





The northern access is used by car trips associated with staff and visitor parking for the main office, workshops and laboratories. The 2014 ITA found that the northern access had 200 light vehicle movements (two way) per day.

The southern access is used by cars and heavy vehicles associated with factory operations. The 2014 ITA found that the southern access had 188 light vehicle and 54 heavy vehicle movements (two way) per day.

The milk tanker bay had approximately 26 vehicle movements per day, although this can fluctuate depending on the season / production.



## 3.4 Traffic Volumes

#### 3.4.1 State Highway

According to the Transport Agency Annual Average Daily Traffic (AADT) data, SH26 carries approximately 5,800 vehicles per day with 9% heavy goods vehicles. The following table shows available AADT values for SH26 recorded at a point approximately 150m west of the SH27 intersection.

Table 1: SH26 AADT Data

2010	2011	2012	2013	2014
5,669	5,532	5,794	5,785	5,799

Traffic volumes have fluctuated over recent years, a 2% decrease in 2011 was reversed by a 4% increase in 2012. On average, volumes have increased by approximately 0.6% per annum over the last five years, so are generally remaining relatively unchanged.

#### 3.4.2 Tatua Existing Trip Generation

The ITA prepared in 2014 found that the factory generated 469 daily vehicle movements (two way) at that time. Light vehicle movements followed a typical in / out distribution pattern, largely inbound in the morning (AM) peak hour and outbound in the evening (PM) peak. Heavy vehicle movements were more evenly distributed as inbound and outbound during all time periods. The majority of light vehicle movements tended to travel to / from the south (Morrinsville direction), with approximately a two thirds bias. Heavy vehicle movements were again more evenly distributed by direction.

The following figure shows the 2014 turning movements, prior to the D3 Dryer project, at the northern and southern intersections during the AM (left) and PM (right) peak hour periods.





Figure 3: Light and Heavy Vehicle Peak Hour Turning Volumes (AM Left, PM Right)

The D3 Dryer project was expected to result in an additional 46 light vehicle movements and 16 heavy vehicle movements (two way) each day by 2023. Demand is expected to build over time as the new facility becomes fully utilised.

The following figure shows the expected vehicle demands during the peak hours under a scenario with the D3 Dryer development fully operational in 2023.



Figure 4: Forecast Turning Volumes with D3 Dryer Development Fully Operational (AM Left, PM, Right)

## 3.5 Intersection Capacity

The ITA prepared for the D3 Dryer project found both the northern and southern intersections to operate with an overall Level of Service of A. This indicated very low levels of vehicle delay and queuing in all peak periods (AM, Interpeak and PM peak) with the Dryer development operational. Any minor levels of vehicle delay (maximum of 17 seconds) occurred within the site for vehicles waiting to turn onto the State Highway, rather than vehicles waiting on the State Highway to turn into the site. There was predicted to be virtually no queuing on any approaches.

An assessment of intersection capacity with additional traffic demands as a result of the plan change is included in the assessment of effects (**Chapter 5**)

## 3.6 Road Safety

Recorded crash information has been extracted from the Transport Agency's Crash Analysis System (CAS). CAS records were examined for the last five years on SH26 adjacent to the site from Brown Road to SH27.

There were nine reported crashes within this search. Of these crashes, four resulted in minor injury and the rest were non-injury. The majority of the crashes (six) occurred at the intersection of SH26 / 27. The crash



records are not indicative of there being a significant road safety risk near the site that would need to be addressed as part of the plan change. The collision diagram output from CAS is provided in **Figure 5**.



### 3.7 Summary

Tatua have been operating from their current facility adjacent to SH26 for over 100 years. The site is subject to a DCP which permits existing factory operations. The existing site has a northern and southern vehicle access as well as a milk tanker bay. The farm products store opposite the site has a driveway opposite the milk tanker bay.

Tatua's operations generate approximately 500 vehicle movements (two way), which are easily and safely accommodated by the existing intersection arrangements. There are no significant existing safety issues in the vicinity of the site.



## 4 Proposed Development

The plan change will enable additional factory development in land adjacent to the existing site. The exact nature and scale of this development is not fixed at this stage and will be responsive to demands over time.

The following figure shows the extent of the existing DCP, the proposed plan change extension on the northern and southern sides of SH26 and particular land uses within the extension such as waste water and domestic waste water treatment and storm water management.



Figure 6: Proposed Plan Change Extent

Rezoning of land to the north of SH26 will enable administration / office services to be relocated into new premises on this side of the road. The following figure shows an indicative layout for the land on the north of SH26. The concept includes two parking areas and a pedestrian underpass beneath SH26 for pedestrians walking between the car park and the factory.



Figure 7: Site Arrangement Plan (Stiles and Hooker Architects)

## 4.1 Car Parking Supply

Car parking for staff and visitors will be provided on site at a level at a level sufficient to accommodate all staff and visitor parking so that in future no Tatua related car parking takes place on SH26. Location and access to car parking will be discussed in subsequent sections.

### 4.2 Additional Facilities

For the purposes of this assessment the following table sets out the existing development within the site and the possible composition of additional and expanded facilities should the plan change be approved.



Table 2: Existing and Potential Future Land Use

	Bu Floor Area (m²)	<b>ilding</b> Maximum Building Height (m)	Office Staff (Monday - Friday 8am-5pm	<b>Staffing</b> Operations Staff (Shift 1 - 4am - 4pm)	Operations Staff (Shift 2 - 4pm - 4am)
Existing Development	24000	35	165	100	51
Additional Development					
Administration / Offices	1500	8	10		
Rural Supply Store	1000	8	4		
Future Powder Dryer 1	1000	35	4	7	7
Future Powder Dryer 2	1000	35	4	7	7
Additional Warehouse Space	18000	10	3	8	8
Storage Space (Relocated from offsite)	6000	10	0	3	3
Wastewater Treatment	15000	10	1		
Total Additional	43000		26	25	25

As the above table shows, the plan change would enable additional administrative office space, two additional dryers, a rural supply store to replace the existing store, additional warehouse space and space for storage relocated from existing off site locations.

With this level of development an additional 76 employees would work at the site, although only 50 of these employees would be on site at one time with the 25 additional operations staff working different shifts.

We have estimated the additional vehicle trips that would result if the above development was implemented on site. This is provided in **Table 3**.

#### Table 3: Existing and Predicted Future Traffic Generation

	Daily Tanker Arrivals	<b>Traffic</b> Daily other Heavy Vehicle Arrivals	Daily Car / Light Vehicle Arrivals
Existing Development	40	23	300
Additional Development			
Administration/ Offices		0	10
Rural Supply Store		0	10
Future Powder Dryer 1	0	6	20
Future Powder Dryer 2	0	6	20
Additional Warehouse Space		captured above	22
Storage Space (Relocated from offsite)		0	8
Wastewater Treatment			1
Total Additional		12	91

As shown above, the additional facilities possible within the plan change extension would be expected to result in an additional 12 daily heavy goods vehicle arrivals at the site and 91 additional light vehicle arrivals. This would be a total of approximately 200 vehicle movements per day.

These vehicle trips would be spread across the day with only the administration / office trips likely to occur in the peak periods, as factory / warehouse staff work in 12 hour shifts (4am - 4pm) and truck movements will be demand based and more evenly spread across the day.

### 4.3 Traffic and Pedestrian Movement

**Figure 8** shows an indicative traffic movement concept plan with a private road through the Tatua site connecting to the existing northern and southern intersections. The concept plan also shows a car park adjacent to SH26 and possible future vehicle access with SH27 and Brown Road, which will be discussed in the following chapter.



Figure 8: Indicative Traffic Flow Diagram



## 5 Transportation Effects

The transportation effects of the plan change are expected to be limited to the operation of the access intersections on the State Highway.

Relatively low additional traffic volumes expected as a result of the plan change, which will be distributed throughout the day and will disperse on the road network to the north and south. As such, there are not expected to be any measurable effects on nearby intersections, such as the State Highway 26/27 roundabout.

Furthermore, given the location of the site and nature of the land use, there are not expected to be any noncar trips associated with the plan change, so there will be no effects associated with non-car transport modes such as walking, cycling or public transport users. Given the traffic effects discussed below, it is not considered that measures to implement greater use of these modes by staff are necessary.

## 5.1 Existing Northern and Southern Intersection Capacity

As part of this ITA we have tested the theoretical capacity of the existing Tatua northern and southern SH26 intersections by adding light and heavy goods vehicle demand to SIDRA Intersection traffic models. This has assumed the existing distribution of traffic (in / out / north / south) during the AM and PM peak periods. This is to understand theoretically how many additional vehicle trips could be generated by additional facilities within the plan change area before the capacity of the existing intersections becomes an issue. SIDRA outputs are provided in **Appendix B**.

This assessment found the northern intersection capable of accommodating a large number of additional vehicle trips without significantly impacting on the level of service of the intersection. With 200 additional light vehicle movements (two way) in the peak hour the intersection continues to operate with a Level of Service of A and only minor vehicle queues, a maximum of one vehicle on any approach.

The southern intersection is slightly more constrained, in part because a high proportion of the additional light vehicle trips loaded onto the northern intersection travel past the southern intersection (to or from Morrinsville). As such, there is more traffic on the State Highway for vehicles using the southern intersection to give way to. However, it is still feasible for an additional 100 light vehicles and 100 heavy goods vehicles (200 vehicles combined) to use this intersection in the peak hour whilst maintaining a Level of Service of A on the State Highway and Level of Service E on the site exit. With a Level of Service E on the exit movement the average delay for vehicles exiting the site is approximately 35 seconds, which would only occur during the peak hour and is considered acceptable.

This assessment has shown that if development within the plan change was to generate an additional 400 peak hour vehicle movements, approximately distributed according to the existing vehicle distribution and split equally between the two separate access intersections, then these intersections would continue to operate with an acceptable Level of Service in the peak hour.

Based on traffic count data from the 2014 ITA, approximately 25% of the Tatua daily vehicle trip generation occurs during the peak hours. Therefore, 400 additional peak hour movements would equate to 1,600 additional daily vehicle movements.

The existing Tatua operations generate approximately 500 daily vehicle movements. The development likely within the plan change area is expected to generate significantly fewer vehicle movements than the existing facilities. The actual level of trip generation expected as a result of the plan change will be calculated in



Chapter 5 of this ITA. However, this assessment shows that the capacity of the two access intersections on the State Highway is not a limiting factor in the plan change considerations.

### 5.2 Possible Alternative / Additional Intersections

Due to uncertainty around the nature of land use changes and access arrangements, a number of possible access scenarios have been considered. It should be noted that the following access intersections would not all be used at the same time. Instead some intersections may close and others open, for example, shifting the administration staff vehicle access from the eastern side of the State Highway to the western side and closing the existing northern access.

An assessment of effects generated should any of the above access points be utilised / modified in future is provided in the following sections. The access intersections are shown on **Figure 8**.

#### 5.2.1 Existing PGG Wrightson Driveway

A key intention of the plan change is to relocate Tatua administration / office staff into office facilities on the western (opposite to existing) side of SH26. This will involve utilising the existing PGG Wrightson car park and access intersection on this side of the road.

We have assessed the capacity of this access intersection by redistributing trips from the Tatua northern access intersection and increasing the demand on the basis of a 115 space car park. The assessed turning movements are show in the following figure, SIDRA outputs are provided in **Appendix B**.





Figure 9: Assessed Western Access Turning Movements

This assessment found the intersection to operate with a good level of service and maximum delay of 15 seconds on departure from the site during the PM peak hour.

The intersection has adequate sight distance in both directions and, as the majority of staff trips travel toward and from Morrinsville, the access relocation will reduce conflict between cars using the central median to turn into the driveway and trucks using the median to turn into the tanker bay.

The plan change concept plan for this area, **Figure 7**, also shows another car park to the south of the administration building which would potentially be used for factory staff parking. This would be a relocation of parking from the eastern to the western side of the site and the effect of this on the safe and efficient operation of the road network is expected to be insignificant.

If additional staff car parking is required to the western side of the State Highway, a pedestrian tunnel is planned to provide a safe crossing of the road between the eastern and western sides of the site. This facility will be discussed and agreed with the Transport Agency at the concept design stage.



#### 5.2.2 Possible Future SH26 Access

There is a possibility that once the existing northern access is closed the existing driveway at the southern end of the Tatua site (south of the existing southern access and shown in **Figure 8**) will be upgraded and utilised as a site access. The location of this access is shown in the following image.



Image 1: Location of Possible Future SH26 Access (google)

This intersection has sufficient visibility in both directions, but does not have a central flush median as provided adjacent to the existing northern and southern access intersections. A flush median should be provided if turning volumes at this intersection increase to more than 10 right turning movements per day. This threshold is informed by the warrants within Austroads Guide to Road Design Part 4A for a road with a speed limit less than 100km/h and peak hour traffic volumes of approximately 600.

This is likely to be best achieved by extending the existing flush median south past the new access. The concept design of the intersection will accord with the MPDC Development Manual requirements and be submitted to the Transport Agency for approval should the intersection be upgraded or traffic volumes utilising the intersection increase as a result of the plan change.

#### 5.2.3 SH27 Left In / Left Out

The concept plan shows an indicative vehicle access to SH27 to the east of the site. Any access to / from this road would be left in / left out only. The intersection is within the 100km/h zone but only a short distance from the start of the 70km/h zone. The design of the intersection will need to include an appropriate deceleration lane / wide shoulder to safely accommodate left turning vehicles from the State Highway.

This operation is expected to work well given the proximity of the intersection to the SH26 / SH27 roundabout, i.e. any vehicles wishing to turn right out of the intersection can turn left out and u-turn at the roundabout. Any vehicles wishing to turn right in from SH27 would be able to turn right at the roundabout and enter the site via SH26. The concept design of the intersection will be submitted to the Transport Agency for approval should the access be progressed.



#### 5.2.4 SH26 / Brown Road

If any access is provided via Brown Road, this is only likely to serve a very small number of vehicle trips associated with the Waste Water facility, less than 10 movements per day. The existing intersection is expected to easily accommodate this negligible increase in traffic demand.

### 5.3 Car Parking

Car parking will be provided on site so that no Tatua staff or visitor vehicles in future are required to park on SH26. Parking will be provided at a rate sufficient to accommodate the needs of staff and visitors. The District Plan requirement of one space per 50sqm of gross floor area for industrial uses will be the basis for parking provision however parking supply and demand will in future be monitored to insure that no Tatua related parking occurs on the adjoining road network.



## 6 Mitigation Strategy

The possible changes to vehicle access and routing that may result in future should the plan change be approved have been considered. Whilst there is some uncertainty about which vehicle access intersections will be utilised, there is likely to be two entrances on the eastern side of SH26, one or two entrances to car parking on the western side of SH26 and possibly a left in / left out access on SH27.

These intersections are all expected to operate safely and with a good level of service. Should any new intersections on SH26 be provided south of the existing flush median, the median will need to be extended and the road widened. The details of this upgrade would be agreed with the Transport Agency prior to any physical works taking place.

Provision of staff car parking on the western side of SH26 will mean that staff will have to cross the road to walk to and from the factory operations. An underpass is proposed to provide safe passage beneath the road for pedestrians. The design of the underpass should direct pedestrians to the safe route and discourage crossing the road at-grade. Tatua should monitor pedestrian movements and require staff to use the underpass when crossing this road. The design of the underpass will be provided to the Transport Agency for approval prior to construction.

As the factory operations grow, it would also be sensible to prepare a plan showing safe pedestrian routes through the site and ensure that these routes have suitable pedestrian facilities to reduce conflict between pedestrians and vehicles within the site.

A construction traffic management plan should also be prepared to limit the effect of construction traffic on the road network. As the site has direct access to the State Highway construction vehicles should not need to travel on local roads to access / egress the site. It will be important to ensure that contractor car parking can be provided on site and that heavy trucks travel well clear of pedestrian routes.

In summary the following mitigation is recommended as part of the plan change:

- Pedestrian underpass to provide a safe crossing of SH26 should additional staff car parking be provided on the western side of the road.
- Plan for safe pedestrian routes through the site as the factory is expanded to reduce pedestrian / vehicle conflict.
- Construction traffic management plan for any new construction generating more than 25 additional vehicle arrivals per day.
- Extension of the flush median on SH26 past the driveway to the south of the site should this driveway need to accommodate more than 10 right turning movements per day in future.



# 7 Summary and Conclusion

### 7.1 Summary

This ITA has been prepared to assess the transportation effects of a private plan change proposed by Tatua Dairy Co-Op Limited which will enable the development of additional dairy factory facilities at their existing site on SH26. Tatua have been operating from this site for over 100 years and expanded from horse and cart deliveries to accommodating approximately 500 vehicle movements per day.

This ITA has found the access intersections on SH26 operate with a good level of service, even when an additional 400 peak hour vehicle movements are applied. This level of additional traffic generation would equate to approximately 1,600 vehicle movements per day which is expected to significantly exceed the possible future vehicle trip generation of Tatua operations under the plan change proposals.

A concept plan for the plan change area shows expanded factory facilities on the eastern side of SH26 and relocated office and administration facilities on the western side of the road. A pedestrian underpass is proposed to provide safe passage for pedestrians across the State Highway.

The ITA has found the existing and possible future access intersections capable of accommodating the expected traffic demands. Should a new intersection to the south of the existing Tatua site be utilised, with any significant demand, it will be necessary to extend the existing flush median on SH26. Designs for any modified intersections with a State Highway will accord with the MPDC Development Manual requirements and be submitted to the Transport Agency for approval prior to construction.

## 7.2 Recommendations

That development be permitted up to a level of vehicle trip generation assessed and considered acceptable in this ITA (1,600 additional vehicle movements per day / 400 per hour).

That the following mitigation is put in place to support development over time:

- Pedestrian underpass to provide a safe crossing of SH26 should additional staff car parking be provided on the western side of the road.
- Plan for safe pedestrian routes through the site as the factory is expanded to reduce pedestrian / vehicle conflict.
- Construction traffic management plan for any new construction generating more than 25 additional vehicle arrivals per day.
- Extension of the flush median on SH26 past the driveway to the south of the site should this driveway
  need to accommodate more than 10 right turning movements per day in future (based on Austroads
  turning warrants).

## 7.3 Conclusion

The ITA has not identified any significant transport issues that would need to be addressed prior to the proposed private plan change being approved. On that basis, assuming the recommendations outlined above can be implemented, the plan change proposal is considered acceptable from a transport perspective.



# Appendix A: Plan Change Land Use Diagram







# Appendix B: SIDRA Outputs



## **▽** Site: Tatua Nth Int - 2025 BASE - AM PEAK

Tatua - Northern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand I Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back c Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: S	H26 South	n-West										
2	T1	259	6.5	0.138	0.0	LOS A	0.0	0.0	0.00	0.00	70.0	
3	R2	22	0.0	0.020	3.9	LOS A	0.1	0.5	0.34	0.49	28.2	
Approac	h	281	6.0	0.138	0.3	NA	0.1	0.5	0.03	0.04	64.4	
East: Ac	cess North	1										
4	L2	5	0.0	0.009	4.5	LOS A	0.0	0.2	0.39	0.45	28.0	
6	R2	1	0.0	0.009	4.7	LOS A	0.0	0.2	0.39	0.45	28.0	
Approac	h	6	0.0	0.009	4.5	LOS A	0.0	0.2	0.39	0.45	28.0	
North: S	H26 North	-East										
7	L2	7	0.0	0.004	2.3	LOS A	0.0	0.0	0.00	0.36	28.9	
8	T1	243	5.6	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	70.0	
Approac	h	251	5.5	0.129	0.1	NA	0.0	0.0	0.00	0.01	67.9	
All Vehic	les	538	5.7	0.138	0.3	NA	0.1	0.5	0.02	0.03	65.2	

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Friday, 28 August 2015 4:45:18 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA - VerII.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright © 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com



## **▽** Site: Tatua Nth Int - 2025 BASE - PM PEAK

Tatua - Northern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Deman Total veh/h	d Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h		
South: S	SH26 So	uth-West											
2	T1	306	3.4	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	70.0		
3	R2	3	0.0	0.003	4.1	LOS A	0.0	0.1	0.38	0.47	28.1		
Approac	h	309	3.4	0.161	0.1	NA	0.0	0.1	0.00	0.00	69.2		
East: Ac	cess No	rth											
4	L2	31	0.0	0.053	5.2	LOS A	0.2	1.3	0.44	0.54	27.7		
6	R2	5	0.0	0.053	5.4	LOS A	0.2	1.3	0.44	0.54	27.7		
Approac	h	36	0.0	0.053	5.2	LOS A	0.2	1.3	0.44	0.54	27.7		
North: S	H26 Nor	rth-East											
7	L2	1	0.0	0.001	2.3	LOS A	0.0	0.0	0.00	0.36	28.9		
8	T1	312	3.4	0.163	0.0	LOS A	0.0	0.0	0.00	0.00	70.0		
Approac	h	313	3.4	0.163	0.0	NA	0.0	0.0	0.00	0.00	69.7		
All Vehic	cles	658	3.2	0.163	0.3	NA	0.2	1.3	0.03	0.03	65.5		

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Friday, 28 August 2015 4:46:50 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA - VerII.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright © 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com



## V Site: Tatua Sth Int - 2025 BASE + DEV - AM PEAK (100/100)-200 Northern

Tatua - Southern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h		
South: S	H26 South-	-West											
2	T1	278	5.3	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	99.9		
3	R2	85	39.5	0.113	5.6	LOS A	0.4	4.2	0.48	0.56	27.6		
Approac	h	363	13.3	0.147	1.3	NA	0.4	4.2	0.11	0.13	76.7		
East: Ac	cess South												
4	L2	29	57.1	0.287	19.8	LOS C	1.1	11.8	0.71	0.83	22.9		
6	R2	34	62.5	0.287	20.0	LOS C	1.1	11.8	0.71	0.83	22.9		
Approac	h	63	60.0	0.287	19.9	LOS C	1.1	11.8	0.71	0.83	22.9		
North: S	H26 North-I	East											
7	L2	89	48.2	0.065	2.3	LOS A	0.0	0.0	0.00	0.24	28.9		
8	T1	267	2.4	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	99.9		
Approac	h	357	13.9	0.139	0.6	NA	0.0	0.0	0.00	0.06	76.4		
All Vehic	les	783	17.3	0.287	2.5	NA	1.1	11.8	0.11	0.16	69.7		

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Friday, 4 September 2015 3:47:57 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright o 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com



## V Site: Tatua Sth Int - 2025 BASE + DEV - PM PEAK (100/100)-200 Northern

Tatua - Southern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov	OD	Demand	l Flows	Deg.	Average	Level of	95% Back of	of Queue	Prop.	Effective	Average		
ID	Mov	Total	HV	Satn	Delay	Service	Vehicles	Distance	Queued	Stop Rate	Speed		
0 11 0		ven/h	%	V/C	sec		veh	m		per veh	km/h		
South: S	SH26 South	n-vvest											
2	T1	301	3.1	0.158	0.0	LOS A	0.0	0.0	0.00	0.00	99.9		
3	R2	77	42.5	0.143	8.1	LOS A	0.5	5.1	0.59	0.72	26.6		
Approad	h	378	11.1	0.158	1.7	NA	0.5	5.1	0.12	0.15	78.7		
East: Ac	cess South	l											
4	L2	84	20.0	0.650	36.1	LOS E	3.5	30.6	0.86	1.35	19.1		
6	R2	44	45.2	0.650	36.4	LOS E	3.5	30.6	0.86	1.35	19.1		
Approad	ch	128	28.7	0.650	36.2	LOS E	3.5	30.6	0.86	1.35	19.1		
North: S	H26 North	-East											
7	L2	64	67.2	0.051	2.3	LOS A	0.0	0.0	0.00	0.22	28.9		
8	T1	493	1.3	0.255	0.1	LOS A	0.0	0.0	0.00	0.00	99.8		
Approac	ch	557	8.9	0.255	0.3	NA	0.0	0.0	0.00	0.02	88.4		
All Vehic	cles	1063	12.1	0.650	5.1	NA	3.5	30.6	0.15	0.23	69.9		

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Friday, 4 September 2015 3:30:49 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright © 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com



## V Site: Tatua Nth Int - 2025 BASE - AM PEAK + Reconfigured Carpark 115 - (100/100 South)

Tatua - Northern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov	OD	Demano	d Flows	Deg.	Average	Level of	95% Back	of Queue	Prop.	Effective	Average		
ID	Mov	Total	HV	Satn	Delay	Service	Vehicles	Distance	Queued	Stop Rate	Speed		
0 11		veh/h	%	V/C	sec		veh	m		per veh	km/h		
South:	SH26 So	outh-West											
1	L2	126	0.0	0.068	6.4	LOS A	0.0	0.0	0.00	0.61	43.3		
2	T1	293	12.9	0.163	0.0	LOS A	0.0	0.0	0.00	0.00	70.0		
Approa	ch	419	9.0	0.163	2.0	NA	0.0	0.0	0.00	0.18	60.5		
North: S	SH26 No	rth-East											
8	T1	333	17.1	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	69.9		
9	R2	7	0.0	0.008	8.6	LOS A	0.0	0.2	0.45	0.64	41.4		
Approa	ch	340	16.7	0.190	0.2	NA	0.0	0.2	0.01	0.01	69.1		
West: T	atua Adr	nin Car Park											
10	L2	1	0.0	0.058	13.7	LOS B	0.2	1.4	0.64	0.85	37.5		
12	R2	22	0.0	0.058	13.8	LOS B	0.2	1.4	0.64	0.85	37.5		
Approa	ch	23	0.0	0.058	13.8	LOS B	0.2	1.4	0.64	0.85	37.5		
All Vehi	icles	782	12.1	0.190	1.5	NA	0.2	1.4	0.02	0.13	63.1		

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 15 September 2015 3:19:23 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA - VerII.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright o 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com



## V Site: Tatua Nth Int - 2025 BASE - PM PEAK + Reconfigured Carpark 115 - (100/100 South)

Tatua - Northern Entrance Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov	OD	Demand I	lows	Deg.	Average	Level of	95% Back o	of Queue	Prop.	Effective	Average		
ID	Mov	Total	HV	Satn	Delay	Service	Vehicles	Distance	Queued	Stop Rate	Speed		
South: SH26 South-W		uth-West	%	V/C	sec	_	ven	m	_	perven	Km/n		
1	12	1/	0.0	0.007	6.4	1.05.4	0.0	0.0	0.00	0.61	12.2		
		14	0.0	0.007	0.4	LUSA	0.0	0.0	0.00	0.01	45.5		
2	T1	351	8.7	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	69.9		
Approad	ch	364	8.4	0.190	0.3	NA	0.0	0.0	0.00	0.02	68.7		
North: S	H26 Nor	th-East											
8	T1	351	8.7	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	69.9		
9	R2	14	0.0	0.014	8.4	LOS A	0.1	0.4	0.42	0.64	41.6		
Approad	ch	364	8.4	0.190	0.3	NA	0.1	0.4	0.02	0.02	68.6		
West: Ta	atua Adm	in Car Park											
10	L2	15	0.0	0.261	14.8	LOS B	1.1	7.4	0.67	0.89	36.8		
12	R2	94	0.0	0.261	14.9	LOS B	1.1	7.4	0.67	0.89	36.8		
Approad	ch	108	0.0	0.261	14.9	LOS B	1.1	7.4	0.67	0.89	36.8		
All Vehi	cles	837	7.3	0.261	2.2	NA	1.1	7.4	0.09	0.14	62.9		

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 15 September 2015 3:22:01 p.m. SIDRA INTERSECTION 6.0.13.4101 Project: P:\428\4283902\Transport\tATUA - VerII.sip6 8000924, BECA LIMITED, PLUS / Floating Copyright o 2000-2013 Akcelik and Associates Pty Ltd www.sidrasolutions.com

