Synlait Milk Ltd

Request for Plan Change

Dairy Processing Management Area

Transportation Assessment Report

May 2014

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Dairy Processing Management Area

Transportation Assessment Report

Quality Assurance Statement

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1. Introduction

Synlait Milk Limited (SML) proposes to initiate a private Plan Change to the Selwyn District Plan (District Plan), to rezone an area of around 113.6ha from Rural Outer Plains (OP) to Dairy Processing Management Area (DPMA). The site subject to the Plan Change is located approximately 7km southwest of Dunsandel. It currently contains the SML milk processing plant, stores, and administration offices. If approved, the Plan Change would facilitate further expansion of the dairy processing facilities on site.

The area of land within the DPMA is intended to provide sufficient space for the future development of the dairy plant. This is anticipated to occur over a period of decades and will progress in response to a variable range of factors. These include the market demand for dairy products, developments in the dairy industry, operational requirements and the size of the catchment area serviced by the dairy plant. Accordingly, there is an optimal scale of development based upon the above considerations.

Whilst the ultimate development scenario for the plant is undefined, the DPMA is generically based upon a scenario which is informed by the existing plant layout and its activities. This scenario anticipates up to 8 dryers with associated drystores, reception, roading and servicing as the maximum scale of development that would occur at this site. There is also the possibility of incorporating a siding on the adjacent rail network to facilitate product movement as the development progresses.

This Transportation Assessment Report describes the existing transportation network and travel patterns, and assesses road safety in the area surrounding the site. It then describes the transportation components of the proposed development, and assesses the performance of the adjacent transportation network with development of the proposed Plan Change area. The report also discusses the proposed Plan Change in the context of strategic planning considerations in Selwyn District.

2. Existing Transport Network and Infrastructure

2.1 Site Location

The Synlait Dairy Plant is located on the southern side of Main South Road (SH1) approximately 7km southwest of Dunsandel, as shown in **Figure 1**. The site is generally located in the southeast corner of SH1 and Heslerton Road, and is also bordered by the Main South Railway Line on its northern side.

The site fronts Heslerton Road on the west and SH1 on the north. The site is located within the Rural Outer Plains Zone of the Selwyn District Plan within an area of predominantly rural land use. The location of the site relative to the surrounding road network and road hierarchy set out within the Selwyn District Plan is shown in **Figure 2**.

As can be seen, the most significant road in the immediate vicinity of the site is Main South Road (SH1) which is classified as a Strategic Road and provides an important national and regional function. Also within the vicinity of the site is the Main South Railway Line which runs parallel to and immediately south of SH1.

Other roads within the vicinity of the site include: Old South Road (including the section of road providing a continuation of Heslerton Road to SH1), Parkins Road, Sharlands Road and Irvines Road. These roads are classified as Local Roads and the predominant function of these roads is to provide access to the surrounding farmland.

2.2 Site Description

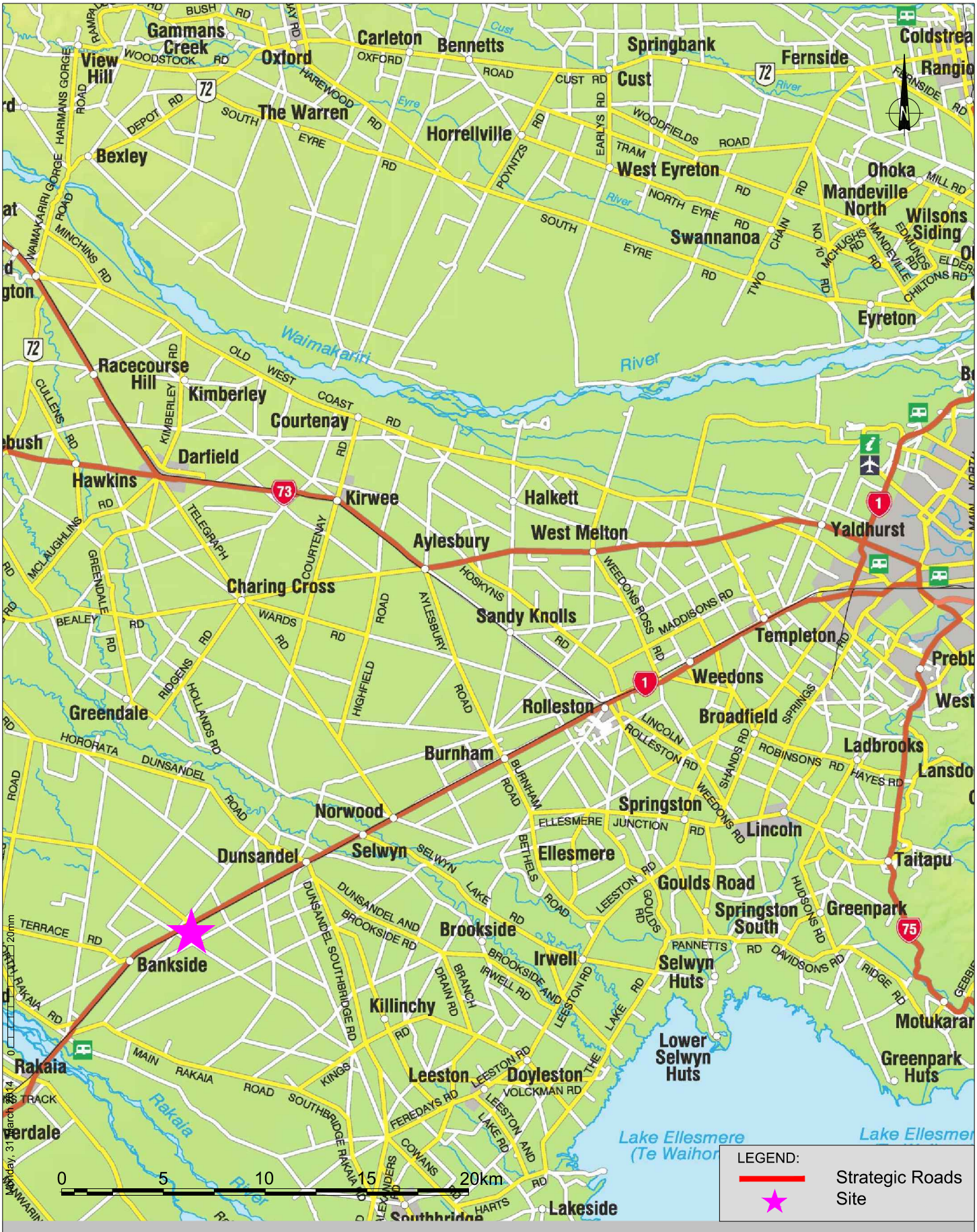
2.2.1 Road Network

Existing access to the site is obtained through a stop-controlled vehicle access on Heslerton Road located approximately 250m south of SH1 and some 220m south of the Main South Railway Line.

SH1 is a rural two-lane road with standard highway geometric characteristics in the vicinity of the site, including wide sealed shoulders. Along its length the road contains several dedicated passing lanes to ensure that an appropriate level of service is retained for the traffic volumes.

The Heslerton Road carriageway is a two-lane rural road with relatively flat alignment. It has a sealed width of approximately 7.3m south of Old South Road, before widening out at the Synlait access to accommodate passing when necessary. Approximately 75m south of the Heslerton Road Synlait site access the carriageway reverts to unsealed width of some 6m.

The Old South Road / SH1 T-intersection is give-way controlled on Old South Road as shown in **Photograph 1**. This intersection was previously upgraded as part of the initial Synlait Dairy Plant development.



Synlait DPMA Plan Change

Site Location

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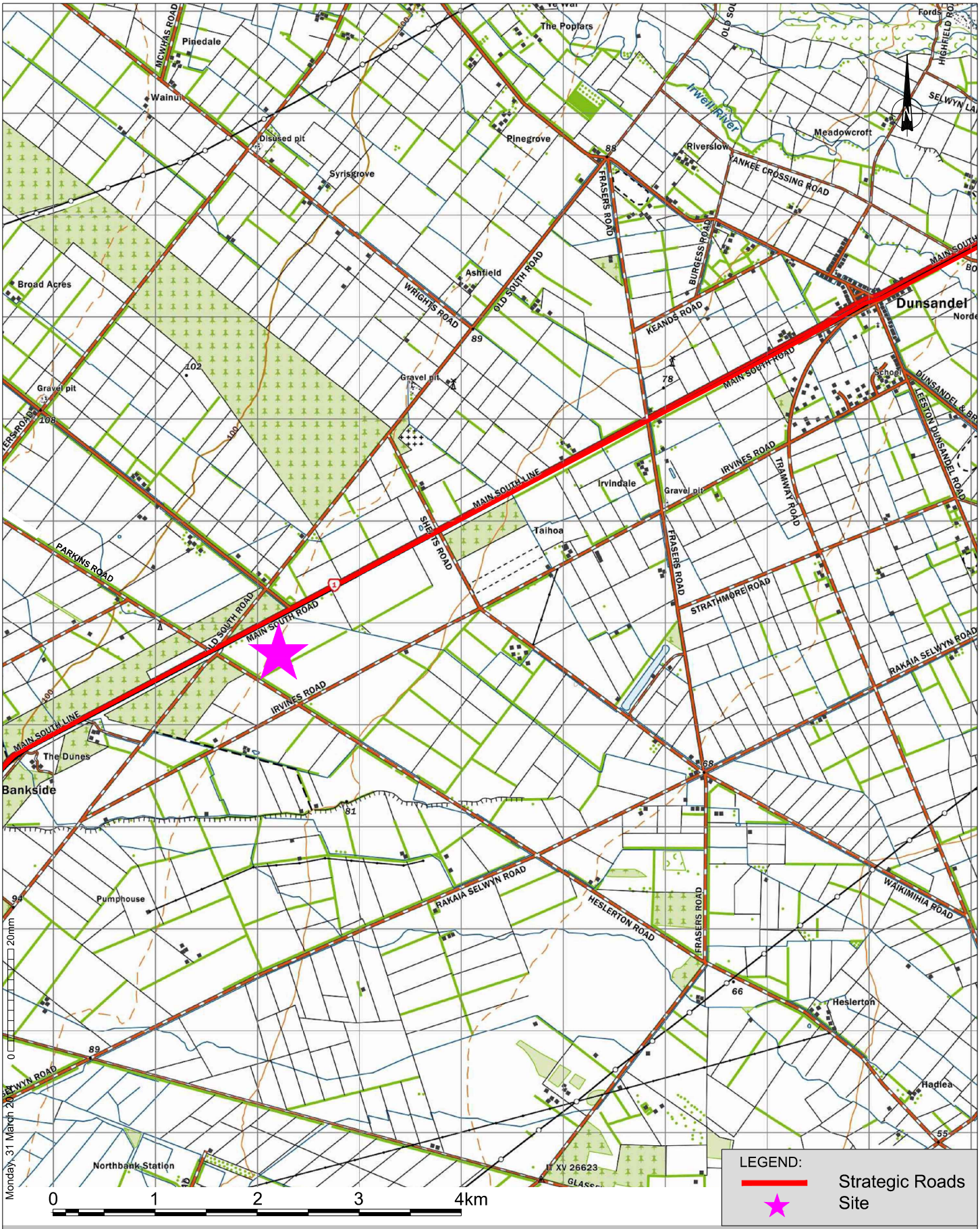

Synlait DPMA Plan Change

Road Network

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Photograph 1: SH1 / Old South Road Intersection (from Old South Road looking towards SH1)

Dedicated left turn slip lanes are provided both from SH1 and from Old South Road. The slip lane from Old South Road has a raised island to channelise traffic into a long southbound acceleration lane on SH1. The intersection has good visibility and there is also a right turn bay for movements from SH1. These provisions are shown in **Photograph 2 and Photograph 3**.

Photograph 2: Old South Road looking East towards SH1 (NB: Island Recently Removed)

Photograph 3: Old South Road looking West towards SH1

Old South Road was also realigned as part of the Synlait plant development and currently intersects with Heslerton Road at a give-way controlled T- intersection located approximately 80m from the SH1 / Old South Road intersection.

2.2.2 Rail Network

The Main South Railway line was also realigned and upgraded as part of the Old South Road / SH1 intersection upgrade. The railway line currently intersects Old South Road 26m south of the Old South Road / SH1 intersection limit-line which readily accommodates a truck queuing at the SH1 / Old South Road intersection. Synlait also contributed to a further upgrade of the railway crossing from Stop control to control by lights and bells. There is good visibility on both sides of the crossing.

2.2.3 Site Access

The existing site access is a stop-controlled T-intersection on Heslerton Road located approximately 250m south of State Highway 1 (SH1) and 220m south of the Main South Railway Line.

The site access is a two lane stop controlled intersection with localised widening as shown in **Photograph 4**. The access has been designed in a manner to enable two milk tankers to move in opposite directions unimpeded.

Photograph 4: Site Access on Heslerton Road (looking towards Synlait Dairy Plant)

The site access has good sight distance provision to both the north and south as shown in **Photograph 5 and Photograph 6**.

Photograph 5: Site Access (looking North to Heslerton Road)

Photograph 6: Site Access (looking South to Heslerton Road)

2.2.4 Existing Site Layout

All of the on-site roads have been designed to accommodate internal circulation and manoeuvring for vehicles accessing the site. The primary internal site roads are sealed, and operate in a two-lane manner with a posted speed limit of 15km/h.

Approximately 20m east of Heslerton Road the access intersects with an internal metalled secondary road for contractors use on the south side and an access road to the drystores and loading area. There is a metalled car park on the northeast side of this road.

Approximately 130m from the site access limit-line is the two-lane give-way controlled access to the existing sealed car parking area adjacent to the administration area.

The sealed car park provides parking for 83 vehicles, of which 2 are allocated to visitors and 4 are for disabled persons parking. A large overflow car parking is available between the site access and the administration area car park, as well as near the energy centre.

A vehicle tag reader located on the main access automates the gate entrance to the core plant area. From the gate point onwards, there are two segregated inbound lanes. The left lane is an external truck rinse which is mainly used by milk tankers before proceeding to the milk reception point while the other lane is used by other vehicles servicing the site.

The milk reception traffic stream is largely separated from the current warehouse inwards goods and product movements. Trucks access the enclosed warehouse loading dock in a clockwise movement.

On site observations show that traffic movement around these access areas is undertaken in an efficient manner.

2.3 Public Transport, Walking and Cycling

There is no specific infrastructure provided in the vicinity of the site for public transport, walking or cycling. In regard to walking and cycling however, the rural nature of the environs coupled with the low traffic volumes on the local roads and the width of the berm mean that the lack of provision of such facilities is not unusual.

3. Existing Transport Patterns

3.1 Daily Traffic Volumes

Daily traffic count information for the road network within the vicinity of the site has been obtained from the Selwyn District Council (SDC) and NZTA. The most recent average daily traffic volumes in the vicinity of the site are summarised in Table 1.

Road	Location	Average Daily Traffic Volume (vpd)	Year
State Highway 1 (SH1)	East of Sheats Road	10,285	2012
Heslerton Road	South of Old South Road	500 est (1,574* obs)	2013
Heslerton Road	North of Irvines Road	181*	2013
Old South Road	North of Irvines Road	26*	2011
Parkins Road	North of Main South Road (SH1)	28*	2013
Sharlands Road	North of Main South Road (SH1)	329*	2013

**Total number of vehicle axles divided by 2, which does not allow for heavy vehicle influences*

Table 1: Daily Traffic Volumes

The traffic volumes listed above clearly indicate the dominance of SH1.

The nearest SH1 traffic data shows an average 10,285 vehicles per day (vpd) comprising 14.3% heavy vehicles. SH1 traffic data (east of Sheats Road) for the recent 10 years (2003 to 2012) has demonstrated average traffic volume growth of 1.8% per year. In the most recent five year period (2008-2012) traffic growth has been at a lower rate of 0.9% per year.

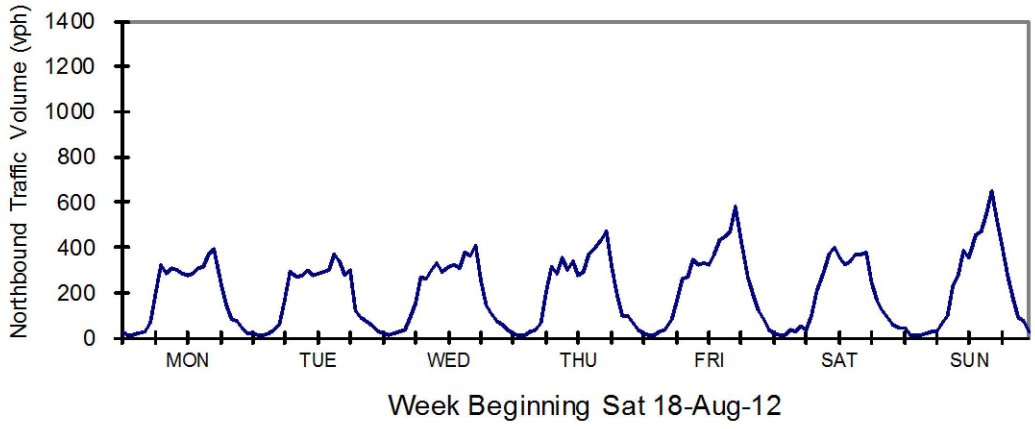
The local roads in the vicinity of the site carry lower traffic volumes, with the increased volume resulting from the Synlait dairy factory notable on Heslerton Road north of the site access. The other local roads have traffic volumes representative of the rural access function of those roads.

The SDC traffic counts represent the total number of counted axles divided by two. Heslerton Road has a higher proportion of heavy vehicles with B-trains and milk tankers having 8-9 axles. This would result in the actual number of vehicles being substantially lower than recorded by SDC, estimated to be approximately 500vpd based on Synlait traffic patterns.

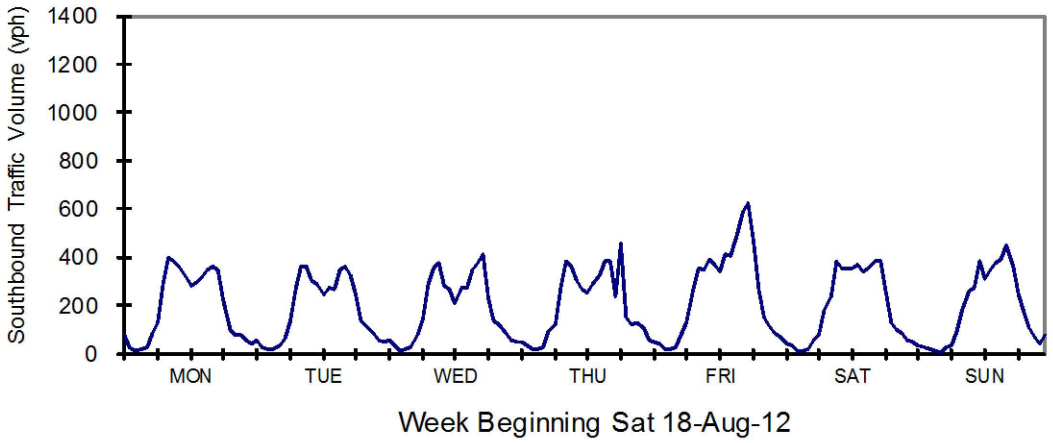
3.2 SH1 Hourly Traffic Patterns

A full seven-day count on State Highway 1 (SH1) east of Sheats Road was undertaken by NZTA in August 2012. The pattern of hourly traffic volumes is shown on **Figure 3**.

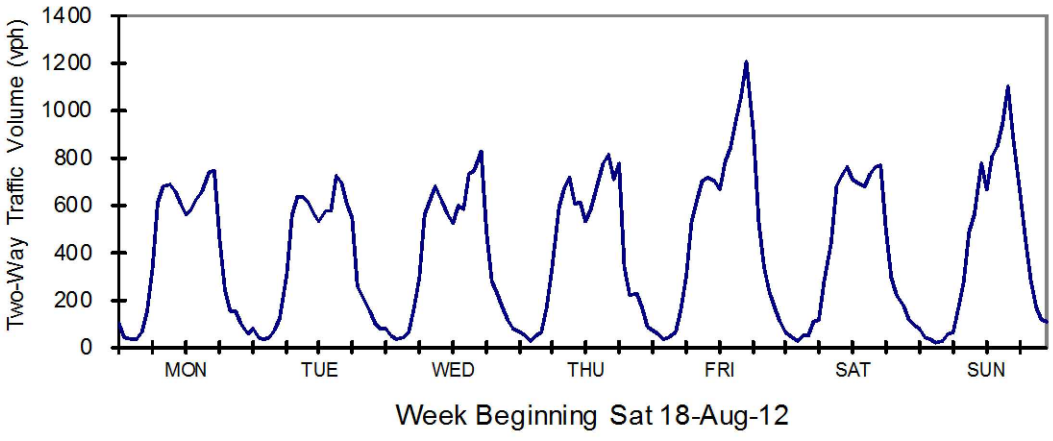
SH1 East of Sheats Road (Northbound)



SH1 East of Sheats Road (Southbound)



SH1 East of Sheats Road (Two Way)



Wednesday, 21 August 2013 0 20mm

Synlait DPMA Plan Change

SH1 Weekly Traffic Volumes (East of Sheats Road)

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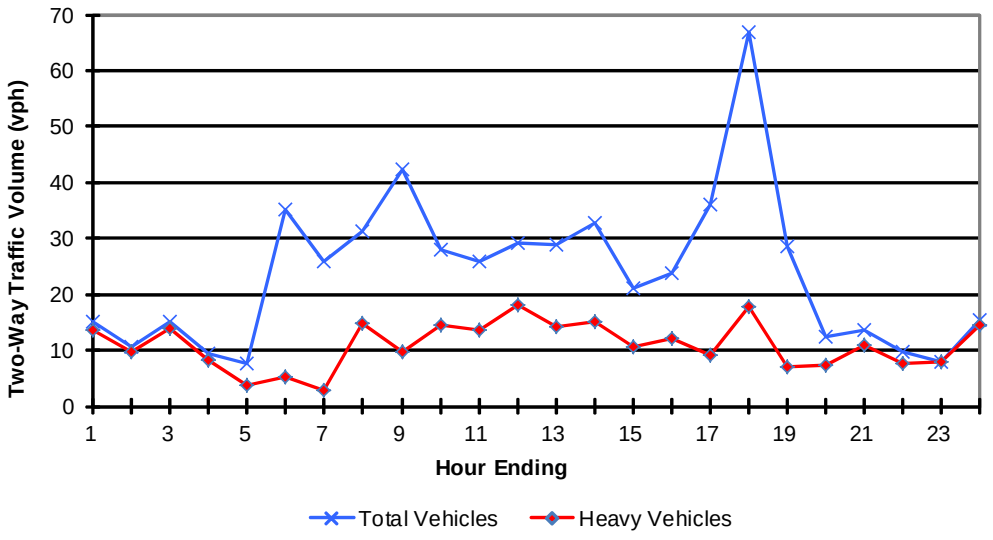
The main features of this traffic pattern include:

- An average daily weekday (Monday-Thursday) traffic volume of 9,200vpd. Fridays have a higher volume of 11,770vpd;
- A Saturday traffic volume of 9,040vpd and Sunday traffic volume of 9,560vpd;
- There were two typically observed peak periods from Monday to Thursday. A morning peak volume of 650-680 vehicles per hour (vph) occurred between 8am and 10am, and the evening peak volume of 750vph occurred between 4pm and 5pm;
- On Saturday, a traffic volume of 760vph occurred between 11am and 12pm, and also between 4pm and 6pm;
- Friday and Sunday have pronounced afternoon peak periods. On Friday, the traffic volumes peaked at 1,200vph between 5pm and 6pm, while on Sunday the peak traffic volumes of 1,100vph occurred between 4pm and 5pm.

3.3 Synlait Access Site Generation

An automatic traffic counter was placed on the site driveway between Sunday, 11 November 2012 and Tuesday, 27 November 2012. At that time, the site operated with two milk dryers, and product was taken to off-site distribution centres for containerisation.

The average daily weekday traffic pattern is shown in **Graph 1**.



Graph 1: Synlait Access Weekday Hourly Pattern (12-15 November 2012)

As can be seen, traffic is generated throughout the day and night with peaks in the morning associated with shift changeover and administration staff arrivals, and in the evening associated with administration staff departures and shift changeovers. The heavy vehicle traffic generation peaks at 11am to 12pm and 4pm to 5pm with 18vph.

3.4 Peak Period Turning Movement Patterns

TDG commissioned traffic turning movement surveys at the Old South Road / SH1 intersection, and at the Synlait site access on Heslerton Road. The surveys covered peak morning and afternoon periods on 25 September 2012. This represents a period nearing peak production at the site. The hours surveyed were from 5am to 9am in the morning and from 4pm to 7pm in the evening.

The peak hours of both the road network and site access coincided and occurred at 8am to 9am in the morning, and 5pm to 6pm in the evening. A summary of the turning movements at these peak times is shown **Figure 4**.

Some of the key findings from the peak hour survey data include:

- The peak traffic generation of the site was 56vph in the morning peak and 79vph in the evening peak. At these times, almost 90% of traffic was entering in the morning peak, and only 20% of traffic was entering in the evening peak;
- Heavy traffic makes up 7% of the morning peak site traffic generation, and 19% of the evening peak site traffic generation;
- 95% of the traffic servicing the site at peak times is to or from the Heslerton Road north of the site access;
- The remaining 5% from the south represents 3-4vph;
- Heslerton Road has very low volumes of traffic passing the Synlait site access at peak times, being 1-2vph;
- Of the turning traffic at the SH1 / Old South Road intersection, approximately 85% is to or from the north in the morning peak, and 77% is to or from the north in the evening peak;
- The through traffic volume on SH1 past Old South Road was 659vph in the morning peak, and 685vph in the evening peak hour.

Figure 5 shows the profile of the site access inbound and outbound traffic across the survey period. Whilst shift changeovers occur at 6am and 6pm, there is no significant peaking at those times. The administration arrivals and departure times are more readily identifiable in the patterns.

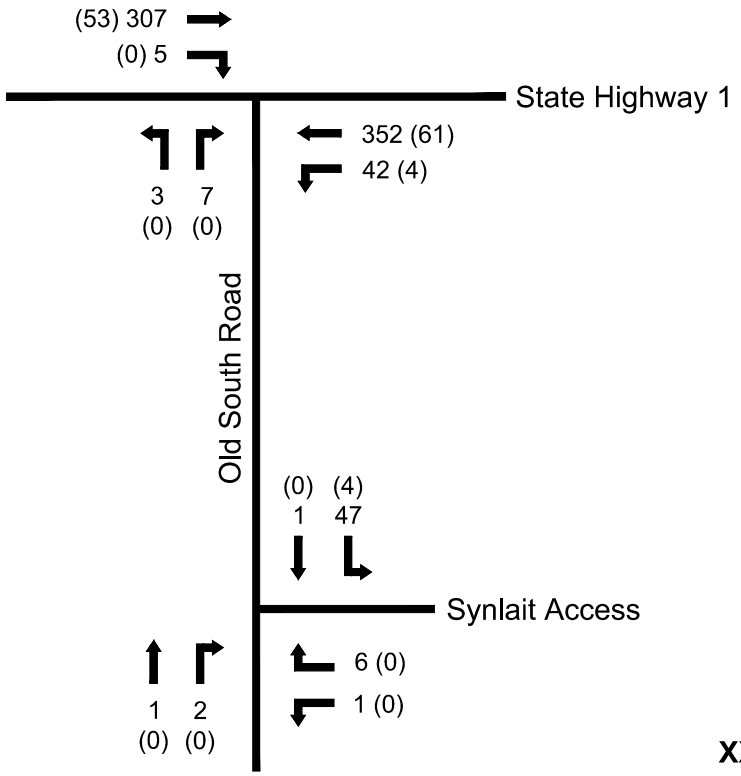
The heavy vehicle peaks are primarily associated with milk tankers departing at the start of their shift. The busiest 15 minute period for heavy vehicles was 5.15pm-5.30pm when seven milk tankers and a B-Train departed the site, and a B-Train entered the site.

As discussed later in this report, the most critical turn movement for assessment relates to the right turn from Old South Road into SH1. The surveys show that between 5am and 9am there were 10 heavy vehicles that made the right turn all within the hour between 7am and 8am. Of those, six were milk tankers and two were Synlait product related B-trains. In the late afternoon period 4pm to 7pm, there were two right turning heavy vehicles between 4pm and 5pm, and three right turning heavy vehicles between 5pm and 6pm. These were all product related trucks.

3.5 Vehicle Occupancy

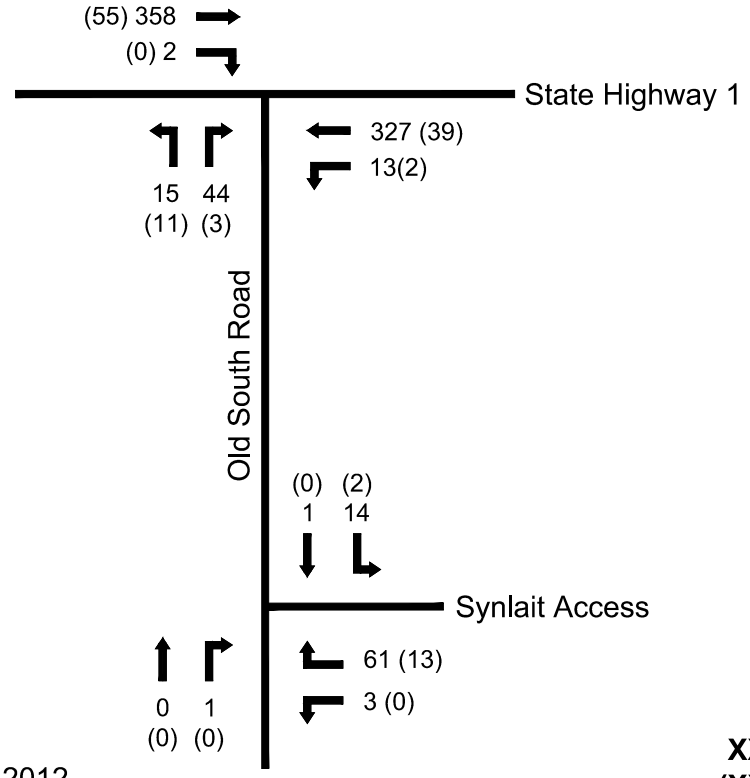
A traffic survey undertaken during the PM peak period on Monday 16 September 2013 measured an average light vehicle occupancy of 1.25 people per vehicle on average, with some car sharing occurring. This was consistent for vehicles departing from the day shift, and vehicles arriving for the night shift.

8:00am - 9:00am



XX - Total Vehicles
(XX) Heavy Vehicles

5:00pm - 6:00pm



Survey Date:
Tuesday 25 September 2012

XX - Total Vehicles
(XX) Heavy Vehicles

Wednesday, 21 August 2013 0 □□□□□□□□□□ 20mm

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2012 Peak Traffic Volumes

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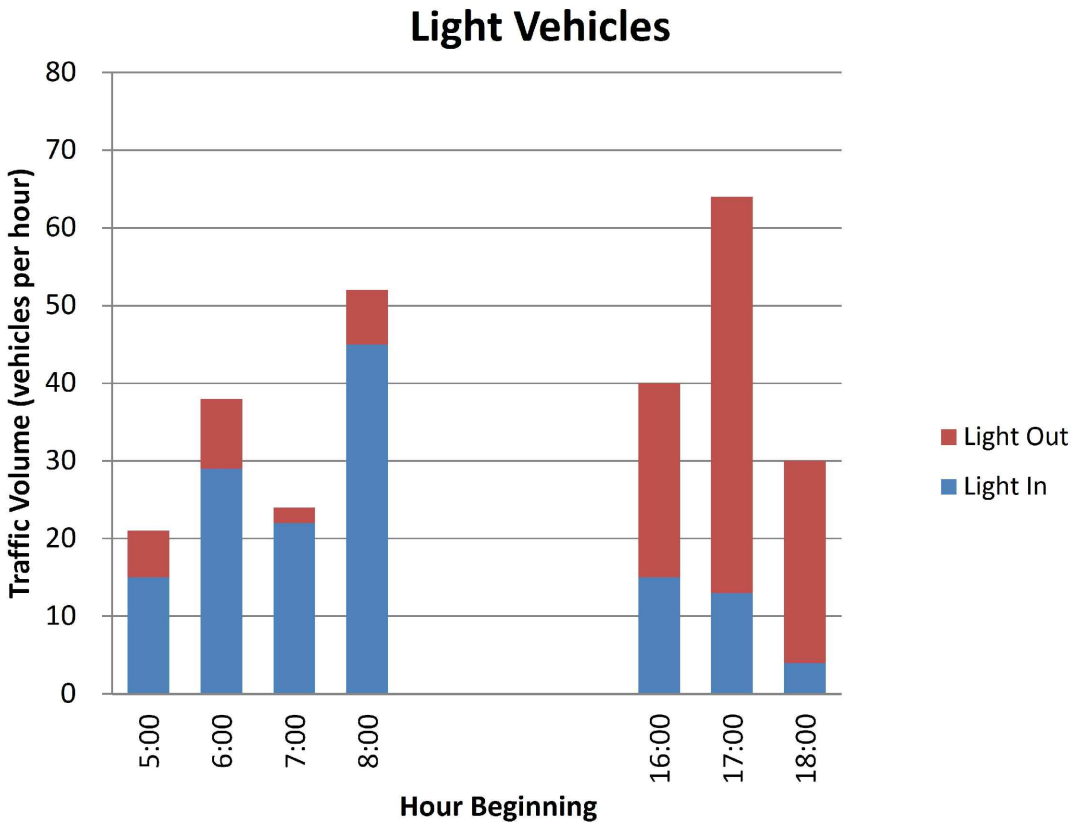

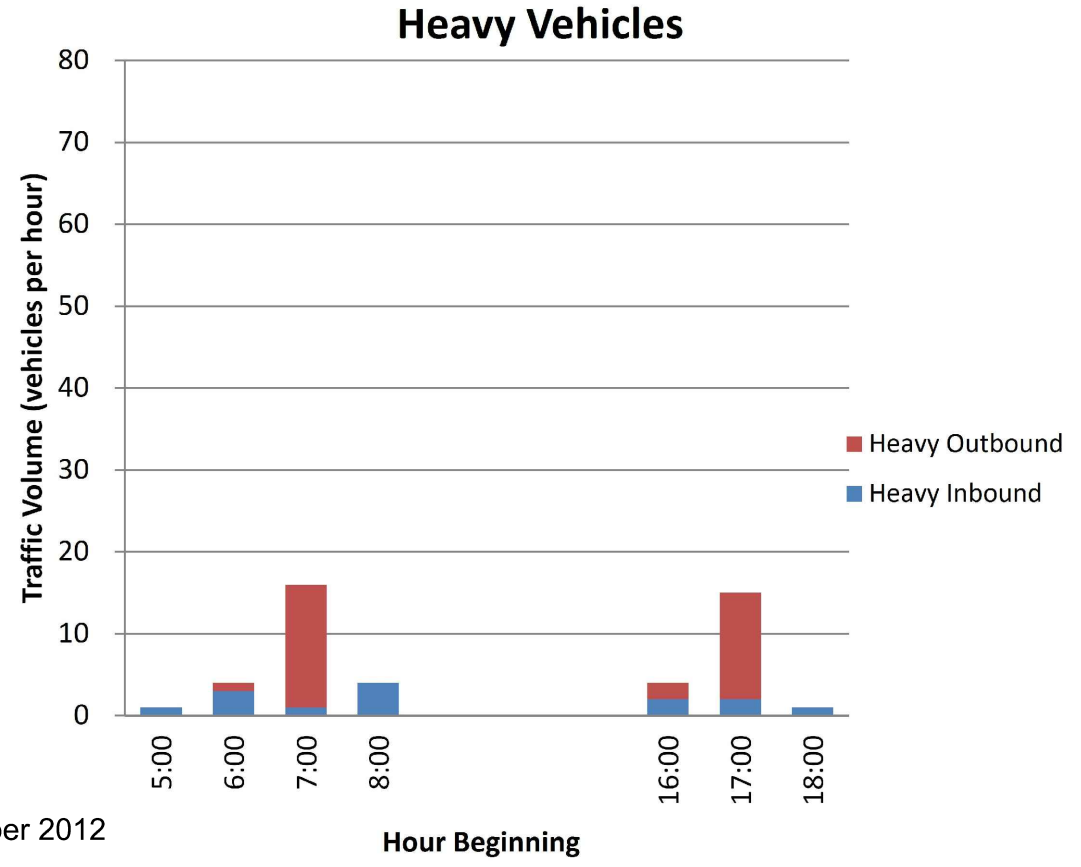

Survey Date:
Tuesday 25 September 2012

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Synlait DPMA Plan Change

Heslerton Road Access Traffic Patterns

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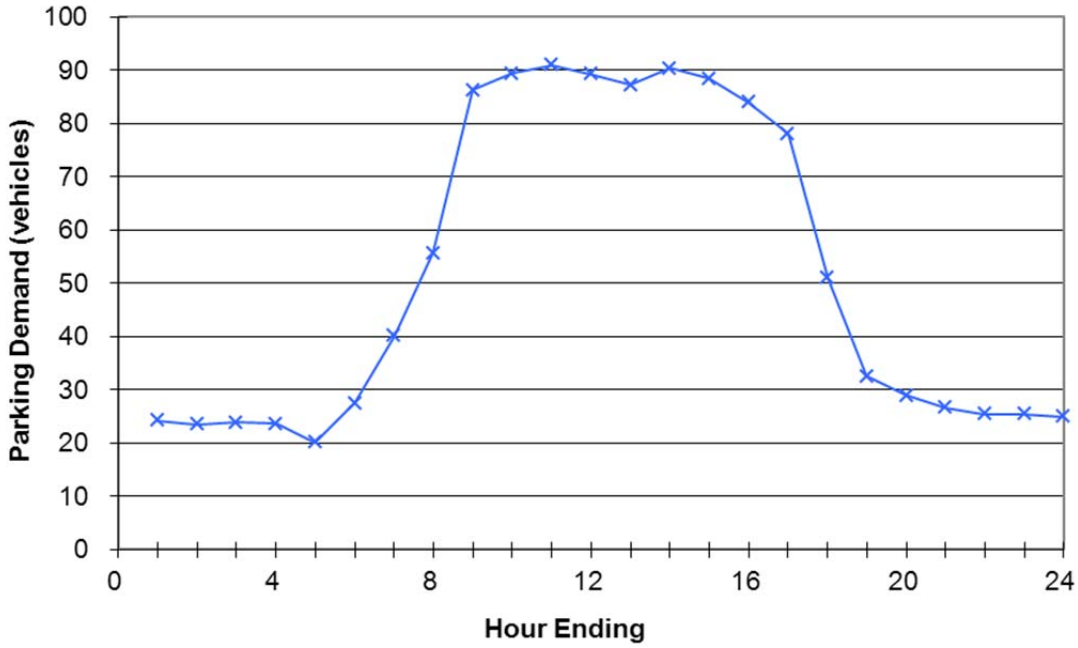
3.6 Existing Car Parking Demand

The site access traffic survey from November 2012 has been analysed to provide an indication of the car parking demand patterns associated on a typical weekday close to the seasonal peak period. The analysis considered the estimated parking associated with night shift staff, and vehicle arrivals and departures throughout the day. The calculated parking demand across the day is shown in Graph 2 below.



Graph 2: Synlait Calculated On-site Parking Pattern 12-15 November 2012

It can be seen that peak parking demand was calculated as approximately 90 spaces throughout the day. The parking demand is higher than the formal sealed and marked on-site parking supply demonstrates some reliance on the use of overflow parking areas and less formal parking elsewhere within the site.

More recent observations have shown an increase in parking demand on site. A total of approximately 125 cars were observed parked on site. These are readily accommodated by the additional overflow parking areas. The change in parking demand could be the result of additional contractors on site undertaking construction related works, as well as increases in support staff on-site.

Existing parking demands have been estimated based on application of the observed vehicle occupancy of 1.25 people per vehicle to the number of staff on site. An additional 10% has then been included to allow for potential variance in staffing levels above the typical demand, provision for visitors, and additional contractors. This results in an equivalent parking provision rate of 0.88 spaces per daytime staff member during the peak season.

The administration personnel parking patterns are such that their parking peak does not coincide with the short term parking peak associated with the day to night shift changeover for other workers on site. Therefore peak parking demands will occur during the daytime.

4. Existing Levels of Service

4.1 Site Layout

The site layout has been observed to operate efficiently, with wide circulation aisles for trucks. Staff car parking is provided in a formal sealed and marked parking area on-site, and this regularly reaches capacity on weekdays. Overflow car parking areas on-site are readily able to accommodate additional parking demands with spare capacity available. No parking occurs on the main access route or on the surrounding road network. Pedestrian access between the car park and main administration areas is clear of the primary heavy traffic routes. It is understood Synlait informally monitors parking patterns on-site to ensure sufficient car parking is provided in locations that are consistent with providing safe operation of the site.

Comfortable two-way movement for heavy vehicles is achieved along the sealed section of Old South Road and Heslerton Road accessing the Synlait site and this is performing well following its upgrade to accommodate the Synlait traffic. Controls are provided at the Old South Road railway crossing providing warning to drivers when trains approach. There have been no reported accidents at the crossing or along Heslerton Road or Old South Road.

4.2 Intersection Performance

The SH1/Old South Road intersection is designed to a high standard with good sight distance provision. It is provided with full left and right turn bays from SH1, slip lanes in and out of Old South Road, and an acceleration lane towards the south.

Based on the observed peak traffic conditions, an assessment of the SH1 / intersection performance has been undertaken using Sidra Intersection. The assessment for the morning and evening peak periods shows that the intersection operates with acceptable performance. Level of service[1] is reported, based on the following average delay based parameters:

Level of Service (LOS)	Average Delay Per Vehicle In Seconds (d)
A	$d \leq 10$
B	$10 < d \leq 15$
C	$15 < d \leq 25$
D	$25 < d \leq 35$
E	$35 < d \leq 50$
F	$d > 50$

Table 2: HCM Level of Service Criteria

[1] Level of service is a qualitative measure of intersection performance. A range from LOS A to LOS F is applied, representing free flow through to congested forced flow conditions. LOS D would be a typical acceptable operational performance for a side road to a highway. Improvements or mitigation would often be considered at LOS E, depending on matters such as the volume of delayed traffic and geometric design of the intersection.

The calculated Level of Service C for the right turn from Old South Road is indicative of stable flow, with a small stop line delay for vehicles turning onto SH1, and a moderate geometric delay. The geometric delay is associated with the deceleration to stop, negotiation of the intersection and acceleration up to highway speed.

The traffic volume carried by SH1 is relatively high for a rural section of highway in Canterbury. The traffic volume of approximately 10,000vpd on SH1 past the site is consistent with the traffic volumes along the length of SH1 between Ashburton and Rolleston. Passing opportunities are provided at passing lanes regularly spaced along the highway. Safe passing opportunities between the passing lanes are limited during peak times given the prevailing traffic volumes.

As sections of SH1 with a similar configuration carry up to 20,000vpd between Rolleston and Christchurch, it is considered that the existing section of SH1 near the site operates with acceptable levels of service well below its traffic carrying capacity. It is understood that NZTA have no plans for significant upgrades to SH1 between Rolleston and Ashburton.

Overall, it is considered that the road and traffic environment in the vicinity of Synlait offers a good level of service for road users.

4.3 Road Safety

A search of the NZTA Crash Analysis System (CAS) has been undertaken to determine the road safety history for the road network in the vicinity of the site for the most recent five year period from 2008 to 2012[2]. The search was to identify reported crashes and covered a 2km radius around the Old South Road / SH1 intersection which forms part of the site's main access route via SH1.

There were no crashes reported at the site access on Heslerton Road or along the road sections between the site access and SH1. This includes the Heslerton Road / Old South Road intersection, Heslerton Road (between Old South Road and Irvines Road) and Old South Road (between SH1 and Heslerton Road).

There was one non-injury crash reported at the Old South Road / SH1 intersection. The crash occurred when a southbound driver lost control of the vehicle with a trailer as they failed to notice the vehicle in front of them slowing down to turn right into Parkins Road. They swerved to the left-turn deceleration lane (into the Old South Road) in order to avoid a rear end collision and after losing control collided with the raised median at the intersection. They then came to rest on the grass berm beside SH1.

In the remainder of the search area there was a total of 12 crashes reported (one fatal, six injury crashes and five non-injury crashes).

Two intersection crashes (one injury and one non-injury) were reported at the Parkins Road / SH1 intersection. The injury crash involved the driver turning right from SH1 into Parkins Road failing to give way to on-coming traffic on SH1. The non-injury crash occurred when a vehicle travelling northbound on SH1 pulled over at the Parkins Road / SH1 intersection and collided with a northbound vehicle on SH1 when the driver attempted a U-turn movement.

[2] As at March 2014, the 2013 road safety data was still incomplete so the most recent full five year period has been analysed.

There was a non-injury rear end crash reported at the Sharlands Road / SH1 intersection. The crash occurred due to insufficient following distance when a truck travelling northbound on SH1 collided with a motorcycle in front that slowed or stopped at the intersection.

There were eight non-intersection crashes (one fatal crash, four injury crashes and three non-injury crashes) reported along SH1 within the 2km radius area, of which three of these crashes were reported within the SH1 passing lane between Sharlands Road and Sheats Road. The fatal crash that occurred on SH1 (80m north of Sharlands Road) was due to driver fatigue which resulted in a head-on collision with opposing traffic. The remaining non-intersection crash (one crash) occurred along Sharlands Road (north of Old South Road). The main crash factor for non-intersection crashes involves the driver losing control of the vehicle due to either fatigue, a vehicle fault, alcohol consumption, vehicle speed or inexperience.

The crash analysis does not show any safety related concerns with the operation of the site access, or route via Heslerton Road and Old South Road to SH1. Although a single non-injury crash has occurred on the Old South Road / SH1 intersection, it was not associated with access to or from Old South Road.

Recorded crashes at nearby intersections do not show high numbers of injury crashes or repeated factors that suggest serious safety issues. The highway crashes indicate a range of driver and vehicle related contributing causes to the crashes.

5. Existing and Consented Development Description

5.1 Existing Development

The Synlait site currently operates with two milk dryers capable of processing a total of approximately 2,800,000 litres of milk per day. The processing currently generates milk powder, anhydrous milk fats (AMF), and infant formula.

The milk supply is seasonal, with the raw milk processing peak occurring during October. Milk is transported directly from farms in the region by contracted milk tankers.

Dry stores service both inward and outwards goods. The inwards raw ingredients are unloaded in an enclosed loading area on the east side of the dry stores. The processed goods are also stored in the dry store prior to dispatch for export.

As well as staff employed on-site associated with the engineering, manufacturing, and warehousing, Synlait base their administration at the dairy plant. Most of the engineering, manufacturing and warehouse staff cover seven days, while administration and Synlait Farms personnel work from Monday to Friday.

Based on data from the 2012 milking season, approximately 135 staff were based at Synlait on a day shift, with approximately 30 staff on a night shift. Staff live throughout the Canterbury region, with approximately 81% living in locations to the east and north (Christchurch, Rolleston, Lincoln, West Melton, and Darfield). Approximately 16% of the current staff is based in Ashburton and Methven, and the remainder are from other areas.

5.2 Additional Consented Development

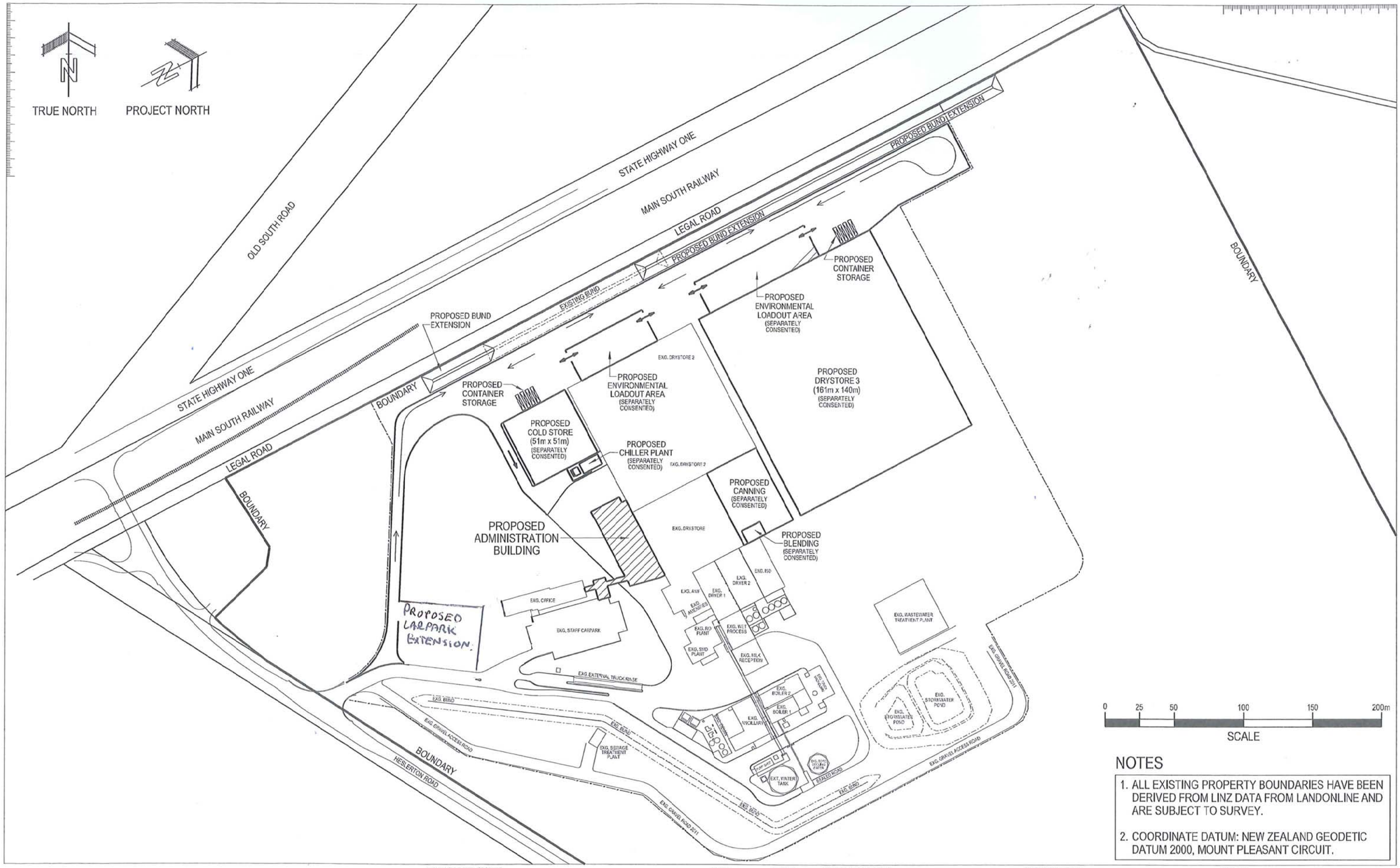
SML has consents for expansion of the dairy plant which is yet to be fully established on-site. The consents will allow the installation and operation of:

- a third dryer and associated plant;
- a canning and blending plant;
- manufacture of butter;
- establishment of a cold store;
- a third dry store and enclosed loading areas;
- a truck depot; and
- a lactoferrin plant.

The addition of the third dryer will increase the milk processing capacity at peak time of the season from 2.8ML per day to 3.7ML per day. The primary purpose of the dry store expansion is to enable Synlait products to be stored on-site and distributed direct to Port for export, while the cold store will support the storage of perishable products on-site. The loading of containers on-site also supports improved product control by Synlait. An increase in heavy vehicle movements is expected due to a change in transport logistics. There is also additional staff required for the consented expansions.

SML has recently received consent to build a larger administration building and laboratory. The building will increase the capacity of the site to accommodate up to 200 administration staff and 30 laboratory staff. It is noted that the capacity of the building is intended to provide for longer term growth requirements.

A plan showing consented and proposed development as at March 2014 is shown in **Figure 6.**



NOTES

1. ALL EXISTING PROPERTY BOUNDARIES HAVE BEEN DERIVED FROM LINZ DATA FROM LANDONLINE AND ARE SUBJECT TO SURVEY.
2. COORDINATE DATUM: NEW ZEALAND GEODETIC DATUM 2000, MOUNT PLEASANT CIRCUIT.

Babbage

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DRAWING REVISIONS

REV	DATE	DESCRIPTION
E	15.10.2012	PROPOSED SOUTHERN BUND EXTENSION ADDED
F	04.07.2013	DRYSTORES 2 AND 3 ENVIROMENTAL LOADOUTS WIDENED AND POSITIONS AMENDED
G	17.02.2014	PROPOSED ADMINISTRATION BUILDING ADDED

	DATE	INITIAL
DESIGNED		
DRAWN	27.08.2012	MJD
DESIGN CHECK		
DRAWING CHECK	28.08.2012	PD
APPROVED	28.08.2012	PD

CLIENT / PROJECT

SYNLAIT MILK LTD.

SYNLAIT STAGE THREE (PART B) - DUNSANDEL, CANTERBURY

DRAWING TITLE

PROPOSED NEW BUILDING WORKS LOCATION PLAN

SCALE

1:1250 @ A1
1:2500 @ A3

6

JOB NO.	DRAWING NO.	REVISION
45230	RC02	G

6. Proposed Plan Change

6.1 Overview

SML proposes to initiate a private Plan Change to the Selwyn District Plan (Rural Zone), to introduce provisions for a Dairy Processing Management Area (DPMA) within the Rural (Outer Plains) Zone of the District Plan. The proposed Change specifically identifies an area of land containing and immediately surrounding the existing Synlait dairy plant on Heslerton Road, as a DPMA.

The proposed Change puts in place DPMA policies and rules which will specifically provide for dairy related activities and buildings. The key mechanism for achieving integrated management of the DPMA is compliance with an Outline Development Plan (ODP). The ODP is based on what could be anticipated as reasonable and optimal future development of the site. This development is expected to occur over a long term time frame.

6.2 Synlait Outline Development Plan

The ODP for the Synlait site shows an area of around 113.6ha that will be treated as a DPMA. It shows areas within the site where built development is allowed, and various controls on the built development. **Figure 7** shows the ODP, which also includes the following transportation provisions:

- Two primary site access points on Heslerton Road, and a requirement for upgrading the section of Heslerton Road between the accesses;
- A secondary access on Irvines Road;
- A potential rail siding for product movement; and
- An area excluded from building areas to allow for future access design options.

The ODP also highlights the State Highway 1 / Heslerton Road (Old South Road) intersection which is referenced in a transport related rule.

6.3 Rule Provisions

A set of rules are proposed for the DPMA to complement the ODP and existing District Plan rules. With respect to transport, rules are proposed that relate to access and parking.

The access rules require design of access and provisions for the nearby intersections to be given written approval by the relevant Road and Rail (where appropriate) controlling authorities when processing or storage capacity increases. A rule is proposed restricting how the secondary access from Irvines Road is used.

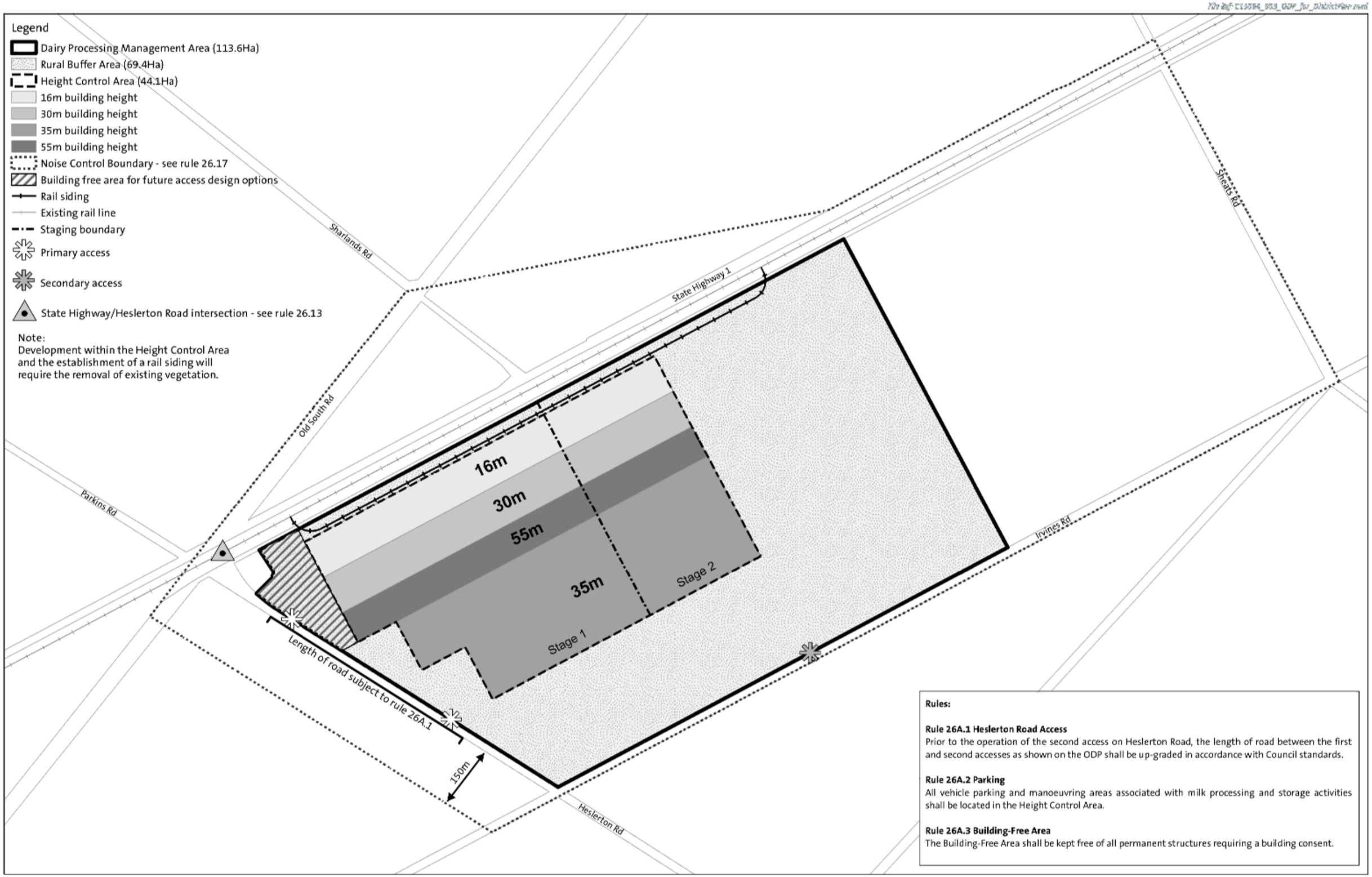
Parking related rules require new parking to be provided on-site to accommodate parking requirements associated with increased processing or storage capacity.

Provisions for construction activities require construction related traffic to be managed so as to minimise disruption, delay, or inconvenience on the adjoining road network.

Legend

- Dairy Processing Management Area (113.6Ha)
- Rural Buffer Area (69.4Ha)
- Height Control Area (44.1Ha)
- 16m building height
- 30m building height
- 35m building height
- 55m building height
- Noise Control Boundary - see rule 26.17
- Building free area for future access design options
- Rail siding
- Existing rail line
- Staging boundary
- Primary access
- Secondary access
- State Highway/Heslerton Road intersection - see rule 26.13

Note:
Development within the Height Control Area and the establishment of a rail siding will require the removal of existing vegetation.



Rules:

Rule 26A.1 Heslerton Road Access
Prior to the operation of the second access on Heslerton Road, the length of road between the first and second accesses as shown on the ODP shall be up-graded in accordance with Council standards.

Rule 26A.2 Parking
All vehicle parking and manoeuvring areas associated with milk processing and storage activities shall be located in the Height Control Area.

Rule 26A.3 Building-Free Area
The Building-Free Area shall be kept free of all permanent structures requiring a building consent.

0 300 m
1:8,000 @ A3

The appropriateness of the traffic related provisions, and the expected traffic related environmental outcomes that could result are assessed further in later sections of this report.

7. Plan Change Development Scenario

The ODP will allow expansion of the existing and consented dairy plant and associated facilities. The intention is that the building area shown on the ODP would accommodate expansion of the type of activity already on-site, or consented for development.

Development concept planning has been undertaken by Synlait to inform the ODP provisions. This planning shows that the zone could accommodate eight milk dryers, of a similar scale to the existing dryers. The zone could also provide for increases in the associated warehousing.

To enable assessment of the Plan Change from a transportation perspective, Synlait forecast the DPMA could facilitate an increase in the plant milk processing capacity daily processing capacity to 10.4ML a day, with eight milk dryers. An indicative staged development based on milk processing capacity is shown in the following table:

Stage	Milk Capacity (l/day)	Stage Increase (l/day)	Percentage increase on Existing
Existing	2,800,000		
With D3	3,700,000	900,000	32%
With D4	5,200,000	1,500,000	86%
With D5	6,500,000	1,300,000	132%
With D6	7,800,000	1,300,000	179%
With D7	9,100,000	1,300,000	225%
With D8	10,400,000	1,300,000	271%

Table 3: Estimated Milk Processing Capacity

The development of eight dryers would occur over a long time frame.

8. Plan Change Traffic Generation

8.1 Existing and Consented Traffic Generation

The Traffic Design Group Transportation Assessment reports (October 2012, July 2013) prepared as part of the consented expansion development outlined existing and proposed traffic generation for activities which are now consented.

A summary of the daily traffic generation forecast during the peak time of year is provided in the table below:

Activity	Vehicle Type	Existing (2012)	Additional Consented	Total Daily Movements
Staff & Visitors	Light	290	+225	515
Courier	Light	10	-	10
Milk Collection	Heavy	164	+54	218
Warehouse	Heavy	44	+113	157
Ancillary (Coal etc)	Heavy	12	+4	16
Total		**520**	**+396**	**916**

Table 4**: **Existing and Consented Daily Traffic Generation (vpd)

A large proportion of the additional consented vehicle movements consist of light vehicle movements. These are associated with staff arriving and departing in personal vehicles as part of their travel to and from work. The change in heavy vehicle movements was the result of increased production capacity, altered transport logistics, and represents days where containers will be transported to a ship in port.

Additional traffic generation associated with construction of a new administration building and laboratory has been consented, but is not summarised in the above table. The staged growth that will facilitate that traffic generation would largely be the result of additional processing capacity resulting that the Plan Change seeks to provide for.

8.2 Full Development Traffic Generation

8.2.1 Daily Traffic Movements

The proposed Plan Change will increase the existing and consented level of traffic generation as the development progresses. As a worst case scenario, the traffic generation assessment will focus on the estimated traffic generation at full development without product movement by rail. This scenario also takes a very long term view, as development of the site is likely to take many years.

The additional heavy vehicle traffic generation will mainly relate to the milk tankers delivering raw milk to the plant, product movements from the site, and ancillary services

truck movements. The number of heavy vehicle movements during the peak season has been forecast to increase with the increase of raw milk processing capacity. An increase in efficiency of 3% and 1% associated with efficiency in collection has been incorporated in the heavy vehicle traffic generation associated with the milk tanker movements and product movements respectively. An additional 25% has been included for product movement to allow for potential variance in product movement levels.

The primary change in the light vehicle traffic generation is related to the increase in the number of staff and their associated travel. The proposed development will increase the current day shift and night shift staff numbers. A total staff number of up to 594 people are proposed at full development, of which 455 will be on the day shift and the remaining 139 will be on the night shift. The Plan Change at full development with eight dryers (D8) is estimated to add an additional 288 staff to the consented 306 staff with three dryers (D3), as shown in Table 5.

Period	Day	Night	TOTAL
Surveyed Existing	135	31	166
With D3	251	55	306
With D4	290	70	360
With D5	332	88	420
With D6	373	105	478
With D7	414	122	536
With D8	455	139	594

Table 5**: **Estimated Staff Numbers

The light vehicle traffic generation is calculated on the basis of the existing observed vehicle occupancy of 1.25 people per vehicle. The following table summarises the total expected traffic generation for each additional dryer:

Activity	Vehicle Type	Existing	Stage 4	Additional				
			Add D3	Add D4	Add D5	Add D6	Add D7	Add D8
Milk Collection	Heavy	164	217	295	369	443	517	591
Warehouse	Heavy	44	157	164	162	160	159	157
Ancillary (Coal etc)	Heavy	12	16	22	27	32	37	42
Heavy Total		**220**	**390**	**481**	**559**	**636**	**713**	**790**
Staff Related	Light	266	490	576	672	765	858	950
Visitor	Light	35	35	35	35	35	35	35
Light Total		**301**	**525**	**611**	**707**	**800**	**893**	**985**
SITE GENERATION		**521**	**914**	**1,092**	**1,266**	**1,436**	**1,606**	**1,776**

Table 6: Estimated Daily Traffic Movements (vpd)

As can be seen, the Plan Change at full development (with D8) has been estimated to generate up to 1,776 vehicle movements a day, of which 790 vehicle movements are associated with heavy vehicles and the remaining 985 vehicle movements related to staff and visitors.

There is a possibility of using rail for freight movement in the future where the rail is estimated to reduce the daily product movement by 90%. This is expected to reduce the full development daily heavy vehicle movement to approximately 650vpd.

8.2.2 PM Peak Hour Movements

At this stage the peak hour traffic movements for each development stage are estimated based on existing patterns as it is not possible to be certain of the extent of peak spreading that will occur in the future. Based on the existing peak hour traffic patterns, about 6.7% of the daily milk tankers movement would occur during the PM peak hour, and about 5% of the daily product movement is estimated to occur during PM peak hour. The ancillary heavy vehicle movements such as coal trucks and solid disposal trucks are not expected to occur during the peak hour.

The SH1 evening peak hour (5pm to 6pm) is anticipated to coincide with the shift changeover period where workers from the day shift are leaving the site and workers on the night shifts are arriving to the dairy plant. However, staff finishing a shift do not all finish and depart at the same time.

The following patterns have been adopted in the light vehicle peak hour traffic generation analysis, taking into consideration existing patterns:

- Approximately 75% of the day shift staff who finish at 5pm will leave the site within the PM peak hour;
- Workers who conclude their shift at 6pm are expected to leave the site outside of the PM peak hour;
- The night shift (5pm to 5am) milk tanker drivers are expected to arrive to the site, before the PM peak hour;
- Night shift manufacturing workers who start at 6pm are expected to arrive before 6pm, within the PM peak hour.

The following table summarises the total estimated PM peak hour traffic generation for each additional dryer:

Activity	Vehicle Type	Consented		Additional				
		Existing	D3 (Stage 4)	With D4	With D5	With D6	With D7	With D8
Milk Collection	Heavy	11	15	20	25	30	35	40
Warehouse	Heavy	4	8	10	10	10	10	10
Ancillary (Coal etc)	Heavy	-	-	-	-	-	-	-
Heavy Total		**15**	**22**	**30**	**35**	**40**	**45**	**50**
Staff	Light	72	127	146	167	188	208	229
Light Total		**72**	**127**	**146**	**167**	**188**	**208**	**229**
SITE GENERATION		**87**	**149**	**176**	**202**	**228**	**253**	**279**

Table 7: Estimated PM Peak Hour Traffic Movements (vph)

As can be seen, the site at full development is estimated to generate 279 vehicles movements during the PM peak hour. This includes 50 heavy vehicle movements and 229 light vehicle movements.

8.3 PM Peak Hour Traffic Distribution

The existing PM peak hour travel pattern indicates all heavy vehicles and 95% of light vehicles will arrive / depart the site via SH1 / Old South Road intersection. The following assumptions have been adopted for the evening peak hour traffic distribution:

- About 90% of the light vehicle traffic to be travelling to / from the site via SH1 will be from the east;
- All heavy vehicles travelling to the site will be from the east of SH1;
- About 90% of milk tankers movements will enter the site, with the remaining 10% exiting;
- Approximately 40% of the product movement will enter the site and 60% will exit the site; and
- About 90% of milk tankers exiting the site will head towards the west, while 90% of product trucks exiting the site will head east.

9. Site Access Rules

The traffic generation and distribution assessment for the development scenario shows that approximately 1,800 vehicles per day could be generated by the site on weekdays during the peak of the milk processing season. This will consist of approximately 800 heavy vehicle movements per day, and 1,000 light vehicle movements per day.

The ODP proposes three points of access to the existing road network. Two are primary access on Heslerton Road that will accommodate almost all of the traffic, with a secondary access on Irvines Road for emergency or temporary access if required.

The existing access on Heslerton Road is shown as a primary access. This access has serviced the existing dairy plant as a sole point of permanent access since its opening. As discussed earlier, the access is designed to accommodate heavy vehicle traffic, has localised widening, and has standard intersection control provisions. As there is negligible through traffic on Heslerton Road it operates very efficiently. It is located close to SH1 which minimises travel on the local road network. Existing traffic patterns show that most traffic travels to and from the north (SH1), so that there are negligible effects on the rural amenity on local roads to the south of the site.

To accommodate options for improved internal circulation with an expanded site development, an additional primary access is proposed to be constructed on Heslerton Road, south of the existing primary access off Heslerton Road. This access will enable improved on-site circulation for future development, particularly for heavy vehicles, as well as offering opportunity to spread traffic across the accesses. The location of the proposed access is well separated from nearby intersections, and is on a straight section of road offering excellent visibility.

The primary site accesses would be designed in accordance with standard Selwyn District Council District Plan access requirements. This would include localised widening to accommodate swept paths of heavy vehicles. No change to the formation of the existing access is expected.

It is expected there will be a specific need to extend the seal on Heslerton Road to just south of the proposed southern primary access. The ODP addresses the need for upgrading of Heslerton Road on the ODP.

As the site will not generate large volumes of traffic further to the south, sealing of the road south of the access would need to be considered and programmed as part of the Selwyn District Council's standard seal extension programme.

A secondary site access is also proposed to be achieved via Irvines Road to provide opportunity for alternative emergency access to the site, or temporary access if the Heslerton Road accesses are made unavailable by the road or rail controlling authorities.

No direct site access is proposed to SH1, with the access route between the site and SH1 continuing to be via Heslerton Road and Old South Road. This is due to constraints posed by the railway, the high traffic volume on SH1, and access restrictions imposed by NZTA on SH1.

Due to the very low through traffic volumes on Heslerton Road, the proposed access provisions will operate efficiently at the traffic volumes expected to be generated by the site.

10. Car Parking Rules

10.1 Parking Provision

The existing District Plan parking rules require all parking on rural sites to be accommodated on-site. The proposed rules anticipate additional parking on-site, but do not specifically require a particular level of parking. To test the ability of the site to accommodate practical parking requirements, a calculation of the parking provision necessary for the ultimate parking scenario has been prepared.

Existing parking patterns show that parking at the dairy plant is most related to the number of staff on site during a day-shift. There is only a small amount of visitor parking required to service the plant. Due to the large areas of warehousing and plant, combined with administration activities, standard industrial floor area parking rates would be unreliable predictors of parking demand.

Adopting the existing parking provision rate of 0.88 space per staff, the Plan Change at full development is estimated to require approximately 400 spaces with daytime staff of approximately 455 people. It is possible that a lower number of spaces will be required if car sharing increases as a result of the additional opportunities created by the larger workforce.

The desirable parking provision will require about 1.0ha to 1.2ha based on $25m^2$ to $30m^2$ per parking space (including aisles). As this represents less than 3% of the proposed height control area, and 1% of the total DPMA area, it is expected that a practical parking provision can readily be achieved on-site without reliance on parking on frontage roads.

The managed provision of on-site parking to reflect practical requirements is how Synlait have addressed the issue throughout the initial high growth phase. It is considered that the DPMA area parking rules should retain a flexible approach to parking supply and location.

10.2 Parking Location and Design

Council control is normally provided on large parking layouts, with a focus on safe pedestrian circulation.

Parking locations at the Synlait site have previously been managed to use the available site efficiently, and have mostly been accommodated in large parking areas near the entrance to the site. With expanded development, Synlait expect that more staff parking will be located close to workstations within the site. This will spread the parking around, making it less necessary to specifically define large parking areas on the ODP.

The specific location of parking will be of importance to Synlait in terms of their health and safety requirements for staff. The ODP requires parking within the Height Control Area, and a rule is proposed requiring any parking to be designed in accordance with existing parking design requirements included in the District Plan.

11. Transport Network Performance

11.1 Vehicle Access and Local Road Performance

The existing site access on Heslerton Road and adjacent road connections leading to SH1 were designed to accommodate two way movements of B-Train and truck and trailer units (such as milk tankers) into the site and out again from either direction. There is widening at the site access and this readily provides for efficient movement of both light and heavy vehicles in and out of the site. The SH1 / Old South Road intersection has good sight distance provision.

There is negligible through traffic at the access, such that Synlait related traffic is the primary user of the section of Heslerton Road and Old South Road between SH1 and the site access. It is considered that the increased traffic generation of the site as a result of the Plan Change will not require any further upgrades to the local road network, beyond provisions in the immediate vicinity of the access.

There are no residential dwellings located between the site access and SH1, such that traffic related amenity effects would be negligible. The development is expected to add negligible traffic to Heslerton Road south of the Synlait access, as only 5% of the existing volume accessing Synlait was to or from the south. All of those vehicles were light vehicles, and most would be to or from Synlait farms on Heslerton Road.

All loading and parking spaces and manoeuvres are contained on-site, and therefore will not affect the road network.

11.2 Cyclists and Pedestrians

The traffic surveys did not identify any cyclists using the adjacent road network. No pedestrians were observed on the surrounding road network during informal observations as part of site visits. This is not unusual considering the surrounding land use is rural land for farming. Due to the negligible number of pedestrian and cyclists from the site, it is not considered any further cycle or pedestrian infrastructure will be necessary in the wider area.

11.3 SH1 Intersection Performance

Previous assessment has shown that the right turn out of Old South Road is the critical movement with respect to performance (and consequently safety) at the SH1 intersection. It currently operates with Level of Service C (where Level of Service has a range from free flow LOS A to congested LOS F) during the busiest PM peak hour (for both the site and the highway), based on assessment using SIDRA Intersection. Level of service[3] is reported, based on the following average delay based parameters:

[3] Level of service is a qualitative measure of intersection performance. A range from LOS A to LOS F is applied, representing free flow through to congested forced flow conditions. LOS D would be a typical acceptable operational performance for a side road to a highway. Improvements or mitigation would often be considered at LOS E, depending on matters such as the volume of delayed traffic and geometric design of the intersection.

Level of Service (LOS)	Average Delay Per Vehicle In Seconds (d)
A	d ≤ 10
B	10 < d ≤ 15
C	15 < d ≤ 25
D	25 < d ≤ 35
E	35 < d ≤ 50
F	d > 50

Table 8: HCM Level of Service Criteria

With the Plan Change, both the site generation and through traffic volumes will influence the level of service in the future. As discussed earlier, the 10 years (2003 to 2012) of traffic data for SH1 east of Sheats Road has demonstrated average traffic volume growth of 1.8% per year. This has been applied to the through volumes at the intersection to assess intersection performance in the future. A sensitivity test has also been undertaken for the state highway to experience the more recent lower traffic growth at a rate of 1% per annum.

The various site traffic generation scenarios for each stage of development have been assessed against the forecast traffic growth scenarios. The scenario assessment allows identification of the combination of development and SH1 traffic growth at which lower LOS thresholds are reached. These are presented in Appendix A.

The LOS C/D threshold (average delay of about 25 seconds per vehicle) will be reached when the daily traffic volume on SH1 at Sheats Road reaches approximately 13,500vpd. With the full traffic generation associated with the ultimate development, this volume would be reached in 2023 at existing growth rates (1.8% p.a.), or 2033 at the lower growth rate (1.0%p.a). If there is no further development past the consented three dryers, the traffic volume threshold will be reached later, being 2030 and 2044 for existing and low traffic growth rates respectively.

The change from LOS C to LOS D is expected to be at least 10 years away. Transportation Assessment guidelines (NZTA Research Report 422) suggest 10 years as a typical period for assessment for a Plan Change. This indicates that no significant change in peak period performance will be experienced during the assessment period.

In order to test the possibility of longer term changes at the intersection further assessment of the LOS E threshold has been undertaken. The peak period LOS E threshold is often used as a threshold at which significant improvements for capacity may be considered necessary, subject to site specific characteristics and side road traffic volumes.

The LOS D/E threshold (average delay of about 35 seconds) will be reached when the daily traffic volume on SH1 at Sheats Road reaches approximately 15,500vpd. With the full traffic generation associated with the ultimate development, this volume would be reached in 2034 at existing growth rates (1.8% p.a), and is not reached in the analysis period at the lower growth rate (1.0%p.a). If there is no further development past the consented three

dryers, the traffic volume threshold will be reached later, being 2043 for the existing traffic growth rate.

The analysis shows that there is a low likelihood of the PM peak period traffic performance reducing to LOS E within the next 20 years regardless of the amount of development on the Synlait site. However, there is a possibility that in the very long term (more than 20 years), performance during the critical PM peak period could reduce to low levels of service. This is well beyond the standard assessment period for a Plan Change.

11.3.1 Heavy Vehicle Performance

Heavy vehicles will typically have higher side road delays than light vehicles due to the additional safety margins drivers take to ensure acceptable gaps can be chosen for their manoeuvre. As the site generates a high proportion of heavy vehicles that will access SH1 throughout the day and night, an assessment has also been undertaken to calculate the indicative delay associated with heavy vehicles turning right from Old South Road throughout the day.

As there are low volumes of heavy vehicles making this movement, and are mainly associated with the movement of product, there are opportunities to manage heavy vehicle movements across the day to minimise their coincidence with times of peak traffic on the highway. To test the practicality of this, an analysis has been undertaken to determine the delays that would be experienced by right turning heavy vehicles using the intersection independently of other right turning traffic. A key output of the analysis is the number of hours in the day where the heavy vehicle LOS threshold is exceeded on a weekday.

As discussed earlier, the existing volume of right turning heavy vehicles at the intersection is generally only a few vehicles per hour. The morning peak hour was higher with milk tankers observed turning right during the shift departure period. However, Synlait advise that the milk tanker routes can be modified to minimise both the volume of right turning milk tankers, and the peak volume. On this basis, the analysis allows for most milk tankers to turn left and product truck movements to be spread throughout the day. The reported test has been undertaken with 5 heavy vehicles per hour turning right which reflect these expectations.

The calculated opposing traffic threshold for each level of service for heavy traffic based on this small number of heavy vehicle right turns per hour is as follows:

- LOSC/D 510 veh/hr
- LOS D/E 700 veh/hr
- LOS E/F 875 veh/hr

These thresholds are considerably lower than the thresholds expected with the higher volumes of mixed light and heavy traffic.

The number of hours expected within each LOS band is shown in Tables 9 and 10 for SH1 growth at 1.8% p.a. and 1.0% respectively. Graphs showing the delay performance for different growth scenarios are included in Appendix B.

Year	Years from 2014	LOS D	LOS E	LOS F
2014	0	7	5	0
2019	5	1	9	1
2024	10	0	7	4
2029	15	0	7	5
2034	20	0	4	8
2039	25	0	1	11

Table 9: Indicative Hours of the Day that Right Turn Heavy Vehicles Experience Low LOS (1.8% growth p.a.)

Year	Years from 2014	LOS D	LOS E	LOS F
2014	0	7	5	0
2019	5	5	7	0
2024	10	2	8	1
2029	15	0	8	3
2034	20	0	8	4
2039	25	0	7	5

Table 10: Indicative Hours of the Day that Right Turn Heavy Vehicles Experience Low LOS (1.0% growth p.a.)

The analysis shows most hours of the day currently operate with LOS D or LOS E. It can be seen that over time the performance of the right turn out for heavy vehicles will deteriorate, and it will be operationally more difficult to avoid high right turn delays through the management of timing of traffic movements. Within the key 10 year analysis period, it is likely that heavy traffic movements will need to be managed to minimise their movement exiting the site in the PM peak period, although major upgrades are not considered necessary. A maximum heavy vehicle average delay of around a minute is expected by 2024 with SH1 growth at 1.8% p.a., and about 50 seconds with 1.0%p.a SH1 growth. This would normally be managed (either formally or informally) by the dairy plant operator through a site "freight transport management plan".

Possible physical improvements to address the increasing safety risk include upgrading the right turn bay provision to the higher level NZTA standard shown in Motsam Figure 3.25a. This treatment is similar to the SH1 intersections servicing the Northeast Ashburton Industrial Area (Northpark Road and Works Road), and allows right turning traffic additional manoeuvre space clear of the through traffic lanes. The timing of such improvements would be dependent on traffic growth and how effective the freight management plan is at minimising movements at peak times when the lowest levels of service are predicted for heavy vehicles.

With the higher growth scenario, there is the potential beyond the 10 year Plan Change assessment timeframe that heavy vehicles will experience high delays throughout the daytime period. This will require consideration of the potential benefits (and costs) offered by a major capacity improvement versus potentially undertaking a high proportion of

product related transport at night. As major improvements would not be justified in the period covered by the Plan Change, a key matter is ensuring that the Plan Change provisions do not preclude possible future options for improvement at the intersection. Sketch options were developed to confirm that the proposed building areas in the ODP do not sit within the area that could be required in the long term for a major capacity upgrade. The ODP also includes a large hatched area to ensure that buildings do not encroach into areas that may be required for such upgrades.

To address the potential for heavy traffic to incur large delays at the SH1 / Old South Road intersection, the Plan Change rules require the written approval of NZTA that the design of the intersection is acceptable each time the milk processing or storage capacity of the plant is to be increased. This provides an on-going and flexible approach to managing the issue, given the uncertainties relating to SH1 traffic growth, and ability to minimise effects from the dairy plant through freight management. In case written approval is not received, then the consent authority would have discretion to assess the ability of the intersection to operate safely through a resource consent process.

12. Railway Level Crossing

The current railway crossing is 'give-way' controlled with flashing lights and bells. Once traffic volumes increase to a certain level, barrier arms would be warranted as a more appropriate level of warning provision.

One advantage of the site is that freight could be moved by train. It is understood that this is unlikely to change the number of train and/or shunting movements, but may increase the length of trains. It may also potentially reduce the site traffic generation, and both of these are important factors in determining whether the warrant is met.

KiwiRail preliminary assessment suggests that barrier arms would be warranted when daily traffic volume is approximately 2,800vpd. However, given the estimated daily traffic generation of approximately 1,776vpd with full development, it is considered that the Plan Change is unlikely to justify a different level of warning provision compared to full development of the existing plant. Ultimately, the decision as to the type of warning provision and timing of any upgrade lies with KiwiRail and is outside of the Resource Management Act.

Another matter of relevance is the potential for regular queuing across the railway as a result of the volume of traffic and delays at peak times. The distance between the railway and the SH1 right turn limit line is sufficient to accommodate one truck and trailer or three to four cars. During the PM peak, the queue is expected to be up to approximately three vehicles if the full development occurred by 2022. This indicates that the current provisions would be acceptable within the planning period.

The proposed rules also give KiwiRail the opportunity to monitor the ability of the railway crossing to accommodate changes in traffic, with written approval required for increases in storage or processing capacity.

13. Planning Requirements

13.1 Selwyn District Plan

A review has been undertaken of the relevant objectives and policies contained within the Selwyn District Plan Rural Volume. The following outlines the Transport Network Objectives relevant to the proposed Plan Change:

- Objective B2.1.1 – An integrated approach to land use and transport planning to ensure the safe and efficient operation of the District's roads, pathways, railway lines and airfields is not compromised by adverse effects from activities on surrounding land or by residential growth;
- Objective B2.1.2 - An integrated approach to land use and transport planning to manage and minimise adverse effects of transport networks on adjoining land uses, and to avoid "reverse sensitivity" effects on the operation of transport networks;
- Objective B2.1.3 - Future road networks and transport corridors are designed, located and protected, to promote transport choice and provide for: a range of sustainable transport modes; and alternatives to road movement of freight such as rail;
- Objective B2.1.4 - Adverse effects of land transport networks on natural or physical resources or amenity values, are avoided, remedied or mitigated, including adverse effects on the environment from construction, operation and maintenance.

The objectives have a series of accompanying Policies B2.1.1-18. The following Policies associated with the Objectives are considered relevant in relation to the proposed Plan Change:

- Policy 4(b) – Avoid or mitigate adverse effects on the safe flow of traffic along State Highways and Arterial Roads from new property access or new/expanded activities which generate a high level of traffic movements.

  Comment – All new accesses will be provided by local roads. This would connect to SH1 through an existing connection (Old South Road / SH1 intersection), with NZTA able to review the design of the intersection as part of expansion applications.

- Policy 6 - Avoid adverse effects of on-road parking and loading generated by surrounding land uses on rural roads.

  Comment - All parking and loading areas will be contained on-site, as required by the proposed rules.

- Policy 7 - Provide for pedestrian safety, security, circulation and access within parking areas by considering the interaction of vehicle access and manoeuvring, circulation, loading and parking, with likely pedestrian routes onto the site, including for users of public transport, and between car and cycle parks, and building entrances.

  Comment – A rule is proposed to address large changes to the parking areas available on-site, with a focus on safe pedestrian circulation and interaction with heavy vehicle circulation routes.

- Policy 11 - Ensure roads are designed, constructed, maintained and upgraded to an appropriate standard to carry the volume and types of traffic safely and efficiently.

Comment – A rule is proposed that requires road controlling authority approval of road, access and intersection design. Otherwise a safety based assessment will be required. The Plan Change provides greater certainty of the potential scale of development at Synlait. This will allow road and rail controlling authorities to better plan the long term transport network.

- Policy 12 - Avoid new property access directly on to the State Highway or Arterial Roads unless there is no alternative legal access available, or effects on the safe and efficient flow of traffic along the road will be minor.

  Comment – The ODP shows the locations of access, which is to local roads. No access to SH1 is proposed due to the constraints associated with the railway and nearby intersections.

Overall, this analysis has not highlighted any area where the proposed Plan Change creates conflict with existing transportation related provisions of the District Plan.

14. Conclusion

The Synlait Milk Ltd privately initiated Plan Change will provide a DPMA allowing for dairy related buildings. This will facilitate additional capacity for dairy processing and storage at the existing Synlait dairy plant near Dunsandel.

The proposed Plan Change has been assessed from a transportation perspective. Matters that have been investigated relate to site access, parking, the ability of the transport network to accommodate the traffic generated, and the consistency with the transport provisions of the District Plan.

With respect to the rule provisions, it has been concluded that:

- The ODP provides for appropriate site access locations to service the future site, primarily from Heslerton Road, together with requirements for upgrading of Heslerton Road between the primary accesses. This will allow the site to operate efficiently, and provide safe access to the local road network;
- Practical parking can readily be provided on site, so specific minimum quantities of parking are not required. The location of parking is contained within the Height Control Area, and will be designed in accordance with existing District Plan standards;
- Rule provisions relating to access are appropriate for the type of development that is expected. The consent / road controlling authorities retain the opportunity to confirm access and intersection design is acceptable as part of each application where capacity of the site is increased;
- The ODP building areas do not conflict with areas that could potentially be required in the long term if changes to the SH1 intersection are required. Provisions in the ODP will also safeguard options for future capacity improvements (if necessary).

The DPMA also fits within the existing suite of District Plan objectives and policies relating to transport. The Plan Change provides greater certainty to roading and rail authorities about the potential scale of development that could occur, which will assist with on-going transport network planning.

For the above reasons, the proposed Plan Change is supported from a transportation perspective.

Traffic Design Group Ltd

Appendix A

State Highway 1 / Old South Road Intersection Performance (PM Peak) – Estimated LOS Thresholds Timeframes

Development Stage	LOSC/D Opposing Volume Threshold (vph)	Year Threshold Reached		Volume at Sh1 Sheats (vpd approx)
		1.8% pa growth	1% pa growth	
Existing	990	2036	2050 +	13,900
With D3	910	2030	2044	13,500
With D4	890	2028	2041	13,500
With D5	870	2027	2039	13,500
With D6	860	2026	2037	13,600
With D7	840	2024	2034	13,600
With D8	830	2023	2033	13,700

Table A1: Old South Road Right Turn – LOS C/D Threshold

Development Stage	LOS D/E Opposing Volume Threshold (vph)	Year Threshold Reached		Volume at Sh1 Sheats (vpd approx)
		1.8% pa growth	1% pa growth	
Existing	1,170	2050 +	2050 +	16,500
With D3	1,070	2043	2050 +	15,700
With D4	1,045	2041	2050 +	15,700
With D5	1,020	2039	2050 +	15,600
With D6	1,005	2037	2050 +	15,700
With D7	980	2035	2050 +	15,600
With D8	965	2034	2050 +	15,600

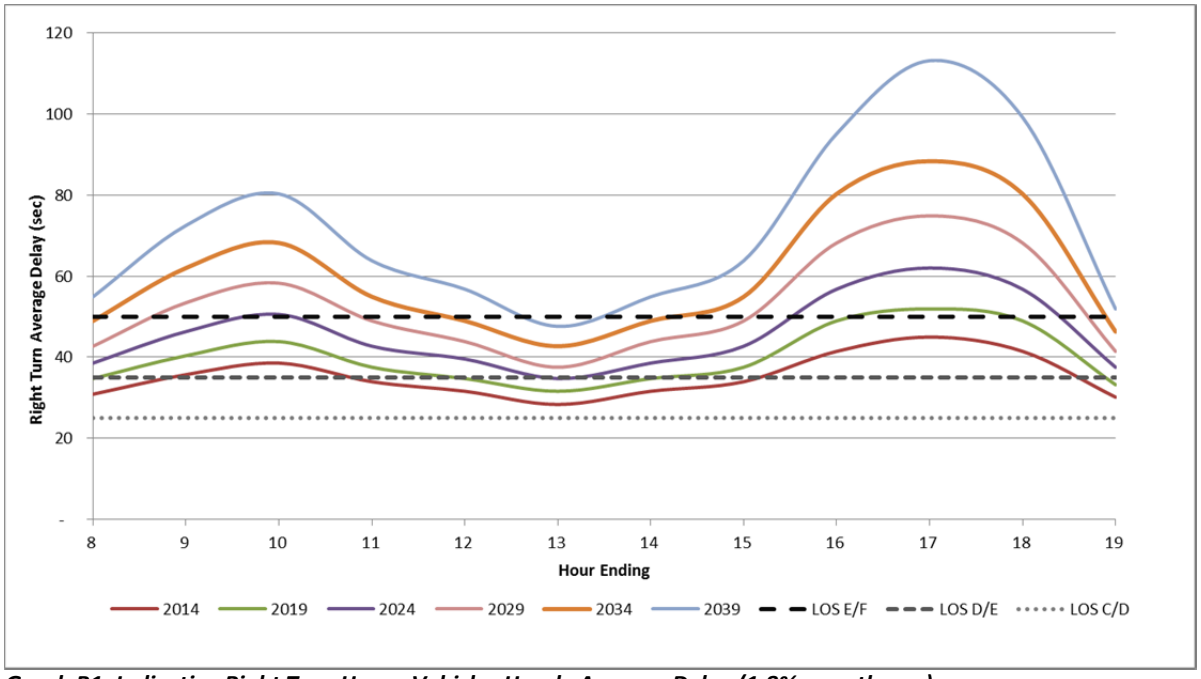
Table A2: Old South Road Right Turn – LOS D/E Threshold

Development Stage	LOS E/F Opposing Volume Threshold (vph)	Year Threshold Reached		Volume at Sh1 Sheats (vpd approx)
		1.8% pa growth	1% pa growth	
Existing	1,325	2050 +	2050 +	18,700
With D3	1,200	2050 +	2050 +	17,600
With D4	1,170	2050 +	2050 +	17,400
With D5	1,138	2048	2050 +	17,300
With D6	1,120	2047	2050 +	17,300
With D7	1,090	2044	2050 +	17,100
With D8	1,065	2042	2050 +	17,100

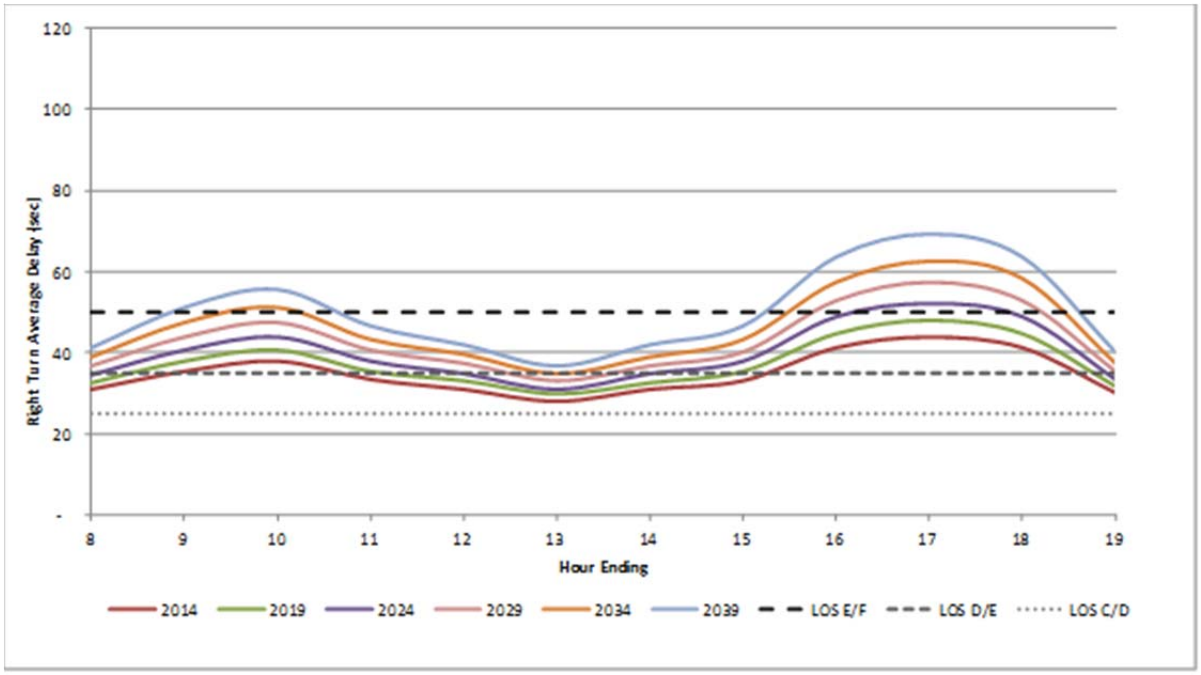
Table A3: Old South Road Right Turn – LOS E/F Threshold

Appendix B

State Highway 1 / Old South Road Intersection Performance – Estimated Delay for Heavy Vehicles (Independent of Other Right Turning Traffic)



Graph B1: Indicative Right Turn Heavy Vehicles Hourly Average Delay (1.8% growth p.a.)



Graph B2: Indicative Right Turn Heavy Vehicles Hourly Average Delay (1.0% growth p.a.)