Traffic Impact Assessment

Proposed MGC Fresh Milk Processing Facility
Erskine Park

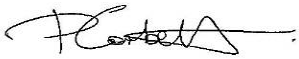
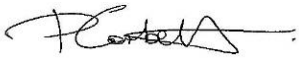
Reference: 13.221r01v02 TRAFFIX Report

traffix
traffic & transport planners

po box 1061
potts point nsw 1335
t: +61 2 8324 8700
f: +61 2 9380 4481
w: www.traffix.com.au
abn: 66065132961

Document Verification

Job Number:	13.221
Project:	MGC Facility
Client:	Murray Goulburn Cooperative

Revision		Initials	Date	Signature
Report v01	Prepared by:	JM	23/07/2013	
	Checked by:	PT	23/07/2013	
	Approved by:	GP	09/08/2013	
Report v02	Prepared by:	PC	28/08/2013	
	Checked by:	PC	28/08/2013	
	Approved by:	GP	29/08/2013	

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po box 1061
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f: +61 2 9380 4481
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abn: 66065132961

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1. Introduction

1.1 Background

TRAFFIX has been commissioned by Murray Goulburn Cooperative (MGC) to undertake a traffic impact assessment in support of a development application relating to the MGC Fresh Milk Processing Facility located at 111-113 Quarry Road, Erskine Park. The development is located within the Penrith City Council LGA and has been assessed under that council's controls. The TIA supports a State Significant Development Application under the Part 4 of the *Environmental Planning and Assessment Act 1979*.

This report documents the findings of our investigations and should be read in the context of the Environmental Impact Statement (EIS) prepared separately. The development is considered a State significant DA and as such requires referral to the RMS under the provisions of SEPP (Infrastructure) 2007.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Describes the strategic context
- Section 4: Documents existing traffic conditions
- Section 5: Describes the proposed development
- Section 6: Assesses the parking requirements
- Section 7: Assesses traffic impacts
- Section 8: Discusses access and internal design aspects
- Section 9: Discusses the development construction traffic management plan
- Section 10: Presents the overall study conclusions.

1.2 Director General's Requirements

Specifically this report addresses Section (8A) of the DGRs which requires the following transport and accessibility issues to be assessed as part of the application:

- *Details of key transport routes and traffic types and volumes likely to be generated during construction and operation.*
- *Assessment of predicted impacts on road safety and the capacity of the surrounding road network including current traffic counts, details of truck routes and modelling of key intersections such as James Erskine Drive and Quarry Road/Sarah Andrews Close, James Erskine Drive and Mamre Road, Erskine Park Road and Mamre Road.*
- *Assessment of where off site infrastructure works are required as a result of traffic impacts including detailed plans of any proposed road upgrades.*
- *Access arrangements.*
- *Provision of parking in accordance with the relevant guidelines.*
- *Cumulative Impacts – particularly in relation to air, noise and traffic associated with the nearby industrial or commercial operations.*

2. Location and Site

The subject site is situated within the industrial estate referred to as the Erskine Business Park. It is bound by the neighbouring industrial development to the north, Quarry Road to the west, adjoining wooded area to the south and a vacant lot to the east. The site fronts to the cul-de-sac of Quarry Road which provides vehicular access to the site.

The site has an irregular configuration with a total site area of approximately 5.07ha. It has a northern boundary of approximately 236 metres to a neighbouring industrial development, an irregular southern site boundary of approximately 430 metres to the adjoining wooded area, an irregular eastern boundary of approximately 330 metres to a neighbouring vacant lot and an irregular western site frontage of approximately 40 metres to Quarry Road.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

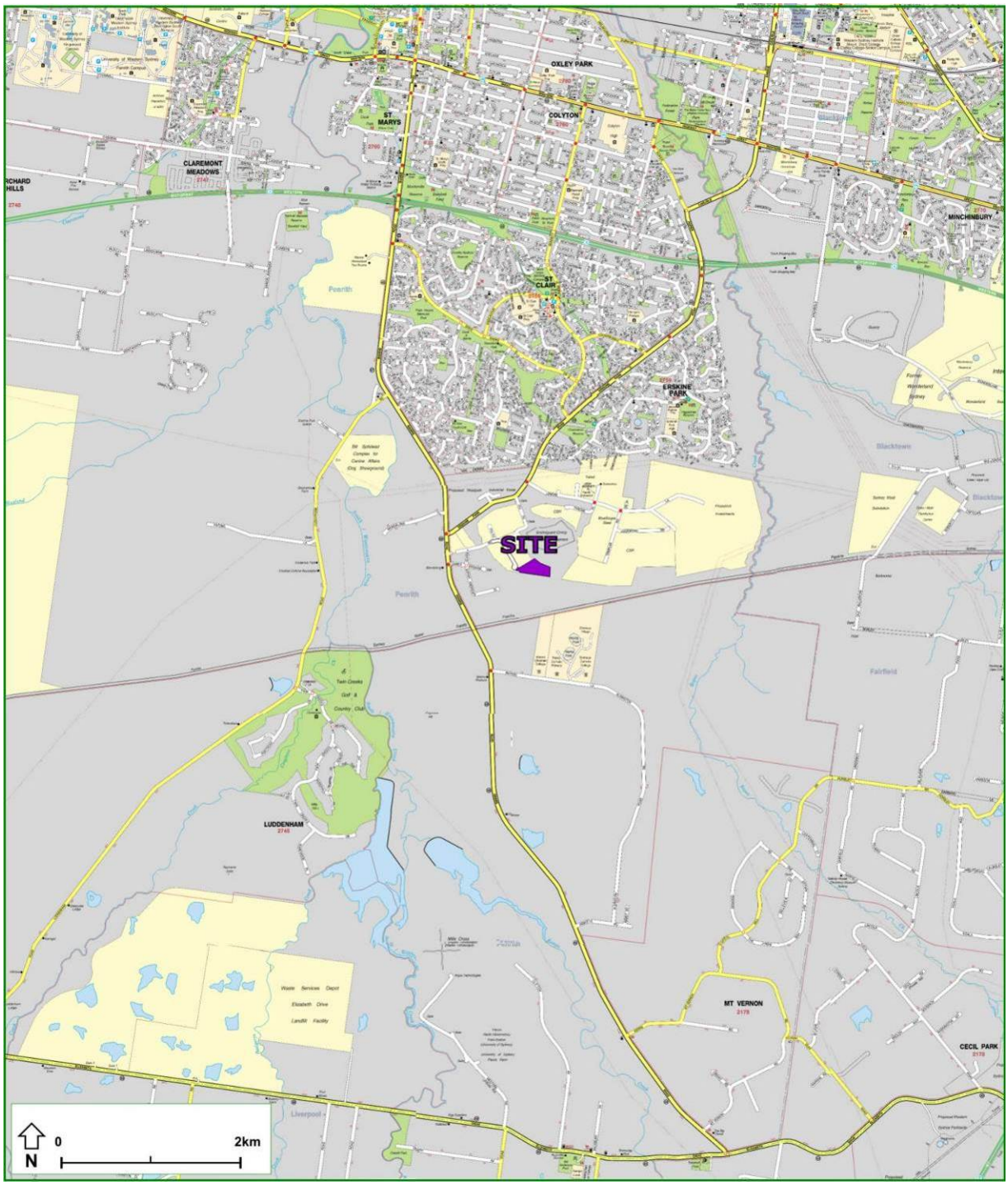


Figure 1: Location Plan

Figure 2: Site Plan

3. Strategic Context

3.1 Relevant State and Local Planning Policies

The strategic policy context of the study area is governed by State and Regional Planning Policies. The NSW planning policies and strategies applicable to the subject site and those considered as part of the development of the TIA include:

- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Western Sydney Employment Area)
- The Metropolitan Plan (2036)
- NSW Long Term Transport Master Plan, and
- Planning Guidelines for Walking and Cycling.

A summary of these policies is provided below, together with an overview of local planning policies.

3.2 State Environmental Planning Policy (Infrastructure) 2007

This Policy contains provisions for referral of certain development applications, considered to be traffic generating developments, to the RMS. The Erskine Business Park will consist mainly of industrial developments and all significant developments such as the MGC Milk Processing Facility will need to be referred to the RMS. Notwithstanding this, it is noted that the aims of the SEPP (Infrastructure) 2007 are as follows:

(a) improving regulatory certainty and efficiency though a consistent planning regime for infrastructure and the provision of services,

(b) providing greater flexibility in the location of infrastructure and service facilities,

(c) allowing for the efficient development, redevelopment or disposal of surplus government owned land,

(d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development),

(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and

(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

3.3 State Environmental Planning Policy (Western Sydney Employment Area)

State Environmental Planning Policy (Western Sydney Employment Area) 2009 was gazetted in August 2009. The SEPP seeks to protect and enhance the Western Sydney Employment Area ("WSEA") for future employment purposes. The aims of the SEPP are as follows:

"(a) to promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities,

(b) to provide for the co-ordinated planning and development of land in the Western Sydney Employment Area,

(c) to rezone land for employment or environmental conservation purposes,

(d) to improve certainty and regulatory efficiency by providing a consistent planning regime for future development and infrastructure provision in the Western Sydney Employment Area,

(e) to ensure that development occurs in a logical, environmentally sensitive and cost-effective manner and only after a development control plan (including specific development controls) has been prepared for the land concerned,

(f) to conserve and rehabilitate areas that have a high biodiversity or heritage or cultural value, in particular areas of remnant vegetation."

The proposed developments within the Eastern Creek Business Hub are generally consistent with these aims. The land has been zoned appropriately, will be developed in a staged manner and is on land that is suitable for the intended purpose.

3.4 Metropolitan Strategy and Transport Plan 2031

In 2005, the Metropolitan Strategy provided a framework for growth within the Sydney Metropolitan Area to 2031. The plan identified housing and employment capacity targets within strategic centres but has been superseded by the Metropolitan Transport Plan (2036) as discussed below.

3.5 Metropolitan Plan 2036

The Metropolitan Plan 2036 is to be reviewed every 5 years and forms an integrated plan for Sydney to 2036. It focuses on transforming Sydney from a single-centred city to a more connected, multi centred city where the regional cities of Parramatta, Liverpool and Penrith in particular deliver increased jobs and improved services. The long term vision is to develop Sydney as a "city of cities" and includes the following objectives:

- Radial public transport links feeding into each city;
- Cross regional transport connections linking more subregions to the Global Economic Corridor; and
- A developing network of transport connections serving a range of different trips and strategic centres that support economic activity across more locations.

3.6 NSW Long Term Transport Master Plan

This plan produced in 2012 provides a 20 year vision for Sydney and regional NSW transport services and infrastructure, with a total of $53 billion allocated for the first 4 years. The Master Plan is principally focussed on the six key transport challenges, which are as follows:

- Integrating modes to meet customer needs.
- Getting Sydney moving again.
- Sustaining growth in Greater Sydney.
- Providing essential access to regional NSW.

- Supporting efficient and productive freight.
- Statewide actions.

3.7 Planning Guidelines for Walking and Cycling (2004)

The aim of this guideline is to assist land-use planners and other related professionals to improve consideration of walking and cycling in their work. The intention of the guideline is to ultimately create further opportunities for people to live in places with easy walking and cycling access to urban services and public transport and reducing private vehicle usage.

3.8 NSW Bike Plan (2010)

The Metropolitan Transport Plan committed $158 million towards improving urban cycle networks and lead to the development of the NSW Bikeplan which outlined a 10 year bicycle infrastructure plan including:

- $80 million over ten years to connect Sydney's district centres by building missing links in the Metro Sydney Bike Network;
- $78 million over ten years to fast-track subregional bike networks for Parramatta, Liverpool and Penrith to grow cycling in these three River Cities; and
- At least $5 million every year for regional cities and local councils across NSW to complete neighbourhood cycleway networks.

3.9 Summary

The plans and strategies discussed above are relevant to the MGC Facility proposal and are referred to throughout this TIA as appropriate.

4. Existing Conditions

4.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Mamre Road: an RMS Main Road (MR 536) that generally traverses in a north-south direction between the Great Western Highway in the north and Elizabeth Drive in the south. Mamre Road carries approximately 14,000vpd (vehicles per day) in the vicinity of the site. Mamre Road is generally subject to a 80km/h speed zoning and generally carries a single lane of traffic though widens to carry two lanes of traffic in either direction in the vicinity of the site within an undivided carriageway of 18.0 metres width.

- Erskine Park Road: an RMS Main Road (MR 629) that generally traverses in a north-south direction between the M4 Western Motorway in the north and Mamre Road in the south. Erskine Park Road carries approximately 28,000vpd (vehicles per day) and is subject to a 70km/h speed zoning in the vicinity of the site. It carries two lanes of traffic in either direction within an undivided carriageway of 13.0 metres width.

- James Erskine Drive: a local road that traverses in a east-west direction between Mamre Road in the west and its termination to the east of its roundabout intersection with Quarry Road. James Erskine Drive is subject to a 50km/h speed zoning and generally carries two lanes of traffic in either direction within a carriageway of width 13.0 metres. It is noted that James Erskine Drive acts as the entry route for all traffic accessing the site.

- Quarry Road: a local road that generally traverses in an east-west direction (north-south in the vicinity of the site) between James Erskine Drive in the west and its termination near the site in the east. Quarry Road is subject to a 50km/h speed zoning and carries a single lane of traffic in either direction along an undivided carriageway of 13.0 metres width. Access to the site is proposed via Quarry Site.

- Erskine Park Link Road a newly constructed RMS road that traverses in an east-west direction connecting Old Wallgrove Road in the east with Lenore Lane in the west. The status of this road is currently unresolved however, it is noted that the road provides a vital link to the western Sydney employment area and a direct connection to the M7 Motorway. It is subject to 80km/hr speed zoning and carries two lanes of traffic in either direction within a divided carriageway of width 21 metres. These eastbound and westbound lanes are separated by a 6.0 metre wide landscaped median.

It can be seen from Figure 3 that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

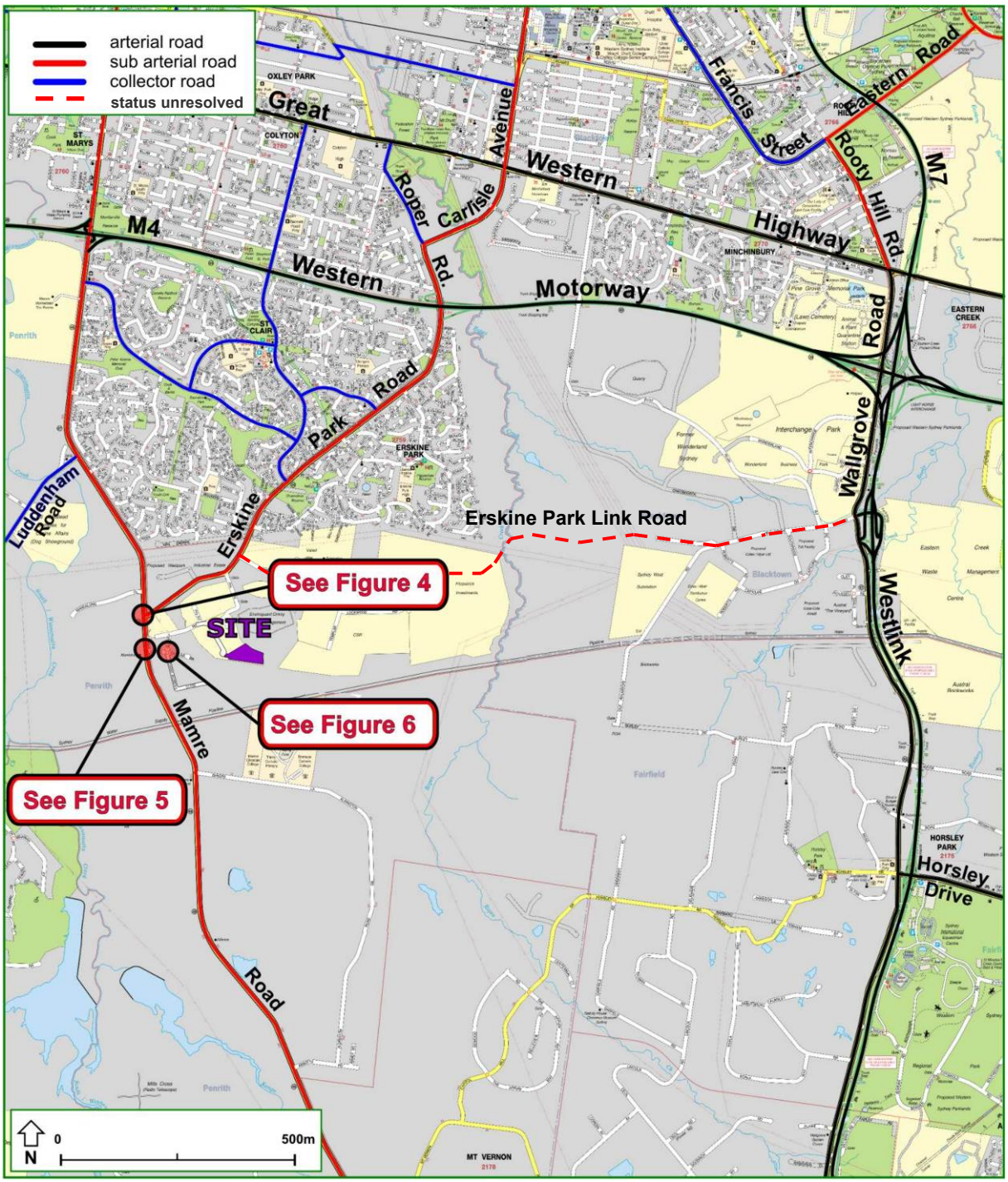


Figure 3: Road Hierarchy

4.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment:

Source: Near Map

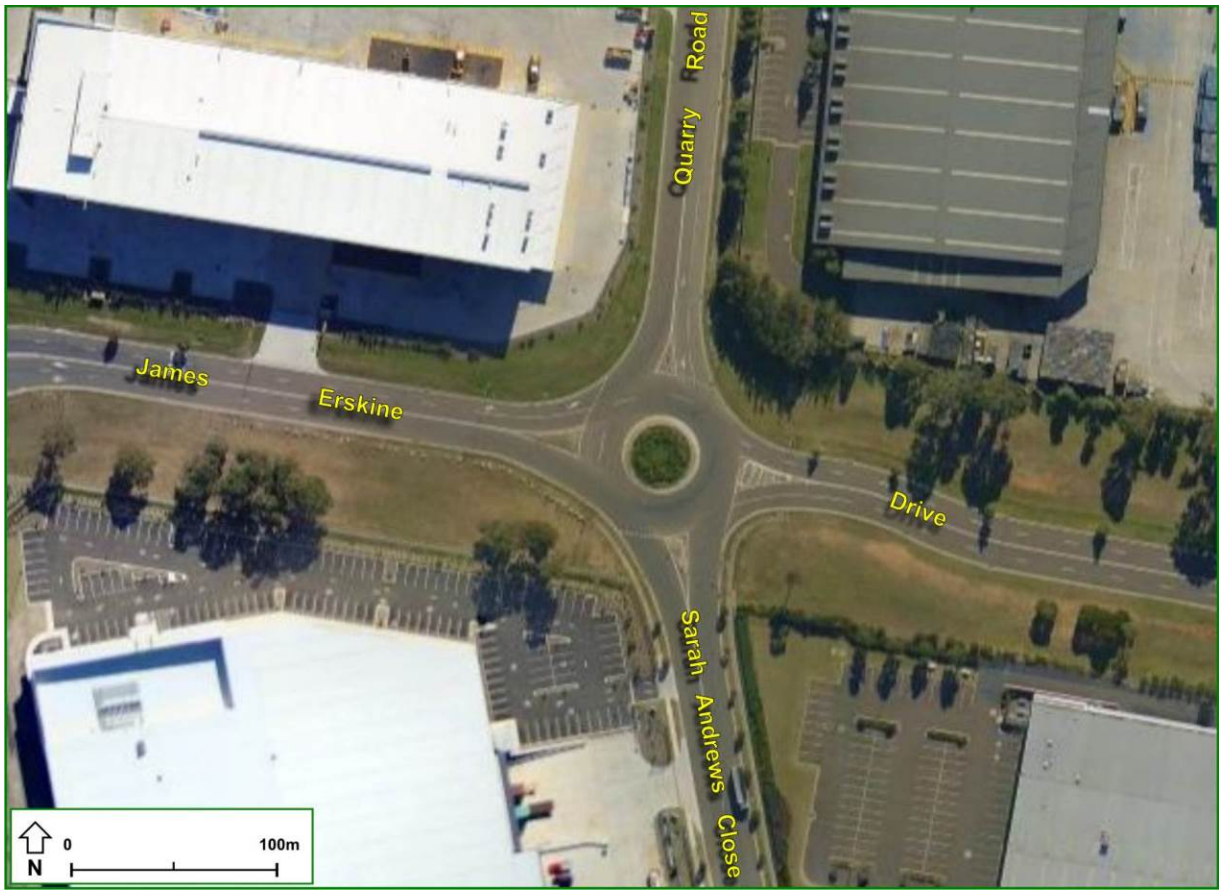
Figure 4: Intersection of Mamre Road and Erskine Park Road

It can be seen from Figure 4 that Erskine Park Road forms a signalised intersection with Mamre Road. Erskine Park Road carries two lanes of traffic in either direction while Mamre Road generally carries a single lane of traffic, although it widens at this intersection to provide two northbound dedicated right turn lanes into Erskine Park Road and two southbound through lanes for a short distance.

Source: Near Map

Figure 5: Intersection of Mamre Road and James Erskine Drive

It is noted that all traffic travelling to and from the site will have to pass through this signalised intersection. James Erskine Drive forms a 'T' intersection with Mamre Road and carries two lanes of traffic in either direction. Mamre Road widens at this intersection to provide a dedicated right turn bay for northbound traffic and a Give Way controlled slip lane for southbound traffic accessing James Erskine Drive.



Source: Near Map

Figure 6: Intersection of James Erskine Drive and Quarry Road

It can be seen from Figure 6 that James Erskine Drive forms a roundabout intersection with Quarry Road, while Sarah Andrews Close forms the southern leg of this intersection. James Erskine Drive provides a dedicated left turn lane for traffic accessing Quarry Road and Quarry Road provides a dedicated right turn lane for traffic travelling towards Mamre Road via James Erskine Drive. Therefore this roundabout already prioritises traffic movements between James Erskine Drive and Quarry Road.

4.3 Existing Intersection Performances

For the purposes of assessing the traffic impacts of the proposed development, traffic surveys were undertaken at the following intersections during a typical morning and evening peak period:

- The signalised intersection of Mamre Road with Erskinre Park Road;
- The signalised intersection of Mamre Road with James Erskine Drive; and
- The roundabout intersection of James Erskine Drive and Quarry Road.

The surveyed traffic flows were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

DOS – the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

AVD – the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LOS – this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results are provided in **Table 1 and 2**. Reference should also be made to the SIDRA outputs provided in **Appendix B** which provide detailed results of all approaches.

Table 1: Existing (AM) Intersection Performance

Intersection Description	Control Type	Degree of Saturation (DOS)	Average Delay (sec)	Level of Service
Mamre Rd x Erskine Park Rd	Signalised	0.571	23.7	B
Mamre Rd x James Erskine Dr	Signalised	0.534	11.6	A
James Erskine Dr x Quarry Rd	Roundabout	0.102	9.7	A

Table 2: Existing (PM) Intersection Performance

Intersection Description	Control Type	Degree of Saturation (DOS)	Average Delay (sec)	Level of Service
Mamre Rd x Erskine Park Rd	Signalised	0.541	22.0	B
Mamre Rd x James Erskine Dr	Signalised	0.540	13.6	A
James Erskine Dr x Quarry Rd	Roundabout	0.114	9.7	A

The results in Table 1 and 2 show that all three intersections currently operate well during both the morning and evening peak periods with a Level of Service A or B. Nevertheless, the performance of these intersections will change as a consequence of on-going development, including development of the subject site, and this is discussed in the following sections.

4.4 Public Transport

The existing bus and train services that operate in the locality are shown in **Figure 7**. The site is located approximately 6.6 kilometres to the south-east of St Marys railway station and 6.5 kilometres to the south-west of Mount Druitt railways station. Both stations provide services along the North Shore & Western Line. It can be seen that the site is not well services by public transport, however it is likely that once the surrounding Industrial Estate is fully developed, the opportunity to improve bus and bicycle accessibility would be investigated. This is likely to be in response to a demonstrated demand.

4.5 Existing Site Generation

The existing site currently comprises vacant land and as such does not generate any significant traffic volumes. Therefore the site is considered to have no existing traffic generation.

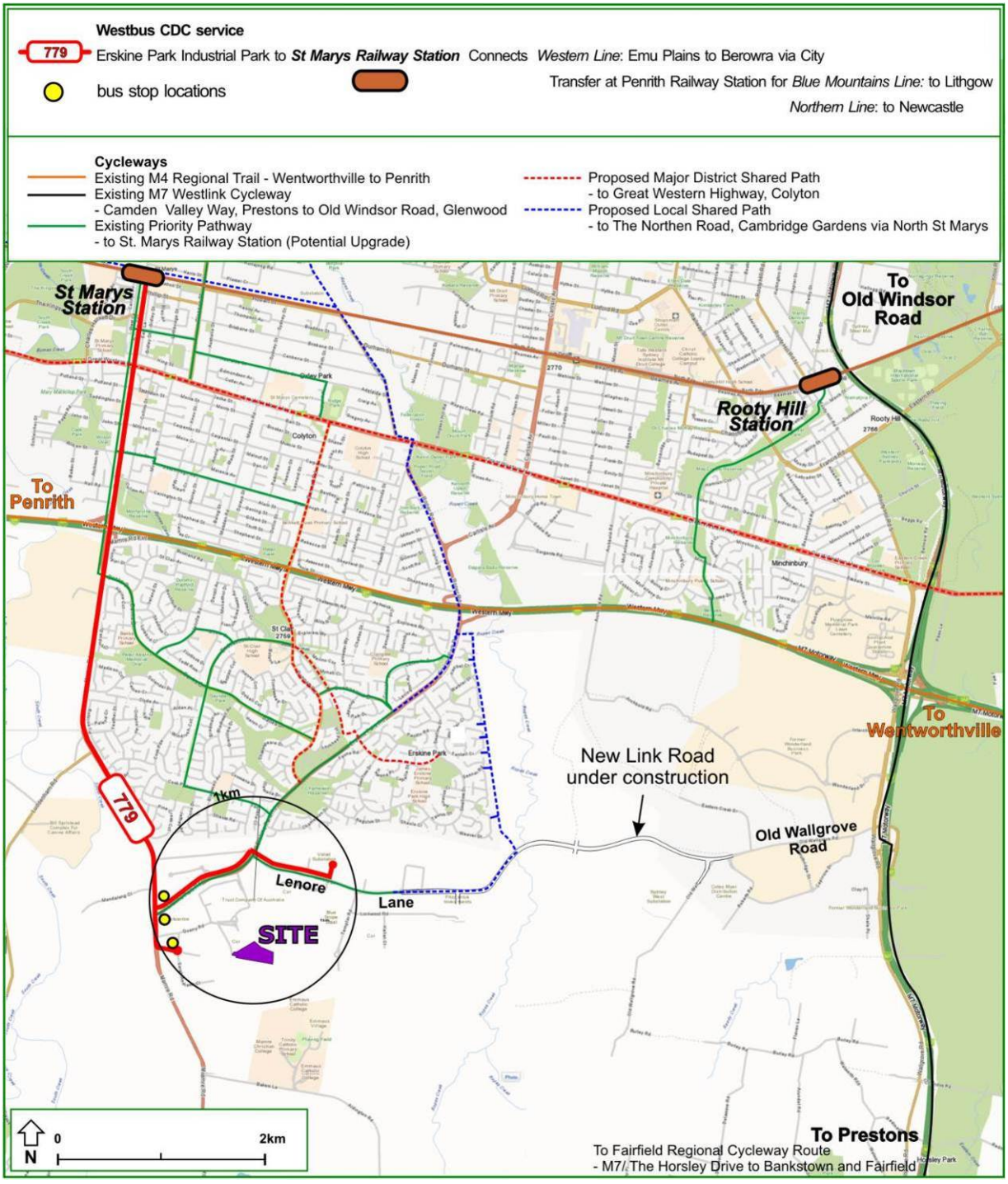


Figure 7: Public Transport

5. Description of Proposed Development

5.1 Development Details

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development for which approval is now sought comprises the following components:

- Construction of the MGC Milk Processing Facility, with;
  - Net floor area of 8,876m^2;
  - 24/7 operation;
- The provision of car parking with a total of 53 spaces for the development.

The parking and traffic impacts arising from the development are discussed in Sections 6 and 7. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix C**.

5.2 Anticipated Site Operation

Details of the future operation of the Milk Processing Facility have been provided by the prospective tenant; these details are as follows:

- General business description: processing and distribution;
- 24 x 7 operation of facility;
- 48 permanent staff expected on site with:
- Truck movements per day as follows:
  - 22 Milk delivery (B-Doubles);

- 18 Finished product milk dispatch (articulated vehicles);
- 8 Packaging materials;
- 3 Waste collection (MRV)

- Type of trucks: commercial vans, 8.8 metre Medium Rigid Vehicles, articulated 19 metre Semi-Trailers, 26 metre B-Double trucks; and
- Types of material stored: fresh milk, packaging.

5.3 Staffing Operation

The Processing Facility proposes a 24/7 operation, with rosters throughout the day. The facility will function with three distinct staff shifts that will operate from 6am-3pm, 3pm-10pm and 10pm-6am. This rostering will have the effect of distributing staff trips so that they will not coincide with the critical morning and evening peak periods.

6. Parking Requirements

6.1 Council Controls

The Penrith City Council DCP 2010 Part C10-'Transport Access and Parking', requires parking for industrial developments to be determined at the rates shown in **Table 1**:

Table 3: Council Parking Rates and Provision

Type	Number	Council Parking Rates	Spaces Required	Spaces Provided
Industries	8,876m^2 Or (48 employees)	The greater of: 1 space per 75m^2 GFA Or 1 space per 2 employees	118 (24)	53
		Totals	118	53

It can be seen from Table 3 that with a net floor area of 8,876m^2, there is a requirement to provide 118 parking spaces. However considering the spread of activity and the extent of the mechanisation of the proposed development there will only be a total of 48 staff on-site at any one given time, which is a considerably lower staffing requirement compare to other industrial developments of similar size. Applying these low staff numbers to Councils alternate industrial parking rate based on employees results in a requirement to provide only 24 spaces for the development. In response the development proposes to provide 53 spaces and this is attuned to the requirements of the development, making provision for visitors as well as staff overlaps. The provision of 53 spaces will ensure that the development will not rely on on-street parking.

While the parking requirements have been assessed based on Council's controls, regard also needs to be given to the NSW Government objectives of reducing car dependant travel. This is generally achieved though the suppression of parking. In similar cases, such as under the Oakdale Concept Plan Application, the rate set by the Department of Planning was 1 space per 200m^2 of GFA which results in an overall requirement of 42 spaces. That is, Council's rate of 1 space/75m^2 GFA is

considered largely superseded in respect of the present nature of large comparable distribution centres, with 24/7 operation and the need for associated staff rostering, which 'dilutes' peak parking demands. In conclusion, the provision of 53 spaces adheres to the aims and objectives of State Planning Policy, while satisfying the specific needs of the development based on extensive operational experience with similar facilities throughout Australia.

6.2 Disabled Parking

Table C10.2-'Provision of Car Parking', specifies that parking spaces for disabled persons should be provided within the range of 1-4% of total parking spaces required. Therefore with the development providing 53 parking spaces there is a requirement to provide between 1 and 2 disabled parking spaces designed in compliance with AS 2890.6 and this can be conditioned.

6.3 Bicycle Facilities

Council's DCP provides no bicycle parking rate for industrial developments, rather section D4, part 4.6 which states that "Major developments such as multi-unit industrial developments, bulky good outlets and other significant industrial developments shall make adequate provision for bicycle parking". Though there is no specific requirement the subject development is required to provide adequate bicycle parking facilities and this is considered best practice as providing such facilities reduces car dependency. This can be dealt with by way of conditions.

6.4 Servicing

In accordance with Council's DCP, adequate facilities for servicing the site (in particular garbage collection) would be provided on-site to ensure loading/unloading activities do not occur on street and compromise the safety, amenity and capacity of the public road system. The development provides a high level access with extensive queuing and loading capacity that is attuned to its specific needs and is acceptable. All vehicles enter and exit the site in a forward direction and loading facilities are in accordance with AS 2890.2 (2002), *Off-street Commercial Vehicle Facilities*.

7. Traffic Impacts

7.1 Standard Assessment

7.1.1 Subject Site Traffic Generation

7.1.1.1 Staff-Related Trips

Traffic data provided indicated that the staff-related (light vehicle) peak hour traffic generation will effectively be zero. It should be noted that the zero peak hour traffic generation doesn't indicate that the site will not generate any staff related trips rather that the trips will not occur during the critical morning and evening peak periods. This is the case as the facility will be designed for 24/7 operation therefore the shifts are timed so that the staff trips do not coincide with the critical peak periods, this in turn has the effect of minimising the developments traffic impacts.

Therefore the site will have a daily trip generation of 60 trips which comprise 48 staff related trips and 12 visitor related trips. Since these trips occur outside of the peak traffic periods they will have little to no impact on the existing road network.

7.1.1.2 Operational Trips

Based on detailed operational data, the heavy vehicle component of the development will generate 102 daily vehicle trips. Since these trips are distributed over a 24 hour timeframe only 10 trips will occur during the morning peak and 16 trips during the evening peak period, with the breakdown shown in Table 4.

Table 4: Predicted (Heavy Vehicle) Peak Hour Traffic

Type of Vehicle	AM Peak Hour			PM Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Milk Delivery B Double	3	3	6	4	4	8
Finished Product Milk Dispatch	0	0	0	2	2	4
Packaging Materials	2	2	4	2	2	4
Waste	0	0	0	0	0	0
Total Operational Traffic	**5**	**5**	**10**	**8**	**8**	**16**

These are relatively minor impacts that can easily be accommodated for by the existing road network. In this regard, these trips may be compared with a generation of 76 veh/hr that would have been assumed for this site based on the application of the 'generic' trip rate of 15 veh/hr/ha as used in the historic strategic assessments. In this context, the proposed development delivers a planning benefit.

7.1.2 Standard Assessment Network Performance

The peak hour traffic generation of the MGC facility has been assessed as 10 trips during the morning peak and 16 trips during the evening peak. Austroads Part 12: 'Traffic Impacts of Development' considers a generation of 10 vehicle trips to be of low impact stating that no traffic impact assessment would normally be required. Therefore with the direct impacts of this development alone being so minimal, there is no need to assess its impacts as an isolated development.

7.2 Cumulative Assessment

7.2.1 Surrounding Site Details

Notwithstanding the above discussion, the subject site is situated near several undeveloped lots which are located within the Erskine Business Park and will be accessed via Quarry Road. These five undeveloped lots have a combined total area of approximately 36 Hectares. Considering that these lots are to be developed in the future a cumulative assessment has been undertaken (as required

under the DGR's) which accounts for the development of these lots. This assessment provides a clear indication of the traffic generation that will result from full development of the sites accessing Quarry Road and may be considered to reflect traffic conditions under an ultimate scenario. These sites are shown in Figure 8.

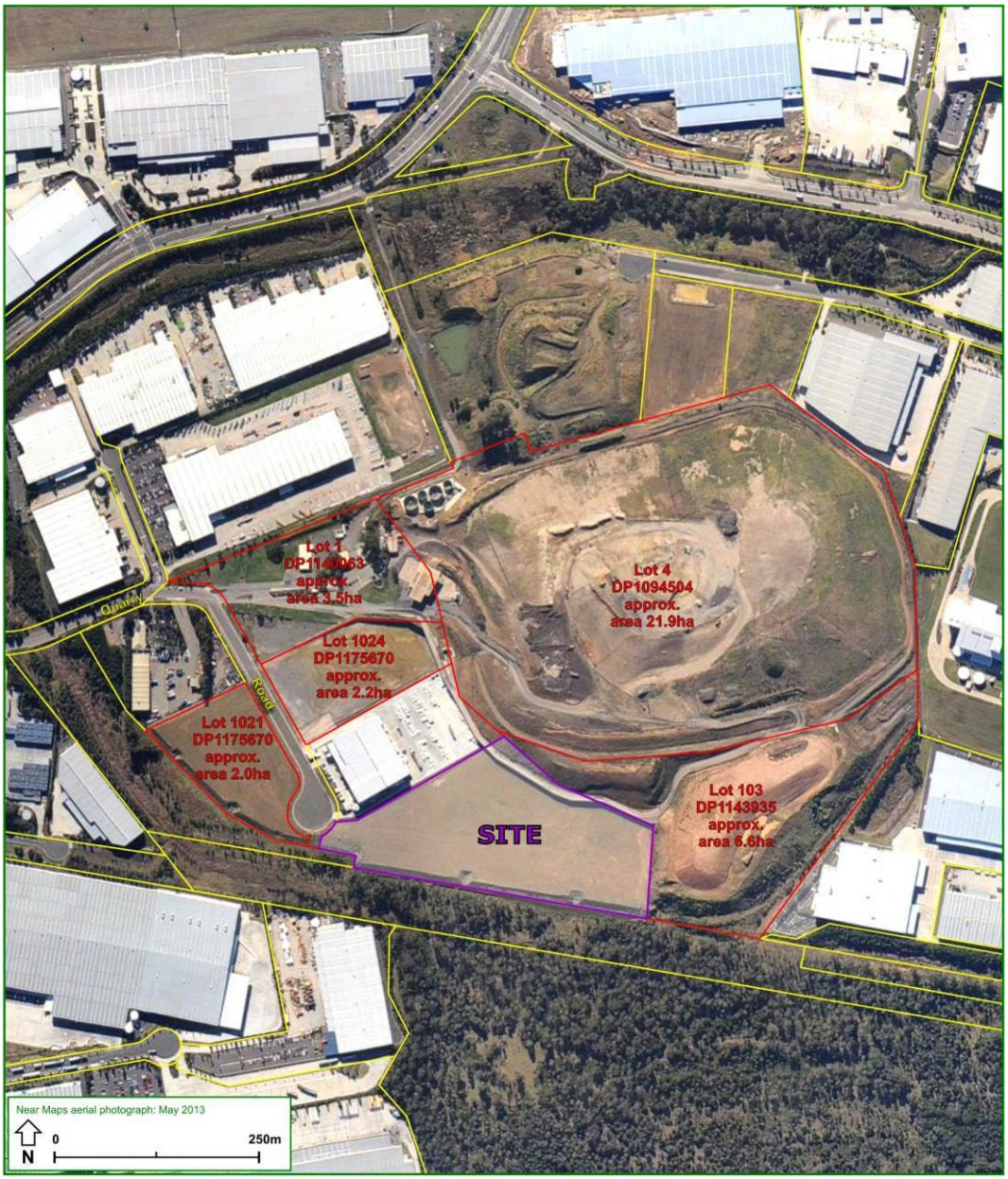


Figure 8: Undeveloped land within the Erskine Business Park

7.2.2 Cumulative Trip Generation

It is noted that the strategic planning undertaken to date has adopted a trip generation of 15 trips/ha/hr of developable land during the peak periods. Applying this adopted trip rate to the 36 hectares of undeveloped land within the vicinity results in a trip generation of 540 vehicles per hour during the peak periods. Adding the peak traffic generation of the proposed development to this generation yields 550 veh/hr during the morning peak and 556 veh/hr during the evening peak period.

This rate has been adopted as an *absolute worst case* and it is noted that the trip rates published in the Erskine Park Link Road, Review of Environmental Factors, undertaken by the RMS are substantially lower. Specifically, Section 6.3.2 of the REF states that the modelling has adopted a trip generation rate of 10 vehicle trips per developable hectare per two hours for the precincts within Penrith LGA and 21 vehicle trips per developable hectare per two hours for the proposed precincts within Blacktown LGA. On this basis, a trip rate of 5-10 veh/ha/hr would be supportable. Nevertheless, as discussed further below, the intersections operate satisfactorily in any event so that a substantial safety margin exists to accommodate any specific end-users on these other sites that might have traffic generation well above the average.

7.2.3 Traffic Distribution

As previously mentioned (and with reference to Figure 3), the subject site is conveniently located with respect to the arterial and sub-arterial road systems serving the region, in particular the Mamre Road corridor to the west of the site, the Erskine Park Road corridor to the north of the site and the Erskine Park Link Road corridor to the north-east of the site. Having regard for these three corridors, the following traffic distribution assumptions have been applied to the development traffic:

- 10% to/from Mamre Road to the south of its intersection with James Erskine Drive.
- 90% to/from Mamre Road to the north of its intersection with James Erskine Drive;
    - 30% to/from Mamre Road, north of its intersection with Erskine Park Road.
    - 60% to/from Erskine Park Road;
        - 25% to/from Erskine Park Road, north of its intersection with Lenore Drive (Erskine Park Link Road)
        - 35% to/from Lenore Drive (Erskine Park Link Road)

7.2.4 Cumulative Intersection Performances

The cumulative traffic volumes and distributions have been added to the existing flows to generate the cumulative intersection performances. Therefore the intersections of importance have been re-modelled in SIDRA to assess the cumulative effects on the surrounding road network during the AM and PM peak periods. A summary of the modelled results are provided in **Table 5 and 6**. Reference should also be made to the SIDRA outputs provided in Appendix B which provide detailed results of all approaches.

Table 5: Future (AM) Intersection Performance

Intersection Description	Control Type	Degree of Saturation (DOS)	Average Delay (sec)	Level of Service
Mamre Rd x Erskine Park Rd	Signalised	0.749	25.1	B (B)
Mamre Rd x James Erskine Dr	Signalised	0.534	13.4	A (A)
James Erskine Dr x Quarry Rd	Roundabout	0.329	10.5	A (A)

Table 6: Future (PM) Intersection Performance

Intersection Description	Control Type	Degree of Saturation (DOS)	Average Delay (sec)	Level of Service
Mamre Rd x Erskine Park Rd	Signalised	0.643	21.2	B (B)
Mamre Rd x James Erskine Dr	Signalised	0.672	20.8	B (A)
James Erskine Dr x Quarry Rd	Roundabout	0.362	11.8	A (A)

The results in Table 5 and 6 show that all three intersections will continue operate well during both the morning and evening peak periods maintaining a Level of Service of B or better, even on the basis of the very conservatively high trip rates that have been adopted.

8. Access & Internal Design Aspects

8.1 Access

Vehicular access to the site consists of a single large driveway that takes up the entire frontage to Quarry Road, as shown on the plan attached at Appendix C. This access is designed to accommodate all entry and exit movements associated with the site.

The proposed driveway would be designed and constructed in accordance with AS 2890.1-2004 and AS 2890.2-2002, with the operational driveways designed to accommodate 26 metre B-Double articulated trucks.

Access and egress swept-path movements for a B-Double truck are presented on the plan attached at **Appendix D**.

8.2 Internal Design

The internal design would comply with the requirements of AS 2890.1-2004 and AS 2890.2-2002, with the following characteristics considered noteworthy:

- The single entry and exit driveway allows trucks to enter, circulate through the site, unload and exit in a forward direction, as shown on the swept-path plan attached at Appendix D;
- Parking spaces would generally be 2.5 metres in width and 5.5 metres in length and satisfy the requirements of AS 2890.1 for Class 2 parking;
- Sufficient end of aisle space would be provided at the end of the car park to allow vehicles to exit parking area in a forward direction;
- All disabled parking spaces would be provided with easy access to the pedestrian walkways. These spaces would be designed in accordance with the requirements AS 2890.6-2009, *Off-street parking for people with disabilities*.

In summary, the internal road design is acceptable and would provide a satisfactory standard of safety and efficiency. It is however envisaged that a standard condition of consent would be imposed requiring compliance with relevant Australian standards. As such, minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

9. Construction Traffic Management Plan

As required under the DGR's, a Construction Traffic Management Plan (CTMP) has been prepared for construction of the subject development (*ref: 13.221r03v1).* This CTMP has been designed in accordance with the requirements of AS 1742.3 and the RMS *Traffic Control at Works Sites Manual* and considers all matters raised in the context of the Early Works CTMP *(ref: 13.221r01v1), w*hich was prepared separately by TRAFFIX and is recommended for adoption.

10. Conclusions

In summary:

- The subject development proposes the construction of a 8,876m^2 MGC Milk Processing Facility at 111-113 Quarry Road, Erskine Park. The site and the surrounding areas form a developing Industrial Estate with convenient access to sub-arterial and arterial roads that are conveniently located in the vicinity of the site.
- The subject site will provide 53 parking spaces on site. This will satisfy the estimated parking demand for the 48 staff (the maximum expected to be on-site at any one given time) and visitor use.
- The traffic generation due to the development will add 10 trips in the morning peak hour and 16 trips in the evening peak hour period, resulting in only minimal impact to the existing road network. These trips are derived from a detailed understanding of the sites proposed operations, with activity spread over the entire day.
- A cumulative assessment of critical intersections has been undertaken on the basis of full development of the balance of land to be developed within the precinct and this demonstrates that the intersections will continue to operate satisfactorily.
- The proposed access, internal design principles, car parking and servicing have all been designed in accordance with Australian Standards and are considered acceptable and will operate safely and efficiently.
- A Construction Traffic Control Plan (CTMP) has been prepared for construction of the development, as required under the DGR's. This CTMP has been designed in accordance with the requirements of AS 1742.3 and the RMS *Traffic Control at Works Sites Manual* and is recommended for adoption.

It is therefore concluded that the proposed development is supportable on traffic planning grounds and will operate satisfactorily. Furthermore, this report satisfactorily responds to each of the Director General's Requirements and the requirements of Roads and Maritime Services.

Appendix A

Photographic Record

View looking south along Quarry Road towards the site access.

View looking north along Quarry Road from the proposed site access.

View looking south along Quarry Road toward its roundabout intersection with James Erskine Drive.

View looking east along James Erskine Drive toward its roundabout intersection with Quarry Road.

View looking west along James Erskine Drive towards its signalized intersection with Mamre Road.

View looking north along Mamre Road towards its signalised intersection with James Erskine Drive.

View looking west along Erskine Park Road towards its signalised intersection with Mamre Road.

View looking east along Erskine Park Road from its signalised intersection with Mamre Road.

Appendix B

SIDRA Results

LANE SUMMARY

INT: Mamre Road x Erskine Park Road
SCENARIO: 2013 Existing
PERIOD: Morning Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Mamre Rd																
Lane 1	0	401	0	401	5.0	1209	0.332	100	4.0	LOS A	3.8	27.5	300	–	0.0	0.0
Lane 2	0	0	172	172	5.0	362	0.475	100	45.8	LOS D	6.5	47.6	190	Turn Bay	0.0	0.0
Lane 3	0	0	172	172	5.0	362	0.475	100	45.8	LOS D	6.5	47.6	190	Turn Bay	0.0	0.0
Approach	0	401	344	745	5.0		0.475		23.3	LOS B	6.5	47.6				
East: Erskine Park Rd																
Lane 1	519	0	0	519	5.0	915	0.567	100	23.5	LOS B	12.2	89.0	600	–	0.0	0.0
Lane 2	0	0	120	120	5.0	427	0.281	100	41.5	LOS C	4.4	32.1	600	–	0.0	0.0
Approach	519	0	120	639	5.0		0.567		26.9	LOS B	12.2	89.0				
North: Mamre Rd																
Lane 1	184	0	0	184	5.0	713[1]	0.258	100	11.8	LOS A	1.3	9.6	35	Turn Bay	0.0	0.0
Lane 2	0	344	0	344	5.0	603[1]	0.571	100	23.8	LOS B	11.7	85.5	110	Turn Bay	0.0	0.0
Lane 3	0	395	0	395	5.0	692	0.571	100	24.7	LOS B	14.0	102.0	1500	–	0.0	0.0
Approach	184	739	0	923	5.0		0.571		21.8	LOS B	14.0	102.0				
Intersection				2307	5.0		0.571		23.7	LOS B	14.0	102.0				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

1 Reduced capacity due to a short lane effect

SIDRA INTERSECTION

LANE SUMMARY

INT: Mamre Road x Erskine Park Road
SCENARIO: 2013 Existing
PERIOD: Evening Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Mamre Rd																
Lane 1	0	654	0	654	5.0	1209	0.541	100	4.8	LOS A	8.1	59.5	300	–	0.0	0.0
Lane 2	0	0	191	191	5.0	362	0.526	100	46.2	LOS D	7.3	53.5	190	Turn Bay	0.0	0.0
Lane 3	0	0	191	191	5.0	362	0.526	100	46.2	LOS D	7.3	53.5	190	Turn Bay	0.0	0.0
Approach	0	654	381	1035	5.0		0.541		20.1	LOS B	8.1	59.5				
East: Erskine Park Rd																
Lane 1	284	0	0	284	5.0	915	0.311	100	21.5	LOS B	5.2	38.1	600	–	0.0	0.0
Lane 2	0	0	172	172	5.0	427	0.402	100	42.6	LOS D	6.5	47.4	600	–	0.0	0.0
Approach	284	0	172	456	5.0		0.402		29.4	LOS C	6.5	47.4				
North: Mamre Rd																
Lane 1	113	0	0	113	5.0	685[1]	0.164	100	11.9	LOS A	0.8	6.0	35	Turn Bay	0.0	0.0
Lane 2	0	151	0	151	5.0	605[1]	0.250	100	21.1	LOS B	4.6	33.3	110	Turn Bay	0.0	0.0
Lane 3	0	173	0	173	5.0	692	0.250	100	21.4	LOS B	5.3	38.7	1500	–	0.0	0.0
Approach	113	324	0	437	5.0		0.250		18.8	LOS B	5.3	38.7				
Intersection				1927	5.0		0.541		22.0	LOS B	8.1	59.5				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

1 Reduced capacity due to a short lane effect

LANE SUMMARY

Site: 2013 Existing AM Peak

INT: Mamre Road x James Erskine Drive
SENARIO: Existing Conditions
PERIOD: Morning Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Mamre Rd																
Lane 1	0	182	0	182	5.0	913[1]	0.199	45[6]	6.6	LOS A	3.1	22.5	120	Turn Bay	0.0	0.0
Lane 2	0	541	0	541	5.0	1230	0.440	100	8.4	LOS A	11.7	85.1	1300	–	0.0	0.0
Lane 3	0	0	82	82	5.0	313	0.263	100	25.1	LOS B	2.2	16.4	100	Turn Bay	0.0	0.0
Approach	0	723	82	805	5.0		0.440		9.7	LOS A	11.7	85.1				
East: James Erskine Dr																
Lane 1	29	0	0	29	5.0	405[1]	0.073	100	9.9	LOS A	0.3	2.0	30	Turn Bay	0.0	0.0
Lane 2	0	0	21	21	5.0	405	0.051	44[6]	37.6	LOS C	0.7	5.2	170	–	0.0	0.0
Lane 3	0	0	47	47	5.0	405	0.115	100	38.2	LOS C	1.7	12.1	170	–	0.0	0.0
Approach	29	0	67	97	5.0		0.115		29.5	LOS C	1.7	12.1				
North: Mamre Rd																
Lane 1	274	0	0	274	5.0	1318[1]	0.208	100	10.4	LOS A	1.1	8.2	110	Turn Bay	0.0	0.0
Lane 2	0	478	0	478	5.0	975	0.490	92[6]	11.5	LOS A	10.0	72.9	300	–	0.0	0.0
Lane 3	0	521	0	521	5.0	975	0.534	100	11.9	LOS A	11.4	83.3	300	–	0.0	0.0
Approach	274	999	0	1273	5.0		0.534		11.4	LOS A	11.4	83.3				
Intersection				2175	5.0		0.534		11.6	LOS A	11.7	85.1				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects

LANE SUMMARY

INT: Mamre Road x James Erskine Drive
SENARIO: Existing Conditions
PERIOD: Evening Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Mamre Rd																
Lane 1	0	221	0	221	5.0	912[1]	0.242	45[6]	6.8	LOS A	3.8	28.0	120	Turn Bay	0.0	0.0
Lane 2	0	657	0	657	5.0	1230	0.534	100	9.2	LOS A	15.5	113.0	1300	–	0.0	0.0
Lane 3	0	0	15	15	5.0	494	0.030	100	18.7	LOS B	0.3	2.0	100	Turn Bay	0.0	0.0
Approach	0	878	15	893	5.0		0.534		8.8	LOS A	15.5	113.0				
East: James Erskine Dr																
Lane 1	93	0	0	93	5.0	591[1]	0.157	100	8.6	LOS A	0.5	4.0	30	Turn Bay	0.0	0.0
Lane 2	0	0	78	78	5.0	405	0.193	44[6]	38.9	LOS C	2.8	20.6	170	–	0.0	0.0
Lane 3	0	0	177	177	5.0	405	0.437	100	41.0	LOS C	6.8	49.8	170	–	0.0	0.0
Approach	93	0	255	347	5.0		0.437		31.9	LOS C	6.8	49.8				
North: Mamre Rd																
Lane 1	54	0	0	54	5.0	1340[1]	0.040	100	10.3	LOS A	0.2	1.2	110	Turn Bay	0.0	0.0
Lane 2	0	262	0	262	5.0	975	0.269	92[6]	10.0	LOS A	4.5	32.5	300	–	0.0	0.0
Lane 3	0	286	0	286	5.0	975	0.293	100	10.1	LOS A	5.0	36.2	300	–	0.0	0.0
Approach	54	548	0	602	5.0		0.293		10.1	LOS A	5.0	36.2				
Intersection				1842	5.0		0.534		13.6	LOS A	15.5	113.0				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects

MOVEMENT SUMMARY

Site: 2013 Existing AM Peak

INT: James Erskine Drive x Quarry Road
SENARIO: Existing Conditions
PERIOD: Morning Peak
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Sarah Andrews Cl											
1	L	41	5.0	0.034	4.8	LOS A	0.1	0.7	0.12	0.46	45.0
2	T	4	5.0	0.034	3.7	LOS A	0.1	0.7	0.12	0.34	45.7
3	R	1	5.0	0.034	9.0	LOS A	0.1	0.7	0.12	0.75	42.1
Approach		46	5.0	0.034	4.8	LOS A	0.1	0.7	0.12	0.45	45.0
East: James Erskine Dr											
4	L	1	5.0	0.001	6.1	LOS A	0.0	0.0	0.43	0.43	36.1
5	T	7	5.0	0.006	4.4	LOS A	0.0	0.3	0.38	0.38	37.7
6	R	1	5.0	0.006	9.7	LOS A	0.0	0.3	0.38	0.72	34.4
Approach		9	5.0	0.006	5.2	LOS A	0.0	0.3	0.38	0.42	37.1
North: Quarry Rd											
7	L	1	5.0	0.009	5.8	LOS A	0.0	0.3	0.34	0.50	45.7
8	T	6	5.0	0.009	4.8	LOS A	0.0	0.3	0.34	0.40	46.0
9	R	66	5.0	0.052	9.6	LOS A	0.2	1.8	0.29	0.61	43.3
Approach		74	5.0	0.052	9.1	LOS A	0.2	1.8	0.29	0.59	43.5
West: James Erskine Dr											
10	L	161	5.0	0.098	4.7	LOS A	0.5	3.5	0.05	0.45	39.3
11	T	13	5.0	0.102	3.6	LOS A	0.5	3.6	0.05	0.30	41.1
12	R	138	5.0	0.102	9.0	LOS A	0.5	3.6	0.05	0.66	34.5
Approach		312	5.0	0.102	6.6	LOS A	0.5	3.6	0.05	0.54	36.9
All Vehicles		441	5.0	0.102	6.8	LOS A	0.5	3.6	0.10	0.54	40.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2013 Existing PM Peak

INT: James Erskine Drive x Quarry Road
SENARIO: Existing Conditions
PERIOD: Evening Peak
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Sarah Andrews Cl											
1	L	121	5.0	0.094	5.0	LOS A	0.3	2.0	0.20	0.48	44.6
2	T	2	5.0	0.094	4.0	LOS A	0.3	2.0	0.20	0.38	45.2
3	R	1	5.0	0.094	9.3	LOS A	0.3	2.0	0.20	0.75	42.0
Approach		124	5.0	0.094	5.0	LOS A	0.3	2.0	0.20	0.48	44.6
East: James Erskine Dr											
4	L	2	5.0	0.002	6.2	LOS A	0.0	0.1	0.43	0.45	36.2
5	T	11	5.0	0.008	4.4	LOS A	0.0	0.3	0.37	0.38	37.8
6	R	1	5.0	0.008	9.7	LOS A	0.0	0.3	0.37	0.74	34.4
Approach		14	5.0	0.008	5.1	LOS A	0.0	0.3	0.38	0.42	37.2
North: Quarry Rd											
7	L	1	5.0	0.012	4.8	LOS A	0.0	0.3	0.13	0.49	46.2
8	T	8	5.0	0.012	3.8	LOS A	0.0	0.3	0.13	0.35	46.8
9	R	173	5.0	0.114	9.1	LOS A	0.5	4.0	0.11	0.62	43.8
Approach		182	5.0	0.114	8.8	LOS A	0.5	4.0	0.11	0.61	43.9
West: James Erskine Dr											
10	L	34	5.0	0.022	4.7	LOS A	0.1	0.7	0.03	0.45	39.4
11	T	4	5.0	0.019	3.6	LOS A	0.1	0.6	0.04	0.30	41.3
12	R	22	5.0	0.019	9.0	LOS A	0.1	0.6	0.04	0.68	34.6
Approach		60	5.0	0.022	6.2	LOS A	0.1	0.7	0.04	0.53	37.4
All Vehicles		380	5.0	0.114	7.0	LOS A	0.5	4.0	0.14	0.55	43.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2013 Cumulative AM Peak

INT: Mamre Road x Erskine Park Road
SCENARIO: 2013 Cumulative
PERIOD: Morning Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mamre Rd											
2	T	454	5.0	0.375	4.1	LOS A	4.5	32.8	0.24	0.22	64.6
3	R	448	5.0	0.484	41.8	LOS C	7.9	57.8	0.84	0.81	25.5
Approach		902	5.0	0.484	22.9	LOS B	7.9	57.8	0.54	0.51	37.6
East: Erskine Park Rd											
4	L	762	5.0	0.749	21.5	LOS B	19.4	142.0	0.63	0.84	46.5
6	R	120	5.0	0.281	41.5	LOS C	4.4	32.1	0.86	0.79	34.9
Approach		882	5.0	0.749	24.2	LOS B	19.4	142.0	0.66	0.83	44.4
North: Mamre Rd											
7	L	184	5.0	0.278	12.0	LOS A	1.4	10.4	0.27	0.71	68.3
8	T	861	5.0	0.729	31.0	LOS C	17.5	127.8	0.95	0.85	54.6
Approach		1045	5.0	0.729	27.7	LOS B	17.5	127.8	0.83	0.82	56.5
All Vehicles		2829	5.0	0.749	25.1	LOS B	19.4	142.0	0.69	0.73	49.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P3	Across E approach	53	31.3	LOS D	0.1	0.1	0.83	0.83
P5	Across N approach	53	33.8	LOS D	0.1	0.1	0.87	0.87
All Pedestrians		159	34.8	LOS D			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2013 Cumulative PM Peak

INT: Mamre Road x Erskine Park Road
SCENARIO: 2013 Cumulative
PERIOD: Evening Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mamre Rd											
2	T	777	5.0	0.643	5.3	LOS A	11.5	84.0	0.37	0.34	60.7
3	R	626	5.0	0.486	33.6	LOS C	9.5	69.1	0.73	0.81	29.4
Approach		1403	5.0	0.643	17.9	LOS B	11.5	84.0	0.53	0.55	42.0
East: Erskine Park Rd											
4	L	389	5.0	0.325	13.6	LOS A	3.0	21.7	0.19	0.75	53.5
6	R	172	5.0	0.402	42.6	LOS D	6.5	47.4	0.89	0.81	34.4
Approach		561	5.0	0.402	22.4	LOS B	6.5	47.4	0.40	0.76	45.7
North: Mamre Rd											
7	L	113	5.0	0.192	12.4	LOS A	1.0	6.9	0.28	0.71	68.0
8	T	377	5.0	0.470	34.2	LOS C	7.4	54.3	0.92	0.76	53.1
Approach		489	5.0	0.470	29.2	LOS C	7.4	54.3	0.78	0.75	55.9
All Vehicles		2454	5.0	0.643	21.2	LOS B	11.5	84.0	0.55	0.64	48.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P3	Across E approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P5	Across N approach	53	33.8	LOS D	0.1	0.1	0.87	0.87
All Pedestrians		159	37.4	LOS D			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2013 Cumulative AM Peak

INT: Mamre Road x James Erskine Drive
SENARIO: Cumulative
PERIOD: Morning Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mamre Rd											
2	T	723	5.0	0.440	8.0	LOS A	11.7	85.1	0.50	0.44	69.3
3	R	122	5.0	0.391	26.7	LOS B	3.7	27.1	0.76	0.81	55.7
Approach		845	5.0	0.440	10.7	LOS A	11.7	85.1	0.54	0.50	67.1
East: James Erskine Dr											
4	L	46	5.0	0.115	9.9	LOS A	0.4	3.2	0.29	0.65	40.3
6	R	224	5.0	0.384	40.0	LOS C	5.9	43.3	0.88	0.78	20.5
Approach		271	5.0	0.384	34.8	LOS C	5.9	43.3	0.78	0.76	22.4
North: Mamre Rd											
7	L	639	5.0	0.497	10.7	LOS A	3.7	27.1	0.25	0.72	48.1
8	T	999	5.0	0.534	11.7	LOS A	11.4	83.3	0.53	0.47	48.8
Approach		1638	5.0	0.534	11.3	LOS A	11.4	83.3	0.42	0.56	48.5
All Vehicles		2754	5.0	0.534	13.4	LOS A	11.7	85.1	0.49	0.56	54.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P3	Across E approach	53	17.4	LOS B	0.1	0.1	0.62	0.62
All Pedestrians		106	28.3	LOS C			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2013 Cumulative PM Peak

INT: Mamre Road x James Erskine Drive
SENARIO: Cumulative
PERIOD: Evening Peak
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mamre Rd											
2	T	887	5.0	0.672	16.4	LOS B	21.4	156.1	0.75	0.66	61.7
3	R	33	5.0	0.086	27.6	LOS B	0.9	6.5	0.70	0.74	55.1
Approach		920	5.0	0.672	16.8	LOS B	21.4	156.1	0.75	0.67	61.5
East: James Erskine Dr											
4	L	134	5.0	0.245	9.2	LOS A	1.0	7.6	0.26	0.65	41.2
6	R	623	5.0	0.668	33.2	LOS C	16.2	118.2	0.86	0.83	23.0
Approach		757	5.0	0.668	29.0	LOS C	16.2	118.2	0.75	0.80	25.0
North: Mamre Rd											
7	L	212	5.0	0.153	10.3	LOS A	0.7	5.2	0.16	0.69	48.9
8	T	548	5.0	0.397	20.1	LOS B	7.8	57.0	0.65	0.55	39.1
Approach		760	5.0	0.397	17.4	LOS B	7.8	57.0	0.52	0.59	41.0
All Vehicles		2437	5.0	0.672	20.8	LOS B	21.4	156.1	0.68	0.68	47.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	28.8	LOS C	0.1	0.1	0.80	0.80
P3	Across E approach	53	25.7	LOS C	0.1	0.1	0.76	0.76
All Pedestrians		106	27.2	LOS C			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2013 Cumulative AM Peak

INT: James Erskine Drive x Quarry Road
SENARIO: Cumulative
PERIOD: Morning Peak
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Sarah Andrews Cl											
1	L	41	5.0	0.037	5.1	LOS A	0.1	0.8	0.25	0.49	44.4
2	T	4	5.0	0.037	4.1	LOS A	0.1	0.8	0.25	0.39	44.9
3	R	1	5.0	0.037	9.4	LOS A	0.1	0.8	0.25	0.74	41.9
Approach		46	5.0	0.037	5.1	LOS A	0.1	0.8	0.25	0.49	44.4
East: James Erskine Dr											
4	L	1	5.0	0.001	7.3	LOS A	0.0	0.1	0.57	0.47	35.1
5	T	7	5.0	0.007	5.2	LOS A	0.0	0.3	0.52	0.43	36.3
6	R	1	5.0	0.007	10.5	LOS A	0.0	0.3	0.52	0.70	33.9
Approach		9	5.0	0.007	6.0	LOS A	0.0	0.3	0.53	0.47	35.9
North: Quarry Rd											
7	L	1	5.0	0.009	5.8	LOS A	0.0	0.3	0.34	0.50	45.6
8	T	6	5.0	0.009	4.8	LOS A	0.0	0.3	0.34	0.40	46.0
9	R	240	5.0	0.187	9.7	LOS A	1.0	7.1	0.32	0.63	43.2
Approach		247	5.0	0.187	9.6	LOS A	1.0	7.1	0.32	0.62	43.3
West: James Erskine Dr											
10	L	566	5.0	0.329	4.7	LOS A	2.2	15.7	0.06	0.45	39.2
11	T	13	5.0	0.129	3.6	LOS A	0.7	4.9	0.06	0.30	41.0
12	R	138	5.0	0.129	9.0	LOS A	0.7	4.9	0.06	0.65	34.5
Approach		717	5.0	0.329	5.5	LOS A	2.2	15.7	0.06	0.49	38.1
All Vehicles		1020	5.0	0.329	6.5	LOS A	2.2	15.7	0.13	0.52	41.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2013 Cumulative PM Peak

INT: James Erskine Drive x Quarry Road
SENARIO: Cumulative
PERIOD: Evening Peak
Roundabout

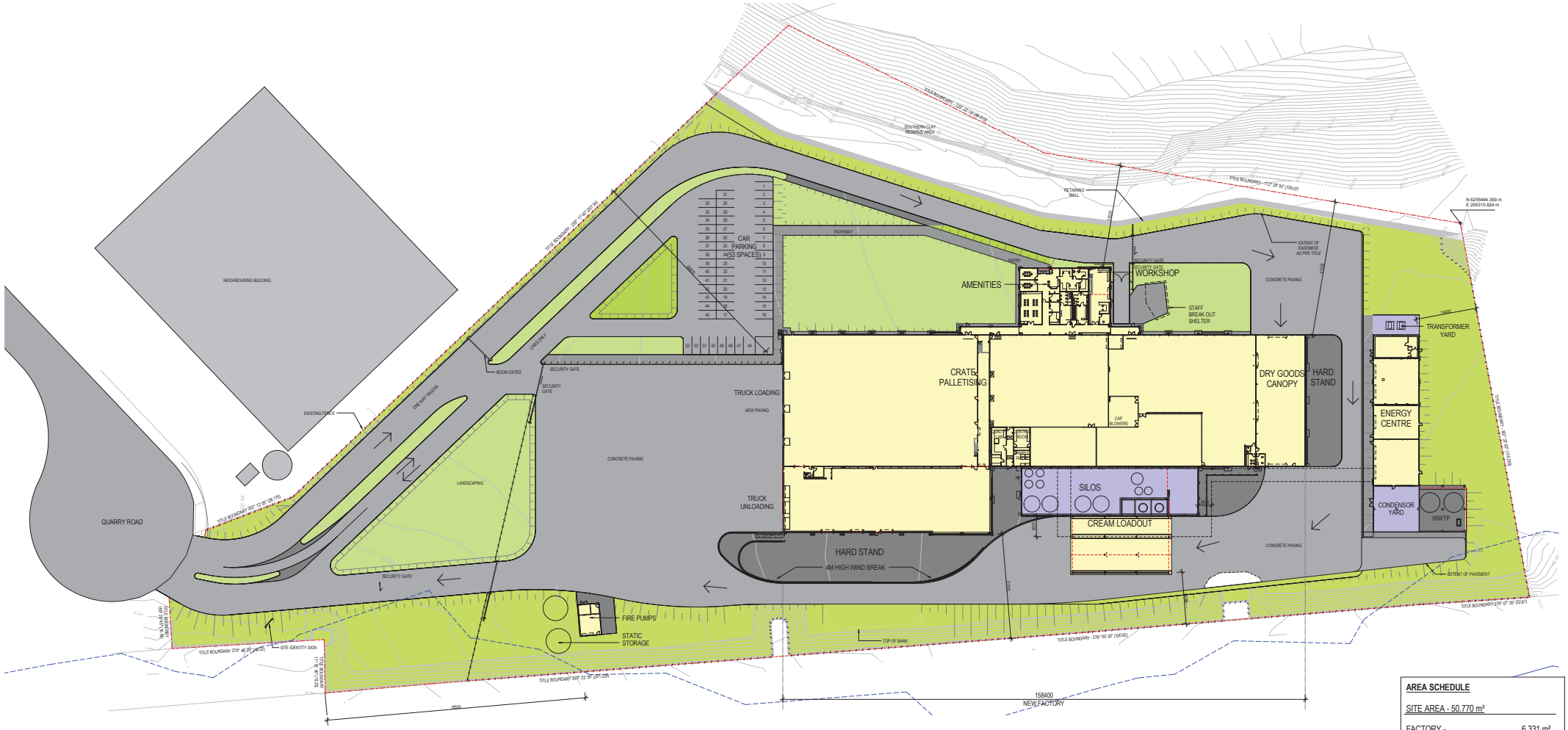
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Sarah Andrews Cl											
1	L	121	5.0	0.115	6.4	LOS A	0.5	3.4	0.45	0.61	43.6
2	T	2	5.0	0.115	5.3	LOS A	0.5	3.4	0.45	0.53	43.8
3	R	1	5.0	0.115	10.6	LOS A	0.5	3.4	0.45	0.79	41.4
Approach		124	5.0	0.115	6.4	LOS A	0.5	3.4	0.45	0.61	43.5
East: James Erskine Dr											
4	L	2	5.0	0.003	9.3	LOS A	0.0	0.1	0.68	0.54	32.9
5	T	11	5.0	0.011	6.5	LOS A	0.1	0.5	0.65	0.51	35.3
6	R	1	5.0	0.011	11.8	LOS A	0.1	0.5	0.65	0.70	32.8
Approach		14	5.0	0.011	7.4	LOS A	0.1	0.5	0.65	0.53	34.7
North: Quarry Rd											
7	L	1	5.0	0.012	4.8	LOS A	0.0	0.3	0.13	0.49	46.2
8	T	8	5.0	0.012	3.8	LOS A	0.0	0.3	0.13	0.35	46.8
9	R	582	5.0	0.362	9.1	LOS A	2.3	16.7	0.14	0.61	43.7
Approach		592	5.0	0.362	9.0	LOS A	2.3	16.7	0.14	0.61	43.7
West: James Erskine Dr											
10	L	209	5.0	0.124	4.7	LOS A	0.7	4.9	0.04	0.45	39.4
11	T	4	5.0	0.025	3.6	LOS A	0.1	0.9	0.05	0.30	41.2
12	R	22	5.0	0.025	9.0	LOS A	0.1	0.9	0.05	0.68	34.6
Approach		236	5.0	0.124	5.1	LOS A	0.7	4.9	0.04	0.47	38.8
All Vehicles		965	5.0	0.362	7.7	LOS A	2.3	16.7	0.16	0.57	43.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

Appendix C

Reduced Plans



AREA SCHEDULE

SITE AREA - 50,770 m²

FACTORY -	6,331 m²
AMENITIES & WORKSHOP -	624 m²
CRATE RETURN/ WASH CANOPY -	1,285 m²
PLANT ROOM (L1) -	553 m²
ENERGY CENTRE -	642 m²
MILK RECEIVAL CANOPY -	513 m²
FIRE PUMP HOUSE -	63 m²
TOTAL GROSS FLOOR AREA -	10,012 m²
OVERALL SITE COVERAGE -	19.7%
ROADWAYS & HARDSTAND AREA INCLUDING TANK FARM -	20,616 m² (41%)

Scale @ B1 1 : 500

Date	No.	Revision Description	By	Date	No.	Revision Description	By	Date	No.	Revision Description	By
03.06.13	P1	PRELIMINARY FOR DISCUSSION									
07.06.13	P2	PRELIMINARY FOR DISCUSSION									
14.06.13	P3	PRELIMINARY FOR DISCUSSION									
26.06.13	P4	PRELIMINARY FOR DISCUSSION									
28.06.13	P5	PRELIMINARY FOR DISCUSSION									
04.07.13	P6	PEA ISSUE									
10.07.13	P7	PEA ISSUE									
08.08.13	P8	PRELIMINARY SSD ISSUE									
20.08.13	P9	SSD ISSUE									

Blomquist + Wark Architects
Blomquist + Wark Pty Ltd
390 Burwood Road
Hawthorn, Victoria, 3122
Ph: (03) 9818 3555
Fax: (03) 9818 3979

Project
PROJECT INVERLOCH (NSW) - LOT 1022, QUARRY ROAD, ERSKINE PARK NSW

MURRAY GOULBURN CO-OPERATIVE CO. LTD

Drawing Title
SITE LAYOUT PLAN

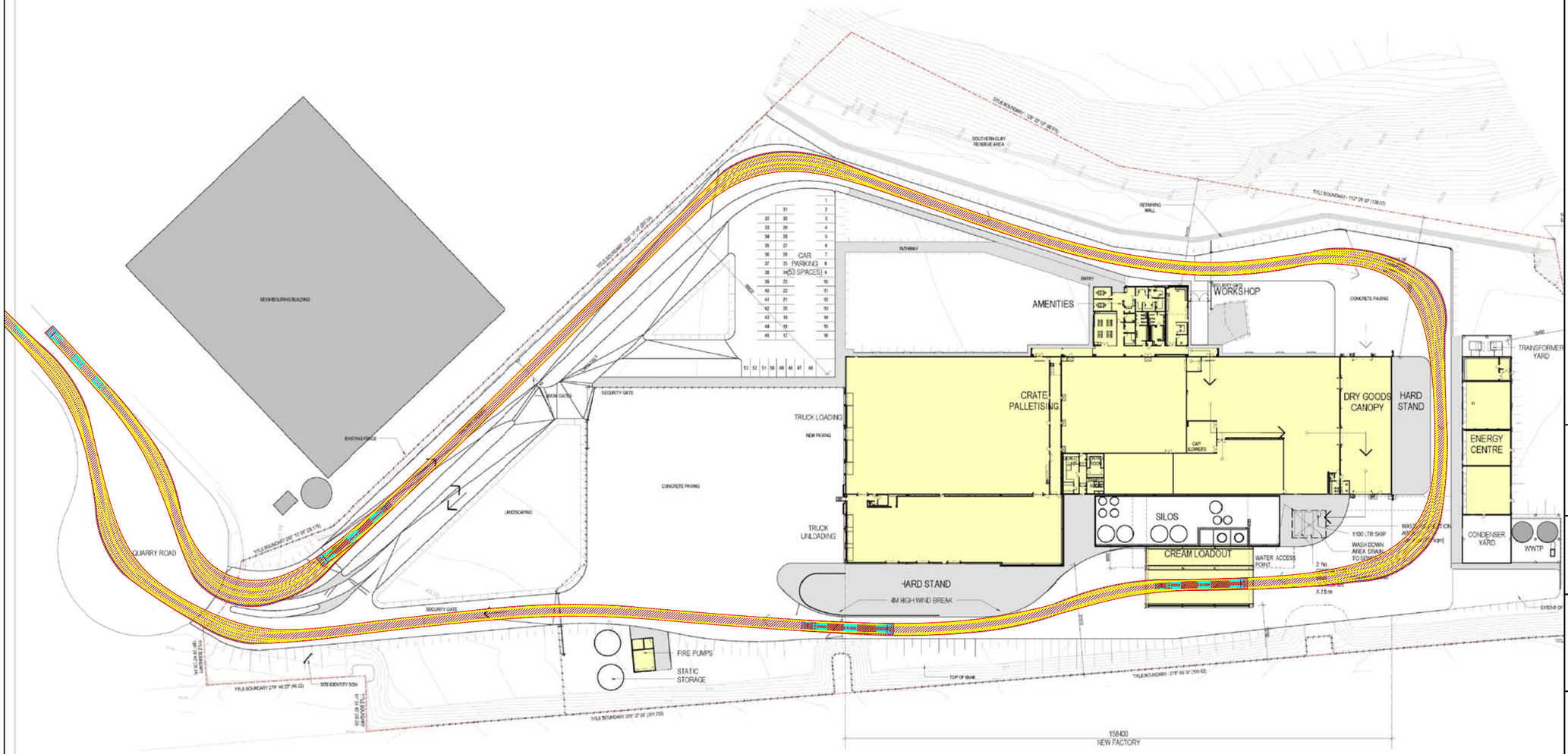
Date: JUNE 2013
Drawn By: JW
Scale @ B1: 1 : 500

Job No. 1325
Drawing No. DA02
Rev. P9

C:\Users\rgriffin.ACCESS\Documents\1325_1.3R3_DOCUMENTATION_CENTRAL_1325R2_rgriffin.rvt
20/08/2013 4:45:15 PM

Appendix D

Swept Path Analysis



TP_SP_PROP OPWASTE MAN PLAN_500
DETAIL ELEVATION
SCALE 1 : 500

Scale @ B1 1 : 500

Date	No.	Revision Description	By	Date	No.	Revision Description	By	Date	No	Revision Description	By
05.06.13	P	PRELIMINARY SSD ISSUE	BG								
20.06.13	P1	SSD ISSUE	BG								

Contractors must verify all dimensions on site prior to commencing any work or making any shop drawings

Blomquist + Wark Architects
Blomquist + Wark Pty Ltd
390 Burwood Road
Hawthorn, Victoria, 3122
Ph: (03) 9818 2555
Fax: (03) 9818 3979

Project
PROJECT INVERLOCH (NSW) - LOT 1022, QUARRY ROAD, ERSKINE PARK
NSW

MURRAY GOULBURN CO-OPERATIVE CO. LTD

Drawing Title
OPERATIONAL WASTE MANAGEMENT PLAN

Date JUNE 2013
Drawn By Author
Scale @ B1 1 : 500

notes
This drawing is prepared for information purposes only. It is not to be used for construction.

no.	revision note	by.	date

architect
Blomquist + Wark Pty Ltd
390 Burwood Road
Hawthorn Victoria 3122

client
Murray Goulburn Cooperative
PO Box 495
Milsons Point NSW 1565

scale

project
MGC Fresh Milk Processing Facility

drawing prepared by
TRAFFIX
traffic and transport planners
suite 3.08 46a macleay street
potts point NSW 2011
PO Box 1061 potts point nsw 1035
t: +61 2 8324 8700
f: +61 2 9380 4481
e: info@traffix.com.au
traffix
traffic & transport planners

drawing title
26m B-Double Swept Path

drawn:	checked:	date:
PC	-	29/08/2013

project no.	drawing phase.	drawing no.	rev
13.221	-	TX.01	A

Construction Traffic Management Plan

Construction of the Proposed MGC Fresh Milk Processing Facility, Erskine Park

traffix
traffic & transport planners

po box 1061
potts point nsw 1335
t: +61 2 8324 8700
f: +61 2 9380 4481
w: www.traffix.com.au
abn: 66065132961

Reference: 13.221r03v1 TRAFFIX MGC Facility, Development CTMP,

Document Verification

Job Number:	13.221
Project:	MGC Facility, Development CTMP
Client:	Murray Goulburn Cooperative

Revision		Initials	Date	Signature
Report v01	Prepared by:	PC	28/08/2013	
	Checked by:	GP	29/08/2013	
	Approved by:			

Traffic Control Plan Certificates

Name:	Paul Corbett		
RMS Traffic Control Plan Certificates:	Design / Inspect Traffic Control Plans (Orange Card)	Certificate No.	2253014019
	Select / Modify Traffic Control Plans (Red Card)	Certificate No.	2252036984

traffix
traffic & transport planners

po box 1061
potts point nsw 1335
t: +61 2 8324 8700
f: +61 2 9380 4481
w: www.traffix.com.au
abn: 66065132961

Contents

Appendices

1. Introduction

TRAFFIX has been commissioned by the Murray Goulburn Cooperative (MGC) to prepare a Construction Traffic Management Plan (CTMP), for the construction of the proposed MGC Fresh Milk Processing Facility at Erskine Park. This CTMP has been prepared to accompany the Environmental Impact Statement (EIS), prepared separately by KMH Environmental, as required under the Director General's Requirements (DGRs) for the subject development.

The site is currently vacant and is accessed via Quarry Road. A Location Plan is presented in **Figure 1**, for reference.

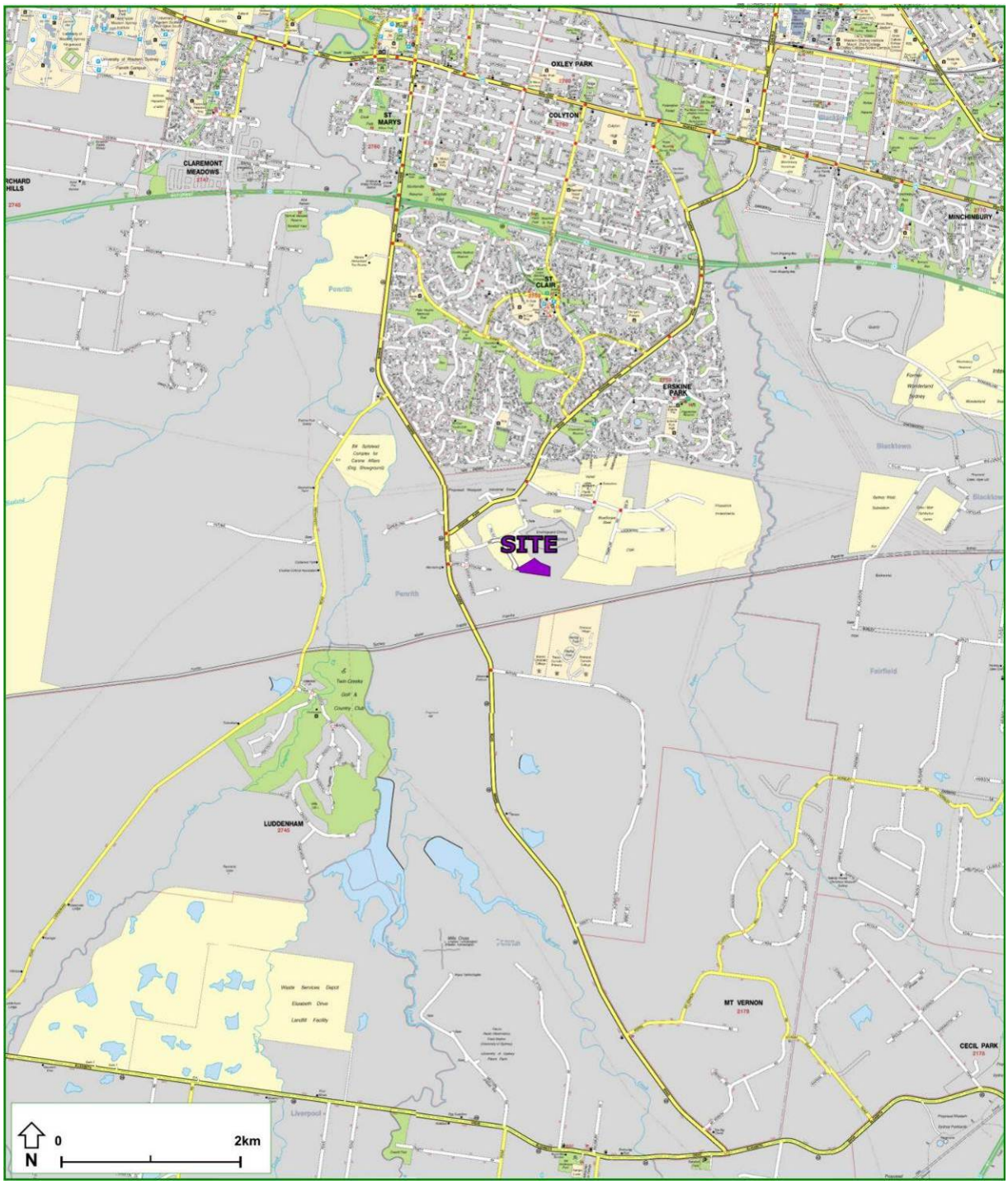


Figure 1: Location Plan

2. Existing Conditions

2.1 Location and Site

The subject site is situated within the industrial estate referred to as the Erskine Business Park. It is bound by a neighbouring industrial development to the north, Quarry Road to the west, adjoins a nature strip and neighbouring vacant lot to the south and a vacant lot to the east. The site fronts to the cul-de-sac of Quarry Road which provides vehicular access to the site.

The site has an irregular configuration with a total site area of approximately 5.07ha. It has a northern boundary of approximately 236 metres to a neighbouring industrial development, an irregular southern site boundary of approximately 430 metres to the adjoining nature strip and neighbouring vacant lot, an irregular eastern boundary of approximately 330 metres to a neighbouring vacant lot and an irregular western site frontage of approximately 40 metres to Quarry Road.

A Site Plan is provided in **Figure 2** which provides a more detailed appreciation of the site in the context of neighbouring properties. Reference should also be made to the Photographic Record presented in **Appendix A**, which demonstrates the general character of roads and other key attributes in proximity to the site.

Figure 2: Site Plan

2.2 Road Hierarchy

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Mamre Road: an RMS Main Road (MR 536) that generally traverses in a north-south direction between the Great Western Highway in the north and Elizabeth Drive in the south. Mamre Road carries approximately 14,000vpd (vehicles per day) in the vicinity of the site. Mamre Road is generally subject to a 80km/h speed zoning and generally carries a single lane of traffic though widens to carry two lanes of traffic in either direction in the vicinity of the site within an undivided carriageway of 18.0 metres width.

- Erskine Park Road: an RMS Main Road (MR 629) that generally traverses in a north-south direction between the M4 Western Motorway in the north and Mamre Road in the south. Erskine Park Road carries approximately 28,000vpd and is subject to a 70km/h speed zoning in the vicinity of the site. It carries two lanes of traffic in either direction within an undivided carriageway of 13.0 metres width.

- James Erskine Drive: a local road that traverses in a east-west direction between Mamre Road in the west and its termination to the east of its roundabout intersection with Quarry Road. James Erskine Drive is subject to a 50km/h speed zoning and generally carries two lanes of traffic in either direction within a carriageway of width 13.0 metres. It is noted that James Erskine Drive acts as the entry route for all traffic accessing the site.

- Quarry Road: a local road that generally traverses in an east-west direction (north-south in the vicinity of the site) between James Erskine Drive in the west and its termination near the site in the east. Quarry Road is subject to a 50km/h speed zoning and carries a single lane of traffic in either direction along an undivided carriageway of 13.0 metres width. Access to the site is proposed via Quarry Site.

- Erskine Park Link Road — a newly constructed RMS road that traverses in an east-west direction connecting Old Wallgrove Road in the east with Lenore Lane in the west. The status of this road is currently unresolved however, it is noted that the road provides a vital link to the western Sydney employment area and a direct connection to the M7 Motorway. It is subject to 80km/hr speed zoning and carries two lanes of traffic in either direction within a divided carriageway of width 21 metres. These eastbound and westbound lanes are separated by a 6.0 metre wide landscaped median.

It can be seen from Figure 3 that the site is conveniently located with respect to the arterial road systems serving the region, while local access is available via James Erskine Drive and Quarry Road.

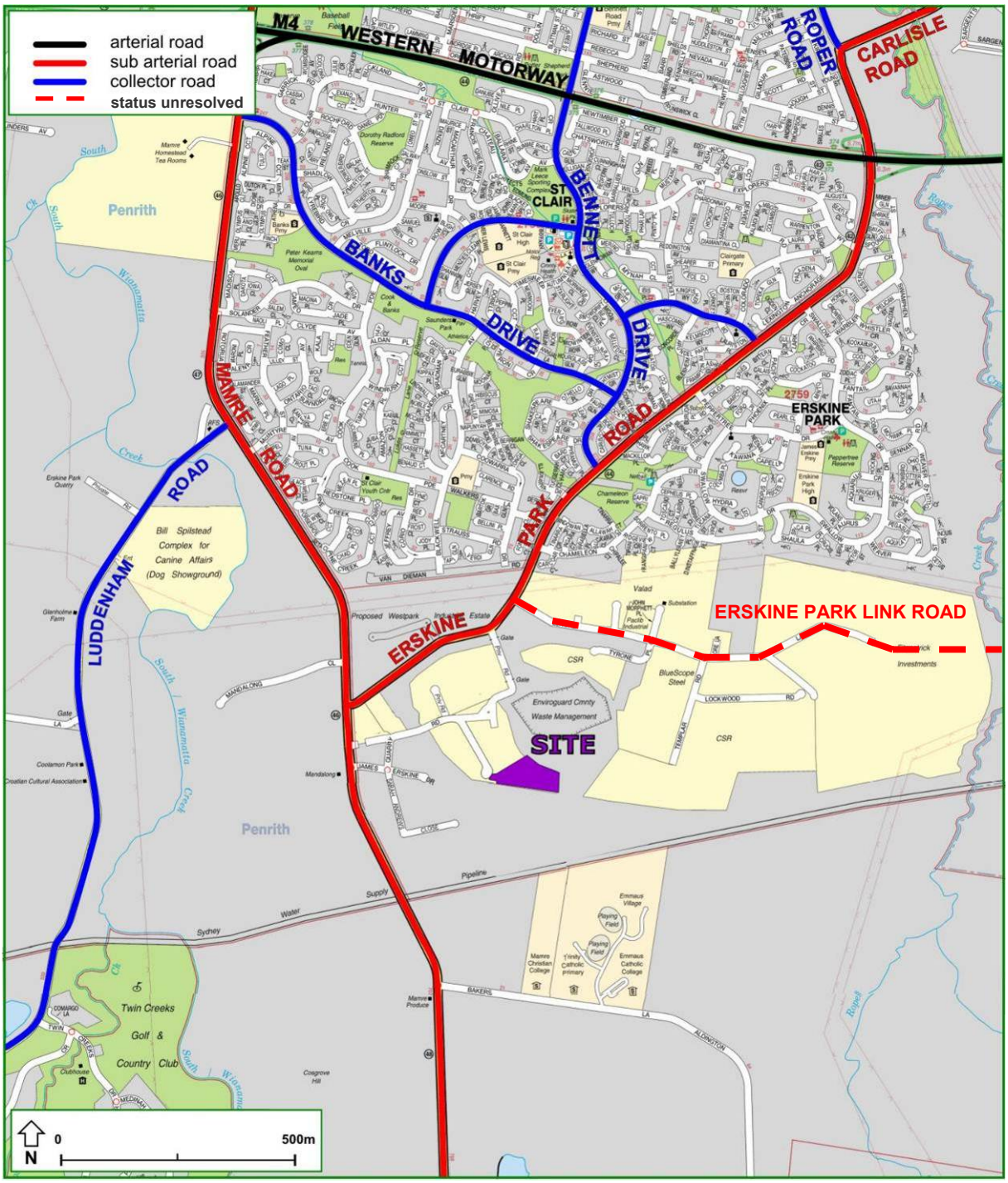


Figure 3: Road Hierarchy

3. Overview of Construction Program

3.1 Times of Operation

The total construction period is expected to occur over 8 months. The hours of operation will be in accordance with the conditions of consent which are as follows:

- Monday-Friday: 6:30am to 6:00pm,
- Saturdays: 6:30am to 1:00pm,
- No work on Sundays or Public Holidays.

3.2 Structure Stage

This will occur over a period of approximately 6 months, commencing in October 2013, after the completion of Stage 1-Early Works (site preparation etc). This stage will involve an average workforce of 50 people, with a maximum of 100 people on-site at any one time. The maximum sized truck used during this stage will be 19 metre articulated truck, with all loading / unloading of trucks to occur on-site An average of 10 truck arrivals per day will occur during this stage (10 in, 10 out), which equates to only one (1) truck arrival per hour.

3.3 External Finishes Stage

This will occur over a period of approximately 2 months and will involve an average workforce of approximately 40 people, with a maximum of 60 people on-site at any one time. The maximum sized truck used during this stage will be 19 metre articulated truck, with all loading / unloading of trucks to occur on-site An average of 10 truck arrivals per day will occur during this stage (10 in, 10 out), which equates to only one (1) truck arrival per hour.

3.4 Works Zone Requirements

All loading / unloading of trucks is to occur on-site throughout all stages. Accordingly, an on-street Works Zone is not required throughout any stage of construction.

4. Traffic Management Plan

4.1 Truck Routes

The proposed truck routes are shown in **Figure 4** and are summarised below. A copy of these routes shall be provided to all drivers prior to attending the site. Trucks will access the site via the following routes:

- To / From the North: Mamre Road, James Erskine Drive, Quarry Road and vice versa or,

  M7 Motorway, Old Wallgrove Road, Erskine Park Link Road, Lenore Drive, Erskine Park Road, Mamre Road, James Erskine Drive, Quarry Road and vice versa.

- To / From the East: M4 Motorway, Erskine Park Road, Mamre Road, James Erskine Drive, Quarry Road and vice versa.

- To / From the West: M4 Motorway, Mamre Road, James Erskine Drive, Quarry Road and vice versa.

- To / From the South: M7 Motorway, Old Wallgrove Road, Erskine Park Link Road, Lenore Drive, Erskine Park Road, Mamre Road, James Erskine Drive, Quarry Road and vice versa.

The above routes seek to utilise the arterial road network as much as possible with the use of local streets only where required.

4.2 Vehicular Access

Vehicular access to the site will be provided via Quarry Road. A swept-path analysis has been undertaken of the proposed access arrangements with the use of a 19 metre articulated truck, which is the largest truck to be accommodated on-site during construction. This swept path demonstrates satisfactory access and is included in **Appendix B**.

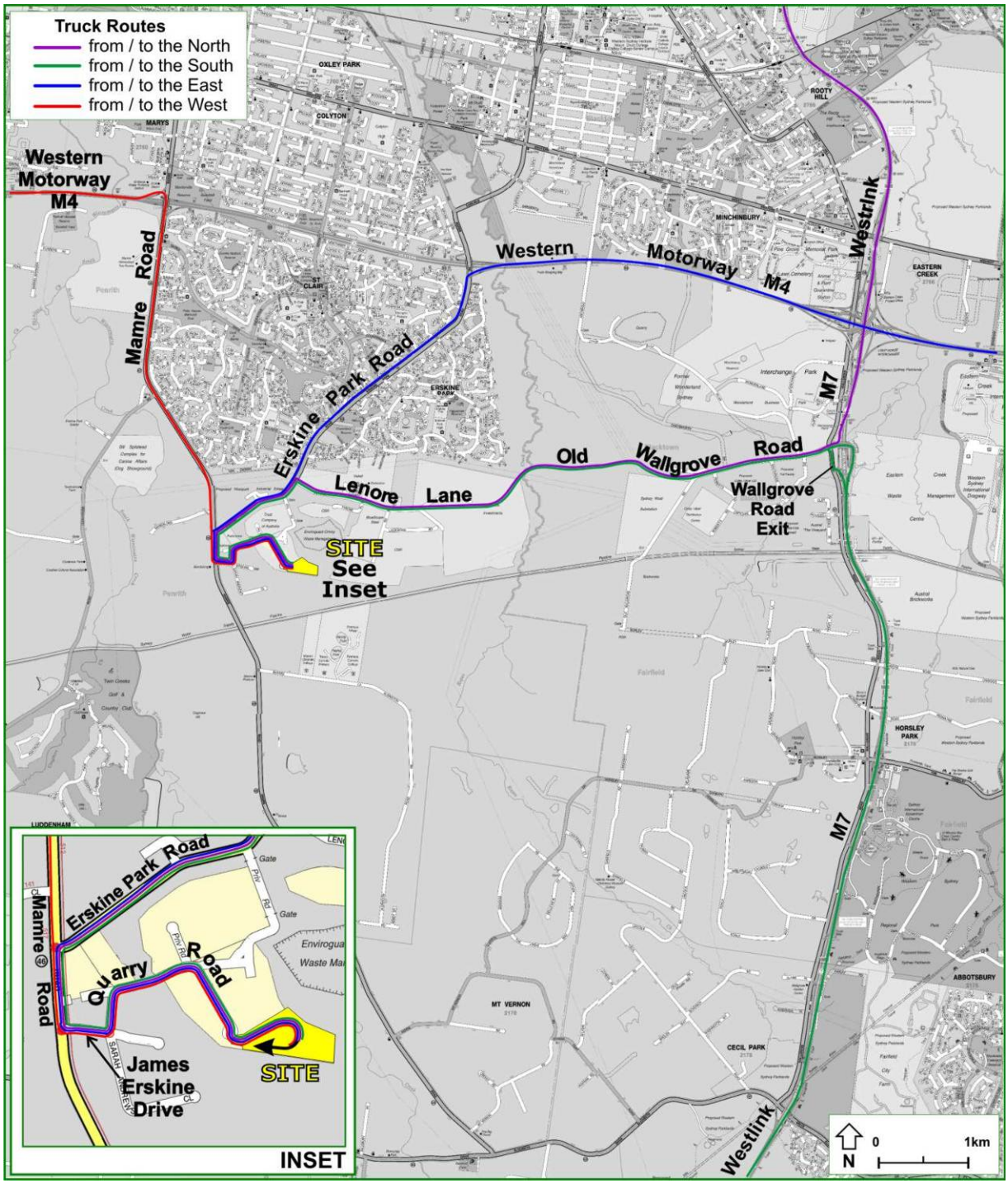


Figure 4: Truck Routes to / from the Site

4.3 Pedestrian Control

The site is located at the end of a cul-de-sac and experiences minimal pedestrian activity. It is therefore considered that the erection of fencing along the site frontage to Quarry Road will provide an acceptable level of pedestrian safety at all times. As previously stated, all work will be carried out within the confines of the site and therefore the proposed development will have minimal effect on pedestrian activity in the area.

4.4 Traffic Control Plan

It is noted that all construction works will be carried out from within the site and truck volumes are less than 20 movements per day. Accordingly, a Traffic Control Plan is not required under the AS 1742.3 and / or the RMS Traffic Control at Work Sites Manual.

4.5 Crane Operation

Use of cranes on site would be subject to a separate application by the appointed builder. In addition, all activities would be undertaken from within the Proposal site and accordingly, no additional signage would need to be implemented for cranes on-site.

4.6 Employee Vehicles

The maximum number of workers proposed over the total construction period is 100 people. Assuming an average car occupancy of 2 people per car, would result in a total demand for 50 spaces. The plan included in **Appendix C** demonstrates that there are significant areas within the site which will be available for contractor parking (hardstands etc) and hence, all contractor parking demands will be contained within the site. Notwithstanding this, it is noted that workers will also be able to utilise the on-site car park (53 spaces), once this has been constructed.

Should any employees visit the site temporarily, they will be instructed to use available on-site parking to avoid any demands to on-street parking.

5. Conclusions

This report should be read in conjunction with other documentation prepared by Murray Goulburn Cooperative relating to internal construction activities. The plan outlined above is considered satisfactory and will minimise any disruptions to tenants of neighbouring developments. This plan meets all requirements of AS 2890.2, AS 1742, RMS Traffic Control at Work Sites Manual and is recommended for adoption.

Appendix A

Photographic Record

View looking south along Quarry Road towards the site access.

View looking north along Quarry Road from the proposed site access.

View looking south along Quarry Road toward its roundabout intersection with James Erskine Drive.

View looking east along James Erskine Drive toward its roundabout intersection with Quarry Road.

View looking west along James Erskine Drive towards its signalized intersection with Mamre Road.

View looking north along Mamre Road towards its signalised intersection with James Erskine Drive.

View looking west along Erskine Park Road towards its signalised intersection with Mamre Road.

View looking east along Erskine Park Road from its signalised intersection with Mamre Road.

Appendix B

Swept Path Analysis

notes

This drawing is prepared for information purposes only. It is not to be used for construction.

no.	revision note	by.	date

architect

Blomquist + Wark Pty Ltd
390 Burwood Road
Hawthorn Victoria 3122

client

Murray Goulburn Cooperative
PO Box 495
Millsons Point NSW 1565

scale

1:1000 @ A3

0m 10 20 30 40

project

MGC Fresh Milk Processing Facility

drawing prepared by

TRAFFIX
traffic and transport planners

suite 3.08 46a macleay street
potts point NSW 2011

PO Box 1061 potts point nsw 1035

t: +61 2 8324 8700
f: +61 2 9380 4481
e: info@traffix.com.au

traffix
traffic & transport planners

drawing title

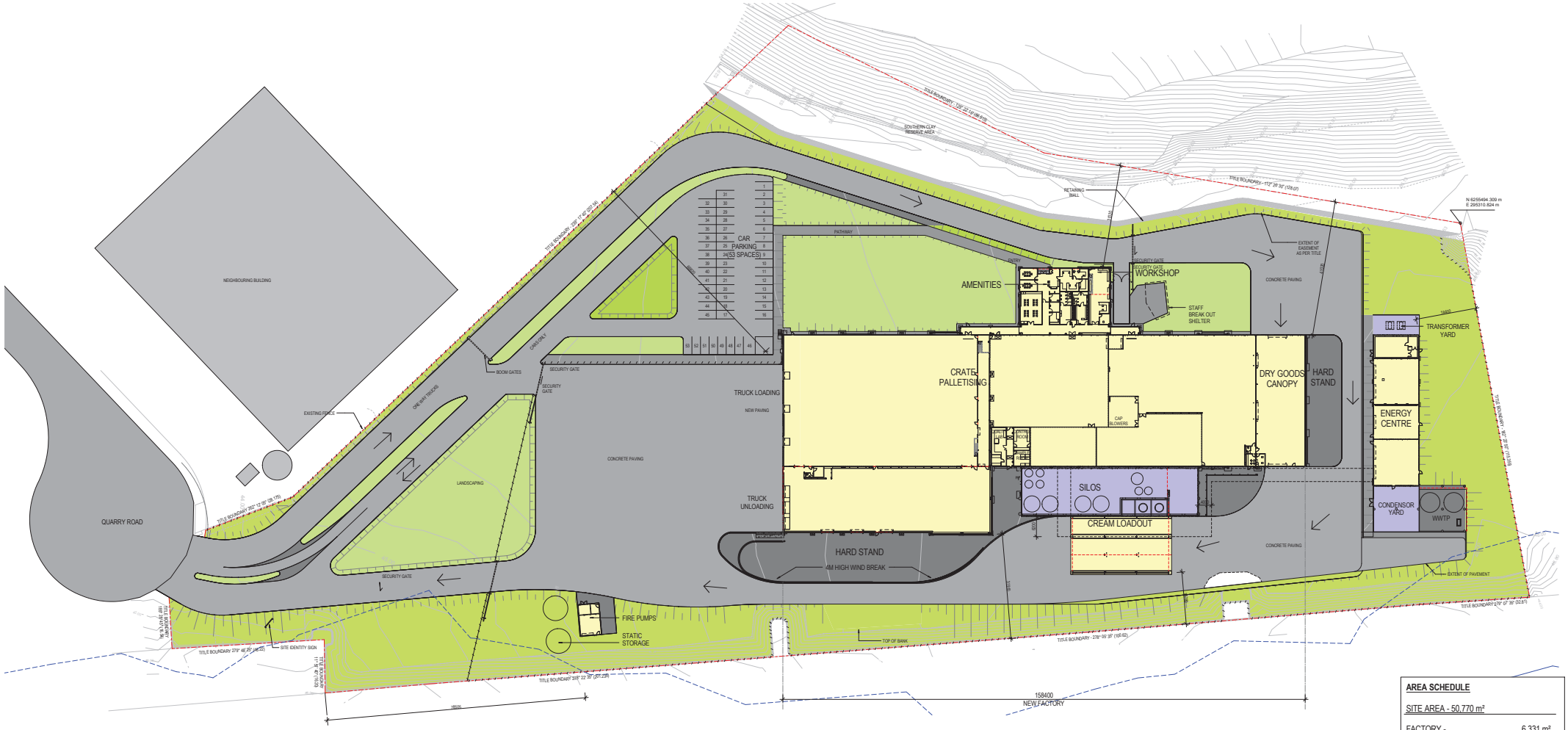
19m Articulated Truck
Entry to and Exit from the Site

drawn:	checked:	date:
PC	-	28/08/2013

project no.	drawing phase.	drawing no.	rev
13.221	-	TX.01	-

Appendix C

Reduced Plan



AREA SCHEDULE

SITE AREA - 50,770 m²

FACTORY -	6,331 m²
AMENITIES & WORKSHOP -	624 m²
CRATE RETURN/ WASH CANOPY -	1,285 m²
PLANT ROOM (L1) -	553 m²
ENERGY CENTRE -	642 m²
MILK RECEIVAL CANOPY -	513 m²
FIRE PUMP HOUSE -	63 m²
TOTAL GROSS FLOOR AREA -	10,012 m²
OVERALL SITE COVERAGE -	19.7%
ROADWAYS & HARDSTAND AREA INCLUDING TANK FARM -	20,616 m² (41%)

Scale @ B1 1 : 500

Date	No.	Revision Description	By	Date	No.	Revision Description	By	Date	No.	Revision Description	By
03.06.13	P1	PRELIMINARY FOR DISCUSSION									
07.06.13	P2	PRELIMINARY FOR DISCUSSION									
14.06.13	P3	PRELIMINARY FOR DISCUSSION									
26.06.13	P4	PRELIMINARY FOR DISCUSSION									
28.06.13	P5	PRELIMINARY FOR DISCUSSION									
04.07.13	P6	PEA ISSUE									
10.07.13	P7	PEA ISSUE									
08.08.13	P8	PRELIMINARY SSD ISSUE									
20.08.13	P9	SSD ISSUE									

Blomquist + Wark Architects
Blomquist + Wark Pty Ltd
390 Burwood Road
Hawthorn, Victoria, 3122
Ph: (03) 9818 3555
Fax: (03) 9818 3979

Project
PROJECT INVERLOCH (NSW) - LOT 1022, QUARRY ROAD, ERSKINE PARK NSW

MURRAY GOULBURN CO-OPERATIVE CO. LTD

Drawing Title
SITE LAYOUT PLAN

Date: JUNE 2013
Drawn By: JW
Scale @ B1: 1 : 500

Job No. 1325
Drawing No. DA02
Rev. P9

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