



Battery Recycling Facility 10 Lancaster Street, Ingleburn Transport Impact Assessment

Client // Ledox Australia
Office // NSW
Reference // 16S1065000
Date // 17/02/17

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10 Lancaster Street, Ingleburn
Transport Impact Assessment

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GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	19/06/16	Final	Nicholas Brown	Andrew Farran	Peter Wills	
B	17/02/17	Updated Analysis	Nicholas Brown	Andrew Farran	Peter Wills	<i>P. B. Wills</i>

Table of Contents

1. Introduction	1
1.1 Background	1
1.2 Secretary's Environmental Assessment Requirements	1
1.3 Consultation	2
1.4 Purpose of this Report	2
1.5 References	2
2. Existing Conditions	3
2.1 Subject Site	3
2.2 Road Network	3
2.3 Active Transport	5
3. Development Proposal	7
3.1 Proposed Development	7
3.2 Land Uses	7
3.3 Car Parking and Vehicle Access	8
3.4 Pedestrian & Bicycle Facilities	8
3.5 Loading Areas	8
4. Transport Impacts – Operational	9
4.1 Council Objectives	9
4.2 Car Parking	9
4.3 Traffic Impact Assessment	10
5. Transport Impacts – Construction	13
5.1 Construction Phasing	13
5.2 Traffic Generation	13
5.3 Heavy Vehicle Access Routes	13
5.4 Other Considerations	14
6. Conclusion	15

Figures

Figure 2.1:	Subject Site and Its Environs	3
Figure 2.2:	Lancaster Street looking northeast	4
Figure 2.3:	Lancaster Street looking southwest	4
Figure 2.4:	Approved B-Double (25/26m) Routes	5
Figure 2.5:	Sydney City Cycleways Map	6
Figure 3.1:	Project Area	8
Figure 4.1:	Heavy Vehicle Routes to/from the Site	12

Tables

Table 4.1:	Forecast Weekly and Daily Truck Movements	11
Table 4.2:	Subject Site Traffic Generation Rate	11
Table 5.1:	Construction Traffic Volumes	13

1. Introduction

1.1 Background

It is understood that a State Significant Development Application (SSDA) is to be lodged with the Department of Planning and Environment (the Department) for a proposed battery recycling facility to be located at 10 Lancaster Street in Ingleburn. The proposal seeks to fit out the existing warehouse building provided on site, to cater for the proposed use, with minimal building works proposed.

GTA Consultants was commissioned by the Applicant in September 2015 to undertake a transport impact assessment for the proposed development.

1.2 Secretary's Environmental Assessment Requirements

An overview of the proposed development was lodged with the Department along with a request for the Secretary's Environmental Assessment Requirements (SEAR's) by JBA Planning in June 2015. The Department referred the proposal to a number of authorities with feedback pertaining to transport issues received from the Road and Maritime Services (RMS). Subsequently, the SEAR's were provided by the Department on 24 August 2015, with the traffic requirements reproduced below:

"Traffic and Transport" – including:

- Accurate predictions of the traffic generated by the development during construction and operation;
- Details of proposed haul routes, site access, internal roads and parking required for the development
- An assessment of the potential impacts of the development on the capacity, efficiency and safety of the road network during construction and operation; and
- Details of any required upgrades to road infrastructure.

These requirements have been largely based on RMS referral comments dated 13 August 2015, whose comments of relevance have been reproduced below:

- Daily and peak traffic movements likely to be generated by the proposed development including the impacts on nearby intersections and the need/associated funding for upgrading or road improvement works (if required).
- Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (ie: turn paths, sight distance requirements, aisle widths, etc).
- Proposed number of car parking spaces and compliance with the appropriate parking codes.
- Details of service vehicle movements (including vehicle type and likely arrival and departure times).
- Roads and Maritime requires an assessment of the likely toxicity levels of loads transported on arterial and local roads to / from the site and, consequently, the preparation of an incident management strategy for crashes involving toxic and flammable loads transported on arterial and local roads to / from the site.

- Roads and Maritime will require in due course the provision of a traffic management plan for all demolition/construction activities, detailing vehicle routes, numbers of trucks, hours of operation, access arrangements and traffic control measures.

This report does not include an assessment of the dangerous goods to be transport to and from the site (i.e. an incident management strategy is not provided as part of this work). This will be prepared by others.

1.3 Consultation

In preparing this assessment GTA staff liaised with RMS officers (telephone discussion with Zhaleh Alamouti dated 6 April 2016) regarding their specific transport assessment requirements for the site. This report has been prepared accordingly.

GTA has been advised that JBA Urban consulted with Campbelltown Council on 10 May 2016 and were advised by Council that at that time they had no transport issues (traffic generation during operation and construction) with regards to the proposed development.

1.4 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- existing traffic and parking conditions surrounding the site
- suitability of the proposed parking in terms of supply (quantum) and layout
- service vehicle requirements
- the traffic generating characteristics of the proposed development
- suitability of the proposed access arrangements for the site
- the transport impact of the development proposal on the surrounding road network.

1.5 References

In preparing this report, reference has been made to the following:

- Campbelltown Council Development Control Plan (DCP)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- other documents and data as referenced in this report.

2. Existing Conditions

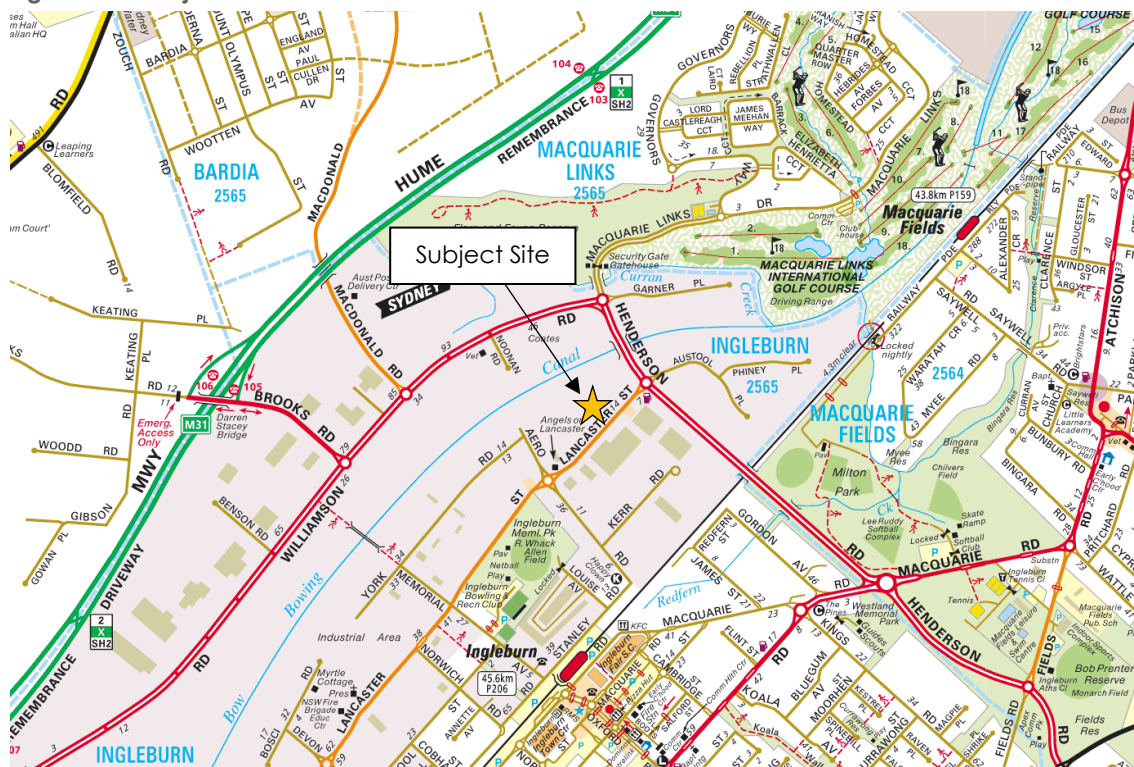
2.1 Subject Site

The subject site is located at 10 Lancaster Street in Ingleburn. The site of approximately 3,841sq.m has a frontage of 54m to Lancaster Street. The site currently has a land use classification as Light Industrial (IN2) and is occupied by an existing warehouse facility.

As the site is located within the Ingleburn Industrial Estate the surrounding properties are predominantly industrial land uses.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs



(Reproduced with permission from Sydway Publishing Pty Ltd)

2.2 Road Network

2.2.1 Adjoining Roads

Lancaster Street

Lancaster Street functions as a higher order local road and in the vicinity of the site is aligned in a northeast to southwest direction. It is a two-way road configured with a 2-lane, 12 metre wide carriageway, set within a 28 metre wide road reserve (approx).

Unrestricted kerbside parking is permitted on both sides of Lancaster Street within the vicinity of the site.

Lancaster Street is shown in Figure 2.2 and Figure 2.3.

Figure 2.2: Lancaster Street looking northeast



Figure 2.3: Lancaster Street looking southwest



2.2.2 Surrounding Intersections

The following key intersections currently exist in the vicinity of the site:

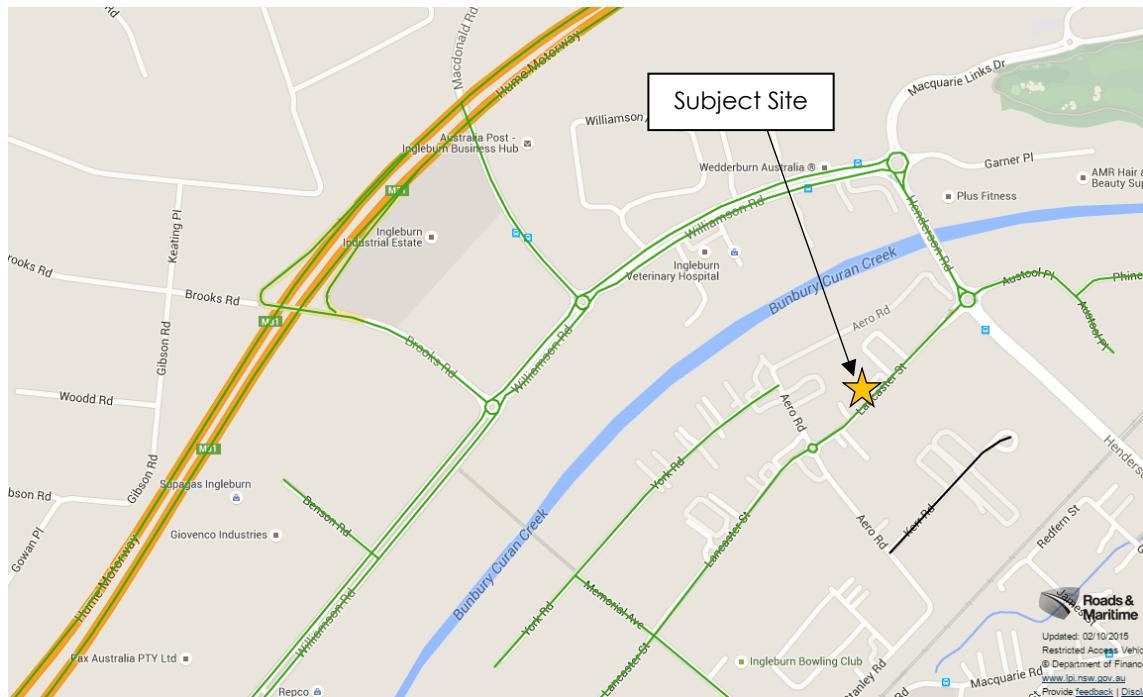
- Lancaster Street/Henderson Road (roundabout)
- Lancaster Street/Aero Road (roundabout)
- Henderson Road/ Williamson Road (roundabout)
- Hume Motorway/Brooks Road (freeway interchange)

2.2.3 RMS Heavy Vehicle Routes

In the vicinity of the subject site, Roads and Maritime Services (RMS) identifies Lancaster Road, Henderson Road, Williamsons Road, Brooks Road and Hume Motorway as approved B-Double routes.

The Restricted Access Vehicle map for approved B-Double vehicles in the vicinity of the subject site is shown in Figure 2.4 (approved routes shown in green).

Figure 2.4: Approved B-Double (25/26m) Routes



(Source: Reproduced from RMS – Restricted Access Vehicles Map online)

2.3 Active Transport

2.3.1 Public Transport

The nearest bus service within the vicinity is the 869 bus service which operates between Ingleburn and Liverpool. The nearest stop is located on Henderson Road at the Lancaster Street roundabout and is approximately 250m from the site.

Ingleburn train station is located approximately 1.1km to the south of the subject site.

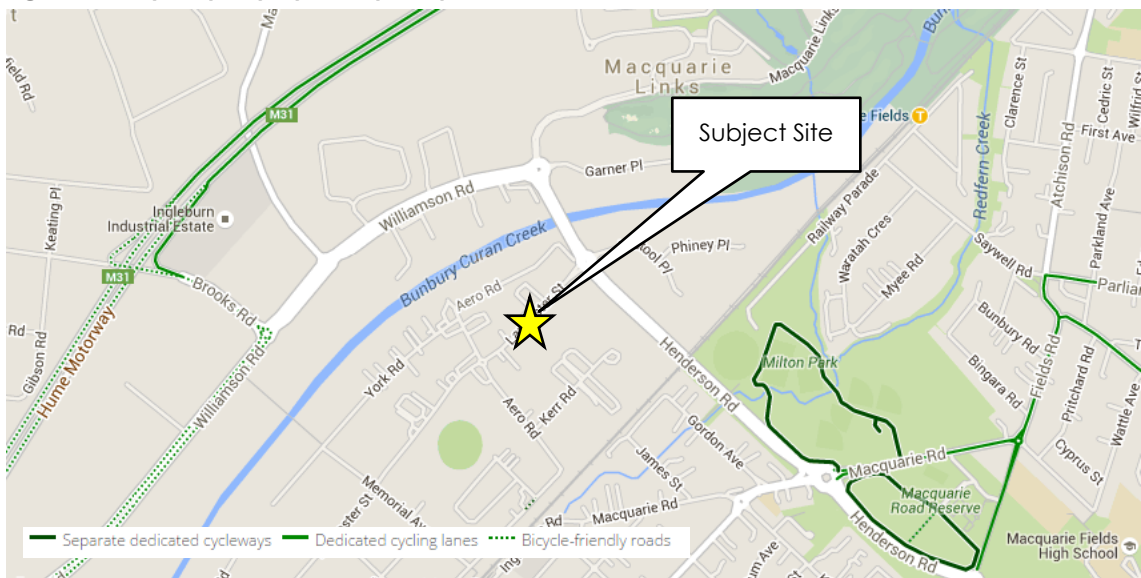
2.3.2 Pedestrian Infrastructure

A pedestrian path is provided on the north side of Lancaster Street in the vicinity of the site. In addition pedestrian paths are provided on Newton Road (eastern side only) and Victoria Street in the vicinity of the Site, providing pedestrian access to nearby bus stops on Newton Road and Victoria Street.

2.3.3 Cycle Infrastructure

Figure 2.5 shows the existing cycleway routes located within the vicinity of the subject site.

Figure 2.5: Sydney City Cycleways Map



(Source: www.sydneycycleways.net)

3. Development Proposal

3.1 Proposed Development

Ledox Australia has commenced leasing the industrial site at 10 Lancaster Street, Ingleburn with the intent to convert it into a car battery recycling facility. These batteries will then be broken down at the facility with recoverable components extracted for recycling and/or re-use.

It is anticipated that the facility will have a capacity to process up to 1,500 tonnes of batteries each month, with the recovered lead plates and lead sludge (comprising approximately 80% of the batteries) to be transported to Korea for re-processing into new car batteries. The residual waste materials will be removed for disposal or recycling, where appropriate recycle schemes are locally available.

3.2 Land Uses

It is proposed to retrofit the existing warehouse building into a battery recycling facility. There will be minimal building works to the existing building which will include:

- The installation of a shredding machine which will shred the car batteries allowing them to be recycled.
- Temporary removal of the warehouse roof to allow the installation of machinery within the warehouse.

The existing internal floor area of 1,997sq.m¹ (approximately) will be maintained.

The layout of the subject site along with the two existing access points are shown on Figure 3.1.

¹ Floor area based on the building covering 52% of the total 3,841sq.m site area.

Figure 3.1: Project Area



3.3 Car Parking and Vehicle Access

The proposal seeks to maintain the existing car parking and vehicle access provisions to the site. This includes:

- Separate entry and exit driveways to Lancaster Street
- The internal road layout will generally be maintained as part of the proposed development
- 12 car parking spaces are provided at the front of the site

The suitability of the car parking provision and layout is discussed in Section 4 of this report.

3.4 Pedestrian & Bicycle Facilities

A formal pedestrian access point is provided to Lancaster Street as shown in the above figure. This access point will be maintained. All crossovers to Lancaster Street will be securely gated.

The Project does not include the provision of any bicycle parking facilities.

3.5 Loading Areas

Loading arrangements for the Site would remain unchanged from the existing operation. As per the current configuration, fork lifts would be utilised to transfer goods internally.

4. Transport Impacts – Operational

4.1 Council Objectives

The car parking and access objectives as defined in Section 7.4 (Part 7 Industrial Development) of the Campbelltown DCP 2014 are reproduced below:

- *"To ensure that all required car parking is accommodated on site.*
- *To maintain the free flow and safe movement of traffic into and out of the site.*
- *To ensure that on site car parking does not detract from the visual character of the streetscape."*

4.2 Car Parking

4.2.1 DCP Requirements

The parking requirements for industrial uses is set out in Section 7.4 of the Campbelltown DCP, with the following car parking rate prescribed:

"For that part of the gross floor area occupied by uses other than office areas, lunch rooms and any associated office storage areas, car parking rates shall be provided in accordance with the following:

- i) a minimum of two (2) spaces (per unit), plus*
- ii) one space for every 100sqm of gross floor area for buildings up to 2000 square metres; plus*
- iii) one space per 250sqm for that part of the building exceeding 2000 square metres in gross floor area."*

Application of the above rate for the proposed development (1,997sq.m) indicates a car parking requirement of 22 spaces (=2+20). In this instance, the proposed formal on-site parking provision of 15 car spaces does not meet the DCP requirement.

4.2.2 Empirical Assessment

The mode share for existing employees in the vicinity of the site (Travel Zone 3247) has been sourced from the Bureau of Transport Statistics (BTS)². The journey to work data indicates that 82% of existing workers drive to work, the remaining trips are made up by car passengers (6%), train (6%), walk (1%), bus (1%) and other modes (1%).

Application of the above mode share to car (as driver) to the anticipated workforce of five to seven full time staff indicates a car parking demand of four to six spaces.

4.2.3 Adequacy of Parking

A total of 15 car spaces will be provided as part of the proposed development. The on-site supply does not meet the 22 car space requirement as outlined in the Campbelltown DCP. However, the assessment of the expected site operation indicates that the site could generate a car parking requirement of up to six car parking spaces which can be fully accommodated on site by the proposed car parking provision of 15 spaces.

² BTS website - <http://www.bts.nsw.gov.au/> . the data has been normalised to remove the 2% of respondents who did not state a mode share choice.

4.2.4 Layout

The car park layout has been designed in accordance with the requirements of the relevant Australian Standards (AS/NZS2890.1-2004).

The site has been designed to accommodate a 12.5m Heavy Rigid Vehicle circulating through the front of the site. A swept path assessment of this manoeuvre is provided in Appendix A.

4.3 Traffic Impact Assessment

The road network servicing the Ingleburn industrial precinct has been designed to accommodate traffic generation from typical industrial park uses. The site is anticipated to have a lower employment density (reflected in the lower car parking demands) than a typical industrial use and as such the traffic generation from the site is anticipated to be less than a typical industrial use.

The sections below set out an assessment of the following:

- Site specific traffic generation (utilising information provided by the Client)
- Generic industrial park use traffic generation (utilising the RMS Guide).

4.3.1 Traffic Generation – First Principles Assessment

Light Vehicles

The car parking assessment presented in Section 4.2 indicates that there will be a car parking demand of up to six spaces. Therefore, it is anticipated that the site could generate up to six movements during the AM and PM peak periods.

Heavy Vehicles

Information has been provided regarding truck delivery of stock to the site (inbound) and stock out of the site (outbound). The data is based on existing truck deliveries to other similar facilities and their forecast product volumes through this site. A summary of the average data is provided in Table 4.2.

It is noted that the data presented in the table, relates to average traffic generation, in this respect there may be some fluctuations with deliveries to and from the site. In particular, the delivery of old batteries to the site will be dependent on the availability of stock.

Table 4.1: Forecast Weekly and Daily Truck Movements

Delivery Type		Typical Truck Type (weight capacity)	Forecast Weekly Truck Numbers	Weekly Total Truck Movements (two way)	Average Daily Total Truck Movements (two way)
Inbound Goods	Old batteries	12.5m heavy rigid vehicle (20t) up to semi-trailer (40t)	20	40 (20 in / 20 out)	8
Outbound Goods	Polyethylene Separators	Up to 12.5m heavy rigid vehicle (20t)	1	2 (1 in / 1 out)	<1
	Lead	12.5m heavy rigid vehicle (20t) or 14.0m articulated vehicle	16	32 (16 in / 16 out)	6
	Waste Water	20,000L Tanker	5	10 (5 in / 5 out)	2
	Other waste	Garbage truck	2	4 (2 in / 2 out)	<1
Total	-	-	44	88 (44 in / 44 out)	18 (9 in / 9 out)

Table 4.2 indicates that the site is anticipated to generate up to 18 heavy vehicle movements per day. Adopting a typical distribution of heavy vehicle activity for an industrial use, the site could be expected to generate up to two movements during the AM and PM road network peak hours³.

Total

Based upon the above first principles assessment of traffic generation the site is expected to generate 8 vehicle movements during each peak hour (that is 6 light vehicles + 2 heavy vehicles).

4.3.2 Traffic Generation - Generic Industrial Traffic Generation Data

Typical traffic generation estimates for the proposed development have been sourced from the RMS Guide to Traffic Generating Developments (Technical Direction: August 2013). Estimates of the AM and PM peak hour traffic generation for the site are provided in Table 4.2.

Table 4.2: Subject Site Traffic Generation Rate

Source	Use	Size	Traffic generation Rate			Traffic Generation		
			AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour	Daily
Technical Direction 2013	Business Parks and Industrial Estates	1,997sq.m	0.52 movements per 100sq.m GFA	0.56 movements per 100sq.m GFA	4.6 movements per 100sq.m GFA	10	11	92

Table 4.2 indicates that adopting generic traffic generation rates that the subject site operating as a typical industrial use could be anticipated to generate some 10 and 11 movements in the AM and PM peak hours respectively, and 92 movements across the day.

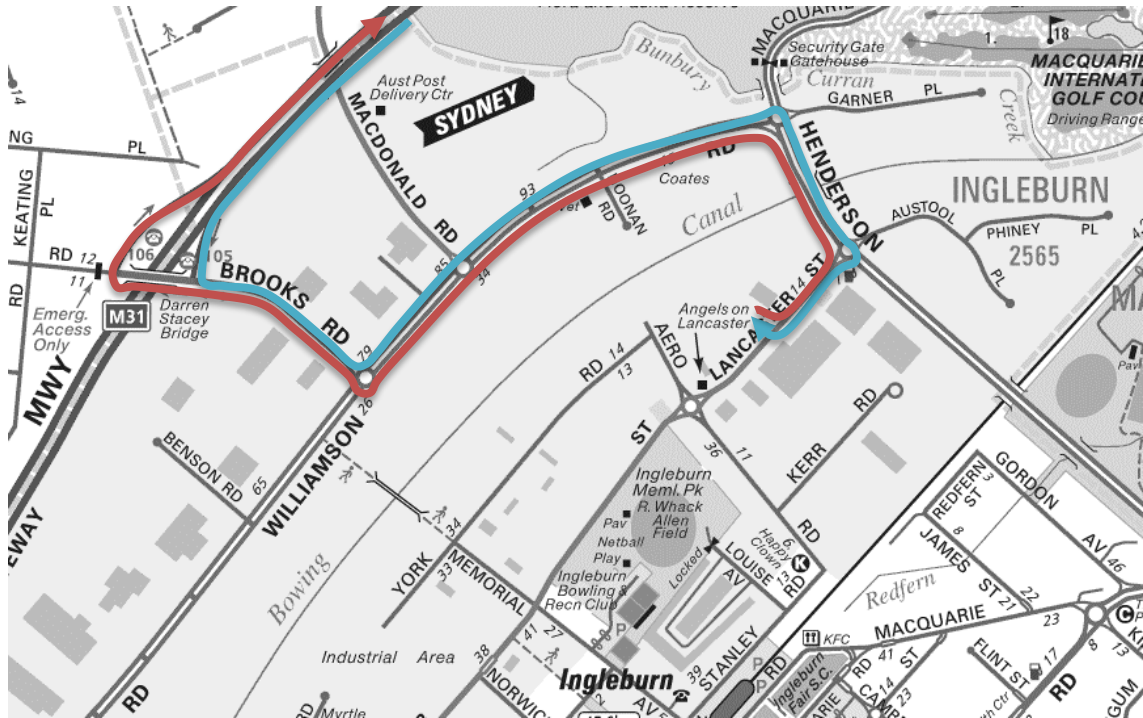
The above peak hour traffic generation estimates are higher than those anticipated for the site, noting that the traffic generation rates are based on a variety of industrial and business park uses rather than a site specific assessment.

³ Sourced from Table 3.4 'Traffic Generation distribution of industrial estates' of the RMS Guide to Traffic Generating Developments.

4.3.3 Heavy Vehicle Traffic Routes

The main vehicle access routes between the site and wider road network is illustrated in Figure 4.1.

Figure 4.1: Heavy Vehicle Routes to/from the Site



Alternate heavy vehicle routes exist for vehicles arriving from or heading to the southwest.

4.3.4 Traffic Impact

The road network within the Ingleburn industrial precinct was initially designed to cater for traditional industrial and factory uses. The proposed development is anticipated to generate less traffic during the critical peak hour periods than a traditional industrial land use (i.e. the existing use). By extension there should be adequate capacity in the surrounding road network to accommodate the traffic generated by the site.

The heavy vehicle routes identified in Figure 4.1 are already utilised extensively by heavy vehicle traffic. Furthermore, each of the intersections along this route are controlled by roundabouts which will assist the required left and right turning manoeuvres at these intersections.

Given the above, the traffic generated by the proposed development could not be expected to compromise the safety or function of the surrounding road network.

5. Transport Impacts – Construction

The following section sets out an overview of the transport impacts of the Project during the construction phase. It is understood that as part of the proposed battery plant construction, a number of minor modifications will be required to the existing building as follows:

- The installation of a shredding machine which will shred the car batteries allowing them to be recycled.
- Temporary removal of the warehouse roof to allow the installation of machinery within the warehouse.

The works associated within the construction phase of this project are considered minor and can be fully contained within the subject site.

5.1 Construction Phasing

The construction of the Project, to allow the conversion of the warehouse into a battery recycle facility, is anticipated to take place over a period of up to 6 months.

5.2 Traffic Generation

Construction vehicles would generally incorporate vehicles ranging in size from small commercial vehicles (utes and vans) up to 19m semi-trailers. Table 5.1 outlines the expected heavy vehicle movements generated during this period.

Table 5.1: Construction Traffic Volumes

Stage	Peak Hour Traffic Generation	Average Daily Traffic Generation
Construction	5 vehicle movements	10 vehicle movements

[1] Peak hours and daily traffic generation estimates have been based on GTA's understanding of the level of work required during the construction phase of this project.

Based on the above, there would be relatively low daily construction vehicle activity, with up to 5 vehicle movements expected in a peak hour. This level of additional traffic generation would not present a noticeable impact on the existing operation of the surrounding road network, noting that it would equate to up to one additional vehicle every 12 minutes.

It is noted that the construction traffic is less than the typical traffic generation for the existing site use (refer to Section 4.3.2).

Construction vehicles would be able to make use of the compound area within the site to turn around when exiting the Site.

5.3 Heavy Vehicle Access Routes

All heavy vehicles would be accommodated within the works area during construction, with heavy vehicles not permitted to queue or park within the streets surrounding the Site.

Construction vehicles would be required to access the site from Lancaster Street which provides connection to surrounding arterial roads and the Hume Motorway to the north. Heavy vehicles would be instructed to use the designated routes and be confined to the main road network as indicated in Section 4.3.3 (Figure 4.1). Each designated route has been identified with the aim of minimising the impact of construction traffic on streets in the vicinity of the site.

5.4 Other Considerations

Operating Hours

It is anticipated that the construction works would be undertaken during typical construction hours as follows:

- Monday to Friday: 7:00am-6:00pm
- Saturday: 8:00am-1:00pm
- Sunday/Public Holidays – No work.

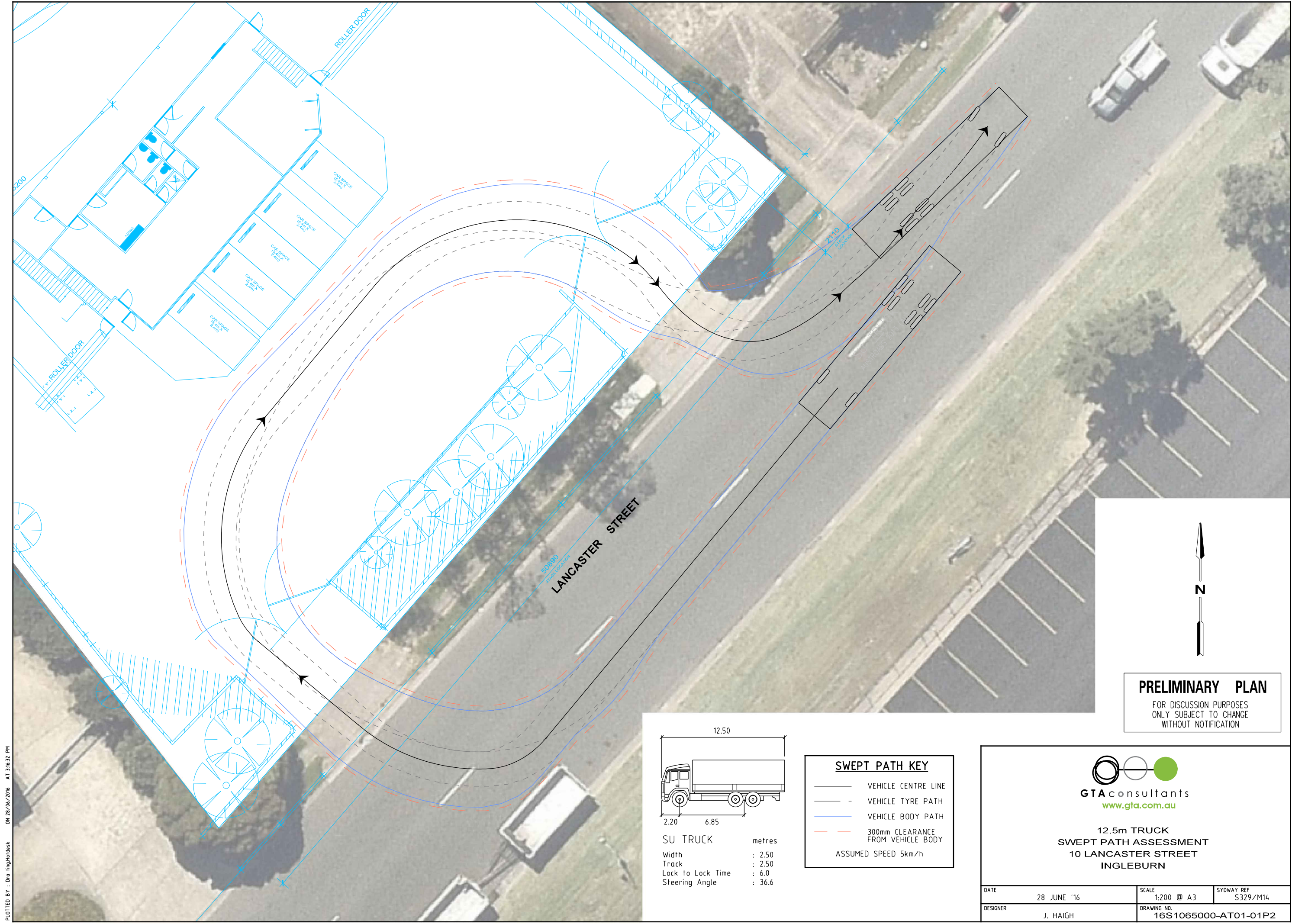
6. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

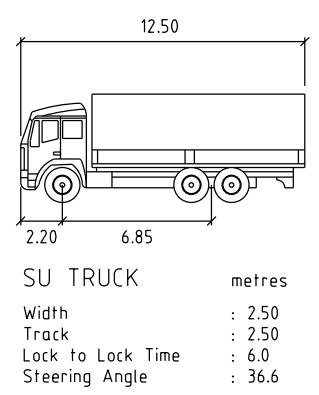
- i The proposed Project generates a DCP parking requirement of 22 spaces.
- ii The proposed supply of 12 spaces does not meet the DCP requirement. However, an empirical assessment of the likely car parking demand generated by the site indicates that the proposed 12 spaces on-site would be able to accommodate the likely demand (generated by the 5 to 7 staff).
- iii The use of the existing on-site loading facilities is considered satisfactory.
- iv An indicative industrial development on the site could be expected to generate up to 10 and 11 vehicle movements in the AM and PM peak hours respectively, and 92 movements across the day. Based on a site specific assessment the development will generate less traffic than the figures outlined by the RMS Guide to Traffic Generating Developments.
- v There is adequate capacity in the surrounding road network to cater for the traffic generated during the construction phase of works.
- vi The proposed development does not seek to change the existing internal layout, car parking supply or vehicle access points.
- vii No specific road network upgrades are proposed or required to accommodate the operational or construction traffic volumes.
- viii Overall the Project is unlikely to result in significant adverse traffic or access impacts during construction or operation.

Appendix A

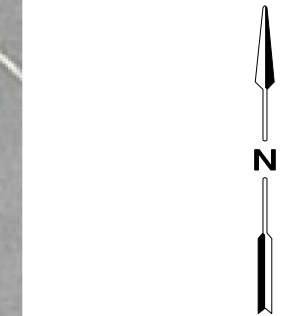
Swept Path Assessment



ON 28/06/2016 AT 3:16:32 PM
PLOTTED BY : Dra fmg/ho/deak



SWEEP PATH KEY	
	VEHICLE CENTRE LINE
	VEHICLE TYRE PATH
	VEHICLE BODY PATH
	300mm CLEARANCE FROM VEHICLE BODY
ASSUMED SPEED 5km/h	

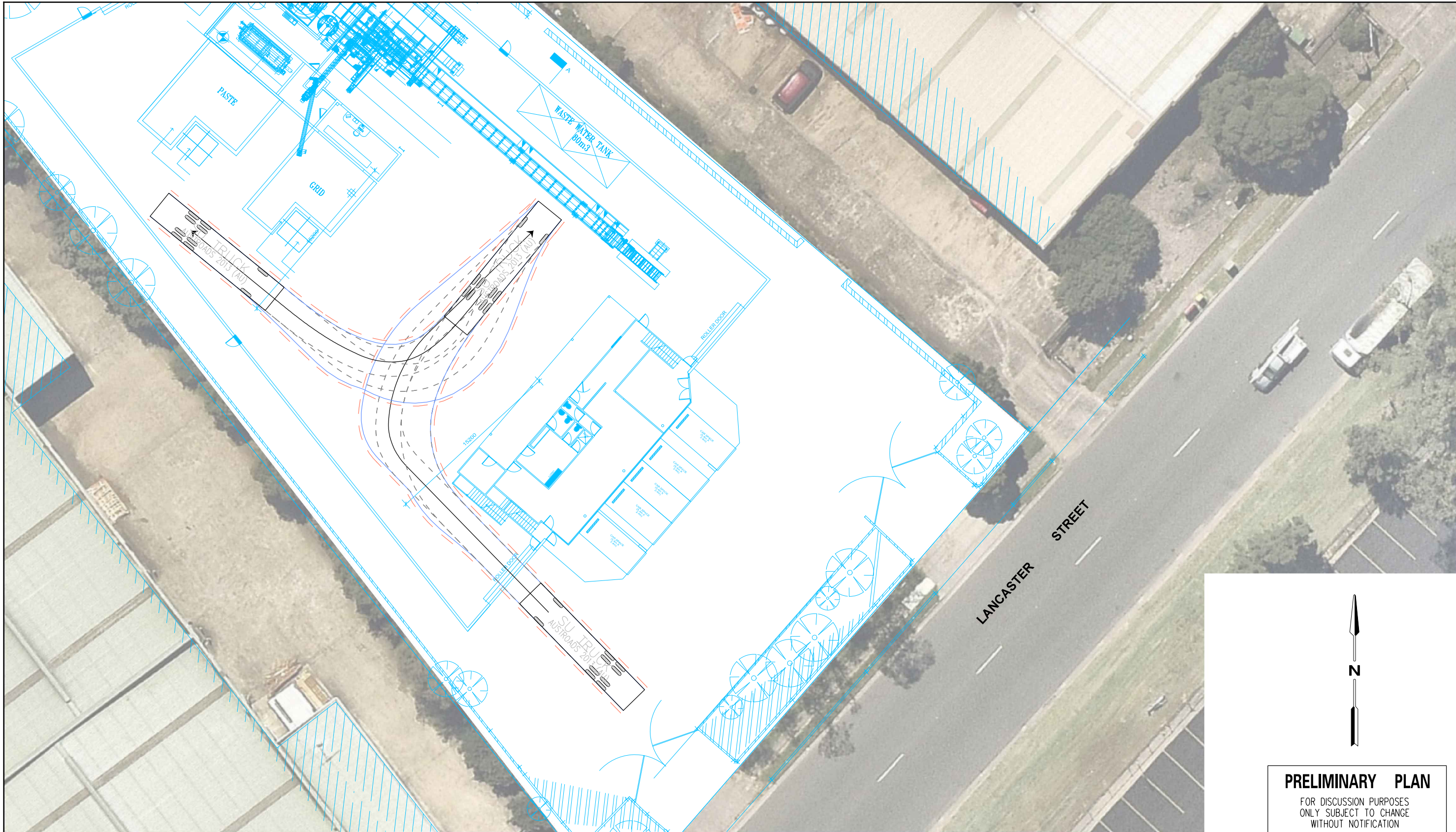


PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION



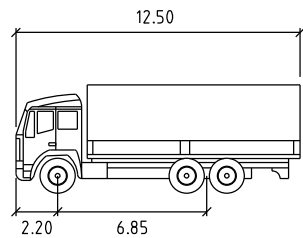
**12.5m TRUCK
SWEEP PATH ASSESSMENT
10 LANCASTER STREET
INGLEBURN**

DATE	28 JUNE '16	SCALE	1:200 @ A3	SYDWAY REF	S329/M14
DESIGNER	J. HAIGH	DRAWING NO.	16S1065000-AT01-01P2		



PRELIMINARY PLAN

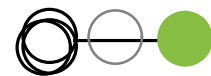
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SU TRUCK metres
Width : 2.50
Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 36.6

SWEPT PATH KEY

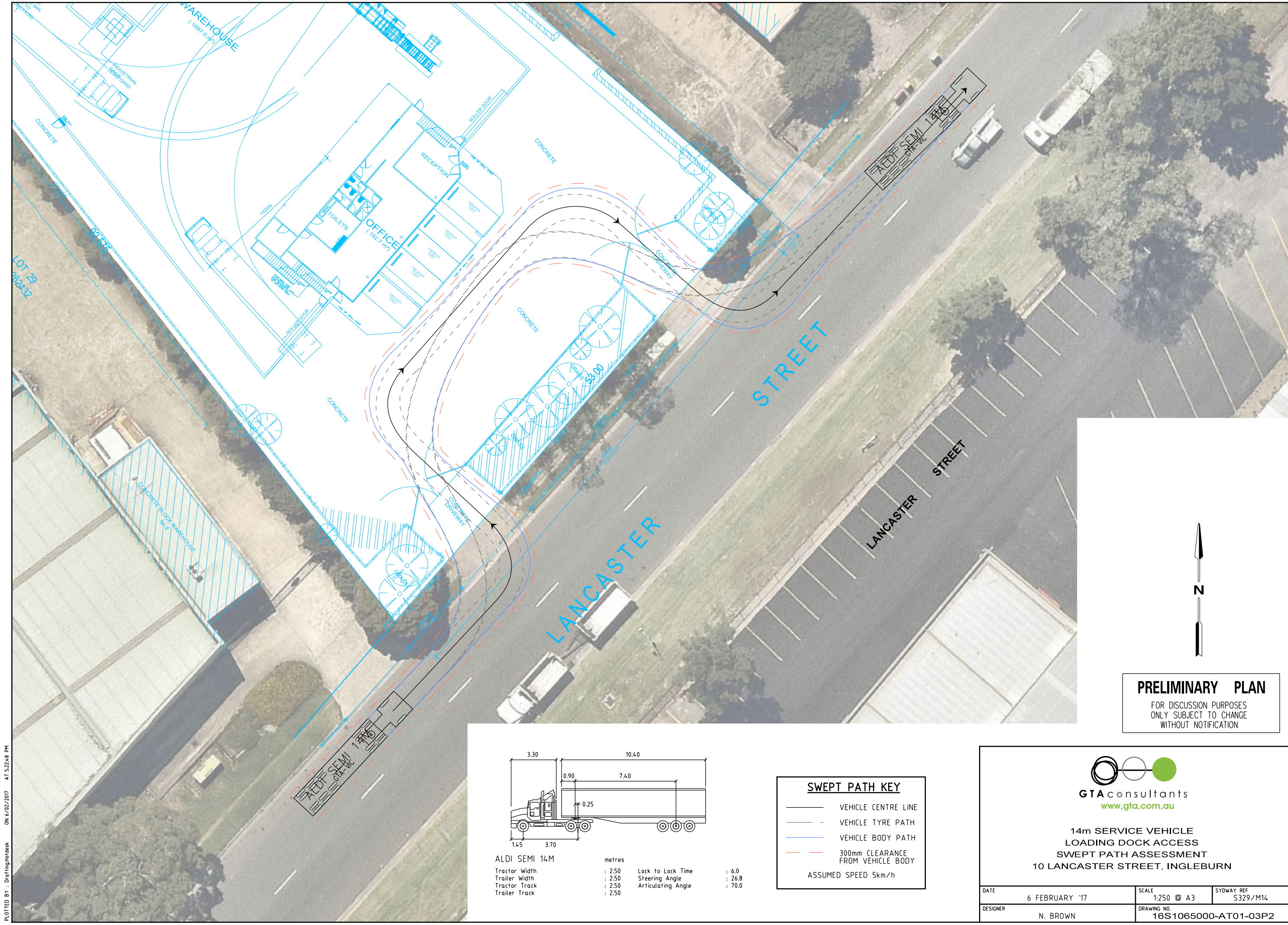
- VEHICLE CENTRE LINE
 - - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 300mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



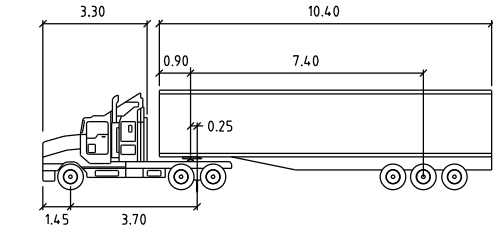
GTA consultants
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12.5m SER ICE EHICLE
L A ING CK ACCESS
SWEPT PATH ASSESSMENT
10 LANCASTER STREET INGLEBURN

DATE	28 JUNE '16	SCALE	1:250 @ A3	SYDWAY REF	S329/M14
DESIGNER	J. HAIGH	DRAWING NO.	16S1065000-AT01-02P2		



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

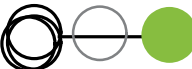


ALDI SEMI 14M			
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 26.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



GTA consultants
www.gta.com.au

**14m SERVICE VEHICLE
LOADING DOCK ACCESS
SWEPT PATH ASSESSMENT
10 LANCASTER STREET, INGLEBURN**

DATE	6 FEBRUARY '17	SCALE	1:250 @ A3	SYDWAY REF	S329/M14
DESIGNER	N. BROWN	DRAWING NO.	16S1065000-AT01-03P2		

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