planning consultants

Planning Proposal

Amendments to Maximum Height Limit

137-141 Newton Road, Blacktown

Prepared for: Mr. Nat Foti
March 2018

PO Box 230 Pennant Hills NSW 1715 | P 02 9980 6933 | www.dfpplanning.com.au

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11 Dartford Road, Thornleigh NSW 2120
207/506 Miller Street, Cammeray NSW 2062

PO Box 230
Pennant Hills NSW 1715

t: 02 9980 6933
f: 02 9980 6217

e: dfp@dfpplanning.com.au

DFP Planning Pty Limited
ACN 002 263 998

www.dfpplanning.com.au

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Abbreviations

Council	Blacktown Council
DA	development application
DCP	development control plan
DFP	DFP Planning Pty Limited
DPE	NSW Department of Planning and Environment
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPI	environmental planning instrument
FSR	floor space ratio
GFA	gross floor area
LEP	local environmental plan
LGA	local government area
PP	Planning Proposal
RL	reduced level
RMS	NSW Roads and Maritime Services
SEE	Statement of Environmental Effects
SEPP	State Environmental Planning Policy

1 Introduction

1.1 Commission

DFP has been commissioned by Mr. Nat Foti to prepare a Planning Proposal in respect of the land at 137-141 Newton Road, Blacktown (the Site).

The Planning Proposal seeks to amend the Height of Buildings Map from 10 metres (3 storeys) to a maximum of 19 metres (5 storeys) on the corner of the site adjacent to the intersection of Newton Road and Lancaster Street and 14 metre (3-4 storeys) for the remainder of the site. The amendment to the height limit will facilitate a new shop top housing development on the site that provides a corner element to the intersection of Lancaster Street and Newton Road.

1.2 Purpose of this Statement

The purpose of this report is to provide Council and the Department of Planning and Environment (DPE) with the necessary information to assess the Planning Proposal and for the Minister to make a Gateway Determination in accordance with Section 56 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.3 Material Relied Upon

This SEE has been prepared by DFP based on information referred to herein and/or appended to this report and Site inspections undertaken on 04/04/17 and 09/01/18.

1.4 Summary of Conclusions and Recommendations

This report concludes that the proposal to amend the Height of Buildings Map to have a maximum height of 18 metres at the corner of the site and a maximum height of 14 metres for the remainder of the site:

- is consistent with regional and subregional planning strategies as well as local planning studies;
- is not inconsistent with relevant SEPPs and Section 117 Directions; and
- will allow for the redevelopment of the site for shop top housing.

Furthermore, the concept plan for the Site demonstrates that environmental factors can be adequately addressed subject to more detailed assessment at the DA stage.

The concept plan demonstrates that providing a corner feature of 5 storeys transitioning to 3 storeys will have a positive impact on the streetscape and facilitate the redevelopment of the site which is currently dominated by grade car parking.

Accordingly, we recommend that Council endorse this Planning Proposal and forward it to the Minister for Gateway Approval.

2 Background

A meeting has been undertaken between Blacktown Council and DFP on 2 March 2017 to discuss the concept design and amendment of the maximum height limit of the site. At this meeting DFP prepared a Site Analysis Plan to identify key site constraints. This plan is attached at **Appendix 1**.

The plan identifies key features which will impact a development, including surrounding land uses, key trees, existing vehicle entry, high and low points of the site, potential privacy and noise impacts, and existing bus stops.

The site analysis identifies the following site constraints and opportunities:

1. Relationship to the adjoining Blacktown West Public School.
2. Topography.
3. Nature of surrounding buildings and height limits.
4. Existing landscaping.
5. Bus Stop locations.

3 Site Context

3.1 Location

The Site is located in Blacktown, 1.3km south east of Blacktown Train Station (see **Figure 1**). The site is adjoins a low density residential area of Blacktown, generally characterised by single or double storey detached dwellings and the Blacktown West Public School.

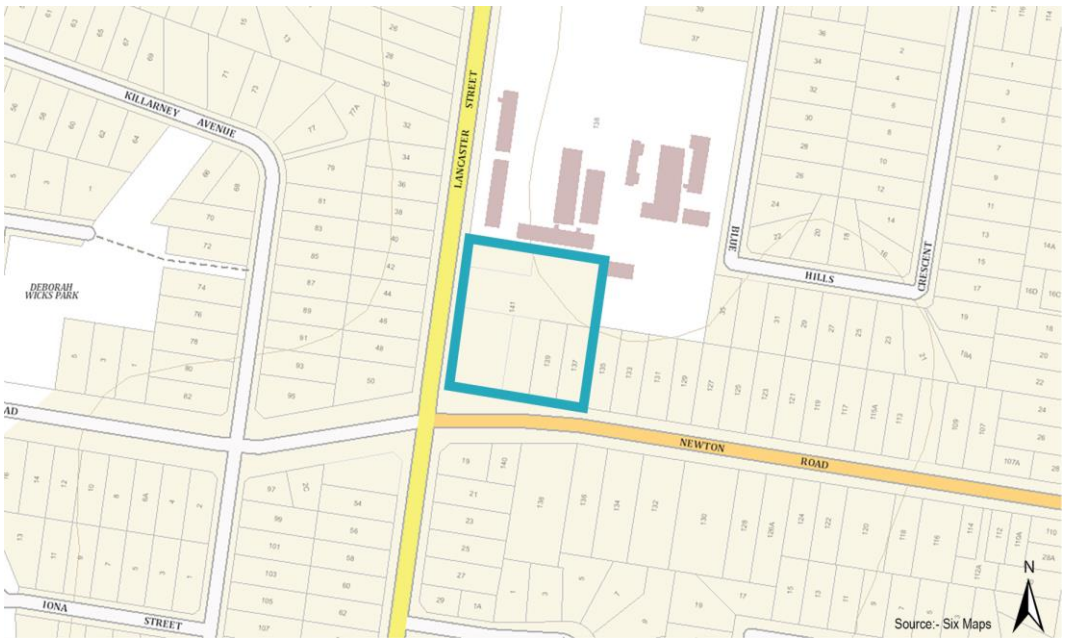

Figure 1 Site Location

3.2 Site Description

The Site comprises three separate sites, being 137, 139 and 141 Newton Road, Blacktown and comprises six allotments and is legally described as Lot 1 to 6 in Deposited Plan (DP) 211530 (see **Figure 2**).

Figure 2 Aerial Photograph

The site is rectangular in shape and relatively flat, with a small slope from the height point at the south western corner of the site to the north eastern corner. A site survey has been prepared by Freeburn Surveying and is attached at **Appendix 2**.

3 Site Context

The site comprises three sites, two of which contain detached dwellings and one site contains the Lancaster Street Fruit Market. It is proposed to consolidate the 2 lots which contain the dwellings into the shop-top housing development. The 2 dwelling house lots have already been zoned B1 Neighbourhood Centre consistent with the land occupied by the existing fruit market.

The most eastern lot fronting Newton Road is 137 Newton Road and comprises one rectangular allotment which is 670.3m^2 in area. The site contains a single storey brick dwelling, with a detached brick garage in the rear yard and driveway access along the eastern boundary (see **Figure 3**).

Figure 3 137 Newton Road

Adjoining No. 137 to the west is 139 Newton Road and comprises one rectangular allotment which is 670.3m^2 in area. The site contains a single storey brick dwelling, with a detached brick garage in the rear yard and driveway access along the eastern boundary (see **Figure 4**).

3 Site Context

Figure 4 139 Newton Road

On the corner of Newton Road and Lancaster Street is 141 Newton Road which comprises four allotments and has a total area of 4,875.7m^2. The site contains a large brick warehouse, comprising Lancaster Street Fruit Market (see **Figure 5**) and 63 uncovered car parking spaces (see **Figure 6**).

Figure 5 The warehouse containing a fruit market

3 Site Context

Figure 6 Car parking on site

Vehicle entry is via Lancaster Street, adjacent to the northern boundary (see **Figure 7**). Separate entry and exit is provided from a 20 metre wide driveway.

Figure 7 Vehicle entry

Loading is provided adjacent to the northern boundary where a roller door is provided to the warehouse where deliveries are made.

3 Site Context

Two large gum trees are located adjacent to the vehicle entry along the western boundary (see **Figure 8**). Jacaranda trees are located surrounding the western and southern boundaries between the parking area and the boundary fence.

Figure 8 Gum trees located on site

3.3 Surrounding Development

The site is located on the north eastern corner of Lancaster Street and Newton Road. This intersection is signalised by traffic lights and turning is permitted in all directions, with the exception of east bound traffic on Newton Road turning right.

3 Site Context

North of the site is Blacktown West Public School, a local public school comprising several single storey buildings and an oval. The site is adjacent to classrooms and the oval (see **Figure 9**). Two large gum trees are also located adjacent to the site along the shared boundary (see **Figure 10**). These trees provide some screening to the school.

Figure 9 School classrooms that are adjacent to the site

Figure 10 Large gum trees located along the shared boundary.

3 Site Context

East of the site is 135 Newton Road, a single storey brick dwelling with a large carport (see **Figure 11**). Along the northern side of the eastern boundary is the oval of Blacktown West Public School.

Figure 11 135 Newton Road, Blacktown

South of the site on the opposite side of Newton Road are low and medium density residential dwellings. 136 and 140 Newton Road and 19 Lancaster Street are single and double storey detached dwellings (see **Figure 12**) and 138 is a two storey townhouse development comprising 7 townhouses (see **Figure 13**).

Figure 12 140 Newton Road and 19 Lancaster Street

3 Site Context

Figure 13 138 Newton Road

On the opposite side of Lancaster Street are six detached dwellings, comprising 40-50 Lancaster Street (see **Figure 14**). These dwellings are single storey and vary in design style.

Figure 14 40 and 42 Lancaster Street (top) and 44 and 46 Lancaster Street (bottom)

Newton Road and Lancaster Street are regional roads. Newton Road provides an east west link from Blacktown Town Centre to the local centre in Doonside and Lancaster Street

3 Site Context

provides a north south link between Richmond Road and Bungarribee Road. Lancaster Street has a variable speed limit due to the school zone.

Both streets have local bus stops, providing services to Blacktown Station, Blacktown International Sports Park, Woodcroft Field, Plumpton Park, Plumpton Marketplace, Mount Druitt TAFE, Mount Druitt Station, Rooty Hill RSL and Rooty Hill Aquatic Centre.

3.4 Existing Legislative Context

Under Blacktown Local Environmental Plan 2015 (BLEP 2015) the site has the following zonings and development standards applying:

- Zoning: B1 Neighbourhood Centre (see **Figure 15**);
- Minimum Lot Size: N/A (see **Figure 16**);
- Height of Buildings: 10 metres ((see **Figure 17**);
- Floor Space Ratio: N/A (see **Figure 18**); and
- Design Excellence: Applies pursuant to Clause 7.7 of BLEP2015 (see **Figure 19**)

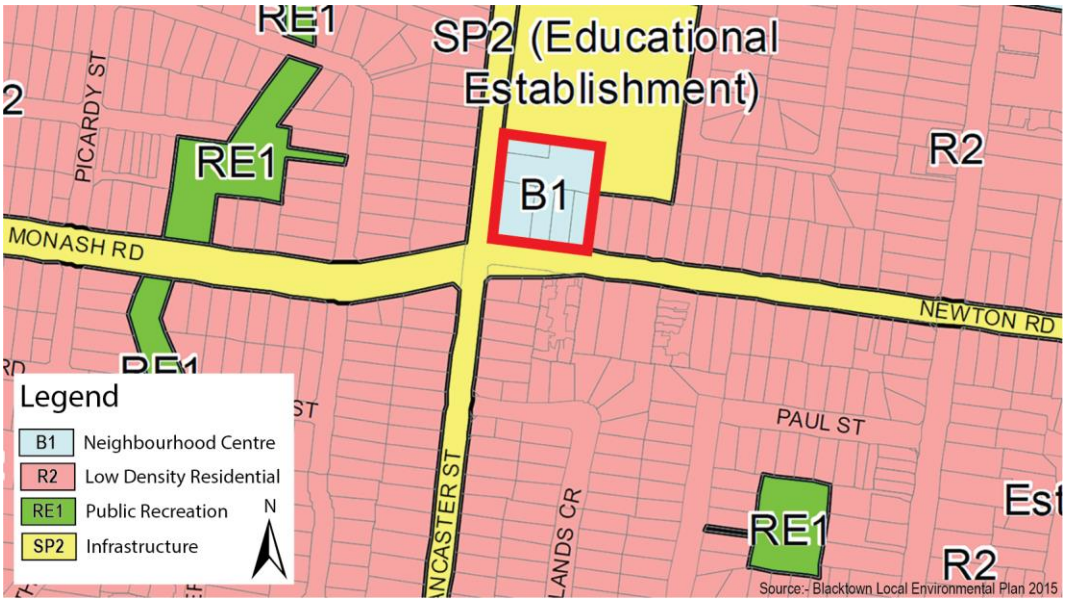

Figure 15 Existing Zoning map extract

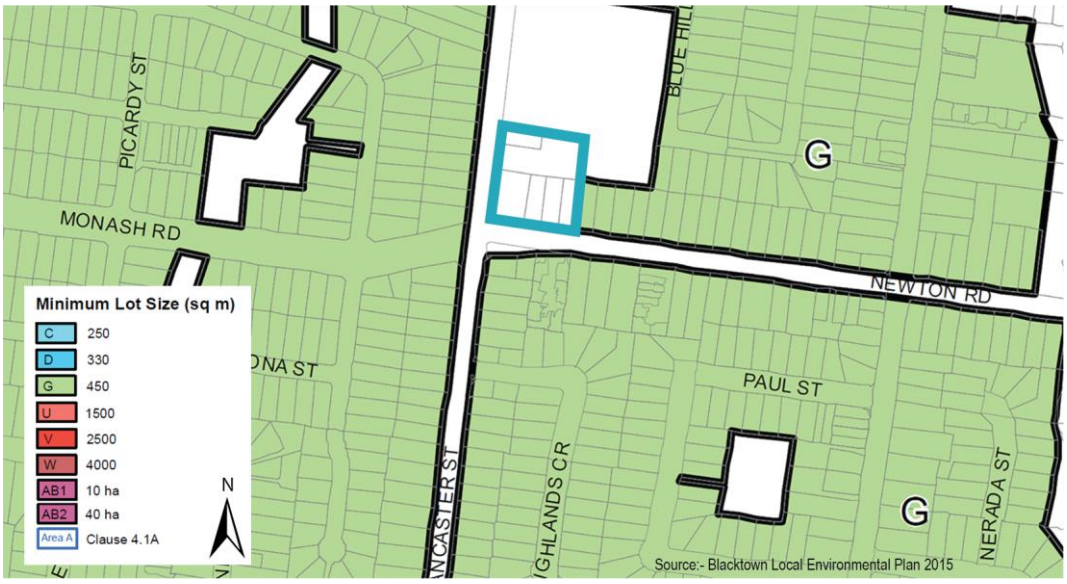

Figure 16 Existing Minimum Lot Size map extract

3 Site Context

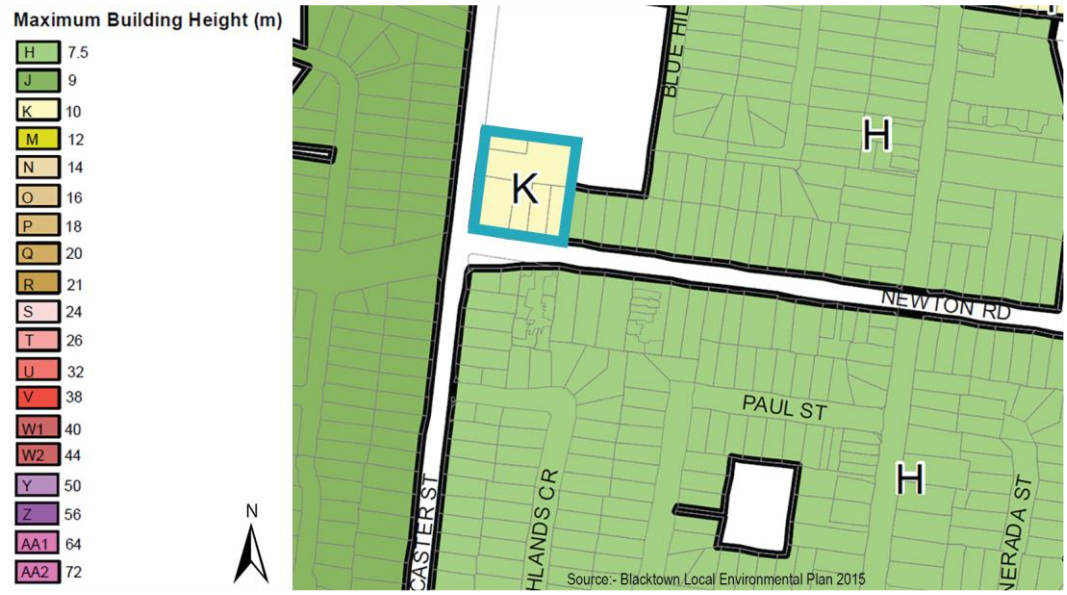

Figure 17 Existing Maximum Building Height map extract

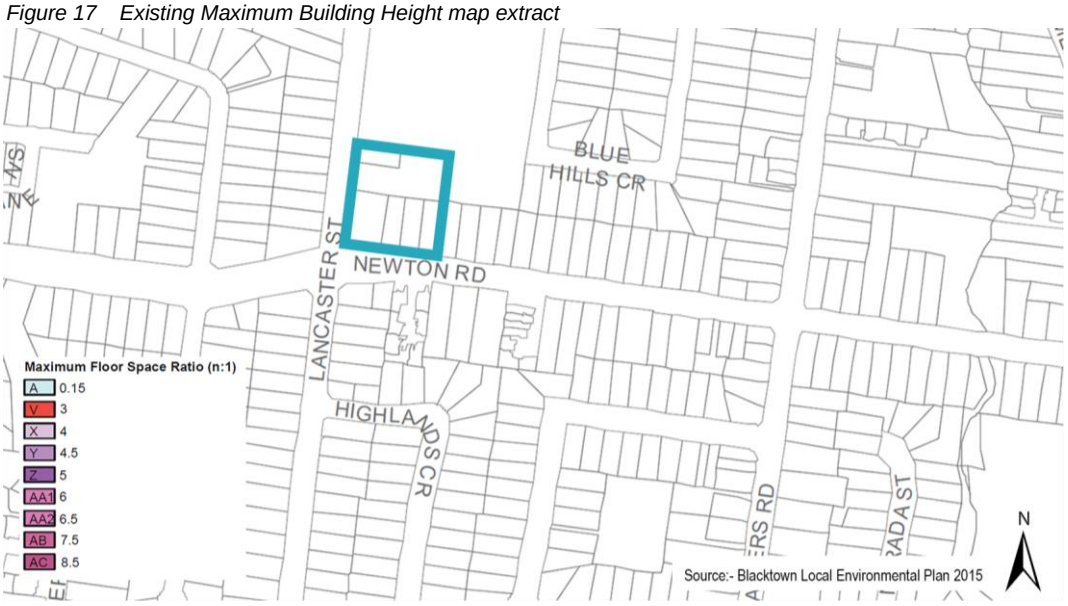

Figure 18 Existing FSR map extract

Figure 19 Existing Design Excellence map extract

4 Concept Proposal

4.1 Summary and Development Statistics

The proposed concept comprises:

- Ground floor retail tenancies and a supermarket;
- 2-4 storeys of residential units above;
- Basement car parking; and
- Vehicular access via Lancaster Street.

The concept plan package has been prepared by AMG Architecture and is attached at **Appendix 3**. The development will include a five storey corner element at the corner of Newton Road and Lancaster Street. The building will taper down to three storeys at the side boundaries and rear corner. The key development statistics of the concept proposal are detailed in **Table 1**.

Table 1 Development Statistics	
Site Area	6,216.3m^2
Number of Retail Tenancies	13 tenancies
Speciality Retail tenancies Floor Area	Approximately 1,200m^2 (12 tenancies)
Supermarket Floor Area	Approximately 2,000m^2 – 1 supermarket
Residential Apartments	74 units
Basement Levels	3 Levels
Car Parking Spaces	234 spaces
Maximum Height	17.46 metres
Front Setbacks (Newton Road and Lancaster Street)	4 metres
Side Setback to the School	6.5 metres
Side Setback to 156 Newton Road	3.5 metres

The following subsections provide a more detailed description of the concept proposal.

4.2 Building Form

The proposed development comprises a supermarket, 12 speciality retail tenancies and 74 residential units. The development includes ground floor retail uses which will create a podium level for the residential units above.

A supermarket will be located along the eastern boundary of the site. The supermarket will be serviced by a loading bay and loading dock, located along the northern side of the site, providing vehicle access to Lancaster Street.

The proposal will also include 12 speciality retail tenancies located in the south western corner, addressing Newton Road and Lancaster Street. At the rear of the retail tenancies will be the garbage bin enclosure area.

The ground floor will act as a podium with residential units above. Residential units are setback from the façade of the retail buildings on the ground floor. In the north-eastern corner and will comprise 2 residential levels above the podium with 8 units located on each level.

4 Concept Proposal

An 'L'-shaped building addresses Lancaster Street and Newton Road. A 4 storey corner is provided above the podium which tapers down to 3 storeys then to 2 storeys at the eastern and northern edges of the building.

When viewed from the street level, the building will present as a 5 storey building addressing the corner of Lancaster Street and Newton Road. The 5 storeys consist of ground level retail with shop fronts activating the streets and 4 storeys of residential apartments above.

The proposal tapers down to 4 storeys then 3 storeys adjacent to the school and 135 Newton Road.

Landscaped setbacks are provided along the northern and eastern boundaries to allow the building to be located in a landscaped setting.

A 3D montage has been prepared and is provided at **Figures 20** and **21** below and at **Appendix 4**.

Figure 20 View looking north east at the Newton Road elevation

Figure 21 View looking east at the Lancaster Street Elevation

4 Concept Proposal

4.3 Vehicular Access

Vehicle access will be provided along Lancaster Street. A loading dock entry will be provided adjacent to the northern boundary, setback 6 metres from the northern boundary. The vehicle basement access for residents and retail uses is located adjacent to the southern side of the loading dock entry which is adjacent to the northern boundary.

The proposed driveways are located in the existing position of the existing driveway to the supermarket. It is proposed that the existing driveways for the dwellings at 137 and 139 Newton Road will be extinguished and kerbs will replace the driveway entries.

A traffic assessment has been prepared by Traffic Solutions Pty Ltd based on the concept design and is attached at **Appendix 5**. The report concludes that the concept plans generally comply with Australian Standards, however this will be further confirmed in the detailed development plans.

Based on the studies of the traffic assessment it is predicted that the concept design will generate an additional 102 morning and 269 evening peak hour trips. A SIDRA model analysis was then prepared to establish the impacts of the proposal on traffic saturation. The conclusion of the SIDRA analysis was that the surrounding intersections would operate at a satisfactory level of service with minimal delays and spare capacity.

Two minor amendments are recommended at this stage. It is recommended that the loading dock and basement parking driveways be separated by 2 metres to provide a refuge between driveways. It is also recommended that a two lane exit be provided to the car driveway. These recommendations can be incorporated in the detailed development plans which would be provided at DA stage.

5 Matters Required by s55 of the EP&A Act

5.1 Introduction

Section 55 of the EP&A Act relates to Planning Proposals and specifically, the matters that are to be addressed in a Planning Proposal. Specifically, Section 55 states:

> *"(1) Before an environmental planning instrument is made under this Division, the relevant planning authority is required to prepare a document that explains the intended effect of the proposed instrument and sets out the justification for making the proposed instrument (the Planning Proposal).*
>
> *(2) The Planning Proposal is to include the following:*
>
> *(a) a statement of the objectives or intended outcomes of the proposed instrument,*
>
> *(b) an explanation of the provisions that are to be included in the proposed instrument,*
>
> *(c) the justification for those objectives, outcomes and provisions and the process for their implementation (including whether the proposed instrument will comply with relevant directions under section 117),*
>
> *(d) if maps are to be adopted by the proposed instrument, such as maps for proposed land use zones; heritage areas; flood prone land—a version of the maps containing sufficient detail to indicate the substantive effect of the proposed instrument,*
>
> *(e) details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.*
>
> *(3) The Secretary may issue requirements with respect to the preparation of a Planning Proposal."*

The following subsections of this Planning Proposal address the requirements of Section 55 of the EP&A Act.

5.2 Part 1 - Objectives or Intended Outcomes (Section 55(2)(a))

5.2.1 Objectives and Outcomes

The intended objective or outcome of this Planning Proposal is:

> *To allow an increased building height limit to allow a new shop top housing development.*

5.2.2 Existing Zone objectives and permissible uses

The site is currently zoned B1 Neighbourhood Centre and this planning proposal does not seek to amend the land use zone. The development proposed in the concept plan is permissible in the B1 Neighbourhood Centre zone.

The B1 Neighbourhood Centre Zone Objectives and Land Use Table pursuant to the current version of the Blacktown Local Environmental Plan 2015 are stated as follows:

> *"**1 Objectives of zone***
>
> - *To provide a range of small-scale retail, business and community uses that serve the needs of people who live or work in the surrounding neighbourhood.*
> - *To allow development that is compatible with the scale and form of the surrounding area.*
>
> ***2 Permitted without consent***
>
> *Nil*
>
> ***3 Permitted with consent***
>
> *Boarding houses; Business premises; Centre-based child care facilities; Community facilities; Medical centres; Neighbourhood shops; Respite day care centres; Roads; Shop top housing; Water reticulation systems; Any other development not specified in item 2 or 4*

5 Matters Required by s55 of the EP&A Act

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Biosolids treatment facilities; Boat building and repair facilities; Boat launching ramps; Boat sheds; Bulky goods premises; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Electricity generating works; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Garden centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home occupations (sex services); Hospitals; Industrial retail outlets; Industrial training facilities; Industries; Information and education facilities; Jetties; Landscaping material supplies; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Plant nurseries; Pubs; Recreation facilities (major); Recreation facilities (outdoor); Registered clubs; Research stations; Residential accommodation; Resource recovery facilities; Restricted premises; Roadside stalls; Rural industries; Rural supplies; Sewage treatment plants; Sex services premises; Storage premises; Timber yards; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Vehicle sales or hire premises; Warehouse or distribution centres; Waste disposal facilities; Water recreation structures; Water recycling facilities; Water supply systems; Wharf or boating facilities; Wholesale supplies"

The meanings of words or expression within the above provisions are subject to the definitions in the *Standard Instrument (Local Environmental Plans) Order 2006.*

5.3 Part 2 - Explanation of Provisions (Section 55(2)(b))

5.3.1 Proposed Permissibility

It is proposed to construct a Shop-top housing development. Shop top housing, Commercial premises (including Retail, Business and Office premises) are permitted with consent on the site. The zoning of the Site therefore does not need to change to support this Planning Proposal.

In addition, minimum lot sizes and FSR controls generally do not apply to Business Zones in the Blacktown LGA, these maps do not need to be amended as part of this Planning Proposal.

The Planning Proposal will however need to amend the Building Height map to allow for a 5 storey Shop top housing development therefore the proposed outcome of construction a new shop top housing development will be achieved by:

> *Amending the Building Height Map to allow a building with a maximum height of 14 metres for Lots 1,2, 5 and 6 and 18 metres for lots 3 and 4.*

18 metres height is required to allow a 4.5 metre ceiling height for the retail component.

5.4 Part 3 – Justification (Section 55(2)(c))

5.4.1 Section A – Need for the Planning Proposal

Strategic Studies or Reports

This Planning Proposal has not been prepared in response to any specific Strategic Studies or Reports prepared by Council or any other Government agencies.

Best Means of Achieving the Intended Objectives or Outcomes

The options for achieving the intended Objective/Outcome of this Planning Proposal are:

1. Amending the Building Height Map of the BLEP 2015 to allow a maximum building height of 18 metres for the corner lots (being Lots 3 and 4) and amending the remainder of the site (Lots 1, 2, 5 and 6) to 14 metres; or

2. Lodge a Development Application for the concept design with a Clause 4.6 variation request to vary the building height limit by 80% from 10 metres to 18 metres.

In our opinion, Option 1 is the best means of achieving the Objective/Outcome of this Planning Proposal as allowing a 80% non-compliance relating to the height limit will set an undesirable precedent and may provide grounds for other similar Clause 4.6 variation requests.

Preparing a Planning Proposal allows for a full assessment of the strategic context of the site and ensures what is mapped in the BLEP 2015 actually reflects the scale of development on the site.

An 18 metre height limit will allow for a five storey shop top housing development with lift overruns on the corner and 14 metres will allow for 3-4 storeys and lift overrun for the remainder of the site. The 18 metre height limit will allow a 4.5 metre floor to ceiling height and accommodate the slope of the land. The height limit will also allow space for lift overruns and therefore will not require a Clause 4.6 variation request to be lodged for a development application.

5.4.2 Section B – Relationship to Strategic Planning Framework

A Plan for Growing Sydney 2036

A Plan for Growing Sydney is the NSW Government's key strategic planning document which was released in December 2014 and sets out the framework for the growth of Sydney over the next 20 years. In the Plan, Blacktown is identified as a Strategic Centre. The plan is clear in its strategic intent to increase housing supply, strengthen Sydney's economic output and encourage urban renewal and sustainability. This vision for Sydney is set out in four overarching goals, two of which directly relate to the proposal. They are:

Goal 1: Sydney's Competitive Economy

Goal 2: A City of housing choice, with homes that meet our needs and lifestyles.

The consistency with Goal 1 and 2 and the corresponding directions and actions is discussed in the table below:

Table 2 The proposals consistency with *A Plan for Growing Sydney*

Action point	Proposals Relationship to the action point
Direction 1.7: Grow strategic centres – proving more jobs closer to home	
1.7.1 Invest in Strategic Centres across Sydney to grow jobs and housing and create vibrant hubs of activity	This action point seeks to increase jobs within strategic centres to provide more jobs in closer proximity to where people live and overall seeks growth in centres. The proposal will provide a range of retail and business jobs at the edge of Blacktown. In conjunction with the proposed units the proposal will provide future residents as well as existing surrounding residents who do not live in the Blacktown town centre with a range of employment opportunities within walking distance of existing homes. The size of the proposed retail uses are not so significant that they will draw retail users away from the Blacktown town centre, but will be of a size to provide convenience stores for local residents.
Direction 2.1: Accelerate housing supply across Sydney	
2.1.1 Accelerate housing supply and local housing choices	This action point is provided with the aim to increase housing supply to 664,000 new dwellings by 2031 with the intention of increasing choice and housing affordability. It is stated that the most suitable area for urban renewal is in areas that are currently connected to employment in and around strategic centres and centres that are close to jobs and are serviced by public transport. The site is connected to Blacktown centre by a bus network which also connects to other town centres in the area. The new housing will have adequate access to local services. In addition, the site is the following walking distances from these key uses:

5 Matters Required by s55 of the EP&A Act

Table 2 The proposals consistency with *A Plan for Growing Sydney*	
Action point	**Proposals Relationship to the action point**
	- adjacent to Blacktown West Public School; - 250 metres from Deborah Wicks Park; - 600 metres from St Patricks Primary School and Church; - 1km from Featherdale Wildlife Park; and - 1.5km from Blacktown Train Station. The proposal will also provide units and townhouses in an area which is dominated by detached dwellings. Units will provide an alternate cheaper housing option for people who wish to live outside of the Blacktown city centre in a quieter area however cannot afford a house.
Direction 2.2: Accelerate urban renewal across Sydney – providing homes closer to jobs	
2.2.1: Use the greater Sydney Commission to support council-led urban infill projects	The Plan acknowledges the role of smaller scale Council led infill projects and states the DPE support local infill where projects are located around local centres, transport corridors and public transport. This small scale proposal will provide infill housing on a site which has access to Blacktown town centre and also establishes the existing retail site as a more significant neighbourhood centre, providing a variety of retail and business options for local residents in the area.
Direction 2.3: Improve housing choice to suit different needs and lifestyles	
2.3.1: Require local housing strategies to plan for a range of housing types	Council's local strategy is "Our Blacktown 2036". The strategy aims that Blacktown should grow both in terms of housing and jobs. Key aims of the strategy include decreasing housing stress, increasing access to local jobs, providing more low skilled jobs in the locality and increase access to public transport. As is discussed in the Section below titled **Our Blacktown 2036** the proposal achieves these goals.

Draft Our Greater Sydney 2056

The draft plan, Our *Greater Sydney 2056* is a strategic plan prepared by the Greater Sydney Commission. The plan will replace *A Plan for Growing Sydney* and provides a 40 year vision for Sydney, focusing on 3 cities being, the Eastern Sydney (Sydney CBD), the Central City (Parramatta) and the Western City (Western Sydney Airport). The site is located within the Central City.

The Plan identifies four features, each with several objectives to achieve the vision for Sydney 2036. These features are Infrastructure and Collaboration, Liveability, Productivity and Sustainability. The following table provides a comment against the relevant objectives:

Table 3 The proposals consistency with *Our Greater Sydney 2056*	
Objective	**Proposals Relationship to the objective**
10. Greater housing supply	The plan seeks to provide more housing supply and typologies in locations well connected to infrastructure. Over the next 5 years the central city will have 53,000 new dwellings and in the next 20 years will have 184,000 new dwelling The proposal is well connected to local bus services which connect to surrounding centres. In addition, the supply of housing in conjunction with a local retail centre will provide not only the new units, but also the existing dwellings in the surrounding area with access to local shops and also new jobs associated with the retail use.
11. Housing is more diverse and affordable	The proposal will increase the diversity of housing options by providing units in an area dominated by dwellings. Units are a cheaper housing option, with the median unit price in Blacktown being $542,000, compared to the median dwelling price in Blacktown being $742,000.

5 Matters Required by s55 of the EP&A Act

Table 3 The proposals consistency with *Our Greater Sydney 2056*	
Objective	**Proposals Relationship to the objective**
	Units will be Market Housing and will be available at market prices. The smaller homes compared with the surrounding typical detached dwellings will provide an alternate housing option as envisaged in the plan.
14. A metropolis of three cities – integrated land use and transport creates walkable and 30-minute cities	The plan seeks to provide good public transport links between peoples homes and places of work in order to reduce travel times to work to 30 minutes. The proposal will provide a range of new jobs in close proximity to existing dwellings. The new units will have access to these jobs and are also a 5 minute bus ride from Blacktown town centre. A range of jobs are available in Blacktown and access to the train station will provide residents with a 35 minute travel time to Parramatta or Penrith.

Draft Central City District Plan

The draft Central City District Plan is the regional plan which applies to the site which is derived from the Greater Sydney Commissions *Our Greater Sydney 2056*. The plan includes housing and jobs within the region as a key priority, providing targets for jobs, housing and housing variety.

The following priorities relate to the Planning Proposal:

Table 4 The proposals consistency with *Central City District Plan*	
Objective	**Proposals Relationship to the objective**
C5. Providing housing supply, choice and affordability, with access to jobs and services	The Planning Proposal will provide an increase of both housing and jobs. The proposed units will provide housing variety in an area which is dominated by detached dwellings, units will be more affordable than detached dwellings and will provide those who wish to reside in the area with an alternate housing option. The additional houses will help contribute to the 5 year housing target of 13,950 new homes for Blacktown LGA. The proposed jobs will not only provide the future residents with employment options but will also provide the existing surrounding residents with employment options outside of Blacktown town centre, within walking distance of their existing homes.
C9. Delivering integrated land use and transport planning and a 30-minute city.	The objective reflects objective 14 of Our *Greater Sydney 2056,* seeking to provide good public transport links between homes and work in order to reduce travel times to work to 30 minutes. The proposal will provide a range of new jobs in close proximity to existing dwellings. The new units will have access to these jobs and will also be a 5 minute bus ride or 20 minute walk from Blacktown town centre. A range of jobs are available in Blacktown and access to the train station will provide residents with a 35 minute travel time to Parramatta or Penrith from the site.
C10. Growing investment, business opportunities and jobs in strategic centres	The proposal will provide new employment opportunities, in particular for retail jobs. This addresses actions 39 and 40 which seek to provide additional retail floor space in relation to the retail sectors requirements. The proponent of this Planning Proposal is the current operator of the fruit market on site, the concept design has been prepared in consultation with this owner to ensure the concept provides a development which is suited to retail needs.

Our Blacktown 2036

Our Blacktown 2036 is the Community Strategic Plan, adopted by Council in mid 2017. The report identifies growth in Blacktown in relation to housing and job opportunities. The population of Blacktown is expected to grow by 49% over the next 20 years and the number of dwellings in the LGA is expected to grow by 54% in the next 20 years.

The Plan includes 6 Strategic Directions that seek to identify key indicators, the measure of the indicators and the target/trend Council are aiming for. Of the 6 Directions 3 are relevant to this Planning Proposal.

5 Matters Required by s55 of the EP&A Act

Strategic Direction 1 is for a Vibrant and Inclusive Community. To achieve this, Blacktown Council are seeking to decrease housing stress and increase access to services within a town centre. The proposal will achieve this by providing additional housing stock in the form of residential units in Blacktown West with ground floor retail uses.

Currently in Blacktown West there are no residential units, meaning residents who wish to live in the area only have the option of purchasing a dwelling house. The concept proposal for units will provide a better variety of housing options for those who wish to live in the area. This will help alleviate housing stress as people will be able to purchase a home based on their budget. Units are a cheaper option, with the median unit price in Blacktown being $542,000, compared to the median dwelling price in Blacktown being $742,000.

In addition, the provision of ground floor retail uses, including a supermarket and 12 retail tenancies will provide many residents with access to a neighbourhood centre within 400 metres of their residence. Currently the closest local shops are 650 metres from the subject site and comprise a Pacific Islander supermarket, a liquor shop, bridal store and hobby shop.

As shown in **Figure 22** below, the site will provide walking access for residents in Blacktown West to local shops. The access will increase the number of people living within close proximity to a variety of retail services.

Figure 22 400 metre radius surrounding the site

Strategic Direction 3 is for a Smart and Prosperous Economy, goals to achieve this direction are to decrease unemployment rate, increase the number of businesses, increase the proportion of residents who work in Blacktown and increase the number of low skilled jobs available.

The proposed retail component, comprising a supermarket and up to 12 other retail or business uses will provide jobs for locals, most of which will be low skilled jobs. Likely uses of the proposed retail tenancies will be food and service jobs (i.e. restaurants, hairdressers and

beauticians, shops, real estate agents etc) which are likely to be filled by local people. Low skilled jobs and managerial opportunities will be available in the proposed supermarket.

The Planning Proposal will allow for more businesses, more job opportunities which will reduce the unemployment rate, provide more jobs for local residents and more low skilled jobs.

Strategic Direction 4 is for a Growing City Supported by Accessible Infrastructure. To achieve this direction the plan seeks to increase the use of public transport, decrease the travel time to work and increase the number of residential development approvals. The additional height will have a positive impact on the streetscape by addressing the intersection of Lancaster Street and Newton Road.

Local Bus stops are provided adjacent to the site along Newton Road, bus services will provide future residents and employees associated with the site with access to larger local centres and public recreational areas. In addition, by providing additional local shops in an area currently void of shops it will provide local residents with access to jobs in close proximity to their homes, thereby reducing travel times to work.

Allowing the increased height limit for the site will also allow for new units to be constructed, thereby increasing the number of new residential approvals.

State Environmental Planning Policies

Table 5 provides an assessment of the Planning Proposal's consistency with relevant State Environmental Planning Policies (SEPPs).

Table 5 Consistency with Applicable State Environmental Planning Policies

SEPP	Response	Consistent
SEPP 55 Remediation of Land	The site is not likely to be contaminated and as such this SEPP does not apply. If during demolition and construction of a new development it is discovered that the site is subject to contamination full remediation will be undertaken as part of the DA.	Consistent
SEPP 64 (Advertising and Signage)	The proposal will include new signage which will be detailed at DA stage. The DA will address SEPP 64 to ensure signage is consistent with Schedule 1 of the SEPP.	Consistent
SEPP 65 (Design Quality of Residential Apartment Development)	The proposal will be required to comply with SEPP 65 and the ADG. The concept complies with SEPP 65 and the ADG however will require further analysis when a detailed design is prepared at DA stage. The DA will address SEPP 65 and the ADG to ensure building is consistent.	Consistent
SEPP (Building Sustainability Index: BASIX) 2004	This is relevant at DA stage where future dwellings will need to demonstrate compliance with the BASIX resource savings goals. At this point is envisaged that the proposal will be able to comply with these goals.	Consistent
SEPP (Infrastructure) 2007	Newton Road and Lancaster Street are both regional roads. Pursuant to Clause 104 which relates to assessment of traffic impacts of certain types of development, such as development with car parking supply in excess of 200 vehicles is development that is required to be referred to the RMS. The development proposes 234 parking spaces and therefore at DA stage will be required to be referred to the RMS.	Consistent

Accordingly, the Planning Proposal is considered to be consistent with the relevant applicable SEPPs.

Directions under Section 117

Table 6 provides an assessment of the Planning Proposal's compliance with relevant Section 117 Directions.

5 Matters Required by s55 of the EP&A Act

Table 6 Compliance with Section 117 Directions	
SEPP	**Response**
1.1 Business and Industrial Zones (1) The objectives of this direction are to: (a) encourage employment growth in suitable locations, (b) protect employment land in business and industrial zones, and (c) support the viability of identified strategic centres. (4) A Planning Proposal must: (a) give effect to the objectives of this direction, (b) retain the areas and locations of existing business and industrial zones, (c) not reduce the total potential floor space area for employment uses and related public services in business zones, (d) not reduce the total potential floor space area for industrial uses in industrial zones, and (e) ensure that proposed new employment areas are in accordance with a strategy that is approved by the Director-General of the Department of Planning.	The Planning Proposal responds to the existing retail use of the site by incorporating the supermarket into the concept design. The proposal also increases the retail space available on the site by providing 12 new retail tenancies which will provide spaces for smaller shops or businesses. The proposal increases the overall amount of retail on the site. The Planning Proposal does not propose to alter the B1 Neighbourhood Centre zoning which currently applies to the site. The proposal provides additional retail space in an area surrounded by residential accommodation and a school, providing employment opportunities and retail services for locals. The proposal does not provide any additional employment zoned land as the entire site, including the two allotments containing detached dwellings are currently zoned B1.
3.4 Integrating Land Use and Transport (1) The objective of this direction is to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the following planning objectives: (a) improving access to housing, jobs and services by walking, cycling and public transport, and (b) increasing the choice of available transport and reducing dependence on cars, and (c) reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and (d) supporting the efficient and viable operation of public transport services, and (e) providing for the efficient movement of freight. (4) A Planning Proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of: (a) Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and (b) The Right Place for Business and Services – Planning Policy (DUAP 2001).	Although the Planning Proposal does not provide alternate residential or business zones compared to what is currently present, the Planning Proposal does allow for a shop top housing development, retaining a supermarket on site while also allowing for additional retail space and new residential units. The proposal will increase the access existing dwellings in the surrounding area have to employment opportunities with new jobs generated by the Planning Proposal to include retail and business jobs. For many dwellings in the locality the site will be accessible by walking. Other future employees can gain access to the site via public transport. For those living at the site they will be able to access Blacktown town centre by a 20 minute walk or a 5 minute bus ride. Blacktown town centre provides a wider range of employment opportunities and also provides access to the train line, connecting the town centre to Penrith and Parramatta. In addition, the site is adjacent to a primary school and is a 5 minute walk from Deborah Wicks Park and a 15 minute walk from Featherdale Wildlife Park.
5.10 Implementation of Regional Plans (1) The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans. (4) Planning Proposals must be consistent with a Regional Plan released by the Minister for Planning.	The proposal is consistent with *A Plan for Growing Sydney*, draft *Our Greater Sydney 2056*, draft *Central City District Plan* and Council's *Our Blacktown 2036*. Consistency with these plans is discussed **Section 5.4.2** above.
6.1 Approval and Referral Requirements	

5 Matters Required by s55 of the EP&A Act

Table 6 Compliance with Section 117 Directions	
SEPP	**Response**
(1) The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development. (4) A Planning Proposal must: (a) minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority, and (b) not contain provisions requiring concurrence, consultation or referral of a Minister or public authority unless the relevant planning authority has obtained the approval of: (i) the appropriate Minister or public authority, and (ii) the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General), prior to undertaking community consultation in satisfaction of section 57 of the Act, and (c) not identify development as designated development unless the relevant planning authority: (i) can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) that the class of development is likely to have a significant impact on the environment, and (ii) has obtained the approval of the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) prior to undertaking community consultation in satisfaction of section 57 of the Act.	This Planning Proposal does not include any proposed provisions requiring referrals or concurrences, however will required referral to the RMS pursuant to Clause 104 of SEPP (Infrastructure).
6.3 Site Specific Provisions (1) The objective of this direction is to discourage unnecessarily restrictive site specific planning controls. (4) A Planning Proposal that will amend another environmental planning instrument in order to allow a particular development proposal to be carried out must either: (a) allow that land use to be carried out in the zone the land is situated on, or (b) rezone the site to an existing zone already applying in the environmental planning instrument that allows that land use without imposing any development standards or requirements in addition to those already contained in that zone, or (c) allow that land use on the relevant land without imposing any development standards or requirements in addition to those already contained in the principal environmental planning instrument being amended. (5) A Planning Proposal must not contain or refer to drawings that show details of the development proposal.	This Planning Proposal does not include any proposed site or development specific provisions. The only amendment to the BLEP proposed is to amend the height of buildings map to provide a height limit of 14m and 18m.
7.1 Implementation of A Plan for Growing Sydney (1) The objective of this direction is to give legal effect to the planning principals; directions; and priorities for subregions, strategic centres and transport gateways contained in A Plan for Growing Sydney. (4) Planning Proposals shall be consistent with: (a) the NSW Government's A Plan for Growing Sydney published in December 2014.	As discussed in **Section 5.4.2** of this report, this Planning Proposal is consistent with A Plan for Growing Sydney 2056.

Accordingly, the Planning Proposal is considered to comply with the relevant Section 117 Directions.

5.4.3 Section C – Environmental, Social and Economic Impact

Critical Habitat, threatened species, populations or ecological communities

There are no critical habitats or threatened species, populations or ecological communities or their habitats on or around the site that will be affected by the Planning Proposal.

Other environmental effects and their management

(a) Traffic and Parking

A traffic and parking assessment has been prepared by Traffic Solutions Pty Ltd as part of this Planning Proposal and is attached at **Appendix 5**. The concept scheme associated with this Planning Proposal will increase traffic compared to the current traffic generated from the site, however the traffic report concludes that the concept scheme will not generate any adverse or unsafe traffic impacts on the local road network.

Based on the studies of the traffic assessment it is predicted that the concept design will generate an additional 102 morning and 269 evening peak hour trips. A SIDRA model analysis was then prepared to establish the impacts of the proposal on traffic saturation. The conclusion of the SIDRA analysis was that the surrounding intersections would operate at a satisfactory level of service with minimal delays and spare capacity.

The concept design generally complies with Australian Standards, however this will be further confirmed in the detailed development plans. Two minor amendments are recommended at this stage. It is recommended that the loading dock and basement parking driveways be separated by 2 metres to provide a refuge between driveways. It is also recommended that the a two lane exit be provided to the car driveway. These recommendations can be incorporated in the detailed development plans which would be provided at DA stage.

(b) Contamination

There is no evidence of previous contamination of the site. The site is currently used as a fruit supermarket and two detached dwellings and the two uses have operated on the site without evidence of contamination.

Should contamination be discovered onsite during preparation of detailed development plans a preliminary site investigation report will be prepared as part of a future DA package.

(c) Visual Impact

A photomontage has been prepared for the concept design and is attached at **Appendix 4** of this report. The proposal is for a five storey building, focusing the height at the corner of Lancaster Street and Newton Road. The development provides strong edges along the two road frontages providing ground floor retail opening onto the footpath and including an awning over the footpath. The proposal steps down to provide 3 storeys at the building edges towards the primary school and the adjoining residential property.

The development is a contemporary design which is typical of new shop top housing designed to activate the 2 streets and improve the streetscape. The site is currently sits among R2 Low Density Residential land and SP2 Infrastructure (Educational Establishment) land. Consequently, both the existing buildings on the site and the proposed development vary from the adjoining school and low density residential dwellings.

The design of the proposal has been prepared to provide the best possible transition to the adjoining primary school and residential land. The higher scale built form is focused on the

corner and the road frontages. All boundaries adjoining the school and residential dwellings will be a maximum of 3 storeys and will generally be consistent with the existing height limit of 10 metres.

Due to the orientation of the site, the majority of overshadowing will occur onto Newton Road, with a smaller amount of overshadowing occurring to Lancaster Street and the adjoining dwelling to the east along Newton Road.

It should be noted that any proposal for a neighbourhood centre development, whether or not the development complied with the current height limit would not conform with the existing built form surrounding the site due to the objectives and permitted land uses of the zone.

Social and economic effects

(a) Housing

As has been discussed, the proposal will increase the total number of houses in Blacktown LGA which is an aim of the various strategic documents as discussed in **Section 5.4.2** above. The proposal will provide units in an area which is currently dominated by detached dwellings, providing housing choice and an alternate housing options for those who wish to purchase in the locality but perhaps could not afford a detached dwelling.

The site currently provides two dwelling houses and the proposal includes 74 new units, providing a total of 72 new dwellings on site.

(b) Employment

The proposal will provide new jobs in the form of retail and business jobs. The proposal will comprise a supermarket and up to 12 other retail or business uses will provide jobs for locals, most of which will be low skilled jobs. Likely uses of the proposed retail tenancies will be food and service jobs (i.e. restaurants, hairdressers and beauticians, shops, real estate agents etc) which are typically jobs filled by local people. The retail tenancies will provide opportunities for local businesses to operate in a centre anchored by a supermarket.

The employment opportunities will generally be for lower skilled jobs, which is a specific aim of the *Our Blacktown 2036* strategic plan prepared by Council. The jobs will be within walking distance for many existing residents within Blacktown West and will provide an alternate employment option to the Blacktown town centre.

(c) Safety and Security

The concept design has been prepared to provide some casual surveillance to the school along the side boundary which is not used as a playground. This will increase the safety of the school in after school hours where trespassing or vandalism may be an issue. By providing units which overlook the school a greater sense of presence will be provided which in turn will lessen the potential for trespassing to occur at the school.

The traffic report (**Appendix 5**) has also considered the safety of the driveway access along Lancaster Street and two minor recommendations are made, firstly to provide a 2 metre separation between the loading driveway and vehicle parking driveway and secondly to provide a two lane exit driveway. These recommendations will be provided at DA stage. Apart from this concern, the traffic report concludes that the proposal will not generate any unsafe vehicle movements for the school.

5.4.4 Section D – State and Commonwealth Interests

Public Infrastructure

The site has access to local parks, bus services and a public school all within 5-minute walking distance from the site. In addition, the site is a 5-minute bus ride from Blacktown town centre which will provide residents with access to a wide range of shops, banks, a library, medical centres and the hospital, restaurants and jobs generated from the retail, education

and health services. In addition, Blacktown Train Station will provide residents with access to Westmead, Parramatta and Penrith.

The site is currently connected to water, sewer and electricity and at this point it appears the existing essential services will be able to accommodate the additional population which would be generated by the proposal.

Public Authority Consultation and Referral

This Planning Proposal will require public notification. Relevant government authorities will be notified during the exhibition period.

5.5 Part 4 – Mapping (Section 55(2)(d))

The only map which needs to be amended as part of this Planning Proposal is the height map. Currently the site is identified as having a maximum building height of 10 metres (see **Figure 17** above).

It is proposed that the building height map is amended to show the site as having a building height limit of 14 metres for Lots 1,2, 5 and 6 and a height of 18 metres for Lots 3 and 4. **Figure 23** below demonstrates the amended building height map, showing the site with a height limit of 14 and 18 metres.

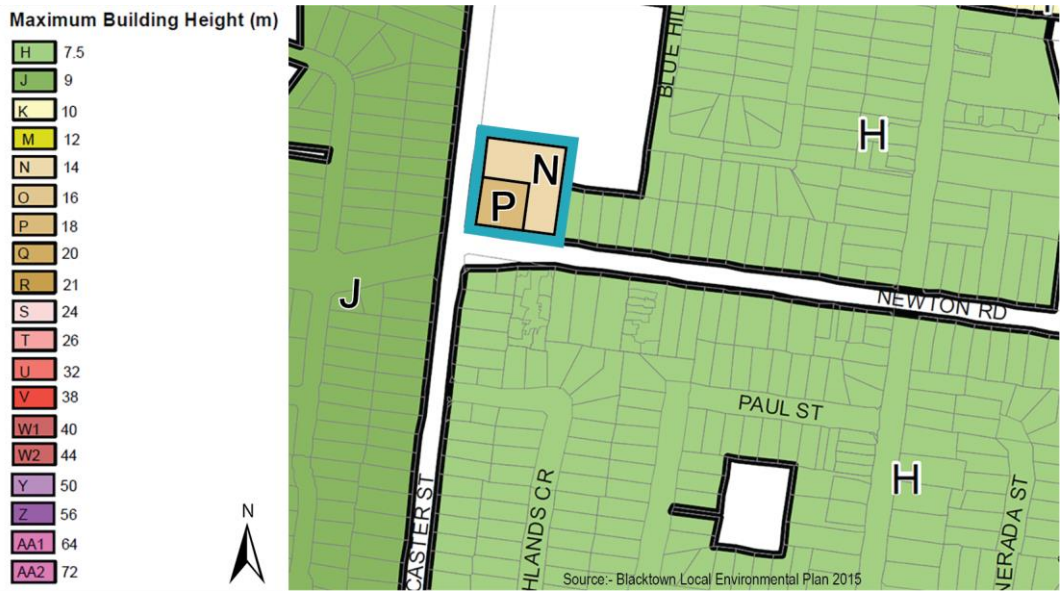

Figure 23 Proposed amendment to the Building Height map

5.6 Part 5 - Community Consultation (Section 55(2)(e))

Whilst it is a requirement to undertake statutory consultation relating to a Draft LEP, we are of the opinion that this need not be extensive or prolonged and should not exceed 14 days, although this will be for Council and DPE to determine.

5.7 Part 6 – Project Timeline

The timeline for assessment, consultation and determination of this Planning Proposal will be for Council and DPE to determine however, we consider that it should be possible to expedite this Planning Proposal within the DPE's suggested timeframe of 6 months for a minor spot rezoning.

6 Conclusion

This Planning Proposal has been prepared on behalf of Nat Foti and seeks to amend the maximum building height limit to 14 and 18 metres at 137 – 141 Newton Road, Blacktown.

This report and accompanying material has been prepared in accordance with Section 55 of the EP&A Act and relevant Departmental guidance.

This report concludes that the proposal to amend the maximum building height limit to 14 and 18 metres:

- is consistent with regional and subregional planning and transport strategies as well as local planning studies;
- is not inconsistent with relevant SEPPs and Section 117 Directions; and
- will allow for a new shop top housing development where ground floor retail uses, including a supermarket and 12 retail tenancies are provided on ground floor. 74 units are proposed which will site above the retail use.

The Planning Proposal will allow a development which will provide new low skilled jobs, strengthening the site as a neighbourhood centre. The new units will provide people with an alternate housing option which will allow people to live in Blacktown West who perhaps otherwise could not afford to purchase or rent a detached dwelling or townhouse, however may be able to buy or rent a unit in the quieter area of Blacktown West.

The additional height provides an opportunity for a modern shop top development to address the intersection of Newton Road and Lancaster Street. The additional height does not generate any adverse overshadowing or privacy impacts. The proposed concept tapers back to 10 metres in height at the interface with the school and adjoining dwelling house at 135 Newton Road.

Accordingly, we recommend that Council endorse this Planning Proposal and forward it to the Minister for Gateway Approval.

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APPENDIX I

Key

- Subject Site (10 metre height limit)
- 7.5 metre height limit
- 9 metre height limit
- School (no height limit)
- Bus Stop
- Townhouse Development
- Vacant Site

LANCASTER STREET

BLUE HILLS CRESCENT

KILLARNEY AVENUE

MONASH ROAD

NEWTON ROAD

Potential noise

Casuarina potential screen

Blacktown West Public School

Existing vehicle entry

Potential overlooking of school

Low Point

School Zone sign obstructs footpath

Fresh Fruit Market

Potential overlooking of school

Potential noise

B1
Max Height - 10m
No FSR Control

Jacarandas

Fall

Scale transition

Pine Tree

High Point

Jacarandas

Single Storey Cottages

Light Controled Intersection

R2
Max Height - 9m
No FSR Control

R2
Max Height - 7.5m
No FSR Control

R2
Max Height - 9m
No FSR Control

R2
Max Height - 7.5m
No FSR Control

N

Source_ SixMaps
Scale_ 1:800

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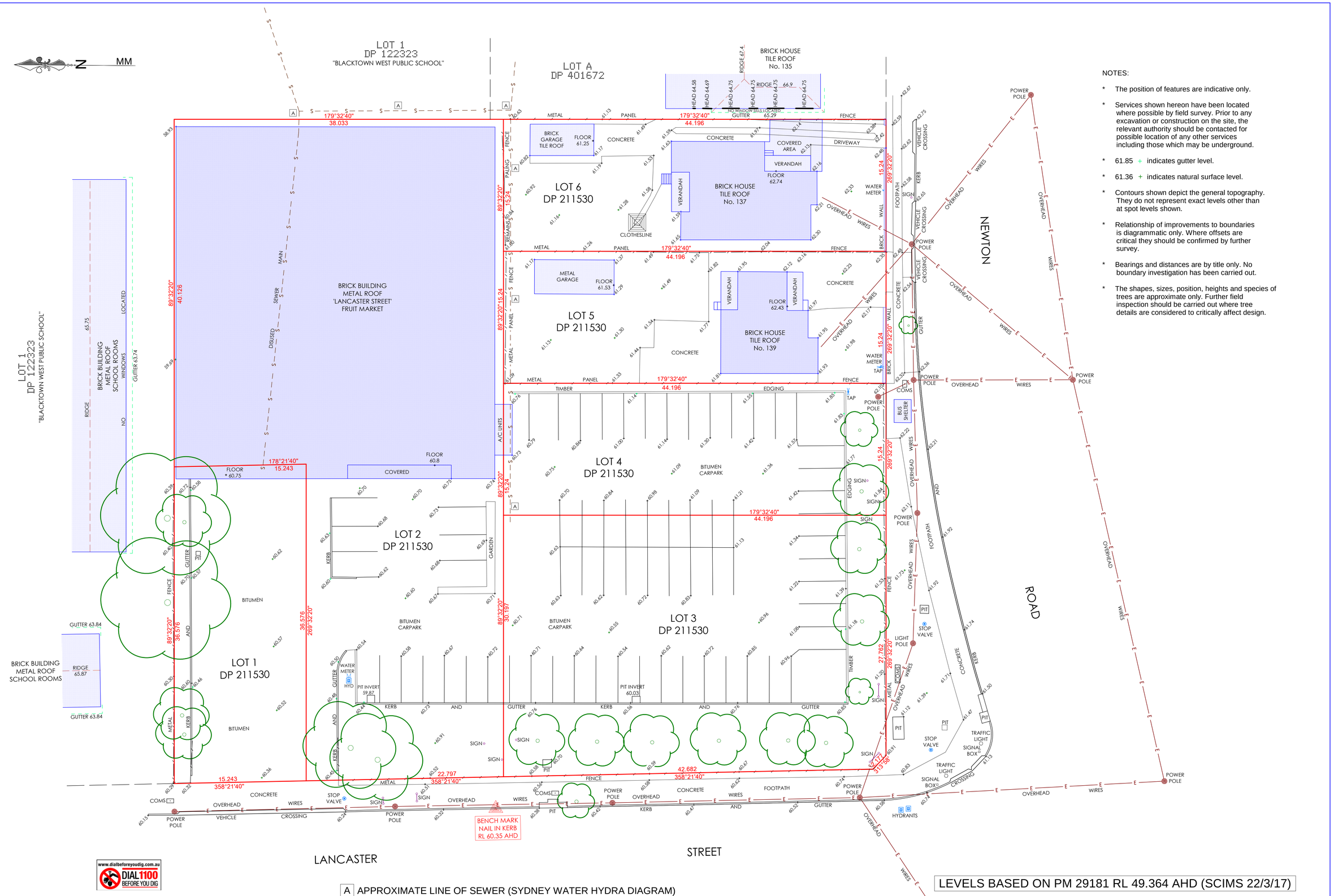
APPENDIX 2



NOTES:

* The position of features are indicative only.
* Services shown hereon have been located where possible by field survey. Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of any other services including those which may be underground.
* 61.85 + indicates gutter level.
* 61.36 + indicates natural surface level.
* Contours shown depict the general topography. They do not represent exact levels other than at spot levels shown.
* Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
* Bearings and distances are by title only. No boundary investigation has been carried out.
* The shapes, sizes, position, heights and species of trees are approximate only. Further field inspection should be carried out where tree details are considered to critically affect design.

A APPROXIMATE LINE OF SEWER (SYDNEY WATER HYDRA DIAGRAM)

LEVELS BASED ON PM 29181 RL 49.364 AHD (SCIMS 22/3/17)

Client: TINESI PTY LTD	Project: PLAN SHOWING DETAIL & LEVELS OVER LOTS 1-6 IN DP 211530 KNOWN AS N° 137-141 NEWTON ROAD, BLACKTOWN.	FREEBURN SURVEYING	MATTHEW FREEBURN LAND, ENGINEERING & MINING SURVEYOR SUITE 2, FIRST FLOOR, "SURVEYOR HOUSE" 2 CASTLEREAGH STREET PENRITH 2750	Telephone 02 4721 2289 Fax 02 4721 5646 email matthew@freeburnsurveyors.com	Date: 27/3/2017	Ref: 35844	Sheet 1 of 1
					Scale 1: 200	Datum: AHD	Contour: NA
					Surveyor: TB/DC	Drawn By: TB	Checked: MF
					DATA - 35844 - DETAIL		A1 SHEET

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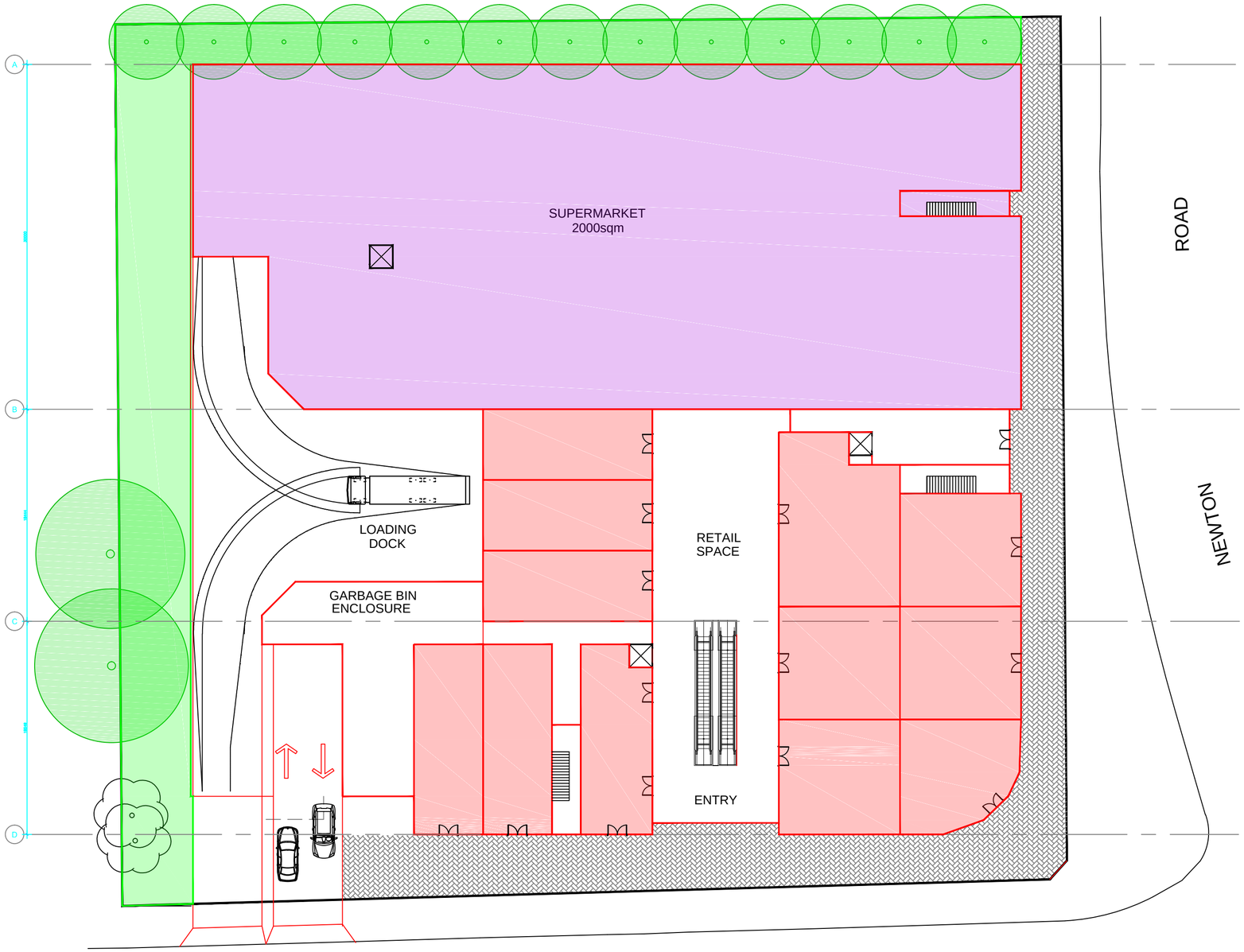
APPENDIX 3



CONCEPT COMMERCIAL FLOOR PLAN

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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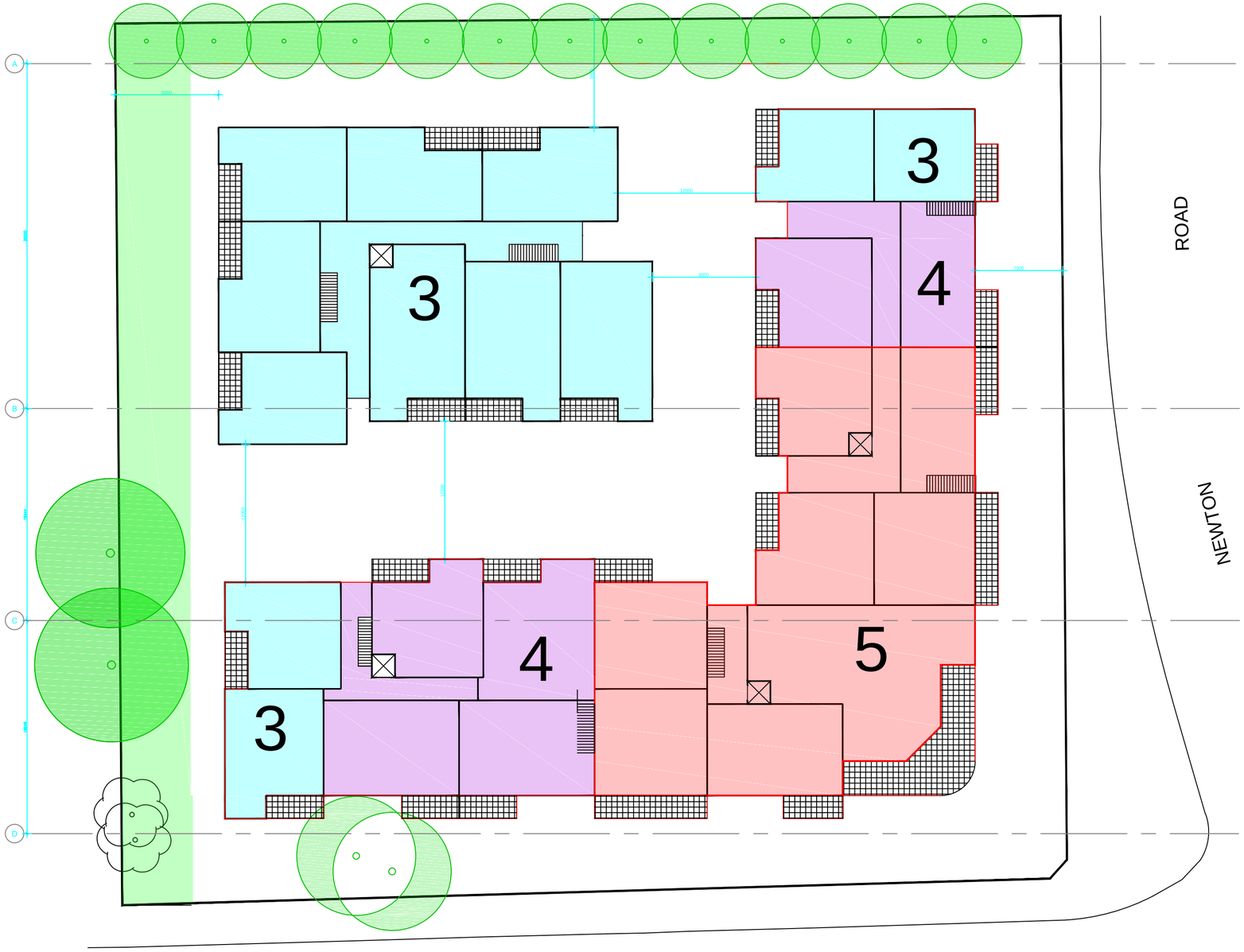
DRAWING NAME

GROUND FLOOR RETAIL
CONCEPT PLAN

137NEW-17

DRAWING No. 1/1



CONCEPT RESIDENTIAL FLOOR PLAN

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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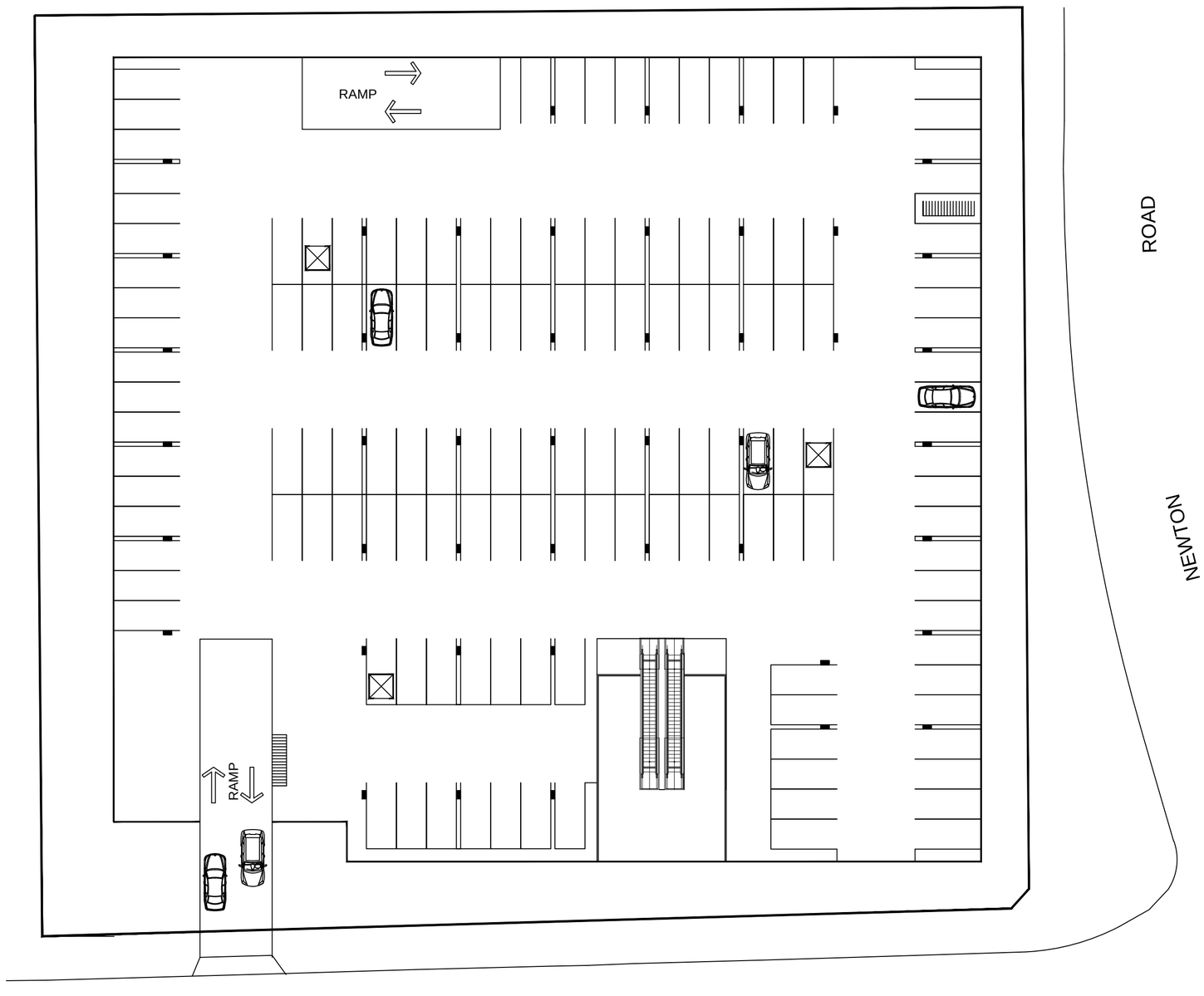
RESIDENTIAL FLOORS CONCEPT
CONCEPT PLAN

137NEW-17

DRAWING No. 1/1



PARKING REQUIREMENTS

RESIDENTIAL
1 SPACE PER 1 OR 2 BEDROOM UNIT
2 SPACES PER 3 BEDROOM UNIT
1 VISITOR SPACE PER 2.5 UNITS

74 UNITS X 1 SPACE = 74 SPACES
74 UNITS / 2.5 SPACES = 30 VISITOR SPACES

RESIDENTIAL PARKING REQUIRED = 104 SPACES

RETAIL

FOR SHOP 200sqm OR GREATER - 1 SPACE PER 22sqm
FOR SHOP LESS THAN 200sqm - 1 SPACE PER 30sqm

SUPERMARKET - 2000sqm / 22 = 90 SPACES
SHOPS - 1200sqm / 30 = 40 SPACES

RETAIL PARKING REQUIRED = 130 SPACES

TOTAL PARKING REQUIRED = 234 SPACES

CONCEPT BASEMENT FLOOR PLAN

PROJECT
PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE MAR 2017

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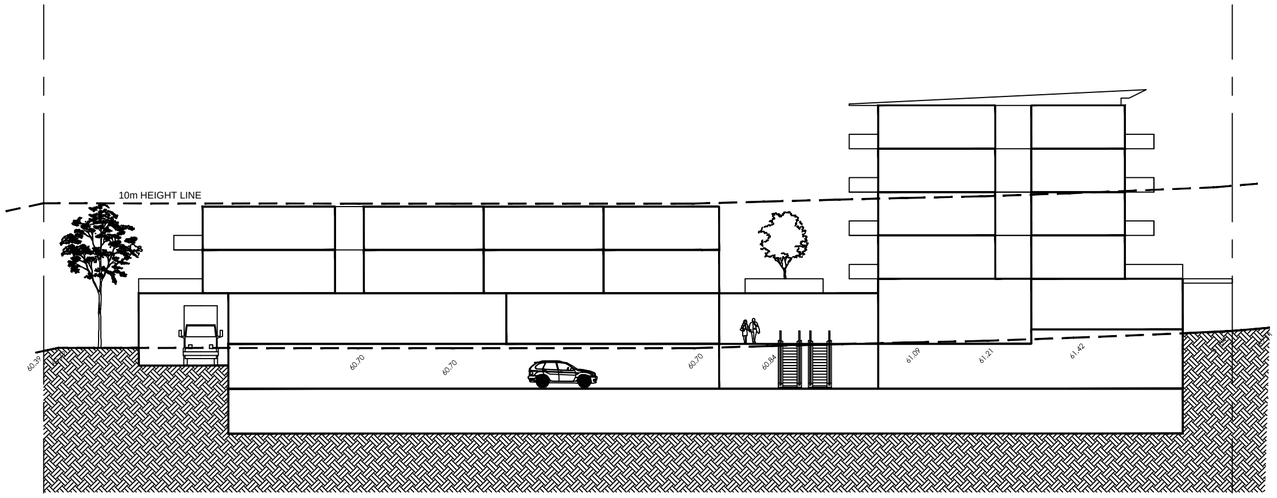
DRAWING NAME
BASEMENT CONCEPT PLAN

DRAWING No.
137NEW-17 1/1

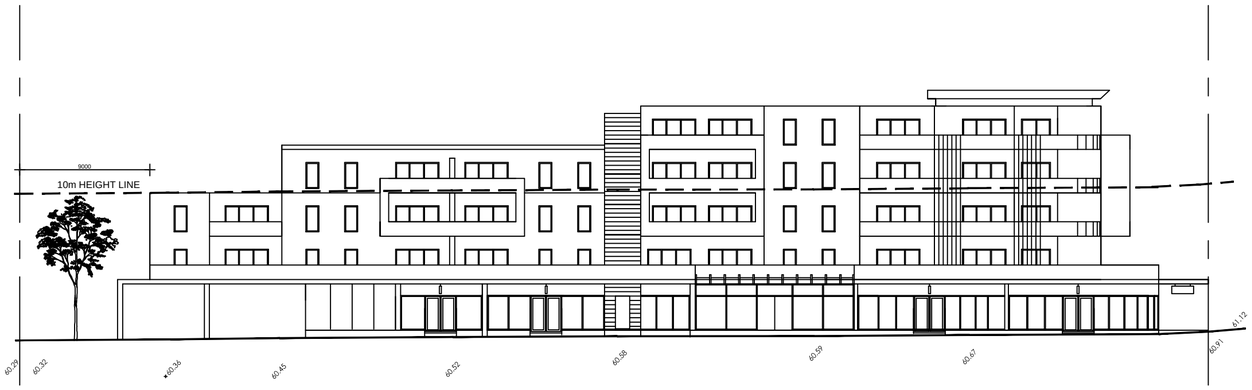
BLACKTOWN WEST
PUBLIC SCHOOL



NEWTON ROAD

CONCEPT SECTION

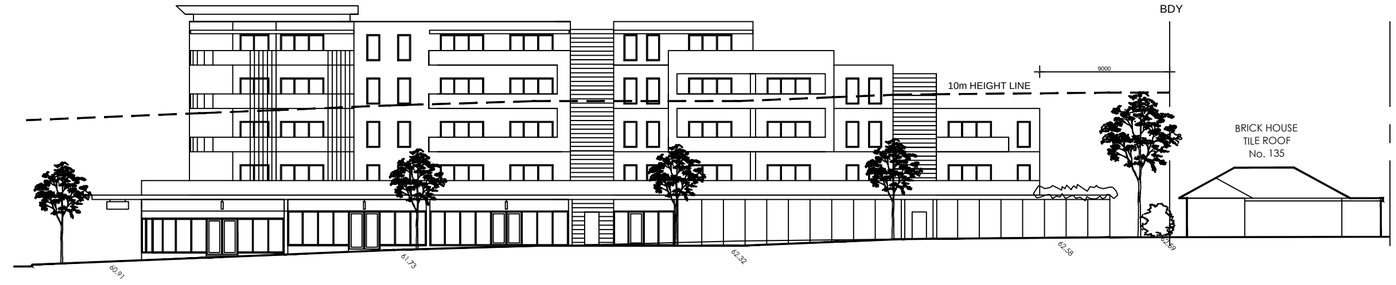
BLACKTOWN WEST
PUBLIC SCHOOL



NEWTON ROAD

CONCEPT WEST ELEVATION - TO LANCASTER STREET

LANCASTER STREET



CONCEPT SOUTH ELEVATION - TO NEWTON ROAD

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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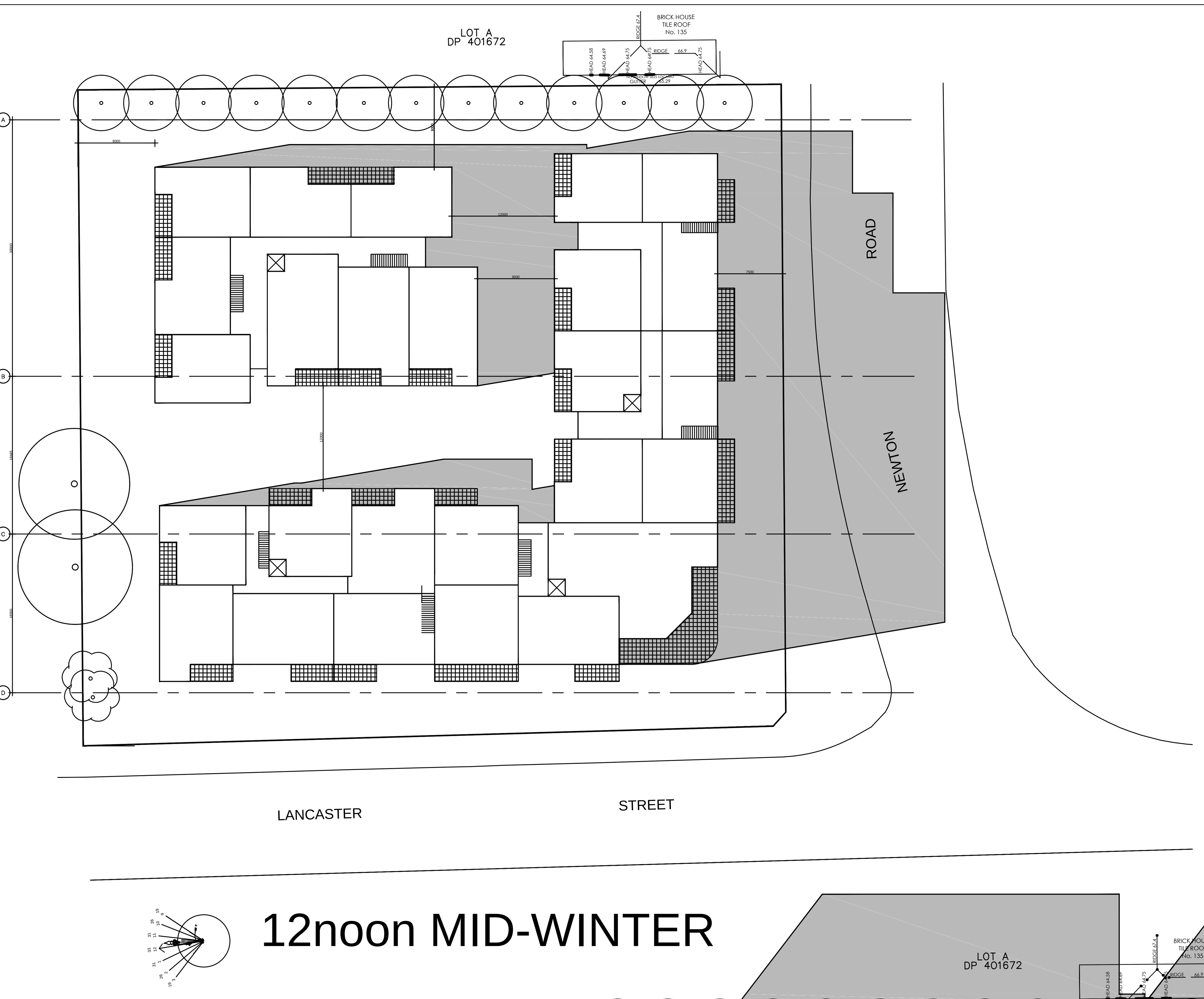
DRAWING NAME

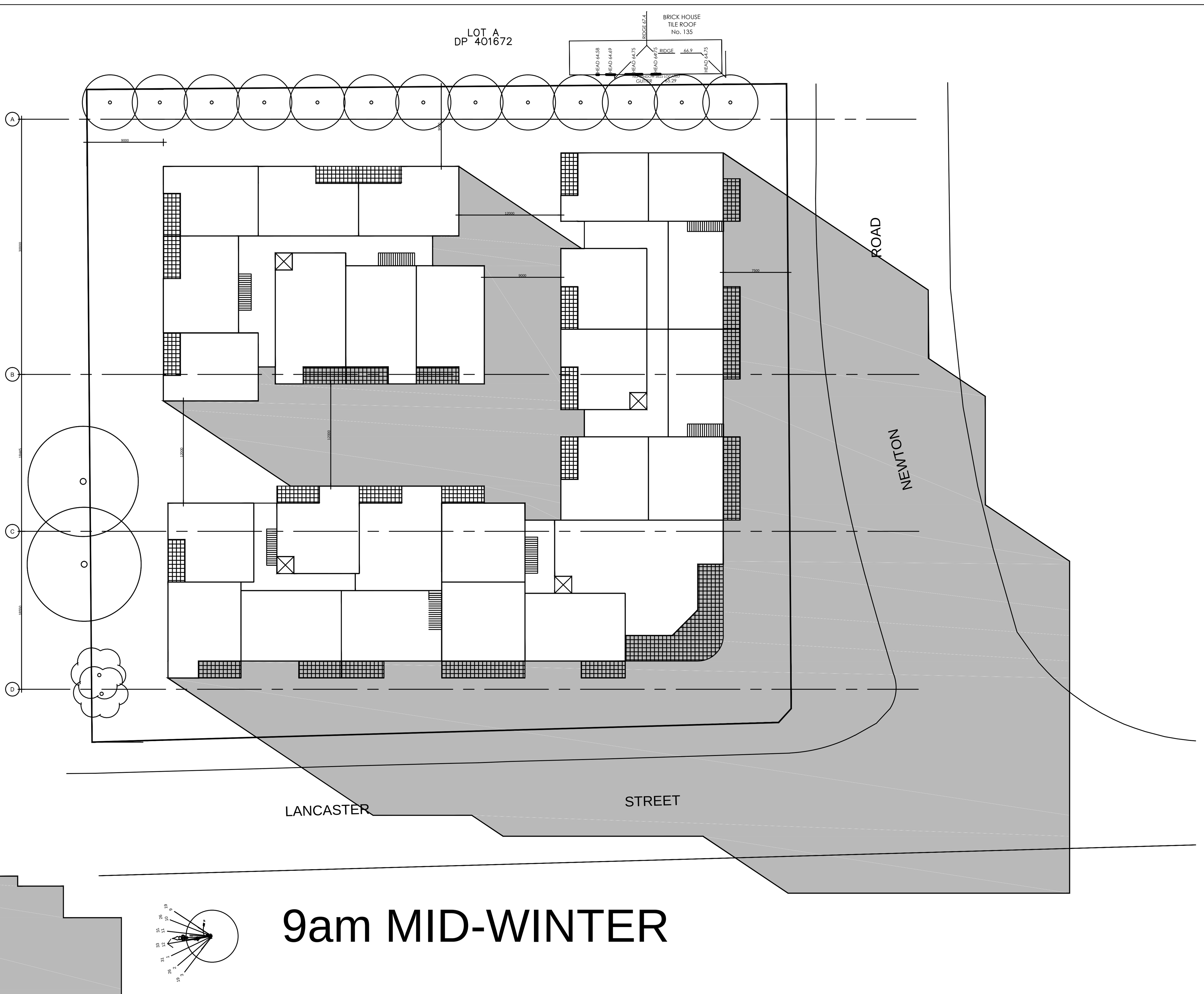
CONCEPTUAL ELEVATIONS/
SECTION

137NEW-17

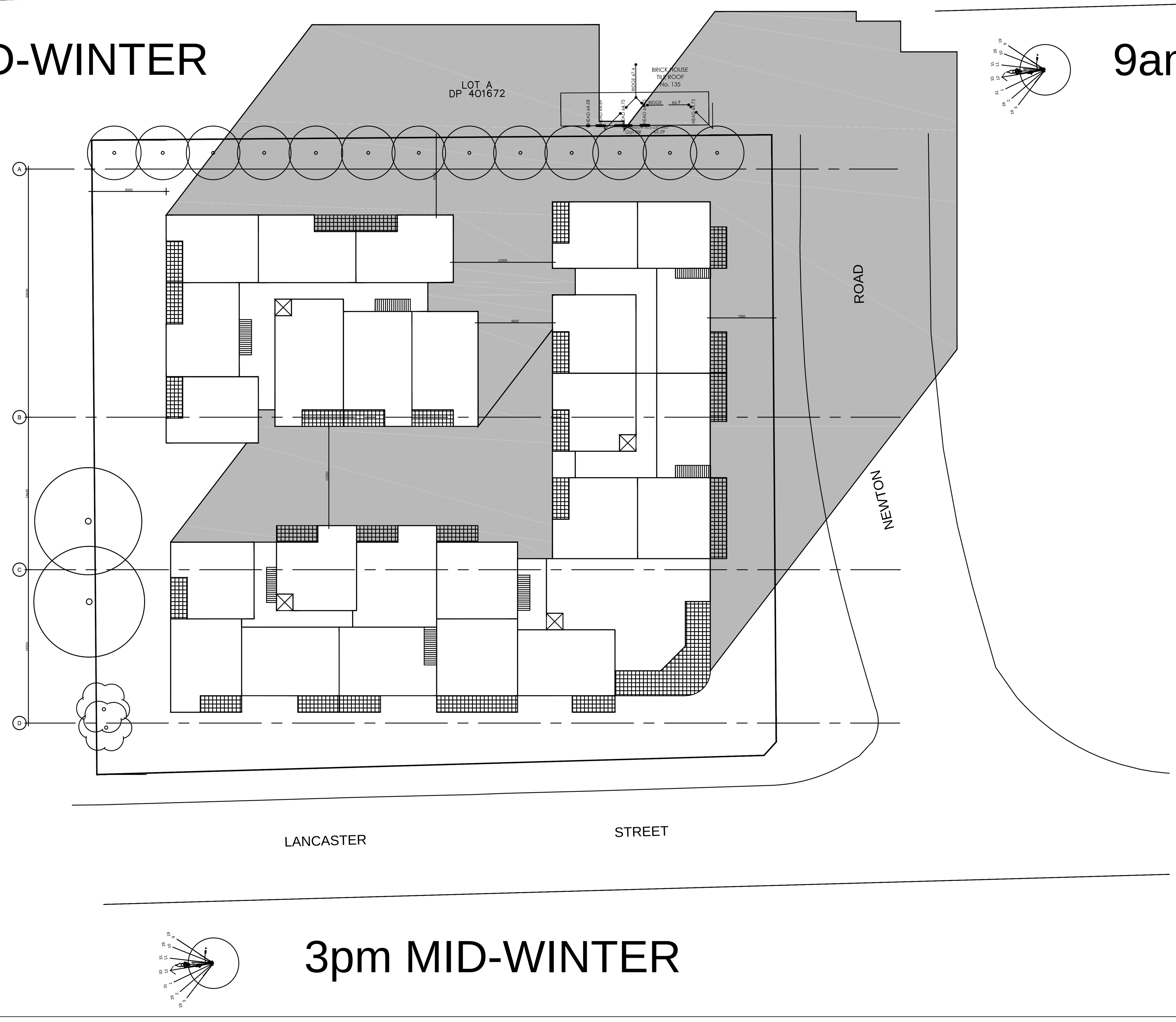
DRAWING No. 1/1



12noon MID-WINTER



9am MID-WINTER



3pm MID-WINTER

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE MAR 2017

SCALE 1:200

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DRAWING NAME

PRELIMINARY
SHADOW DIAGRAMS

DRAWING No.

137NEW-17SH 1/1

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APPENDIX 4


SHOPPING
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APPENDIX 5

Traffic Solutions Pty Ltd

PROPOSAL FOR A MIXED USE DEVELOPMENT, 137-141 NEWTON ROAD, BLACKTOWN

TRAFFIC AND PARKING ASSESSMENT

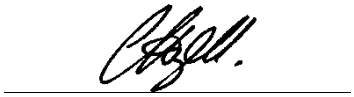
February 2018

Ref: 17.18.060

P.O Box 9161, Bathurst NSW 2795 Phone: (02) 6331 0467 Email: craig@trafficsolutions.com.au

RESIDENTIAL AND COMMERCIAL PLANNING PROPOSAL, 137-141 NEWTON ROAD, BLACKTOWN. – TRAFFIC AND PARKING ASSESSMENT

Prepared By: Craig Hazell
Director
Traffic Solutions P/L
P.O Box 9161
Bathurst NSW 2795
M. 0417 262 057



For: Dominic Foti
Director
Tinesi Pty Ltd
M. 0414 254 524

Report No.: 17.18.060

Date: 19 February 2018

Issue: FINAL

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CONTENTS

1. INTRODUCTION

This report has been prepared to accompany a planning proposal to Blacktown City Council for a proposed mixed use development located at 137-141 Newton Road, Blacktown. (Figure 1)

The Planning Proposal seeks to amend the height of the Buildings Map in the Blacktown LEP by replacing the existing 10m height limit with an 18m height limit.

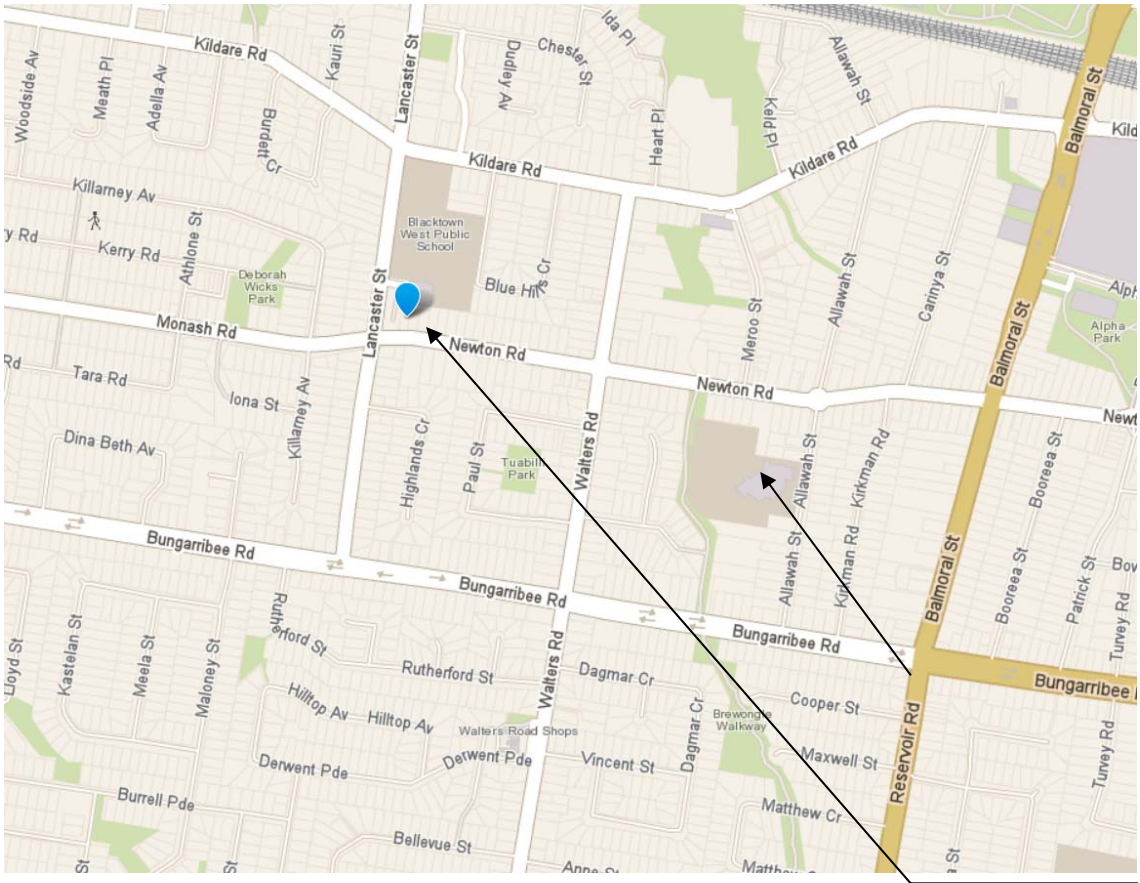
The proposed amendment to the height limit would facilitate a future development consisting of a 2000m^2 supermarket, 1200m^2 of retail/business with 74 residential units above. Parking for 234 cars is proposed in 2 basement levels. Vehicle access to/from the development is proposed via two driveways off Lancaster Street, one of which will be for heavy vehicles only.

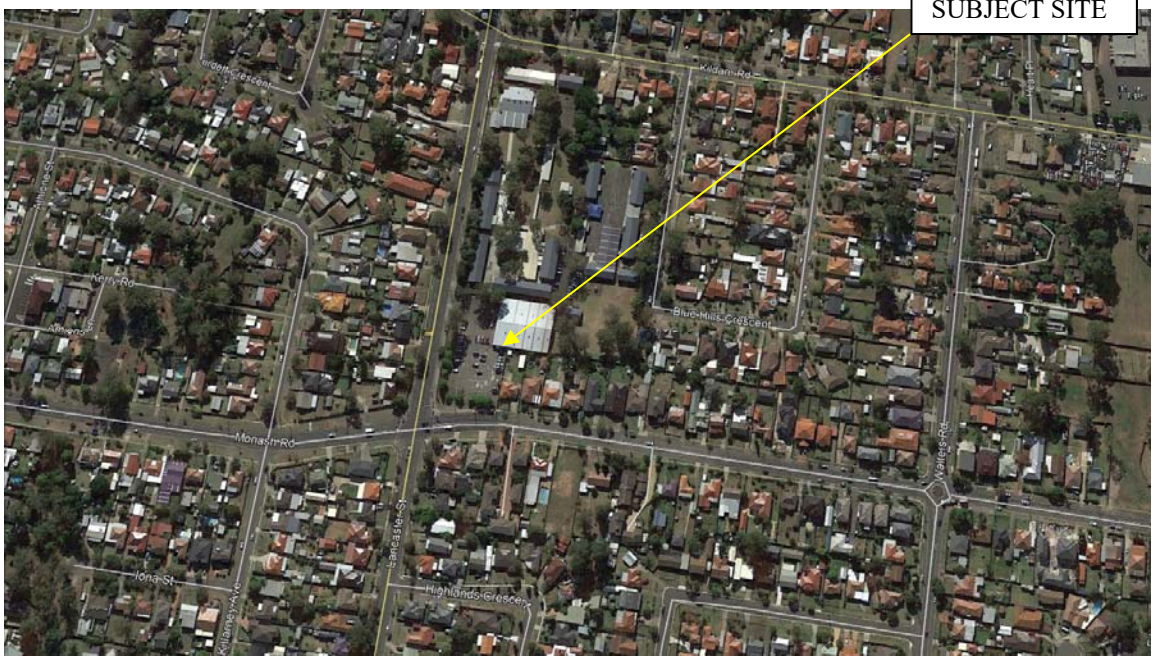
The existing site comprises a fruit market and 2 residential houses. The fruit market site currently has 63 car parking spaces with access to the fruit market provided off Lancaster Street and the residential houses off Newton Road.

This report examines the traffic and parking implications of the proposed development and will assess the:

- The off-street parking provision.
- Proposed access arrangements.
- Estimated traffic generation of the proposal.
- Impacts on the existing road network of the estimated traffic generation.
- Loading arrangements.

This report has been undertaken utilising plans prepared by AMG Architecture Pty Ltd, 4 drawings, project number 137NEW-17, dated March 2017.





LOCATION

Fig 1

2. PROPOSED DEVELOPMENT

SITE

The proposed development will be located on the corner of Newton Road and Lancaster Street. The subject site is known as Lots 1-6 in D.P. 211530, known as 137-141 Newton Road, Blacktown and includes the existing Lancaster Street Fruit Market.

DEVELOPMENT PROPOSAL

The planning proposal includes a 2000m^2 supermarket, 1200m^2 of retail/business with 74 residential units above. Parking for 234 cars is proposed in 2 basement levels.

Vehicle access to/from the site is to be provided by two separated 6m wide driveways, the northern driveway is for trucks/deliveries only and the southern is proposed for cars.

3. EXISTING CONDITIONS

SITE

The existing development comprises a fruit market with an area of approximately 1472m^2 and 63 car parking spaces. The planning proposal site also includes 2 residential houses numbered 137 and 139 Newton Road.

TRAFFIC AND PARKING

Newton Road and Lancaster Street are classified a Regional Road under the RMS Road Classification Review-Sydney Region. The main features of the existing traffic controls in the vicinity of the site are:

- Traffic Signals at the intersections of Lancaster with Newton and Kildare Roads.
- 60km/h speed limit on Lancaster Street.
- 40km/h school zone on Lancaster Street.
- 50km/h speed limit on Newton Road.
- 50km/h speed limit on Kildare Road.
- 50km/h speed limit on Monash Road.
- 60km/h speed limit on intersection of Newton and Monash Road and Lancaster Street.
- Double white centrelines exist in Newton Road and Lancaster Street.

The existing parking constraints in the vicinity are:

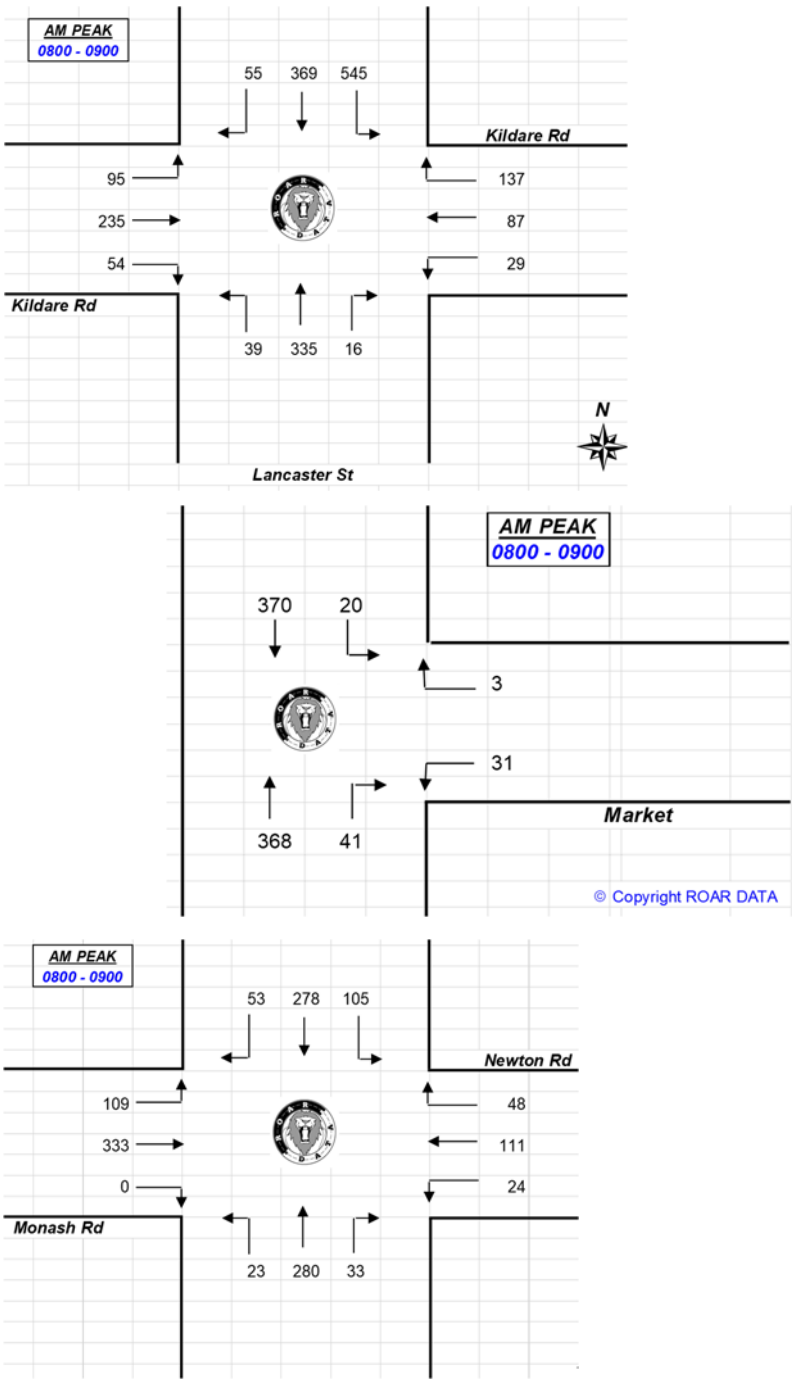
- No Stopping
- No Parking
- Bus Stop

Data on the traffic movements in the vicinity of the subject site have been collected by surveys undertaken by ROAR Data Pty Ltd from 7.00am – 9.00am and 3.00pm – 6.00pm on Tuesday 5th December 2017 at the intersections of Lancaster Street with Kildare Road, Newton/Monash Roads and the current Fruit Market Driveway.

The traffic counts revealed that the existing Lancaster Street Fruit Market is generating the following vehicle trips in the existing peak hours:

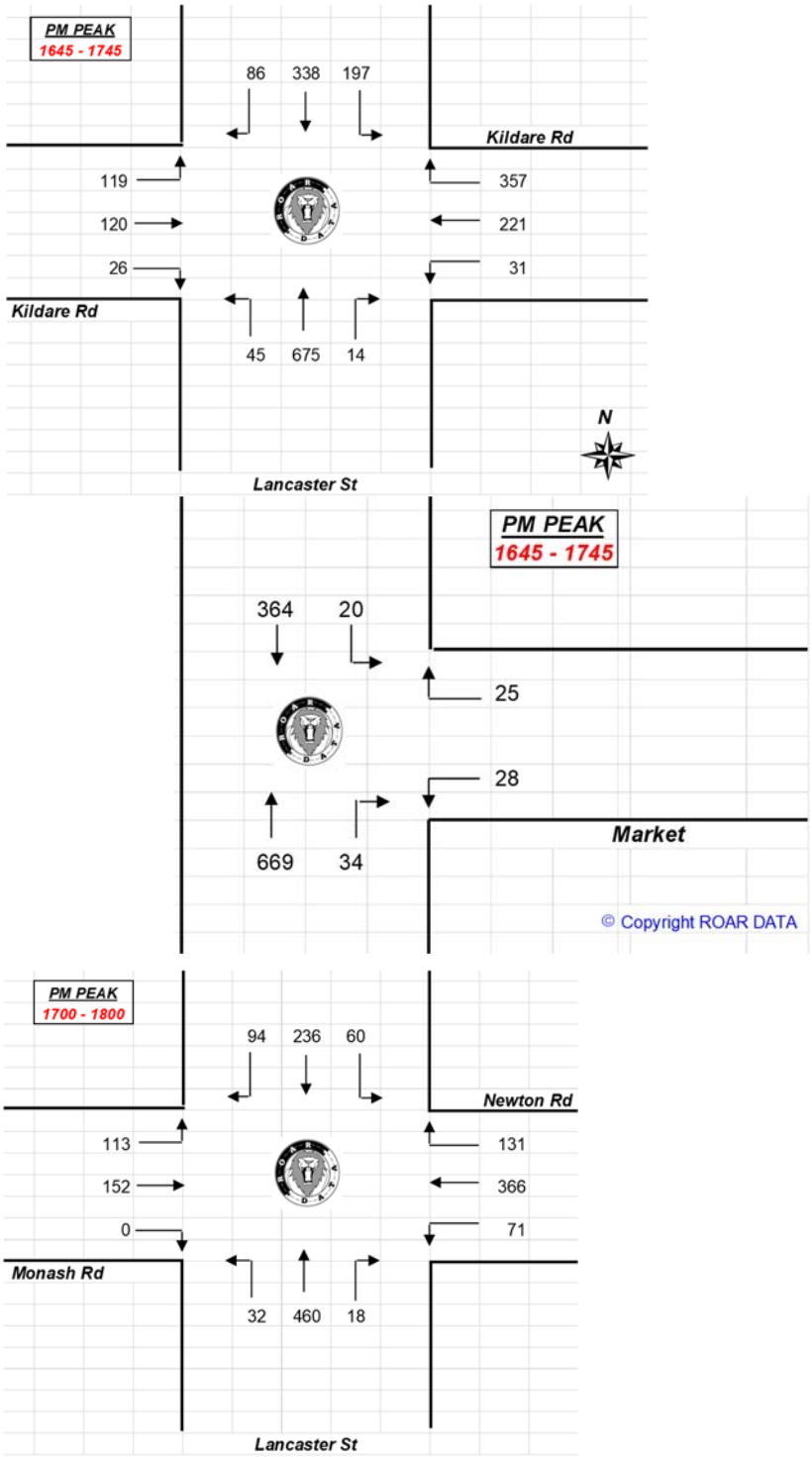
	AM Peak 8.00am – 9.00am	**PM peak 4.45m-5.45pm**
In	61	54
Out	34	53
Total	**95**	**107**

The detailed results of the surveys are attached as appendix A. The peak hour flows at each intersection are depicted on Figures 2 and 3 in the following pages.



Existing Morning Peak Hour Flows

Fig 2



Existing Evening Peak Hour Flows

Fig 3

4. KEY ISSUES

ACCESS AND PARKING

Vehicle access to/from the site is to be provided by two separated 6m wide driveways off Lancaster Street. The driveway off Lancaster Street is satisfactory and will provide good sight distance in both directions. The available sight distance easily exceeds the desirable 83m distance suggested by AS/NZS 2890.1:2004 for 60km/h.

The northern driveway is for trucks/deliveries only and the southern is proposed for cars. Whilst the southern driveway width complies with AS/NZS 2890.1 because Lancaster Street is not an Arterial Road, consideration should be given to a 2 lane exit driveway for cars. The northern driveway will need amendment to cater for a Heavy Rigid Vehicle.

The conceptual plans generally comply with the geometric design requirements for car park layouts are specified in the '*Australian/New Zealand Standard, Parking Facilities Part 1; Off Street Car Parking (AS/NZS 2890.1)* of 2004 and of course disabled car parking spaces will be provided in appropriate numbers in accordance with *Australian/New Zealand Standard, Parking Facilities Part 6: Off street Parking for People With Disabilities* of 2009.

Compliance with the Australian Standards for car parking, driveway widths and ramp grades as a minimum will be a recommendation of this report

Due to the proposals location to the Blacktown west public school it will also be a recommendation that the separation between the loading dock and basement car parking driveways be increased to at least 2m to provide a refuge for pedestrians between driveways. This area could possibly be highlighted with a different pedestrian surface or line marking as considered applicable by Council.

A review of Blacktown City Council's "*Development Control Plan 2015"* reveals the following car parking requirements applicable to this proposal:

Residential Flat Building (Outside Blacktown CBD)
1 space per 1 or 2 bedroom dwellings
2 spaces per 3 or more bedrooms
Plus 1 space per 2.5 dwellings for visitor parking(or part thereof)
Retail premises and business premises (Outside Blacktown CBD)
200sq.m or greater 1 space per 22sq.m GFA
Less than 200sq. m 1 space per 30 sq.m GFA

Therefore, the car parking required for the proposal at this time calculates as:

74 units @ 1 space per unit	=	74 spaces
74 units @ 1 per/2.5units	=	29 spaces
2000m^2 @ 1 space per 22m^2 GFA	=	91 spaces
1200m^2 @ 1 space per 30m^2 GFA	=	40 spaces
Total	**=**	**234 spaces**

Accordingly, the planning proposal for the mixed use development satisfies Council's parking requirements with the provision of **234** off-street parking spaces.

LOADING FACILITIES

The loading dock is provided off a 6m driveway from Lancaster Street. The proposed loading dock driveway and manoeuvring area is only sufficient for vehicles up to the equivalent of a Heavy Rigid Vehicle up to 12.5m long.

An assessment of the loading dock has been undertaken to determine if it is of sufficient size to enable the proposed maximum heavy rigid vehicle (12.5m) to manoeuvre on site and enter/exit in a forward direction. This assessment has been undertaken using the *"Australian Standard Off-Street parking – Part 2 – Commercial vehicle facilities, AS 2890.2 – 2002"* service area maneuvering and swept turning path templates using AUTOCAD Vehicle tracking programme which has the specifications of the Australian Standard AS 2890.2:2002, 12.5m long heavy rigid vehicle inbuilt into the programme.

This assessment revealed that the planning proposal area for manoeuvring within the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This will also be a recommendation of this report.

TRAFFIC

An estimation of the traffic generation of the proposed development can be calculated by again referring to the Roads and Traffic Authority's *'Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation'* of October 2002. The guide provides the following Thursday evening peak hour generation formula for shopping centres including retail and commercial components:

Shopping Centres

$V(P) = 20\ A(S) + 51\ A(F) + 155\ A(SM) + 46\ A(SS) + 22\ A(OM)$
(vehicle trips per $1000m^2$)

where:

A(S): **Slow Trade gross leasable floor area (Gross Leasable Floor Area in square metres) includes major department stores such as David Jones and Grace Bros., furniture, electrical and whitegoods stores.**

A(F): **Faster Trade GLFA - includes discount department stores such as K-Mart and Target, together with larger specialist stores such as Fosseys.**

A(SM): **Supermarket GLFA - includes stores such as Franklins and large fruit markets.**

A(SS): **Specialty shops, secondary retail GLFA - includes speciality shops and take-away stores such as McDonalds. These stores are grouped as they tend to not be primary attractors to the centre.**

A(OM): **Office, medical GLFA: includes medical centres and general business offices.**

As the traffic generated by the existing centre has been recorded, only the increased floor areas and new components of the proposal will be applied to this formula which is as follows:

Supermarket	2000m^2
Specialty shops	1200m^2

Therefore, the supermarket, commercial and retail component of the development potential traffic generation calculates as:

V(P) = 20 A(S) + 51 A(F) + 155 A(SM) + 46 A(SS) + 22 A(OM) (vehicle trips per 1000m^2)

= 20 A(S) + 51 A(F) + 155 (supermarket) + 46 (specialty retail) + 22 (OM)/1000m^2

= (20 x 0) + (51 x 0) + 155 (2000m^2) + 46 (1200m^2) + (22 x 0)/1000m^2

= 365.2 evening peak hour vehicle trips

As the RMS, does not provide a morning peak hour traffic generation, it will be assumed that 50% of the commercial evening peak hour traffic generation will be generated in the morning peak hour. (i.e. 183 vtph)

An estimation of the traffic generation of the proposed residential component of the development can be calculated by reference to the Roads and Maritime Services Technical Direction '*Guide to Traffic Generating Developments, Updated surveys TDT 2013/14'* of May 2013. The guide specifies the following peak hour generation rates for High Density residential flat buildings in Sydney:

AM Peak Hour Vehicle Trips	=	0.19
PM Peak Hour Vehicle Trips	=	0.15

The Roads and Maritime Services defines a high density residential flat building as:

"… a building containing 20 or more dwellings. This does not include aged or disabled persons' housing. High density residential flat buildings are usually more than five levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use."

Therefore, the estimated traffic generation of the development calculates as:

AM Peak
74 Dwellings @ 0.19 trips per unit = 14.06 peak hour trips

PM Peak
74 Dwellings @ 0.15 trips per unit = 11.1 peak hour trips

Accordingly, the planning proposal has the potential to generate approximately 197 and 376 vehicle trips in the morning and evening peak hours respectively.

The estimated potential traffic generation of the subject site can be discounted by the

traffic generated by the existing Fruit Market which has been recorded in the traffic surveys undertaken. The following indicates the potential net traffic flows to/from the planning proposal and calculations undertaken.

	Existing volumes		**Potential total volumes**		**Potential additional volumes**	
	AM Peak	**PM peak**	**AM Peak**	**PM peak**	**AM Peak**	**PM peak**
In	61	54	91 (com)	194 (183 com, 11 Res)	30	140
Out	34	53	106 (92 com, 14 Res)	182 (com)	72	129
Total	**95**	**107**	**197**	**376**	**102**	**269**

Accordingly, the estimated potential increase in traffic flows of the planning proposal is in the order of **102** morning and **269** evening peak hour trips.

To assess the impact of the development on the intersections of Lancaster Road with Newton/Monash Road, Kildare Road and the access driveway (to the planning proposal) the estimated morning and evening peak hour approach and departure vehicle trips have been assigned proportionally to these intersections on the basis of existing turning movements. Further, for the purposes of this assessment it has been assumed that during the peak hours the traffic generation of the commercial component will be split proportionally for approach and departure to this site as per existing recorded volumes and that the residential volumes will depart the site in the morning and return in the evening peak hours.

Figures 4 and 5 depict the assignment of the potential additional morning and evening peak hour traffic flows to the surrounding road network.

Using SIDRA Intersection 6 Plus, a software program developed for the purpose of analysing signalised, roundabout and sign controlled intersections, the effect of the estimated traffic generation of this development on the adjacent road system has been assessed.

The SIDRA model standard features and settings have not been modified. i.e. no alterations to the programme defaults.

Attached in appendix B is the intersection layout modelled for Council's reference. A copy of the SIDRA file is available for review if required.

A comparison of intersection performance between the existing and projected traffic demands during the morning and evening peak hours upon the intersections of

Lancaster Road with Newton/Monash Road, Kildare Road and the access driveway to the planning proposal has been modelled. Tabled below are the results of the intersection modelling and a copy of the SIDRA summary output files are attached as appendix B for Council's information. A brief guide on evaluating the results of SIDRA analysis is reproduced in the following pages:

Indicator	Lancaster Street and Kildare Road, Blacktown – Signals			
	Existing		Proposed	
	AM	PM	AM	PM
Level of Service	B	C	C	C
Degree of Saturation	0.742	0.868	0.750	0.901
Total Average Delay (sec/veh)	27.5s	40.8s	28.6s	42.5s

Indicator	Lancaster Street and proposed vehicle access driveway, Blacktown – Sign Control Intersection	
	AM	PM
Level of Service	A	B
Degree of Saturation	0.251	0.455
Total Average Delay (sec/veh)	1.6s	3.3s
Total Average delay for right turn from site driveway (sec/veh)	4.5s	16.4s

Indicator	Newton Road, Monash Road and Lancaster Street, Blacktown – Signals			
	Existing		Proposed	
	AM	PM	AM	PM
Level of Service	B	B	B	B
Degree of Saturation	0.623	0.710	0.682	0.717
Total Average Delay (sec/veh)	18.7s	18.7s	19.2s	21.4s

The results of the SIDRA analysis reveals that the intersections modelled will operate at a very good Level of Service with minimal delays and spare capacity with the additional traffic estimated to be generated by the proposal.

Evaluation of the results of SIDRA

LEVEL OF SERVICE

THE LEVEL OF SERVICE FOR TRAFFIC SIGNALS, ROUNDABOUTS AND SIGN CONTROL INTERSECTIONS IS SHOWN BELOW, THIS IS BASED ON THE AVERAGE DELAY IN SECONDS PER VEHICLE:

AVERAGE DELAY PER VEHICLE	LEVEL OF SERVICE	TRAFFIC SIGNALS & ROUNDABOUTS	SIGN CONTROL
< 14	A	GOOD	GOOD
15 - 28	B	GOOD WITH MINIMAL DELAYS AND SPARE CAPACITY	ACCEPTABLE DELAYS AND SPARE CAPACITY
29 - 42	C	SATISFACTORY WITH SPARE CAPACITY	SATISFACTORY BUT ACCIDENT STUDY REQUIRED
43 - 56	D	SATISFACTORY BUT OPERATING NEAR CAPACITY	NEAR CAPACITY AND ACCIDENT STUDY REQUIRED
57 - 70	E	**AT CAPACITY**: AT SIGNALS INCIDENTS WILL CAUSE EXCESSIVE DELAYS, ROUNDABOUTS REQUIRE ANOTHER CONTROL MODE	AT CAPACITY AND REQUIRES ANOTHER CONTROL MODE
> 70	F	UNSATISFACTORY	UNSATISFACTORY

DEGREE OF SATURATION

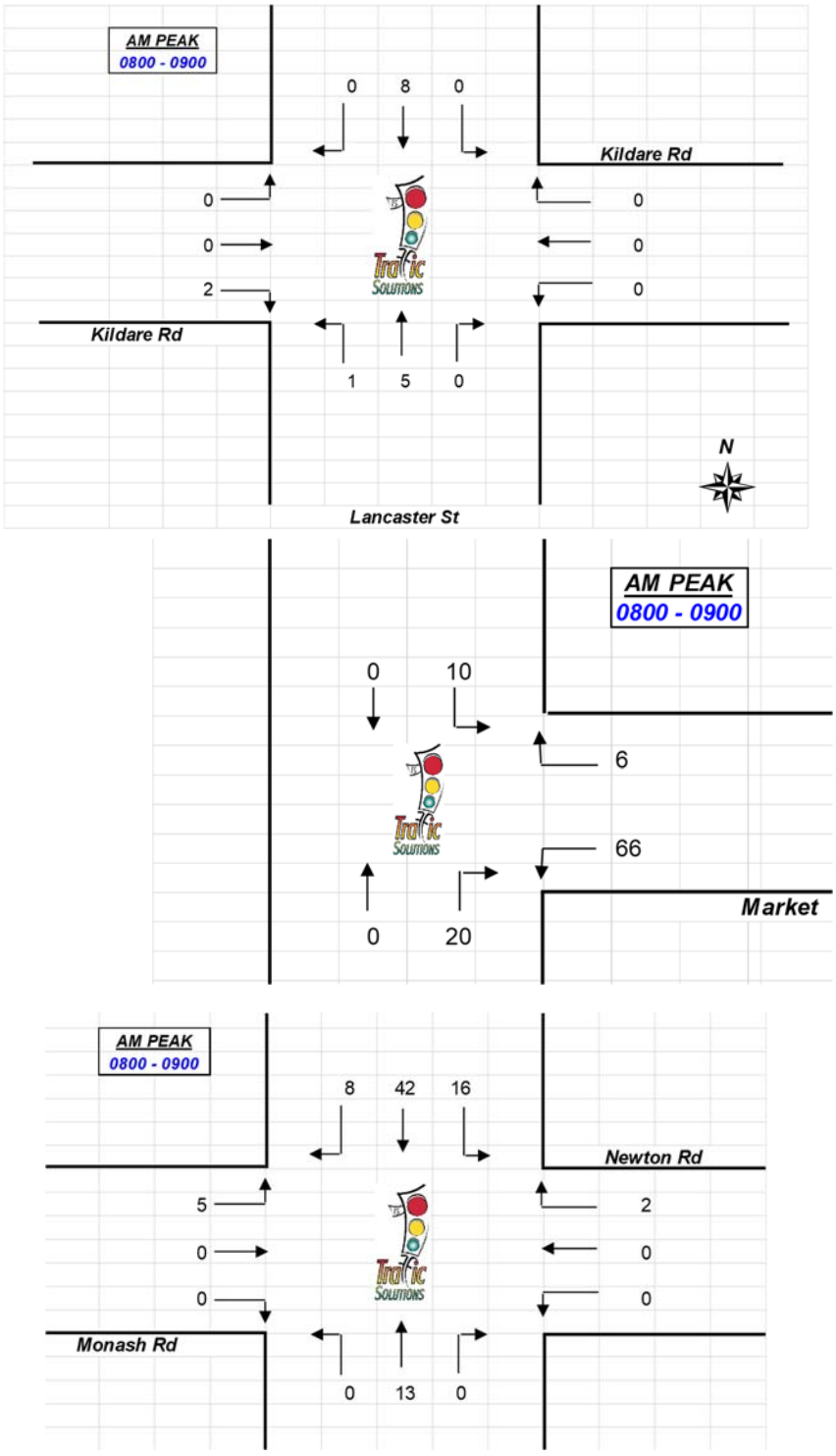
THE DEGREE OF SATURATION IS ANOTHER MEASURE OF THE OPERATIONAL PERFORMANCE OF INDIVIDUAL INTERSECTIONS.

FOR TRAFFIC SIGNAL CONTROLLED INTERSECTIONS BOTH QUEUE LENGTH AND DELAY INCREASE RAPIDLY AS THE DEGREE OF SATURATION APPROACHES 1.0, AND IT IS USUALLY ATTEMPTED TO KEEP IT BELOW 0.9.

FOR ROUNDABOUTS OR SIGN CONTROLLED INTERSECTIONS, OVERSATURATION IS INDICATED BY A VALUE IN EXCESS OF 0.8.

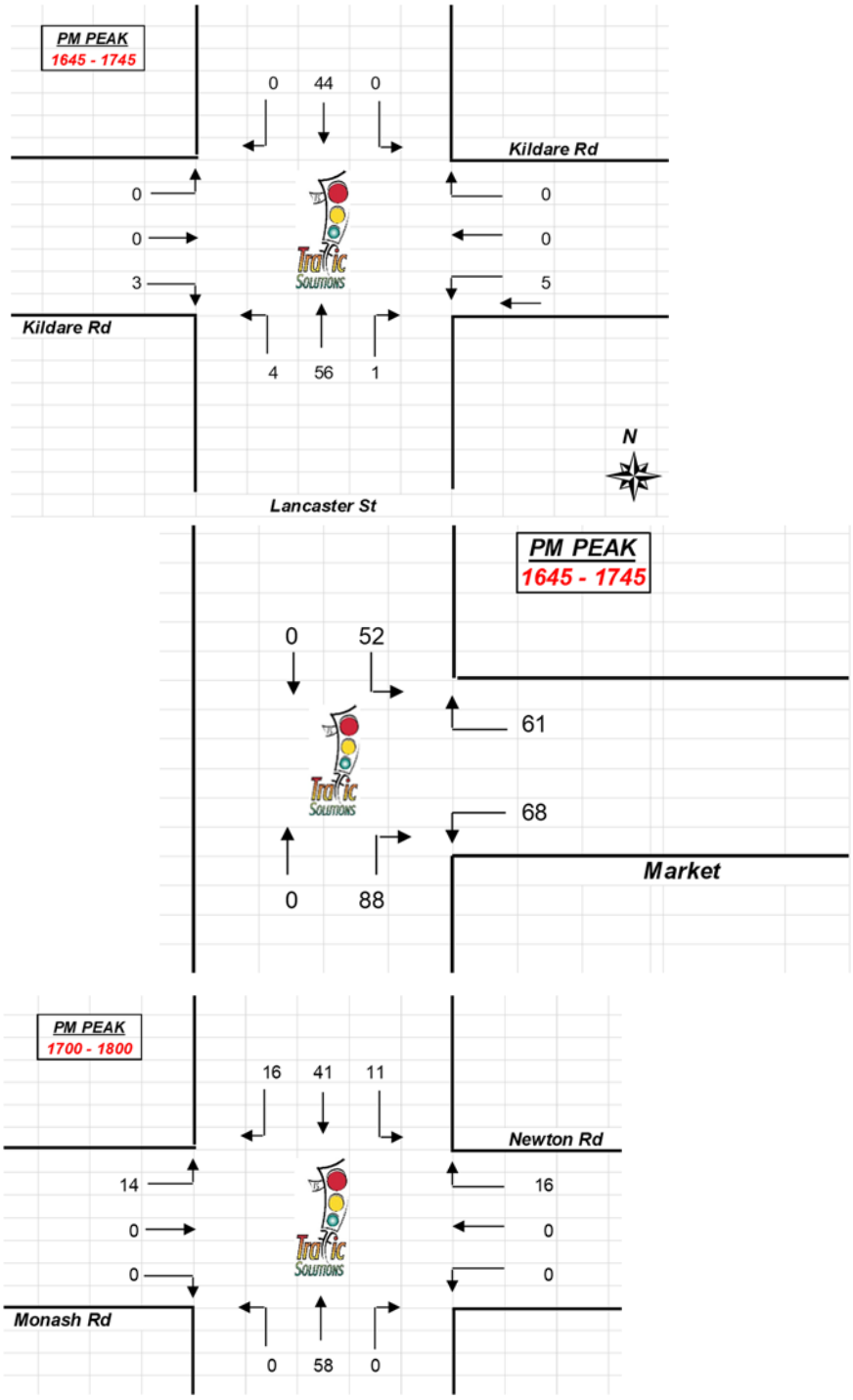
AVERAGE VEHICLE DELAY

THE AVERAGE VEHICLE DELAY PROVIDES A MEASURE OF THE OPERATIONAL PERFORMANCE OF AN INTERSECTION AS INDICATED IN THE ABOVE TABLE . THE AVERAGE VEHICLE DELAYS IN THE TABLE SHOULD BE USED AS A GUIDE ONLY AS LONGER DELAYS COULD BE TOLERATED IN SOME LOCATIONS.



Potential Additional Morning Peak Hour Flows

Fig 4



Potential Additional Evening Peak Hour Flows

Fig 5

5. CONCLUSIONS AND RECOMMENDATIONS

The preceding analysis has demonstrated that:

- The proposed access driveway off Lancaster Street Parade will provide adequate sight distance.

- It is recommended that a separation of at least 2m between the loading area driveways be increased to at least 2m and highlighted as a pedestrian refuge area should the planning proposal proceed.

- The off-street parking proposed in the planning proposal will comply with Council's requirements.

- This assessment revealed that the planning proposal area for manoeuvring within the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This is recommended should the development proceed as per the planning proposal.

- The proposed development is considered to satisfy the intent of the geometric design specifications contained in the Australian Standards for off - street parking and vehicular access, however, it is recommended that a 2 lane exit driveway be provided at the car driveway.

- Assessment of the loading dock utilising the Australian Standard service area maneuvering template and swept path turning templates indicates that the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This is recommended should the development proceed as per the planning proposal.

- The potential additional traffic generation of the proposal is estimated to be in the order of **102** morning and **269** evening peak hour vehicle trips.

- The intersections of Lancaster Street with Newton/Monash Roads, Kildare Rd and the access driveway will operate at a satisfactory Level of Service with minimal delays and spare capacity.

- The potential additional traffic generation of the proposal will not have any unacceptable traffic impacts upon Lancaster Street or the surrounding road network.

APPENDIX A TRAFFIC COUNTS

R.O.A.R. DATA

Reliable, Original & Authentic Results

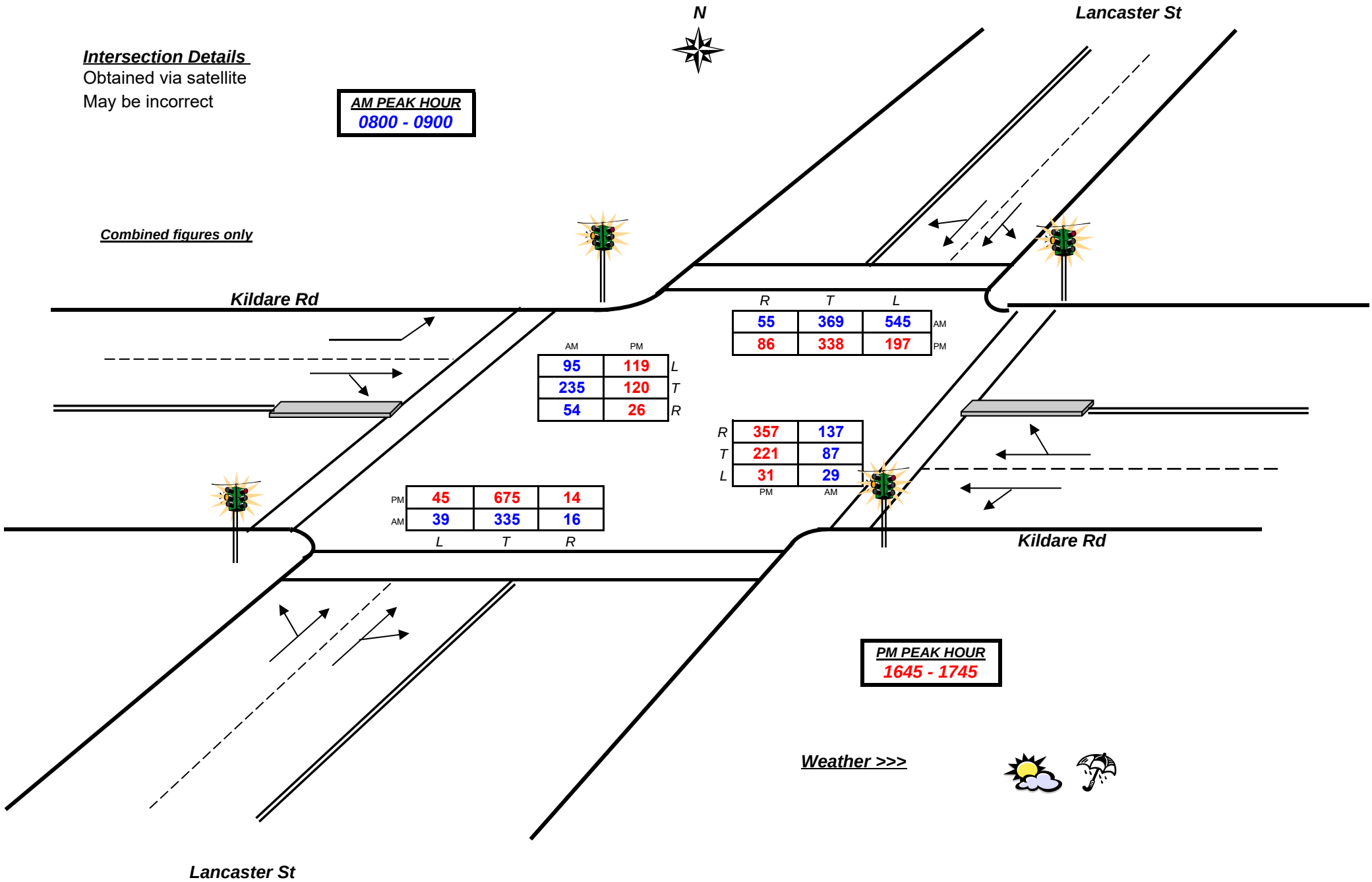
Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



PM PEAK HOUR
1645 - 1745

Weather >>>

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	77	68	8	21	37	3	1	51	0	4	14	23	**307**
0715 - 0730	102	79	18	30	27	4	5	61	2	1	14	14	**357**
0730 - 0745	105	77	15	23	42	5	6	65	2	5	14	23	**382**
0745 - 0800	130	83	21	21	55	7	8	68	7	5	15	28	**448**
0800 - 0815	110	71	7	27	47	8	6	72	2	5	19	25	**399**
0815 - 0830	166	113	10	23	64	14	8	77	4	8	25	33	**545**
0830 - 0845	133	91	20	27	68	14	14	96	6	4	20	38	**531**
0845 - 0900	136	91	18	18	52	17	10	87	3	11	21	41	**505**
Period End	**959**	**673**	**117**	**190**	**392**	**72**	**58**	**577**	**26**	**43**	**142**	**225**	**3474**

Lights

Peak Time	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	414	307	62	95	161	19	20	245	11	15	57	88	**1494**
0715 - 0815	447	310	61	101	171	24	25	266	13	16	62	90	**1586**
0730 - 0830	511	344	53	94	208	34	28	282	15	23	73	109	**1774**
0745 - 0845	539	358	58	98	234	43	36	313	19	22	79	124	**1923**
0800 - 0900	545	366	55	95	231	53	38	332	15	28	85	137	**1980**
PEAK HOUR	**545**	**366**	**55**	**95**	**231**	**53**	**38**	**332**	**15**	**28**	**85**	**137**	**1980**

Heavies

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	0	1	0	0	1	0	0	1	0	0	1	0	**4**
0715 - 0730	1	0	0	0	1	0	0	1	0	1	1	0	**5**
0730 - 0745	0	3	0	0	1	1	0	0	0	0	0	0	**5**
0745 - 0800	0	1	0	1	0	1	0	1	0	0	3	0	**7**
0800 - 0815	0	1	0	0	1	0	0	1	0	0	0	0	**3**
0815 - 0830	0	0	0	0	1	0	0	0	0	1	2	0	**4**
0830 - 0845	0	1	0	0	1	1	0	1	0	0	0	0	**4**
0845 - 0900	0	1	0	0	1	0	1	1	1	0	0	0	**5**
Period End	**1**	**8**	**0**	**1**	**7**	**3**	**1**	**6**	**1**	**2**	**7**	**0**	**37**

Heavies

Peak Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	1	5	0	1	3	2	0	3	0	1	5	0	**21**
0715 - 0815	1	5	0	1	3	2	0	3	0	1	4	0	**20**
0730 - 0830	0	5	0	1	3	2	0	2	0	1	5	0	**19**
0745 - 0845	0	3	0	1	3	2	0	3	0	1	5	0	**18**
0800 - 0900	0	3	0	0	4	1	1	3	1	1	2	0	**16**
PEAK HOUR	**0**	**3**	**0**	**0**	**4**	**1**	**1**	**3**	**1**	**1**	**2**	**0**	**16**

Combined

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	77	69	8	21	38	3	1	52	0	4	15	23	**311**
0715 - 0730	103	79	18	30	28	4	5	62	2	2	15	14	**362**
0730 - 0745	105	80	15	23	43	6	6	65	2	5	14	23	**387**
0745 - 0800	130	84	21	22	55	8	8	69	7	5	18	28	**455**
0800 - 0815	110	72	7	27	48	8	6	73	2	5	19	25	**402**
0815 - 0830	166	113	10	23	65	14	8	77	4	9	27	33	**549**
0830 - 0845	133	92	20	27	69	15	14	97	6	4	20	38	**535**
0845 - 0900	136	92	18	18	53	17	11	88	4	11	21	41	**510**
Period End	**960**	**681**	**117**	**191**	**399**	**75**	**59**	**583**	**27**	**45**	**149**	**225**	**3511**

Combined

Peak Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	415	312	62	96	164	21	20	248	11	16	62	88	**1515**
0715 - 0815	448	315	61	102	174	26	25	269	13	17	66	90	**1606**
0730 - 0830	511	349	53	95	211	36	28	284	15	24	78	109	**1793**
0745 - 0845	539	361	58	99	237	45	36	316	19	23	84	124	**1941**
0800 - 0900	545	369	55	95	235	54	39	335	16	29	87	137	**1996**
PEAK HOUR	**545**	**369**	**55**	**95**	**235**	**54**	**39**	**335**	**16**	**29**	**87**	**137**	**1996**

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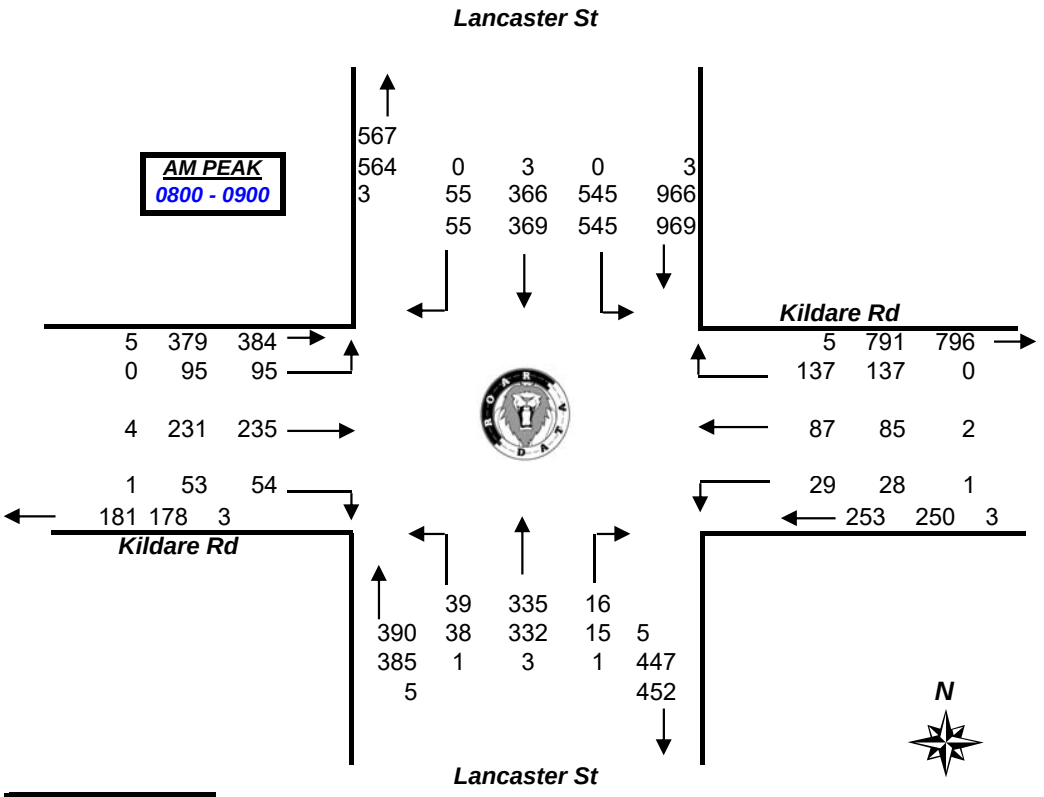
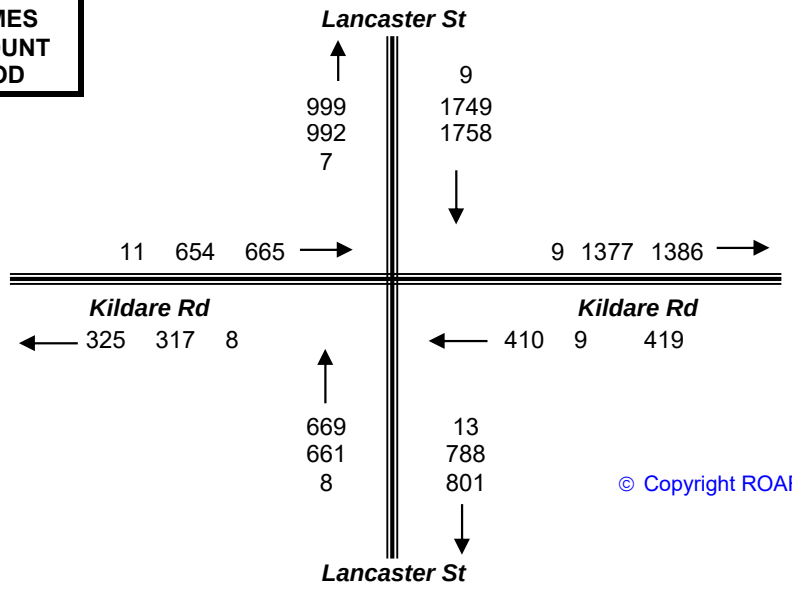
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017



Peds

Time Per	NORTH Lancaster St UNCLASSIFIED	WEST Kildare Rd UNCLASSIFIED	SOUTH Lancaster St UNCLASSIFIED	EAST Kildare Rd UNCLASSIFIED	TOT
0700 - 0715	2	1	2	0	**5**
0715 - 0730	0	0	2	0	**2**
0730 - 0745	1	0	0	0	**1**
0745 - 0800	1	2	2	0	**5**
0800 - 0815	6	1	0	4	**11**
0815 - 0830	2	8	7	3	**20**
0830 - 0845	1	5	2	3	**11**
0845 - 0900	7	7	17	26	**57**
Period End	**20**	**24**	**32**	**36**	**112**

TOTAL VOLUMES FOR COUNT PERIOD



Peds

Peak Per	NORTH Lancaster St UNCLASSIFIED	WEST Kildare Rd UNCLASSIFIED	SOUTH Lancaster St UNCLASSIFIED	EAST Kildare Rd UNCLASSIFIED	TOT
0700 - 0800	4	3	6	0	**13**
0715 - 0815	8	3	4	4	**19**
0730 - 0830	10	11	9	7	**37**
0745 - 0845	10	16	11	10	**47**
0800 - 0900	16	21	26	36	**99**

PEAK HR	16	21	26	36	99

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Client : Traffic Solutions Pty. Ltd.
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Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	55	82	28	20	46	6	14	101	5	6	45	69	**477**
1515 - 1530	43	69	25	17	29	3	11	107	5	7	39	68	**423**
1530 - 1545	69	77	20	34	37	14	14	104	7	5	50	77	**508**
1545 - 1600	49	63	25	35	32	3	7	108	5	7	37	65	**436**
1600 - 1615	75	77	30	20	45	7	8	123	5	14	41	62	**507**
1615 - 1630	62	79	20	37	27	10	15	108	3	14	46	69	**490**
1630 - 1645	53	71	20	27	32	7	12	134	5	14	39	71	**485**
1645 - 1700	45	73	24	26	25	8	15	160	3	4	46	89	**518**
1700 - 1715	57	89	20	32	32	9	11	172	5	5	61	87	**580**
1715 - 1730	50	88	23	32	32	5	11	172	3	15	62	91	**584**
1730 - 1745	42	84	19	29	27	3	8	168	3	7	49	90	**529**
1745 - 1800	48	68	25	23	30	7	14	143	5	11	50	86	**510**
Period End	**648**	**920**	**279**	**332**	**394**	**82**	**140**	**1600**	**54**	**109**	**565**	**924**	**6047**

Lights

Peak Time	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	216	291	98	106	144	26	46	420	22	25	171	279	**1844**
1515 - 1615	236	286	100	106	143	27	40	442	22	33	167	272	**1874**
1530 - 1630	255	296	95	126	141	34	44	443	20	40	174	273	**1941**
1545 - 1645	239	290	95	119	136	27	42	473	18	49	163	267	**1918**
1600 - 1700	235	300	94	110	129	32	50	525	16	46	172	291	**2000**
1615 - 1715	217	312	84	122	116	34	53	574	16	37	192	316	**2073**
1630 - 1730	205	321	87	117	121	29	49	638	16	38	208	338	**2167**
1645 - 1745	194	334	86	119	116	25	45	672	14	31	218	357	**2211**
1700 - 1800	197	329	87	116	121	24	44	655	16	38	222	354	**2203**
PEAK HOUR	**194**	**334**	**86**	**119**	**116**	**25**	**45**	**672**	**14**	**31**	**218**	**357**	**2211**

Heavies

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	0	0	0	0	1	0	0	1	1	1	1	0	**5**
1515 - 1530	0	1	0	0	1	0	0	0	0	1	0	0	**3**
1530 - 1545	0	1	0	0	0	0	0	1	0	0	1	0	**3**
1545 - 1600	0	0	0	0	1	0	0	0	0	0	1	0	**2**
1600 - 1615	0	1	0	0	0	1	0	0	0	0	2	0	**4**
1615 - 1630	0	0	0	0	1	0	0	3	0	0	1	0	**5**
1630 - 1645	0	1	0	0	1	3	0	0	0	0	1	0	**6**
1645 - 1700	1	1	0	0	1	0	0	1	0	0	1	0	**5**
1700 - 1715	2	2	0	0	1	0	0	0	0	0	0	0	**5**
1715 - 1730	0	1	0	0	1	1	0	2	0	0	2	0	**7**
1730 - 1745	0	0	0	0	1	0	0	0	0	0	0	0	**1**
1745 - 1800	0	0	0	0	0	0	0	1	0	0	1	0	**2**
Period End	**3**	**8**	**0**	**0**	**9**	**5**	**0**	**9**	**1**	**2**	**11**	**0**	**48**

Heavies

Peak Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	0	2	0	0	3	0	0	2	1	2	3	0	**13**
1515 - 1615	0	3	0	0	2	1	0	1	0	1	4	0	**12**
1530 - 1630	0	2	0	0	2	1	0	4	0	0	5	0	**14**
1545 - 1645	0	2	0	0	3	4	0	3	0	0	5	0	**17**
1600 - 1700	1	3	0	0	3	4	0	4	0	0	5	0	**20**
1615 - 1715	3	4	0	0	4	3	0	4	0	0	3	0	**21**
1630 - 1730	3	5	0	0	4	4	0	3	0	0	4	0	**23**
1645 - 1745	3	4	0	0	4	1	0	3	0	0	3	0	**18**
1700 - 1800	2	3	0	0	3	1	0	3	0	0	3	0	**15**
PEAK HOUR	**3**	**4**	**0**	**0**	**4**	**1**	**0**	**3**	**0**	**0**	**3**	**0**	**18**

Combined

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	55	82	28	20	47	6	14	102	6	7	46	69	**482**
1515 - 1530	43	70	25	17	30	3	11	107	5	8	39	68	**426**
1530 - 1545	69	78	20	34	37	14	14	105	7	5	51	77	**511**
1545 - 1600	49	63	25	35	33	3	7	108	5	7	38	65	**438**
1600 - 1615	75	78	30	20	45	8	8	123	5	14	43	62	**511**
1615 - 1630	62	79	20	37	28	10	15	111	3	14	47	69	**495**
1630 - 1645	53	72	20	27	33	10	12	134	5	14	40	71	**491**
1645 - 1700	46	74	24	26	26	8	15	161	3	4	47	89	**523**
1700 - 1715	59	91	20	32	33	9	11	172	5	5	61	87	**585**
1715 - 1730	50	89	23	32	33	6	11	174	3	15	64	91	**591**
1730 - 1745	42	84	19	29	28	3	8	168	3	7	49	90	**530**
1745 - 1800	48	68	25	23	30	7	14	144	5	11	51	86	**512**
Period End	**651**	**928**	**279**	**332**	**403**	**87**	**140**	**1609**	**55**	**111**	**576**	**924**	**6095**

Combined

Peak Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	216	293	98	106	147	26	46	422	23	27	174	279	**1857**
1515 - 1615	236	289	100	106	145	28	40	443	22	34	171	272	**1886**
1530 - 1630	255	298	95	126	143	35	44	447	20	40	179	273	**1955**
1545 - 1645	239	292	95	119	139	31	42	476	18	49	168	267	**1935**
1600 - 1700	236	303	94	110	132	36	50	529	16	46	177	291	**2020**
1615 - 1715	220	316	84	122	120	37	53	578	16	37	195	316	**2094**
1630 - 1730	208	326	87	117	125	33	49	641	16	38	212	338	**2190**
1645 - 1745	197	338	86	119	120	26	45	675	14	31	221	357	**2229**
1700 - 1800	199	332	87	116	124	25	44	658	16	38	225	354	**2218**
PEAK HOUR	**197**	**338**	**86**	**119**	**120**	**26**	**45**	**675**	**14**	**31**	**221**	**357**	**2229**

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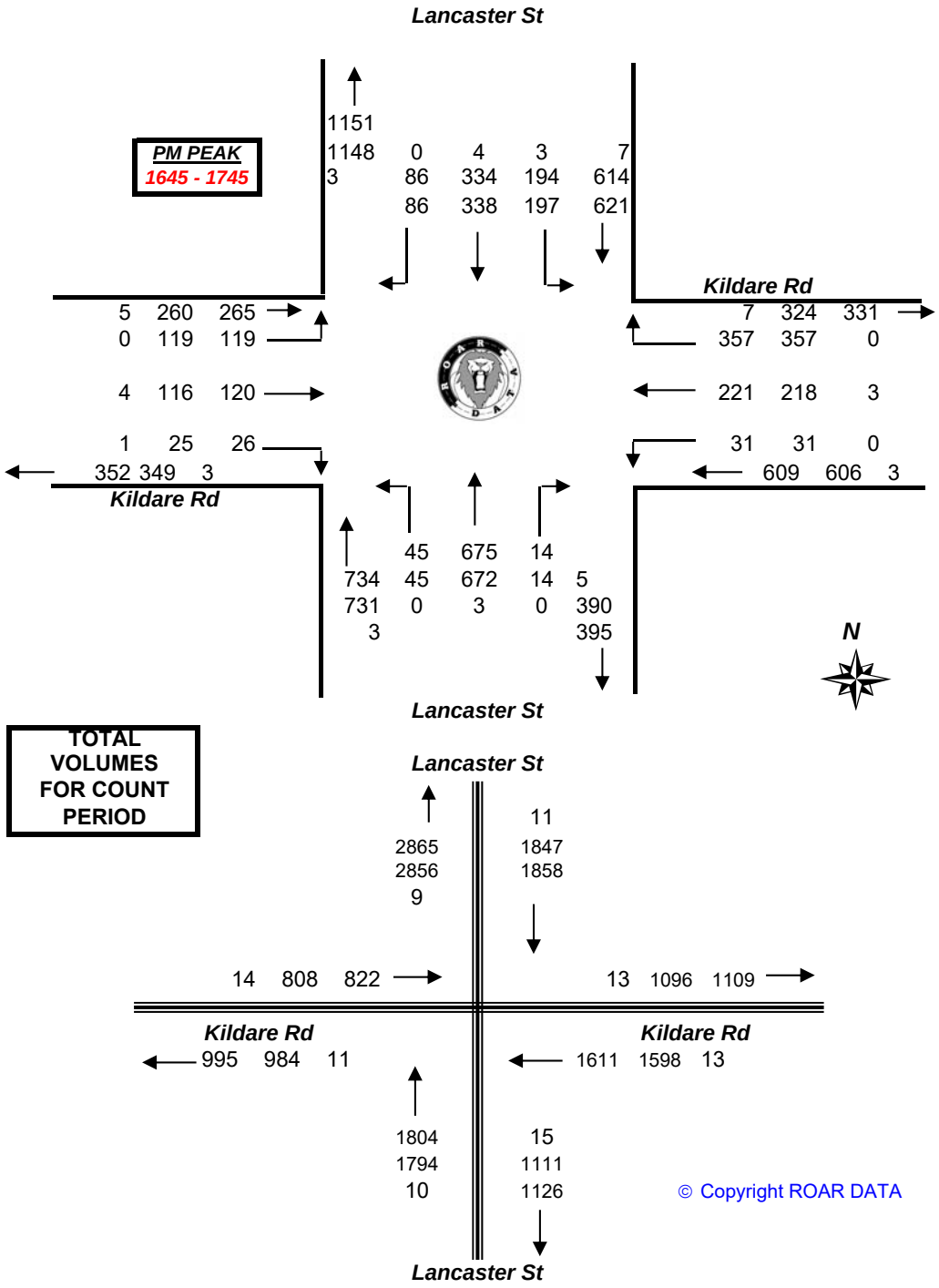
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Peds	NORTH *Lancaster St*	WEST *Kildare Rd*	SOUTH *Lancaster St*	EAST *Kildare Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1515	6	5	48	3	**62**
1515 - 1530	2	2	1	1	**6**
1530 - 1545	1	1	1	0	**3**
1545 - 1600	1	1	4	0	**6**
1600 - 1615	0	0	5	0	**5**
1615 - 1630	3	5	1	0	**9**
1630 - 1645	2	7	5	1	**15**
1645 - 1700	4	1	1	0	**6**
1700 - 1715	5	0	3	0	**8**
1715 - 1730	2	2	2	7	**13**
1730 - 1745	2	1	3	3	**9**
1745 - 1800	3	0	0	1	**4**
Period End	**31**	**25**	**74**	**16**	**146**

Peds	NORTH *Lancaster St*	WEST *Kildare Rd*	SOUTH *Lancaster St*	EAST *Kildare Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1600	10	9	54	4	**77**
1515 - 1615	4	4	11	1	**20**
1530 - 1630	5	7	11	0	**23**
1545 - 1645	6	13	15	1	**35**
1600 - 1700	9	13	12	1	**35**
1615 - 1715	14	13	10	1	**38**
1630 - 1730	13	10	11	8	**42**
1645 - 1745	13	4	9	10	**36**
1700 - 1800	12	3	8	11	**34**
PEAK HR	**13**	**4**	**9**	**10**	**36**



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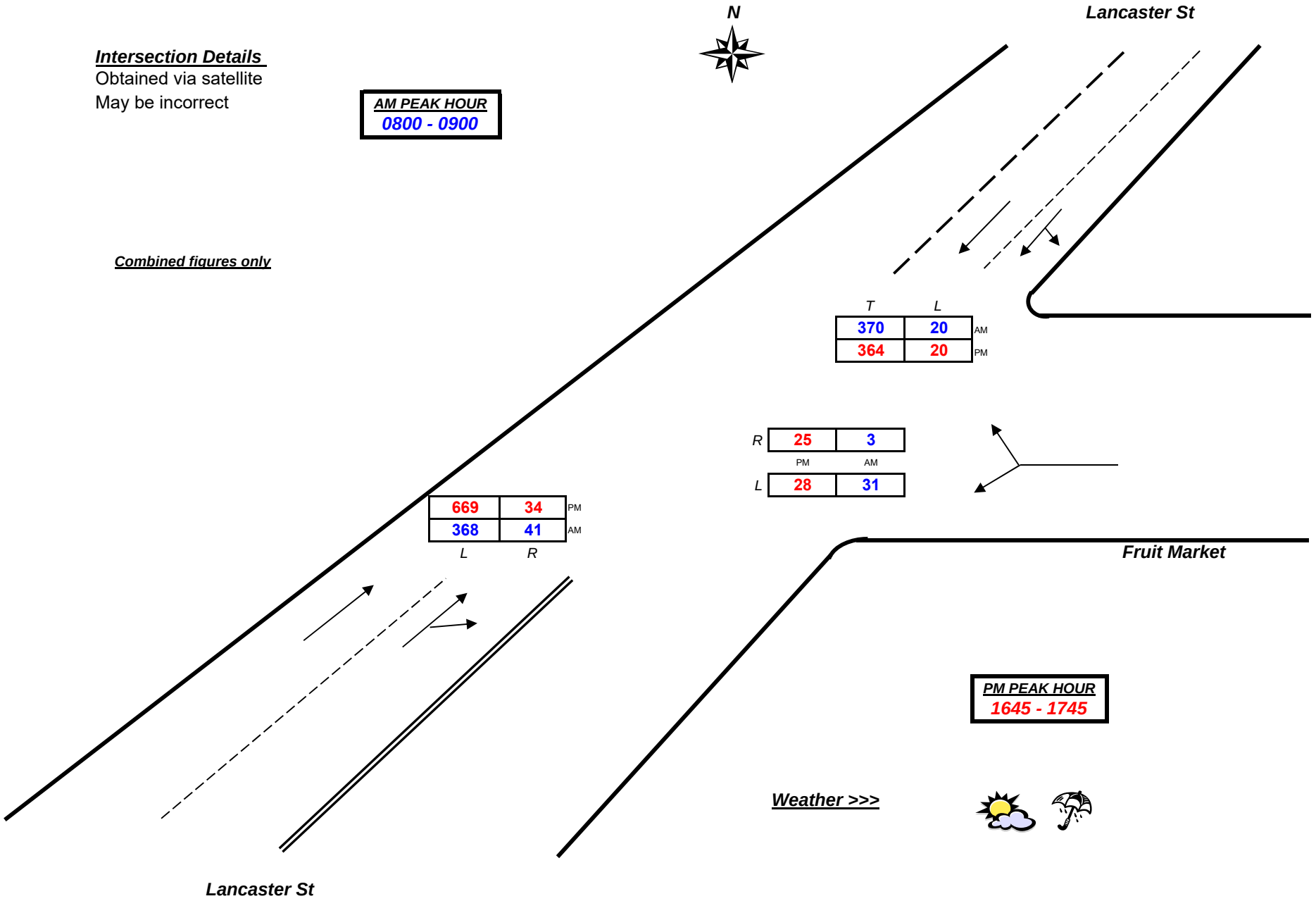
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



PM PEAK HOUR
1645 - 1745

Weather >>>

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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PEDS

Time Per	NORTH Lancaster St	EAST Market	SOUTH Lancaster St	TOT
0700 - 0715	0	1	0	**1**
0715 - 0730	0	0	0	**0**
0730 - 0745	1	1	0	**2**
0745 - 0800	0	2	0	**2**
0800 - 0815	0	3	0	**3**
0815 - 0830	0	8	0	**8**
0830 - 0845	1	18	2	**21**
0845 - 0900	0	33	0	**33**
Per End	**2**	**66**	**2**	**70**

PEDS

Peak Per	NORTH Lancaster St	EAST Market	SOUTH Lancaster St	TOT
0700 - 0800	1	4	0	**5**
0715 - 0815	1	6	0	**7**
0730 - 0830	1	14	0	**15**
0745 - 0845	1	31	2	**34**
0800 - 0900	1	62	2	**65**
PEAK HR	**1**	**62**	**2**	**65**

Lights

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	66	0	1	1	2	54	**124**
0715 - 0730	82	0	0	0	0	63	**145**
0730 - 0745	93	0	0	0	0	78	**171**
0745 - 0800	120	1	2	2	2	98	**225**
0800 - 0815	50	3	0	2	0	68	**123**
0815 - 0830	104	1	0	2	5	78	**190**
0830 - 0845	103	7	0	12	14	108	**244**
0845 - 0900	108	9	3	14	22	109	**265**
Per End	**726**	**21**	**6**	**33**	**45**	**656**	**1487**

Heavies

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	1	0	0	0	0	1	**2**
0715 - 0730	0	1	0	0	0	1	**2**
0730 - 0745	4	0	0	0	0	0	**4**
0745 - 0800	0	1	1	0	0	0	**2**
0800 - 0815	0	0	0	1	0	1	**2**
0815 - 0830	2	0	0	0	0	0	**2**
0830 - 0845	1	0	0	0	0	1	**2**
0845 - 0900	2	0	0	0	0	3	**5**
Per End	**10**	**2**	**1**	**1**	**0**	**7**	**21**

Combined

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	67	0	1	1	2	55	**126**
0715 - 0730	82	1	0	0	0	64	**147**
0730 - 0745	97	0	0	0	0	78	**175**
0745 - 0800	120	2	3	2	2	98	**227**
0800 - 0815	50	3	0	3	0	69	**125**
0815 - 0830	106	1	0	2	5	78	**192**
0830 - 0845	104	7	0	12	14	109	**246**
0845 - 0900	110	9	3	14	22	112	**270**
Per End	**736**	**23**	**7**	**34**	**45**	**663**	**1508**

Lights

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	361	1	3	3	4	293	**665**
0715 - 0815	345	4	2	4	2	307	**664**
0730 - 0830	367	5	2	6	7	322	**709**
0745 - 0845	377	12	2	18	21	352	**782**
0800 - 0900	365	20	3	30	41	363	**822**
PEAK HR	**365**	**20**	**3**	**30**	**41**	**363**	**822**

Heavies

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	5	2	1	0	0	2	**10**
0715 - 0815	4	2	1	1	0	2	**10**
0730 - 0830	6	1	1	1	0	1	**10**
0745 - 0845	3	1	1	1	0	2	**8**
0800 - 0900	5	0	0	1	0	5	**11**
PEAK HR	**5**	**0**	**0**	**1**	**0**	**5**	**11**

Combined

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	366	3	4	3	4	295	**675**
0715 - 0815	349	6	3	5	2	309	**674**
0730 - 0830	373	6	3	7	7	323	**719**
0745 - 0845	380	13	3	19	21	354	**790**
0800 - 0900	370	20	3	31	41	368	**833**
PEAK HR	**370**	**20**	**3**	**31**	**41**	**368**	**833**

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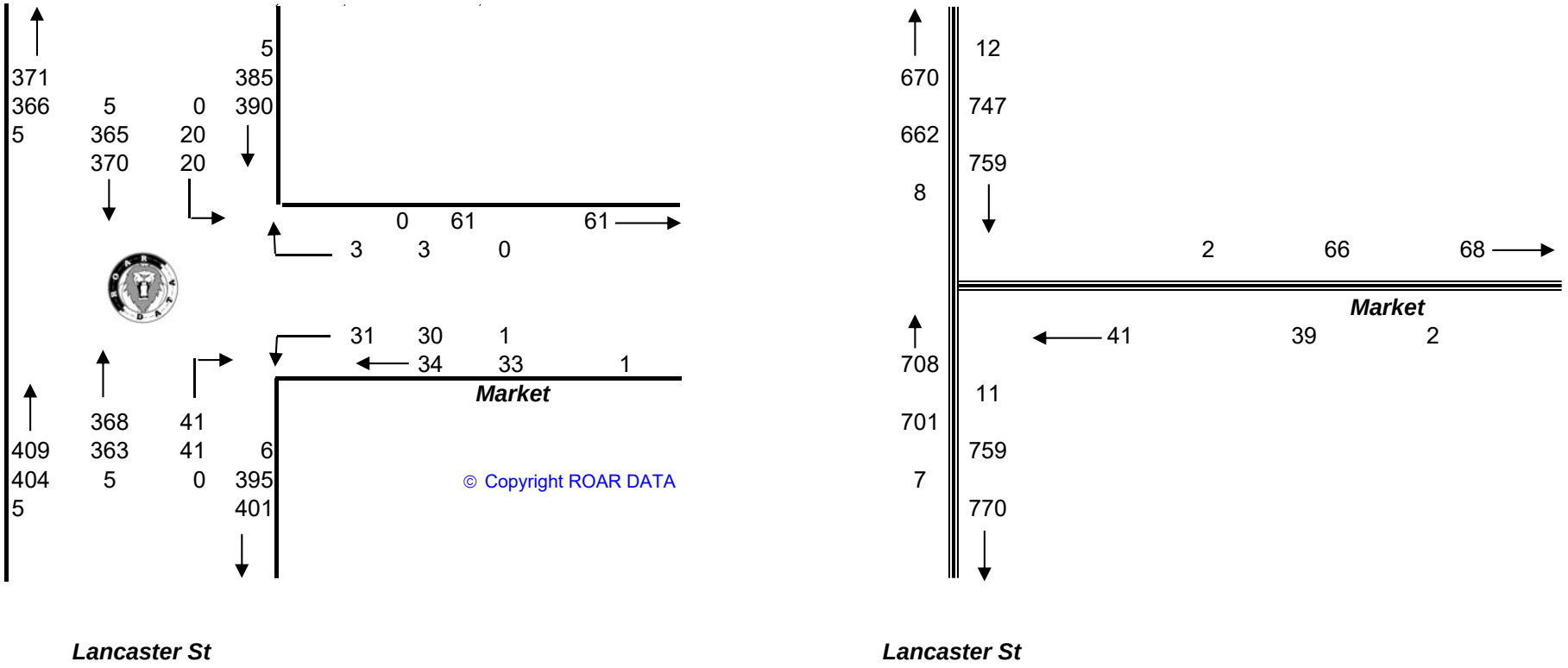
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

AM PEAK
0800 - 0900

TOTAL VOLUMES FOR COUNT PERIOD

N



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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PEDS	NORTH	EAST	SOUTH	
Time Per	*Lancaster St*	*Market*	*Lancaster St*	TOT
1500 - 1515	2	90	0	**92**
1515 - 1530	0	5	0	**5**
1530 - 1545	0	0	0	**0**
1545 - 1600	0	2	0	**2**
1600 - 1615	0	0	0	**0**
1615 - 1630	0	0	0	**0**
1630 - 1645	0	0	0	**0**
1645 - 1700	0	0	0	**0**
1700 - 1715	0	1	0	**1**
1715 - 1730	1	1	0	**2**
1730 - 1745	0	1	0	**1**
1745 - 1800	0	1	0	**1**
Per End	**3**	**101**	**0**	104

PEDS	NORTH	EAST	SOUTH	
Peak Per	*Lancaster St*	*Market*	*Lancaster St*	TOT
1500 - 1600	2	97	0	**99**
1515 - 1615	0	7	0	**7**
1530 - 1630	0	2	0	**2**
1545 - 1645	0	2	0	**2**
1600 - 1700	0	0	0	**0**
1615 - 1715	0	1	0	**1**
1630 - 1730	1	2	0	**3**
1645 - 1745	1	3	0	**4**
1700 - 1800	1	4	0	**5**
PEAK HR	**1**	**3**	**0**	**4**

Lights	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	99	10	15	33	13	98	**268**
1515 - 1530	87	4	7	8	7	128	**241**
1530 - 1545	84	3	12	4	15	104	**222**
1545 - 1600	76	9	11	10	20	127	**253**
1600 - 1615	67	9	8	15	13	115	**227**
1615 - 1630	105	8	14	8	10	134	**279**
1630 - 1645	71	5	7	10	7	147	**247**
1645 - 1700	85	9	10	7	5	157	**273**
1700 - 1715	81	2	2	10	9	166	**270**
1715 - 1730	97	3	4	6	8	169	**287**
1730 - 1745	95	6	9	5	12	174	**301**
1745 - 1800	77	3	8	11	3	156	**258**
Per End	**1024**	**71**	**107**	**127**	**122**	**1675**	**3126**

Heavies	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	0	0	0	0	0	1	**1**
1515 - 1530	3	0	0	0	0	0	**3**
1530 - 1545	1	0	0	0	0	0	**1**
1545 - 1600	0	0	0	0	0	1	**1**
1600 - 1615	1	0	0	0	0	0	**1**
1615 - 1630	0	0	0	0	0	3	**3**
1630 - 1645	4	0	0	0	0	0	**4**
1645 - 1700	1	0	0	0	0	1	**2**
1700 - 1715	3	0	0	0	0	0	**3**
1715 - 1730	2	0	0	0	0	2	**4**
1730 - 1745	0	0	0	0	0	0	**0**
1745 - 1800	0	0	0	0	0	1	**1**
Per End	**15**	**0**	**0**	**0**	**0**	**9**	**24**

Combined	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	99	10	15	33	13	99	**269**
1515 - 1530	90	4	7	8	7	128	**244**
1530 - 1545	85	3	12	4	15	104	**223**
1545 - 1600	76	9	11	10	20	128	**254**
1600 - 1615	68	9	8	15	13	115	**228**
1615 - 1630	105	8	14	8	10	137	**282**
1630 - 1645	75	5	7	10	7	147	**251**
1645 - 1700	86	9	10	7	5	158	**275**
1700 - 1715	84	2	2	10	9	166	**273**
1715 - 1730	99	3	4	6	8	171	**291**
1730 - 1745	95	6	9	5	12	174	**301**
1745 - 1800	77	3	8	11	3	157	**259**
Per End	**1039**	**71**	**107**	**127**	**122**	**1684**	**3150**

Lights	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	346	26	45	55	55	457	**984**
1515 - 1615	314	25	38	37	55	474	**943**
1530 - 1630	332	29	45	37	58	480	**981**
1545 - 1645	319	31	40	43	50	523	**1006**
1600 - 1700	328	31	39	40	35	553	**1026**
1615 - 1715	342	24	33	35	31	604	**1069**
1630 - 1730	334	19	23	33	29	639	**1077**
1645 - 1745	358	20	25	28	34	666	**1131**
1700 - 1800	350	14	23	32	32	665	**1116**
PEAK HR	**358**	**20**	**25**	**28**	**34**	**666**	**1131**

Heavies	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	4	0	0	0	0	2	**6**
1515 - 1615	5	0	0	0	0	1	**6**
1530 - 1630	2	0	0	0	0	4	**6**
1545 - 1645	5	0	0	0	0	4	**9**
1600 - 1700	6	0	0	0	0	4	**10**
1615 - 1715	8	0	0	0	0	4	**12**
1630 - 1730	10	0	0	0	0	3	**13**
1645 - 1745	6	0	0	0	0	3	**9**
1700 - 1800	5	0	0	0	0	3	**8**
PEAK HR	**6**	**0**	**0**	**0**	**0**	**3**	**9**

Combined	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	350	26	45	55	55	459	**990**
1515 - 1615	319	25	38	37	55	475	**949**
1530 - 1630	334	29	45	37	58	484	**987**
1545 - 1645	324	31	40	43	50	527	**1015**
1600 - 1700	334	31	39	40	35	557	**1036**
1615 - 1715	350	24	33	35	31	608	**1081**
1630 - 1730	344	19	23	33	29	642	**1090**
1645 - 1745	364	20	25	28	34	669	**1140**
1700 - 1800	355	14	23	32	32	668	**1124**
PEAK HR	**364**	**20**	**25**	**28**	**34**	**669**	**1140**

R.O.A.R. DATA
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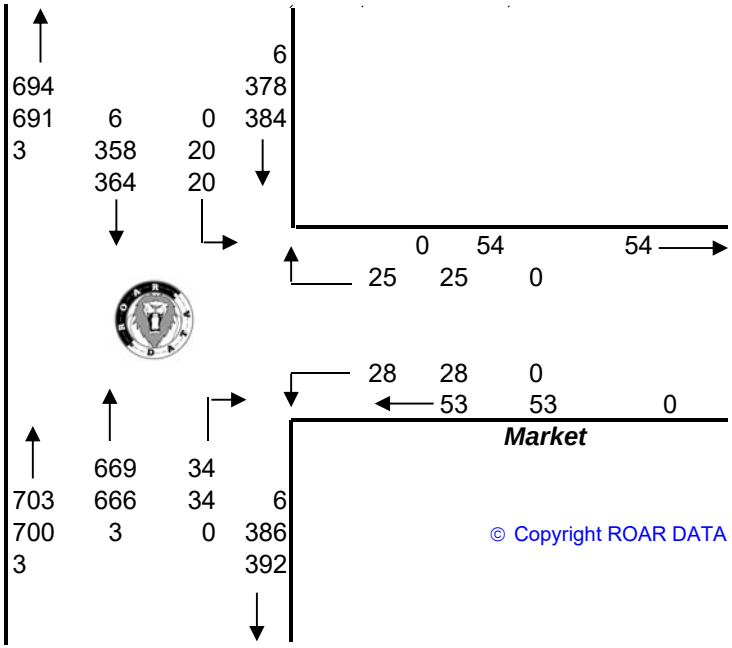
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PM PEAK
1645 - 1745

TOTAL VOLUMES FOR COUNT PERIOD

N



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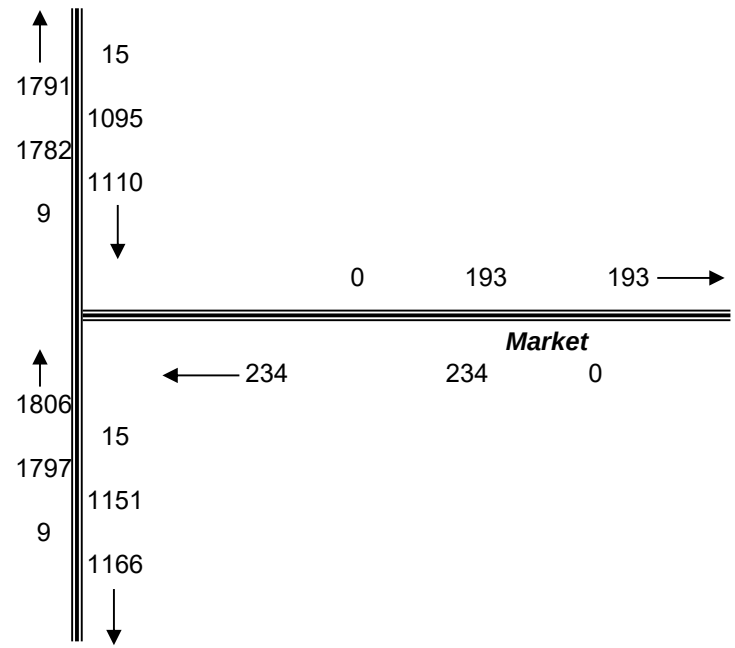

R.O.A.R. DATA

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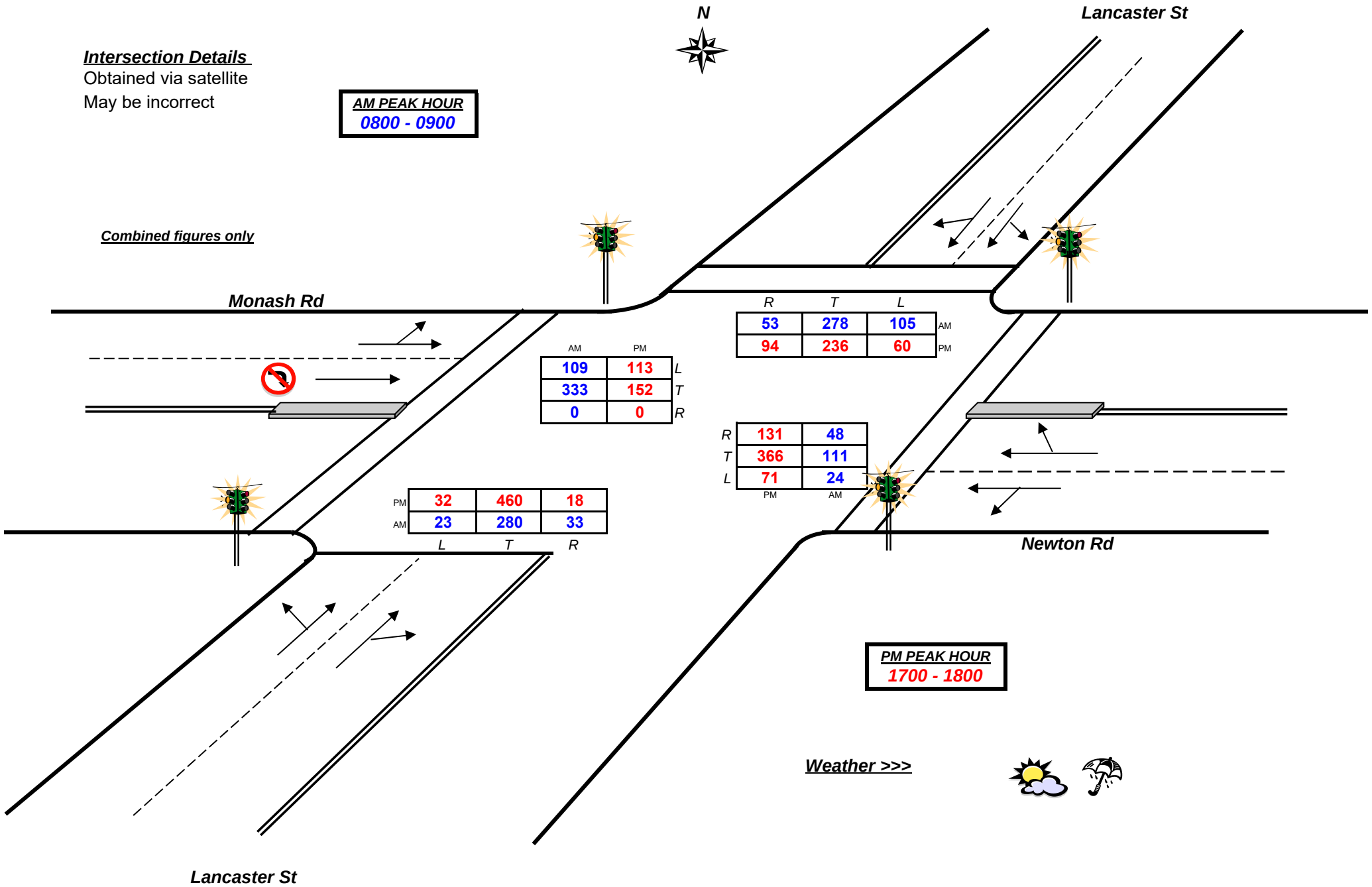
Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



	AM	PM
L	109	113
T	333	152
R	0	0

	R	T	L	
AM	53	278	105	AM
PM	94	236	60	PM

	PM	AM
R	131	48
T	366	111
L	71	24

	L	T	R
PM	32	460	18
AM	23	280	33

PM PEAK HOUR
1700 - 1800

Weather >>>

R.O.A.R. DATA

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Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	11	53	5	16	44	1	2	36	5	3	20	8	**204**
0715 - 0730	7	73	16	18	67	0	5	51	8	10	20	1	**276**
0730 - 0745	7	62	13	21	68	0	4	51	1	5	17	1	**250**
0745 - 0800	15	73	11	22	88	0	4	53	6	5	25	7	**309**
0800 - 0815	17	61	6	22	73	0	1	59	1	2	22	7	**271**
0815 - 0830	22	73	13	18	80	0	5	67	11	3	20	8	**320**
0830 - 0845	33	77	17	31	94	0	6	81	5	7	35	18	**404**
0845 - 0900	31	65	15	37	85	0	11	72	13	10	32	12	**383**
Period End	**143**	**537**	**96**	**185**	**599**	**1**	**38**	**470**	**50**	**45**	**191**	**62**	**2417**

Lights

Peak Time	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	40	261	45	77	267	1	15	191	20	23	82	17	**1039**
0715 - 0815	46	269	46	83	296	0	14	214	16	22	84	16	**1106**
0730 - 0830	61	269	43	83	309	0	14	230	19	15	84	23	**1150**
0745 - 0845	87	284	47	93	335	0	16	260	23	17	102	40	**1304**
0800 - 0900	103	276	51	108	332	0	23	279	30	22	109	45	**1378**
PEAK HOUR	**103**	**276**	**51**	**108**	**332**	**0**	**23**	**279**	**30**	**22**	**109**	**45**	**1378**

Heavies

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	1	0	0	0	0	0	0	0	1	0	0	1	**3**
0715 - 0730	0	0	0	0	0	0	0	0	1	1	1	1	**4**
0730 - 0745	2	2	0	0	1	0	0	0	1	0	0	0	**6**
0745 - 0800	0	0	0	0	0	0	0	0	1	0	1	0	**2**
0800 - 0815	1	1	0	0	1	0	0	0	1	1	0	1	**6**
0815 - 0830	0	0	1	0	0	0	0	0	1	0	0	0	**2**
0830 - 0845	1	0	1	0	0	0	0	0	1	0	1	1	**5**
0845 - 0900	0	1	0	1	0	0	0	1	0	1	1	1	**6**
Period End	**5**	**4**	**2**	**1**	**2**	**0**	**0**	**1**	**7**	**3**	**4**	**5**	**34**

Heavies

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	3	2	0	0	1	0	0	0	4	1	2	2	**15**
0715 - 0815	3	3	0	0	2	0	0	0	4	2	2	2	**18**
0730 - 0830	3	3	1	0	2	0	0	0	4	1	1	1	**16**
0745 - 0845	2	1	2	0	1	0	0	0	4	1	2	2	**15**
0800 - 0900	2	2	2	1	1	0	0	1	3	2	2	3	**19**
PEAK HOUR	**2**	**2**	**2**	**1**	**1**	**0**	**0**	**1**	**3**	**2**	**2**	**3**	**19**

Combined

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	12	53	5	16	44	1	2	36	6	3	20	9	**207**
0715 - 0730	7	73	16	18	67	0	5	51	9	11	21	2	**280**
0730 - 0745	9	64	13	21	69	0	4	51	2	5	17	1	**256**
0745 - 0800	15	73	11	22	88	0	4	53	7	5	26	7	**311**
0800 - 0815	18	62	6	22	74	0	1	59	2	3	22	8	**277**
0815 - 0830	22	73	14	18	80	0	5	67	12	3	20	8	**322**
0830 - 0845	34	77	18	31	94	0	6	81	6	7	36	19	**409**
0845 - 0900	31	66	15	38	85	0	11	73	13	11	33	13	**389**
Period End	**148**	**541**	**98**	**186**	**601**	**1**	**38**	**471**	**57**	**48**	**195**	**67**	**2451**

Combined

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	43	263	45	77	268	1	15	191	24	24	84	19	**1054**
0715 - 0815	49	272	46	83	298	0	14	214	20	24	86	18	**1124**
0730 - 0830	64	272	44	83	311	0	14	230	23	16	85	24	**1166**
0745 - 0845	89	285	49	93	336	0	16	260	27	18	104	42	**1319**
0800 - 0900	105	278	53	109	333	0	23	280	33	24	111	48	**1397**
PEAK HOUR	**105**	**278**	**53**	**109**	**333**	**0**	**23**	**280**	**33**	**24**	**111**	**48**	**1397**

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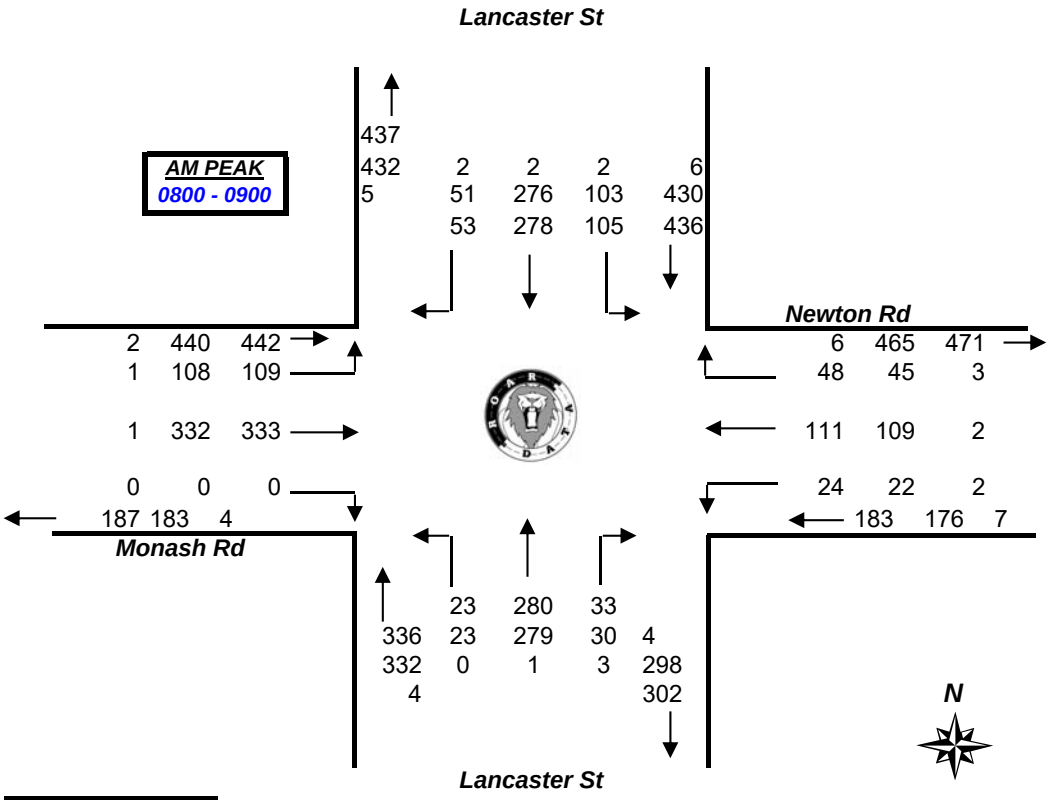
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

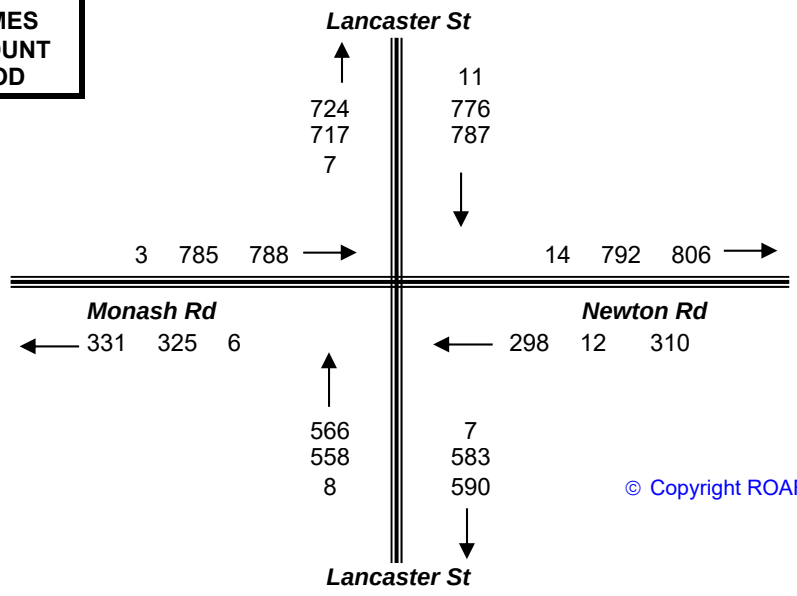
Peds	NORTH	WEST	SOUTH	EAST	
	Lancaster St	*Monash Rd*	*Lancaster St*	*Newton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	2	0	0	0	**2**
0715 - 0730	1	1	0	0	**2**
0730 - 0745	0	3	0	3	**6**
0745 - 0800	0	1	0	1	**2**
0800 - 0815	6	1	0	0	**7**
0815 - 0830	5	1	0	2	**8**
0830 - 0845	8	3	1	1	**13**
0845 - 0900	28	9	0	4	**41**
Period End	**50**	**19**	**1**	**11**	**81**

Peds	NORTH	WEST	SOUTH	EAST	
	Lancaster St	*Monash Rd*	*Lancaster St*	*Newton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	3	5	0	4	**12**
0715 - 0815	7	6	0	4	**17**
0730 - 0830	11	6	0	6	**23**
0745 - 0845	19	6	1	4	**30**
0800 - 0900	47	14	1	7	**69**

PEAK HR	**47**	**14**	**1**	**7**	**69**



TOTAL VOLUMES FOR COUNT PERIOD



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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	32	82	27	14	41	0	7	86	1	11	62	18	**381**
1515 - 1530	5	68	23	22	45	0	13	92	3	15	75	25	**386**
1530 - 1545	12	55	22	20	39	0	12	71	3	13	75	26	**348**
1545 - 1600	6	65	17	22	52	0	10	103	6	13	60	20	**374**
1600 - 1615	6	60	24	17	30	0	10	93	8	16	70	25	**359**
1615 - 1630	11	71	25	28	46	0	9	80	4	9	78	22	**383**
1630 - 1645	11	61	16	27	32	0	6	104	7	17	96	35	**412**
1645 - 1700	8	50	24	18	34	0	6	123	2	14	79	30	**388**
1700 - 1715	14	57	22	29	39	0	11	119	3	15	89	31	**429**
1715 - 1730	13	74	29	34	39	0	8	122	3	19	96	32	**469**
1730 - 1745	18	49	22	27	30	0	8	111	4	13	88	44	**414**
1745 - 1800	12	54	21	22	42	0	5	108	6	20	91	22	**403**
Period End	**148**	**746**	**272**	**280**	**469**	**0**	**105**	**1212**	**50**	**175**	**959**	**330**	**4746**

Lights

Peak Time	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	55	270	89	78	177	0	42	352	13	52	272	89	**1489**
1515 - 1615	29	248	86	81	166	0	45	359	20	57	280	96	**1467**
1530 - 1630	35	251	88	87	167	0	41	347	21	51	283	93	**1464**
1545 - 1645	34	257	82	94	160	0	35	380	25	55	304	102	**1528**
1600 - 1700	36	242	89	90	142	0	31	400	21	56	323	112	**1542**
1615 - 1715	44	239	87	102	151	0	32	426	16	55	342	118	**1612**
1630 - 1730	46	242	91	108	144	0	31	468	15	65	360	128	**1698**
1645 - 1745	53	230	97	108	142	0	33	475	12	61	352	137	**1700**
1700 - 1800	57	234	94	112	150	0	32	460	16	67	364	129	**1715**
PEAK HOUR	**57**	**234**	**94**	**112**	**150**	**0**	**32**	**460**	**16**	**67**	**364**	**129**	**1715**

Heavies

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	0	0	0	0	0	0	0	0	1	0	0	1	**2**
1515 - 1530	1	1	1	0	0	0	0	0	0	0	0	0	**3**
1530 - 1545	1	0	0	0	1	0	0	0	0	1	0	0	**3**
1545 - 1600	0	0	0	0	0	0	0	0	0	0	1	1	**2**
1600 - 1615	1	0	0	0	0	0	0	0	2	0	0	0	**3**
1615 - 1630	0	0	0	0	0	0	0	1	0	2	1	2	**6**
1630 - 1645	1	3	0	0	2	0	0	0	1	0	0	0	**7**
1645 - 1700	1	0	0	0	0	0	0	0	0	2	1	1	**5**
1700 - 1715	2	1	0	0	1	0	0	0	0	1	0	0	**5**
1715 - 1730	1	1	0	1	0	0	0	0	1	1	1	1	**7**
1730 - 1745	0	0	0	0	1	0	0	0	1	1	0	0	**3**
1745 - 1800	0	0	0	0	0	0	0	0	0	1	1	1	**3**
Period End	**8**	**6**	**1**	**1**	**5**	**0**	**0**	**1**	**6**	**9**	**5**	**7**	**49**

Heavies

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	2	1	1	0	1	0	0	0	1	1	1	2	**10**
1515 - 1615	3	1	1	0	1	0	0	0	2	1	1	1	**11**
1530 - 1630	2	0	0	0	1	0	0	1	2	3	2	3	**14**
1545 - 1645	2	3	0	0	2	0	0	1	3	2	2	3	**18**
1600 - 1700	3	3	0	0	2	0	0	1	3	4	2	3	**21**
1615 - 1715	4	4	0	0	3	0	0	1	1	5	2	3	**23**
1630 - 1730	5	5	0	1	3	0	0	0	2	4	2	2	**24**
1645 - 1745	4	2	0	1	2	0	0	0	2	5	2	2	**20**
1700 - 1800	3	2	0	1	2	0	0	0	2	4	2	2	**18**
PEAK HOUR	**3**	**2**	**1**	**2**	**2**	**0**	**0**	**0**	**2**	**4**	**2**	**2**	**18**

Combined

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	32	82	27	14	41	0	7	86	2	11	62	19	**383**
1515 - 1530	6	69	24	22	45	0	13	92	3	15	75	25	**389**
1530 - 1545	13	55	22	20	40	0	12	71	3	14	75	26	**351**
1545 - 1600	6	65	17	22	52	0	10	103	6	13	61	21	**376**
1600 - 1615	7	60	24	17	30	0	10	93	10	16	70	25	**362**
1615 - 1630	11	71	25	28	46	0	9	81	4	11	79	24	**389**
1630 - 1645	12	64	16	27	34	0	6	104	8	17	96	35	**419**
1645 - 1700	9	50	24	18	34	0	6	123	2	16	80	31	**393**
1700 - 1715	16	58	22	29	40	0	11	119	3	16	89	31	**434**
1715 - 1730	14	75	29	35	39	0	8	122	4	20	97	33	**476**
1730 - 1745	18	49	22	27	31	0	8	111	5	14	88	44	**417**
1745 - 1800	12	54	21	22	42	0	5	108	6	21	92	23	**406**
Period End	**156**	**752**	**273**	**281**	**474**	**0**	**105**	**1213**	**56**	**184**	**964**	**337**	**4795**

Combined

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	57	271	90	78	178	0	42	352	14	53	273	91	**1499**
1515 - 1615	32	249	87	81	167	0	45	359	22	58	281	97	**1478**
1530 - 1630	37	251	88	87	168	0	41	348	23	54	285	96	**1478**
1545 - 1645	36	260	82	94	162	0	35	381	28	57	306	105	**1546**
1600 - 1700	39	245	89	90	144	0	31	401	24	60	325	115	**1563**
1615 - 1715	48	243	87	102	154	0	32	427	17	60	344	121	**1635**
1630 - 1730	51	247	91	109	147	0	31	468	17	69	362	130	**1722**
1645 - 1745	57	232	97	109	144	0	33	475	14	66	354	139	**1720**
1700 - 1800	60	236	94	113	152	0	32	460	18	71	366	131	**1733**
PEAK HOUR	**60**	**236**	**94**	**113**	**152**	**0**	**32**	**460**	**18**	**71**	**366**	**131**	**1733**

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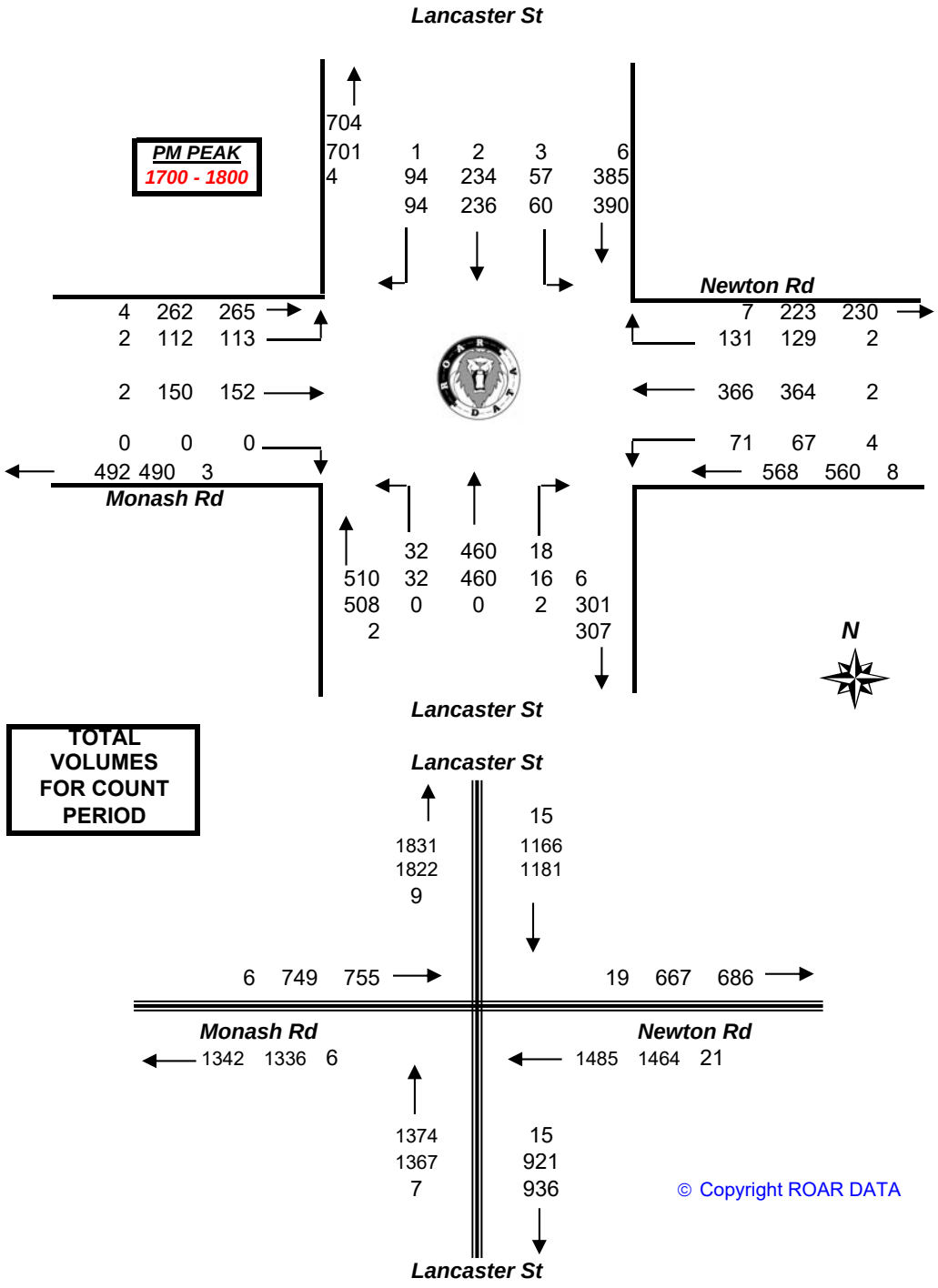
Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Peds	NORTH *Lancaster St*	WEST *Monash Rd*	SOUTH *Lancaster St*	EAST *Newton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1515	53	18	0	10	**81**
1515 - 1530	2	1	0	3	**6**
1530 - 1545	1	0	0	1	**2**
1545 - 1600	2	2	0	0	**4**
1600 - 1615	6	4	0	0	**10**
1615 - 1630	5	3	1	3	**12**
1630 - 1645	0	0	0	0	**0**
1645 - 1700	2	2	0	1	**5**
1700 - 1715	3	2	0	1	**6**
1715 - 1730	0	0	1	0	**1**
1730 - 1745	2	1	1	1	**5**
1745 - 1800	4	0	1	3	**8**
Period End	**80**	**33**	**4**	**23**	**140**

Peds	NORTH *Lancaster St*	WEST *Monash Rd*	SOUTH *Lancaster St*	EAST *Newton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1600	58	21	0	14	**93**
1515 - 1615	11	7	0	4	**22**
1530 - 1630	14	9	1	4	**28**
1545 - 1645	13	9	1	3	**26**
1600 - 1700	13	9	1	4	**27**
1615 - 1715	10	7	1	5	**23**
1630 - 1730	5	4	1	2	**12**
1645 - 1745	7	5	2	3	**17**
1700 - 1800	9	3	3	5	**20**
PEAK HR	**9**	**3**	**3**	**5**	**20**



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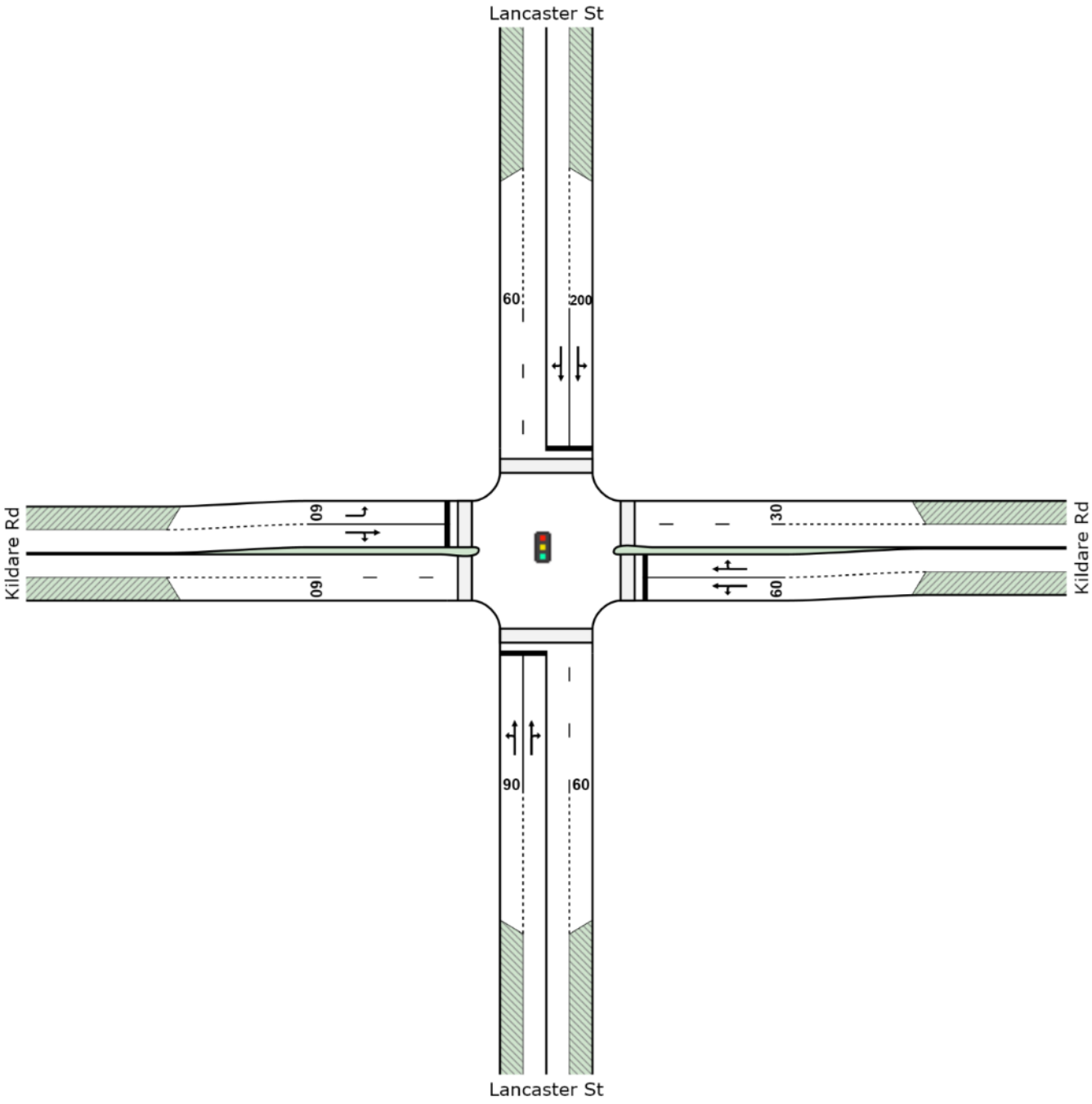
APPENDIX B SIDRA SUMMARY ANALYSIS RESULTS

SITE LAYOUT

Site: Existing AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated



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MOVEMENT SUMMARY

Site: Existing AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 95 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	41	2.6	0.185	27.5	LOS B	3.9	27.9	0.71	0.62	31.5
2	T1	353	0.9	0.502	26.8	LOS B	10.7	75.4	0.80	0.69	30.8
3	R2	17	6.2	0.502	31.1	LOS C	10.7	75.4	0.82	0.71	30.7
Approach		411	1.3	0.502	27.1	LOS B	10.7	75.4	0.79	0.68	30.9
East: Kildare Rd											
4	L2	31	3.4	0.182	38.1	LOS C	2.8	19.8	0.84	0.68	28.7
5	T1	92	2.3	0.493	36.3	LOS C	8.1	57.1	0.87	0.73	28.2
6	R2	144	0.0	0.493	41.1	LOS C	8.1	57.1	0.91	0.78	27.8
Approach		266	1.2	0.493	39.1	LOS C	8.1	57.1	0.89	0.75	28.1
North: Lancaster St											
7	L2	574	0.0	0.506	15.0	LOS B	14.8	103.8	0.59	0.72	34.5
8	T1	388	0.8	0.742	30.9	LOS C	18.4	129.4	0.92	0.81	29.8
9	R2	58	0.0	0.742	34.3	LOS C	18.4	129.4	0.92	0.81	29.9
Approach		1020	0.3	0.742	22.1	LOS B	18.4	129.4	0.74	0.76	32.3
West: Kildare Rd											
10	L2	100	0.0	0.197	33.1	LOS C	3.6	25.0	0.78	0.72	29.5
11	T1	247	1.7	0.582	33.8	LOS C	12.3	87.6	0.90	0.77	29.1
12	R2	57	1.9	0.582	37.2	LOS C	12.3	87.6	0.90	0.77	29.1
Approach		404	1.3	0.582	34.1	LOS C	12.3	87.6	0.87	0.76	29.2
All Vehicles		2101	0.8	0.742	27.5	LOS B	18.4	129.4	0.79	0.74	30.8

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	35.4	LOS D	0.1	0.1	0.86	0.86
P2	East Full Crossing	38	25.1	LOS C	0.1	0.1	0.73	0.73
P3	North Full Crossing	17	30.4	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.1	LOS C	0.0	0.0	0.73	0.73
All Pedestrians		104	28.7	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.

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MOVEMENT SUMMARY

Site: Potential AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	42	2.5	0.187	28.5	LOS C	4.2	29.7	0.71	0.62	31.2
2	T1	358	0.9	0.507	28.1	LOS B	11.4	80.4	0.80	0.69	30.5
3	R2	17	6.3	0.507	32.4	LOS C	11.4	80.4	0.82	0.71	30.4
Approach		417	1.3	0.507	28.3	LOS B	11.4	80.4	0.79	0.68	30.6
East: Kildare Rd											
4	L2	31	3.4	0.174	38.9	LOS C	2.9	20.5	0.83	0.68	28.6
5	T1	92	2.3	0.472	37.2	LOS C	8.4	59.1	0.86	0.73	28.0
6	R2	144	0.0	0.472	42.0	LOS C	8.4	59.1	0.90	0.77	27.7
Approach		266	1.2	0.472	40.0	LOS C	8.4	59.1	0.88	0.75	27.9
North: Lancaster St											
7	L2	574	0.0	0.498	15.0	LOS B	15.2	106.4	0.58	0.71	34.5
8	T1	397	0.8	0.750	32.4	LOS C	19.7	138.8	0.92	0.82	29.4
9	R2	58	0.0	0.750	35.8	LOS C	19.7	138.8	0.92	0.82	29.5
Approach		1028	0.3	0.750	22.9	LOS B	19.7	138.8	0.73	0.76	32.1
West: Kildare Rd											
10	L2	100	0.0	0.199	34.9	LOS C	3.8	26.4	0.79	0.72	29.0
11	T1	247	1.7	0.594	35.9	LOS C	13.1	93.3	0.90	0.78	28.6
12	R2	59	1.8	0.594	39.3	LOS C	13.1	93.3	0.90	0.78	28.6
Approach		406	1.3	0.594	36.2	LOS C	13.1	93.3	0.87	0.76	28.7
All Vehicles		2118	0.8	0.750	28.6	LOS C	19.7	138.8	0.79	0.74	30.5

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	36.2	LOS D	0.1	0.1	0.85	0.85
P2	East Full Crossing	38	26.0	LOS C	0.1	0.1	0.72	0.72
P3	North Full Crossing	17	32.0	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.9	LOS C	0.0	0.0	0.72	0.72
All Pedestrians		104	29.6	LOS C			0.77	0.77

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.

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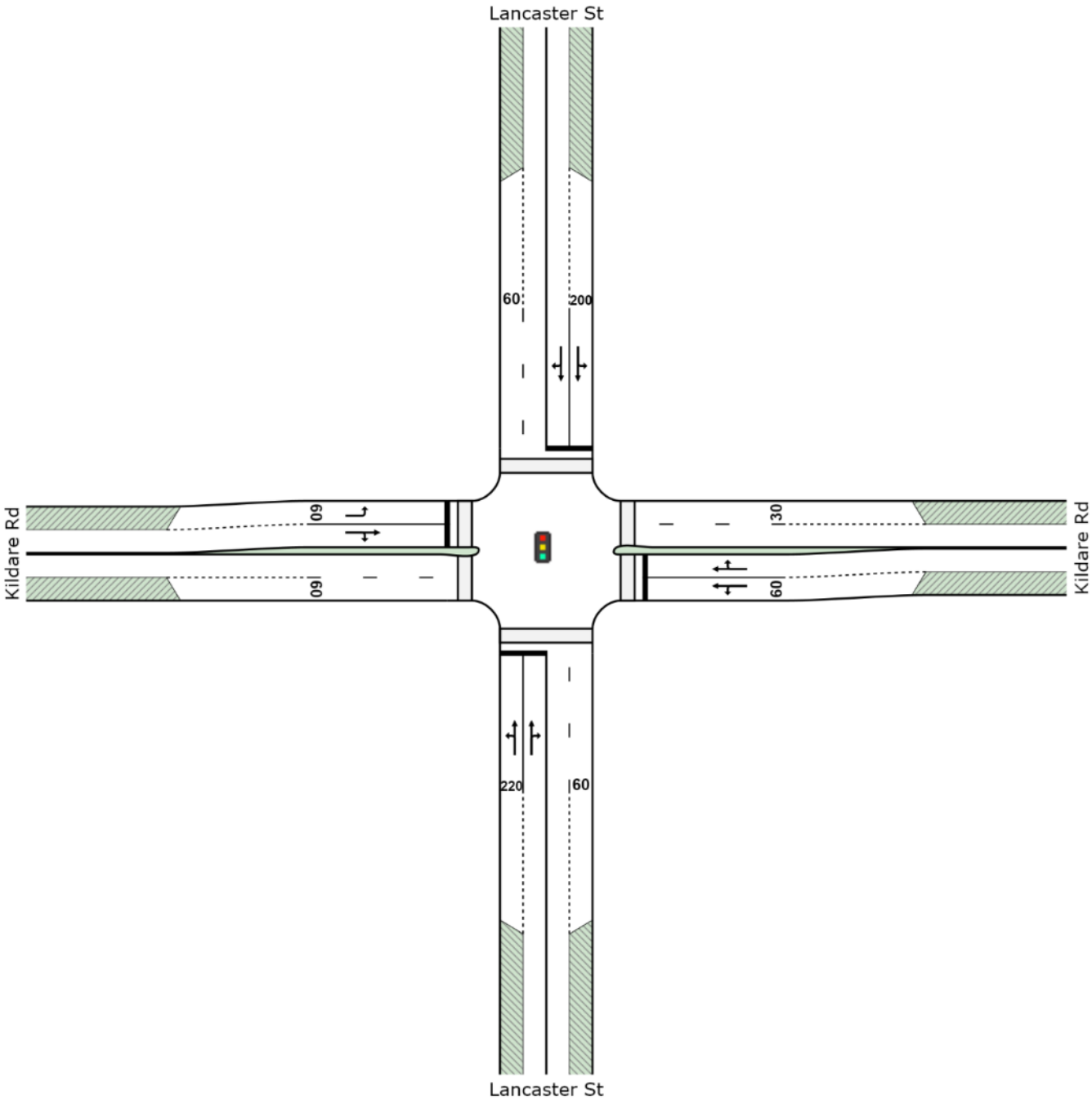
SITE LAYOUT

Site: Existing PM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated



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MOVEMENT SUMMARY

Site: Existing PM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 120 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	47	0.0	0.307	34.6	LOS C	8.9	62.3	0.74	0.65	34.9
2	T1	711	0.4	0.832	37.2	LOS C	29.9	209.7	0.91	0.81	33.1
3	R2	15	0.0	0.832	44.0	LOS D	29.9	209.7	0.96	0.86	32.3
Approach		773	0.4	0.832	37.2	LOS C	29.9	209.7	0.90	0.80	33.1
East: Kildare Rd											
4	L2	33	0.0	0.306	37.5	LOS C	8.5	59.7	0.76	0.66	34.0
5	T1	233	1.4	0.829	34.8	LOS C	22.8	160.0	0.81	0.71	33.4
6	R2	376	0.0	0.829	43.8	LOS D	22.8	160.0	0.92	0.84	31.3
Approach		641	0.5	0.829	40.2	LOS C	22.8	160.0	0.87	0.78	32.1
North: Lancaster St											
7	L2	207	1.5	0.320	35.5	LOS C	8.9	63.0	0.75	0.76	33.4
8	T1	356	1.2	0.868	41.9	LOS C	25.0	176.5	0.98	0.89	31.5
9	R2	91	0.0	0.868	46.6	LOS D	25.0	176.5	0.98	0.89	31.3
Approach		654	1.1	0.868	40.6	LOS C	25.0	176.5	0.90	0.85	32.1
West: Kildare Rd											
10	L2	125	0.0	0.385	54.2	LOS D	6.6	46.1	0.91	0.78	28.6
11	T1	126	3.3	0.465	50.4	LOS D	8.2	59.2	0.92	0.76	29.4
12	R2	27	3.8	0.465	55.0	LOS D	8.2	59.2	0.92	0.76	29.2
Approach		279	1.9	0.465	52.6	LOS D	8.2	59.2	0.91	0.77	29.0
All Vehicles		2346	0.8	0.868	40.8	LOS C	29.9	209.7	0.89	0.81	32.0

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	9	31.5	LOS D	0.0	0.0	0.73	0.73
P2	East Full Crossing	11	29.4	LOS C	0.0	0.0	0.70	0.70
P3	North Full Crossing	14	46.8	LOS E	0.0	0.0	0.88	0.88
P4	West Full Crossing	5	29.4	LOS C	0.0	0.0	0.70	0.70
All Pedestrians		39	36.1	LOS D			0.77	0.77

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.

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MOVEMENT SUMMARY

Site: Potential AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	42	2.5	0.187	28.5	LOS C	4.2	29.7	0.71	0.62	31.2
2	T1	358	0.9	0.507	28.1	LOS B	11.4	80.4	0.80	0.69	30.5
3	R2	17	6.3	0.507	32.4	LOS C	11.4	80.4	0.82	0.71	30.4
Approach		417	1.3	0.507	28.3	LOS B	11.4	80.4	0.79	0.68	30.6
East: Kildare Rd											
4	L2	31	3.4	0.174	38.9	LOS C	2.9	20.5	0.83	0.68	28.6
5	T1	92	2.3	0.472	37.2	LOS C	8.4	59.1	0.86	0.73	28.0
6	R2	144	0.0	0.472	42.0	LOS C	8.4	59.1	0.90	0.77	27.7
Approach		266	1.2	0.472	40.0	LOS C	8.4	59.1	0.88	0.75	27.9
North: Lancaster St											
7	L2	574	0.0	0.498	15.0	LOS B	15.2	106.4	0.58	0.71	34.5
8	T1	397	0.8	0.750	32.4	LOS C	19.7	138.8	0.92	0.82	29.4
9	R2	58	0.0	0.750	35.8	LOS C	19.7	138.8	0.92	0.82	29.5
Approach		1028	0.3	0.750	22.9	LOS B	19.7	138.8	0.73	0.76	32.1
West: Kildare Rd											
10	L2	100	0.0	0.199	34.9	LOS C	3.8	26.4	0.79	0.72	29.0
11	T1	247	1.7	0.594	35.9	LOS C	13.1	93.3	0.90	0.78	28.6
12	R2	59	1.8	0.594	39.3	LOS C	13.1	93.3	0.90	0.78	28.6
Approach		406	1.3	0.594	36.2	LOS C	13.1	93.3	0.87	0.76	28.7
All Vehicles		2118	0.8	0.750	28.6	LOS C	19.7	138.8	0.79	0.74	30.5

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	36.2	LOS D	0.1	0.1	0.85	0.85
P2	East Full Crossing	38	26.0	LOS C	0.1	0.1	0.72	0.72
P3	North Full Crossing	17	32.0	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.9	LOS C	0.0	0.0	0.72	0.72
All Pedestrians		104	29.6	LOS C			0.77	0.77

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.

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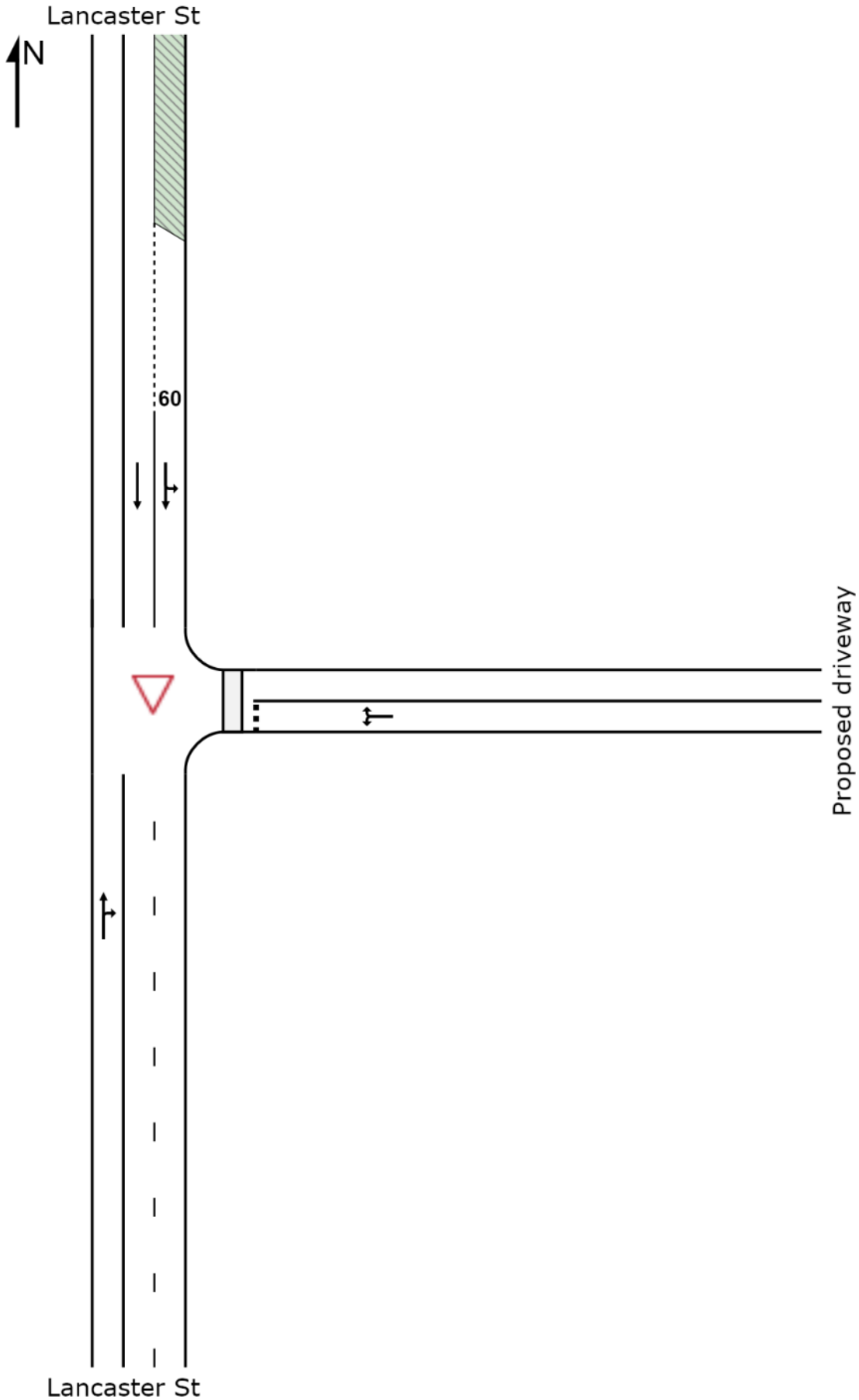
SITE LAYOUT

Site: proposed AM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)



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MOVEMENT SUMMARY

Site: proposed AM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
2	T1	387	1.4	0.251	1.7	LOS A	1.8	12.5	0.39	0.08	39.0
3	R2	64	0.0	0.251	5.2	LOS A	1.8	12.5	0.39	0.08	39.0
Approach		452	1.2	0.251	2.2	NA	1.8	12.5	0.39	0.08	39.0
East: Proposed driveway											
4	L2	102	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.2
6	R2	9	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.1
Approach		112	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.2
North: Lancaster St											
7	L2	32	0.0	0.109	3.4	LOS A	0.0	0.0	0.00	0.07	39.9
8	T1	389	1.4	0.109	0.0	LOS A	0.0	0.0	0.00	0.03	39.9
Approach		421	1.3	0.109	0.3	NA	0.0	0.0	0.00	0.04	39.9
All Vehicles		984	1.1	0.251	1.6	NA	1.8	12.5	0.21	0.11	39.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: proposed PM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
2	T1	704	0.4	0.248	0.8	LOS A	1.6	11.1	0.14	0.08	49.1
3	R2	128	0.0	0.248	7.0	LOS A	1.6	11.1	0.43	0.25	46.7
Approach		833	0.4	0.248	1.7	NA	1.6	11.1	0.18	0.10	48.7
East: Proposed driveway											
4	L2	101	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.5
6	R2	91	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.3
Approach		192	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.4
North: Lancaster St											
7	L2	76	0.0	0.120	4.6	LOS A	0.0	0.0	0.00	0.18	48.5
8	T1	383	1.6	0.120	0.0	LOS A	0.0	0.0	0.00	0.07	49.6
Approach		459	1.4	0.120	0.8	NA	0.0	0.0	0.00	0.09	49.4
All Vehicles		1483	0.6	0.455	3.3	NA	2.6	18.3	0.16	0.18	47.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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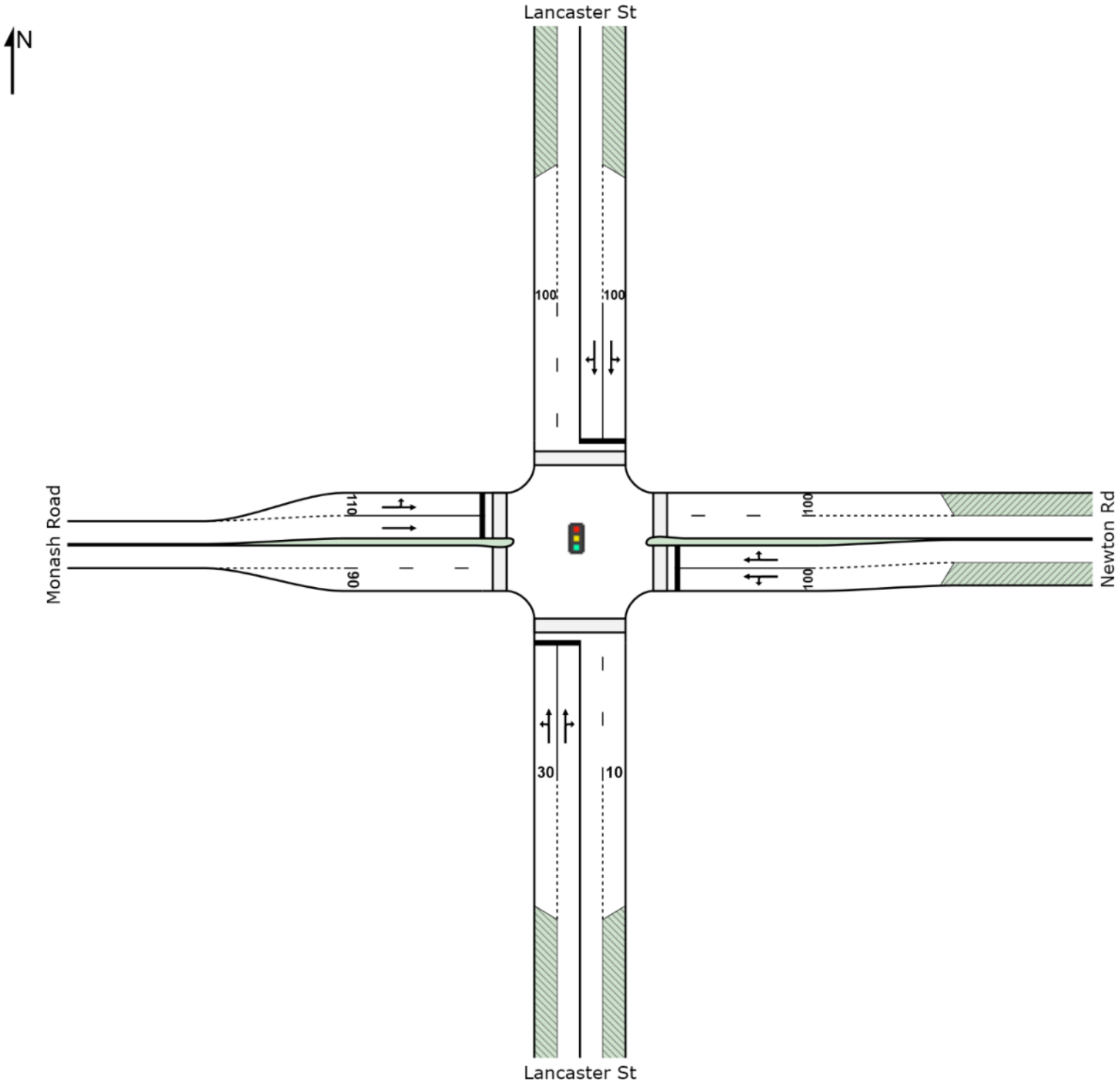
SITE LAYOUT

Site: Existing AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time



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MOVEMENT SUMMARY

Site: Existing AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total 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: Lancaster St											
1	L2	24	0.0	0.222	18.4	LOS B	3.1	22.1	0.74	0.62	34.3
2	T1	295	0.4	0.400	17.0	LOS B	4.9	34.8	0.80	0.67	33.5
3	R2	35	9.1	0.400	22.0	LOS B	4.9	34.8	0.84	0.71	33.2
Approach		354	1.2	0.400	17.6	LOS B	4.9	34.8	0.80	0.67	33.6
East: Newton Rd											
4	L2	25	8.3	0.109	13.8	LOS A	1.6	11.3	0.61	0.53	35.7
5	T1	117	1.8	0.215	12.7	LOS A	2.2	15.9	0.69	0.59	34.7
6	R2	51	6.3	0.215	19.3	LOS B	2.2	15.9	0.80	0.66	33.6
Approach		193	3.8	0.215	14.5	LOS B	2.2	15.9	0.71	0.60	34.5
North: Lancaster St											
7	L2	111	1.9	0.122	10.4	LOS A	1.7	12.3	0.51	0.61	36.1
8	T1	293	0.7	0.608	18.8	LOS B	8.6	60.9	0.88	0.77	33.0
9	R2	56	3.8	0.608	22.7	LOS B	8.6	60.9	0.90	0.77	33.0
Approach		459	1.4	0.608	17.2	LOS B	8.6	60.9	0.80	0.73	33.7
West: Monash Road											
10	L2	115	0.9	0.346	24.0	LOS B	4.0	28.4	0.86	0.74	32.1
11	T1	351	0.3	0.623	22.2	LOS B	8.2	57.7	0.93	0.79	32.1
Approach		465	0.5	0.623	22.6	LOS B	8.2	57.7	0.91	0.78	32.1
All Vehicles		1471	1.4	0.623	18.7	LOS B	8.6	60.9	0.82	0.72	33.2

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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	South Full Crossing	1	23.4	LOS C	0.0	0.0	0.88	0.88
P2	East Full Crossing	7	18.4	LOS B	0.0	0.0	0.78	0.78
P3	North Full Crossing	49	23.5	LOS C	0.1	0.1	0.89	0.89
P4	West Full Crossing	15	18.4	LOS B	0.0	0.0	0.78	0.78
All Pedestrians		73	21.9	LOS C			0.85	0.85

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.

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MOVEMENT SUMMARY

Site: Potential AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	24	0.0	0.227	17.7	LOS B	3.3	23.1	0.73	0.61	34.5
2	T1	308	0.3	0.409	16.7	LOS B	5.0	35.4	0.79	0.67	33.7
3	R2	35	9.1	0.409	22.1	LOS B	5.0	35.4	0.84	0.71	33.1
Approach		367	1.1	0.409	17.3	LOS B	5.0	35.4	0.79	0.67	33.7
East: Newton Rd											
4	L2	25	8.3	0.116	14.4	LOS A	1.7	12.0	0.63	0.54	35.5
5	T1	117	1.8	0.229	13.3	LOS A	2.3	16.4	0.71	0.60	34.5
6	R2	53	6.0	0.229	20.2	LOS B	2.3	16.4	0.82	0.67	33.3
Approach		195	3.8	0.229	15.3	LOS B	2.3	16.4	0.73	0.61	34.3
North: Lancaster St											
7	L2	127	1.7	0.136	10.0	LOS A	1.9	13.8	0.50	0.61	36.3
8	T1	337	0.6	0.682	19.4	LOS B	10.4	73.1	0.90	0.82	32.8
9	R2	64	3.3	0.682	23.4	LOS B	10.4	73.1	0.92	0.83	32.8
Approach		528	1.2	0.682	17.6	LOS B	10.4	73.1	0.81	0.77	33.6
West: Monash Road											
10	L2	120	0.9	0.375	25.0	LOS B	4.2	29.4	0.88	0.75	31.8
11	T1	351	0.3	0.675	23.9	LOS B	8.7	61.1	0.95	0.84	31.6
Approach		471	0.4	0.675	24.1	LOS B	8.7	61.1	0.94	0.82	31.7
All Vehicles		1561	1.3	0.682	19.2	LOS B	10.4	73.1	0.83	0.74	33.1

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	1	24.3	LOS C	0.0	0.0	0.90	0.90
P2	East Full Crossing	7	17.6	LOS B	0.0	0.0	0.77	0.77
P3	North Full Crossing	49	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	15	17.6	LOS B	0.0	0.0	0.77	0.77
All Pedestrians		73	22.3	LOS C			0.86	0.86

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.

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MOVEMENT SUMMARY

Site: Existing PM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	34	0.0	0.290	19.3	LOS B	4.3	30.3	0.75	0.64	40.9
2	T1	484	0.0	0.521	16.2	LOS B	7.9	55.4	0.81	0.69	40.7
3	R2	19	11.1	0.521	21.7	LOS B	7.9	55.4	0.84	0.72	40.0
Approach		537	0.4	0.521	16.6	LOS B	7.9	55.4	0.81	0.69	40.7
East: Newton Rd											
4	L2	75	5.6	0.303	16.7	LOS B	4.8	34.2	0.69	0.63	41.9
5	T1	385	0.5	0.598	14.2	LOS A	8.3	58.7	0.79	0.70	41.1
6	R2	138	1.5	0.598	20.5	LOS B	8.3	58.7	0.88	0.75	39.9
Approach		598	1.4	0.598	15.9	LOS B	8.3	58.7	0.80	0.70	40.9
North: Lancaster St											
7	L2	63	5.0	0.142	18.4	LOS B	1.9	13.7	0.70	0.66	40.3
8	T1	248	0.8	0.710	21.5	LOS B	9.0	63.8	0.91	0.85	38.0
9	R2	100	1.1	0.710	27.2	LOS B	9.0	63.8	0.95	0.88	37.3
Approach		412	1.5	0.710	22.4	LOS B	9.0	63.8	0.89	0.83	38.2
West: Monash Road											
10	L2	120	1.8	0.280	25.6	LOS B	3.0	21.2	0.86	0.76	36.8
11	T1	160	1.3	0.355	21.4	LOS B	4.1	28.7	0.88	0.71	38.7
Approach		280	1.5	0.355	23.2	LOS B	4.1	28.7	0.87	0.73	37.8
All Vehicles		1826	1.2	0.710	18.7	LOS B	9.0	63.8	0.83	0.73	39.7

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	3	24.3	LOS C	0.0	0.0	0.90	0.90
P2	East Full Crossing	5	17.6	LOS B	0.0	0.0	0.77	0.77
P3	North Full Crossing	9	24.3	LOS C	0.0	0.0	0.90	0.90
P4	West Full Crossing	3	17.6	LOS B	0.0	0.0	0.77	0.77
All Pedestrians		21	21.6	LOS C			0.85	0.85

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.

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MOVEMENT SUMMARY

Site: Potential PM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	34	0.0	0.285	18.0	LOS B	5.3	37.4	0.68	0.59	41.6
2	T1	545	0.0	0.513	15.1	LOS B	8.8	62.2	0.73	0.64	41.3
3	R2	19	11.1	0.513	20.8	LOS B	8.8	62.2	0.77	0.67	40.4
Approach		598	0.4	0.513	15.4	LOS B	8.8	62.2	0.73	0.64	41.3
East: Newton Rd											
4	L2	75	5.6	0.359	21.3	LOS B	6.5	45.9	0.76	0.68	39.8
5	T1	385	0.5	0.708	20.5	LOS B	10.9	76.7	0.86	0.79	38.4
6	R2	155	1.4	0.708	28.6	LOS C	10.9	76.7	0.96	0.90	36.6
Approach		615	1.4	0.708	22.6	LOS B	10.9	76.7	0.87	0.80	38.1
North: Lancaster St											
7	L2	75	4.2	0.143	17.1	LOS B	2.4	17.1	0.63	0.63	40.9
8	T1	292	0.7	0.717	21.7	LOS B	11.7	82.2	0.88	0.83	37.9
9	R2	117	0.9	0.717	27.8	LOS B	11.7	82.2	0.92	0.87	37.1
Approach		483	1.3	0.717	22.4	LOS B	11.7	82.2	0.85	0.81	38.1
West: Monash Road											
10	L2	135	1.6	0.367	31.5	LOS C	4.1	29.2	0.91	0.77	34.7
11	T1	160	1.3	0.414	27.2	LOS B	4.9	34.9	0.92	0.74	36.5
Approach		295	1.4	0.414	29.2	LOS C	4.9	34.9	0.91	0.76	35.6
All Vehicles		1991	1.1	0.717	21.4	LOS B	11.7	82.2	0.83	0.75	38.6

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	3	29.3	LOS C	0.0	0.0	0.91	0.91
P2	East Full Crossing	5	15.8	LOS B	0.0	0.0	0.67	0.67
P3	North Full Crossing	9	29.3	LOS C	0.0	0.0	0.91	0.91
P4	West Full Crossing	3	15.8	LOS B	0.0	0.0	0.67	0.67
All Pedestrians		21	23.9	LOS C			0.82	0.82

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.

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Key

- Subject Site (10 metre height limit)
- 7.5 metre height limit
- 9 metre height limit
- School (no height limit)
- Bus Stop
- Townhouse Development
- Vacant Site

LANCASTER STREET

BLUE HILLS CRESCENT

KILLARNEY AVENUE

MONASH ROAD

NEWTON ROAD

Potential noise

Casuarina potential screen

Blacktown West Public School

Existing vehicle entry

Potential overlooking of school

Low Point

School Zone sign obstructs footpath

Fresh Fruit Market

Potential overlooking of school

Potential noise

B1
Max Height - 10m
No FSR Control

Jacarandas

Fall

Scale transition

Pine Tree

High Point

Jacarandas

Single Storey Cottages

Light Controled Intersection

R2
Max Height - 9m
No FSR Control

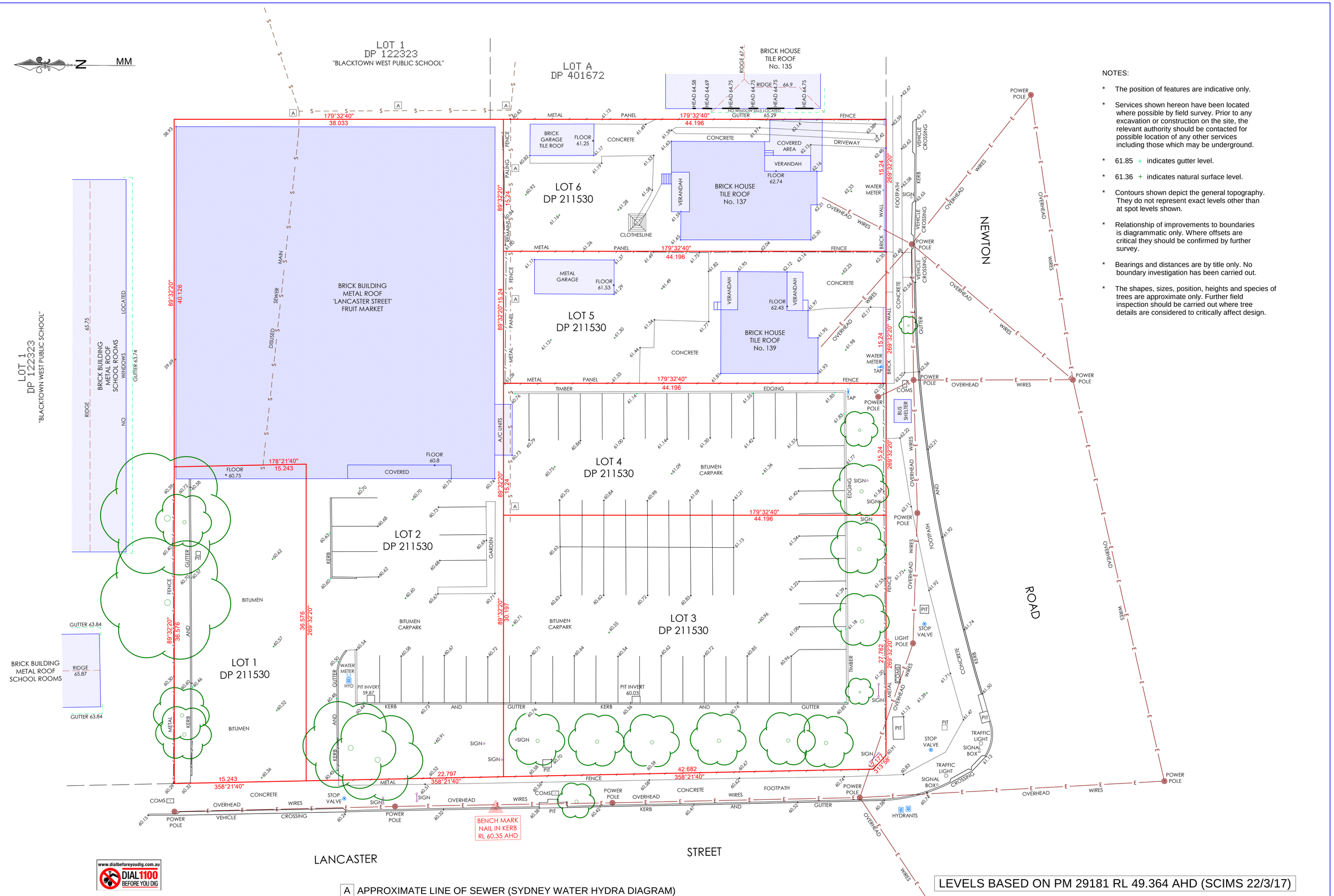
R2
Max Height - 7.5m
No FSR Control

R2
Max Height - 9m
No FSR Control

R2
Max Height - 7.5m
No FSR Control

N

Source_ SixMaps
Scale_ 1:800



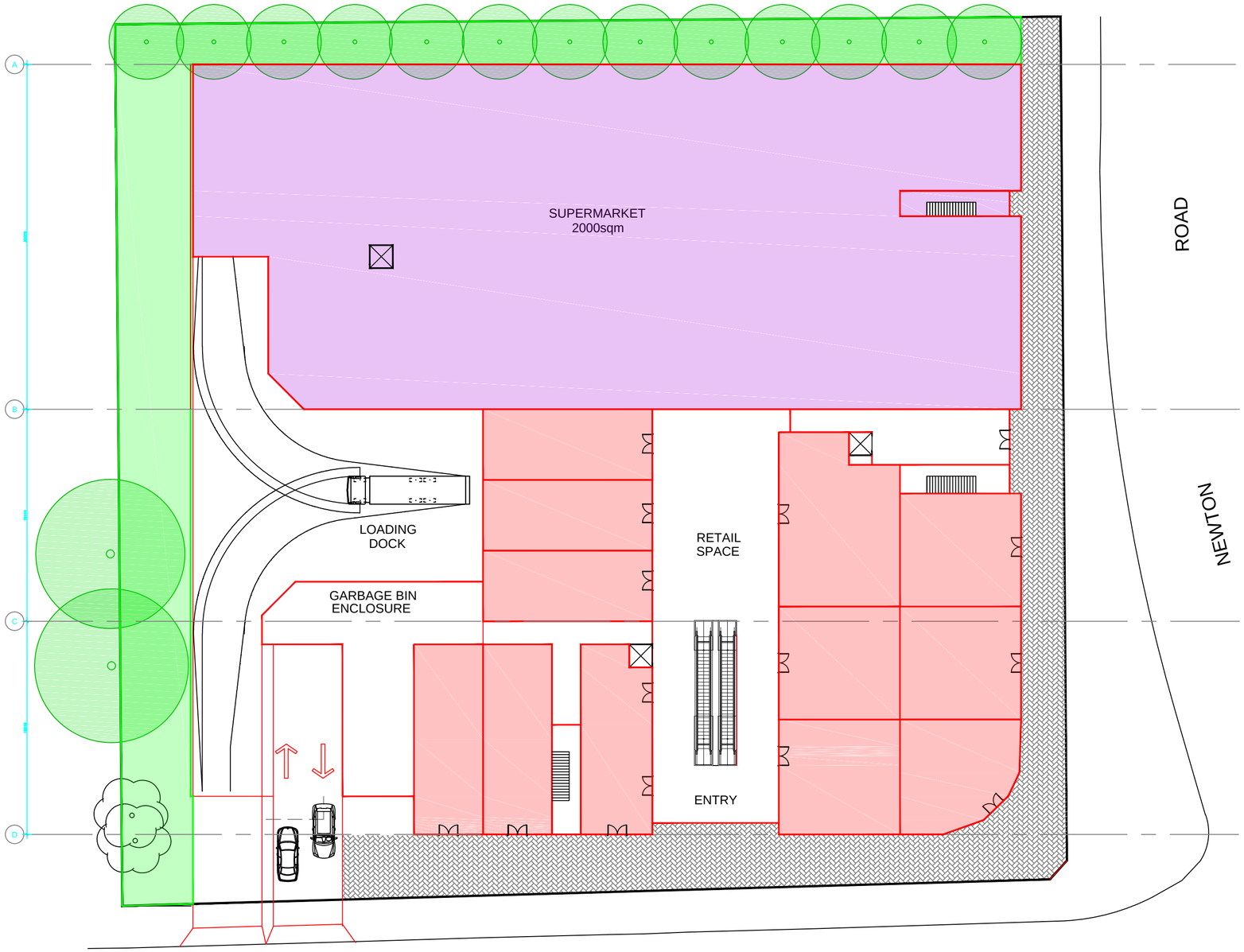
NOTES:

* The position of features are indicative only.
* Services shown hereon have been located where possible by field survey. Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of any other services including those which may be underground.
* 61.85 + indicates gutter level.
* 61.36 + indicates natural surface level.
* Contours shown depict the general topography. They do not represent exact levels other than at spot levels shown.
* Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
* Bearings and distances are by title only. No boundary investigation has been carried out.
* The shapes, sizes, position, heights and species of trees are approximate only. Further field inspection should be carried out where tree details are considered to critically affect design.

A APPROXIMATE LINE OF SEWER (SYDNEY WATER HYDRA DIAGRAM)

LEVELS BASED ON PM 29181 RL 49.364 AHD (SCIMS 22/3/17)

Client: TINESI PTY LTD	Project: PLAN SHOWING DETAIL & LEVELS OVER LOTS 1-6 IN DP 211530 KNOWN AS N° 137-141 NEWTON ROAD, BLACKTOWN.	FREEBURN SURVEYING	MATTHEW FREEBURN LAND, ENGINEERING & MINING SURVEYOR SUITE 2, FIRST FLOOR, "SURVEYOR HOUSE" 2 CASTLEREAGH STREET PENRITH 2750	Telephone 02 4721 2289 Fax 02 4721 5646 email matthew@freeburnsurveyors.com	Date: 27/3/2017	Ref: 35844	Sheet 1 of 1
					Scale 1: 200	Datum: AHD	Contour: NA
					Surveyor: TB/DC	Drawn By: TB	Checked: MF
					DATA - 35844 - DETAIL		A1 SHEET



CONCEPT COMMERCIAL FLOOR PLAN

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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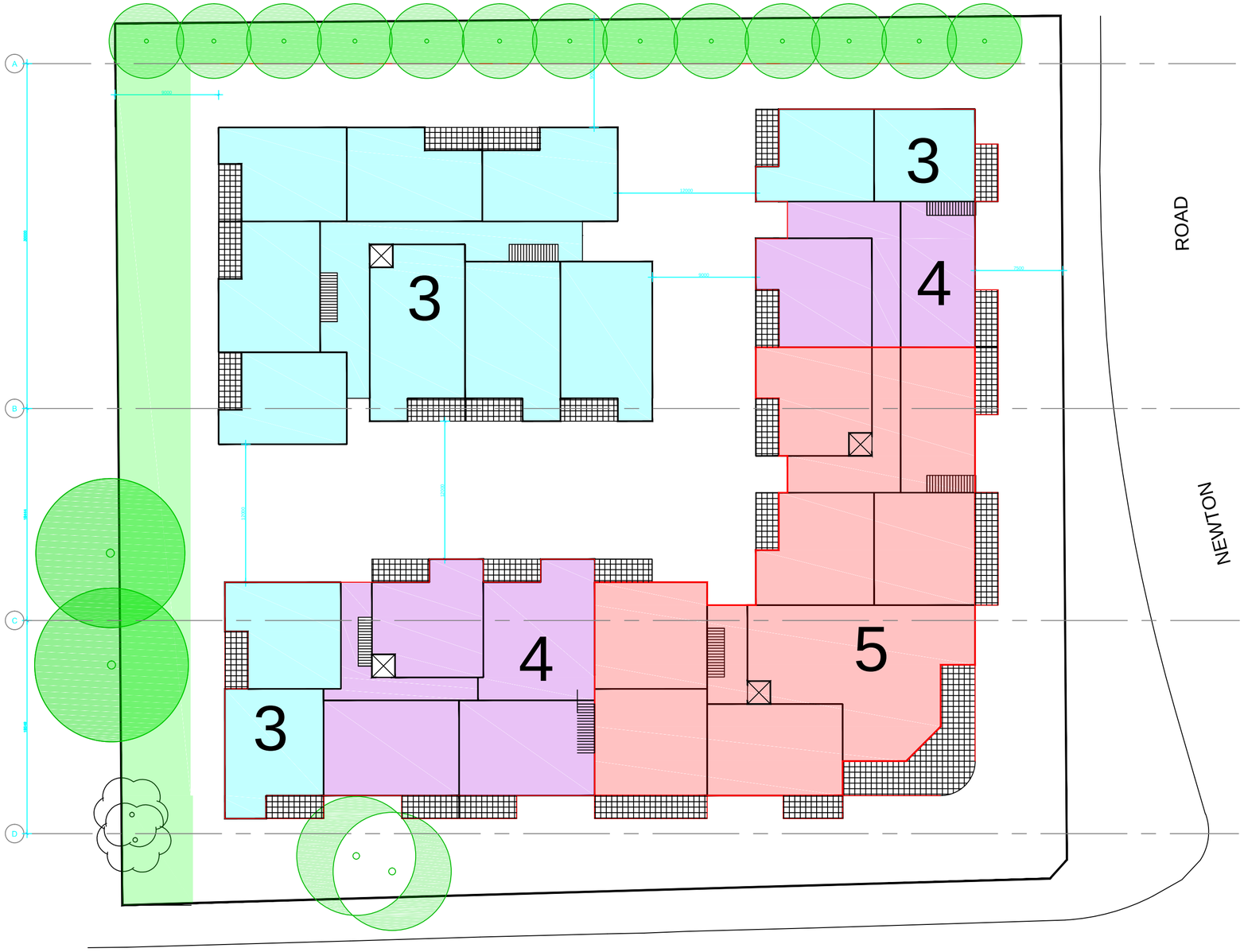
DRAWING NAME

GROUND FLOOR RETAIL
CONCEPT PLAN

137NEW-17

DRAWING No. 1/1



CONCEPT RESIDENTIAL FLOOR PLAN

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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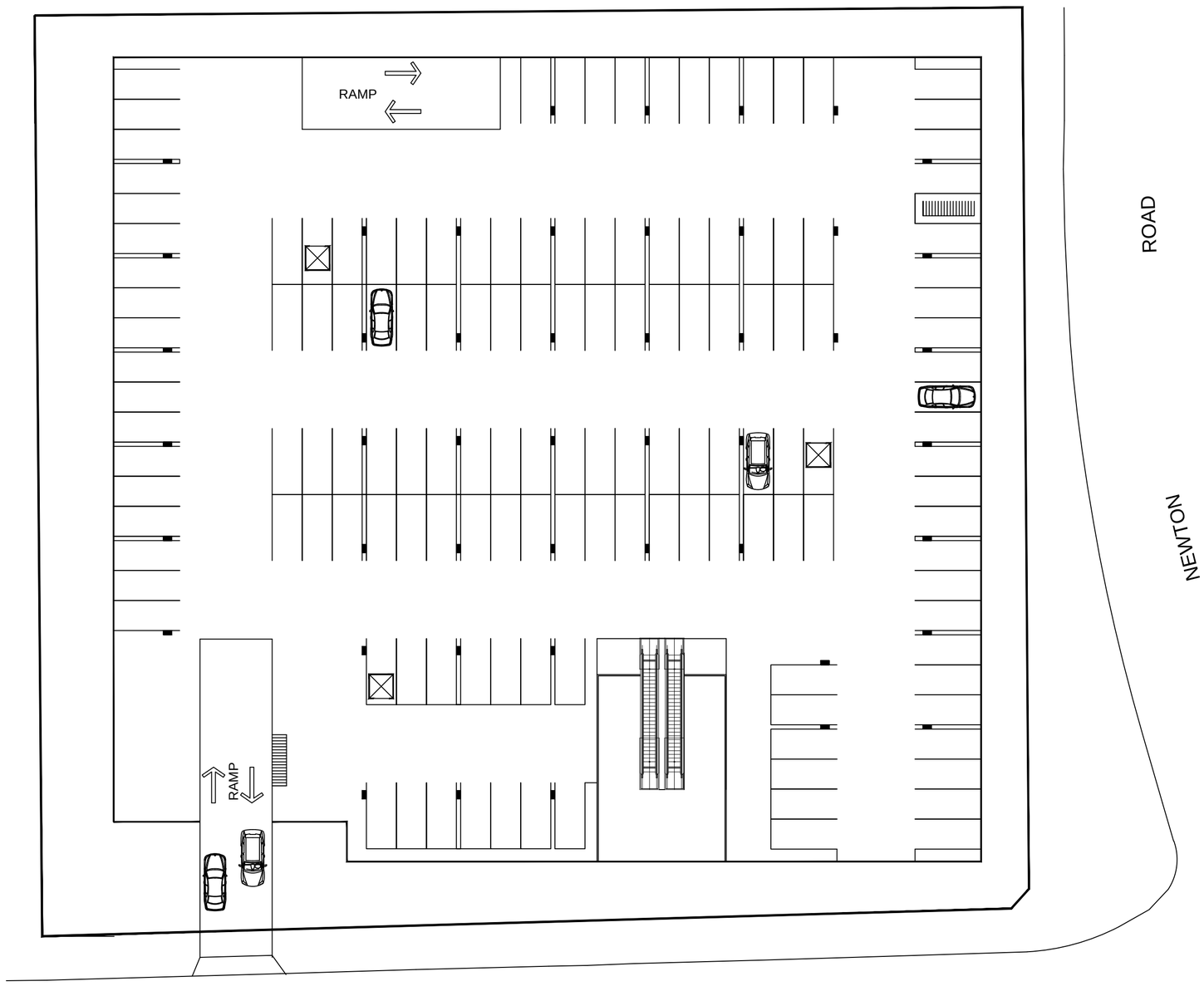
DRAWING NAME

RESIDENTIAL FLOORS CONCEPT
CONCEPT PLAN

137NEW-17

DRAWING No. 1/1



PARKING REQUIREMENTS

RESIDENTIAL
1 SPACE PER 1 OR 2 BEDROOM UNIT
2 SPACES PER 3 BEDROOM UNIT
1 VISITOR SPACE PER 2.5 UNITS

74 UNITS X 1 SPACE = 74 SPACES
74 UNITS / 2.5 SPACES = 30 VISITOR SPACES

RESIDENTIAL PARKING REQUIRED = 104 SPACES

RETAIL

FOR SHOP 200sqm OR GREATER - 1 SPACE PER 22sqm
FOR SHOP LESS THAN 200sqm - 1 SPACE PER 30sqm

SUPERMARKET - 2000sqm / 22 = 90 SPACES
SHOPS - 1200sqm / 30 = 40 SPACES

RETAIL PARKING REQUIRED = 130 SPACES

TOTAL PARKING REQUIRED = 234 SPACES

CONCEPT BASEMENT FLOOR PLAN

PROJECT
PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE MAR 2017

SCALE 1:200

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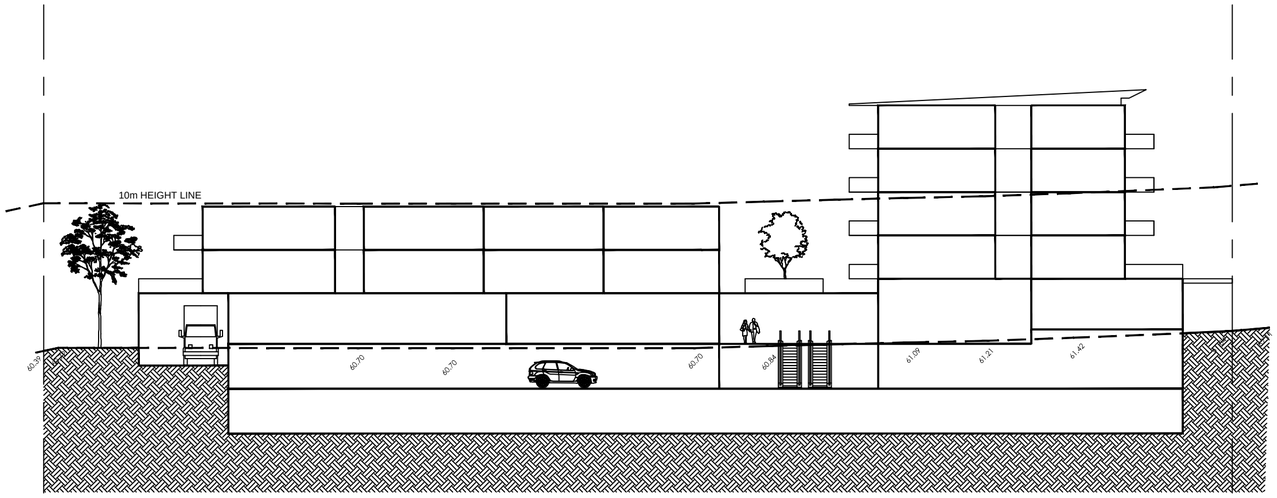
DRAWING NAME
BASEMENT CONCEPT PLAN

DRAWING No.
137NEW-17 1/1

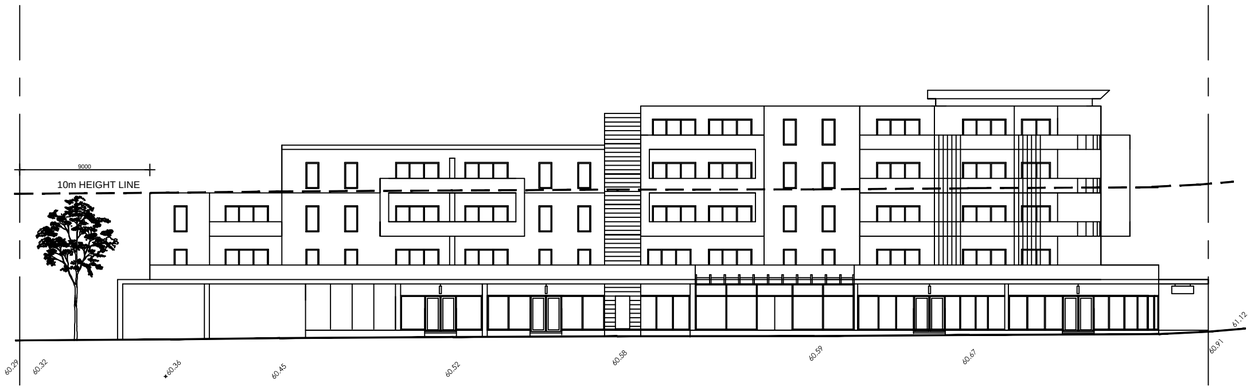
BLACKTOWN WEST
PUBLIC SCHOOL



NEWTON ROAD

CONCEPT SECTION

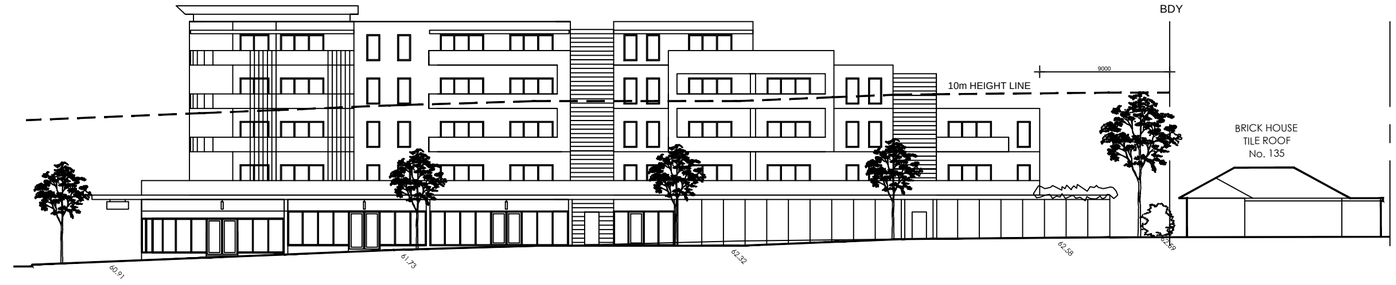
BLACKTOWN WEST
PUBLIC SCHOOL



NEWTON ROAD

CONCEPT WEST ELEVATION - TO LANCASTER STREET

LANCASTER STREET



CONCEPT SOUTH ELEVATION - TO NEWTON ROAD

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE	MAR 2017
SCALE	1:200

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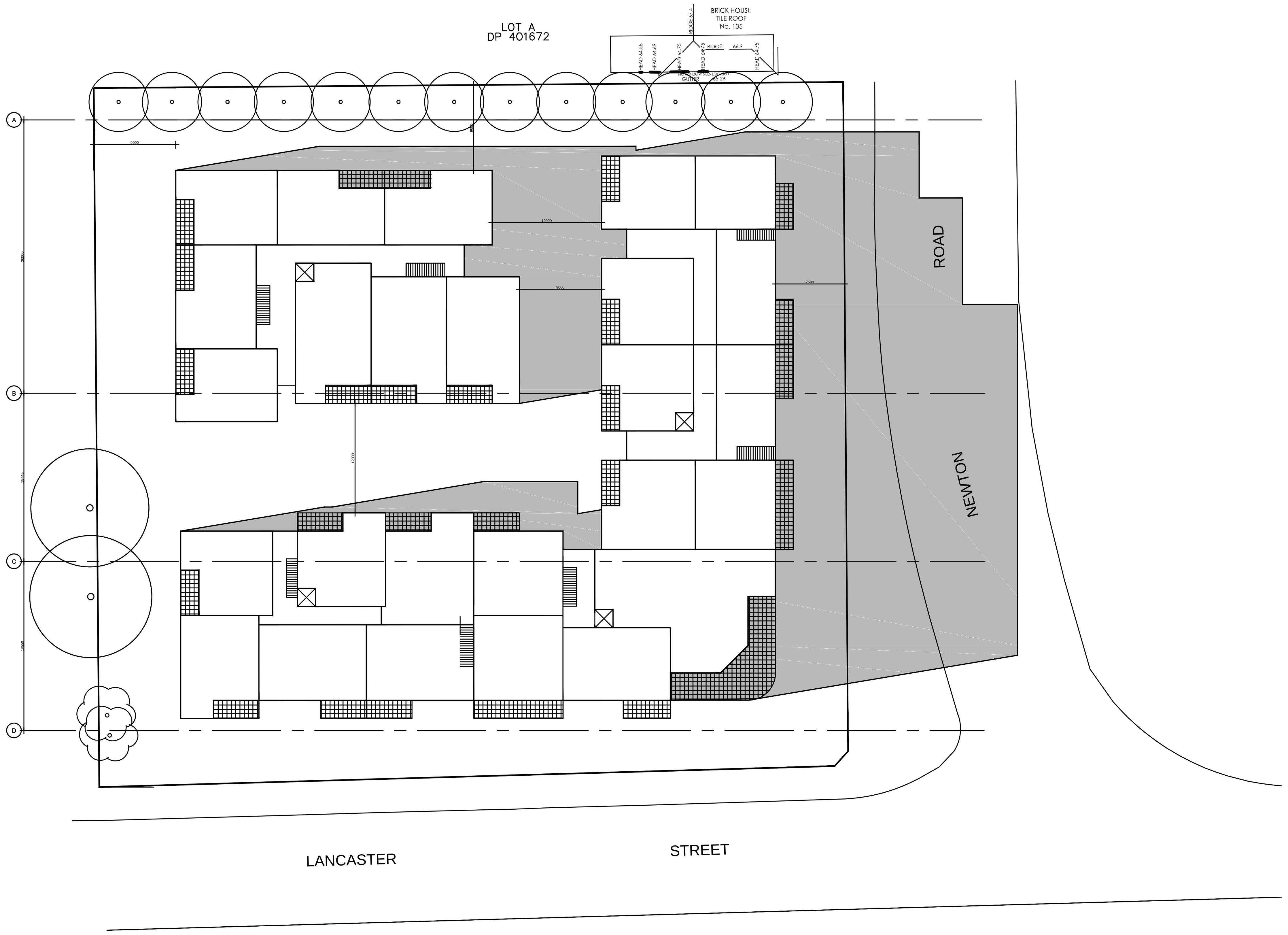
DRAWING NAME

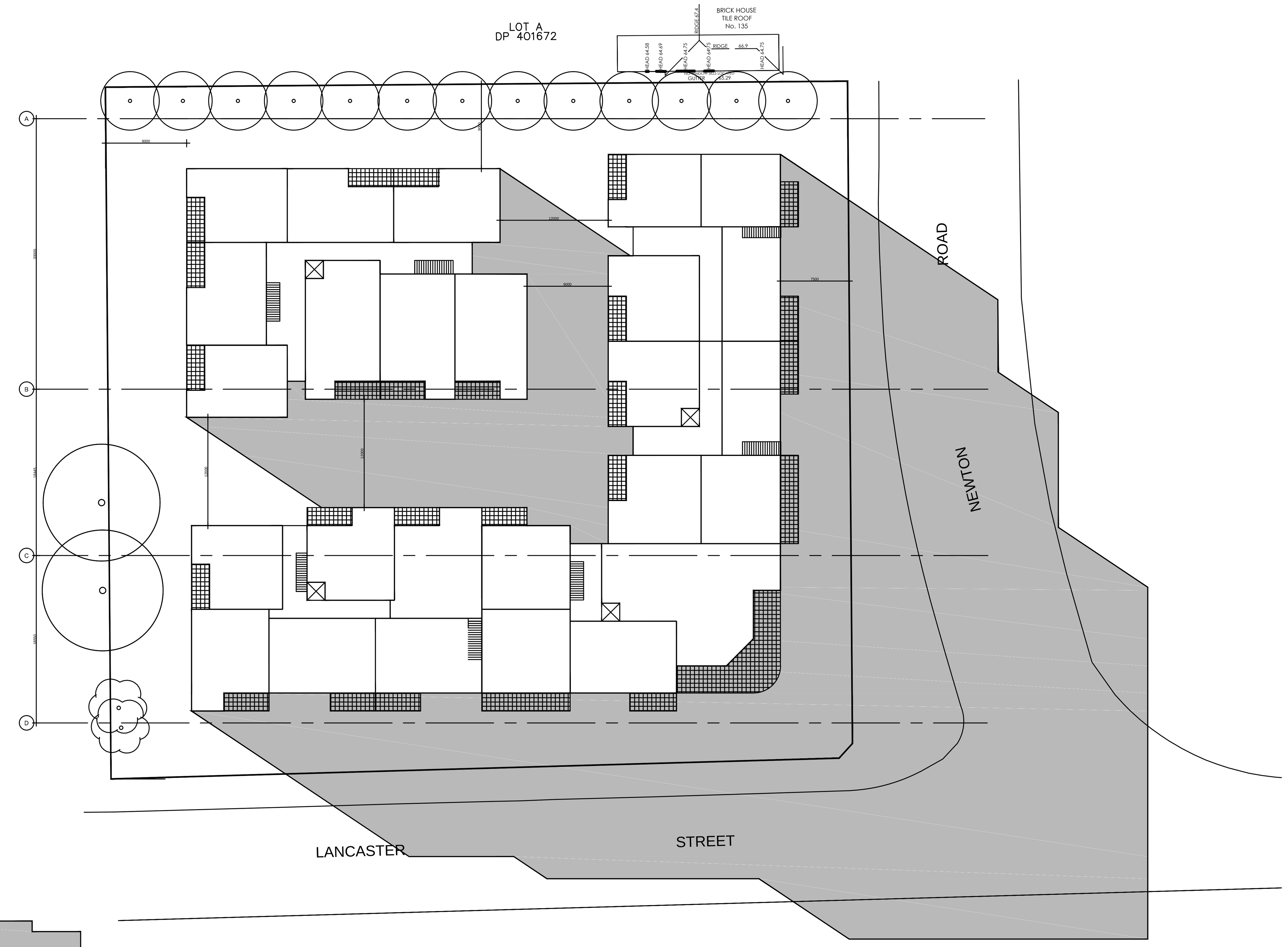
CONCEPTUAL ELEVATIONS/
SECTION

137NEW-17

DRAWING No. 1/1



12noon MID-WINTER



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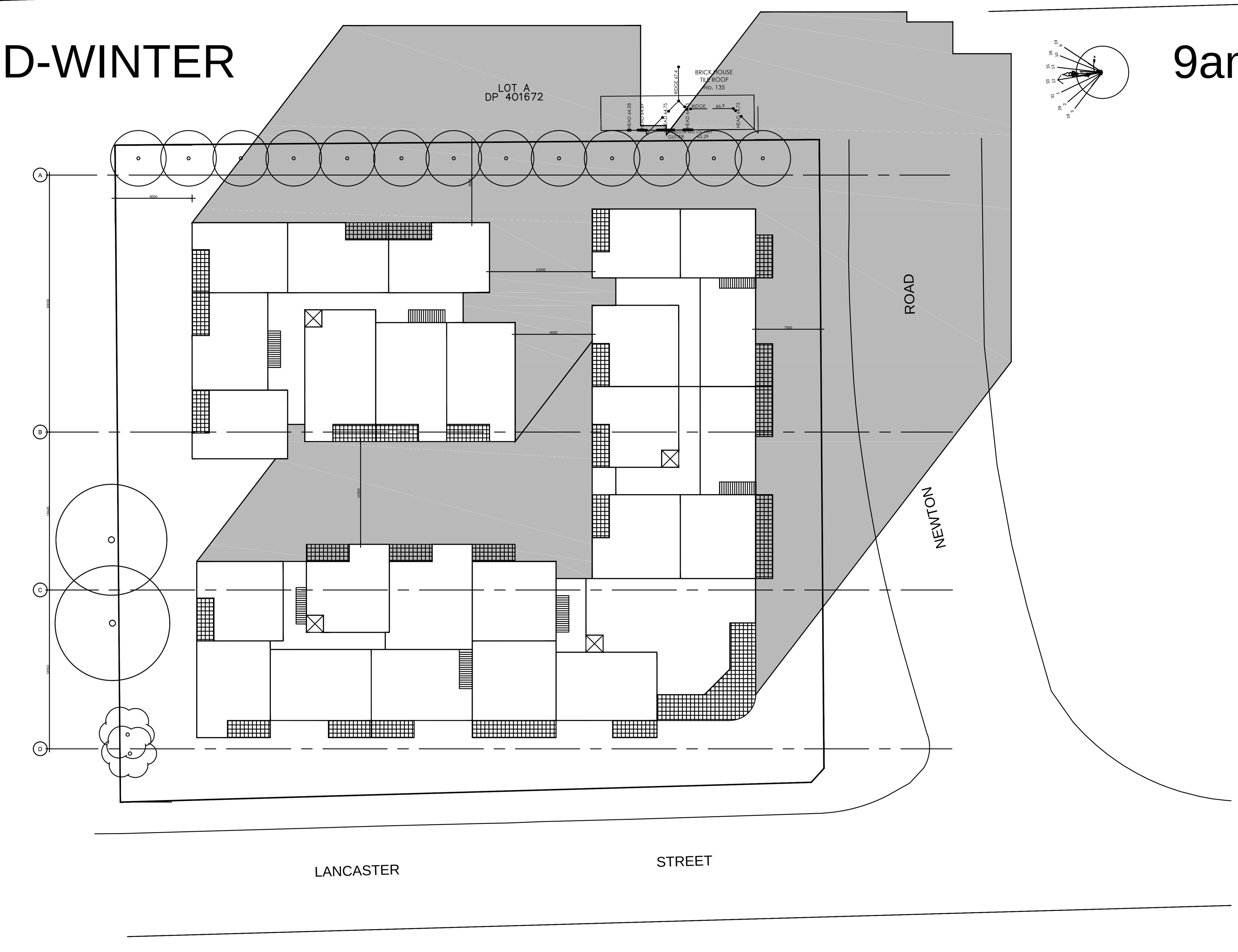

3pm MID-WINTER

PROJECT

PROPOSED
MIXED-USE DEVELOPMENT
No. 137-141 NEWTON RD,
BLACKTOWN

A M G ARCHITECTURE
PTY LTD

12A HAROLD STREET,
MOUNT LEWIS NSW 2190
Tel: 0400111350

DATE MAR 2017

SCALE 1:200

All dimensions and levels to be verified on site prior to commencement of any construction or fabrication.
This drawing is subject to copyright.
It must not be retained, copied or used without authority from AMG Developments

DRAWING NAME

PRELIMINARY
SHADOW DIAGRAMS

DRAWING No.

137NEW-17SH 1/1


SHOPPING
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Traffic Solutions Pty Ltd

PROPOSAL FOR A MIXED USE DEVELOPMENT, 137-141 NEWTON ROAD, BLACKTOWN

TRAFFIC AND PARKING ASSESSMENT

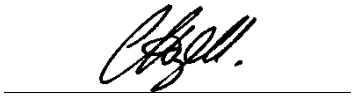
February 2018

Ref: 17.18.060

P.O Box 9161, Bathurst NSW 2795 Phone: (02) 6331 0467 Email: craig@trafficsolutions.com.au

RESIDENTIAL AND COMMERCIAL PLANNING PROPOSAL, 137-141 NEWTON ROAD, BLACKTOWN. – TRAFFIC AND PARKING ASSESSMENT

Prepared By: Craig Hazell
Director
Traffic Solutions P/L
P.O Box 9161
Bathurst NSW 2795
M. 0417 262 057



For: Dominic Foti
Director
Tinesi Pty Ltd
M. 0414 254 524

Report No.: 17.18.060

Date: 19 February 2018

Issue: FINAL

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CONTENTS

1. INTRODUCTION

This report has been prepared to accompany a planning proposal to Blacktown City Council for a proposed mixed use development located at 137-141 Newton Road, Blacktown. (Figure 1)

The Planning Proposal seeks to amend the height of the Buildings Map in the Blacktown LEP by replacing the existing 10m height limit with an 18m height limit.

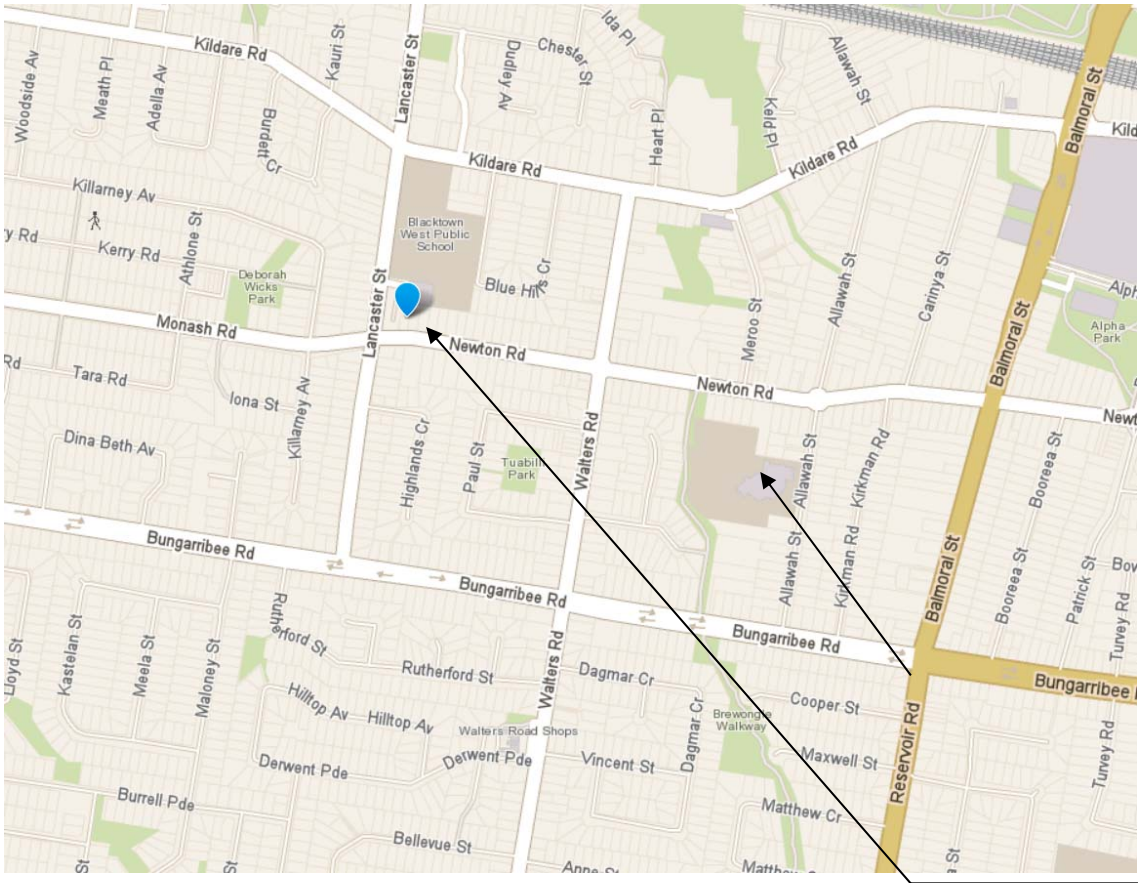
The proposed amendment to the height limit would facilitate a future development consisting of a 2000m^2 supermarket, 1200m^2 of retail/business with 74 residential units above. Parking for 234 cars is proposed in 2 basement levels. Vehicle access to/from the development is proposed via two driveways off Lancaster Street, one of which will be for heavy vehicles only.

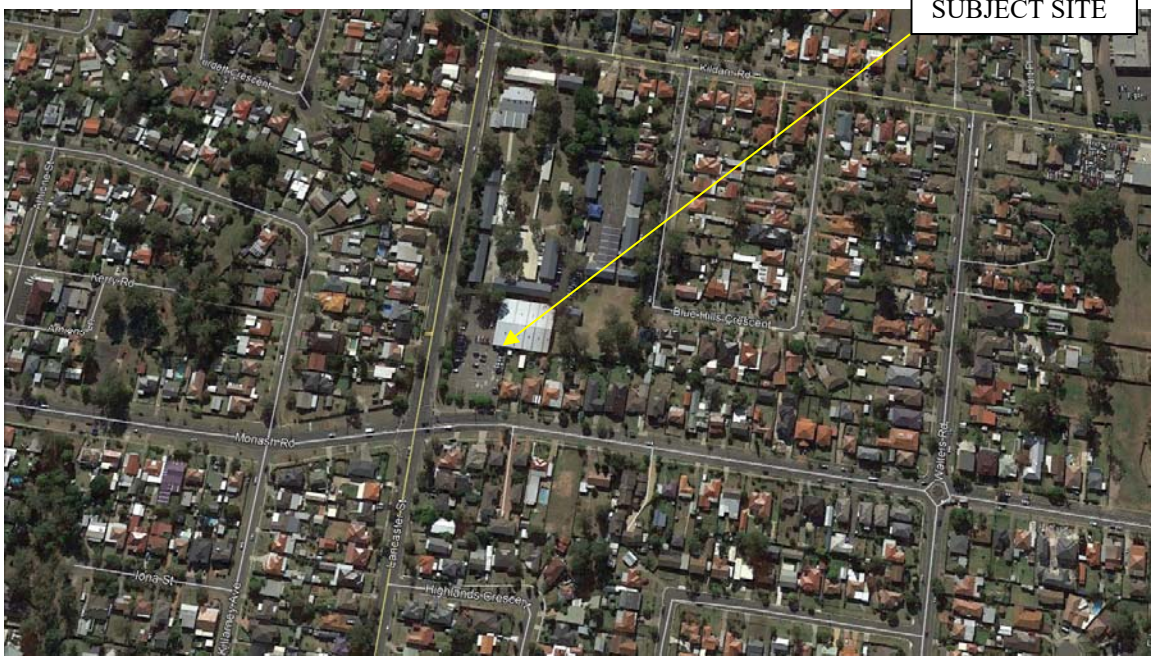
The existing site comprises a fruit market and 2 residential houses. The fruit market site currently has 63 car parking spaces with access to the fruit market provided off Lancaster Street and the residential houses off Newton Road.

This report examines the traffic and parking implications of the proposed development and will assess the:

- The off-street parking provision.
- Proposed access arrangements.
- Estimated traffic generation of the proposal.
- Impacts on the existing road network of the estimated traffic generation.
- Loading arrangements.

This report has been undertaken utilising plans prepared by AMG Architecture Pty Ltd, 4 drawings, project number 137NEW-17, dated March 2017.





LOCATION

Fig 1

2. PROPOSED DEVELOPMENT

SITE

The proposed development will be located on the corner of Newton Road and Lancaster Street. The subject site is known as Lots 1-6 in D.P. 211530, known as 137-141 Newton Road, Blacktown and includes the existing Lancaster Street Fruit Market.

DEVELOPMENT PROPOSAL

The planning proposal includes a 2000m^2 supermarket, 1200m^2 of retail/business with 74 residential units above. Parking for 234 cars is proposed in 2 basement levels.

Vehicle access to/from the site is to be provided by two separated 6m wide driveways, the northern driveway is for trucks/deliveries only and the southern is proposed for cars.

3. EXISTING CONDITIONS

SITE

The existing development comprises a fruit market with an area of approximately 1472m^2 and 63 car parking spaces. The planning proposal site also includes 2 residential houses numbered 137 and 139 Newton Road.

TRAFFIC AND PARKING

Newton Road and Lancaster Street are classified a Regional Road under the RMS Road Classification Review-Sydney Region. The main features of the existing traffic controls in the vicinity of the site are:

- Traffic Signals at the intersections of Lancaster with Newton and Kildare Roads.
- 60km/h speed limit on Lancaster Street.
- 40km/h school zone on Lancaster Street.
- 50km/h speed limit on Newton Road.
- 50km/h speed limit on Kildare Road.
- 50km/h speed limit on Monash Road.
- 60km/h speed limit on intersection of Newton and Monash Road and Lancaster Street.
- Double white centrelines exist in Newton Road and Lancaster Street.

The existing parking constraints in the vicinity are:

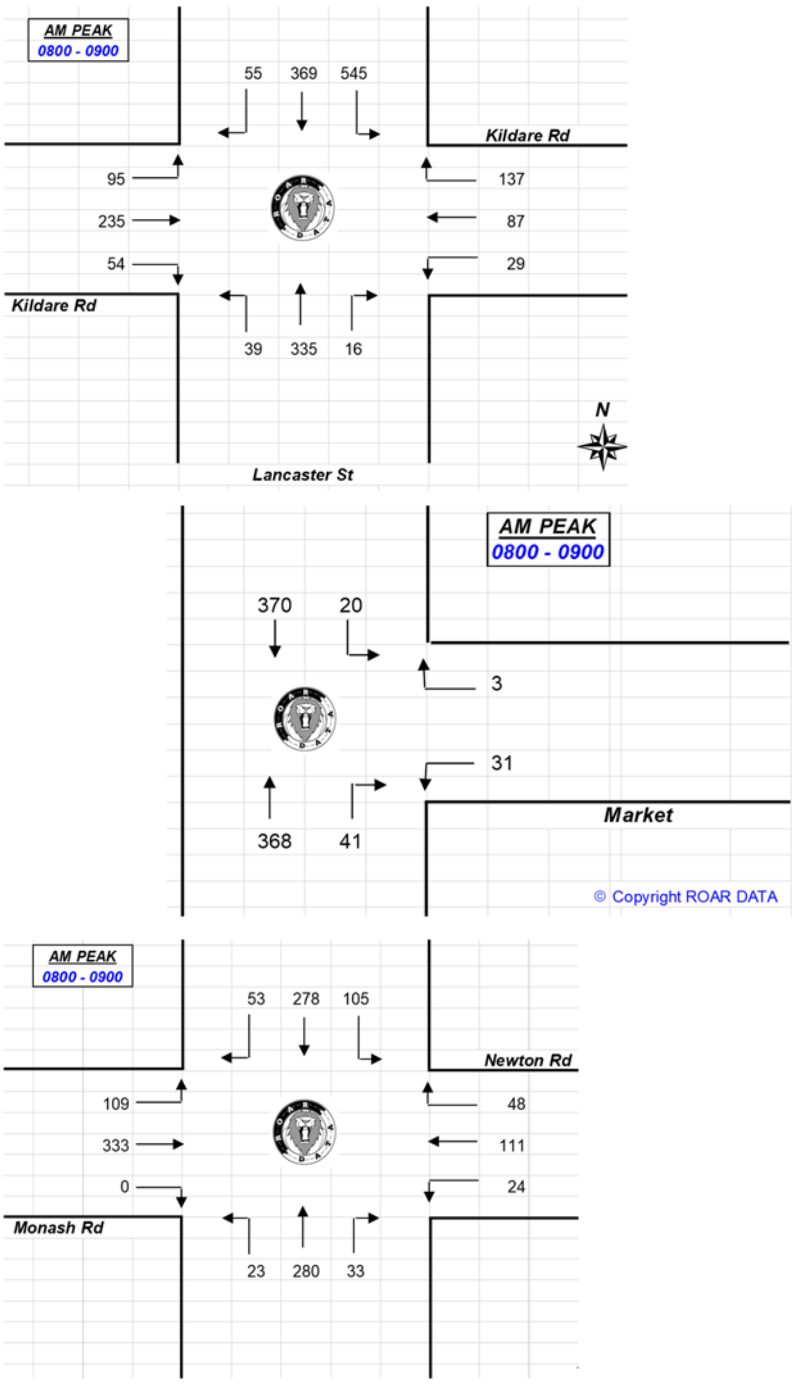
- No Stopping
- No Parking
- Bus Stop

Data on the traffic movements in the vicinity of the subject site have been collected by surveys undertaken by ROAR Data Pty Ltd from 7.00am – 9.00am and 3.00pm – 6.00pm on Tuesday 5th December 2017 at the intersections of Lancaster Street with Kildare Road, Newton/Monash Roads and the current Fruit Market Driveway.

The traffic counts revealed that the existing Lancaster Street Fruit Market is generating the following vehicle trips in the existing peak hours:

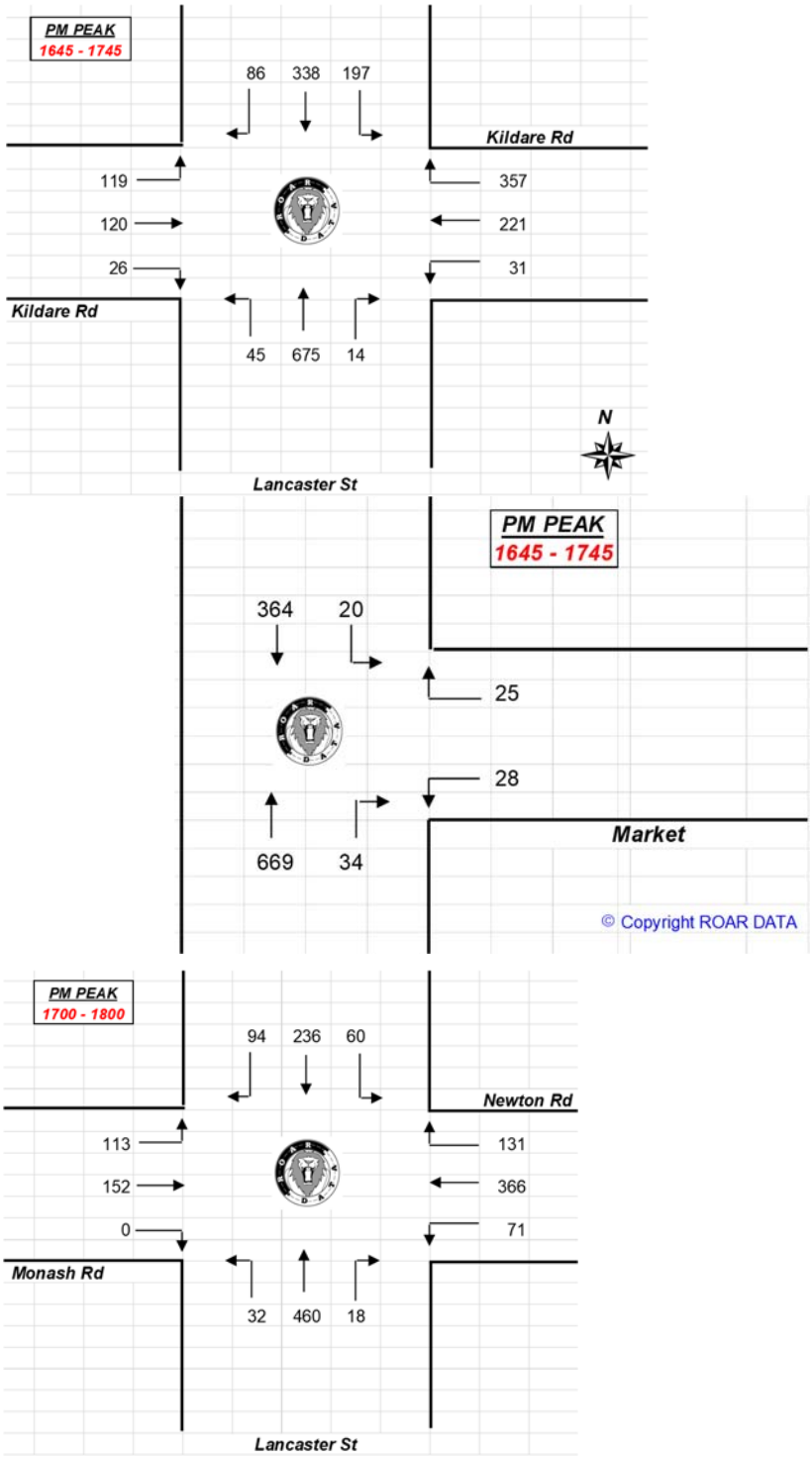
	AM Peak 8.00am – 9.00am	**PM peak 4.45m-5.45pm**
In	61	54
Out	34	53
Total	**95**	**107**

The detailed results of the surveys are attached as appendix A. The peak hour flows at each intersection are depicted on Figures 2 and 3 in the following pages.



Existing Morning Peak Hour Flows

Fig 2



Existing Evening Peak Hour Flows

Fig 3

4. KEY ISSUES

ACCESS AND PARKING

Vehicle access to/from the site is to be provided by two separated 6m wide driveways off Lancaster Street. The driveway off Lancaster Street is satisfactory and will provide good sight distance in both directions. The available sight distance easily exceeds the desirable 83m distance suggested by AS/NZS 2890.1:2004 for 60km/h.

The northern driveway is for trucks/deliveries only and the southern is proposed for cars. Whilst the southern driveway width complies with AS/NZS 2890.1 because Lancaster Street is not an Arterial Road, consideration should be given to a 2 lane exit driveway for cars. The northern driveway will need amendment to cater for a Heavy Rigid Vehicle.

The conceptual plans generally comply with the geometric design requirements for car park layouts are specified in the '*Australian/New Zealand Standard, Parking Facilities Part 1; Off Street Car Parking (AS/NZS 2890.1)* of 2004 and of course disabled car parking spaces will be provided in appropriate numbers in accordance with *Australian/New Zealand Standard, Parking Facilities Part 6: Off street Parking for People With Disabilities* of 2009.

Compliance with the Australian Standards for car parking, driveway widths and ramp grades as a minimum will be a recommendation of this report

Due to the proposals location to the Blacktown west public school it will also be a recommendation that the separation between the loading dock and basement car parking driveways be increased to at least 2m to provide a refuge for pedestrians between driveways. This area could possibly be highlighted with a different pedestrian surface or line marking as considered applicable by Council.

A review of Blacktown City Council's "*Development Control Plan 2015"* reveals the following car parking requirements applicable to this proposal:

Residential Flat Building (Outside Blacktown CBD)
1 space per 1 or 2 bedroom dwellings
2 spaces per 3 or more bedrooms
Plus 1 space per 2.5 dwellings for visitor parking(or part thereof)
Retail premises and business premises (Outside Blacktown CBD)
200sq.m or greater 1 space per 22sq.m GFA
Less than 200sq. m 1 space per 30 sq.m GFA

Therefore, the car parking required for the proposal at this time calculates as:

74 units @ 1 space per unit	=	74 spaces
74 units @ 1 per/2.5units	=	29 spaces
2000m^2 @ 1 space per 22m^2 GFA	=	91 spaces
1200m^2 @ 1 space per 30m^2 GFA	=	40 spaces
Total	**=**	**234 spaces**

Accordingly, the planning proposal for the mixed use development satisfies Council's parking requirements with the provision of **234** off-street parking spaces.

LOADING FACILITIES

The loading dock is provided off a 6m driveway from Lancaster Street. The proposed loading dock driveway and manoeuvring area is only sufficient for vehicles up to the equivalent of a Heavy Rigid Vehicle up to 12.5m long.

An assessment of the loading dock has been undertaken to determine if it is of sufficient size to enable the proposed maximum heavy rigid vehicle (12.5m) to manoeuvre on site and enter/exit in a forward direction. This assessment has been undertaken using the *"Australian Standard Off-Street parking – Part 2 – Commercial vehicle facilities, AS 2890.2 – 2002"* service area maneuvering and swept turning path templates using AUTOCAD Vehicle tracking programme which has the specifications of the Australian Standard AS 2890.2:2002, 12.5m long heavy rigid vehicle inbuilt into the programme.

This assessment revealed that the planning proposal area for manoeuvring within the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This will also be a recommendation of this report.

TRAFFIC

An estimation of the traffic generation of the proposed development can be calculated by again referring to the Roads and Traffic Authority's *'Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation'* of October 2002. The guide provides the following Thursday evening peak hour generation formula for shopping centres including retail and commercial components:

Shopping Centres

$V(P) = 20\ A(S) + 51\ A(F) + 155\ A(SM) + 46\ A(SS) + 22\ A(OM)$
(vehicle trips per $1000m^2$)

where:

A(S): **Slow Trade gross leasable floor area (Gross Leasable Floor Area in square metres) includes major department stores such as David Jones and Grace Bros., furniture, electrical and whitegoods stores.**

A(F): **Faster Trade GLFA - includes discount department stores such as K-Mart and Target, together with larger specialist stores such as Fosseys.**

A(SM): **Supermarket GLFA - includes stores such as Franklins and large fruit markets.**

A(SS): **Specialty shops, secondary retail GLFA - includes speciality shops and take-away stores such as McDonalds. These stores are grouped as they tend to not be primary attractors to the centre.**

A(OM): **Office, medical GLFA: includes medical centres and general business offices.**

As the traffic generated by the existing centre has been recorded, only the increased floor areas and new components of the proposal will be applied to this formula which is as follows:

Supermarket	2000m^2
Specialty shops	1200m^2

Therefore, the supermarket, commercial and retail component of the development potential traffic generation calculates as:

V(P) = 20 A(S) + 51 A(F) + 155 A(SM) + 46 A(SS) + 22 A(OM) (vehicle trips per 1000m^2)

= 20 A(S) + 51 A(F) + 155 (supermarket) + 46 (specialty retail) + 22 (OM)/1000m^2

= (20 x 0) + (51 x 0) + 155 (2000m^2) + 46 (1200m^2) + (22 x 0)/1000m^2

= 365.2 evening peak hour vehicle trips

As the RMS, does not provide a morning peak hour traffic generation, it will be assumed that 50% of the commercial evening peak hour traffic generation will be generated in the morning peak hour. (i.e. 183 vtph)

An estimation of the traffic generation of the proposed residential component of the development can be calculated by reference to the Roads and Maritime Services Technical Direction '*Guide to Traffic Generating Developments, Updated surveys TDT 2013/14'* of May 2013. The guide specifies the following peak hour generation rates for High Density residential flat buildings in Sydney:

AM Peak Hour Vehicle Trips	=	0.19
PM Peak Hour Vehicle Trips	=	0.15

The Roads and Maritime Services defines a high density residential flat building as:

"… a building containing 20 or more dwellings. This does not include aged or disabled persons' housing. High density residential flat buildings are usually more than five levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use."

Therefore, the estimated traffic generation of the development calculates as:

AM Peak
74 Dwellings @ 0.19 trips per unit = 14.06 peak hour trips

PM Peak
74 Dwellings @ 0.15 trips per unit = 11.1 peak hour trips

Accordingly, the planning proposal has the potential to generate approximately 197 and 376 vehicle trips in the morning and evening peak hours respectively.

The estimated potential traffic generation of the subject site can be discounted by the

traffic generated by the existing Fruit Market which has been recorded in the traffic surveys undertaken. The following indicates the potential net traffic flows to/from the planning proposal and calculations undertaken.

	Existing volumes		**Potential total volumes**		**Potential additional volumes**	
	AM Peak	**PM peak**	**AM Peak**	**PM peak**	**AM Peak**	**PM peak**
In	61	54	91 (com)	194 (183 com, 11 Res)	30	140
Out	34	53	106 (92 com, 14 Res)	182 (com)	72	129
Total	**95**	**107**	**197**	**376**	**102**	**269**

Accordingly, the estimated potential increase in traffic flows of the planning proposal is in the order of **102** morning and **269** evening peak hour trips.

To assess the impact of the development on the intersections of Lancaster Road with Newton/Monash Road, Kildare Road and the access driveway (to the planning proposal) the estimated morning and evening peak hour approach and departure vehicle trips have been assigned proportionally to these intersections on the basis of existing turning movements. Further, for the purposes of this assessment it has been assumed that during the peak hours the traffic generation of the commercial component will be split proportionally for approach and departure to this site as per existing recorded volumes and that the residential volumes will depart the site in the morning and return in the evening peak hours.

Figures 4 and 5 depict the assignment of the potential additional morning and evening peak hour traffic flows to the surrounding road network.

Using SIDRA Intersection 6 Plus, a software program developed for the purpose of analysing signalised, roundabout and sign controlled intersections, the effect of the estimated traffic generation of this development on the adjacent road system has been assessed.

The SIDRA model standard features and settings have not been modified. i.e. no alterations to the programme defaults.

Attached in appendix B is the intersection layout modelled for Council's reference. A copy of the SIDRA file is available for review if required.

A comparison of intersection performance between the existing and projected traffic demands during the morning and evening peak hours upon the intersections of

Lancaster Road with Newton/Monash Road, Kildare Road and the access driveway to the planning proposal has been modelled. Tabled below are the results of the intersection modelling and a copy of the SIDRA summary output files are attached as appendix B for Council's information. A brief guide on evaluating the results of SIDRA analysis is reproduced in the following pages:

Indicator	Lancaster Street and Kildare Road, Blacktown – Signals			
	Existing		Proposed	
	AM	PM	AM	PM
Level of Service	B	C	C	C
Degree of Saturation	0.742	0.868	0.750	0.901
Total Average Delay (sec/veh)	27.5s	40.8s	28.6s	42.5s

Indicator	Lancaster Street and proposed vehicle access driveway, Blacktown – Sign Control Intersection	
	AM	PM
Level of Service	A	B
Degree of Saturation	0.251	0.455
Total Average Delay (sec/veh)	1.6s	3.3s
Total Average delay for right turn from site driveway (sec/veh)	4.5s	16.4s

Indicator	Newton Road, Monash Road and Lancaster Street, Blacktown – Signals			
	Existing		Proposed	
	AM	PM	AM	PM
Level of Service	B	B	B	B
Degree of Saturation	0.623	0.710	0.682	0.717
Total Average Delay (sec/veh)	18.7s	18.7s	19.2s	21.4s

The results of the SIDRA analysis reveals that the intersections modelled will operate at a very good Level of Service with minimal delays and spare capacity with the additional traffic estimated to be generated by the proposal.

Evaluation of the results of SIDRA

LEVEL OF SERVICE

THE LEVEL OF SERVICE FOR TRAFFIC SIGNALS, ROUNDABOUTS AND SIGN CONTROL INTERSECTIONS IS SHOWN BELOW, THIS IS BASED ON THE AVERAGE DELAY IN SECONDS PER VEHICLE:

AVERAGE DELAY PER VEHICLE	LEVEL OF SERVICE	TRAFFIC SIGNALS & ROUNDABOUTS	SIGN CONTROL
< 14	A	GOOD	GOOD
15 - 28	B	GOOD WITH MINIMAL DELAYS AND SPARE CAPACITY	ACCEPTABLE DELAYS AND SPARE CAPACITY
29 - 42	C	SATISFACTORY WITH SPARE CAPACITY	SATISFACTORY BUT ACCIDENT STUDY REQUIRED
43 - 56	D	SATISFACTORY BUT OPERATING NEAR CAPACITY	NEAR CAPACITY AND ACCIDENT STUDY REQUIRED
57 - 70	E	**AT CAPACITY**: AT SIGNALS INCIDENTS WILL CAUSE EXCESSIVE DELAYS, ROUNDABOUTS REQUIRE ANOTHER CONTROL MODE	AT CAPACITY AND REQUIRES ANOTHER CONTROL MODE
> 70	F	UNSATISFACTORY	UNSATISFACTORY

DEGREE OF SATURATION

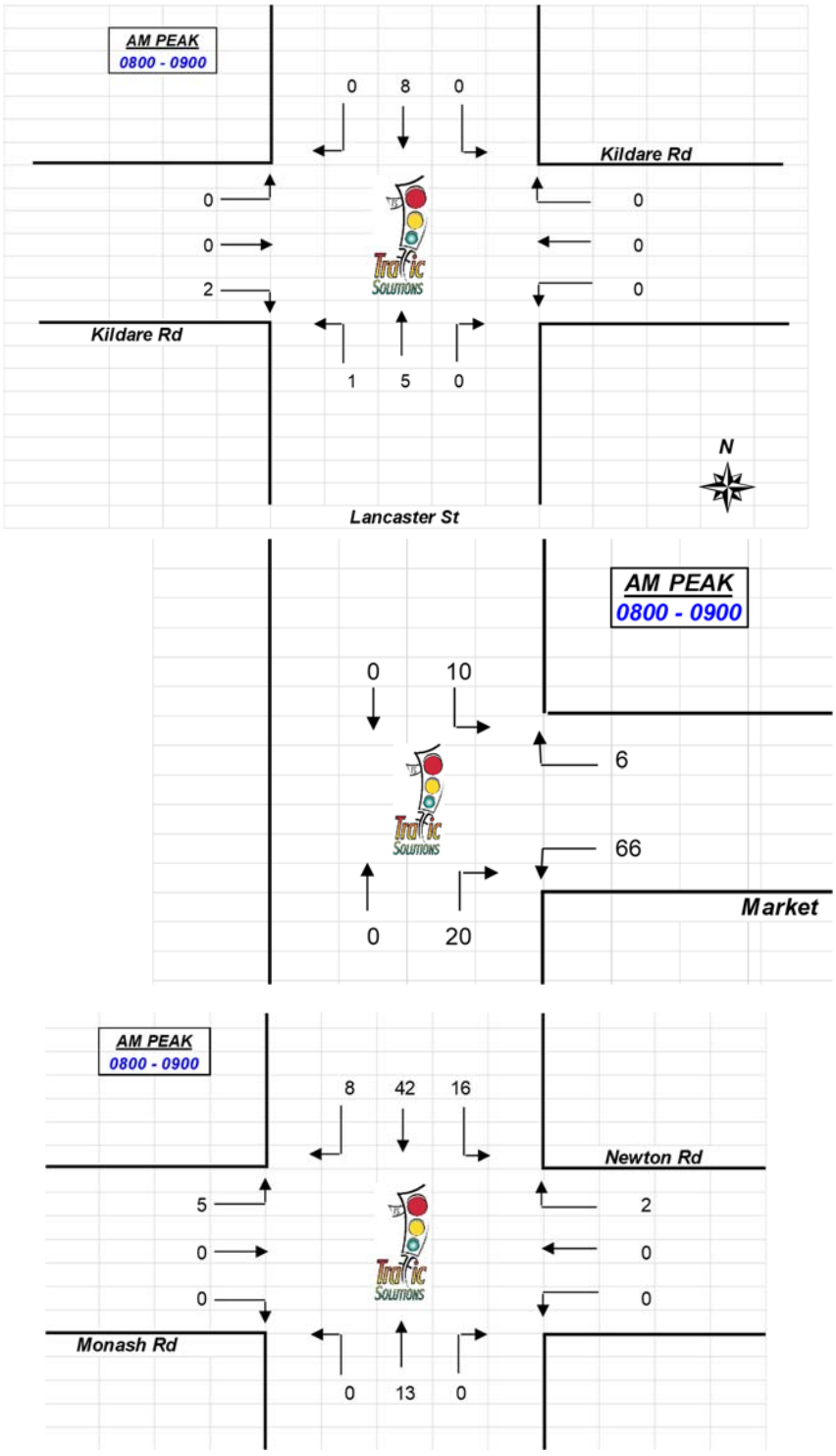
THE DEGREE OF SATURATION IS ANOTHER MEASURE OF THE OPERATIONAL PERFORMANCE OF INDIVIDUAL INTERSECTIONS.

FOR TRAFFIC SIGNAL CONTROLLED INTERSECTIONS BOTH QUEUE LENGTH AND DELAY INCREASE RAPIDLY AS THE DEGREE OF SATURATION APPROACHES 1.0, AND IT IS USUALLY ATTEMPTED TO KEEP IT BELOW 0.9.

FOR ROUNDABOUTS OR SIGN CONTROLLED INTERSECTIONS, OVERSATURATION IS INDICATED BY A VALUE IN EXCESS OF 0.8.

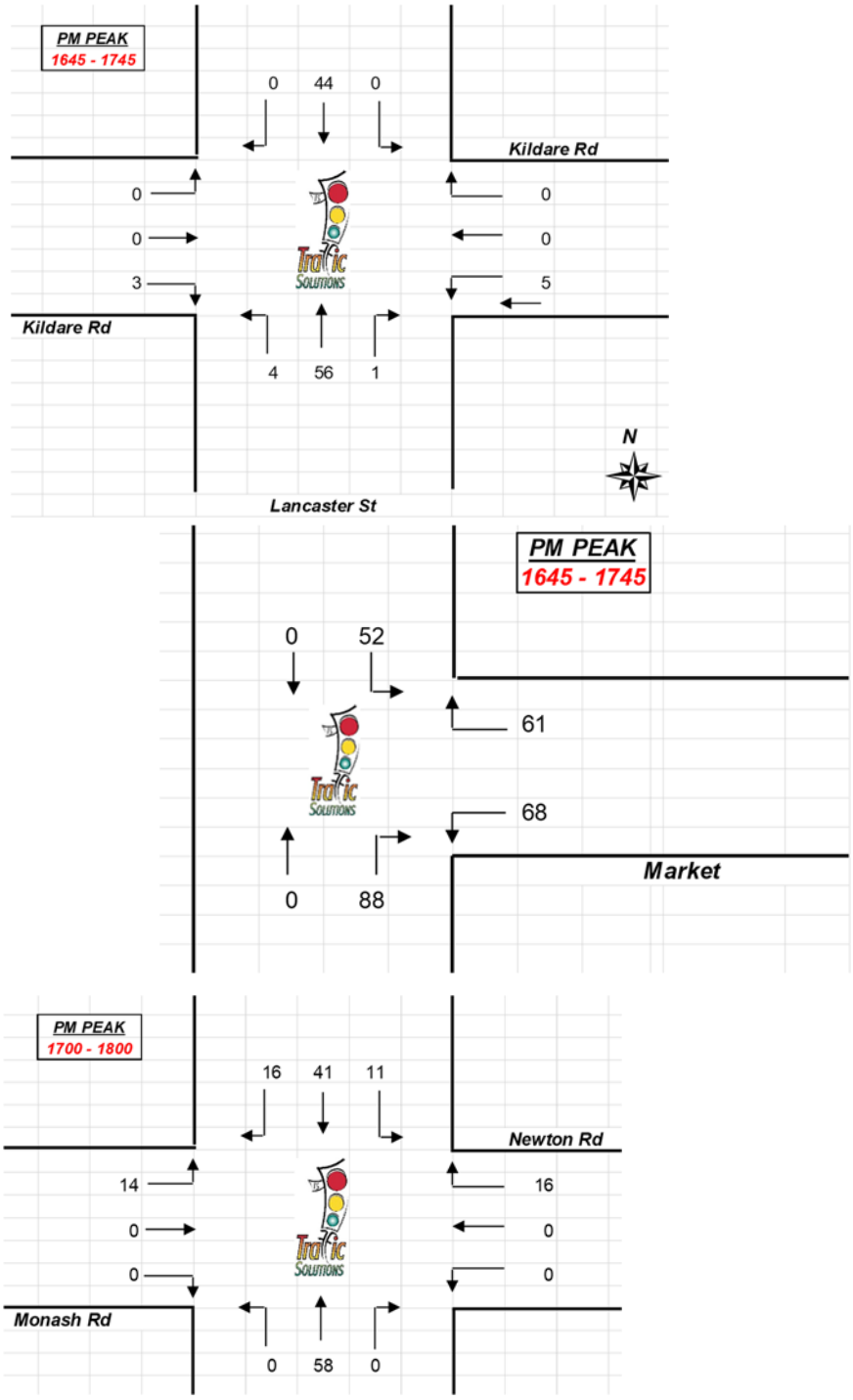
AVERAGE VEHICLE DELAY

THE AVERAGE VEHICLE DELAY PROVIDES A MEASURE OF THE OPERATIONAL PERFORMANCE OF AN INTERSECTION AS INDICATED IN THE ABOVE TABLE . THE AVERAGE VEHICLE DELAYS IN THE TABLE SHOULD BE USED AS A GUIDE ONLY AS LONGER DELAYS COULD BE TOLERATED IN SOME LOCATIONS.



Potential Additional Morning Peak Hour Flows

Fig 4



Potential Additional Evening Peak Hour Flows

Fig 5

5. CONCLUSIONS AND RECOMMENDATIONS

The preceding analysis has demonstrated that:

- The proposed access driveway off Lancaster Street Parade will provide adequate sight distance.

- It is recommended that a separation of at least 2m between the loading area driveways be increased to at least 2m and highlighted as a pedestrian refuge area should the planning proposal proceed.

- The off-street parking proposed in the planning proposal will comply with Council's requirements.

- This assessment revealed that the planning proposal area for manoeuvring within the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This is recommended should the development proceed as per the planning proposal.

- The proposed development is considered to satisfy the intent of the geometric design specifications contained in the Australian Standards for off - street parking and vehicular access, however, it is recommended that a 2 lane exit driveway be provided at the car driveway.

- Assessment of the loading dock utilising the Australian Standard service area maneuvering template and swept path turning templates indicates that the site is sufficient for a heavy rigid vehicle, however, the access driveway will require widening/modifying to accommodate left turns into the site from Lancaster Street. This is recommended should the development proceed as per the planning proposal.

- The potential additional traffic generation of the proposal is estimated to be in the order of **102** morning and **269** evening peak hour vehicle trips.

- The intersections of Lancaster Street with Newton/Monash Roads, Kildare Rd and the access driveway will operate at a satisfactory Level of Service with minimal delays and spare capacity.

- The potential additional traffic generation of the proposal will not have any unacceptable traffic impacts upon Lancaster Street or the surrounding road network.

APPENDIX A TRAFFIC COUNTS

R.O.A.R. DATA

Reliable, Original & Authentic Results

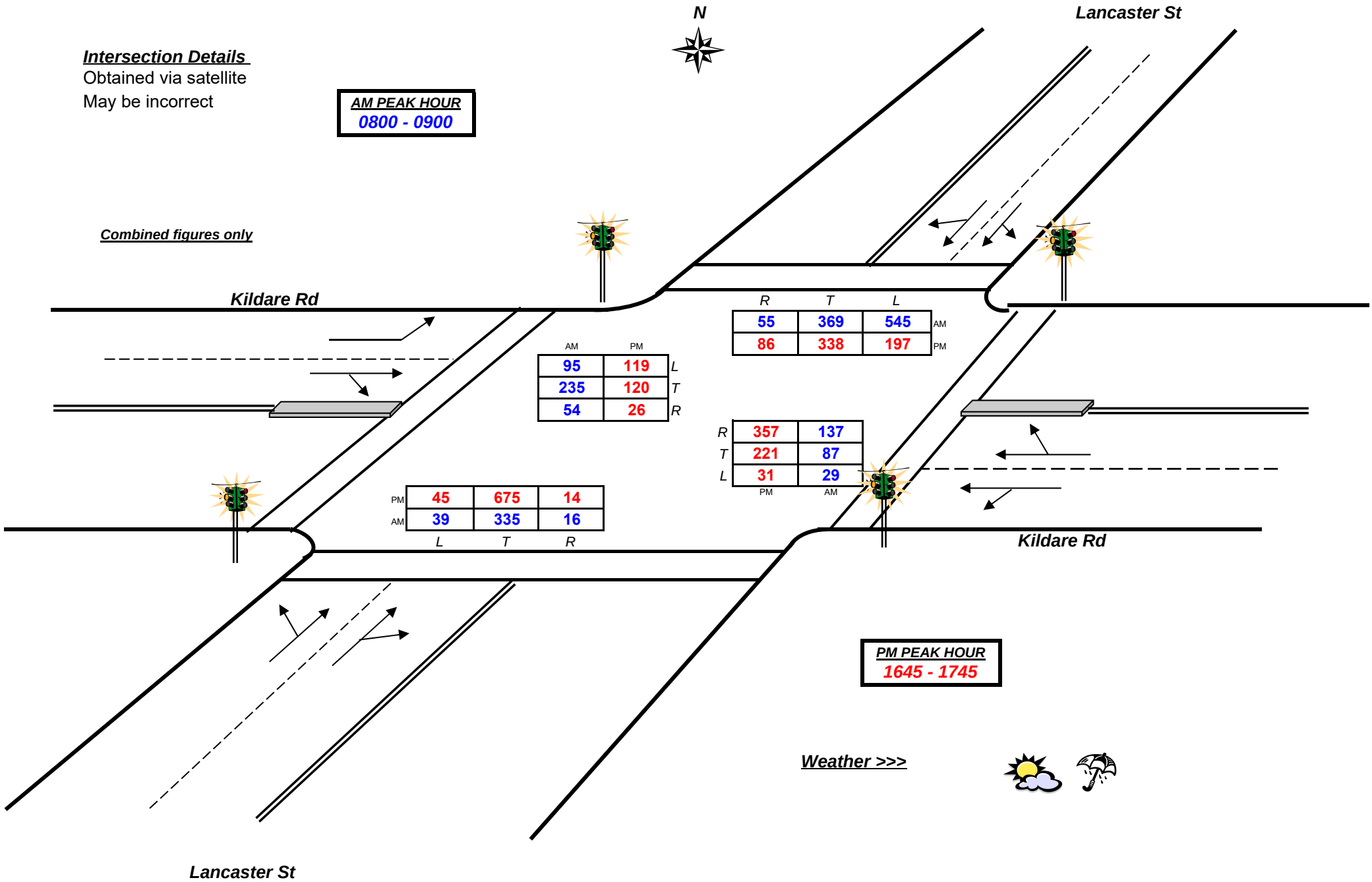
Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



PM PEAK HOUR
1645 - 1745

Weather >>>

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	77	68	8	21	37	3	1	51	0	4	14	23	**307**
0715 - 0730	102	79	18	30	27	4	5	61	2	1	14	14	**357**
0730 - 0745	105	77	15	23	42	5	6	65	2	5	14	23	**382**
0745 - 0800	130	83	21	21	55	7	8	68	7	5	15	28	**448**
0800 - 0815	110	71	7	27	47	8	6	72	2	5	19	25	**399**
0815 - 0830	166	113	10	23	64	14	8	77	4	8	25	33	**545**
0830 - 0845	133	91	20	27	68	14	14	96	6	4	20	38	**531**
0845 - 0900	136	91	18	18	52	17	10	87	3	11	21	41	**505**
Period End	**959**	**673**	**117**	**190**	**392**	**72**	**58**	**577**	**26**	**43**	**142**	**225**	**3474**

Lights

Peak Time	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	414	307	62	95	161	19	20	245	11	15	57	88	**1494**
0715 - 0815	447	310	61	101	171	24	25	266	13	16	62	90	**1586**
0730 - 0830	511	344	53	94	208	34	28	282	15	23	73	109	**1774**
0745 - 0845	539	358	58	98	234	43	36	313	19	22	79	124	**1923**
0800 - 0900	545	366	55	95	231	53	38	332	15	28	85	137	**1980**
PEAK HOUR	**545**	**366**	**55**	**95**	**231**	**53**	**38**	**332**	**15**	**28**	**85**	**137**	**1980**

Heavies

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	0	1	0	0	1	0	0	1	0	0	1	0	**4**
0715 - 0730	1	0	0	0	1	0	0	1	0	1	1	0	**5**
0730 - 0745	0	3	0	0	1	1	0	0	0	0	0	0	**5**
0745 - 0800	0	1	0	1	0	1	0	1	0	0	3	0	**7**
0800 - 0815	0	1	0	0	1	0	0	1	0	0	0	0	**3**
0815 - 0830	0	0	0	0	1	0	0	0	0	1	2	0	**4**
0830 - 0845	0	1	0	0	1	1	0	1	0	0	0	0	**4**
0845 - 0900	0	1	0	0	1	0	1	1	1	0	0	0	**5**
Period End	**1**	**8**	**0**	**1**	**7**	**3**	**1**	**6**	**1**	**2**	**7**	**0**	**37**

Heavies

Peak Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	1	5	0	1	3	2	0	3	0	1	5	0	**21**
0715 - 0815	1	5	0	1	3	2	0	3	0	1	4	0	**20**
0730 - 0830	0	5	0	1	3	2	0	2	0	1	5	0	**19**
0745 - 0845	0	3	0	1	3	2	0	3	0	1	5	0	**18**
0800 - 0900	0	3	0	0	4	1	1	3	1	1	2	0	**16**
PEAK HOUR	**0**	**3**	**0**	**0**	**4**	**1**	**1**	**3**	**1**	**1**	**2**	**0**	**16**

Combined

Time Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0715	77	69	8	21	38	3	1	52	0	4	15	23	**311**
0715 - 0730	103	79	18	30	28	4	5	62	2	2	15	14	**362**
0730 - 0745	105	80	15	23	43	6	6	65	2	5	14	23	**387**
0745 - 0800	130	84	21	22	55	8	8	69	7	5	18	28	**455**
0800 - 0815	110	72	7	27	48	8	6	73	2	5	19	25	**402**
0815 - 0830	166	113	10	23	65	14	8	77	4	9	27	33	**549**
0830 - 0845	133	92	20	27	69	15	14	97	6	4	20	38	**535**
0845 - 0900	136	92	18	18	53	17	11	88	4	11	21	41	**510**
Period End	**960**	**681**	**117**	**191**	**399**	**75**	**59**	**583**	**27**	**45**	**149**	**225**	**3511**

Combined

Peak Per	NORTH Lancaster St L	T	R	WEST Kildare Rd L	T	R	SOUTH Lancaster St L	T	R	EAST Kildare Rd L	T	R	TOT
0700 - 0800	415	312	62	96	164	21	20	248	11	16	62	88	**1515**
0715 - 0815	448	315	61	102	174	26	25	269	13	17	66	90	**1606**
0730 - 0830	511	349	53	95	211	36	28	284	15	24	78	109	**1793**
0745 - 0845	539	361	58	99	237	45	36	316	19	23	84	124	**1941**
0800 - 0900	545	369	55	95	235	54	39	335	16	29	87	137	**1996**
PEAK HOUR	**545**	**369**	**55**	**95**	**235**	**54**	**39**	**335**	**16**	**29**	**87**	**137**	**1996**

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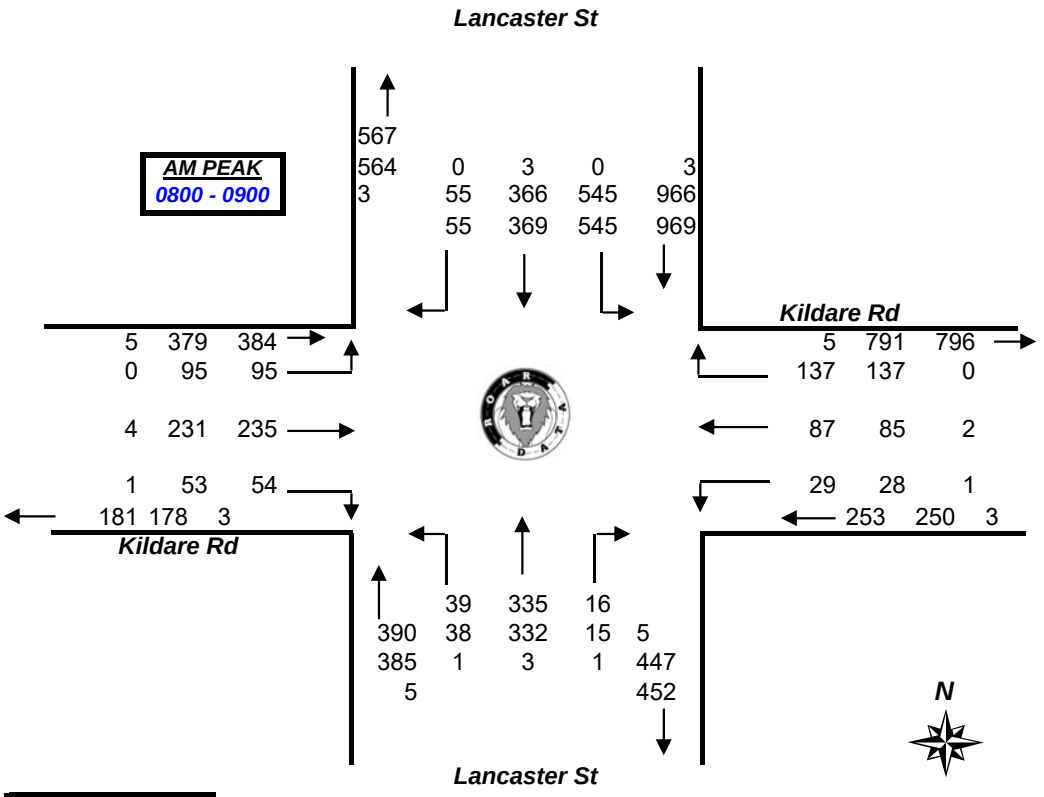
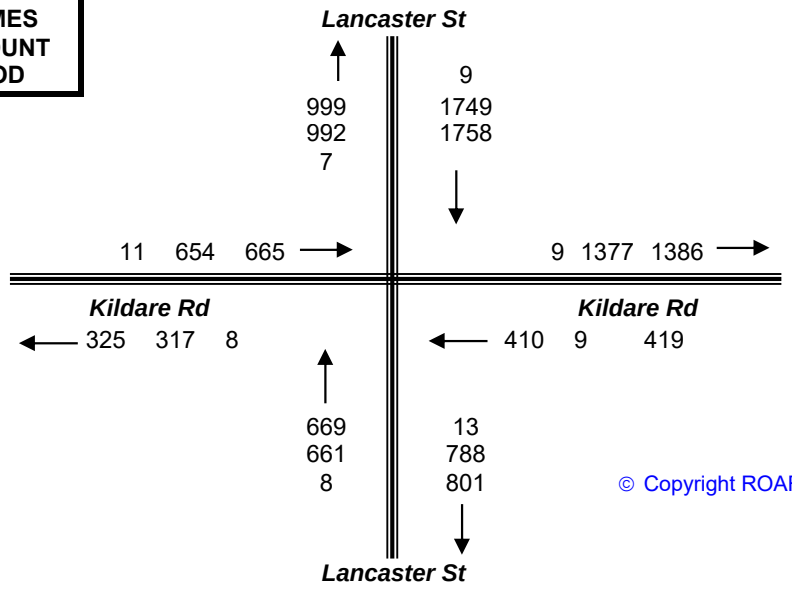
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017



Peds

Time Per	NORTH Lancaster St UNCLASSIFIED	WEST Kildare Rd UNCLASSIFIED	SOUTH Lancaster St UNCLASSIFIED	EAST Kildare Rd UNCLASSIFIED	TOT
0700 - 0715	2	1	2	0	**5**
0715 - 0730	0	0	2	0	**2**
0730 - 0745	1	0	0	0	**1**
0745 - 0800	1	2	2	0	**5**
0800 - 0815	6	1	0	4	**11**
0815 - 0830	2	8	7	3	**20**
0830 - 0845	1	5	2	3	**11**
0845 - 0900	7	7	17	26	**57**
Period End	**20**	**24**	**32**	**36**	**112**

TOTAL VOLUMES FOR COUNT PERIOD



Peds

Peak Per	NORTH Lancaster St UNCLASSIFIED	WEST Kildare Rd UNCLASSIFIED	SOUTH Lancaster St UNCLASSIFIED	EAST Kildare Rd UNCLASSIFIED	TOT
0700 - 0800	4	3	6	0	**13**
0715 - 0815	8	3	4	4	**19**
0730 - 0830	10	11	9	7	**37**
0745 - 0845	10	16	11	10	**47**
0800 - 0900	16	21	26	36	**99**

PEAK HR	16	21	26	36	99

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Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	55	82	28	20	46	6	14	101	5	6	45	69	**477**
1515 - 1530	43	69	25	17	29	3	11	107	5	7	39	68	**423**
1530 - 1545	69	77	20	34	37	14	14	104	7	5	50	77	**508**
1545 - 1600	49	63	25	35	32	3	7	108	5	7	37	65	**436**
1600 - 1615	75	77	30	20	45	7	8	123	5	14	41	62	**507**
1615 - 1630	62	79	20	37	27	10	15	108	3	14	46	69	**490**
1630 - 1645	53	71	20	27	32	7	12	134	5	14	39	71	**485**
1645 - 1700	45	73	24	26	25	8	15	160	3	4	46	89	**518**
1700 - 1715	57	89	20	32	32	9	11	172	5	5	61	87	**580**
1715 - 1730	50	88	23	32	32	5	11	172	3	15	62	91	**584**
1730 - 1745	42	84	19	29	27	3	8	168	3	7	49	90	**529**
1745 - 1800	48	68	25	23	30	7	14	143	5	11	50	86	**510**
Period End	**648**	**920**	**279**	**332**	**394**	**82**	**140**	**1600**	**54**	**109**	**565**	**924**	**6047**

Lights

Peak Time	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	216	291	98	106	144	26	46	420	22	25	171	279	**1844**
1515 - 1615	236	286	100	106	143	27	40	442	22	33	167	272	**1874**
1530 - 1630	255	296	95	126	141	34	44	443	20	40	174	273	**1941**
1545 - 1645	239	290	95	119	136	27	42	473	18	49	163	267	**1918**
1600 - 1700	235	300	94	110	129	32	50	525	16	46	172	291	**2000**
1615 - 1715	217	312	84	122	116	34	53	574	16	37	192	316	**2073**
1630 - 1730	205	321	87	117	121	29	49	638	16	38	208	338	**2167**
1645 - 1745	194	334	86	119	116	25	45	672	14	31	218	357	**2211**
1700 - 1800	197	329	87	116	121	24	44	655	16	38	222	354	**2203**
PEAK HOUR	**194**	**334**	**86**	**119**	**116**	**25**	**45**	**672**	**14**	**31**	**218**	**357**	**2211**

Heavies

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	0	0	0	0	1	0	0	1	1	1	1	0	**5**
1515 - 1530	0	1	0	0	1	0	0	0	0	1	0	0	**3**
1530 - 1545	0	1	0	0	0	0	0	1	0	0	1	0	**3**
1545 - 1600	0	0	0	0	1	0	0	0	0	0	1	0	**2**
1600 - 1615	0	1	0	0	0	1	0	0	0	0	2	0	**4**
1615 - 1630	0	0	0	0	1	0	0	3	0	0	1	0	**5**
1630 - 1645	0	1	0	0	1	3	0	0	0	0	1	0	**6**
1645 - 1700	1	1	0	0	1	0	0	1	0	0	1	0	**5**
1700 - 1715	2	2	0	0	1	0	0	0	0	0	0	0	**5**
1715 - 1730	0	1	0	0	1	1	0	2	0	0	2	0	**7**
1730 - 1745	0	0	0	0	1	0	0	0	0	0	0	0	**1**
1745 - 1800	0	0	0	0	0	0	0	1	0	0	1	0	**2**
Period End	**3**	**8**	**0**	**0**	**9**	**5**	**0**	**9**	**1**	**2**	**11**	**0**	**48**

Heavies

Peak Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	0	2	0	0	3	0	0	2	1	2	3	0	**13**
1515 - 1615	0	3	0	0	2	1	0	1	0	1	4	0	**12**
1530 - 1630	0	2	0	0	2	1	0	4	0	0	5	0	**14**
1545 - 1645	0	2	0	0	3	4	0	3	0	0	5	0	**17**
1600 - 1700	1	3	0	0	3	4	0	4	0	0	5	0	**20**
1615 - 1715	3	4	0	0	4	3	0	4	0	0	3	0	**21**
1630 - 1730	3	5	0	0	4	4	0	3	0	0	4	0	**23**
1645 - 1745	3	4	0	0	4	1	0	3	0	0	3	0	**18**
1700 - 1800	2	3	0	0	3	1	0	3	0	0	3	0	**15**
PEAK HOUR	**3**	**4**	**0**	**0**	**4**	**1**	**0**	**3**	**0**	**0**	**3**	**0**	**18**

Combined

Time Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	55	82	28	20	47	6	14	102	6	7	46	69	**482**
1515 - 1530	43	70	25	17	30	3	11	107	5	8	39	68	**426**
1530 - 1545	69	78	20	34	37	14	14	105	7	5	51	77	**511**
1545 - 1600	49	63	25	35	33	3	7	108	5	7	38	65	**438**
1600 - 1615	75	78	30	20	45	8	8	123	5	14	43	62	**511**
1615 - 1630	62	79	20	37	28	10	15	111	3	14	47	69	**495**
1630 - 1645	53	72	20	27	33	10	12	134	5	14	40	71	**491**
1645 - 1700	46	74	24	26	26	8	15	161	3	4	47	89	**523**
1700 - 1715	59	91	20	32	33	9	11	172	5	5	61	87	**585**
1715 - 1730	50	89	23	32	33	6	11	174	3	15	64	91	**591**
1730 - 1745	42	84	19	29	28	3	8	168	3	7	49	90	**530**
1745 - 1800	48	68	25	23	30	7	14	144	5	11	51	86	**512**
Period End	**651**	**928**	**279**	**332**	**403**	**87**	**140**	**1609**	**55**	**111**	**576**	**924**	**6095**

Combined

Peak Per	NORTH Lancaster St			WEST Kildare Rd			SOUTH Lancaster St			EAST Kildare Rd			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	216	293	98	106	147	26	46	422	23	27	174	279	**1857**
1515 - 1615	236	289	100	106	145	28	40	443	22	34	171	272	**1886**
1530 - 1630	255	298	95	126	143	35	44	447	20	40	179	273	**1955**
1545 - 1645	239	292	95	119	139	31	42	476	18	49	168	267	**1935**
1600 - 1700	236	303	94	110	132	36	50	529	16	46	177	291	**2020**
1615 - 1715	220	316	84	122	120	37	53	578	16	37	195	316	**2094**
1630 - 1730	208	326	87	117	125	33	49	641	16	38	212	338	**2190**
1645 - 1745	197	338	86	119	120	26	45	675	14	31	221	357	**2229**
1700 - 1800	199	332	87	116	124	25	44	658	16	38	225	354	**2218**
PEAK HOUR	**197**	**338**	**86**	**119**	**120**	**26**	**45**	**675**	**14**	**31**	**221**	**357**	**2229**

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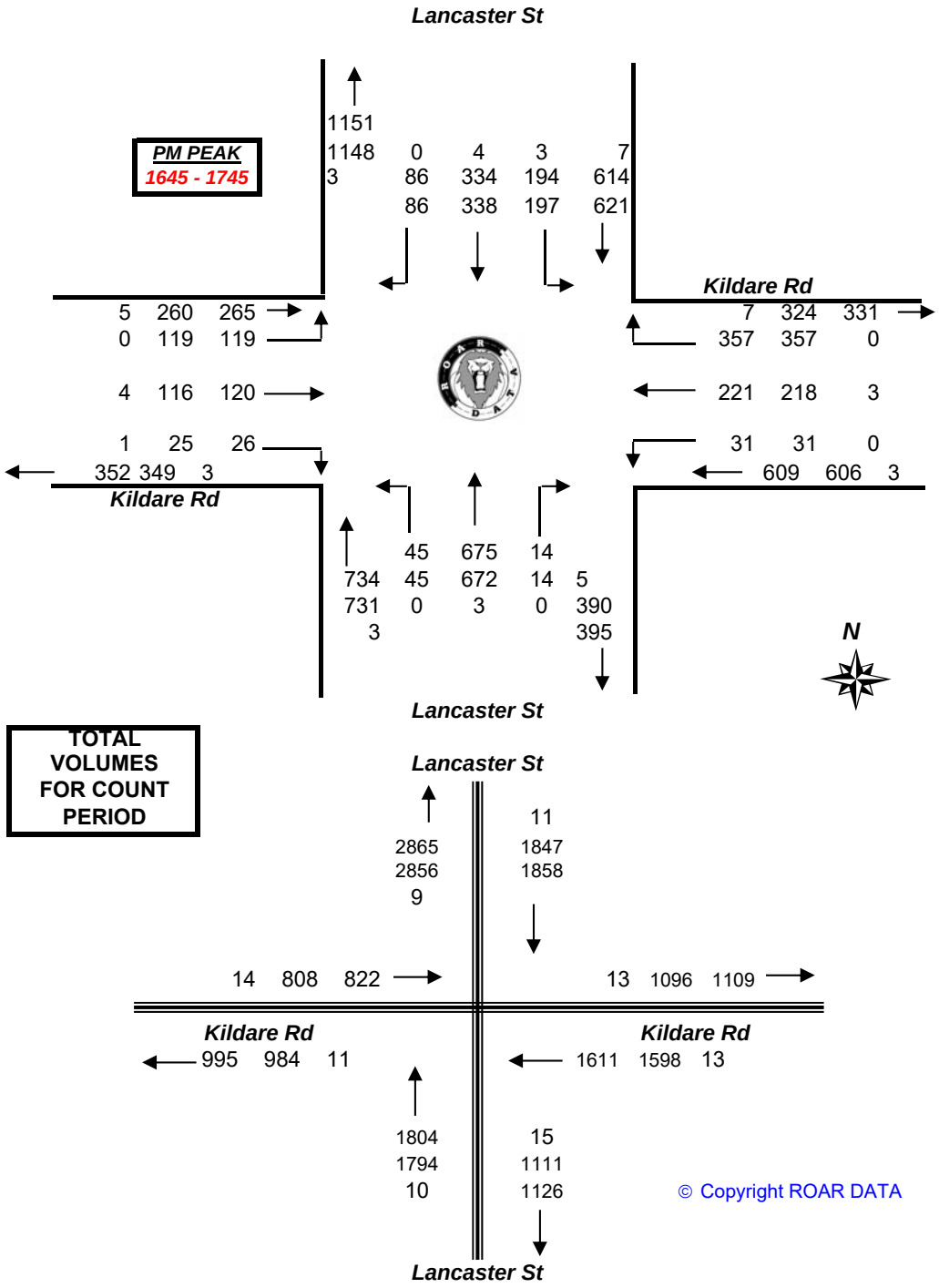
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Peds	NORTH *Lancaster St*	WEST *Kildare Rd*	SOUTH *Lancaster St*	EAST *Kildare Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1515	6	5	48	3	**62**
1515 - 1530	2	2	1	1	**6**
1530 - 1545	1	1	1	0	**3**
1545 - 1600	1	1	4	0	**6**
1600 - 1615	0	0	5	0	**5**
1615 - 1630	3	5	1	0	**9**
1630 - 1645	2	7	5	1	**15**
1645 - 1700	4	1	1	0	**6**
1700 - 1715	5	0	3	0	**8**
1715 - 1730	2	2	2	7	**13**
1730 - 1745	2	1	3	3	**9**
1745 - 1800	3	0	0	1	**4**
Period End	**31**	**25**	**74**	**16**	**146**

Peds	NORTH *Lancaster St*	WEST *Kildare Rd*	SOUTH *Lancaster St*	EAST *Kildare Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1600	10	9	54	4	**77**
1515 - 1615	4	4	11	1	**20**
1530 - 1630	5	7	11	0	**23**
1545 - 1645	6	13	15	1	**35**
1600 - 1700	9	13	12	1	**35**
1615 - 1715	14	13	10	1	**38**
1630 - 1730	13	10	11	8	**42**
1645 - 1745	13	4	9	10	**36**
1700 - 1800	12	3	8	11	**34**
PEAK HR	**13**	**4**	**9**	**10**	**36**



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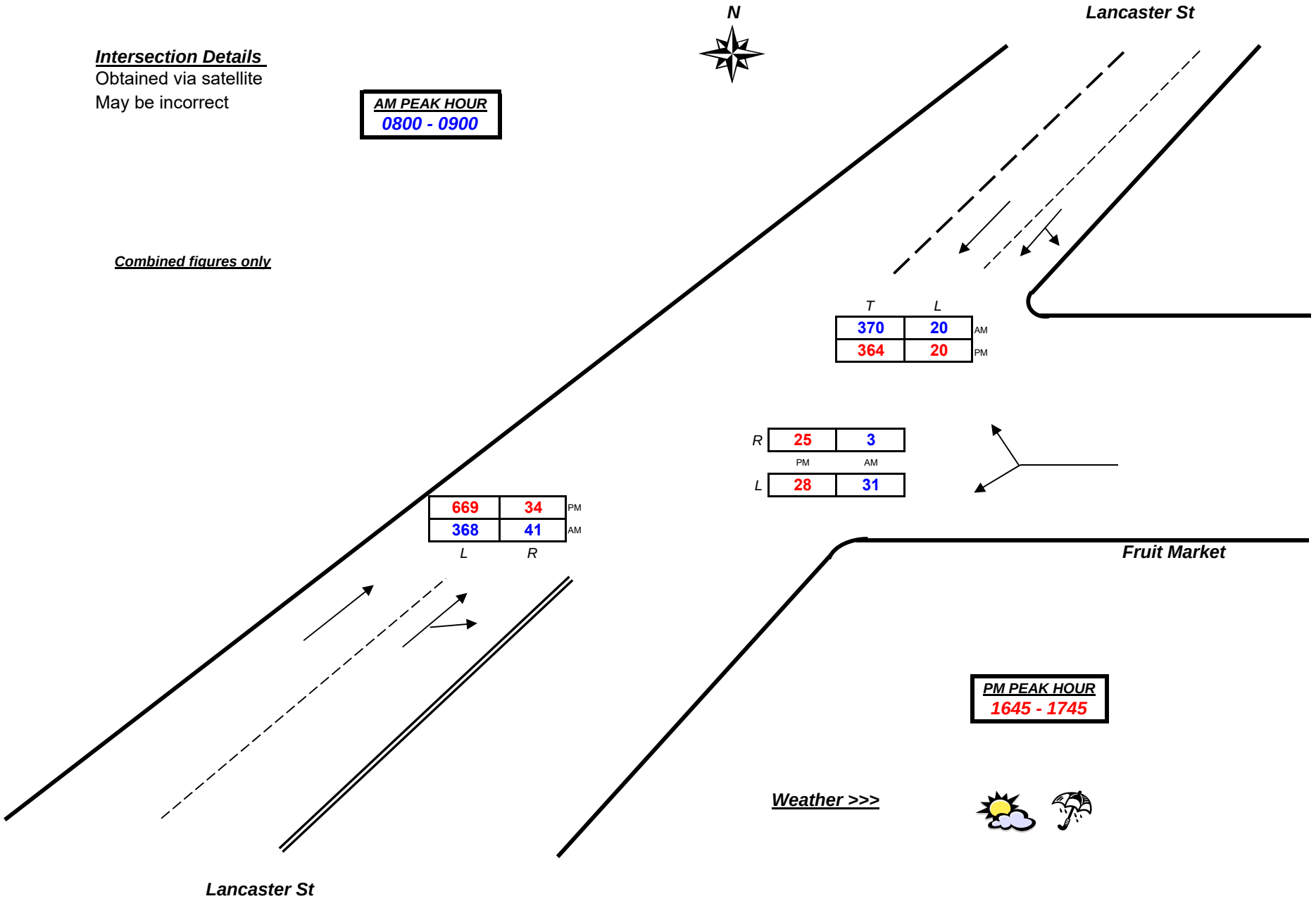
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



PM PEAK HOUR
1645 - 1745

Weather >>>

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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PEDS

Time Per	NORTH Lancaster St	EAST Market	SOUTH Lancaster St	TOT
0700 - 0715	0	1	0	**1**
0715 - 0730	0	0	0	**0**
0730 - 0745	1	1	0	**2**
0745 - 0800	0	2	0	**2**
0800 - 0815	0	3	0	**3**
0815 - 0830	0	8	0	**8**
0830 - 0845	1	18	2	**21**
0845 - 0900	0	33	0	**33**
Per End	**2**	**66**	**2**	**70**

PEDS

Peak Per	NORTH Lancaster St	EAST Market	SOUTH Lancaster St	TOT
0700 - 0800	1	4	0	**5**
0715 - 0815	1	6	0	**7**
0730 - 0830	1	14	0	**15**
0745 - 0845	1	31	2	**34**
0800 - 0900	1	62	2	**65**
PEAK HR	**1**	**62**	**2**	**65**

Lights

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	66	0	1	1	2	54	**124**
0715 - 0730	82	0	0	0	0	63	**145**
0730 - 0745	93	0	0	0	0	78	**171**
0745 - 0800	120	1	2	2	2	98	**225**
0800 - 0815	50	3	0	2	0	68	**123**
0815 - 0830	104	1	0	2	5	78	**190**
0830 - 0845	103	7	0	12	14	108	**244**
0845 - 0900	108	9	3	14	22	109	**265**
Per End	**726**	**21**	**6**	**33**	**45**	**656**	**1487**

Heavies

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	1	0	0	0	0	1	**2**
0715 - 0730	0	1	0	0	0	1	**2**
0730 - 0745	4	0	0	0	0	0	**4**
0745 - 0800	0	1	1	0	0	0	**2**
0800 - 0815	0	0	0	1	0	1	**2**
0815 - 0830	2	0	0	0	0	0	**2**
0830 - 0845	1	0	0	0	0	1	**2**
0845 - 0900	2	0	0	0	0	3	**5**
Per End	**10**	**2**	**1**	**1**	**0**	**7**	**21**

Combined

Time Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0715	67	0	1	1	2	55	**126**
0715 - 0730	82	1	0	0	0	64	**147**
0730 - 0745	97	0	0	0	0	78	**175**
0745 - 0800	120	2	3	2	2	98	**227**
0800 - 0815	50	3	0	3	0	69	**125**
0815 - 0830	106	1	0	2	5	78	**192**
0830 - 0845	104	7	0	12	14	109	**246**
0845 - 0900	110	9	3	14	22	112	**270**
Per End	**736**	**23**	**7**	**34**	**45**	**663**	**1508**

Lights

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	361	1	3	3	4	293	**665**
0715 - 0815	345	4	2	4	2	307	**664**
0730 - 0830	367	5	2	6	7	322	**709**
0745 - 0845	377	12	2	18	21	352	**782**
0800 - 0900	365	20	3	30	41	363	**822**
PEAK HR	**365**	**20**	**3**	**30**	**41**	**363**	**822**

Heavies

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	5	2	1	0	0	2	**10**
0715 - 0815	4	2	1	1	0	2	**10**
0730 - 0830	6	1	1	1	0	1	**10**
0745 - 0845	3	1	1	1	0	2	**8**
0800 - 0900	5	0	0	1	0	5	**11**
PEAK HR	**5**	**0**	**0**	**1**	**0**	**5**	**11**

Combined

Peak Per	NORTH Lancaster St T	NORTH Lancaster St L	EAST Market R	EAST Market L	SOUTH Lancaster St R	SOUTH Lancaster St T	TOT
0700 - 0800	366	3	4	3	4	295	**675**
0715 - 0815	349	6	3	5	2	309	**674**
0730 - 0830	373	6	3	7	7	323	**719**
0745 - 0845	380	13	3	19	21	354	**790**
0800 - 0900	370	20	3	31	41	368	**833**
PEAK HR	**370**	**20**	**3**	**31**	**41**	**368**	**833**

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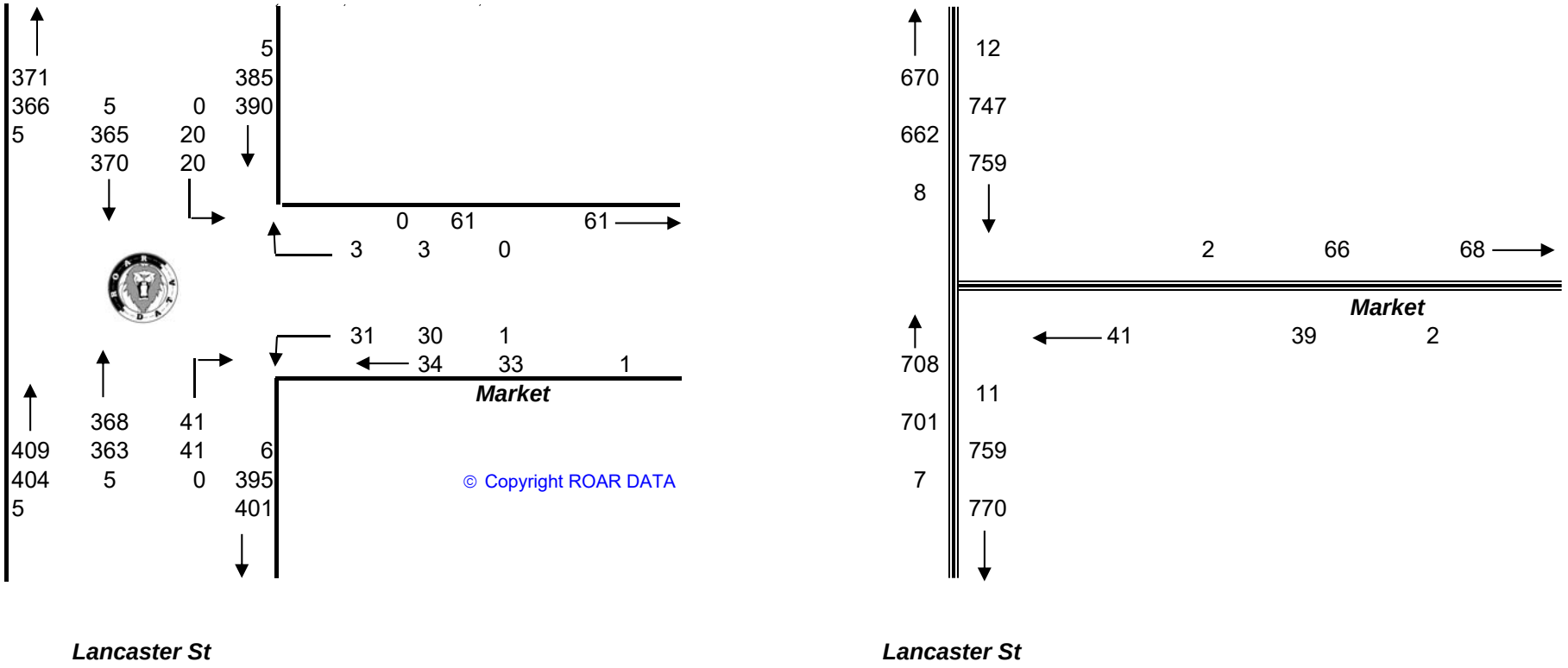
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

AM PEAK
0800 - 0900

TOTAL VOLUMES FOR COUNT PERIOD

N



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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PEDS	NORTH	EAST	SOUTH	
Time Per	*Lancaster St*	*Market*	*Lancaster St*	TOT
1500 - 1515	2	90	0	**92**
1515 - 1530	0	5	0	**5**
1530 - 1545	0	0	0	**0**
1545 - 1600	0	2	0	**2**
1600 - 1615	0	0	0	**0**
1615 - 1630	0	0	0	**0**
1630 - 1645	0	0	0	**0**
1645 - 1700	0	0	0	**0**
1700 - 1715	0	1	0	**1**
1715 - 1730	1	1	0	**2**
1730 - 1745	0	1	0	**1**
1745 - 1800	0	1	0	**1**
Per End	**3**	**101**	**0**	104

PEDS	NORTH	EAST	SOUTH	
Peak Per	*Lancaster St*	*Market*	*Lancaster St*	TOT
1500 - 1600	2	97	0	**99**
1515 - 1615	0	7	0	**7**
1530 - 1630	0	2	0	**2**
1545 - 1645	0	2	0	**2**
1600 - 1700	0	0	0	**0**
1615 - 1715	0	1	0	**1**
1630 - 1730	1	2	0	**3**
1645 - 1745	1	3	0	**4**
1700 - 1800	1	4	0	**5**
PEAK HR	**1**	**3**	**0**	**4**

Lights	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	99	10	15	33	13	98	**268**
1515 - 1530	87	4	7	8	7	128	**241**
1530 - 1545	84	3	12	4	15	104	**222**
1545 - 1600	76	9	11	10	20	127	**253**
1600 - 1615	67	9	8	15	13	115	**227**
1615 - 1630	105	8	14	8	10	134	**279**
1630 - 1645	71	5	7	10	7	147	**247**
1645 - 1700	85	9	10	7	5	157	**273**
1700 - 1715	81	2	2	10	9	166	**270**
1715 - 1730	97	3	4	6	8	169	**287**
1730 - 1745	95	6	9	5	12	174	**301**
1745 - 1800	77	3	8	11	3	156	**258**
Per End	**1024**	**71**	**107**	**127**	**122**	**1675**	**3126**

Heavies	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	0	0	0	0	0	1	**1**
1515 - 1530	3	0	0	0	0	0	**3**
1530 - 1545	1	0	0	0	0	0	**1**
1545 - 1600	0	0	0	0	0	1	**1**
1600 - 1615	1	0	0	0	0	0	**1**
1615 - 1630	0	0	0	0	0	3	**3**
1630 - 1645	4	0	0	0	0	0	**4**
1645 - 1700	1	0	0	0	0	1	**2**
1700 - 1715	3	0	0	0	0	0	**3**
1715 - 1730	2	0	0	0	0	2	**4**
1730 - 1745	0	0	0	0	0	0	**0**
1745 - 1800	0	0	0	0	0	1	**1**
Per End	**15**	**0**	**0**	**0**	**0**	**9**	**24**

Combined	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	99	10	15	33	13	99	**269**
1515 - 1530	90	4	7	8	7	128	**244**
1530 - 1545	85	3	12	4	15	104	**223**
1545 - 1600	76	9	11	10	20	128	**254**
1600 - 1615	68	9	8	15	13	115	**228**
1615 - 1630	105	8	14	8	10	137	**282**
1630 - 1645	75	5	7	10	7	147	**251**
1645 - 1700	86	9	10	7	5	158	**275**
1700 - 1715	84	2	2	10	9	166	**273**
1715 - 1730	99	3	4	6	8	171	**291**
1730 - 1745	95	6	9	5	12	174	**301**
1745 - 1800	77	3	8	11	3	157	**259**
Per End	**1039**	**71**	**107**	**127**	**122**	**1684**	**3150**

Lights	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	346	26	45	55	55	457	**984**
1515 - 1615	314	25	38	37	55	474	**943**
1530 - 1630	332	29	45	37	58	480	**981**
1545 - 1645	319	31	40	43	50	523	**1006**
1600 - 1700	328	31	39	40	35	553	**1026**
1615 - 1715	342	24	33	35	31	604	**1069**
1630 - 1730	334	19	23	33	29	639	**1077**
1645 - 1745	358	20	25	28	34	666	**1131**
1700 - 1800	350	14	23	32	32	665	**1116**
PEAK HR	**358**	**20**	**25**	**28**	**34**	**666**	**1131**

Heavies	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	4	0	0	0	0	2	**6**
1515 - 1615	5	0	0	0	0	1	**6**
1530 - 1630	2	0	0	0	0	4	**6**
1545 - 1645	5	0	0	0	0	4	**9**
1600 - 1700	6	0	0	0	0	4	**10**
1615 - 1715	8	0	0	0	0	4	**12**
1630 - 1730	10	0	0	0	0	3	**13**
1645 - 1745	6	0	0	0	0	3	**9**
1700 - 1800	5	0	0	0	0	3	**8**
PEAK HR	**6**	**0**	**0**	**0**	**0**	**3**	**9**

Combined	NORTH		EAST		SOUTH		
	Lancaster St		*Market*		*Lancaster St*		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	350	26	45	55	55	459	**990**
1515 - 1615	319	25	38	37	55	475	**949**
1530 - 1630	334	29	45	37	58	484	**987**
1545 - 1645	324	31	40	43	50	527	**1015**
1600 - 1700	334	31	39	40	35	557	**1036**
1615 - 1715	350	24	33	35	31	608	**1081**
1630 - 1730	344	19	23	33	29	642	**1090**
1645 - 1745	364	20	25	28	34	669	**1140**
1700 - 1800	355	14	23	32	32	668	**1124**
PEAK HR	**364**	**20**	**25**	**28**	**34**	**669**	**1140**

R.O.A.R. DATA
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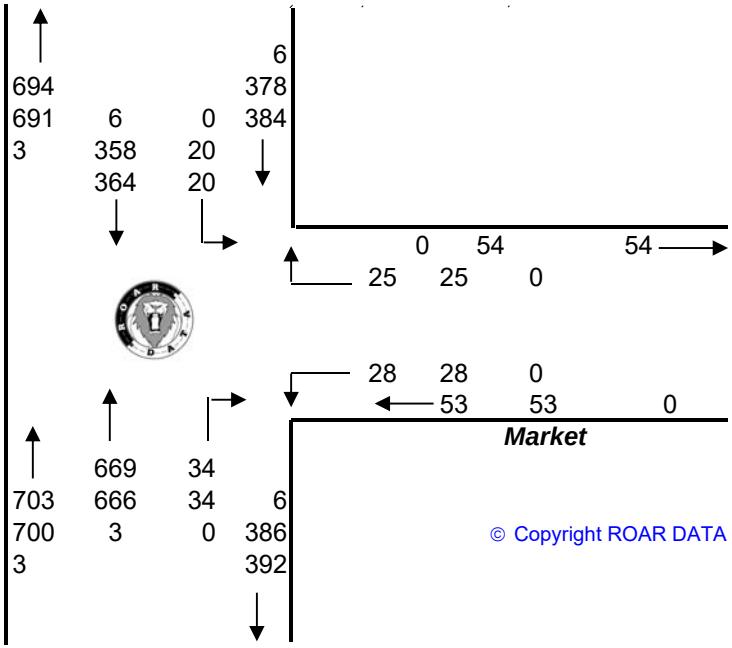
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

PM PEAK
1645 - 1745

TOTAL VOLUMES FOR COUNT PERIOD

N



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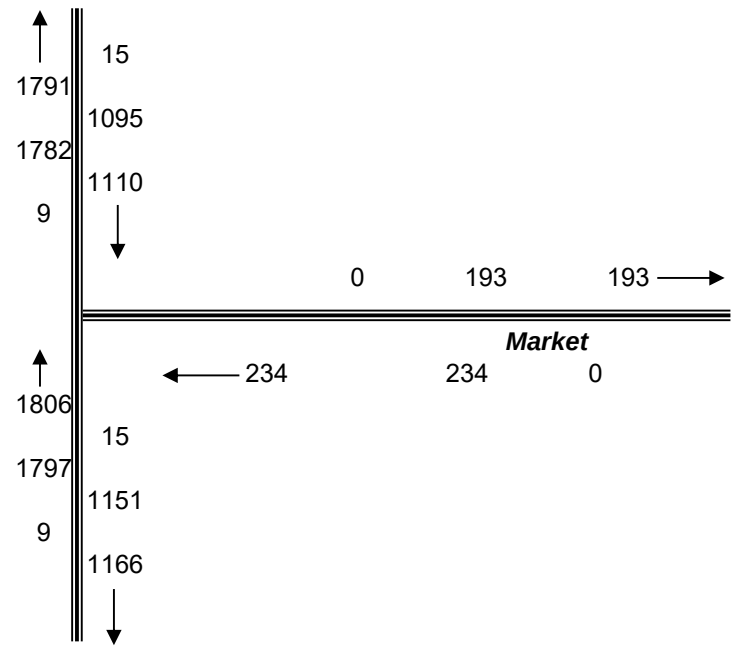


R.O.A.R. DATA

Reliable, Original & Authentic Results

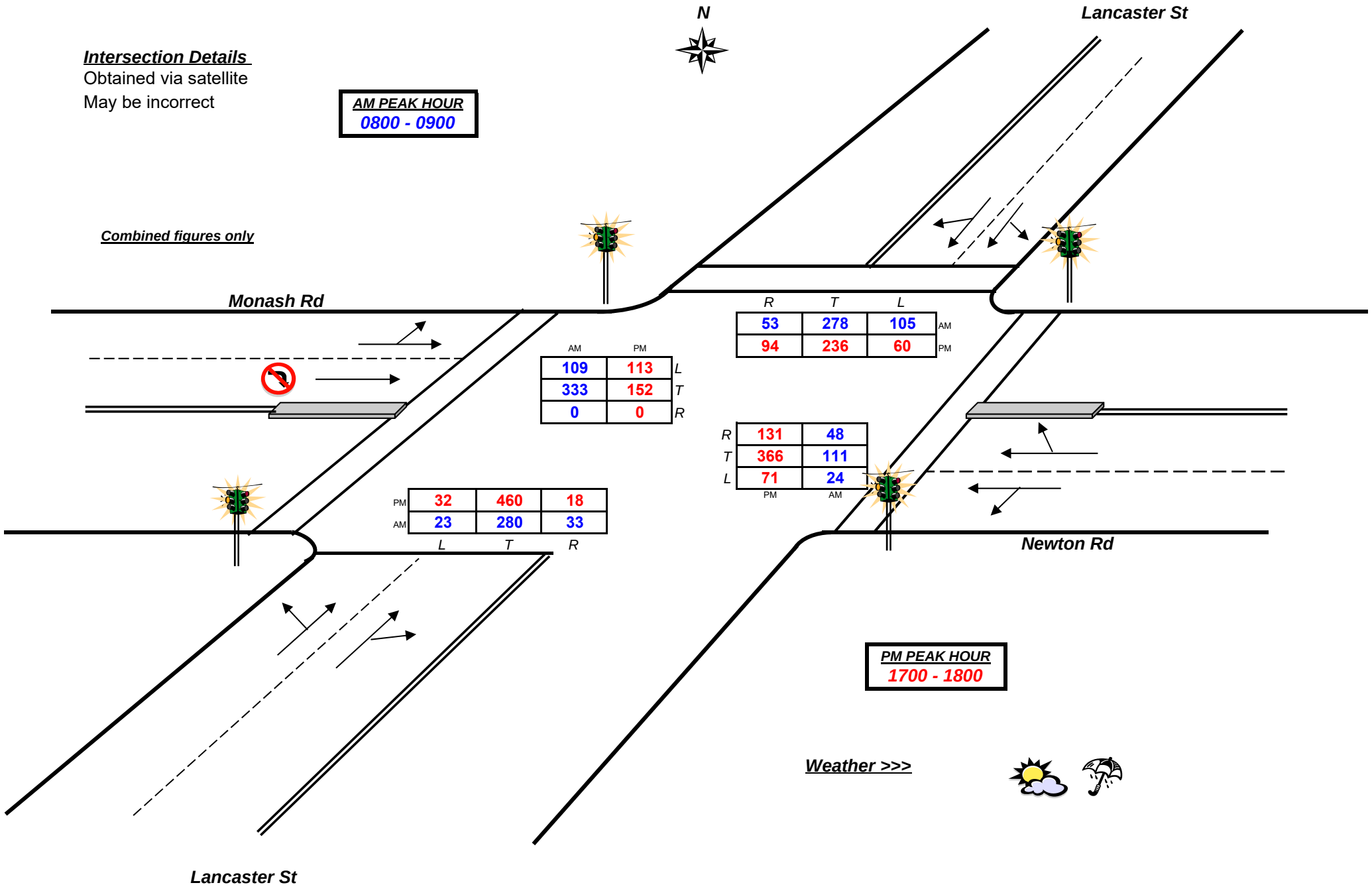
Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0800 - 0900

Combined figures only



	AM	PM
L	109	113
T	333	152
R	0	0

	R	T	L	
AM	53	278	105	AM
PM	94	236	60	PM

	PM	AM
R	131	48
T	366	111
L	71	24

	L	T	R
PM	32	460	18
AM	23	280	33

PM PEAK HOUR
1700 - 1800

Weather >>>

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	11	53	5	16	44	1	2	36	5	3	20	8	**204**
0715 - 0730	7	73	16	18	67	0	5	51	8	10	20	1	**276**
0730 - 0745	7	62	13	21	68	0	4	51	1	5	17	1	**250**
0745 - 0800	15	73	11	22	88	0	4	53	6	5	25	7	**309**
0800 - 0815	17	61	6	22	73	0	1	59	1	2	22	7	**271**
0815 - 0830	22	73	13	18	80	0	5	67	11	3	20	8	**320**
0830 - 0845	33	77	17	31	94	0	6	81	5	7	35	18	**404**
0845 - 0900	31	65	15	37	85	0	11	72	13	10	32	12	**383**
Period End	**143**	**537**	**96**	**185**	**599**	**1**	**38**	**470**	**50**	**45**	**191**	**62**	**2417**

Lights

Peak Time	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	40	261	45	77	267	1	15	191	20	23	82	17	**1039**
0715 - 0815	46	269	46	83	296	0	14	214	16	22	84	16	**1106**
0730 - 0830	61	269	43	83	309	0	14	230	19	15	84	23	**1150**
0745 - 0845	87	284	47	93	335	0	16	260	23	17	102	40	**1304**
0800 - 0900	103	276	51	108	332	0	23	279	30	22	109	45	**1378**
PEAK HOUR	**103**	**276**	**51**	**108**	**332**	**0**	**23**	**279**	**30**	**22**	**109**	**45**	**1378**

Heavies

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	1	0	0	0	0	0	0	0	1	0	0	1	**3**
0715 - 0730	0	0	0	0	0	0	0	0	1	1	1	1	**4**
0730 - 0745	2	2	0	0	1	0	0	0	1	0	0	0	**6**
0745 - 0800	0	0	0	0	0	0	0	0	1	0	1	0	**2**
0800 - 0815	1	1	0	0	1	0	0	0	1	1	0	1	**6**
0815 - 0830	0	0	1	0	0	0	0	0	1	0	0	0	**2**
0830 - 0845	1	0	1	0	0	0	0	0	1	0	1	1	**5**
0845 - 0900	0	1	0	1	0	0	0	1	0	1	1	1	**6**
Period End	**5**	**4**	**2**	**1**	**2**	**0**	**0**	**1**	**7**	**3**	**4**	**5**	**34**

Heavies

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	3	2	0	0	1	0	0	0	4	1	2	2	**15**
0715 - 0815	3	3	0	0	2	0	0	0	4	2	2	2	**18**
0730 - 0830	3	3	1	0	2	0	0	0	4	1	1	1	**16**
0745 - 0845	2	1	2	0	1	0	0	0	4	1	2	2	**15**
0800 - 0900	2	2	2	1	1	0	0	1	3	2	2	3	**19**
PEAK HOUR	**2**	**2**	**2**	**1**	**1**	**0**	**0**	**1**	**3**	**2**	**2**	**3**	**19**

Combined

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0715	12	53	5	16	44	1	2	36	6	3	20	9	**207**
0715 - 0730	7	73	16	18	67	0	5	51	9	11	21	2	**280**
0730 - 0745	9	64	13	21	69	0	4	51	2	5	17	1	**256**
0745 - 0800	15	73	11	22	88	0	4	53	7	5	26	7	**311**
0800 - 0815	18	62	6	22	74	0	1	59	2	3	22	8	**277**
0815 - 0830	22	73	14	18	80	0	5	67	12	3	20	8	**322**
0830 - 0845	34	77	18	31	94	0	6	81	6	7	36	19	**409**
0845 - 0900	31	66	15	38	85	0	11	73	13	11	33	13	**389**
Period End	**148**	**541**	**98**	**186**	**601**	**1**	**38**	**471**	**57**	**48**	**195**	**67**	**2451**

Combined

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0700 - 0800	43	263	45	77	268	1	15	191	24	24	84	19	**1054**
0715 - 0815	49	272	46	83	298	0	14	214	20	24	86	18	**1124**
0730 - 0830	64	272	44	83	311	0	14	230	23	16	85	24	**1166**
0745 - 0845	89	285	49	93	336	0	16	260	27	18	104	42	**1319**
0800 - 0900	105	278	53	109	333	0	23	280	33	24	111	48	**1397**
PEAK HOUR	**105**	**278**	**53**	**109**	**333**	**0**	**23**	**280**	**33**	**24**	**111**	**48**	**1397**

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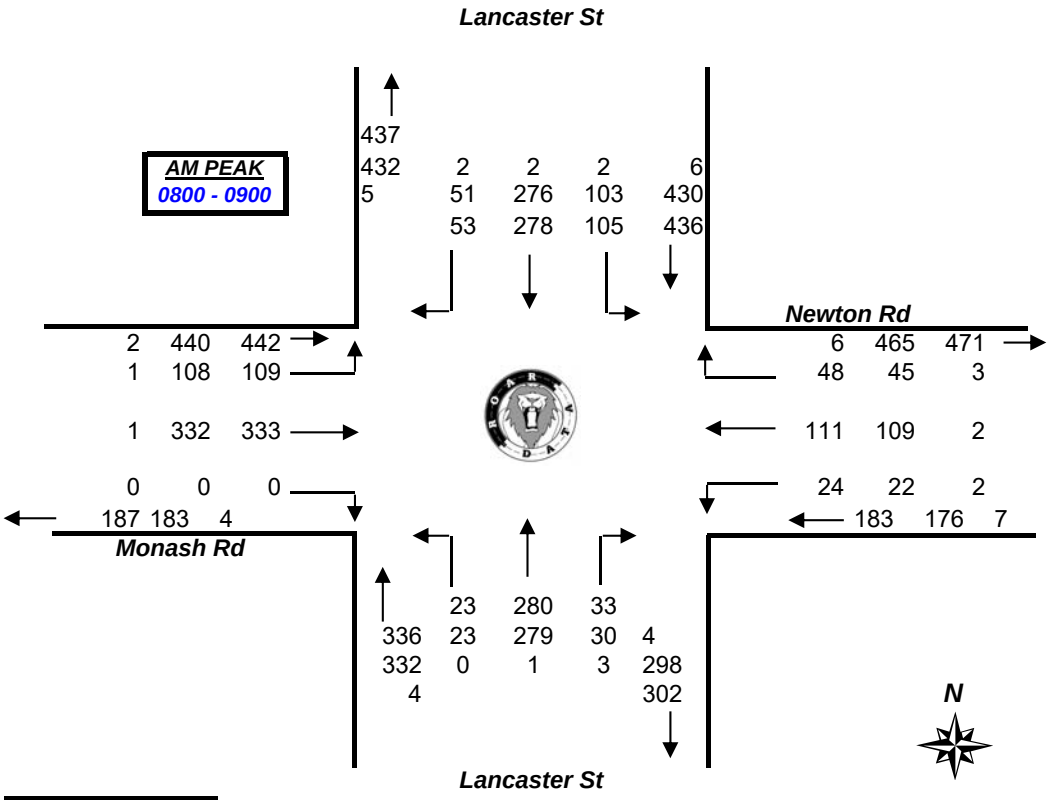
Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

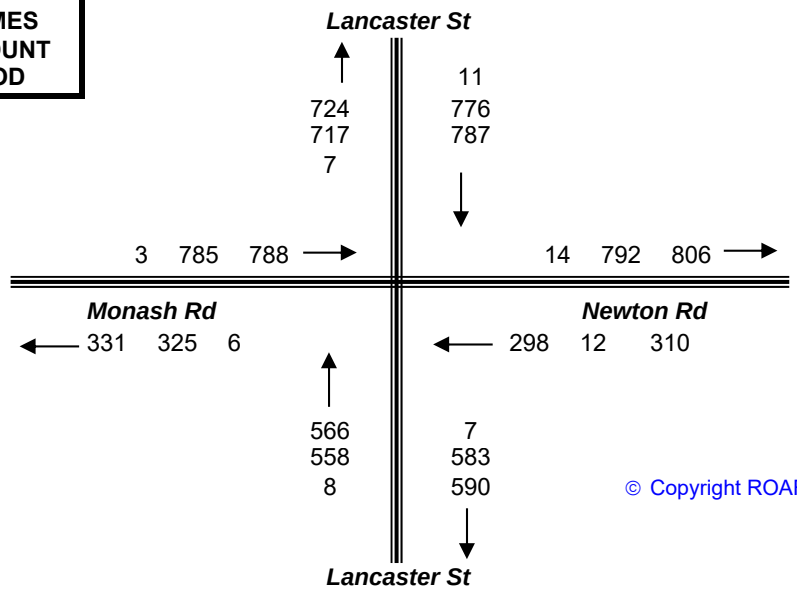
Peds	NORTH	WEST	SOUTH	EAST	
	Lancaster St	*Monash Rd*	*Lancaster St*	*Newton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	2	0	0	0	**2**
0715 - 0730	1	1	0	0	**2**
0730 - 0745	0	3	0	3	**6**
0745 - 0800	0	1	0	1	**2**
0800 - 0815	6	1	0	0	**7**
0815 - 0830	5	1	0	2	**8**
0830 - 0845	8	3	1	1	**13**
0845 - 0900	28	9	0	4	**41**
Period End	**50**	**19**	**1**	**11**	**81**

Peds	NORTH	WEST	SOUTH	EAST	
	Lancaster St	*Monash Rd*	*Lancaster St*	*Newton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	3	5	0	4	**12**
0715 - 0815	7	6	0	4	**17**
0730 - 0830	11	6	0	6	**23**
0745 - 0845	19	6	1	4	**30**
0800 - 0900	47	14	1	7	**69**

PEAK HR	**47**	**14**	**1**	**7**	**69**



TOTAL VOLUMES FOR COUNT PERIOD



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Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Lights

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	32	82	27	14	41	0	7	86	1	11	62	18	**381**
1515 - 1530	5	68	23	22	45	0	13	92	3	15	75	25	**386**
1530 - 1545	12	55	22	20	39	0	12	71	3	13	75	26	**348**
1545 - 1600	6	65	17	22	52	0	10	103	6	13	60	20	**374**
1600 - 1615	6	60	24	17	30	0	10	93	8	16	70	25	**359**
1615 - 1630	11	71	25	28	46	0	9	80	4	9	78	22	**383**
1630 - 1645	11	61	16	27	32	0	6	104	7	17	96	35	**412**
1645 - 1700	8	50	24	18	34	0	6	123	2	14	79	30	**388**
1700 - 1715	14	57	22	29	39	0	11	119	3	15	89	31	**429**
1715 - 1730	13	74	29	34	39	0	8	122	3	19	96	32	**469**
1730 - 1745	18	49	22	27	30	0	8	111	4	13	88	44	**414**
1745 - 1800	12	54	21	22	42	0	5	108	6	20	91	22	**403**
Period End	**148**	**746**	**272**	**280**	**469**	**0**	**105**	**1212**	**50**	**175**	**959**	**330**	**4746**

Lights

Peak Time	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	55	270	89	78	177	0	42	352	13	52	272	89	**1489**
1515 - 1615	29	248	86	81	166	0	45	359	20	57	280	96	**1467**
1530 - 1630	35	251	88	87	167	0	41	347	21	51	283	93	**1464**
1545 - 1645	34	257	82	94	160	0	35	380	25	55	304	102	**1528**
1600 - 1700	36	242	89	90	142	0	31	400	21	56	323	112	**1542**
1615 - 1715	44	239	87	102	151	0	32	426	16	55	342	118	**1612**
1630 - 1730	46	242	91	108	144	0	31	468	15	65	360	128	**1698**
1645 - 1745	53	230	97	108	142	0	33	475	12	61	352	137	**1700**
1700 - 1800	57	234	94	112	150	0	32	460	16	67	364	129	**1715**
PEAK HOUR	**57**	**234**	**94**	**112**	**150**	**0**	**32**	**460**	**16**	**67**	**364**	**129**	**1715**

Heavies

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	0	0	0	0	0	0	0	0	1	0	0	1	**2**
1515 - 1530	1	1	1	0	0	0	0	0	0	0	0	0	**3**
1530 - 1545	1	0	0	0	1	0	0	0	0	1	0	0	**3**
1545 - 1600	0	0	0	0	0	0	0	0	0	0	1	1	**2**
1600 - 1615	1	0	0	0	0	0	0	0	2	0	0	0	**3**
1615 - 1630	0	0	0	0	0	0	0	1	0	2	1	2	**6**
1630 - 1645	1	3	0	0	2	0	0	0	1	0	0	0	**7**
1645 - 1700	1	0	0	0	0	0	0	0	0	2	1	1	**5**
1700 - 1715	2	1	0	0	1	0	0	0	0	1	0	0	**5**
1715 - 1730	1	1	0	1	0	0	0	0	1	1	1	1	**7**
1730 - 1745	0	0	0	0	1	0	0	0	1	1	0	0	**3**
1745 - 1800	0	0	0	0	0	0	0	0	0	1	1	1	**3**
Period End	**8**	**6**	**1**	**1**	**5**	**0**	**0**	**1**	**6**	**9**	**5**	**7**	**49**

Heavies

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	2	1	1	0	1	0	0	0	1	1	1	2	**10**
1515 - 1615	3	1	1	0	1	0	0	0	2	1	1	1	**11**
1530 - 1630	2	0	0	0	1	0	0	1	2	3	2	3	**14**
1545 - 1645	2	3	0	0	2	0	0	1	3	2	2	3	**18**
1600 - 1700	3	3	0	0	2	0	0	1	3	4	2	3	**21**
1615 - 1715	4	4	0	0	3	0	0	1	1	5	2	3	**23**
1630 - 1730	5	5	0	1	3	0	0	0	2	4	2	2	**24**
1645 - 1745	4	2	0	1	2	0	0	0	2	5	2	2	**20**
1700 - 1800	3	2	0	1	2	0	0	0	2	4	2	2	**18**
PEAK HOUR	**3**	**2**	**1**	**2**	**2**	**0**	**0**	**0**	**2**	**4**	**2**	**2**	**18**

Combined

Time Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1515	32	82	27	14	41	0	7	86	2	11	62	19	**383**
1515 - 1530	6	69	24	22	45	0	13	92	3	15	75	25	**389**
1530 - 1545	13	55	22	20	40	0	12	71	3	14	75	26	**351**
1545 - 1600	6	65	17	22	52	0	10	103	6	13	61	21	**376**
1600 - 1615	7	60	24	17	30	0	10	93	10	16	70	25	**362**
1615 - 1630	11	71	25	28	46	0	9	81	4	11	79	24	**389**
1630 - 1645	12	64	16	27	34	0	6	104	8	17	96	35	**419**
1645 - 1700	9	50	24	18	34	0	6	123	2	16	80	31	**393**
1700 - 1715	16	58	22	29	40	0	11	119	3	16	89	31	**434**
1715 - 1730	14	75	29	35	39	0	8	122	4	20	97	33	**476**
1730 - 1745	18	49	22	27	31	0	8	111	5	14	88	44	**417**
1745 - 1800	12	54	21	22	42	0	5	108	6	21	92	23	**406**
Period End	**156**	**752**	**273**	**281**	**474**	**0**	**105**	**1213**	**56**	**184**	**964**	**337**	**4795**

Combined

Peak Per	NORTH Lancaster St			WEST Monash Rd			SOUTH Lancaster St			EAST Newton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1500 - 1600	57	271	90	78	178	0	42	352	14	53	273	91	**1499**
1515 - 1615	32	249	87	81	167	0	45	359	22	58	281	97	**1478**
1530 - 1630	37	251	88	87	168	0	41	348	23	54	285	96	**1478**
1545 - 1645	36	260	82	94	162	0	35	381	28	57	306	105	**1546**
1600 - 1700	39	245	89	90	144	0	31	401	24	60	325	115	**1563**
1615 - 1715	48	243	87	102	154	0	32	427	17	60	344	121	**1635**
1630 - 1730	51	247	91	109	147	0	31	468	17	69	362	130	**1722**
1645 - 1745	57	232	97	109	144	0	33	475	14	66	354	139	**1720**
1700 - 1800	60	236	94	113	152	0	32	460	18	71	366	131	**1733**
PEAK HOUR	**60**	**236**	**94**	**113**	**152**	**0**	**32**	**460**	**18**	**71**	**366**	**131**	**1733**

R.O.A.R DATA

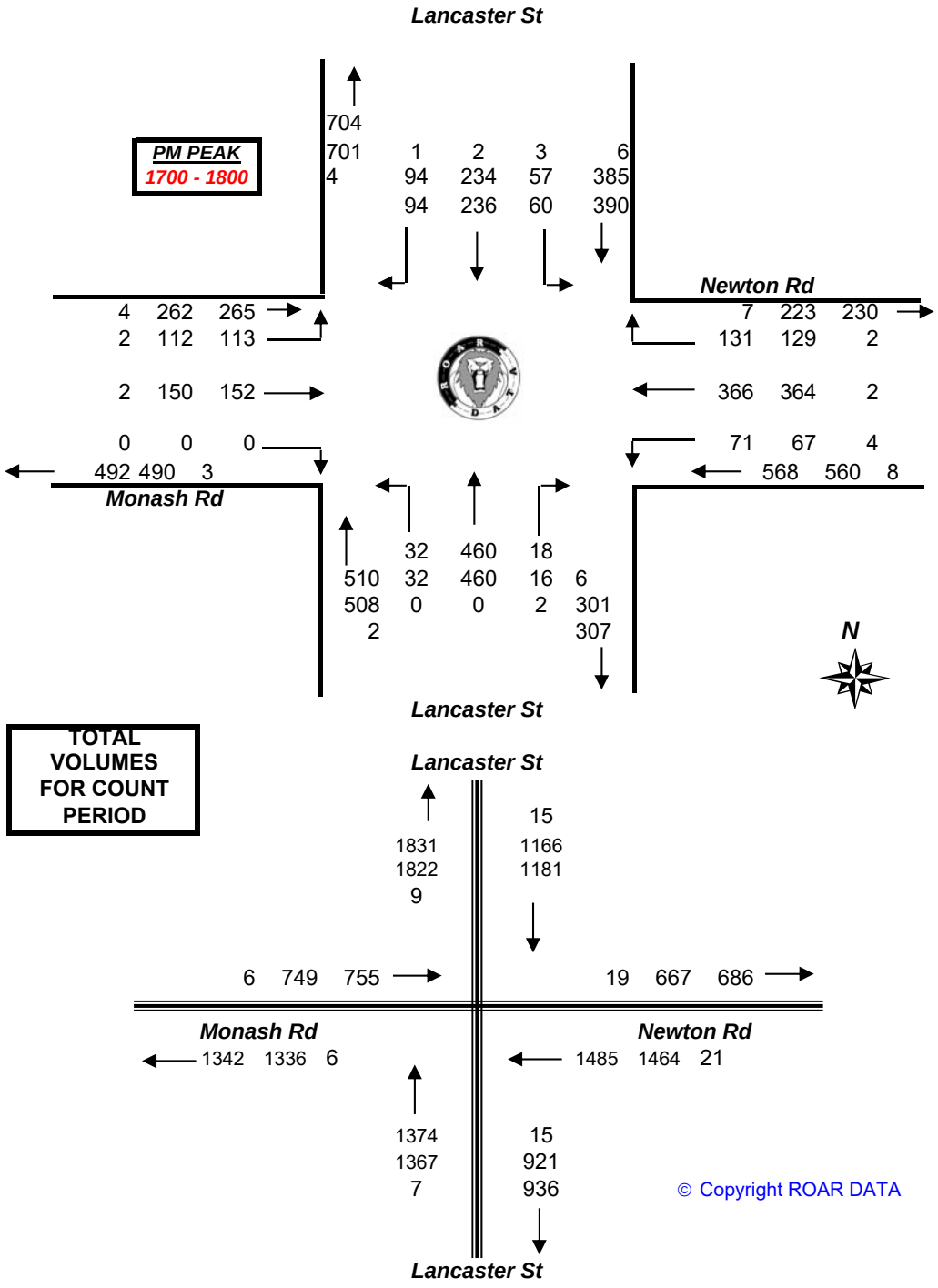
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 6661 BLACKTOWN Lancaster St
Day/Date : Tuesday 5th December 2017

Peds	NORTH *Lancaster St*	WEST *Monash Rd*	SOUTH *Lancaster St*	EAST *Newton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1515	53	18	0	10	**81**
1515 - 1530	2	1	0	3	**6**
1530 - 1545	1	0	0	1	**2**
1545 - 1600	2	2	0	0	**4**
1600 - 1615	6	4	0	0	**10**
1615 - 1630	5	3	1	3	**12**
1630 - 1645	0	0	0	0	**0**
1645 - 1700	2	2	0	1	**5**
1700 - 1715	3	2	0	1	**6**
1715 - 1730	0	0	1	0	**1**
1730 - 1745	2	1	1	1	**5**
1745 - 1800	4	0	1	3	**8**
Period End	**80**	**33**	**4**	**23**	**140**

Peds	NORTH *Lancaster St*	WEST *Monash Rd*	SOUTH *Lancaster St*	EAST *Newton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1600	58	21	0	14	**93**
1515 - 1615	11	7	0	4	**22**
1530 - 1630	14	9	1	4	**28**
1545 - 1645	13	9	1	3	**26**
1600 - 1700	13	9	1	4	**27**
1615 - 1715	10	7	1	5	**23**
1630 - 1730	5	4	1	2	**12**
1645 - 1745	7	5	2	3	**17**
1700 - 1800	9	3	3	5	**20**
PEAK HR	**9**	**3**	**3**	**5**	**20**



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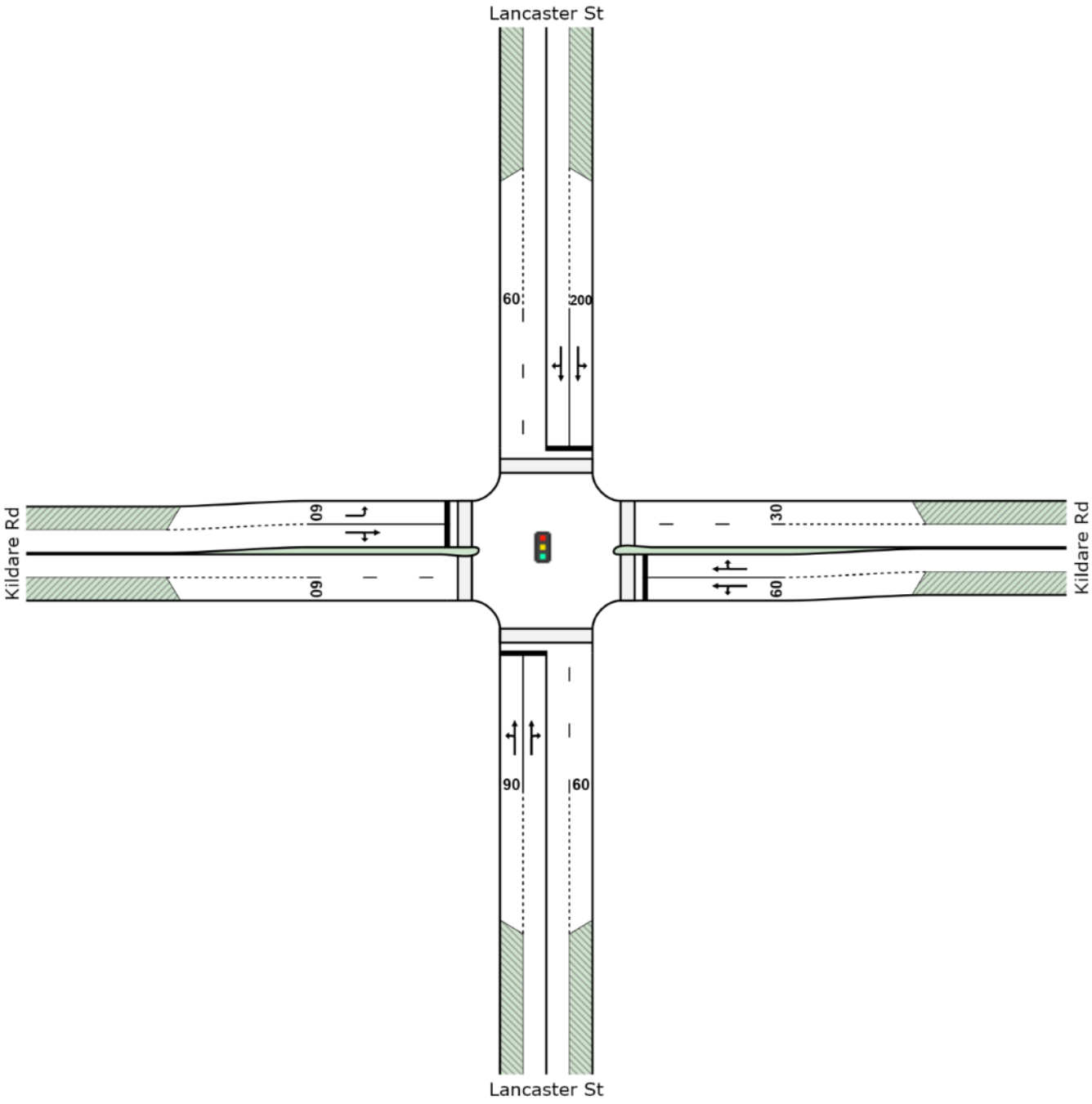
APPENDIX B SIDRA SUMMARY ANALYSIS RESULTS

SITE LAYOUT

Site: Existing AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated



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MOVEMENT SUMMARY

Site: Existing AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 95 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	41	2.6	0.185	27.5	LOS B	3.9	27.9	0.71	0.62	31.5
2	T1	353	0.9	0.502	26.8	LOS B	10.7	75.4	0.80	0.69	30.8
3	R2	17	6.2	0.502	31.1	LOS C	10.7	75.4	0.82	0.71	30.7
Approach		411	1.3	0.502	27.1	LOS B	10.7	75.4	0.79	0.68	30.9
East: Kildare Rd											
4	L2	31	3.4	0.182	38.1	LOS C	2.8	19.8	0.84	0.68	28.7
5	T1	92	2.3	0.493	36.3	LOS C	8.1	57.1	0.87	0.73	28.2
6	R2	144	0.0	0.493	41.1	LOS C	8.1	57.1	0.91	0.78	27.8
Approach		266	1.2	0.493	39.1	LOS C	8.1	57.1	0.89	0.75	28.1
North: Lancaster St											
7	L2	574	0.0	0.506	15.0	LOS B	14.8	103.8	0.59	0.72	34.5
8	T1	388	0.8	0.742	30.9	LOS C	18.4	129.4	0.92	0.81	29.8
9	R2	58	0.0	0.742	34.3	LOS C	18.4	129.4	0.92	0.81	29.9
Approach		1020	0.3	0.742	22.1	LOS B	18.4	129.4	0.74	0.76	32.3
West: Kildare Rd											
10	L2	100	0.0	0.197	33.1	LOS C	3.6	25.0	0.78	0.72	29.5
11	T1	247	1.7	0.582	33.8	LOS C	12.3	87.6	0.90	0.77	29.1
12	R2	57	1.9	0.582	37.2	LOS C	12.3	87.6	0.90	0.77	29.1
Approach		404	1.3	0.582	34.1	LOS C	12.3	87.6	0.87	0.76	29.2
All Vehicles		2101	0.8	0.742	27.5	LOS B	18.4	129.4	0.79	0.74	30.8

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	35.4	LOS D	0.1	0.1	0.86	0.86
P2	East Full Crossing	38	25.1	LOS C	0.1	0.1	0.73	0.73
P3	North Full Crossing	17	30.4	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.1	LOS C	0.0	0.0	0.73	0.73
All Pedestrians		104	28.7	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.

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MOVEMENT SUMMARY

Site: Potential AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	42	2.5	0.187	28.5	LOS C	4.2	29.7	0.71	0.62	31.2
2	T1	358	0.9	0.507	28.1	LOS B	11.4	80.4	0.80	0.69	30.5
3	R2	17	6.3	0.507	32.4	LOS C	11.4	80.4	0.82	0.71	30.4
Approach		417	1.3	0.507	28.3	LOS B	11.4	80.4	0.79	0.68	30.6
East: Kildare Rd											
4	L2	31	3.4	0.174	38.9	LOS C	2.9	20.5	0.83	0.68	28.6
5	T1	92	2.3	0.472	37.2	LOS C	8.4	59.1	0.86	0.73	28.0
6	R2	144	0.0	0.472	42.0	LOS C	8.4	59.1	0.90	0.77	27.7
Approach		266	1.2	0.472	40.0	LOS C	8.4	59.1	0.88	0.75	27.9
North: Lancaster St											
7	L2	574	0.0	0.498	15.0	LOS B	15.2	106.4	0.58	0.71	34.5
8	T1	397	0.8	0.750	32.4	LOS C	19.7	138.8	0.92	0.82	29.4
9	R2	58	0.0	0.750	35.8	LOS C	19.7	138.8	0.92	0.82	29.5
Approach		1028	0.3	0.750	22.9	LOS B	19.7	138.8	0.73	0.76	32.1
West: Kildare Rd											
10	L2	100	0.0	0.199	34.9	LOS C	3.8	26.4	0.79	0.72	29.0
11	T1	247	1.7	0.594	35.9	LOS C	13.1	93.3	0.90	0.78	28.6
12	R2	59	1.8	0.594	39.3	LOS C	13.1	93.3	0.90	0.78	28.6
Approach		406	1.3	0.594	36.2	LOS C	13.1	93.3	0.87	0.76	28.7
All Vehicles		2118	0.8	0.750	28.6	LOS C	19.7	138.8	0.79	0.74	30.5

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	36.2	LOS D	0.1	0.1	0.85	0.85
P2	East Full Crossing	38	26.0	LOS C	0.1	0.1	0.72	0.72
P3	North Full Crossing	17	32.0	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.9	LOS C	0.0	0.0	0.72	0.72
All Pedestrians		104	29.6	LOS C			0.77	0.77

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.

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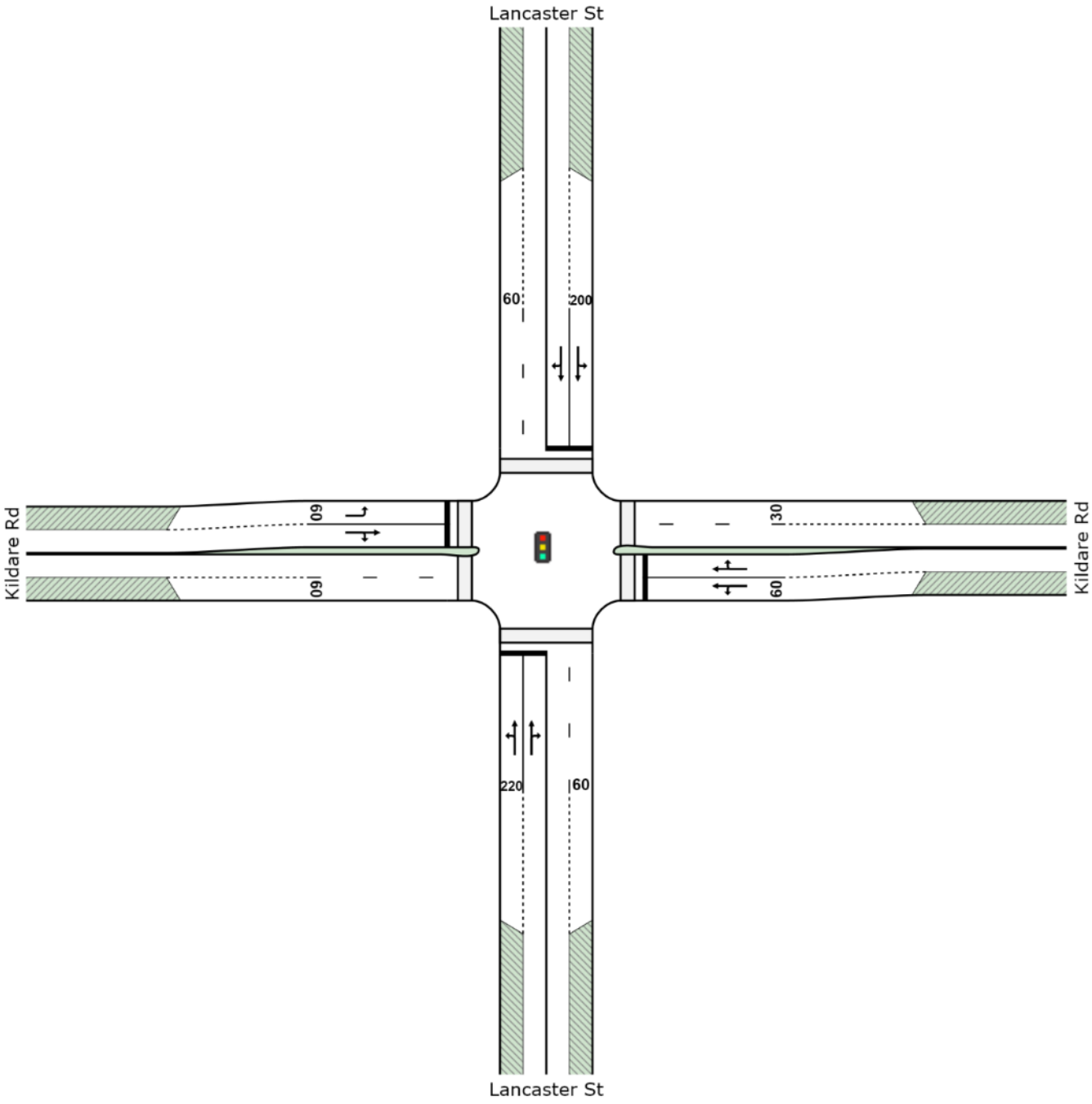
SITE LAYOUT

Site: Existing PM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated



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MOVEMENT SUMMARY

Site: Existing PM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 120 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	47	0.0	0.307	34.6	LOS C	8.9	62.3	0.74	0.65	34.9
2	T1	711	0.4	0.832	37.2	LOS C	29.9	209.7	0.91	0.81	33.1
3	R2	15	0.0	0.832	44.0	LOS D	29.9	209.7	0.96	0.86	32.3
Approach		773	0.4	0.832	37.2	LOS C	29.9	209.7	0.90	0.80	33.1
East: Kildare Rd											
4	L2	33	0.0	0.306	37.5	LOS C	8.5	59.7	0.76	0.66	34.0
5	T1	233	1.4	0.829	34.8	LOS C	22.8	160.0	0.81	0.71	33.4
6	R2	376	0.0	0.829	43.8	LOS D	22.8	160.0	0.92	0.84	31.3
Approach		641	0.5	0.829	40.2	LOS C	22.8	160.0	0.87	0.78	32.1
North: Lancaster St											
7	L2	207	1.5	0.320	35.5	LOS C	8.9	63.0	0.75	0.76	33.4
8	T1	356	1.2	0.868	41.9	LOS C	25.0	176.5	0.98	0.89	31.5
9	R2	91	0.0	0.868	46.6	LOS D	25.0	176.5	0.98	0.89	31.3
Approach		654	1.1	0.868	40.6	LOS C	25.0	176.5	0.90	0.85	32.1
West: Kildare Rd											
10	L2	125	0.0	0.385	54.2	LOS D	6.6	46.1	0.91	0.78	28.6
11	T1	126	3.3	0.465	50.4	LOS D	8.2	59.2	0.92	0.76	29.4
12	R2	27	3.8	0.465	55.0	LOS D	8.2	59.2	0.92	0.76	29.2
Approach		279	1.9	0.465	52.6	LOS D	8.2	59.2	0.91	0.77	29.0
All Vehicles		2346	0.8	0.868	40.8	LOS C	29.9	209.7	0.89	0.81	32.0

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	9	31.5	LOS D	0.0	0.0	0.73	0.73
P2	East Full Crossing	11	29.4	LOS C	0.0	0.0	0.70	0.70
P3	North Full Crossing	14	46.8	LOS E	0.0	0.0	0.88	0.88
P4	West Full Crossing	5	29.4	LOS C	0.0	0.0	0.70	0.70
All Pedestrians		39	36.1	LOS D			0.77	0.77

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.

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MOVEMENT SUMMARY

Site: Potential AM Peak

Lancaster St and Kildare Rd, Blacktown - Singnal control

Signals - Actuated Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	42	2.5	0.187	28.5	LOS C	4.2	29.7	0.71	0.62	31.2
2	T1	358	0.9	0.507	28.1	LOS B	11.4	80.4	0.80	0.69	30.5
3	R2	17	6.3	0.507	32.4	LOS C	11.4	80.4	0.82	0.71	30.4
Approach		417	1.3	0.507	28.3	LOS B	11.4	80.4	0.79	0.68	30.6
East: Kildare Rd											
4	L2	31	3.4	0.174	38.9	LOS C	2.9	20.5	0.83	0.68	28.6
5	T1	92	2.3	0.472	37.2	LOS C	8.4	59.1	0.86	0.73	28.0
6	R2	144	0.0	0.472	42.0	LOS C	8.4	59.1	0.90	0.77	27.7
Approach		266	1.2	0.472	40.0	LOS C	8.4	59.1	0.88	0.75	27.9
North: Lancaster St											
7	L2	574	0.0	0.498	15.0	LOS B	15.2	106.4	0.58	0.71	34.5
8	T1	397	0.8	0.750	32.4	LOS C	19.7	138.8	0.92	0.82	29.4
9	R2	58	0.0	0.750	35.8	LOS C	19.7	138.8	0.92	0.82	29.5
Approach		1028	0.3	0.750	22.9	LOS B	19.7	138.8	0.73	0.76	32.1
West: Kildare Rd											
10	L2	100	0.0	0.199	34.9	LOS C	3.8	26.4	0.79	0.72	29.0
11	T1	247	1.7	0.594	35.9	LOS C	13.1	93.3	0.90	0.78	28.6
12	R2	59	1.8	0.594	39.3	LOS C	13.1	93.3	0.90	0.78	28.6
Approach		406	1.3	0.594	36.2	LOS C	13.1	93.3	0.87	0.76	28.7
All Vehicles		2118	0.8	0.750	28.6	LOS C	19.7	138.8	0.79	0.74	30.5

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	27	36.2	LOS D	0.1	0.1	0.85	0.85
P2	East Full Crossing	38	26.0	LOS C	0.1	0.1	0.72	0.72
P3	North Full Crossing	17	32.0	LOS D	0.0	0.0	0.80	0.80
P4	West Full Crossing	22	25.9	LOS C	0.0	0.0	0.72	0.72
All Pedestrians		104	29.6	LOS C			0.77	0.77

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.

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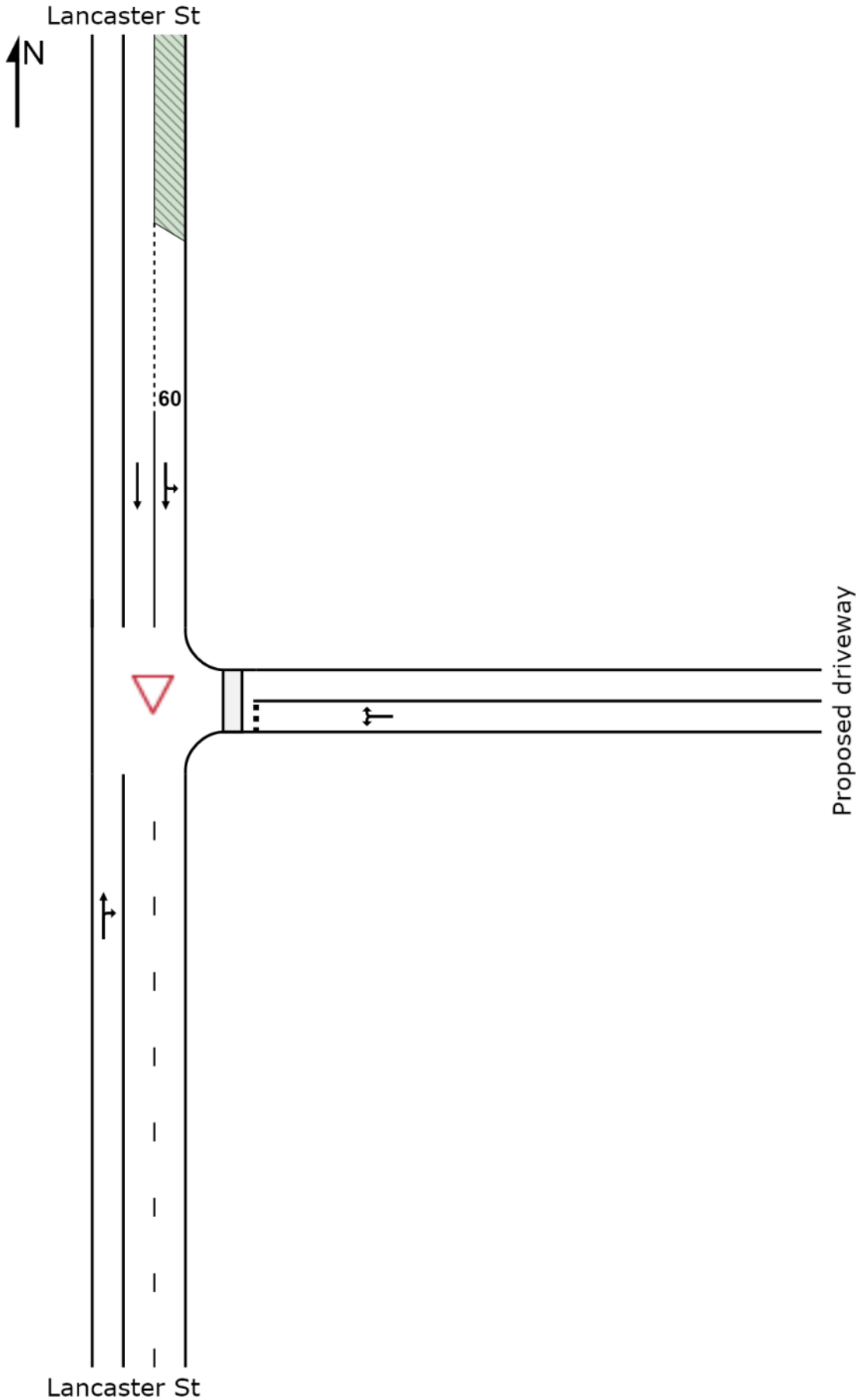
SITE LAYOUT

Site: proposed AM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)



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MOVEMENT SUMMARY

Site: proposed AM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
2	T1	387	1.4	0.251	1.7	LOS A	1.8	12.5	0.39	0.08	39.0
3	R2	64	0.0	0.251	5.2	LOS A	1.8	12.5	0.39	0.08	39.0
Approach		452	1.2	0.251	2.2	NA	1.8	12.5	0.39	0.08	39.0
East: Proposed driveway											
4	L2	102	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.2
6	R2	9	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.1
Approach		112	0.0	0.091	4.5	LOS A	0.4	2.9	0.28	0.48	38.2
North: Lancaster St											
7	L2	32	0.0	0.109	3.4	LOS A	0.0	0.0	0.00	0.07	39.9
8	T1	389	1.4	0.109	0.0	LOS A	0.0	0.0	0.00	0.03	39.9
Approach		421	1.3	0.109	0.3	NA	0.0	0.0	0.00	0.04	39.9
All Vehicles		984	1.1	0.251	1.6	NA	1.8	12.5	0.21	0.11	39.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: proposed PM peak

Lancaster St and proposed driveway
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
2	T1	704	0.4	0.248	0.8	LOS A	1.6	11.1	0.14	0.08	49.1
3	R2	128	0.0	0.248	7.0	LOS A	1.6	11.1	0.43	0.25	46.7
Approach		833	0.4	0.248	1.7	NA	1.6	11.1	0.18	0.10	48.7
East: Proposed driveway											
4	L2	101	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.5
6	R2	91	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.3
Approach		192	0.0	0.455	16.4	LOS B	2.6	18.3	0.47	0.74	40.4
North: Lancaster St											
7	L2	76	0.0	0.120	4.6	LOS A	0.0	0.0	0.00	0.18	48.5
8	T1	383	1.6	0.120	0.0	LOS A	0.0	0.0	0.00	0.07	49.6
Approach		459	1.4	0.120	0.8	NA	0.0	0.0	0.00	0.09	49.4
All Vehicles		1483	0.6	0.455	3.3	NA	2.6	18.3	0.16	0.18	47.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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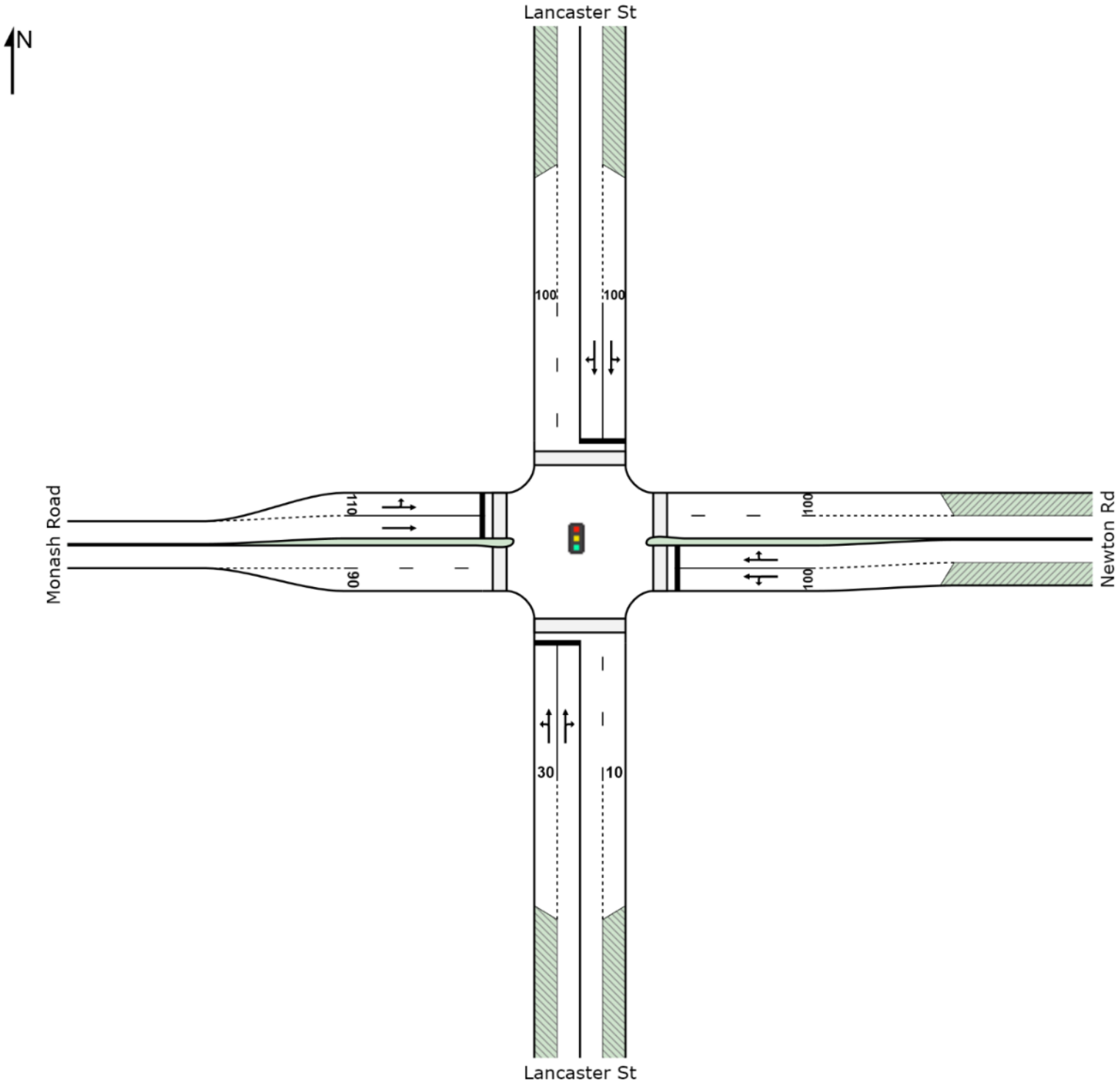
SITE LAYOUT

Site: Existing AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time



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MOVEMENT SUMMARY

Site: Existing AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total 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: Lancaster St											
1	L2	24	0.0	0.222	18.4	LOS B	3.1	22.1	0.74	0.62	34.3
2	T1	295	0.4	0.400	17.0	LOS B	4.9	34.8	0.80	0.67	33.5
3	R2	35	9.1	0.400	22.0	LOS B	4.9	34.8	0.84	0.71	33.2
Approach		354	1.2	0.400	17.6	LOS B	4.9	34.8	0.80	0.67	33.6
East: Newton Rd											
4	L2	25	8.3	0.109	13.8	LOS A	1.6	11.3	0.61	0.53	35.7
5	T1	117	1.8	0.215	12.7	LOS A	2.2	15.9	0.69	0.59	34.7
6	R2	51	6.3	0.215	19.3	LOS B	2.2	15.9	0.80	0.66	33.6
Approach		193	3.8	0.215	14.5	LOS B	2.2	15.9	0.71	0.60	34.5
North: Lancaster St											
7	L2	111	1.9	0.122	10.4	LOS A	1.7	12.3	0.51	0.61	36.1
8	T1	293	0.7	0.608	18.8	LOS B	8.6	60.9	0.88	0.77	33.0
9	R2	56	3.8	0.608	22.7	LOS B	8.6	60.9	0.90	0.77	33.0
Approach		459	1.4	0.608	17.2	LOS B	8.6	60.9	0.80	0.73	33.7
West: Monash Road											
10	L2	115	0.9	0.346	24.0	LOS B	4.0	28.4	0.86	0.74	32.1
11	T1	351	0.3	0.623	22.2	LOS B	8.2	57.7	0.93	0.79	32.1
Approach		465	0.5	0.623	22.6	LOS B	8.2	57.7	0.91	0.78	32.1
All Vehicles		1471	1.4	0.623	18.7	LOS B	8.6	60.9	0.82	0.72	33.2

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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	South Full Crossing	1	23.4	LOS C	0.0	0.0	0.88	0.88
P2	East Full Crossing	7	18.4	LOS B	0.0	0.0	0.78	0.78
P3	North Full Crossing	49	23.5	LOS C	0.1	0.1	0.89	0.89
P4	West Full Crossing	15	18.4	LOS B	0.0	0.0	0.78	0.78
All Pedestrians		73	21.9	LOS C			0.85	0.85

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.

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MOVEMENT SUMMARY

Site: Potential AM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	24	0.0	0.227	17.7	LOS B	3.3	23.1	0.73	0.61	34.5
2	T1	308	0.3	0.409	16.7	LOS B	5.0	35.4	0.79	0.67	33.7
3	R2	35	9.1	0.409	22.1	LOS B	5.0	35.4	0.84	0.71	33.1
Approach		367	1.1	0.409	17.3	LOS B	5.0	35.4	0.79	0.67	33.7
East: Newton Rd											
4	L2	25	8.3	0.116	14.4	LOS A	1.7	12.0	0.63	0.54	35.5
5	T1	117	1.8	0.229	13.3	LOS A	2.3	16.4	0.71	0.60	34.5
6	R2	53	6.0	0.229	20.2	LOS B	2.3	16.4	0.82	0.67	33.3
Approach		195	3.8	0.229	15.3	LOS B	2.3	16.4	0.73	0.61	34.3
North: Lancaster St											
7	L2	127	1.7	0.136	10.0	LOS A	1.9	13.8	0.50	0.61	36.3
8	T1	337	0.6	0.682	19.4	LOS B	10.4	73.1	0.90	0.82	32.8
9	R2	64	3.3	0.682	23.4	LOS B	10.4	73.1	0.92	0.83	32.8
Approach		528	1.2	0.682	17.6	LOS B	10.4	73.1	0.81	0.77	33.6
West: Monash Road											
10	L2	120	0.9	0.375	25.0	LOS B	4.2	29.4	0.88	0.75	31.8
11	T1	351	0.3	0.675	23.9	LOS B	8.7	61.1	0.95	0.84	31.6
Approach		471	0.4	0.675	24.1	LOS B	8.7	61.1	0.94	0.82	31.7
All Vehicles		1561	1.3	0.682	19.2	LOS B	10.4	73.1	0.83	0.74	33.1

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	1	24.3	LOS C	0.0	0.0	0.90	0.90
P2	East Full Crossing	7	17.6	LOS B	0.0	0.0	0.77	0.77
P3	North Full Crossing	49	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	15	17.6	LOS B	0.0	0.0	0.77	0.77
All Pedestrians		73	22.3	LOS C			0.86	0.86

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.

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MOVEMENT SUMMARY

Site: Existing PM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	34	0.0	0.290	19.3	LOS B	4.3	30.3	0.75	0.64	40.9
2	T1	484	0.0	0.521	16.2	LOS B	7.9	55.4	0.81	0.69	40.7
3	R2	19	11.1	0.521	21.7	LOS B	7.9	55.4	0.84	0.72	40.0
Approach		537	0.4	0.521	16.6	LOS B	7.9	55.4	0.81	0.69	40.7
East: Newton Rd											
4	L2	75	5.6	0.303	16.7	LOS B	4.8	34.2	0.69	0.63	41.9
5	T1	385	0.5	0.598	14.2	LOS A	8.3	58.7	0.79	0.70	41.1
6	R2	138	1.5	0.598	20.5	LOS B	8.3	58.7	0.88	0.75	39.9
Approach		598	1.4	0.598	15.9	LOS B	8.3	58.7	0.80	0.70	40.9
North: Lancaster St											
7	L2	63	5.0	0.142	18.4	LOS B	1.9	13.7	0.70	0.66	40.3
8	T1	248	0.8	0.710	21.5	LOS B	9.0	63.8	0.91	0.85	38.0
9	R2	100	1.1	0.710	27.2	LOS B	9.0	63.8	0.95	0.88	37.3
Approach		412	1.5	0.710	22.4	LOS B	9.0	63.8	0.89	0.83	38.2
West: Monash Road											
10	L2	120	1.8	0.280	25.6	LOS B	3.0	21.2	0.86	0.76	36.8
11	T1	160	1.3	0.355	21.4	LOS B	4.1	28.7	0.88	0.71	38.7
Approach		280	1.5	0.355	23.2	LOS B	4.1	28.7	0.87	0.73	37.8
All Vehicles		1826	1.2	0.710	18.7	LOS B	9.0	63.8	0.83	0.73	39.7

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	3	24.3	LOS C	0.0	0.0	0.90	0.90
P2	East Full Crossing	5	17.6	LOS B	0.0	0.0	0.77	0.77
P3	North Full Crossing	9	24.3	LOS C	0.0	0.0	0.90	0.90
P4	West Full Crossing	3	17.6	LOS B	0.0	0.0	0.77	0.77
All Pedestrians		21	21.6	LOS C			0.85	0.85

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.

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MOVEMENT SUMMARY

Site: Potential PM peak

Lancaster Street with Newton and Monash Roads - Signals

Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lancaster St											
1	L2	34	0.0	0.285	18.0	LOS B	5.3	37.4	0.68	0.59	41.6
2	T1	545	0.0	0.513	15.1	LOS B	8.8	62.2	0.73	0.64	41.3
3	R2	19	11.1	0.513	20.8	LOS B	8.8	62.2	0.77	0.67	40.4
Approach		598	0.4	0.513	15.4	LOS B	8.8	62.2	0.73	0.64	41.3
East: Newton Rd											
4	L2	75	5.6	0.359	21.3	LOS B	6.5	45.9	0.76	0.68	39.8
5	T1	385	0.5	0.708	20.5	LOS B	10.9	76.7	0.86	0.79	38.4
6	R2	155	1.4	0.708	28.6	LOS C	10.9	76.7	0.96	0.90	36.6
Approach		615	1.4	0.708	22.6	LOS B	10.9	76.7	0.87	0.80	38.1
North: Lancaster St											
7	L2	75	4.2	0.143	17.1	LOS B	2.4	17.1	0.63	0.63	40.9
8	T1	292	0.7	0.717	21.7	LOS B	11.7	82.2	0.88	0.83	37.9
9	R2	117	0.9	0.717	27.8	LOS B	11.7	82.2	0.92	0.87	37.1
Approach		483	1.3	0.717	22.4	LOS B	11.7	82.2	0.85	0.81	38.1
West: Monash Road											
10	L2	135	1.6	0.367	31.5	LOS C	4.1	29.2	0.91	0.77	34.7
11	T1	160	1.3	0.414	27.2	LOS B	4.9	34.9	0.92	0.74	36.5
Approach		295	1.4	0.414	29.2	LOS C	4.9	34.9	0.91	0.76	35.6
All Vehicles		1991	1.1	0.717	21.4	LOS B	11.7	82.2	0.83	0.75	38.6

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 is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	3	29.3	LOS C	0.0	0.0	0.91	0.91
P2	East Full Crossing	5	15.8	LOS B	0.0	0.0	0.67	0.67
P3	North Full Crossing	9	29.3	LOS C	0.0	0.0	0.91	0.91
P4	West Full Crossing	3	15.8	LOS B	0.0	0.0	0.67	0.67
All Pedestrians		21	23.9	LOS C			0.82	0.82

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.

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