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TRANSPORT IMPACT ASSESSMENT
PROPOSED INDUSTRIAL ESTATE
LOT 1 DP 104958
CORNER MAMRE ROAD & BAKERS LANE
KEMPS CREEK

Ref: 10-043

AUGUST 2010

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1. INTRODUCTION

1.1 Introduction

This Practice has been engaged by Logos Property to prepare a Traffic Impact Assessment for a masterplan involving the redevelopment of a 51.72 hectare rural residential parcel of land to provide a large industrial estate. The site adjoins the Western Sydney Employment Area. The proposal will be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* and will be determined by the Minister for Planning.

This report considers the traffic impact and transport issues associated with the masterplan in the wider strategic context provided by the envisaged redevelopment of the adjoining Western Sydney Employment Area. This report also provides a Transport Management and Accessibility (TMAP) outline with a view to formulating a draft package of policy, service and infrastructure measures required to meet the requirements of the subject masterplan.

While there is a wide range of stakeholders with interests in the development, this report is primarily prepared for discussion between the subject applicant, Penrith Council, the Roads & Traffic Authority and the Department of Planning. This report has been prepared with reference to the following documents and guidelines:

- The Roads & Traffic Authority's *Guide to Traffic Generating Developments*;
- The Roads & Traffic Authority's *Road Design Guide*;
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (Western Sydney Employment Area) 2009;
- NSW Department of Transport and the Roads & Traffic Authority's *Draft Interim Guidelines on Transport Management and Accessibility Plans*; and
- NSW Government's *North-West Subregional Transport Strategy* forming part of the *Metropolitan Strategy*.

This report should be read in conjunction with the site masterplan prepared by Axis Architectural, reduced copies of which are included in **Appendix 1**.

1.2 Site Location and Details

The subject site is located on the south-eastern corner of the junction of Mamre Road and Bakers Lane, Kemps Creek. The site location is shown overleaf within a local and regional context by **Figures 1** and **2** respectively, being extracts of UBD's *Australian City Streets*, Version 4.

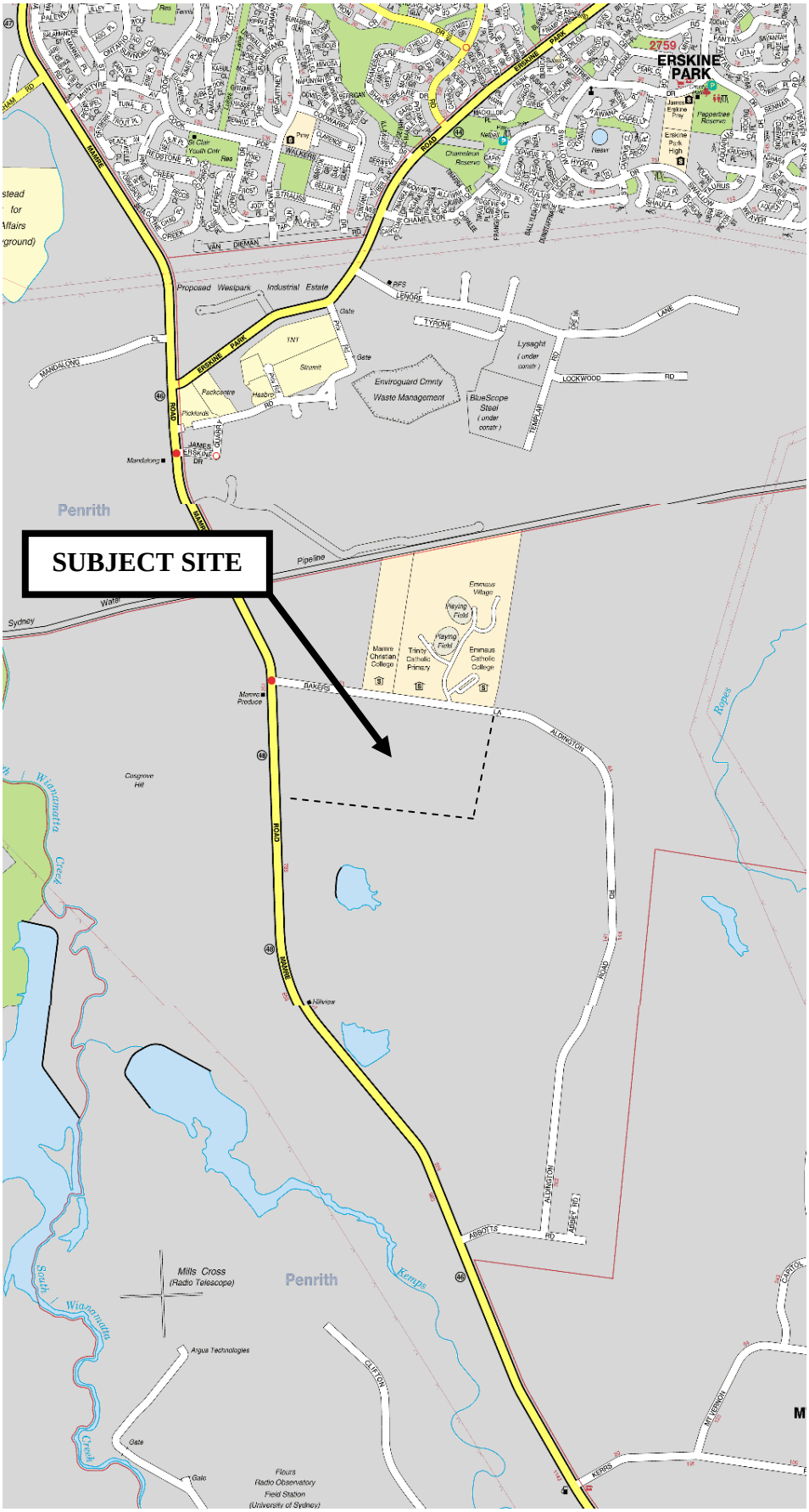


FIGURE 1 – SITE LOCATION WITHIN A LOCAL CONTEXT
SCALE = 1:30000

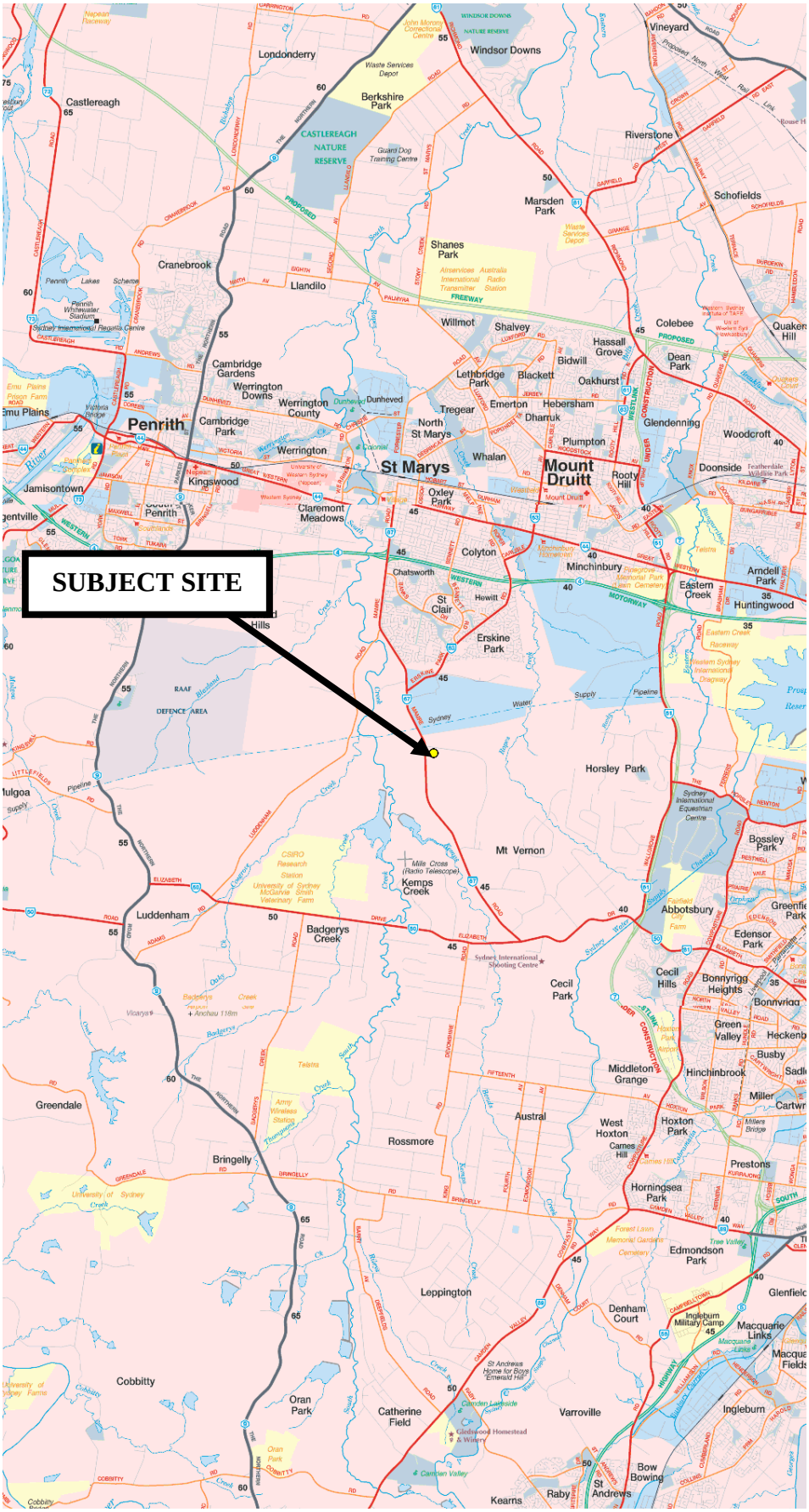


FIGURE 2 – SITE LOCATION WITHIN A REGIONAL CONTEXT
SCALE = 1:150000

The site provides a property description of Lot 1 within Deposited Plan 104958. The site is primarily rectangular in shape providing frontages of approximately 489 metres and 1,067 metres to Mamre Road and Bakers Lane respectively. The total site area is 51.72 hectares. The subject and surrounding land is significantly undulating containing a number of dams within the low points.

The subject site currently contains a single rural residential dwelling located approximately within the north-western portion of the site being set-back from the Mamre Road and Bakers Lane frontages in the order of 300 metres and 60 metres respectively. The dwelling is currently serviced by two single width access driveways connecting with Bakers Lane. No access is currently provided between the subject site and Mamre Road.

Rural residential dwellings occupy the surrounding allotments with the exception of two large parcels of land located to the north which accommodate the following uses:

- Mamre Christian College;
- Trinity Catholic Primary;
- Emmaus Catholic College; and
- Emmaus (retirement) Village.

1.3 Assessment Scope

The purpose of this report is to assess and document likely transport impacts resulting from the proposed masterplan and formulate a draft recommended package of policy, service and infrastructure measures to meet the requirements of the subject masterplan. To this end, this report undertakes the following:

- Describes the strategic context of the subject masterplan by investigating the various strategy documents relating to the surrounding area and proposed use;
- Assesses the existing transport conditions within the vicinity of the site;
- Describes the alterations to existing transport conditions associated with the planned development of the Western Sydney Employment Area;
- Distinguishes traffic likely to be generated by the proposed masterplan based on the proposed floor space and the Roads & Traffic Authority adopted average trip generation rate per hectare of site area;
- Identifies the scope of road upgrades required to accommodate the additional traffic movements associated with the subject masterplan in conjunction with the planned development of the Western Sydney Employment Area; and
- Determines the suitability and safety of the proposed access and internal circulation arrangements as relevant to the site and the local conditions.

2. STRATEGIC CONTEXT

There is a general recognition that western Sydney will be required to accommodate significant additional employment opportunities in the short, medium and long term. The subject land immediately adjoins the Western Sydney Employment Area which is planned to play a vital role in fulfilling this vision. The following provides a summary of the various strategy documents which provide discussion on this notion relevant to the subject masterplan.

2.1 Sydney Into its Third Century

Sydney Into its Third Century – Metropolitan Strategy for the Sydney Region aimed to guide the development of the Sydney region from 1988 over the period in which an extra one million people would be added to the region's population. This Strategy identified the subject site within a large egg shaped area as being an area under investigation for future development.

2.2 Sydney Metropolitan Strategy

The Sydney Metropolitan Strategy, released in December 2005, is the State Government's long term planning blueprint for the Sydney Metropolitan Area for the next 20 years. The Strategy identifies the need to accommodate a significant number of forecast 280,000 new jobs in the employment lands close to the M7 Orbital, and particularly in Western Sydney. The Strategy indicates that there is also a need to identify, zone and develop 4,000 – 7,500 hectares of new employment lands. The 2,450 hectare Western Sydney Employment Area is intended to play a vital role in fulfilling this vision.

Demand is being driven by the transport and logistics industries, which require large broad acre developments at competitive costs that are close to strategic transport infrastructure and support services. The Strategy identifies the Western Sydney Employment Area as an area that has the potential to provide significant stocks of employment land for Sydney in the short term.

2.3 Employment Lands for Sydney Action Plan

The Employment Lands for Sydney Action Plan was released in 2007 identifying a number of initiatives for Government action designed to maximise opportunities for new investment and jobs from the timely provision of employment lands in the right places.

The Action Plan included a key initiative to release more greenfield lands for employment purposes and a specific reference to the Western Sydney Employment Lands Investigation Area being land located between the Western Sydney Employment Area and Badgerys Creek, including the subject site. This area consists of approximately 7,000 hectares of potential employment land including 800 hectares within Kemps Creek.

2.4 Western Sydney Employment Lands Investigation Area

Since the release of the Metropolitan Strategy in 2005, the employment lands identified have experienced considerable uptake, much of the investment in the key employment lands account for manufacturing, transport and logistics activities. In light of the need to increase the supply of available industrial land, the Western Sydney Employment Lands Investigation Area was seen as a significant opportunity to assess the potential of the area to meet the expected employment land needs. The Department of Planning commenced detailed investigations of the area in late 2007 involving an assessment of environmental constraints, potential lands for development and infrastructure servicing requirements.

2.5 Release of the Western Sydney Employment Area

In 2008, the Government exhibited a draft State Environmental Planning Policy for the Western Sydney Employment Area. Subsequent to the exhibition period, State Environmental Planning Policy (Western Sydney Employment Area) was gazetted in 2009. This created a consistent zoning system for the employment lands and zones to the immediate north-east of the subject land.

The Western Sydney Employment Area Guide, prepared as part of the above gazettal, indicated that the following:

> *The opportunity would be available for landowners to fast-track development in areas adjacent to the zoned employment area through …an application under Part 3A of the Environmental Planning and Assessment Act. A case would need to be demonstrated that the development of land outside of the program represents no cost to government in regard to infrastructure requirements and meets all relevant environmental tests.*

This report is proposed to accompany a Part 3A application.

3. PROPOSED DEVELOPMENT

3.1 Built Form

The proposal involves the redevelopment of a 51.72 hectare rural residential parcel of land to provide a large industrial estate accommodating distribution centres for Metcash and DHL. The industrial estate is proposed to accommodate distribution centres for Metcash and DHL. The Metcash facility is proposed to occupy the eastern portion of the site providing a warehouse, service, office and ancillary floor area of approximately 98,000m^2 with a possible future expansion in the order of 19,000m^2. The DHL facility is proposed to be contained within the western portion of the site comprising a total of seven buildings providing a total floor area of approximately 160,000m^2.

3.1.1 Metcash Distribution Facility

The Metcash facility is proposed to occupy the eastern portion of the site providing the following primary components:

- A main warehouse building providing a floor area of 55,685m^2;
- A cold storage building providing a floor area of 12,025m^2;
- A two storey office building providing a floor area of 6,470m^2; and
- Two outbuildings (plant and gatehouse) providing a floor area of 525m^2.

In addition to the above, there is scope to expand the main warehouse building to provide an additional 12,500m^2 of warehouse floor space. Further, the cold storage building can be expanded by 6,210m^2.

3.1.2 DHL Distribution Facility

The DHL facility is proposed to be located within the western portion of the site providing the following primary components:

- Buildings 1 - 4 provide a warehouse area of 18,800m^2 in conjunction with an ancillary two storey office building providing a floor area of 1,600m^2;
- Buildings 5 and 7 provide a warehouse area of 19,800m^2 in conjunction with an ancillary two storey office building providing a floor area of 1,600m^2;
- Building 6 provides a warehouse area of 32,400m^2 in conjunction with an ancillary two storey office building providing a floor area of 1,600m^2; and
- An ancillary café building is proposed providing a floor area of 565m^2.

3.2 Site Access & Surrounding Road Upgrades

The selection of appropriate site access was the subject of discussion with the Roads & Traffic Authority at a meeting in their Parramatta offices on 28 April 2010. During this meeting, the Authority advised that site access is required to be via Bakers Lane. It was also advised that the number of access points should be minimised in order to reduce possible points of conflict.

Taking the abovementioned advice from the Roads & Traffic Authority into consideration, the estate is primarily proposed to be serviced by a central north-south access road which is to intersect with Bakers Lane under traffic signal control approximately 650m to the east of Mamre Road. The estate access road is initially proposed to form a dual carriageway extending in a southerly direction into the site. This access road is proposed to provide separated truck and passenger vehicle access to the Metcash and DHL site components via a driveway and a centrally located single lane circulating roundabout respectively.

The proposal involves the upgrading of Bakers Lane to provide a four lane divided carriageway for the full site frontage forming part of the planned road upgrades associated with the development of the Western Sydney Employment Area. Further and based on advice from the Roads & Traffic Authority at the abovementioned meeting, a service road is proposed to be constructed to the north of the Bakers Lane divided carriageway in order to effectively separate traffic movements associated with the existing community and educational establishments located on the northern side of Bakers Lane traffic movements associated with the subject masterplan (and indeed, future traffic associated with the Western Sydney Employment Area). These widening works are to be wholly accommodated within the existing Bakers Lane road reservation and within land dedicated by the subject site (i.e. no acquisition of land adjoining the northern side of Bakers Lane is proposed).

Despite the Roads & Traffic Authority preference for all site access to be via Bakers Lane a left in / left out access driveway is also proposed to be provided to Mamre Road approximately central to the site frontage. This driveway (which is to assisted by the provision of appropriate auxiliary deceleration and acceleration lanes is proposed to provide connectivity to a central east-west roadway running through the DHL site which in turn links with the previously presented internal roundabout. This roadway is proposed to form a divided carriageway providing auxiliary left and right turning lanes servicing the separate passenger vehicle parking and heavy vehicle manoeuvring areas associated with the various DHL buildings located to the north and south.

Whilst not necessitated by the abovementioned access, some Mamre Road upgrading works are proposed in the immediate vicinity of the site including the amplification of the existing Bakers Lane signalised intersection. The site access arrangements and the extent of the proposed adjoining road upgrades are contained within the masterplan layout included as **Appendix 1**. The proposed adjoining road upgrades have been formulated based on detailed intersection modelling and route analysis with respect to the traffic generating capacity of the subject proposal which is described and presented in subsequent sections of this report.

It is further noted that the masterplan layout contained within **Appendix 1** is the proposed ultimate layout which assumes that Bakers Lane is extended to the east to provide the southern east-west link through the Western Sydney Employment Area eventually linking with the M7 Motorway. In this regard, it is acknowledged that a lower order intersection will only be required if this link does not eventuate whereby all vehicles exiting the masterplan would turn left into Bakers Lane and thence access Mamre Road.

4. EXISTING TRANSPORT CONDITIONS

4.1 Surrounding Road Network

Mamre Road performs a State Road function under the care and control of the Roads & Traffic Authority. It provides a north-south arterial route between Great Western Highway at St Marys and Elizabeth Drive at Mt Vernon. In this context, Mamre Road intersects with a number of important east-west arterial routes such as the M4 Motorway (with which it provides west facing ramps) and Erskine Park Road to the north of the site.

Mamre Road primarily forms a two lane undivided carriageway providing one through lane of traffic in each direction. Traffic flow is governed by a sign posted speed limit of 80km/h. Pavement widening is provided on approach to major junctions to accommodate exclusive turning lanes.

Adjoining the north-western corner of the subject site, Mamre Road intersects with Bakers Lane under traffic signal control with Mamre Road providing exclusive right and left turn lanes on approach to the intersection. Bakers Lane primarily performs an access function to Mamre Road servicing the abutting educational and community uses located opposite the subject site under the care and control of Penrith City Council. Bakers Lane continues to the east and south to form Aldington Road which performs a reduced rural residential access function.

Bakers Lane forms a two lane undivided carriageway providing one through lane of traffic in each direction. The directional travel lanes are separated by a double barrier centre line and sealed shoulders defined by edge lines. Traffic flow is governed by a sign posted speed limit of 60km/h however a 40km/h school zone speed limit applies for a majority of the site frontage associated with the existing educational establishments abutting to the north.

4.2 Existing Road Network Operation

Motorists experience a good level of service within Bakers Lane during most periods commensurate with the insignificant traffic demands generated by the primarily rural residential uses abutting. Notwithstanding this, Bakers Lane traffic demands are significantly increased during school start and finish periods associated with the abutting educational establishments to the north of the site. The schools' limited on-site provision for student set-down / pick-up results in some of this activity occurring within the Bakers Lane road reservation.

The signalised intersection control at the junction of Mamre Road and Bakers Lane provides motorists with safe and efficient means by which to undertake turning movements to / from Bakers Lane. Vehicular delay is acceptable even during peak school start and finish periods with motorists rarely incurring delays in excess of one signal cycle length. The exclusive turning lanes provided within Mamre Road ensure that motorists are able to access Bakers Lane without unreasonably impacting trailing Mamre Road through traffic movements.

4.3 Public Transport and Non-Car Travel

4.3.1 Railways

Figure 2 illustrates that the closest railway stations to the subject site area St Marys and Mt Druitt being located some 8km to the north. These stations form part of the western railway line which services other major stations such as Penrith and the Blue Mountains to the west of the site and Blacktown, Parramatta, Strathfield and the Sydney CBD to the east.

Mt Druitt railway station in particular is a major interchange station and as a result, the frequency of trains servicing the station is high during all periods of the day.

4.3.2 Buses

Westbus operates a single bus service within the immediate vicinity of the subject site being Route 779 which operates between St Marys Station and Erskine Park, the closest stop being located within James Erskine Drive approximately 1.5km to the north of the subject site. This service operates every 30 minutes during peak business commuter periods.

In addition to the above public bus services, special school bus services are provided to the educational establishments located to the immediate north of the subject site during school start and finish periods.

4.3 Modal Split

The mode of travel utilised by workers within the Penrith LGA is published by the Australian Bureau of Statistics' 2006 Census Data, the approximate results of which are summarised below within **Table 1** below.

TABLE 1
MODE OF TRAVEL WITHIN PENRITH LGA

Mode	Percentage of Utilisation
Car – as Driver	62%
Car – as Passenger	6%
Bus	1%
Taxi	<1%
Walk	2%
Train	6%
Bicycle	<1%
Other	22%
TOTAL	**100%**

Table 1 indicates that a significant proportion (62%) of people drive themselves to work within the Penrith LGA.

5. ALTERATIONS TO THE SURROUNDING TRANSPORT NETWORK

5.1 Western Sydney Employment Area

Following the formulation of the Sydney Metropolitan Strategy, the NSW Government created the Western Sydney Employment Area. The Area includes ten precincts between Erskine Park and Greystanes. Four north-west precincts comprise land between the M7 Motorway, Mamre Road / Erskine Park Road, the M4 Motorway and the Sydney Water pipeline. A single south-west precinct comprises land immediately to the south of the abovementioned north-west precinct bounded to the north by the Sydney Water pipeline. This precinct extends to immediately adjoin the subject site to the north-east.

The north-west and south-west precincts comprise a large development area of approximately 1,285 developable hectares. The developments have the potential to provide employment for approximately 30,000 people by the year 2016.

Strategic traffic modelling has been undertaken by the Roads & Traffic Authority (and others) in order to determine and define the road network required to service the abovementioned precincts of the Western Sydney Employment Area. Several options have been tested and a preferred road network has been identified. This modelling included the application of a series of local area assumptions including details of land use, trip generation, trip distribution and road network improvements. The following sub-sections of this report outline the pertinent assumptions and findings of the above assessment relevant to the assessment of the likely impacts of the subject masterplan.

5.1.1 Traffic Generation

The Roads & Traffic Authority adopted an average trip generation rate of 15 trips / hectare / hour, per assumed developed hectares of industrial land. These rates were applied to both the morning and evening peak periods for the entirety of the Western Sydney Employment Area. These rates were derived by the Authority based on data from a number of sources, including a Transport Management and Accessibility Plan prepared by Sinclair Knight Merz for the Huntingwood precinct and several Development Applications submitted for employment areas in Erskine Park and other locations within the Penrith LGA.

5.1.2 Trip Distribution

The Roads & Traffic Authority adopted a split of total generated trips of 19% outbound and 81% inbound (in the morning peak) based on trip generation data from the nearby industrial areas of Minchinbury, Huntingwood and Wetherill Park. The reverse split was assumed during the evening peak. This split reflects the commuter nature of travel during the peak periods.

The Roads & Traffic Authority assumed the following approximate trip distribution based on existing trip distribution for the nearby industrial zones of Wetherill Park, Huntingwood and Minchinbury as follows:

- Blacktown – 30%;
- Penrith – 20%;
- Fairfield / Liverpool – 25%;
- Parramatta / Holroyd – 15%; and
- Other areas – 10%.

5.1.3 New Road Network

The Roads & Traffic Authority preferred option includes the following road network features:

- A northern east-west route ('Erskine Park Link Road' as an extension of Lenore Lane) linking Erskine Park Road to the Old Wallgrove Road interchange with Wallgrove Road and the M7 Motorway;
- A southern east-west route ('southern route' commencing at Bakers Lane to the west) linking Mamre Road with Wallgrove Road and the M7 Motorway;
- Eastern and western north-south connections (Old Wallgrove Road and 'north-south link' respectively) linking both the north and south east-west link roads; and
- A northern access road to Archibold Road connecting the area to the M4 Motorway (at a new interchange with east facing ramps only) and the Great Western Highway.

The above new road links encompass 40m wide corridors and are to be constructed to a four lane divided carriageway standard widening at intersections to accommodate additional exclusive turning lanes.

It is further planned that there will be additional lower order internal access roads that would be required to suit the development needs of the area.

5.1.4 Future Traffic Demands and Road Upgrades

The development of the Western Sydney Employment Area is expected to significantly increase traffic flows on the surrounding road network for both morning and afternoon peak periods. The Roads & Traffic Authority has projected that traffic flows on the M7 Motorway are to increase by approximately 65% during peak periods. Furthermore, a substantial increase in the morning and afternoon peak traffic volumes are forecast on other major roads, including Mamre Road and Erskine Park Road.

Based on the Roads & Traffic Authority's modelling analysis, a list of external roads that require upgrading to accommodate the traffic demand generated by the planned development of the Western Sydney Employment Area has been identified as follows:

- Mamre Road is to provide a four lane divided carriageway between Bakers Lane and the M4 Motorway including the duplication of the bridge over the Motorway and associated upgrading of the existing on and off ramps;

- Archibold Road bold is to provide a four lane divided carriageway between Great Western Highway and the M4 Motorway, where west facing ramps are to be provided;

- Erskine Park Road is to provide a four lane divided carriageway between Mamre Road and Coonawarra Drive; and

- M7 Motorway is to provide an additional 2 southbound lanes and 1 northbound lane between the M4 Motorway and Old Wallgrove Road, including the widening of access ramps to and from Wallgrove road at Old Wallgrove Road.

The abovementioned upgrading of Mamre Road between Bakers Lane and the M4 Motorway encompasses a series of intersections including Erskine Park Road, which is proposed to be significantly upgraded to provide additional auxiliary turning lanes and operate under traffic signal control. This is discussed in more detail in subsequent sections of this report.

5.1.5 Public Transport

Section 4.3 of this report indicates that the subject site and surrounding area is not particularly well served by existing public transport facilities. The North-west Subregional Transport Strategy identifies the challenge of providing public transport services for employees in the Western Sydney Employment Area. In this regard, the former *State Environmental Planning Policy 59* provided a target of 10% of employees working within the Western Sydney Employment Areas utilising public transport to travel to and from work. This will obviously require the implementation of significant public transport initiatives to the area, most likely to be high frequency bus services linking the subject area to existing railway services, anticipated to be the western and south-western railway lines.

5.1.6 Future Traffic Volumes

In order to obtain an estimation of the future peak traffic demands immediately surrounding the subject site, this Practice has requested preliminary strategic modelling outputs from the Roads & Traffic Authority. **Table 1** overleaf provides a summary of the projected 2016 and 2031 traffic volumes surrounding the subject site incorporating the planned development of the Western Sydney Employment Area whilst full details are contained as **Appendix 2**.

TABLE 1 PROJECTED FUTURE PEAK HOUR TRAFFIC VOLUMES				
	2016		2031	
	AM	PM	AM	PM
Bakers Lane				
Eastbound	943	283	2117	164
Westbound	283	1032	237	2257
Mamre Road (south of Bakers Lane)				
Northbound	1074	704	1822	966
Southbound	729	1150	980	1850
Mamre Road (north of Bakers Lane)				
Northbound	723	1061	1102	2259
Southbound	1087	758	2140	1050

The 2031 traffic volume projections incorporate the planned future road network described in Section 5.1.3 of this report (associated with the redevelopment of the Western Sydney Employment Area) whilst the 2016 projections assume the existing road network still prevails.

5.1.6.1 Junction of Mamre Road and Bakers Lane

The future 2016 and 2031 peak hour movement profiles at the junction of Mamre Road and Bakers Lane have been extrapolated from the abovementioned Roads & Traffic Authority strategic modelling data, and represented as **Figures 3** and **4**.

FIGURE 3
PROJECTED 2016 PEAK HOUR MOVEMENT PROFILE
JUNCTION OF MAMRE ROAD & BAKERS LANE

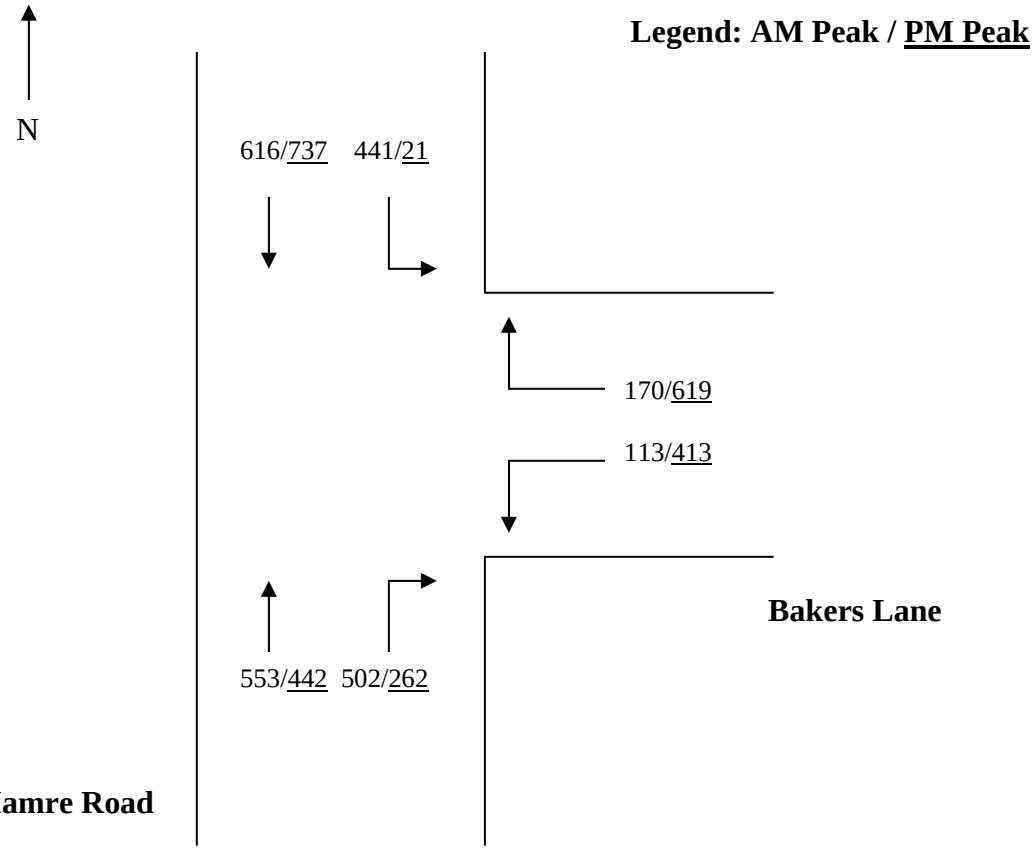
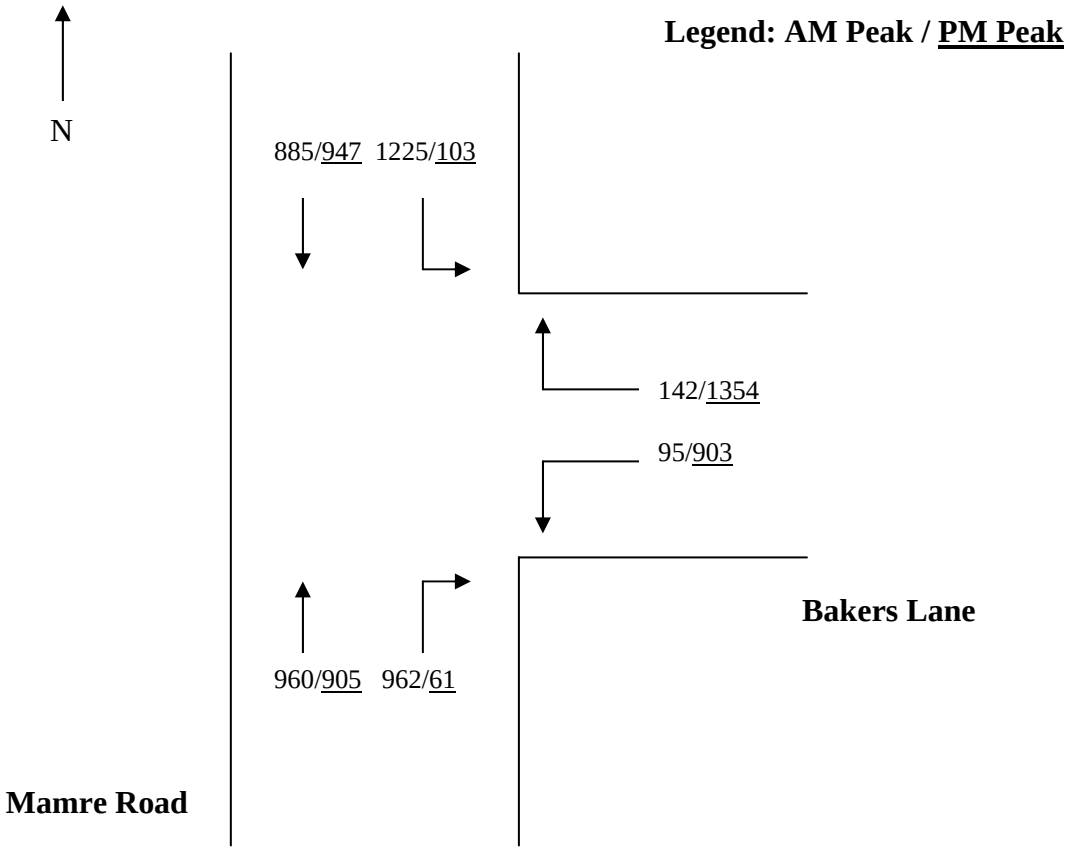


FIGURE 4
PROJECTED 2031 PEAK HOUR MOVEMENT PROFILE
JUNCTION OF MAMRE ROAD & BAKERS LANE



The 2016 and 2031 movement profiles indicate that the junction of Mamre Road and Bakers Lane will require a significant upgrade to suitably accommodate future traffic demands (whether or not the subject site is redeveloped). It is understood that the layout and extent of such an intersection upgrade has not yet been fully assessed and formulated by the Roads & Traffic Authority.

6. PROJECTED TRANSPORT GENERATION & IMPACTS

6.1 Traffic Generation

It has previously been presented that a rate of 15 trips per hectare has been adopted by the Roads & Traffic Authority in other comparable industrial locations (including Eastern Creek and the M7 Business Hub). The basis of this rate is not fully understood but it could be argued that it does not take into account the public transport improvements that will be required to achieve the 10% target set under the former State Environmental Planning Policy 59.

Further to the above, the traffic generated by the subject masterplan is anticipated to be lower than that adopted by the Roads & Traffic Authority for the following reasons:

- Large warehouse developments such as that proposed typically operate 24 hours per day and 7 days per week, thereby spreading traffic loads and minimising peak period generation;

- Warehouses are usually staffed over the abovementioned 24 hour period with shift changeover times that do not coincide with the on-street peak period; and

- Peak period travel is only usually associated with administrative staff, which is only a small proportion of the overall Metcash and DHL activity.

Application of the rate of 15 trips per hectare is therefore likely to generate a worst case scenario which overstates the traffic generation arising from the subject masterplan. Notwithstanding this and in order to generate an absolute worst case scenario, the abovementioned Roads & Traffic Authority traffic generation rate has been adopted to the subject masterplan.

Application of the above rate to the developable area of the subject site (estimated to be approximately 50 hectares) results in 750 vehicle trips per hour in the peak periods.

6.2 Trip Assignment

It has previously been presented that the Roads & Traffic Authority has applied a directional split of 81% / 19% inbound and outbound trips during the morning peak for industrial development. The opposite split is applied during the evening peak period. For the purposes of this assessment, this split has been altered to a 70% / 30% split to account for the abovementioned predominant warehouse nature of the masterplan whereby employee shifts are spread over a 24 hour period with a significant portion of staff not working standard business hours.

The projected site traffic generation is therefore assigned as follows during peak periods:

- 525 inbound and 225 outbound trips during the morning peak hour; and
- 225 inbound and 525 outbound trips during the afternoon peak hour.

Section 5.1.2 of this report presented trip distribution rates assumed by the Roads & Traffic Authority during the assessment of its concept plan for the Western Sydney Employment Area road network. The following trip assignments have been applied to the subject masterplan based on the assumed trip distribution rates under both the projected 2016 and 2031 scenarios:

2016 Scenario

- 65% of traffic will access the site from the north via Mamre Road and thence Bakers Lane; and
- The remaining 35% of traffic will access the site from the south via Mamre Road and thence Bakers Lane.

The same directional split is assumed for vehicles exiting the site.

2031 Scenario

- 20% of traffic will access the site from the north via Mamre Road and thence Bakers Lane;
- 25% of traffic will access the site from the south via Mamre Road and thence Bakers Lane; and
- The remaining 55% of traffic will access the site from the east via the southern east-west link through the Western Sydney Employment Area, the western part of which forms Bakers Lane.

The same directional split is assumed for vehicles exiting the site.

Figures 5 and **6** contained within the following pages represent a graphical representation of the abovementioned trip assignments.

The above trip assignments (and subsequent impact assessment) assumes that the proposed left in / left out access driveway to Mamre Road is not incorporated within the masterplan. The incorporation of this access would reduce traffic demands at the Bakers Lane access intersection and at the junction of Mamre Road and Bakers Lane. Not accounting for this access therefore ensures that this assessment provides an absolute worst case scenario.

FIGURE 5
PROJECTED SITE GENERATED TRIP ASSIGNMENT
2016 SCENARIO

Legend: AM Peak / PM Peak

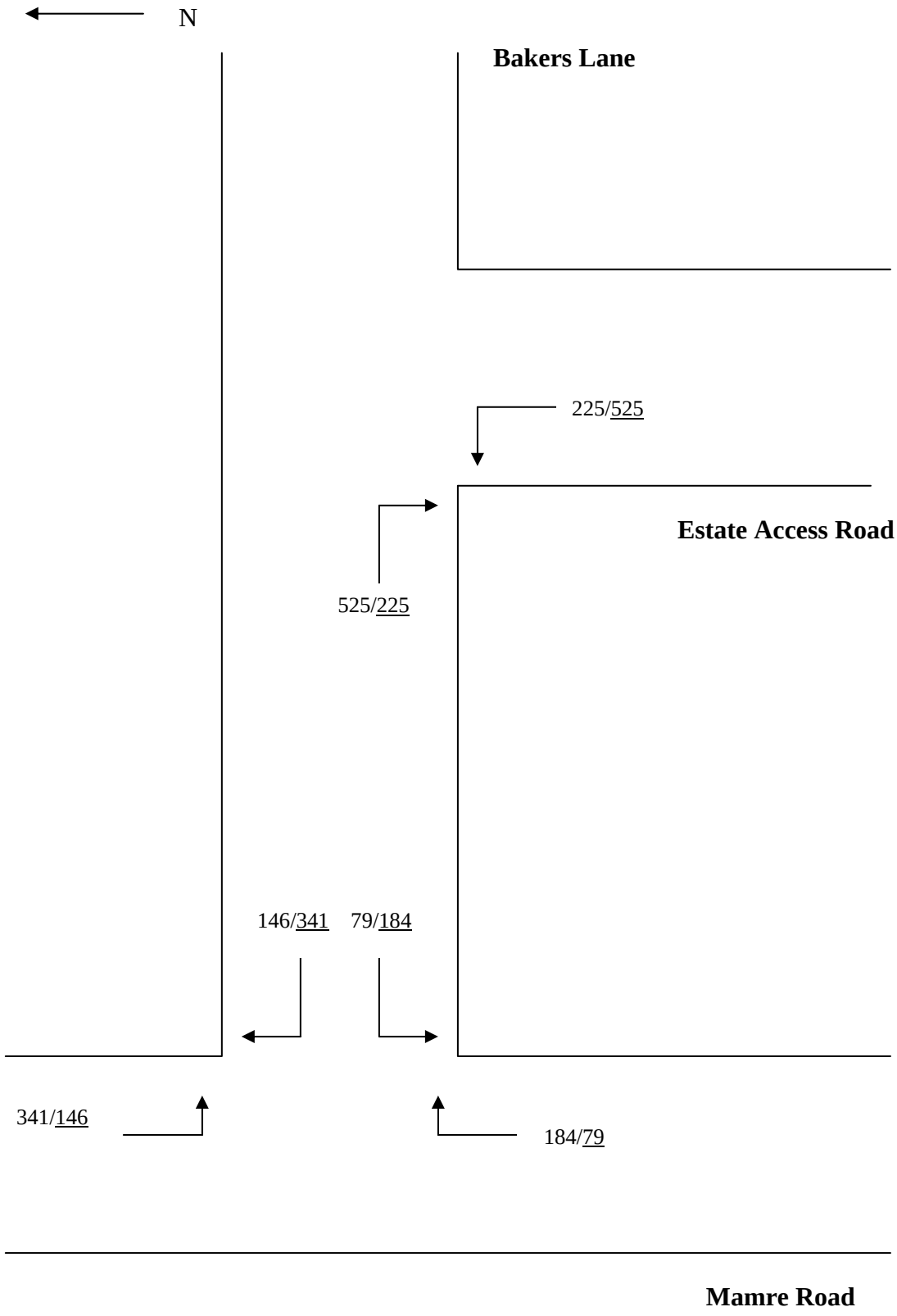
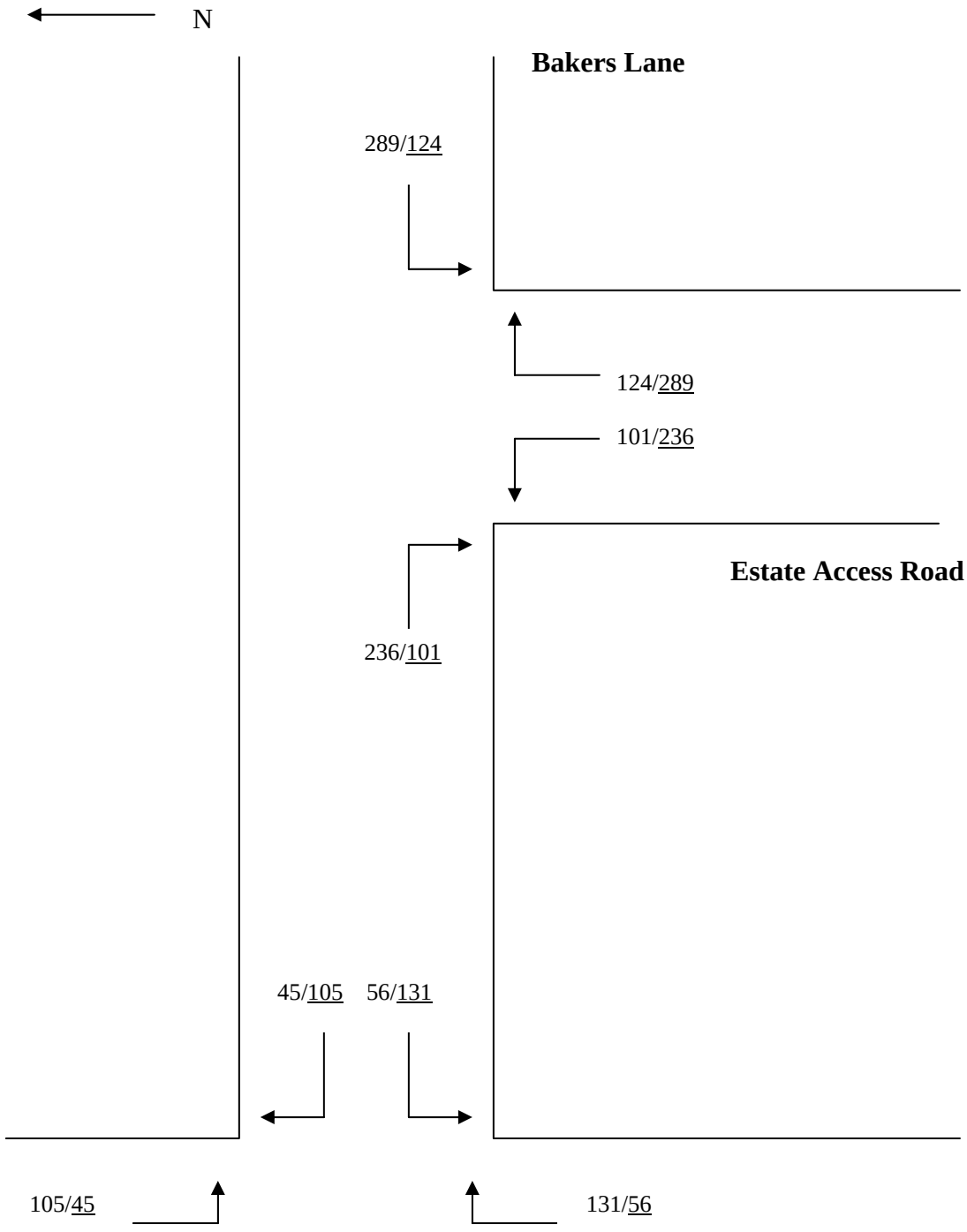


FIGURE 6
PROJECTED SITE GENERATED TRIP ASSIGNMENT
2031 SCENARIO

Legend: AM Peak / PM Peak



6.3 Projected Traffic Volumes

In order to estimate the likely peak hour traffic volumes at the adjoining intersections, the formulated trip assignments presented within **Figures 5** and **6** have been added to the Roads & Traffic Authority's 2016 and 2031 strategic modelling traffic volumes presented within **Table 1**. **Figures 7** and **8** provide an estimation of the 2016 and 2031 traffic demands adjoining the subject site incorporating the additional traffic projected to be generated by the subject site.

It is reiterated that the 2031 traffic volume projections incorporate the planned future road network described in section 5.1.3 of this report (associated with the redevelopment of the Western Sydney Employment Area) whilst the 2016 projections assume the existing road network prevails.

Further to the intersection volumes presented within the following pages, mid-block traffic volumes in the vicinity of the subject site have also been calculated and are presented below within **Table 2** for reference.

TABLE 2
2016 & 2031 MID-BLOCK TRAFFIC VOLUME PROJECTIONS
BAKERS LANE & MAMRE ROAD

	2016			2031		
	RTA Prediction	**RTA Prediction + Masterplan**	**Increase**	**RTA Prediction**	**RTA Prediction + Masterplan**	**Increase**
Bakers Lane (East)						
Eastbound AM	943	943	-	2,217	2,341	124
Westbound AM	283	283	-	237	526	289
Eastbound PM	283	283	-	164	453	289
Westbound PM	1032	1032	-	2,257	2,381	124
Bakers Lane (West)						
Eastbound AM	943	1,468	525	2,217	2,453	236
Westbound AM	283	508	225	237	338	101
Eastbound PM	283	508	225	164	265	101
Westbound PM	1,032	1,557	525	2,257	2,493	236
Mamre Road (North)						
Northbound AM	723	869	146	1,102	1,147	45
Southbound AM	1,057	1,398	341	2,140	2,245	105
Northbound PM	1,061	1,402	341	2,259	2,364	105
Southbound PM	758	904	146	1,050	1,095	45
Mamre Road (South)						
Northbound AM	1,055	1,239	184	1,922	2,053	131
Southbound AM	729	808	79	980	1,036	56
Northbound PM	704	783	79	966	1,022	56
Southbound PM	1,150	1,334	184	1,850	1,981	131

Notes:

1. Bakers Lane (East) is the section of Bakers Lane to the east of the subject site;
2. Bakers Lane (West) is the section of Bakers Lane between the masterplan site access and Mamre Road;
3. Mamre Road (North) is the section of Mamre Road to the north of Bakers Lane; and
4. Mamre Road (South) is the section of Mamre Road to the south of Bakers Lane.

FIGURE 7
PROJECTED TRAFFIC VOLUMES INCORPORATING THE SUBJECT MASTERPLAN
2016 SCENARIO

Legend: AM Peak / PM Peak

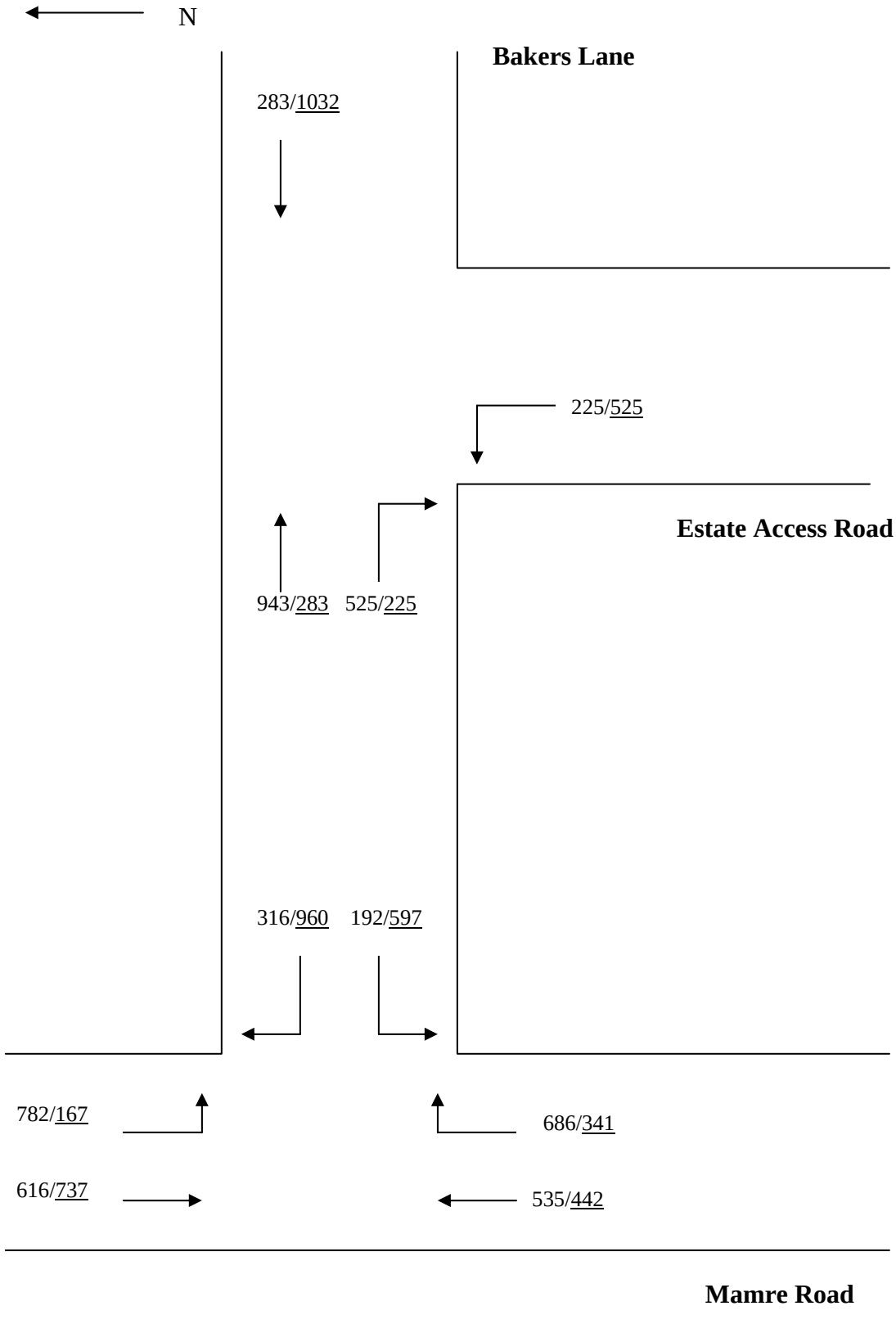
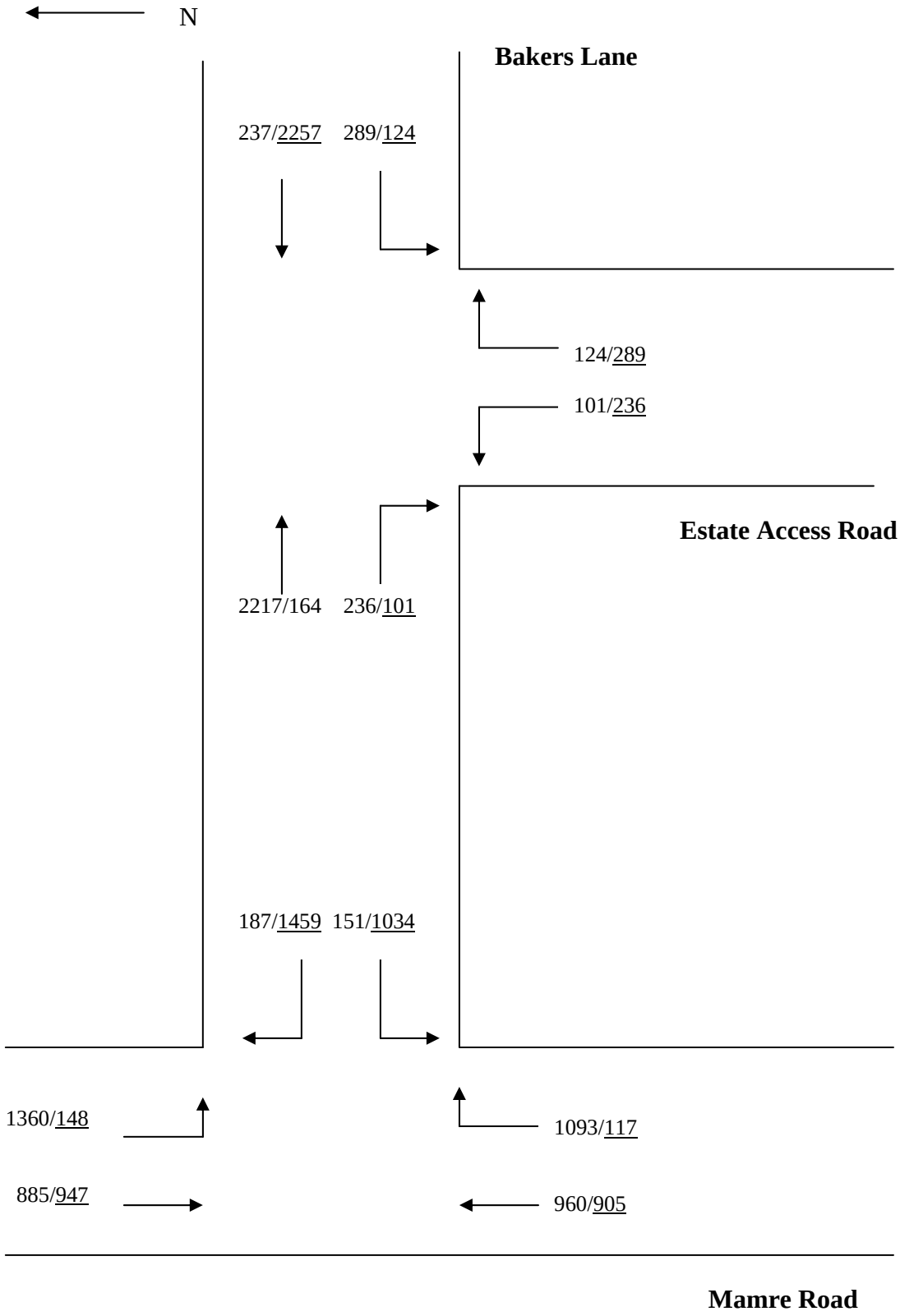


FIGURE 8
PROJECTED TRAFFIC VOLUMES INCORPORATING THE SUBJECT MASTERPLAN
2031 SCENARIO

Legend: AM Peak / PM Peak



6.4 Intersection Performance

In order to objectively assess the operation of the intersections servicing and adjoining the subject site, they have been analysed using INTANAL computer intersection analysis program. INTANAL is a computerised traffic arrangement program which, when volume and geometrical configurations of an intersection are imputed, provides an objective assessment of the operation efficiency under varying types of control (ie signs, signal and roundabouts). Key indicators of INTANAL include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by the Roads and Traffic Authority.

INTANAL provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 3** below (adapted from the Roads & Traffic Authority's *Guide to Traffic Generating Developments*).

TABLE 3
LEVELS OF SERVICE CRITERIA FOR INTERSECTION

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

The results of the analyses are presented overleaf in **Table 4** overleaf whilst full details are available if required.

TABLE 4 INTANAL OUTPUT –INTERSECTION EFFICIENCY								
Intersection	**2016**				**2031**			
	Without Masterplan		**With Masterplan**		**Without Masterplan**		**With Masterplan**	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Mamre Rd / Bakers Ln								
Delay	22.2	24.1	30.0	34.1	37.2	46.9	43.8	55.7
Degree of Saturation	0.49	0.67	0.61	0.83	0.80	0.89	0.87	0.91
Level of Service	C	C	C	C	C	C	C	C
Bakers Ln / Estate Access Rd								
Delay	-	-	7.7	15.1	-	-	14.1	22.6
Degree of Saturation	-	-	0.49	0.70	-	-	0.73	0.86
Level of Service	-	-	A	B	-	-	B	B

Table 4 indicates the following:

- The junction of Mamre Road and Bakers Lane is projected to operate with a level of service C incorporating 2016 and 2031 traffic volumes without the subject masterplan, representing satisfactory conditions;

- Whilst the average vehicular delay and the junction degree of saturation is projected to increase marginally as a result of the proposed masterplan, the abovementioned level of service of the junction of Mamre Road and Bakers Lane is projected to remain C incorporating both the 2016 and 2031 scenarios;

- The proposed Bakers Lane / Estate Access Road junction is projected to operate with a level of service A / B incorporating 2016 traffic demands and the subject masterplan, representing good operation with spare capacity; and

- The proposed Bakers Lane / Estate Access Road junction is projected to operate with a level of service B incorporating 2031 traffic demands and the subject masterplan, once again representing good operation with spare capacity.

The INTANAL assessment therefore indicates that the adjoining road network is anticipated to be capable of accommodating the additional traffic projected to be generated by the masterplan incorporating the road upgrading works proposed and illustrated within **Appendix 1**.

6.5 Mid-Block Carriageway Performance

In order to undertake an assessment of the future mid-block performance of the surrounding road network, the carriageway level of service criteria provided by the Roads & Traffic Authority within its *Guide to Traffic Generating Developments* has been applied to the projected 2016 and 2031 mid-block traffic volumes presented within **Table 2** of this report.

The following provides a summary of the level of service definitions relating to mid-block traffic demands provided by the Roads & Traffic Authority:

- *Level of service A – this, the top level is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.*

- *Level of service B – this level is in the zone for stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort is a little less than that of the service A.*

- *Level of service C – this service level is also in the zone of stable flor, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.*

- *Level of service D – this level is close to the limit of stable flor but is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.*

- *Level of service E – this occurs when traffic volumes are at or close to capacity and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause a traffic-jam.*

- *Level of service F – this service level is in the zone of forced flow. With it, the amount of traffic approaching the point under consideration exceeds that which can pass it. Flow break-down occurs and queuing and delays result.*

The Roads & Traffic Authority provides indicative traffic volumes for the above levels of service for various lane configurations within Table 4.4 of its *Guide to Traffic Generating Developments*. Based on these traffic volume demands, **Table 5** overleaf estimates the future mid-block levels of service of the surrounding road network by applying the future traffic volume projections presented within **Table 2** of this report.

TABLE 5 2016 & 2031 MID-BLOCK LEVELS OF SERVICE BAKERS LANE & MAMRE ROAD				
	2016		2031	
	RTA Prediction	RTA Prediction + Masterplan	RTA Prediction	RTA Prediction + Masterplan
Bakers Lane (East)				
Eastbound AM	A	A	D	D
Westbound AM	A	A	A	A
Eastbound PM	A	A	A	A
Westbound PM	A	A	D	D
Bakers Lane (West)				
Eastbound AM	A	B	D	D
Westbound AM	A	A	A	A
Eastbound PM	A	A	A	A
Westbound PM	A	B	D	D
Mamre Road (North)				
Northbound AM	A	A	A	A
Southbound AM	A	B	D	D
Northbound PM	A	B	D	D
Southbound PM	A	A	A	A
Mamre Road (South)				
Northbound AM	A	A	C	C
Southbound AM	A	A	A	A
Northbound PM	A	A	A	A
Southbound PM	A	B	C	C

Whilst **Table 2** indicates that the subject masterplan will result in marginal increases to the mid-block carriageway volumes of Mamre Road and Bakers Lane, **Table 5** indicates that the levels of service of the carriageways are not projected to change to any unreasonable extent. In this regard, the 2016 levels of service within the Mamre Road and Bakers Lane carriageways are projected to be at least B incorporating the subject masterplan. This level of service however represents stable flow capable of accommodating additional capacity

Whilst the increased 2031 traffic demands throughout the surrounding road network are envisaged to see a general reduction in the level of service surrounding the subject site, the additional traffic projected to be generated by the masterplan is not projected to alter the performance of Mamre Road and Bakers Lane.

6.6 Bakers Lane Land-Uses

6.6.1 Community and Educational Establishments

A series of community and educational establishments are located opposite the subject site on the northern side of Bakers Lane including:

- Mamre Christian College;
- Trinity Catholic Primary;
- Emmaus Catholic College; and

- Emmaus (retirement) Village.

The Mamre Christian College provides an on-site passenger vehicle parking area, access between this area and Bakers Lane being provided via a single combined ingress / egress driveway located approximately 250m to the west of proposed industrial estate access intersection. In addition, the College provides an indented set-down / pick-up bay to the east of the car park access (located approximately 150m to the west of the proposed industrial estate access intersection).

The Trinity Catholic Primary School, Emmaus Catholic College and Emmaus Retirement Village share a large site to the east of the Mamre Christian College. This site is serviced by an internal access road which provides separated ingress and egress to Bakers Lane approximately 200m to the east of the proposed industrial estate access road. This access road provides connectivity to a series of internal passenger vehicle parking and circulation areas associated with the community and educational establishments. Similarly to the Mamre Christian College, the Emmaus site provides an indented set-down / pick-up bay to the east of the site access road located some 250m to east of the proposed industrial estate access road.

The above access roads and set-down / pick-up bays currently accommodate unrestricted access movements however observations indicate that a majority of vehicular movements are left in / right out associated with the connectivity of Bakers Lane to Mamre Road and the greater road network to the west.

During initial liaison with the Roads & Traffic Authority with respect to the subject application, it has been recommended that any Bakers Lane upgrading works associated with the subject proposal include the provision of a service lane along the frontage of the opposing land-uses to provide separation between traffic / pedestrians associated with these uses and traffic entering / exiting the proposed development. This recommendation was included within a letter from the Authority to the Department of Planning dated 29 April 2010.

The proposed Bakers Lane upgrading works associated with the subject masterplan include the provision of a 5.5m wide service lane accommodated wholly within the existing Bakers Lane road reserve which extends along the total extent of the frontages of the abovementioned land-uses. The design of the service lane has been based on existing service lanes recently constructed on State Roads throughout Sydney and will provide for a one-way eastbound traffic function along the site frontages parallel to the eastbound Bakers Lane carriageway.

Vehicles accessing the land-uses located on the northern side of Bakers Lane will do so via a simple diverge movement from the eastbound Bakers Lane carriageway and thence a left turn movement from the proposed service lane. Vehicles exiting the land-uses located on the northern side will do so via left turn into the service lane. The eastern termination of the service lane is proposed to be provided with an interim U-turn facility which will allow access to both the east and westbound Bakers Lane carriageways. The extremely low traffic volumes accommodated by Bakers Lane to the east of the subject site is such that these U-turning movements can be undertaken in a safe and efficient manner.

Following the development of the adjoining south-west precinct of the Western Sydney Employment Area, it is likely that the previously presented interim U-turn facility will need to be closed and vehicles exiting the service lane will need to undertake a U-turn manoeuvre via the future Employment Area road network, most likely to include a roundabout within Bakers Lane to the east of the subject site.

The proposed service lane is therefore anticipated to effectively separate traffic and pedestrian associated with the land-uses to the north from the traffic entering and exiting the proposed masterplan. It is noted that a similar traffic management arrangement would most likely be necessary when Bakers Lane accommodates the significant increases in traffic demands associated with the development of the Western Sydney Employment Area, whether or not the subject site is developed.

Preliminary consultation with respect to the subject proposal has been undertaken with representatives of Mamre Christian College and Parramatta Diocese, the trustees for the total property occupied by Trinity Primary School, Emmaus College and the Emmaus Retirement Village. During these discussions, the proposed service lane plan was tabled. It is understood that a letter has been forwarded to the Director General of the Department of Planning on behalf of the Parramatta Diocese seeking details on the impact of the proposal on the total site.

It is also understood that the Emmaus Retirement Village administered by the Catholic Healthcare Services is seeking development consent from Penrith Council for the provision of a further vehicular access driveway between the Emmaus site and Bakers Lane to the west of the existing indented set-down / pick-up bay. This additional access is proposed to service the existing retirement village which is currently serviced by the central primary access road as well as additional retirement units. It is noted that the proposed additional site access is capable of being suitably accommodated within the proposed service lane design provided within **Appendix 1**.

6.6.2 Rural Residential Allotments

In addition to the previously presented community and educational establishments, there are two rural residential dwellings located to the west of the abovementioned community and educational establishments. These uses in their current form generate minimal vehicle trips and as such are proposed to maintain direct access to the Bakers Lane through traffic lanes (eastbound carriageway only).

The provision of a service road to service these properties is not considered warranted in terms of these low traffic flows and particularly as such a facilitate residents travelling excessive distances on the service road to gain access to the westbound carriageway. In addition, these residents would be unduly affected by traffic flows generated by the community and educational establishments. It is proposed however that consultation be undertaken with these landowners similar to that which has taken place with the community and educational establishments.

The restriction of access to / from these properties to left in / left out associated with the separation of the Bakers Lane directional carriageways will result in motorists exiting these properties being required to utilise the previously presented interim U-turn facility provided adjoining the north-eastern corner of the site. This facility will

allow eastbound Bakers Lane vehicles to access the westbound carriageway and thence Mamre Road. As previously presented, following the development of the adjoining south-west precinct of the Western Sydney Employment Area, it is likely that the previously presented interim U-turn facility will need to be closed, upon which eastbound Bakers Lane vehicles will need to undertake a U-turn manoeuvre via the future Employment Area road network, most likely to include a roundabout within Bakers Lane to the east of the subject site.

6.7 Estate Access Road Intersection

The Estate Access Road Intersection with Bakers Lane is proposed to be provided approximately 650m to the east of Mamre Road. Whilst the Bakers Lane horizontal alignment is reasonably consistent along the site frontage, the vertical alignment is variable commensurate with the undulating nature of the surrounding environment. This inconsistent vertical alignment somewhat restricts sight distance to / from abutting land-uses at various locations along the site frontage.

In regard to the above, care has been taken in the design of the estate access road intersection to ensure that adequate sight distance is provided between the access road and the Bakers Lane approaches. The estate access road is proposed to be located approximately in a low point between two surrounding hills to maximise the available sight distance. The available sight distance is proposed to be enhanced by the regrading of Bakers Lane along the site frontage which will result in the lowering and raising of the current roadway high and low points resulting in a more consistent vertical alignment.

Whilst the proposed service lane will separate traffic associated with the land-uses to the north and the subject site, the estate access road has been located approximately mid-way between the existing land-use access driveways. Any influence of the subject development access intersection on the existing land-uses to the north will therefore be minimised as much as is practicable.

6.8 Mamre Road Access Driveway

The masterplan provides for a centrally located access driveway to the internal east-west roadway bisecting the DHL site providing restricted left in / left out access from and to the future upgraded southbound Mamre Road carriageway. The left in / left out access movements are proposed to be assisted by the provision of auxiliary deceleration and acceleration lanes to ensure that site access movements can occur with minimal impact on adjoining southbound traffic safety and efficiency. In any case, the operation of the traffic signals at Bakers Lane effectively punctuate southbound traffic flow within Mamre Road thereby providing extended and regular gaps in traffic flow allowing traffic to exit the site in a safe and efficient manner.

It has previously been presented that the trip assignments and subsequent impact assessment provided by this report assumes that the proposed left in / left out access driveway to Mamre Road is not incorporated within the masterplan. The incorporation of this access would reduce traffic demands at the Bakers Lane access intersection and at the junction of Mamre Road and Bakers Lane. Not accounting for this access therefore ensures that this assessment provides an absolute worst case scenario.

6.9 Greater Road Network

The Roads & Traffic Authority in a letter to the Department of Planning with respect to the subject masterplan indicated that assessment of the subject proposal should be undertaken with respect to the operation of the Mamre Road intersections with James Erskine Drive and Erskine Park Road in conjunction with Bakers Lane. Whilst this report undertakes detailed assessment of the impact of the subject proposal on Bakers Lane, assessment of the impact on Mamre Road to the north is not considered to be required for the reasons outlined as follows:

- The intersection of Mamre Road and James Erskine Drive over the last few years has been constructed as part of the development of the James Erskine Industrial Estate to accommodate the future four lane divided carriageway nature of Mamre Road in conjunction with exclusive turning lanes. This amplification work also included the provision of traffic signals; and

- The junction of Mamre Road and Erskine Park Road is as indicated in Section 5.1.4 of this report also proposed to be upgraded in a similar fashion to the above junction with signalised control.

The above works including the widening of Mamre Road and Erskine Park Road along with signalisation of the latter junction will ensure that the levels of traffic service available at these junctions is capable of accommodating the future traffic demands associated with the subject site particularly in the interim period pending the redevelopment of the Western Sydney Employment Area. These works must be in place irrespective of the subject proposal.

It is acknowledged that the traffic generating capability of the subject masterplan is notable on face value however **Table 2** of this report indicates that the additional traffic volumes associated with the subject masterplan within Mamre Road to the north of the subject site are not significant, particularly during the 2031 scenario. In this regard, the proposed redevelopment of the 50 hectare site is minor when considering the planned redevelopment of the adjoining Western Sydney Employment Area which comprises some 2,450 of developable land. The subject site represents approximately 2% of the extent of the Employment Area thereby indicating that any impacts of the subject proposal over and above that of the redevelopment of the Employment Area on the greater road network including Mamre Road intersections to the north of the subject site, would be negligible.

The above situation is displayed by the mid-block carriageway level of service assessment of Mamre Road to the north of Bakers Lane contained within **Table 5** of this report. Accordingly, an analysis of future projected traffic flows along with the additional traffic generated by the subject development would indicate that the masterplan would have insignificant impact with respect to intersection performance parameters such as vehicular delay, degree of saturation and level of service.

A large proportion of the Bakers Lane and Mamre Road upgrading works proposed as part of the subject masterplan are works which would be necessary in the future whether or not the subject site was redeveloped. Any future negotiations between the subject applicant and the relevant stakeholders in relation to the requirement for

upgrading works to the surrounding greater road network should be cognisant of this situation.

6.10 Public Transport and Non-Car Travel

The North-West Subregional Transport Strategy identifies the challenge of providing public transport services for employees in the Western Sydney Employment Area. Prior to the introduction of the Western Sydney Employment Area SEPP, SEPP 59 provided a target public transport utilisation of 10% for employment lands such as the subject masterplan. It is understood that the Metcash and DHL components of the subject masterplan will ultimately generate employment for up to 1,600 people. Applying the abovementioned public transport utilisation target to this employee population, it is estimated that 160 people will utilise public transport to access to the subject site on a daily basis.

It has previously been presented that the only feasible method of providing public transport to / from the subject site is that of providing bus services between the site and nearby railway stations, most likely to be St Marys, Mt Druitt, Fairfield and Liverpool. Based on an average bus occupancy of 40 employees, it is estimated that approximately 4 new bus services will be required to service the subject site on a regular basis. Westbus currently operate a peak hour service between the Western Railway Line and the James Erskine Industrial Estate located to the north of the site. It is anticipated that this service can be extended to capture the subject site. It is acknowledged that the subject applicant will need to liaise extensively with public transport providers such as Westbus to ensure that these services can be adequately provided to / from the subject site.

Metcash and DHL have both displayed a willingness during discussions with this Practice to implement site specific sustainable travel plans (similar to Travelsmart) to ensure that the public transport utilisation target is met and / or exceeded.

7. INTERNAL CONSIDERATIONS

7.1 Estate Access Road

It has previously been presented that the subject site is proposed to be accessed via a primary estate access road intersecting with Bakers Lane under traffic signal control. The access road is proposed to extend south into the site and provide connectivity to the Metcash site and the DHL site located to the east and west of the estate access road respectively.

The access road is essentially proposed to form a two lane divided carriageway (13m wide pavement within a 20m wide reservation) widening on approach to Bakers Lane to accommodate suitable exclusive turning lanes. The southbound access road carriageway is proposed to provide direct driveway access to a large passenger vehicle parking area servicing the Metcash site. Right turn egress from this driveway back to the estate access road is proposed to be facilitated by a right turn acceleration lane contained within the central median.

The estate access road is proposed to connect with a centrally located four-way single lane circulating roundabout with the three other approaches providing the access to the following development components:

- The eastern approach is to service the Metcash heavy vehicle loading areas;
- The southern approach is to service the heavy vehicle manoeuvring areas of building 5 of the DHL facilities (in conjunction with a potential future road extension to abutting sites to the south); and
- The western approach is to service the remainder of the DHL building heavy vehicle areas and all passenger vehicle parking associated with the DHL buildings.

The following sub-sections of this report describe abovementioned development components.

7.2 Metcash Component

7.2.1 Passenger Vehicles

The Metcash site component is proposed to be serviced by a large passenger vehicle parking area accessed directly from the estate access road as described above. This parking area is proposed to contain approximately 500 parking spaces provided within a standard arrangement comprising rows of 90 degree angled parking rows serviced by adjoining parking aisles. The parking area has been designed in accordance with the Australian Standard for Parking Facilities Part 1: Off Street Car Parking (AS2890.1-2004) providing parking space dimensions of 2.5m x 5.5m serviced by 6.5m wide two-way parking aisles.

7.2.2 Heavy Vehicles

The Metcash site is proposed to be serviced by and has been designed to accommodate vehicles up to the size of 25m long B-doubles.

Heavy vehicle access to the Metcash development is proposed to be facilitated via the eastern internal roundabout approach road. This road is proposed to provide a pavement width of 11m providing one through lane of traffic in each direction. A security gate house is proposed to be provided approximately 50m to the east of the roundabout to ensure that queuing from the gatehouse does not influence the operation of the estate access road.

The Metcash access road provides connectivity to a wide roadway which circulates around the primary warehouse servicing loading docks provided along the eastern and western warehouse walls.

7.2 DHL Component

7.3.1 Passenger Vehicles

Passenger vehicles associated with the DHL site are proposed to be provided with a series of campus style parking areas adjoining the various DHL buildings. These parking areas (containing approximately 600 parking spaces) are proposed to be accessed via the western approach roadway intersecting with the estate access road under roundabout control which also extends to the west to provide a left in / left out connection to Mamre Road.

The parking areas are proposed to provide standard designs comprising rows of 90 degree parking areas serviced by central parking aisles, designed to similar AS2890.1-2004 standards described for the Metcash parking area.

7.3.2 Heavy Vehicles

The DHL site is proposed to be serviced by and has been designed to accommodate vehicles up to the size of 25m long B-doubles.

The heavy vehicle and passenger vehicle movements associated with the DHL component are proposed to be separated as much as is practicable. In this regard all DHL buildings are proposed to be serviced by passenger and heavy vehicle parking and manoeuvring areas accessed via separate access driveways connecting to the internal east-west roadway linking the internal roundabout to Mamre Road.

Heavy vehicles servicing the southern DHL buildings are proposed to be exclusively serviced by a southern periphery road which forms the southern approach to the central roundabout. Heavy vehicle turning movements between the main DHL access road and the building heavy vehicle manoeuvring areas are proposed to be assisted by exclusive right and left turn deceleration and acceleration lanes respectively to ensure that any interaction between passenger and heavy vehicle movements is minimised.

7.4 Parking Provision

Penrith City Council and the Roads & Traffic Authority provide parking requirements for industrial developments relevant to the subject masterplan as follows:

Penrith City Council

Warehouses - 1 space per 100m^2 gross floor area
Offices - 1 space per 40m^2 gross floor area

Roads & Traffic Authority

Warehouses - 1 space per 300m^2 gross floor area
Offices - 1 space per 300m^2 gross floor area

The masterplan parking provision has been based on 1 space per 300m^2 of warehouse area and 1 space per 40m^2 of office area, which is consistent with contemporary industrial estates in the Western Sydney Employment Area (e.g. Greystanes Southern Employment Lanes). Such a parking provision comfortably complies with the Roads & Traffic Authority parking requirements and is therefore considered reasonable, particularly for the proposed larger scale warehouse type development which typically has a lower employee density than smaller industrial facilities.

The proposed parking provision has been formulated based on specific advice / requirements provided by Metcash and DHL. Accordingly, it is expected that the parking provision will suitably accommodate the peak parking demand such that there will not be any unreasonable overspill of parking onto the adjoining road network or indeed the estate access road.

8. DRAFT PACKAGE OF MEASURES

As well as undertaking an assessment of the traffic and transport impact of the masterplan, this report also provides a TMAP outline with the primary objective of formulating a draft package of measures designed to respond to and manage the transport impacts of the subject development. The package of measures should be designed to assist in implementing the overall vision for the Western Sydney Employment Area as reflected in the Government strategies outlined in Section 2 of this report.

The *Draft Interim Guidelines on Transport Management and Accessibility Plans* states that key stakeholders (Penrith Council, the Department of Planning and the subject applicant) should be actively involved in the formulation of the package of measures to be implemented. It is further noted that other stakeholders such as the Roads & Traffic Authority, West Bus and the operators of the community and educational land-uses bounding the site to the north could be consulted during the formulation of the package of measures.

The Roads & Traffic Authority has in recent times worked towards formulating a package of measures for the surrounding area which take into consideration the planned development of the adjoining Western Sydney Employment Area. This has resulted in the planned road network alterations and upgrades described in Sections 5.1.3 and 5.1.4 of this report being formulated. It is understood that the alterations and upgrade to the surrounding infrastructure will be funded by developer contributions associated with the planned development of the Western Sydney Employment Area.

Further to the infrastructure alterations and upgrades already planned, this report identifies a number of additional works which are considered to be required to suitably accommodate the subject development. These works are primarily restricted to upgrading works within Mamre Road and Bakers Lane and are defined within the masterplan included as **Appendix 1**. In addition to these proposed infrastructure requirements, this report presents that additional bus services will be required to service the subject site. The extent of these services is described within Section 6.9 of this report.

Similarly to those measures already planned, it is understood that the subject applicant will negotiate with the relevant stakeholders an appropriate apportionment of contributions to the abovementioned additional measures which are necessitated by the subject development. In this regard, it is considered that a detailed TMAP could reasonably be imposed as condition of development consent whereby the package of measures could be agreed upon by the abovementioned relevant stakeholders.

9. CONSTRUCTION ISSUES

9.1 Construction Traffic Management Plan

The scale of the subject development (earthworks alone may require the transport of approximately 250,000m^3 of fill from the site) is such that the construction will occur over a significant period of time during which an integrated series of traffic and pedestrian management measures will be required to be implemented. It is understood that as part of the development consent process, the applicant will be required to prepare a detailed site management plan providing traffic and pedestrian management measures to be implemented during construction including but not being limited to:

- Construction vehicle transport routes;
- Construction site access locations and management measures;
- Construction personnel parking controls;
- Stage by stage construction traffic generation; and
- Impacts of construction on adjoining traffic and pedestrian movements, in particular the community and educational facilities located opposite the site on the northern side of Bakers Lane.

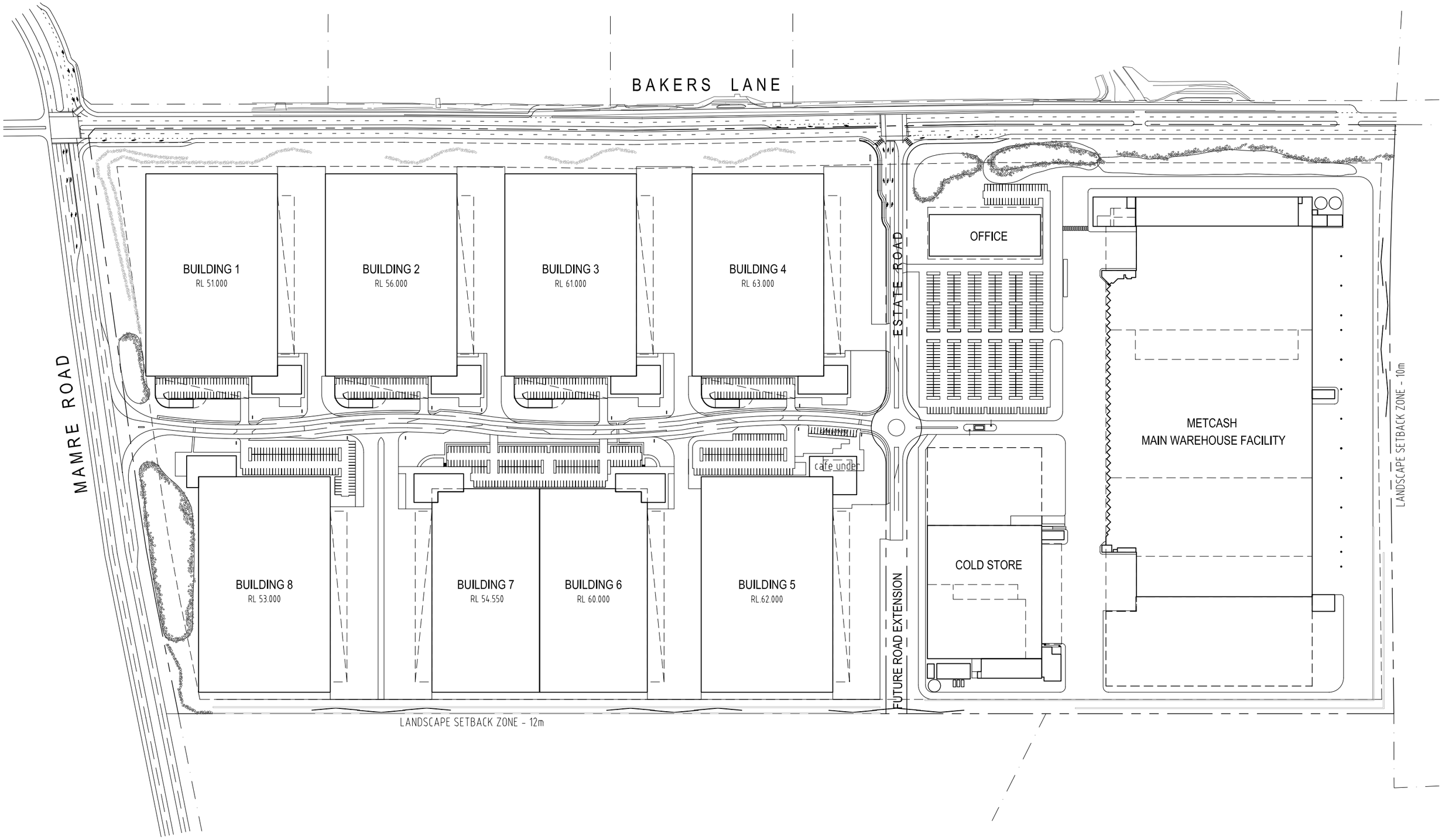
Until such time as the proposed road upgrades associated with the subject masterplan are completed, vehicular site access location associated with construction should be located a significant distance away from the existing access driveways servicing the abovementioned community and educational establishments to ensure that any interaction is minimised to acceptable levels. The most desirable location is likely to be within Bakers Lane approximately 150m to the east of Mamre Road. Any temporary construction site access is to be supervised by appropriately qualified traffic controllers. Further, site access movements by construction vehicles should be eliminated during periods of peak school operation (start and finish periods, i.e. 8.00am – 9.30am and 2.30pm – 4.00pm, school days).

Construction vehicle transit routes to and from the site will be appropriately selected to minimise the impact on adjoining arterial road network capacities with routes governed by load limits being avoided as necessary.

The scale of the subject site is such that portions of the site can be utilised by construction personnel and vehicles rather than occupying the adjoining road network.

Whilst it is noted that a notable level of traffic will be generated to and from the site during the construction phases, it is not expected that this traffic will exceed that which is projected to be generated by the proposed masterplan following construction. Accordingly, incorporating the implementation of appropriate traffic and pedestrian management measures as determined by the management plan (which can reasonably be imposed as a condition of consent) and based on the traffic impact assessment provided in this report, it is not envisaged that the construction will result in unreasonable impacts on the surrounding road network.

APPENDIX 1



LOGOS Property

Kemps Creek Industrial Estate

MAMRE ROAD & BAKERS LANE, ERSKINE PARK

AXIS architectural
2 / 107 Cronulla Street, Cronulla NSW 2230
p + 02 9523 7858 e + david@axisarchitects.com.au
nominated architect - David McDonald NSW ARB -7997

ESTATE LAYOUT PLAN

August 2010
1:3000 scale

100501/ LP-EP-DA

A 101 / A

APPENDIX 2

Our Reference:	RDC 10M620 SYD10/00275
Your Reference:	Ref: 10062 - 708 Mamre Road, Erskine Park
Contact:	Dianne Rees
Telephone	8849 2237

RTA

Thompson Stanbury Associates
75 Gindurra Avenue
CASTLE HILL NSW 2154

Attention: David Thompson

CONSTRUCTION AND OPERATION OF WAREHOUSING AND DISTRIBUTION PRECINCT AT 708 MAMRE ROAD, KEMPS CREEK.

Dear David

I refer to our meeting on 28 April 2010 regarding the proposed construction and operation of warehousing and distribution precinct (Erskine Park Logistics Campus).

Attached are some preliminary strategic modelling outputs showing future traffic volumes on Bakers Lane and Mamre Road. The RTA emphasis that this modelling is approximate and based on assumptions which are subject to change. Furthermore, the outputs and their use are subject to the following:

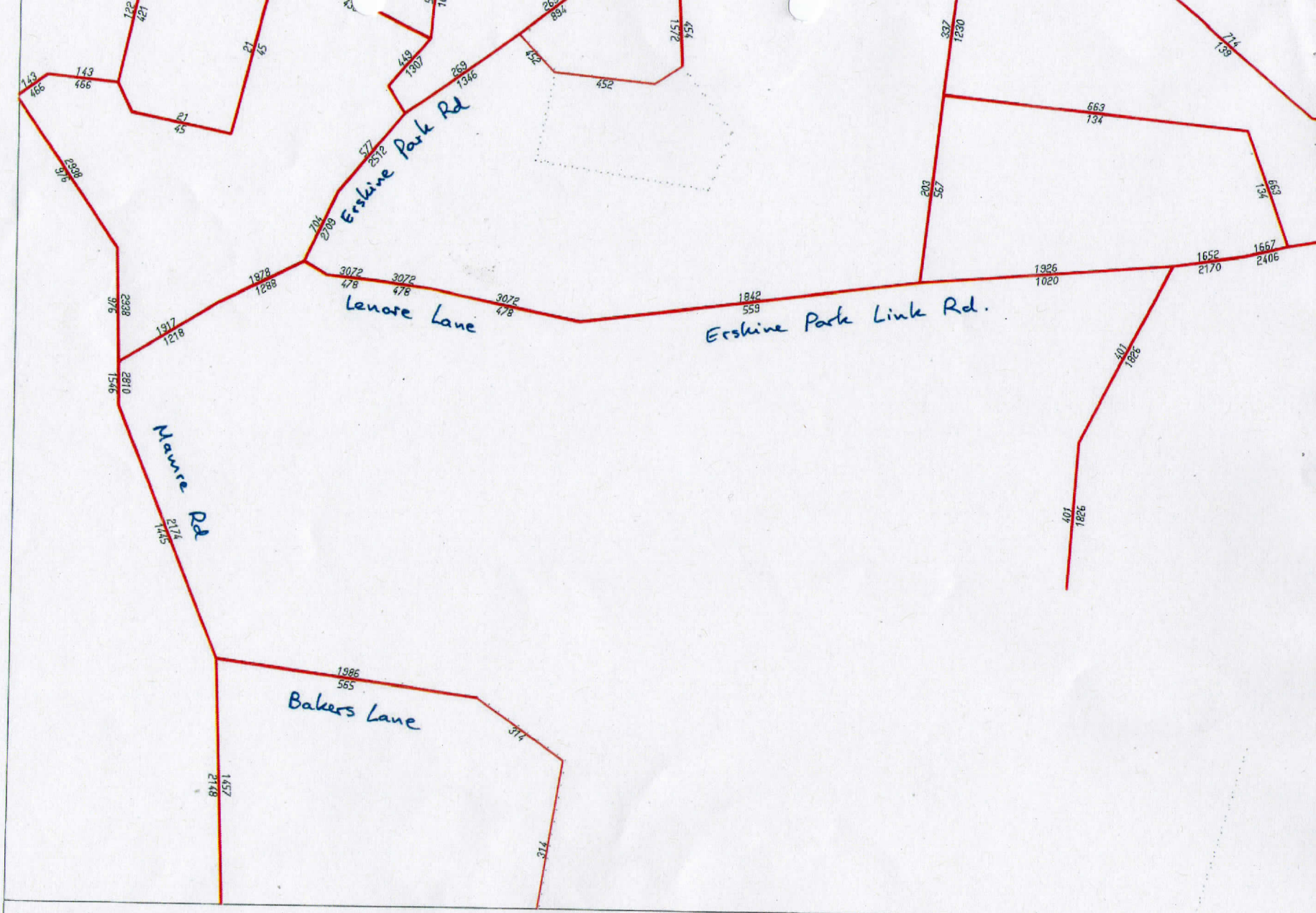
- The modelled volumes are very approximate.
- Modelling is based on assumptions about future levels of employment which cannot be verified until the area is fully developed.
- The model includes assumptions about future levels of employment in the area surrounding Bakers Lane.
- The configuration of the modelled road networks within the development area has been assumed for modelling and planning purposes, and does not imply any commitments on the part of RTA, Department of Planning, or local government.
- Any changes to assumptions about future employment and road infrastructure will change the forecast traffic volumes.
- Any person who places any reliance on these forecasts does so at their own risk.
- The information is only provided to the proponent in relations to this development proposal only.

Should you have questions regarding this matter, please call Dianne Rees on 8849 2237.

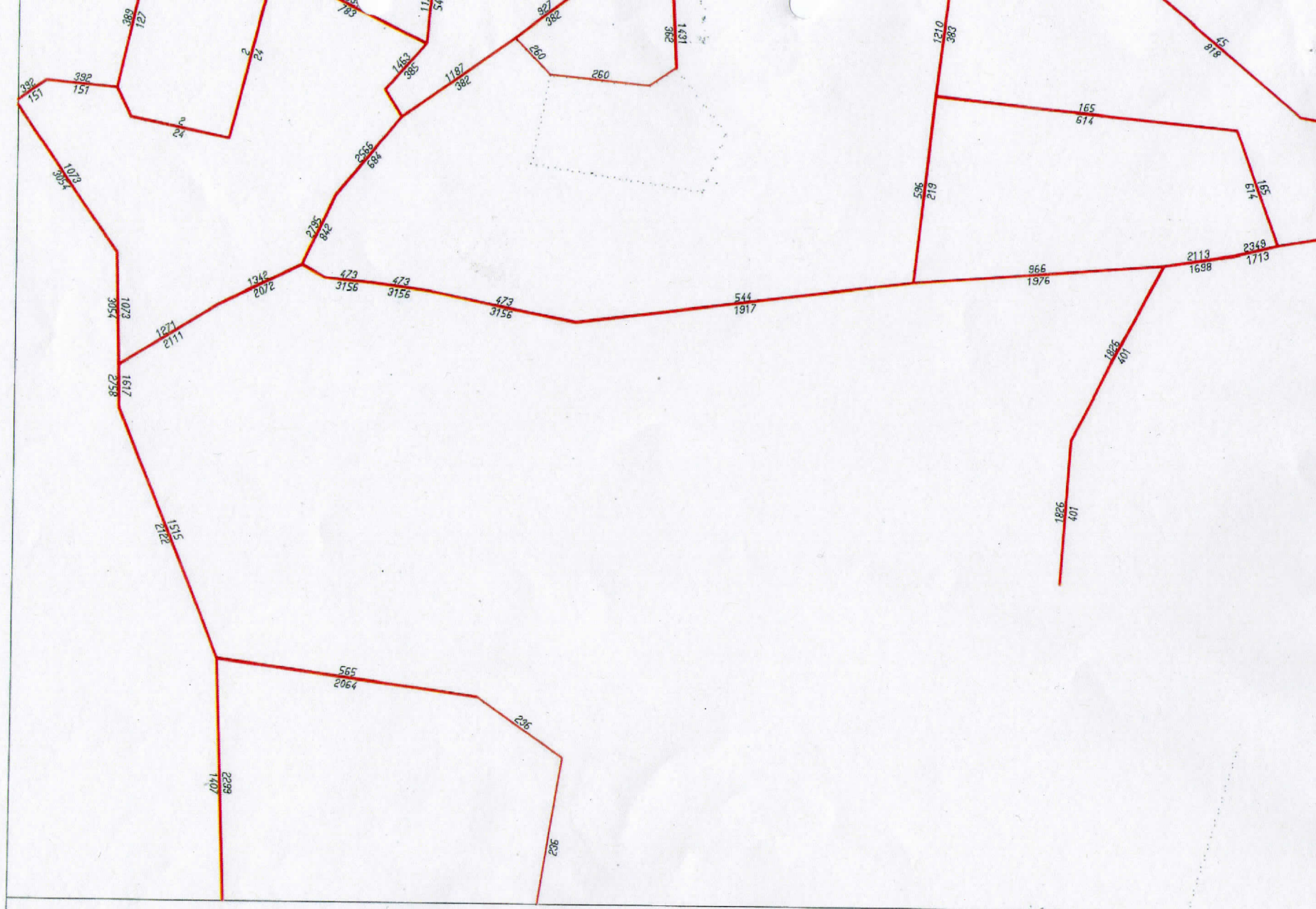
Yours faithfully

Ken Moon
Land Use Planning and Assessment Manager
Transport Planning, Sydney Region

10 May 2010



EMME/2 PROJECT: RTA Networks
SCENARIO 65201: 2016SYDRDNET7-9AM (mf94, 21&10T/ha) : M7HUB&NoSthLNoRamps (JF)



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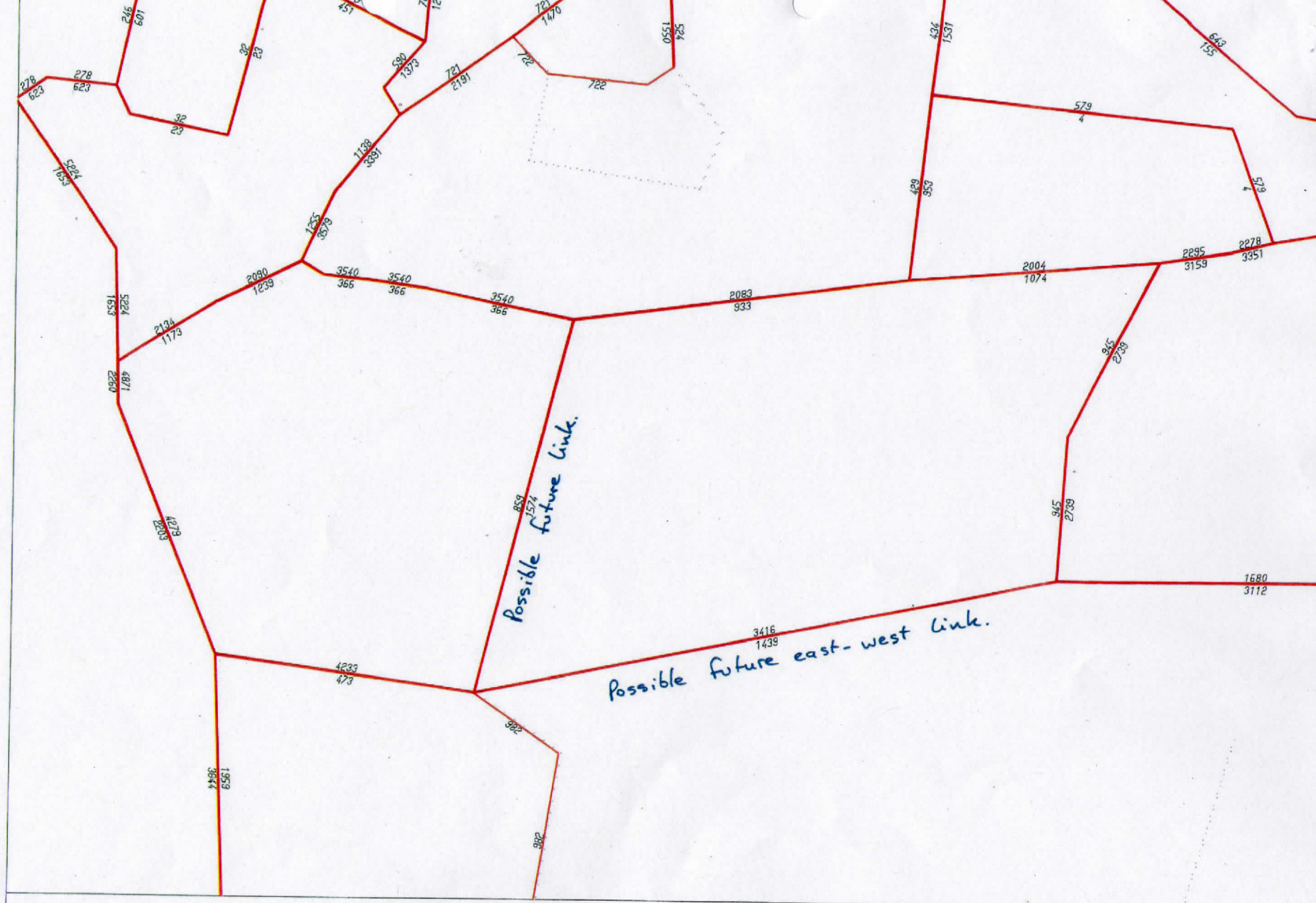
SCENARIO 65202: 2016SYDRDNET4-6pm (mf97, 21&10T/ha) : M7HUB&NoSthLNoRamps (JF)



EMME/2 PROJECT: RTA Networks
SCENARIO 6501: 2031SYDRDNET7-9AM (mf95, 21&10T/ha): M7 Hub+Chandos.S.LINK (JF)

EMME/2 PROJECT: RTA Networks
SCENARIO 5502: 2031SYDRDNET4-6PM (mf96, 21&10T/ha) : M7Hub+Chandos.sth.link (JF)