

TRAFFIX



TRAFFIC IMPACT ASSESSMENT
OF A PROPOSED
COLES MYER LIMITED DISTRIBUTION CENTRE (CML CDC)
AT
M7 BUSINESS HUB, WALLGROVE ROAD, MINCHINBURY

Prepared on behalf of

MACQUARIE GOODMAN MANAGEMENT LIMITED

Prepared by

TRAFFIX

TRAFFIC AND TRANSPORT PLANNERS

*Ref: 05 208v3
January 2006*



CONTENTS

1. INTRODUCTION	1
2. LOCATION AND SITE	2
3. BASE CASE TRAFFIC CONDITIONS	3
4. DESCRIPTION OF PROPOSED DEVELOPMENT	4
5. ASSESSMENT OF TRAFFIC IMPACTS	5
5.1 Traffic Generation Under Current Planning Context	5
5.2 Traffic Generation Under RTA Guideline Trip Rates	5
5.3 Traffic Generation Based on Operational Requirements	6
5.4 Recent Traffic Planning Assessments	7
5.5 Road Design Aspects	9
6. PARKING REQUIREMENTS	11
7. ACCESS & INTERNAL DESIGN ASPECTS	12
7.1 Access Design	12
7.2 Internal Design	12
8. CONCLUSIONS	14

APPENDIX A: REDUCED PLANS
APPENDIX B: M7 TRAFFIC INVESTIGATIONS



1. INTRODUCTION

TRAFFIX has been commissioned by Macquarie Goodman Management Limited (MGM) to undertake a traffic impact assessment in support of a development application relating to the construction of a proposed industrial development known as the Chilled Distribution Centre (CDC) for Coles Myer Limited (CML), located within the M7 Business Hub, at Eastern Creek. The site lies within the Blacktown Council LGA and is subject to that council's controls. The site lies to the immediate east of CDC's National Distribution Centre (NDC) which has been the subject of a separate development application.

This report documents the findings of our investigations and should be read in the context of the overall submission prepared by MGM to CML for the delivery of this development. In this regard, the report has been requested by CML as part of a package of additional information following the preliminary submission by MGM to CML.

The development proposal relates to the erection of a Chilled Distribution Warehouse and an RRU with a combined building area of 49,014m². This excludes canopy and hardstand areas. The development also provides parking for a total of 472 cars. The development is therefore a Schedule 1 development for the purpose of application of State Environmental Planning Policy No. 11 and accordingly will require referral to the RTA's Regional Development Committee.

The report is structured as follows:

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

The overall site is located within the Draft Eastern Creek Precinct Plan area and accordingly may be considered in the context of the documentation established for this area, with particular reference to the Transport Management and Accessibility Plan (TMAP) Study dated November 2003 prepared by SKM. However, the planning requirements are to be addressed having regard for the Precinct Plan Matters developer agreement prepared by Integrated Site design dated 12 November 2004, which governs all land within the Eastern Creek Stage 3 Release Area of SEPP 59. This land is known as the M7 Estate and was previously owned and operated by The Austral Brick Company.

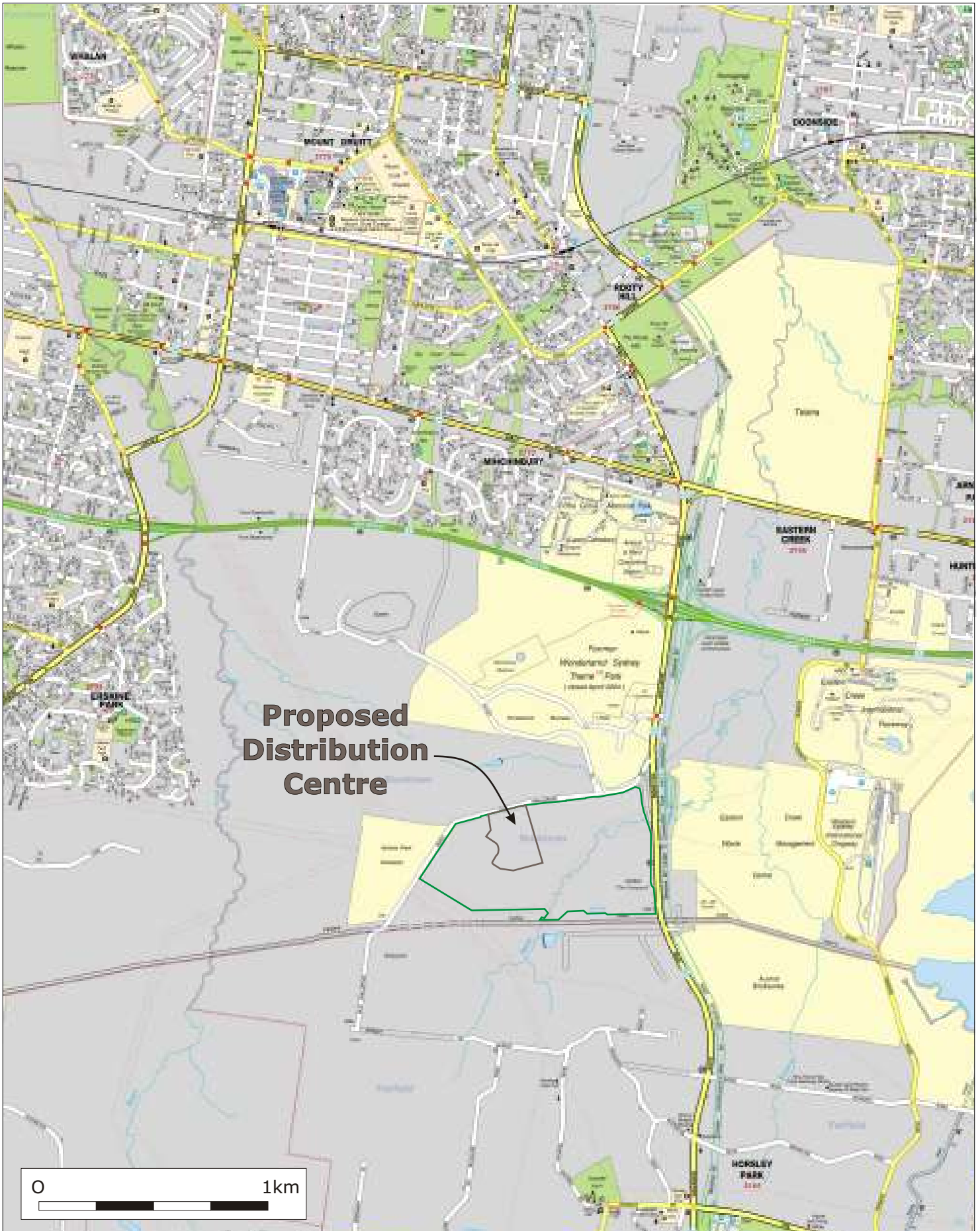


2. LOCATION AND SITE

The site is located within the southern part of the Eastern Park Precinct Plan area and is located in the southern part of the Precinct Plan area, on the south side of Old Wallgrove Road. It is within the former Austral Bricks site which generally occupies the land on the southern side of this road and which extends in a westerly direction from Wallgrove Road to the Sydney West Substation.

The site itself occupies an area of 165,500m² and is situated centrally within the Austral site frontage to Old Wallgrove Road, to the immediate east of the site that is currently the subject of a separate development application for a proposed Coles Myer National Distribution Centre. These two sites are separated by a proposed new access road which has a generally north-south orientation and traverses the western boundary of the subject site, on the western side of the existing substation. This new access road is in addition to the Austral Bricks Access Road South as assessed in the TMAP study, which lies to the east of the site. The implications of this new road are discussed further in Section 5.

The overall site has a generally rectangular configuration. A Location Plan is presented in **Figure 1** with a Site Plan presented in **Figure 2**.



Source: UBD 2005



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M7 BUSINESS HUB, WALLGROVE ROAD, MINCHINBURY**

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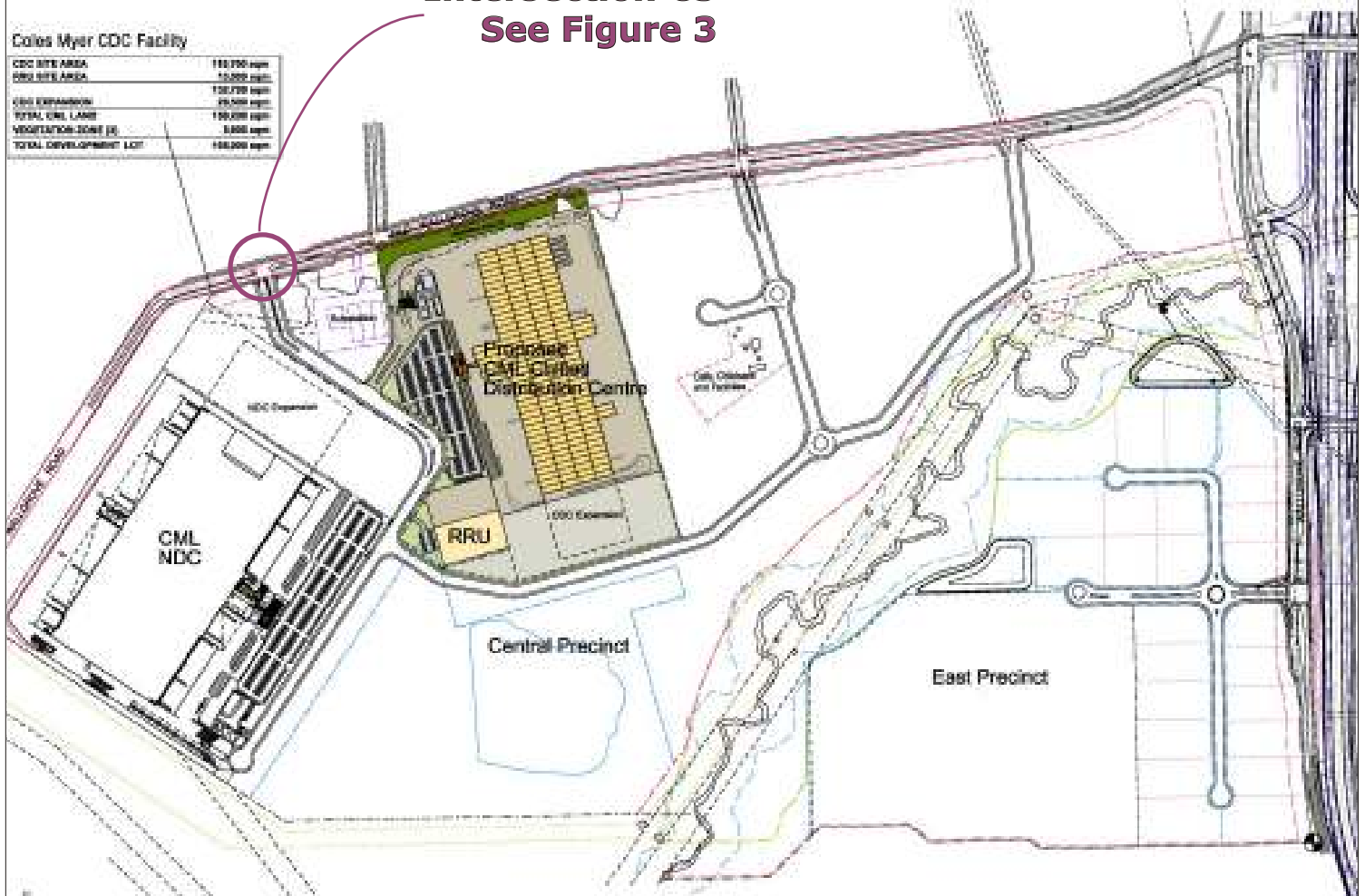
Figure 1

LOCATION

**Intersection C3
See Figure 3**

Coles Myer CDC Facility

CDC SITE AREA	110,000 sqm
CML SITE AREA	10,000 sqm
CML EMPLOYMENT	100,000 sqm
TOTAL CML LAND	100,000 sqm
VEGETATION ZONE (R)	0.000 sqm
TOTAL DEVELOPMENT LOT	100,000 sqm



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Figure 2

SITE

3. BASE CASE TRAFFIC CONDITIONS

The site lies within the Draft Eastern Creek Precinct Plan area and as such, extensive planning has been undertaken to provide the framework for all sites within the Plan area, including the site that is the subject of this Development Application. Of particular interest in this regard are the transport planning assumptions that underpin the Draft Plan. These are discussed in the Final TMAP study prepared by SKM dated 27 November 2003. In this regard, the traffic generation embodied in the computer modelling is derived from the following assumptions, on the basis of a factory landuse development, with an emphasis on distribution:

- 28 employees per hectare;
- 0.318 vehicles trips per employee in the morning peak hour;
- 0.365 vehicle trips per employee in the evening peak hour;
- 15 percent outbound and 85 percent inbound in the morning peak; and
- 85 percent outbound and 15 percent inbound in the evening peak.

As mentioned, the subject site has an area of 16.55 hectares and accordingly, these assumptions result in the following attributes for the site and this is inherent (has been taken into account) in the modelling undertaken to date for the Draft Precinct Plan:

- 464 employees;
- 148 vehicle trips per hour in the morning peak (126 in, 22 out);
- 170 vehicle trips per hour in the evening peak (25 in, 145 out);

The specific characteristics of the proposed development have been assessed against these implicit trip rates as well as the various design parameters and development controls that apply to the site. This is discussed in the following sections, which also examines more recent assessments for the Eastern Creek Precinct.

In addition to the above, the Precinct Plan Matters developer agreement as adopted for the M7 Estate includes transport targets as set out in section 6.3 of the Agreement. These targets are embodied in the TMAP study recommendations and are based on the above assumed level of traffic generation associated with the subject site. The recommendations are directed at the achievement of initiatives including the following:

- integrate transport linkages between the Estate, the balance of the Eastern Creek Precinct and Western Sydney;
- coordinate the staging of development and provision of transport infrastructure;
- reduce the car driver modal split by 10% compared with the surrounding area;
- reduce vehicle travel generated by the Estate by 5%; and
- Provide funding for the development of transport infrastructure.



4. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the submission prepared by MGM which has been provided separately. In summary, the development for which approval is now sought comprises the following components:

- ❑ The proposed CDC is to operate on a 24 hour basis, 7 days per week;
- ❑ The facility will be used for warehousing and no factory use (manufacturing) is to be undertaken on the site;
- ❑ The operations principally involve the storage and distribution of chilled products;
- ❑ All access to the site is controlled by boom gates, with CCTV security and alarm monitoring of all accesses;
- ❑ The overall development (including the CDC and the RRU) comprises a total building floor area of 49,014m², including warehouse, offices, plant, gatehouse and reception areas but excluding canopy areas;
- ❑ Provision of all access via a proposed new access road connecting to Old Wallgrove Road, with no direct access proposed to Old Wallgrove Road from the site;
- ❑ Provision of a total of 472 parking spaces, including 6 visitor spaces and 3 accessible (disabled) spaces. This parking is accessed via separate entry and exit driveways that are independent of the truck driveway access.

Reference should be made to the plans prepared by Macquarie Goodman Management which are shown in **Appendix A** at reduced scale. The traffic impacts arising from the development are discussed in Sections 5 and 6.



5. ASSESSMENT OF TRAFFIC IMPACTS

5.1 Traffic Generation Under Current Planning Context

As discussed in Section 3, the transport modelling undertaken for the Eastern Creek Precinct Plan assumes a trip generation for the subject site based on 464 employees, with hourly trips during the on-street peak periods as follows:

- 148 vehicle trips per hour in the morning peak (126 in, 22 out);
- 170 vehicle trips per hour in the evening peak (25 in, 145 out);

These trip rates are inherent in the planning undertaken to date for the Precinct, including the M7 Estate. They also underpin the Precinct Plan Matters developer agreement which embodies the TMAP study as a suitable basis for assessment.

5.2 Traffic Generation Under RTA Guideline Trip Rates

The proposed development embodies areas as shown in Table 1 below, with application of trip rates adopted by the Roads and Traffic Authority for the relevant land use components.

Table 1: Traffic Generation Under RTA Trip Rates (Peak Periods)

Floor Space Component	Area (m ²)	RTA Trip Rate	Trips Per Hour
Free Standing Office ¹	Nil	2.0/ 100m ²	-
Warehouse ²	49,014 (100%)	0.5/100m ²	245
Total	49,014 (100%)		245

Note 1: No Free Standing Office Proposed

Note 2: Includes 5,810m² ancillary office areas (11.8% of total area)

It can be seen that a total of 245 vehicle trips per hour would result from application of the Roads and Traffic Authority's 'generic' trip rates; with 80% in the direction of peak flow as follows:

- 245 vehicle trips per hour in the morning peak (196 in, 49 out);
- 245 vehicle trips per hour in the evening peak (49 in, 196 out);

However these are average rates over the metropolitan area and a more accurate method is available due to the operational requirements of the proposed tenant, which are known and understood. In this regard, the CDC will be purpose-built and this is discussed in the following section.



Traffic Generation Based on Operational Requirements

Detailed information provided by CML based on their known and well established operational characteristics at comparable facilities has been made available and is outlined below for light and heavy vehicle movements separately:

Light Vehicles

The proposed development will employ a total of 498 staff, comprising 249 on the day shift, 174 on the afternoon shift and 75 on the night shift, as follows:

Day Shift	6am to 2pm	(249 staff);
Afternoon Shift	2pm to 10pm	(174 staff)
Night Shift	10pm to 6am	(75 staff)

For the purpose of assessment, 95% of these staff have been assumed to drive, with an average occupancy of 1.1 persons per car. This dependence of private cars can be expected to reduce in the longer term as public transport improvements and employee enhancement schemes are progressively implemented in accordance with the TMAP study. Accordingly, staff vehicle movements will be as follows:

Day Shift	(215 cars in at 6am and 215 cars out at 2pm);
Afternoon Shift	(150 cars in at 2pm and 150 cars out at 10pm);
Night Shift	(65 cars in at 10pm and 65 cars out at 6am)

Finally, no additional provision for visitor trips is considered necessary, as these will typically occur throughout normal business hours, outside peak periods, and are in any event minimal.

Heavy Vehicles

Heavy vehicle movements will involve 486 trucks during the day shift, 370 trucks during the afternoon shift and 26 trucks during the night shift. These will all be equally distributed over the respective 8 hour shift so that hourly movements will be as follows:

Day Shift	(60 in, 60 out per hour between 6am and 2pm);
Afternoon Shift	(46 in, 46 out per hour between 2pm and 10pm); and
Night Shift	(3 in, 3 out per hour between 10pm and 6am).

Combined Trips

Light and heavy vehicle movements associated with the site will therefore be as follows over a typical day:

5am to 6am	218 in, 3 out	
6am to 7am	60 in, 125 out	
7am to 1pm	60 in, 60 out	(per hour)
1pm to 2pm	210 in, 60 out	
2pm to 3pm	46 in, 261 out	
3pm to 9pm	46 in, 46 out	(per hour)
9pm to 10pm	65 in, 196 out	



10pm to 11pm 3 in, 150 out
11pm to 5am 3 in, 3 out (per hour)

Of particular interest are trips during the on-street peak periods, which is the condition that determines the capacity of the road system. In this regard, peak flows generated by the proposed development will be a maximum during the critical 7am to 9am and 4pm to 6pm periods as follows (during each hourly period):

- 120 trips per hour in the morning peak (60 in, 60 out); and
- 92 trips per hour in the evening peak (46 in, 46 out)

These volumes compare with trips under the Precinct Plan of:

- 148 vehicle trips per hour in the morning peak (126 in, 22 out);
- 170 vehicle trips per hour in the evening peak (25 in, 145 out);

These volumes compare with trips under the RTA Guideline of:

- 245 vehicle trips per hour in the morning peak (196 in, 49 out);
- 245 vehicle trips per hour in the evening peak (49 in, 196 out);

It may be concluded that the proposed development will result in overall planning 'benefits', with reductions of between 20% and 50% in the morning; and between 45% and 63% in the evening. That is, traffic levels from the site will be lower than has been assumed to date within the established planning framework, reducing pressure on the planned road network in the region. Accordingly, the traffic generated by the proposed development can be readily accommodated.

5.3 Recent Traffic Planning Assessments

TRAFFIX has undertaken further traffic planning investigations in relation to the M7 Business Hub which rely on data provided by the RTA concerning strategic modelling for the Eastern Creek Precinct and the Erskine Park Employment Area (EPEA), based on the assumed provision of a link between the EPEA and the M7 on the general alignment of Lenore lane. These investigations were the subject of a report to MGM dated 7 November 2005 and this report is included in **Appendix B**.

The report documents the road and intersection improvements that will be required in 2016 when the EPEA and Eastern Creek Precinct lands are fully developed. The modelling is based upon an implicit trip generation rate of 15 trips per hectare per hour during peak periods for the developable land within these areas, which are about 160 and 360 hectares respectively.

In this regard, the subject site, with an area of 16.55 hectares, was therefore assumed to generate a total of 248 trips per hour in this analysis. This compares with the 245 trips per hour assessed using RTA trip rates as discussed above and these assumed trips are



substantially higher than the 120 veh/hr and 92 veh/hr that are now predicted for this site, as discussed in Section 5.3. On this basis, the analysis reported upon in Appendix B represents a worst-case scenario, with increased flows than will occur with the subject development. Accordingly, the conclusions in that report remain valid and subject to the improvements discussed, the road system will operate satisfactorily in 2016.

Notwithstanding, it is noted that intersection C3 is now proposed to be altered (under this application) to provide offset 'T' junctions rather than a cross intersection as previously assessed. This amended arrangement is shown in Appendix A. The traffic volumes shown at this intersection in Figure 2 of Appendix B have therefore been adjusted to take this into account. The opportunity has also been taken to examine the cumulative impacts of the NDC facility. This NDC facility was the subject of a traffic report prepared by SKM dated November 2004. The report identified a generation of 97 veh/hr for this facility in the morning peak period; and 77 veh/hr in the afternoon peak. In this regard, the NDC site has an area of 20 hectares and as with the CDC facility, would have been assessed in the analysis reported upon in Appendix B as generating 300 veh/hr, based on an assumed trip rate of 15 trips per hectare.

In summary, the traffic volumes at intersection C3 in Appendix B associated with conditions in 2016 (Figures 1 and 2) can be reduced based upon Table 2.

Table 2: Traffic Generation Corrections (Peak Periods)

Scenario		CDC Facility			NCD Facility		
		In	Out	Total	In	Out	Total
AM PEAK	Strategic Assessment ¹	174	74	248	210	90	300
	As Predicted ²	60	60	120	66	31	97
	Reduction	114	14	128	144	69	203
PM PEAK	Strategic Assessment ¹	74	174	248	90	210	300
	As Predicted ²	46	46	92	21	56	77
	Reduction	28	128	156	69	154	223

Note 1: As assessed in Appendix B

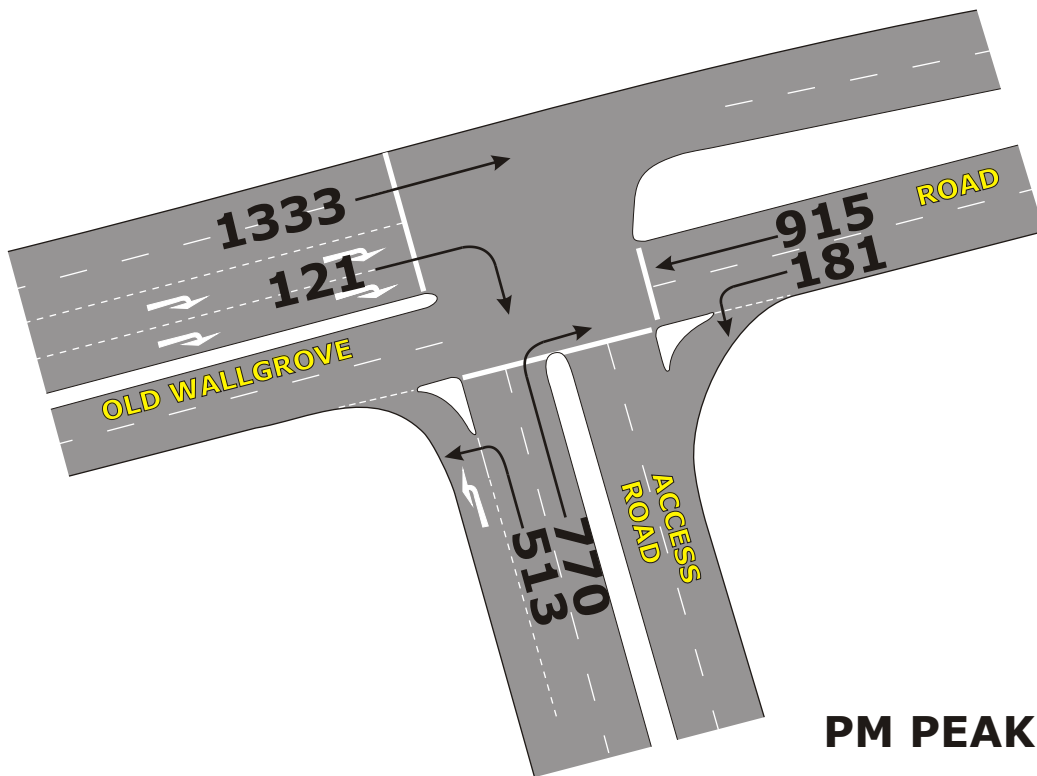
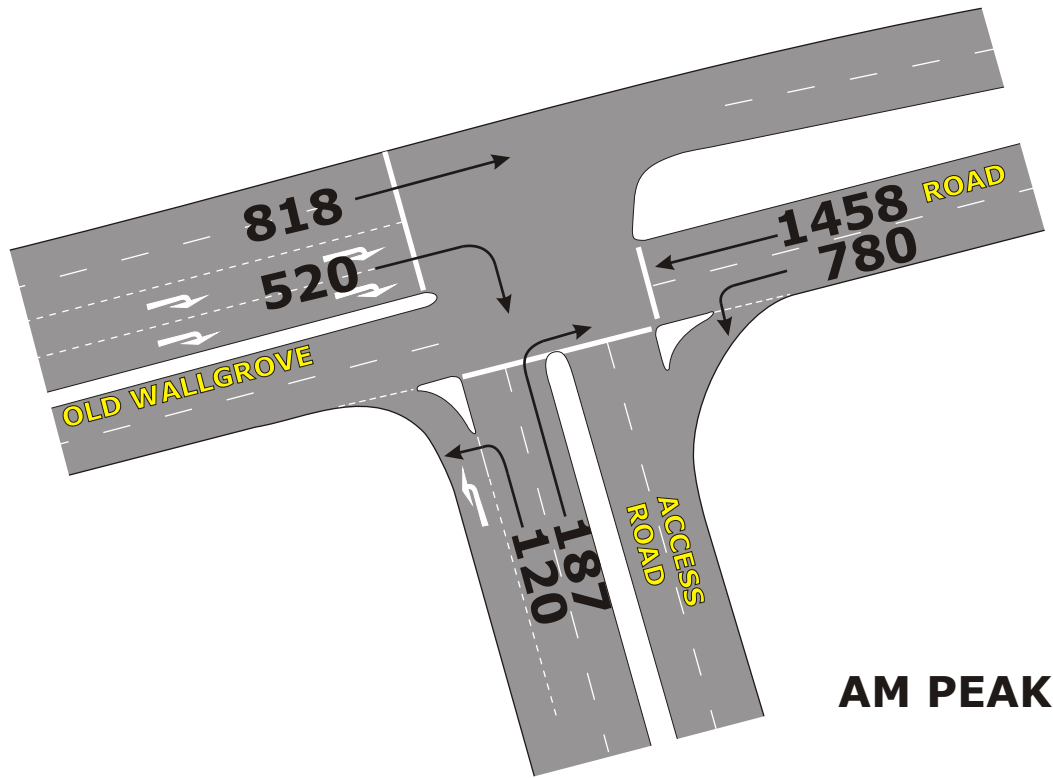
Note 2: As established by respective Traffic Impact Assessments

It is evident from the above assessment that significant reductions in traffic volumes are warranted on the basis of these separate development applications. The *cumulative reductions* are as follows:

AM Peak 331 trips (258 in, 83 out)

PM Peak 379 trips (97 in, 282 out).

These trips have been deleted from the volumes shown in Figures 1 and 2 in Appendix B for the AM and PM peak periods respectively. Based on the amended road geometry, the expected traffic volumes at Intersection C3 will be as shown in **Figure 3**. It is important to note that not all of this reduction will be realised at Intersection C3 as in practice, some benefit will also be derived on the alternate route that traverses the southern side of the proposed CDC facility. For assessment purposes, it has been assumed that 70% of the



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**Figure 3 PREDICTED TRAFFIC VOLUMES
AT INTERSECTION C3**

TRAFFIX Traffic & Transport Planners: Level 2, 55 Mountain Street, Broadway, 2007.



expected reduction will occur at Intersection C3. The geometry of this 'T' intersection (under traffic signal control) is shown on the plans submitted separately, as shown in Appendix B and incorporates two right turn lanes (west to south). This geometry is preferred to the previous arrangement with a cross intersection as it will require fewer signal phases and will therefore have improved performance; and will also involve fewer conflicting movements. It will also be easier to signpost. Based on this geometry and the volumes shown in Figure 1, the intersection performance has been analysed using the Intanal computer model. The results are shown in Table 3.

Table 3: Predicted Performance of Intersection C3 with Old Wallgrove Road 100% Development Completion (2016) FILE NAME: OLDWC3F1 (T2 phasing – Traffic Signal Control)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.82	0.78
Level of Service	B	B
Intersection Delay (secs)	17.9	18.4

This performance is very satisfactory. Indeed, even without these traffic reductions, the intersection still operates with comparable performance parameters, with unchanged levels of service. The proposed road system is therefore satisfactory for the subject development. It is also noted that the above assessment deals with each intersection as an isolated intersection and the benefits of signal coordination along Old Wallgrove Road have not been taken into account, which will result in improved performance.

The traffic volume reductions that are warranted are effectively therefore *not claimed* on the basis that this provides a conservative (worst case) assessment. The planned road system thus in practice provides some spare capacity to accommodate higher traffic volumes as may occur on occasions. It also enables other development sites to proceed with traffic volumes that may be higher than the 'generic' rate of 15 trips per hectare per hour as adopted by the RTA, and also provides scope for further sensitivity testing of the road network by the RTA in fulfilling its strategic planning responsibilities.

Similarly, traffic volumes at all other intersections as shown in Appendix B have the potential to reduce although no changes to these intersections or the road geometry overall are considered necessary at this time.

5.4 Road Design Aspects

The road layout shown in Appendix A is satisfactory and is consistent with relevant controls (AS2890.1 and AS 2890.2). This is assisted by their location on the outside of the bend. It is however recommended that parking be prohibited on the inside of the bend (opposite the site) to maximise safety. Indeed, it is recommended that on-street parking be generally



reviewed at construction certificate stage to ensure that visibility at all driveways is maximised. In particular, it is expected that on-street parking will be arranged to provide sufficient set-backs to maximise visibility, while also resulting in a sufficient off-set on approach to create an effective short left turn lane for entering traffic. Traffic volumes at all driveways do not require any auxiliary lanes to be provided.

It is noted that the bend in the road connecting to Intersection C3 adjacent to the site is designed with a 50km/h Design Speed and will provide satisfactory conditions for through traffic movements. This incorporates a central median through the bend to channel through traffic movement and provide turning bays as indicated on the plans.

6. PARKING REQUIREMENTS

The Precinct Plan Matters developer agreement states (Section 6.8) that parking for development within the M7Estate should be based upon the RTA's document entitled "Guide to Traffic Generating Developments." However, it is also considered appropriate to review the requirements of Blacktown Council's DCP 1992 – Part A. The application of Council and RTA parking rates to the proposed CDC facility thus results in parking requirements as shown in Table 4.

Table 4: Comparative Parking Requirements

Land Use	Area (m ²)	Council DCP Requirement		RTA Guideline Requirement	
		Rate	Spaces	Rate	Spaces
Office	5,810	1/40m ²	145	1/300m ²	20
Warehouse	43,204	1/200m ²	216	1/300m ²	144
Total	49,014		361		164

It can be seen that the development would require between 164 spaces based on RTA requirements and 361 spaces if based on the DCP requirement. In response to this, it is noted that the above parking rates are generic rates that are averaged across the LGA/metropolitan area and do not take due account of the particular requirements of specific tenants or the wide variation in surveyed parking demands for industrial uses. Accordingly, a significant degree of flexibility is required to assist planning within the Precinct generally and the proposed facility in particular.

In response, 472 parking spaces are proposed, which is substantially more than the maximum and hence the proposed development does not comply with current controls. It is however emphasised that notwithstanding this level of parking, traffic volumes at times of concern remain lower than planned for this site so that this additional parking does not create any unacceptable impacts.

Rather, this level of parking is necessary to accommodate the known requirements of the tenant that will occupy this purpose-built CDC facility. In particular, the main shift changeover occurs around 2pm, when 249 staff will depart the day shift and 174 staff will arrive for the afternoon shift. While some staggering will occur, there is a potential for these 423 staff to require parking at the same time under worst case assumptions. The provision of 472 spaces meets this requirement, providing additional capacity for visitors as well as other 'non design' peak demands as occur periodically. These 472 spaces also include 6 visitor spaces and 3 disabled spaces.

In summary, the overall level of parking provision for the development is considered satisfactory.

7. ACCESS & INTERNAL DESIGN ASPECTS

7.1 Access Design

The access arrangements comply with relevant standards. Specifically, all access is via the proposed western access road as shown in Appendix A, which links to Old Wallgrove Road at Intersection C3 (a traffic signal controlled 'T' junction) with the following accesses:

- A separate truck ingress and egress driveway is provided at a distance of 230 metres from the traffic signals at Intersection C3. These driveways are separated by a concrete median. The vast majority of arrivals and departures are expected from the north. Manoeuvrability is acceptable and full compliance with AS 2890.1 is proposed, subject to further detailed assessment at construction certificate stage;
- Extensive internal queuing capacity is provided for the truck access. A storage length of over 100 metres is available within the site on approach to the gatehouse, with 3 queuing lanes providing a total storage length of about 300 metres;
- Three separate car entry and exit driveways are provided from the main western access road. This provides an efficient distribution of vehicles and avoids local traffic concentrations that will otherwise create short term queuing effects;
- The driveway located at the apex of the bend in the road is provided with a right turn entry storage bay and a median storage for the right turn exit manoeuvre, so that cars can exit in two 'stage'. This arrangement provides improved safety;
- Available sight distances at all driveways will be satisfactory, subject to the road verge being landscaped with appropriate species to provide clear sight lines and the introduction of 'No Stopping' restrictions on the inside of the bend, immediately opposite the site.; and
- The two main driveways to the car parking provide a minimum storage of 20 metres within the site on approach to the boom gates/card readers. This will ensure that on-street queuing does not occur.

It is emphasised that cars accessing and traversing the available parking areas will be physically separated from truck traffic and this is appropriate.

7.2 Internal Design

The internal design complies with the requirements of AS 2890.1 and AS 2890.2 and incorporates the following elements:

- Driveways comply as discussed above;
- Parking bays and aisles exceed the requirements of AS 2890.1 and generally incorporate bays of minimum width 2.5 metres with aisles of minimum width 6.0 metres;



- Provision of clearances to accommodate a B Double operating with a 12.5 metre radius turn, as defined by Austroad Guidelines;
- The extent of loading and internal truck parking area is sufficient to accommodate the demands of the development, based on their known and demonstrated operations at existing sites. Hence, no on-street queuing or delays will occur; and
- The access and internal manoeuvring requirements of a 25 metre B Double have been reviewed and are satisfactory. The detailed design of these areas will require further assessment at construction certificate stage, taking account also of Council's requirements for driveway crossings.

In this regard, it is noted that AS2890.2 is also adopted in the M7 Agreement (Section 6.3) as the basis for the design of access driveways and circulation areas.

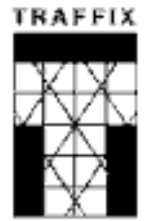
In summary, the internal design is considered to be satisfactory and will provide a very good level of service and amenity. Indeed, the design is considered to be the optimal design for this site. It will however be necessary to review truck movements prior to construction to ensure that the detailed designs for vertical and horizontal geometry comply with relevant standards.

8. CONCLUSIONS

The following matters are noteworthy:

- *The traffic generation arising from the development is moderate at peak times and can be accommodated on the road network without the need for any additional external road improvements. Indeed, the site traffic generation during peak periods is significantly less than embodied in the assumptions that underpin the planning of the Eastern Park Precinct Plan as adopted by Council and the RTA, and is also less than the 'generic' trip rate that has been adopted by the RTA in more recent investigations, as discussed;*
- *The cumulative traffic impacts arising from the CDC facility and the NDC facility has been assessed and this confirms that significant further reductions in traffic volumes are warranted. These have not however been 'claimed' and the assessment is therefore a worst-case scenario that overstates traffic impacts from these two developments. This is considered appropriate as it provides spare capacity that can accommodate higher traffic volumes as may occur on occasions. It also enables other development sites to proceed with traffic volumes that may be higher than the 'generic' rate of 15 trips per hectare per hour as adopted by the RTA, and also provides scope for further sensitivity testing of the road network by the RTA in fulfilling its strategic planning responsibilities;*
- *The road system and intersection layouts as submitted with the application is therefore confirmed and will provide a very good level of service;*
- *Parking has been provided at a level above Council's DCP rates. It is however emphasised that notwithstanding the level of parking proposed, traffic volumes at times of concern remain lower than planned for this site so that this additional parking does not create any unacceptable impacts. The parking is necessary to accommodate the known requirements of the tenant and in particular, to accommodate overlap demands at shift changeover times. Provision is made for visitors as well as disabled parkers;*
- *The proposed means of site access is considered the optimal arrangement in all the circumstances. Traffic will be able to enter and exit the site safely and efficiently in a forward direction. In addition, cars and heavy vehicles are physically separated; and*
- *The internal design arrangements comply with the requirements of AS 2890.1 and AS 2890.2 and will accommodate all required vehicles. The detailed design of the facility, including driveway crossing levels and on-street parking controls, will need to be reviewed prior to construction.*

It is concluded that the proposed development is supportable on traffic planning grounds and will operate satisfactorily.



APPENDIX A:

Reduced Plans



Land Areas

CDC SITE AREA	119,700 sqm
RRU SITE AREA	13,000 sqm
CDC EXPANSION	132,700 sqm
TOTAL CML LAND	26,500 sqm
VEGETATION ZONE (3)	159,200 sqm
TOTAL DEVELOPMENT LOT	5,800 sqm
	165,000 sqm

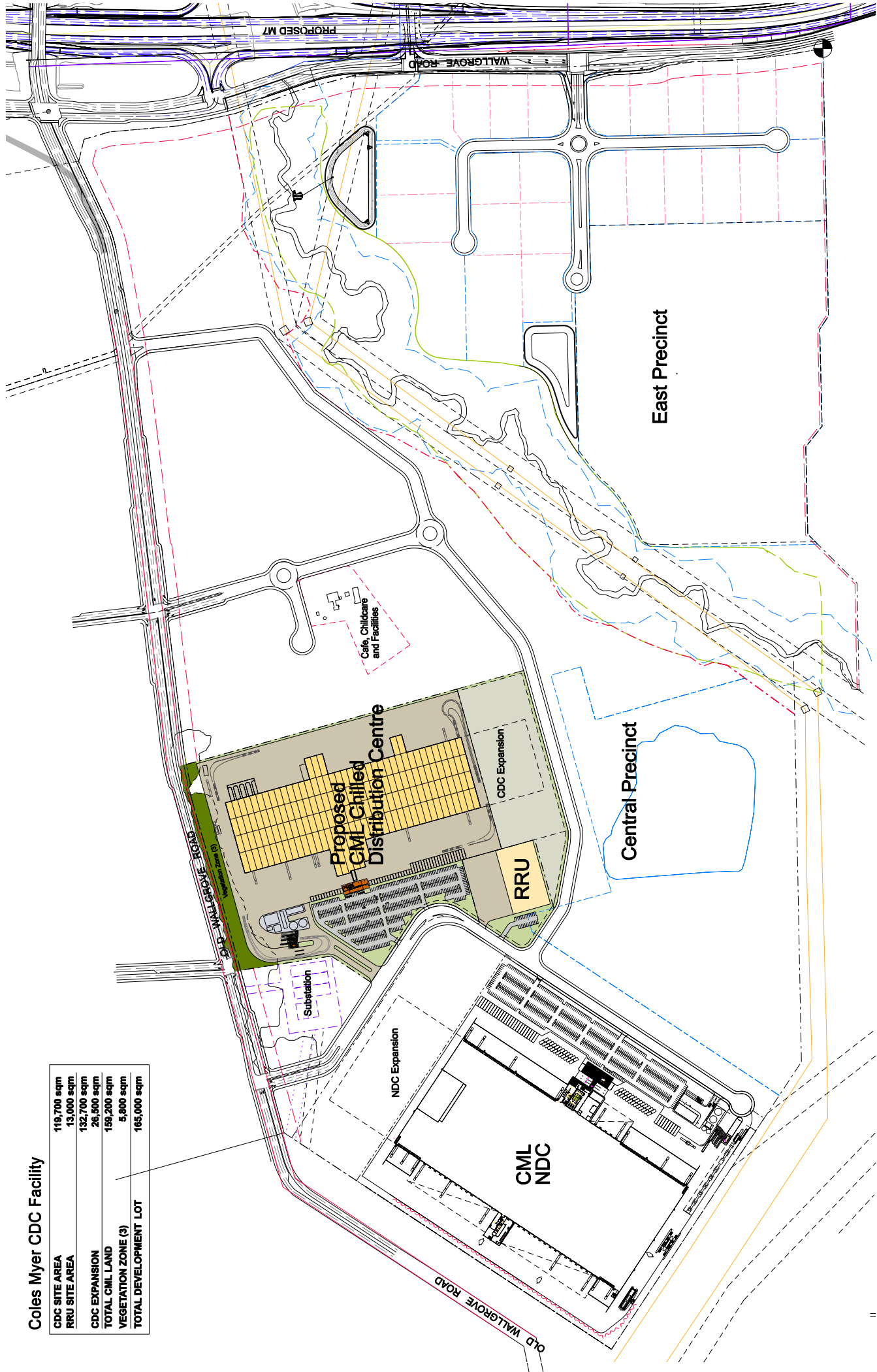
Building Areas

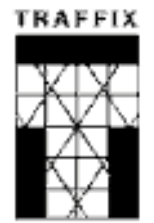
CHILLED DISTRIBUTION CENTRE	
WAREHOUSE	36,855 sqm
OFFICES	3,650 sqm
SATELLITE OFFICES	2,160 sqm
PLANT	470 sqm
TOTAL DISTRIBUTION AREA	43,135 sqm
GATE HOUSE	55 sqm
ENTRY RECEPTION	44 sqm
GEN. SUB STN SWITCH RM	446 sqm
PUMP HOUSE	69 sqm
TOTAL BUILDING AREA	614 sqm
RECEIVING CANOPY	1,190 sqm
COMPACTOR CANOPY	243 sqm
GUARD HOUSE	76 sqm
ENTRY/BIKE PARK CANOPY	106 sqm
TOTAL CANOPY AREA	1,615 sqm
HARDSTAND CARPARKING	99,060 sqm
RRU	472 SPACES
BUILDING AREA	5,285 sqm
HARDSTAND	4,780 sqm



Coles Myer CDC Facility

CDC SITE AREA	119,700 sqm
RRU SITE AREA	13,000 sqm
CDC EXPANSION	132,700 sqm
TOTAL CML LAND	26,500 sqm
VEGETATION ZONE (3)	159,200 sqm
TOTAL DEVELOPMENT LOT	5,900 sqm
	165,000 sqm





APPENDIX B:

*7 November 2005 Traffic
Assessment*



Level 2, 55 Mountain Street Broadway NSW 2007 ☎ PO Box 697 Broadway NSW 2007
PH (02) 9211 3352 ☎ FAX (02) 9211 2740 ☎ E-MAIL enquiries@traffix.com.au
ACN 065 132 961 ABN 66 065 132 961

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7 November 2005

Macquarie Goodman Management
Level 10
60 Castlereagh Street
Sydney NSW 2000

Attention: Mr. Colin Rockliff, Company Architect

Dear Colin,

Re: *M7 Business Hub, Eastern Creek:
Traffic Planning Advice Relating to External Road Improvements*

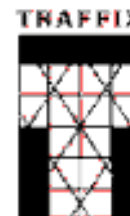
We are in receipt of updated EMME2 modelling from the RTA, which is referenced in the RTA's letter to DIPNR dated 6th October 2005 and relates to traffic conditions in 2016, with full development of the SEPP 59 lands, plus additional lands to the south of the Austral Bricks site. The modelling also assumes provision of a link between the M7 and Erskine Park Road, on the general alignment of Old Wallgrove Road and Lenore Lane. In this regard, the modelling (and in particular turning movement volumes) is incomplete for much of the 'internal' road system along Old Wallgrove Road, so that we have prepared estimates of turning movements based on reasonable assumptions, which have resulted in 'balanced' flows that are generally consistent with the EMME2 model outputs.

The resulting traffic volumes are shown in **Figures 1 and 2** attached, which relate to the AM and PM peak periods respectively. Based on these volumes, we have assessed the critical intersections of interest to Macquarie Goodman, which are the subject of the Terms of Agreement between Macquarie Goodman and the RTA. These include intersections C0, C2, C3, E1 and E3 as shown in these figures and as previously assessed. The performance of these intersections has been reassessed using the Intanal computer model. Due to the need to make assumptions as discussed above, the analysis should be regarded as a 'first-cut' assessment. We also note the RTA's advice that it is currently reviewing the underlying assumptions of this EMME2 modelling and that these volumes could change to an 'unknown degree'.

The results of this further analysis are based upon the intersection concept layouts shown in Figures 3 to 7 inclusive, which respectively relate to each of these intersections. The results of the analysis are summarized below for each intersection (and others as appropriate). The intersections assessed are capable of further optimization and the current assessment is at this stage simply intended to confirm the suitability of the required road reservations as previously assessed.

Page 1

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|------------------------------|-----------------------|-----------------------|-------------------------|
| ◆ Traffic Impact Studies | ◆ Expert Witness | ◆ Local Govt. Liaison | ◆ Traffic Calming |
| ◆ Development Advice | ◆ Parking Studies | ◆ Pedestrian Studies | ◆ Traffic Control Plans |
| ◆ Traffic Management Studies | ◆ Intersection Design | ◆ Transport Studies | ◆ Director G. Pindar |



The following factors are of relevance in understanding the assessment:

- The assessment has adopted conservatively high trip rates and in practice, an improved performance is likely;
- The peak period conditions assessed will only be sustained over a very short time (about 45 minutes during each peak based on the performance of other intersections in the locality) which introduces the potential for further peak spreading, with lower resultant trip rates. That is, the development traffic would be able to respond to any short term periods of high delay that may occur (by delaying or advancing trip times) and this is a reasonable expectation; and
- The RTA will be able to optimize the performance of intersections if necessary without requiring addition land to that required as discussed below. The road reservation requirements are also not likely to be sensitive to minor changes in traffic volumes, in the event that the RTA undertakes further ‘fine tuning’ of modeling outputs.

Intersection C0 (Figure 3)

The intersection performance under this design is shown in Table 1. The main changes relate to the provision of left turn slip lanes on all approaches.

Table 1: Predicted Performance of Intersection C0 with Old Wallgrove Road 100% Development Completion FILE NAME: W-0W-100 (L2L1 phasing)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.90	0.95
Level of Service	C	D
Intersection Delay (secs)	30.5	54.3

The intersection operates satisfactorily and the assumed geometry shown in Figure 3 as assessed in 2016 is not expected to alter and will be acceptable. The modelling does however assume the banning of the right turns (south to east and east to north), which is considered warranted in view of the minimal volumes and the availability of alternate traffic routes. This intersection will require further optimization if these turns are to be retained.

The left turn exit loop from the M7 (southbound to westbound) will need accommodate 2,134 veh/hr in the AM Peak (equivalent to the westbound through movement at Intersection C0, with the right turn volume deleted as discussed above); and 1,096 veh/hr in the PM Peak period. The analysis indicates that the 200 metres long two-lane queuing capacity on this approach to Intersection C0 (widening at the intersection to provide a left turn storage lane as shown in Figure 3) is satisfactory and compares with a required length of 165 metres.



Intersection C1

This intersection will attract westbound traffic entering the M7 Hub from Old Wallgrove Road. Its performance has not been reassessed although with left-in/left-out movements only being permitted, its operation will continue to be very satisfactory, with unchanged geometry from our previous assessment. It is noted that Council has raised the issue of the potential for this intersection to be relocated slightly west to form a cross-intersection with the existing access road on the northern side of Old Wallgrove Road. In our view, this is unnecessary in terms of road capacity and is not required for the M7 Business Hub, for which a left-in/left-out arrangement is acceptable. It would also result in a multiplicity of major signalized intersections along Old Wallgrove Road (Intersections C0, C1, C2 and C3) and would need the geometry of Intersection C1 to reflect a similar layout to Intersection C2 (as shown in Figure 4) if full movements were to be required. In these circumstances, minor adjustments to road widths would be needed to provide the required geometry and turn capacity. It would still be possible however to permit only left-in/left-out manoeuvres to the M7 Hub at this intersection, which would then retain the existing road reservations within the M7 estate. Another alternative that may be pursued involves the relocation of the internal M7 Collector Road from Intersection C1 to Intersection C3. This has no status at the present time and would require further assessment.

Intersection C2 (Figure 4)

The intersection performance under this design is shown in Table 2. The main changes relate to the provision of extended right turn lanes within Old Wallgrove Road and an uninterrupted left turn from Old Wallgrove Road (east to south).

Table 2: Predicted Performance of Intersection C2 with Old Wallgrove Road		
100% Development Completion		
FILE NAME: OLDWI2F3 (D0SO phasing)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.91	0.92
Level of Service	D	E
Intersection Delay (secs)	48.0	58.4

This performance is considered acceptable in the circumstances.

Intersection C3 (Figure 5)

The intersection performance under this design is shown in Table 3. The main change relates to the provision of dual right turn lanes within Old Wallgrove Road (west to south).



Table 3: Predicted Performance of Intersection C3 with Old Wallgrove Road 100% Development Completion FILE NAME: OLDWI2F3 (DOSO phasing)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.89	0.89
Level of Service	C	C
Intersection Delay (secs)	38.7	36.9

This performance is satisfactory.

Intersection E1 (Figure 6)

The intersection performance under this design is as shown in Table 4. No changes are proposed from the geometry previously assessed.

Table 4: Predicted Performance of Intersection E1 with Wallgrove Road 100% Development Completion FILE NAME: WALLEPF2 (T2 phasing)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.66	0.81
Level of Service	A	A
Intersection Delay (secs)	11.0	12.0

This performance is very satisfactory.

Intersection E3 (Figure 7)

The intersection performance under this design is as shown in Table 5. The changes that are required are significant and result from the substantially higher volumes at this intersection as shown in Figures 1 and 2. These improvements include the provision of two through and two (195 metres long) right turn lanes in Wallgrove Road (southern approach); three southbound through lanes in Wallgrove Road between Old Wallgrove Road and a point 200 metres south of Intersection E3 (where the three southbound lanes merge into two lanes); and the provision of a 180 metre long left turn lane on the northern approach of Wallgrove Road.

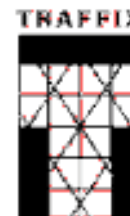


Table 5: Predicted Performance of Intersection E3 with Wallgrove Road		
100% Development Completion		
FILE NAME: E32016F1 (T2 phasing)		
PARAMETER	AM PEAK	PM PEAK
Degree of Saturation	0.93	0.94
Level of Service	D	E
Intersection Delay (secs)	54.8	56.9

This performance is satisfactory.

In summary, the intersection and link capacities outlined above demonstrate a satisfactory resolution of the local road network based on these RTA's modelling results and the Terms of Agreement are therefore satisfied.

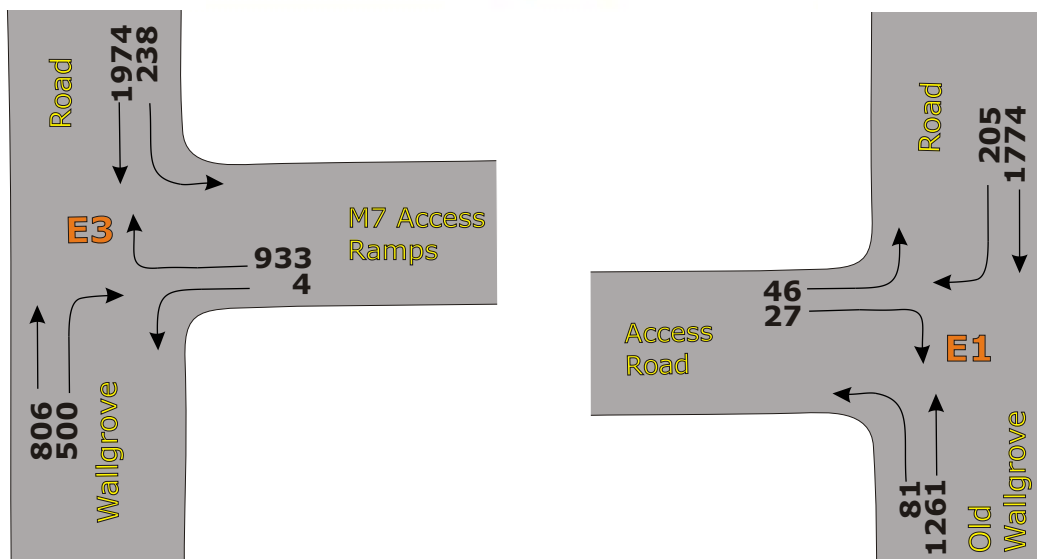
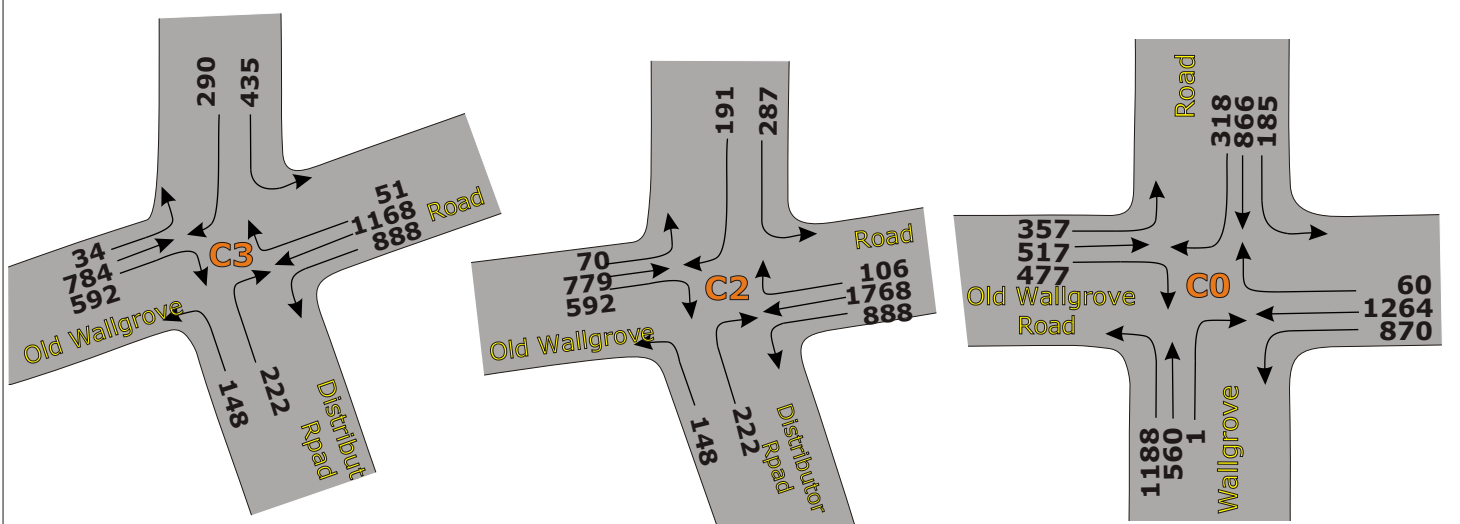
We trust that this advice will be of assistance and request that you contact us should you require any further information.

Yours faithfully,

TRAFFIX

Graham Pindar
Director

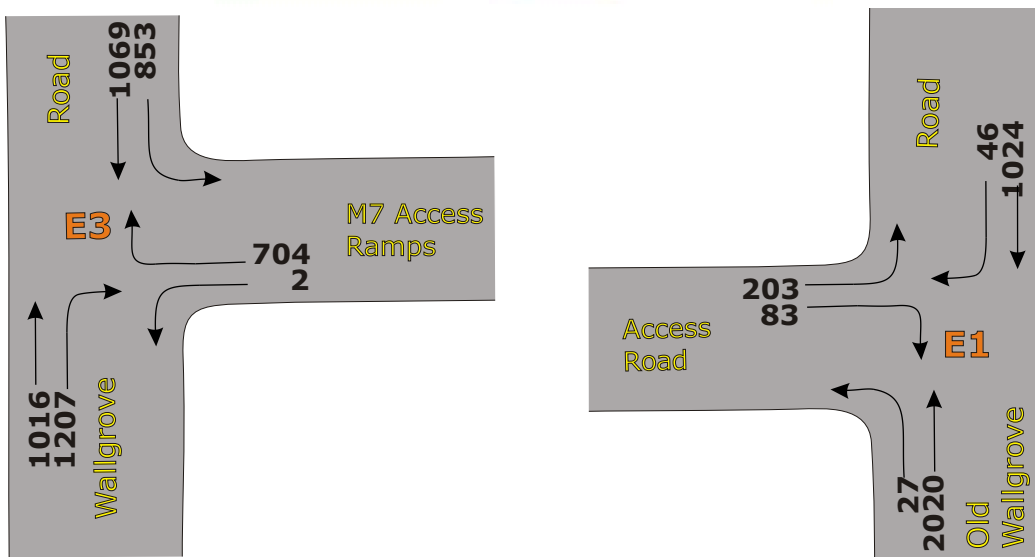
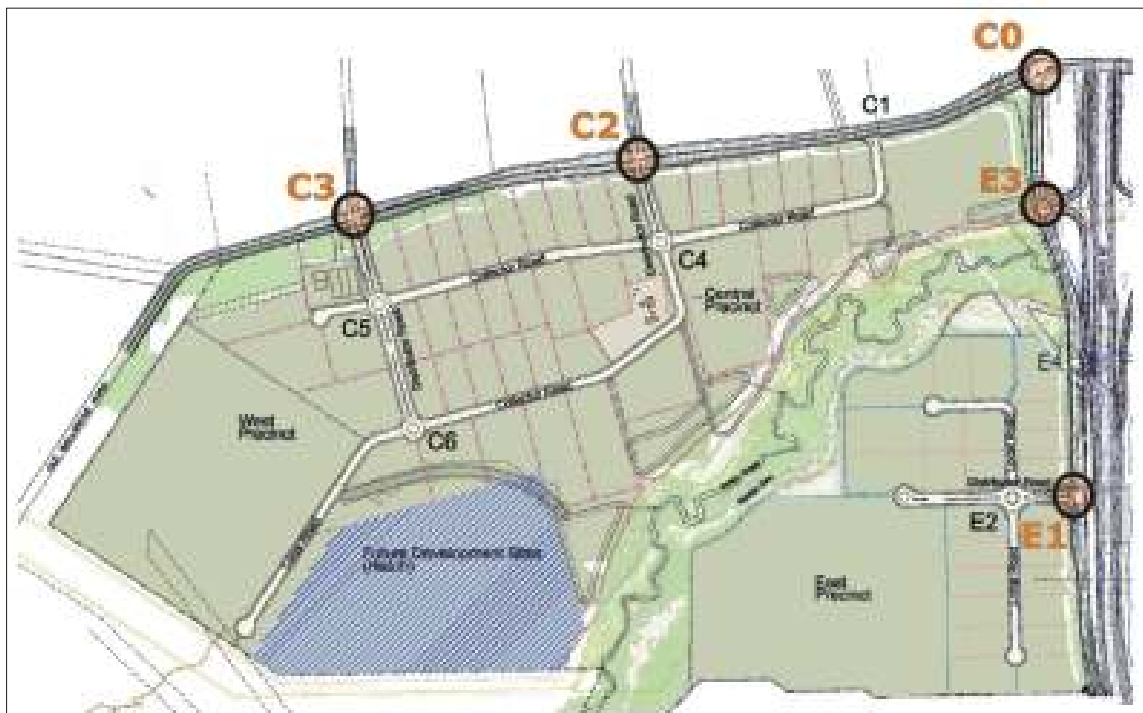
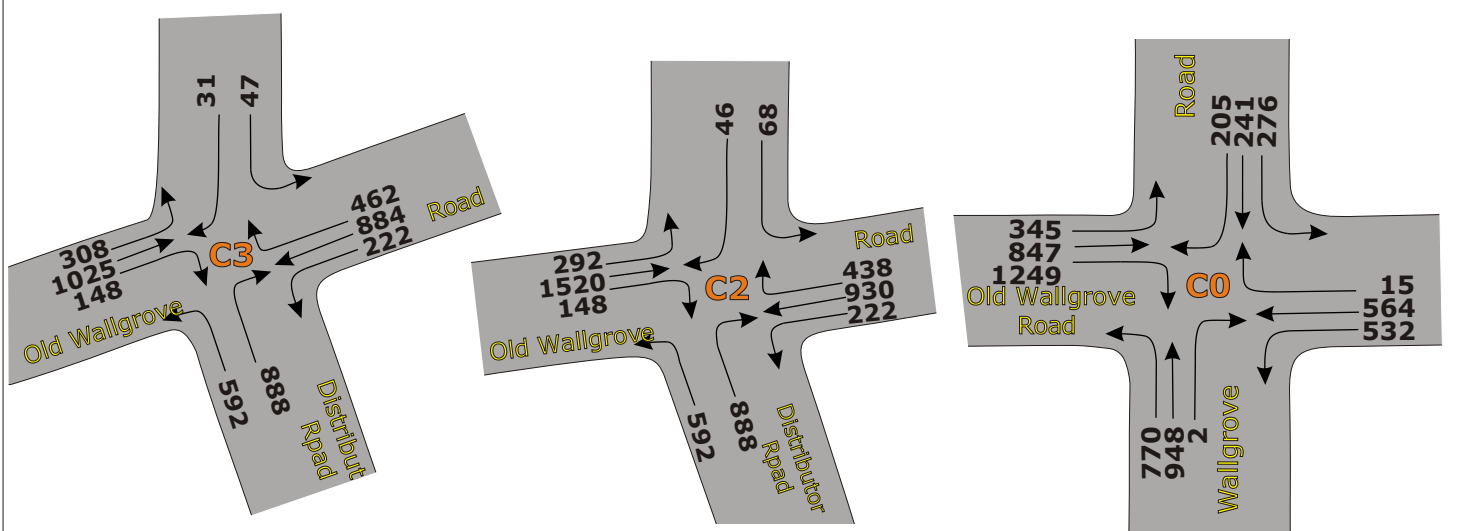
Encl: Figures 1 to 7



M 7 BUSINESS HUB

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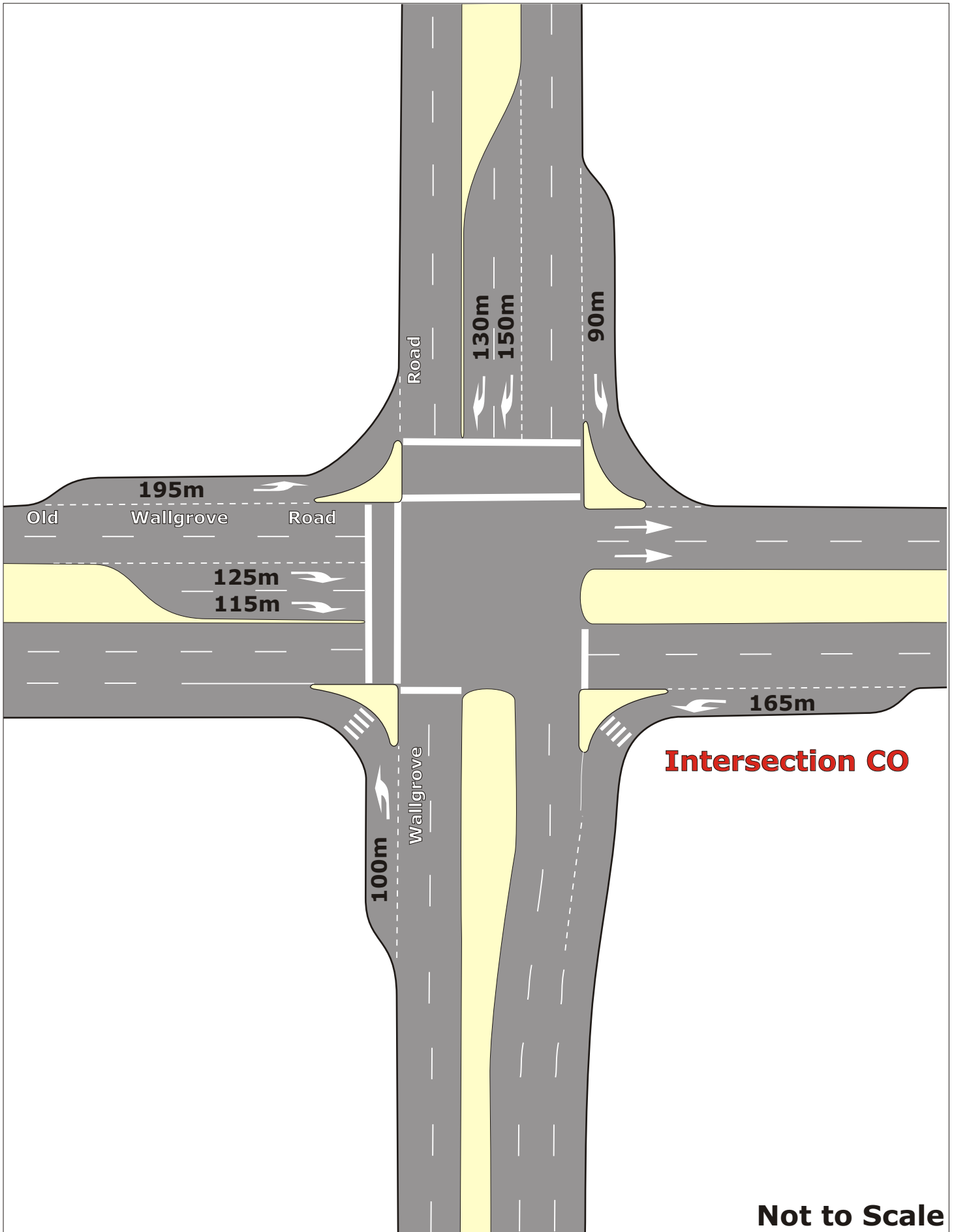
Figure 1 AM PEAK VOLUMES - 2016



M 7 B U S I N E S S H U B

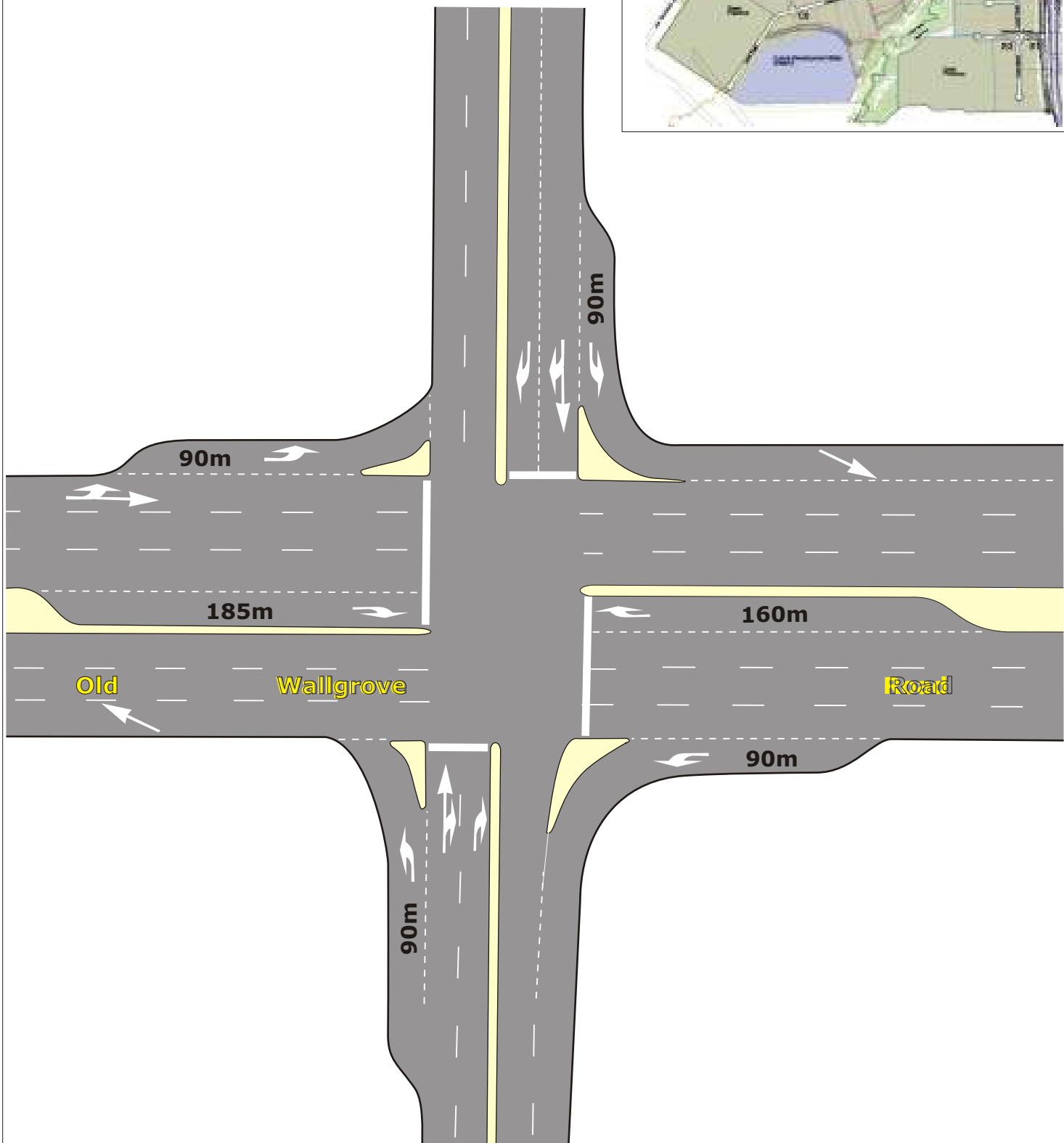
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Figure 2 PM PEAK VOLUMES - 2016



Not to Scale

Figure 3 CENTRAL PRECINCT-CO



Intersection C2

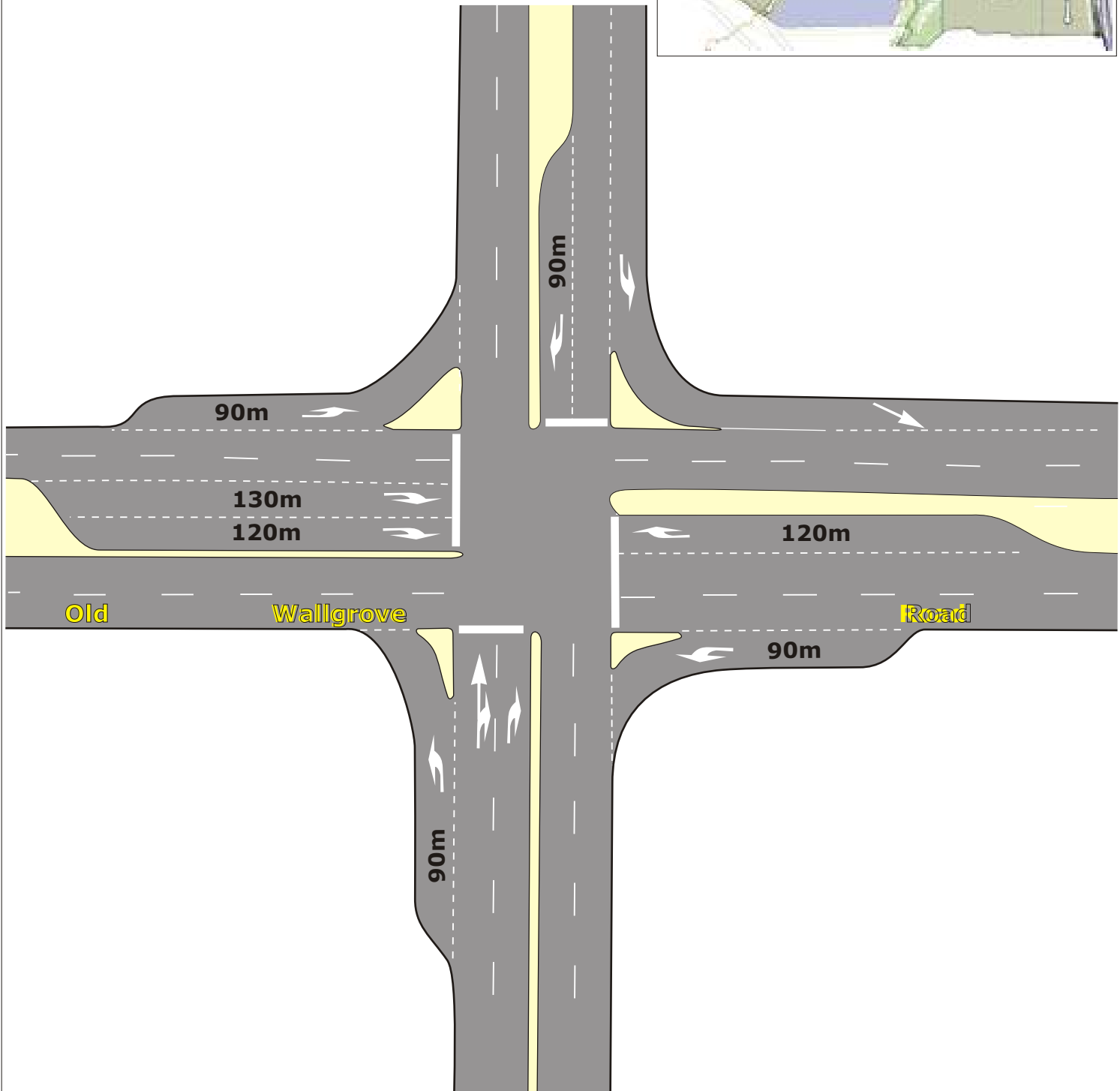
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M 7 B U S I N E S S H U B

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Figure 4 CENTRAL PRECINCT-C2



Intersection C3

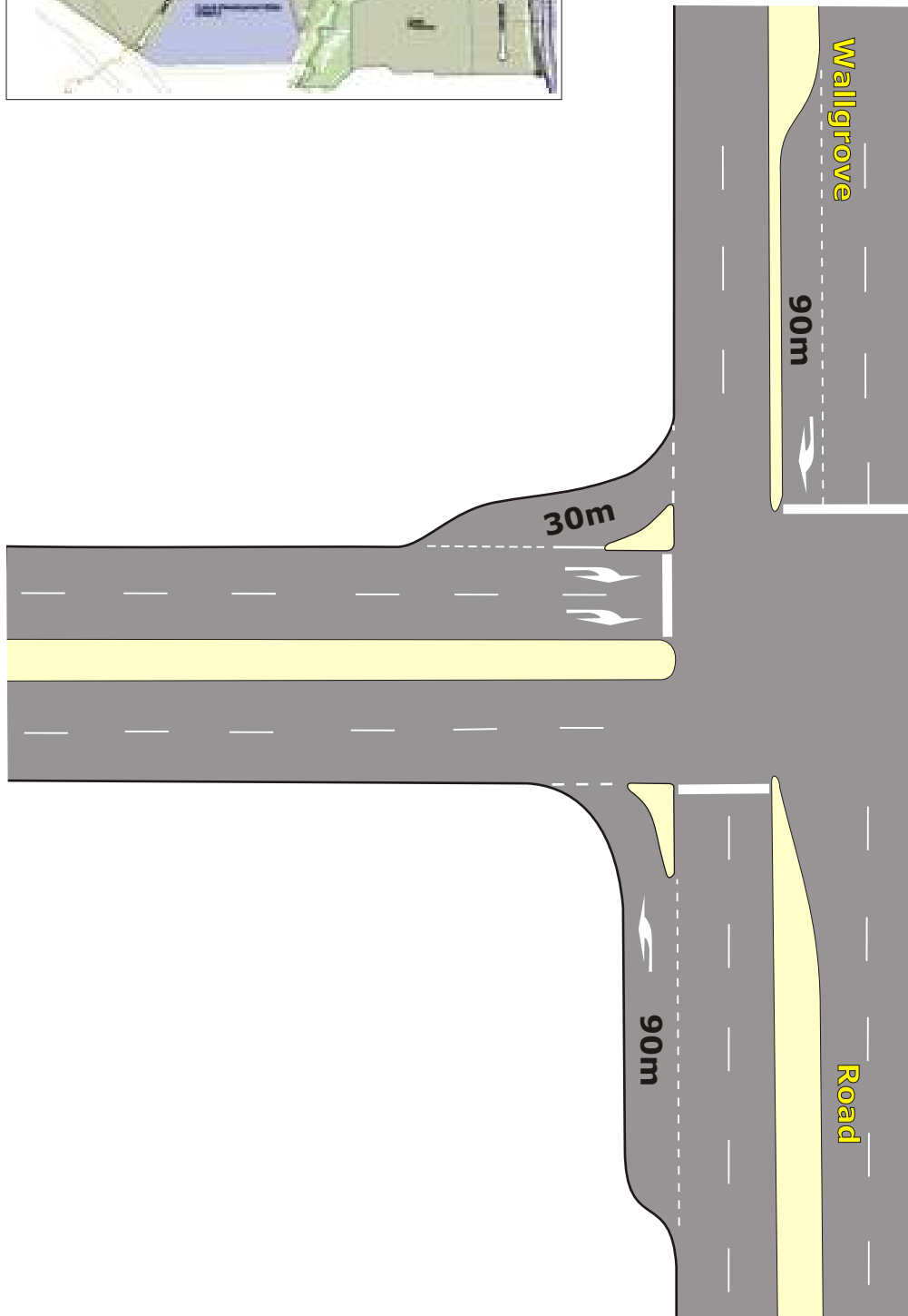
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M 7 B U S I N E S S H U B

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Figure 5 CENTRAL PRECINCT-C3



Intersection E1

Diagrammatic only

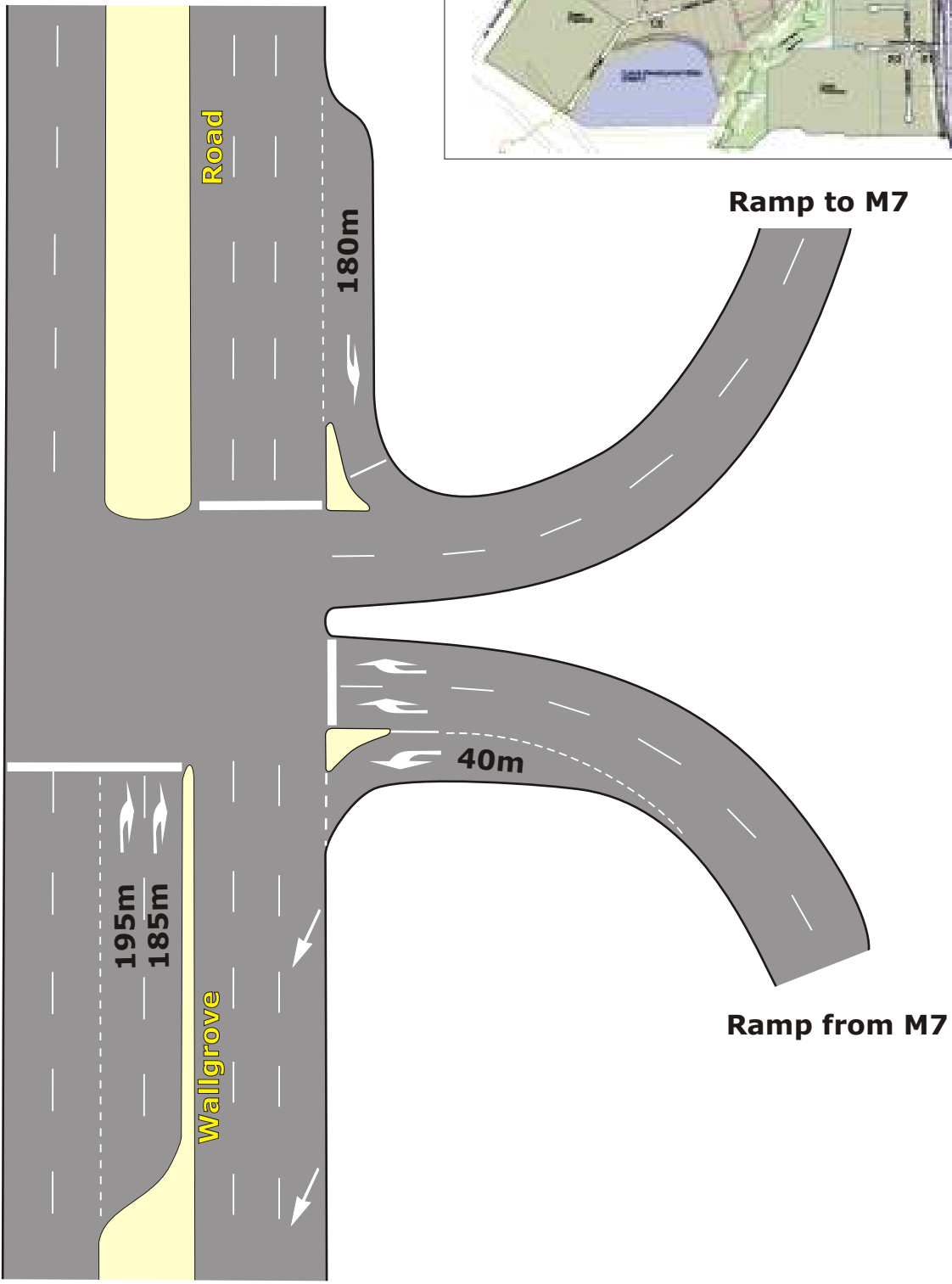


M 7 B U S I N E S S H U B

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Figure 6

EAST PRECINCT-E1



Intersection E3

Diagrammatic only

Figure 7 EAST PRECINCT-E3