TRAFFIX

OAKDALE CENTRAL
PROJECT APPLICATION NO.1
TRAFFIC IMPACT ASSESSMENT

OF THE PROPOSED

ESTATE ROADS + END-USER FACILITY (DHL)

AT

OLD WALLGROVE ROAD, EASTERN CREEK

Prepared on behalf of

GOODMAN INTERNATIONAL LIMITED

Prepared by

TRAFFIX

TRAFFIC AND TRANSPORT PLANNERS

Ref: 07098 PA v6
May 2008

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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1. INTRODUCTION

T R A F F I X has been commissioned by Goodman International to undertake a traffic impact assessment for a Part 3A Project Application (No. 1) for Estate Works and the development of two building sites within Oakdale Central. These sites are referred to as Site 1A and Site 2A and lie on the eastern boundary of the Oakdale Central area. The report should therefore be read in conjunction with the Oakdale Central Concept Plan Traffic Impact Assessment prepared by TRAFFIX, dated February 2008.

Site 1A is for an end-user development (the DHL Facility) which is located within the northern part of the site that is the subject of this Project Application. Site 2A occupies the remaining southern part of the site.

The development proposal relates to a total building area of 54,350m^2 and provides parking for a total of 390 cars. The development is therefore required to be referred to the RTA under the provisions of SEPP (Infrastructure) 2007.

The report is structured as follows:

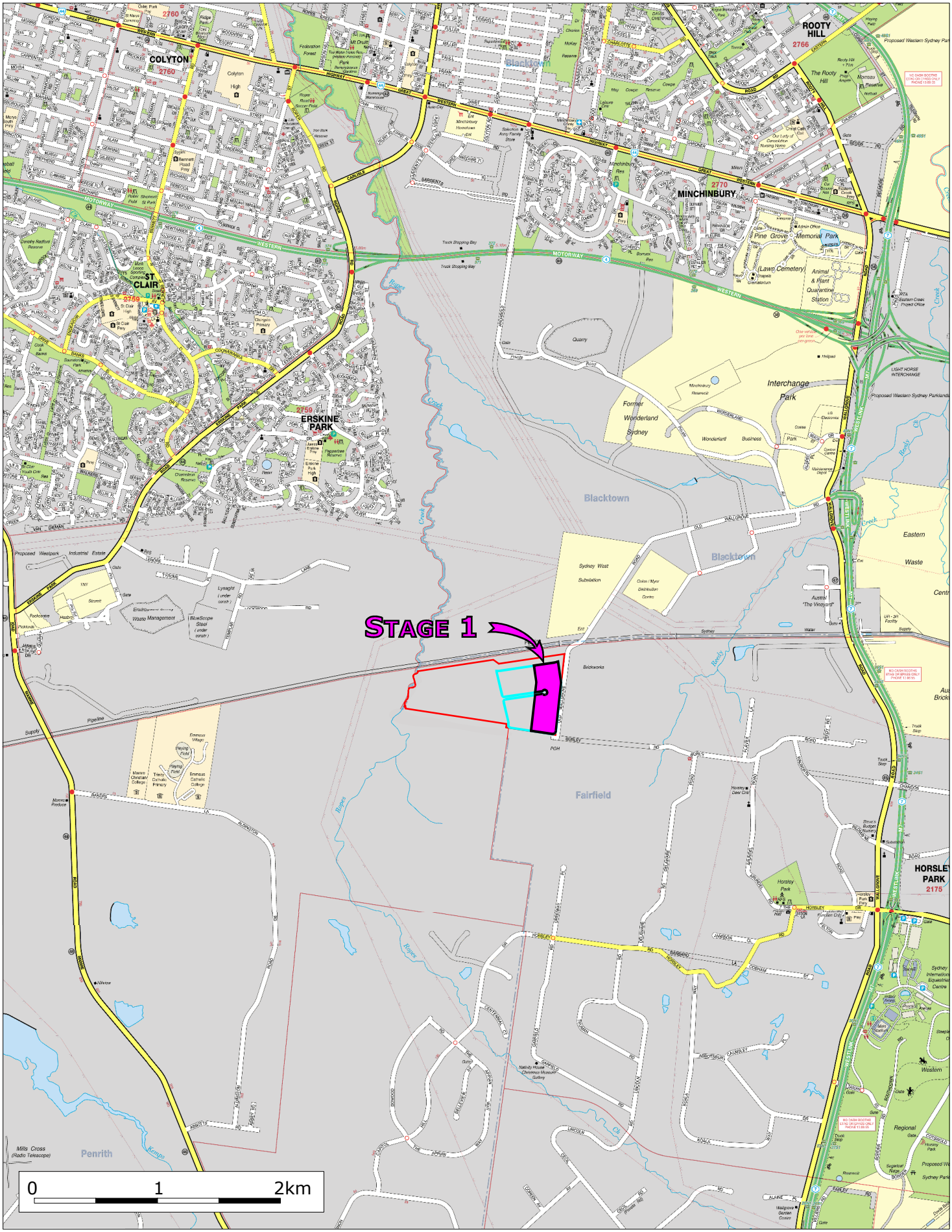
- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the traffic impacts
- Section 6: Assesses parking requirements
- Section 7: Discusses access and internal design aspects
- Section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

2. LOCATION AND SITE

The site is located within the eastern part of the Oakdale Central Concept Plan area, to the south-west of the existing alignment (and termination) of Old Wallgrove Road. It is therefore to the immediate south west of the M7 Business Hub. The site is within Area 8 of the 656ha site identified as the "Area South of the Sydney Water Pipeline" which forms one of the 10 sites that comprise the Western Sydney Employment Hub. It is the last of these development areas to proceed.

The site that is the subject of this Project Application occupies a total site area of 12.58ha with a total leased area of 109,900m^2 (about 11ha) and has frontage to a proposed new road that will form the extension of Old Wallgrove Road and will ultimately be widened to connect to Mamre Road in the west, as discussed in the Oakdale Central Concept Plan Application. Hence, all entry and exit movements will occur via Old Wallgrove Road, connecting to Wallgrove Road and the M7 Sydney Orbital. The minor subdivisional roads that traverse the eastern and southern boundaries of the site will also be constructed including temporary roads serving Sites 1A and 2A.

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



Source: UBD 2006

STAGE 1 PROJECT APPLICATION
PROPOSED END-USER FACILITY (DHL)
OLD WALLGROVE ROAD, EASTERN CREEK
Prepared on behalf of Goodman International Limited

Figure **1** **LOCATION**

0 100 200m

design+ | Oakdale, Eastern Creek | Oakdale Central, Lot 2 DP120679 | Masterplan | 22 Oct 07 JC | SP DHL SK44 (A)

STAGE 1 PROJECT APPLICATION
PROPOSED END-USER FACILITY (DHL)
OLD WALLGROVE ROAD, EASTERN CREEK
Prepared on behalf of Goodman International Limited

Figure **2** **SITE**

3. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the Project Application Report prepared on behalf of Goodman International. This is based on the plans prepared by Goodman International dated 4th April 2008 which are reproduced at reduced scale in ***Appendix A***. In summary, the development for which approval is now sought has a total building area of 53,350m^2, as follows: These will all operate 24 hours per day, 7 days per week.

Site 1A (The DHL Facility – Warehouse 1)

- 20,000m^2 of warehouse area;
- 820m^2 of ancilliary office area; and
- 150 parking spaces;

Site 2A (Warehouse 2)

- 32,550m^2 of warehouse area;
- 980m^2 of office area; and
- 240 parking spaces;

A total of 390 parking spaces are proposed. All access to the overall site is via a staged perimeter roads as shown in ***Appendix A***. This includes the construction of a temporary access road ("Temporary Access Road No. 1") along the northern site boundary that lies within the future link road corridor. This will be constructed to a standard that will enable the future development of the balance of the Oakdale Central Project area. This road also traverses part of the western site boundary and is to terminate at a cul-de-sac within "Estate Road Lot 3" as shown on Drawing SK69 (A). The cul-de-sac lies between Sites 1A and 1B which is on the alignment of "Estate Road Lot 2", which will be partially constructed. This temporary access road will be closed and all access provided by "Estate Road Lot 2" in the longer term.

Access is proposed by 25m long B Doubles to both warehouse buildings.

It is emphasised that the total office space for the overall development is 1,800m^2 which represents only 3.3% of the total floor area. This is substantially below the 20% limit for ancilliary office area within an industrial development.

The traffic and parking impacts arising from the development are discussed in Sections 5 and 6.

4. ASSESSMENT OF TRAFFIC IMPACTS

4.1 Traffic Generation Under RTA Guideline Trip Rates

The proposed development embodies areas as shown in Table 1 below, with 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]	54,350 (100%)	0.5/100m^2	272
Total	158,650 (100%)		272

Note 1: No Free Standing Office Proposed
Note 2: Includes 1,800m^2 ancillary office areas 3% of total area)

It can be seen that a total of 272 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:

- 272 vehicle trips per hour in the morning peak (218 in, 54 out);
- 272 vehicle trips per hour in the evening peak (54 in, 218 out);

However these are average rates over the metropolitan area and more recent data is available.

4.2 Warehouse Distribution Trip Rates

The rate of 15 trips per hectare has been generally adopted by the RTA in other comparable locations (including Eastern Creek and the M7 Business Hub), where there is a similar high proportion of warehouse and distribution facilities. The basis of this rate is not fully appreciated but it arguably does not take full account of public transport improvements as would occur if the 10% target set under SEPP 59 was achieved. That is, it is a worst-case scenario which in the long term (pending implementation of public transport initiatives) is likely to overstate the traffic generation arising from Oakdale in general, and the DHL Facility in particular. Application of this rate to the 10.99ha for this development results in the following trips:

- 164 vehicle trips per hour in the morning peak (131 in, 33 out);
- 164 vehicle trips per hour in the evening peak (33 in, 131 out);

These trips are considered appropriate for adoption and are preferred to the RTA's generic rate. In addition, many of the development applications within Erskine Park and the M7 Business Hub have demonstrated trip rates that are lower than 15 trips/ha and this is a direct consequence of the following factors:

- Large warehouse developments typically operate 24 hours per day and 7 days per week, thereby spreading traffic loads and minimising peak period generation;
- Warehouse staff are usually rostered over this 24 hour shift with changeover times that do not generally coincide with the on-street peak period; and
- Peak period travel is usually associated with administrative staff, which is a small proportion of the overall workforce.

Accordingly, the adoption of 164 veh/hr is considered to represent a worst-case scenario, which is nevertheless appropriate for assessment. With a total of 390 parking spaces, this represents about 0.43 trips/space/hr which is also within the expected range.

4.3 Impacts of Generated Traffic

The traffic generated by Project Application 1 (164 veh/hr) represents 27% of the overall traffic generation associated with the Oakdale Central Concept Plan. These are moderate volumes and the main issue of potential concern relates to the right turn movement from Wallgrove Road into Old Wallgrove Road (north to west) which is expected to increase from 118 veh/hr presently to 188 veh/hr (i.e. an additional 70 veh/hr, which represents 54% of total arrivals).

The existing route and intersection performance was assessed in the Concept Plan Application report and was found to be satisfactory subject to minor improvements. The impact of the Project Application No. 1 has been assessed based on the existing geometry and the results are provided in ***Appendix C***. It is evident that the intersection will continue to perform satisfactorily with no improvements required at this intersection. It does not therefore depend upon any intersection improvements external to those works that are planned under the Project Application.

The road system serving the Project Application No.1 site comprises a 2 lane two-way temporary roadway that connects to Wallgrove Road to the south of the existing bridge over the Sydney Water Supply Pipeline, where it forms the stem of a priority-controlled 'T' junction. The proposed 7.0 metre wide carriageway with one lane in each direction will readily accommodate the traffic generated under the Project Application (164 veh/hr) and the design is more dictated by geometric requirements.

The temporary intersection with Old Wallgrove Road will operate very satisfactorily, with minimal delays arising from the predicted traffic volumes, which equate to a maximum arrival

in the AM Peak of about 2-3 vehicles per minute; with a maximum departure in the PM peak also of about 2-3 vehicles per minute.

The improved link road will traverse the bridge over the Sydney Water Pipeline and this will need to be designed to accommodate a 7m wide road carriageway, with the ability to widen this to 4 lanes at a future time to facilitate the completion of all development within Oakdale, as discussed in the Concept Plan Application submitted separately. The horizontal and vertical geometry at this bridge will however need to be assessed and improvements only undertaken if they are required to achieve compliance with relevant standards and guidelines, including the RTA's Road Design Guide.

These volumes are in addition to the traffic volumes presently using Old Wallgrove Road which principally relate to the existing quarrying activities associated with PGH Bricks (south of Burley Road) and Austral Bricks (opposite the site on Old Wallgrove Road). These sites together generate moderate volumes which are estimated to be about 30 veh/hr during peak periods. A Section 96 (1A) modification has also been lodged for the Bedford Quarry (DA-260-8-2002) which is estimated to generate an additional 15 veh/hr associated with the western pit, as discussed in the SEE. This pit lies to the immediate west of the subject site and will be accessed at the southern end of the site. These volumes are moderate and raise no concern for the operation of the temporary access road, assuming priority (stop) sign control. The access incorporates passing bays for southbound through traffic along Old Wallgrove Road, so that this traffic is not delayed by right turn entering vehicles.

The through movement along Old Wallgrove Road north of the site will be about 200 veh/hr during peak periods (combined flow in both directions) which can be readily accommodated by Old Wallgrove Road, which has a mid-block capacity of about 1,200 veh/hr for a single undivided lane under interrupted flow conditions. Therefore a 7.0 metre wide undivided carriageway with one lane in each direction will readily accommodate the traffic generated under the Project Application.

This may require upgrading of sections of Old Wallgrove Road, subject to further detailed assessment. As mentioned, the bridge over the Sydney Water Pipeline will also need to provide a minimum 7m wide road carriageway and this appears to be achievable without widening the existing structure (subject to further detailed assessment). Local widening at bends may also be required to safely accommodate B Doubles and this will need to be assessed at the detailed design stage.

In summary the traffic generated by this Project Application No. 1 can be readily accommodated with no external traffic improvements required, including the proposed works associated with the M7 Hub which are not relied upon.

5. PARKING REQUIREMENTS

The requirements of Fairfield Council's City Wide DCP (Chapter 12) have been reviewed as well as the rates embodied in the RTA's document entitled "Guide to Traffic Generating Developments." The application of Council and RTA parking rates to the proposed development under the Project Application results in parking requirements as shown in Table 2.

Table 2: Comparative Parking Requirements

Site	Area (m^2)	Council DCP Requirement		RTA Guideline Requirement	
		Rate	Spaces	Rate	Spaces
	Warehouse Office	1/80m^2 1/70m^2		1/300m^2 1/300m^2	
1A	20,000 820		250 12		70
			262		
2A	32,550 980		407 14		112
			421		
Total Warehouse Total Office	52,550 1,800		657 26		182
TOTAL	54,350		683		182

It can be seen that the development would require between 182 spaces based on the RTA's requirements and 683 spaces if based on Council's DCP requirement. 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.

In this regard, the plans incorporate 390 spaces (150 for Site 1A and 240 for Site 2A) which are substantially more than the RTA's requirement which demonstrates that all parking demands will be fully accommodated within the site. Application of Council's rate is considered excessive and is not considered representative of a modern distribution facility.

6. ACCESS & INTERNAL DESIGN ASPECTS

6.1 Access Design

The access arrangements comply with all relevant standards. The following factors are noted:

- The northern access roadway is located to the south of the existing bridge crossing of Old Wallgrove Road, at the north-eastern corner of the site. This is located on the outside of (and south of) the existing bend on approach to the bridge crossing. In this regard, all traffic will enter the driveway via a right turn and will exit via a left turn;
- Sight distances at this driveway to/from the south are excellent and substantially exceed the requirements of AS 2890.2;
- Sight distances at this driveway to/from the north are less. A truck exiting the site has an available sight distance of 90 metres to the north. This compares with a requirement for 83 metres assuming an approach speed of 60km/h, with a 5 second gap. This is therefore acceptable;
- The available sight distance for a driver travelling southbound on approach to the driveway is 70 metres. This compares with a Stopping Sight Distance of 65 metres for an approach speed of 60km/h, which is also acceptable;
- It is noted that the above assumes that a B Double turning left out of the site does not encroach onto the opposite carriageway, which would reduce the available sight distance to a relocated 'conflict point'. This requires the provision of generous splays as provided for;
- It is recommended that a 60km/h speed signposting be installed facing southbound traffic in the vicinity of the existing bridge, to achieve satisfactory sight distances; and
- It is proposed that a passing bay be provided for southbound traffic to enable passing of vehicles waiting to turn right into the site. This incorporates a 6 metre wide southbound carriageway with appropriate diverge and merge tapers based on the RTA's Road Design Guide. This involves 25 metre long tapers (both sides) with a 40 metre long passing lane, based on site entry by a 25 metre B Double. This local widening can occur within the existing road reserve.

Finally, it is noted that the above access driveway is an interim arrangement, pending the construction of the new subdivisional road system to the west of the site under subsequent development stages. The ultimate arrangement will involve a substantial upgrade of Old Wallgrove Road on the general alignment of the temporary access road.

6.2 Internal Design

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

- Both sites incorporate a one-way clockwise flow-through system which is safe and efficient;
- Access is facilitated by the cul-de-sac
- Provision of sufficient clearances to accommodate a B Double operating with a 12.5 metre radius turn, as defined by Austroad Guidelines and as shown in ***Appendix B***. The detailed design of these areas will require further assessment at construction certificate stage, taking account also of Fairfield Council's requirements for driveway crossings;
- Extensive internal queuing capacity is provided for both sites;
- Cars and trucks are provided with separate access driveways and are separated internally, providing maximum safety for both car drivers and pedestrians;
- Available sight distances at all driveways will be satisfactory, subject to the road verge being landscaped with appropriate species; and
- The Parking bays and aisles comply with the requirements of AS 2890.1 and generally incorporate bays of minimum width 2.5 metres with aisles of minimum width 6.0 metres;

In summary, the internal design is considered to be satisfactory and will provide a very good level of safety, convenience and amenity. 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.

7. CONCLUSIONS

The following matters are noteworthy:

- *The traffic generation arising from Project Application No. 1 (164 veh/hr combined in both directions at peak times) can be accommodated on the road network with a 7.0 metre wide road carriageway, providing single lane traffic flow in each direction. This will require improvements to some existing sections of Old Wallgrove Road, subject to a detailed road conditions audit;*

- *The temporary access roads to be relied upon are readily able to accommodate the required traffic volumes;*

- *Parking is provided for 390 spaces which is substantially more than required under the RTA's Guideline (182 spaces) and less that Fairfield Council's requirements (683 spaces). This is considered will ensure that on-street parking does not occur;*

- *The proposed means of site access is considered satisfactory and traffic will be able to enter and exit the site safely and efficiently in a forward direction, including B-Doubles. In addition, cars and heavy vehicles are physically separated to a significant extent; 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; and*

- *Provision will be made for visitors as well as disabled parkers;*

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

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APPENDIX A:

Reduced Plans

Site Area Schedule

	Central
Total Land Area	**61.18 ha**
Less: Restricted Areas	
Conservation	11.98 ha
Easements	0.0 ha
Total Restricted Areas	(11.98 ha)
DEVELOPMENT Area	**49.20 ha**
Less: Regional infrastructure	
Services Lot (1) (Sewage)	1.00 ha
Services Lot (2) (Substation)	1.00 ha
Services Lot (3) (Water)	1.00 ha
Services Lot (4)	0.42 ha
Link Road (Option A)	5.54 ha
Total Regional Infrastructure	(8.96 ha)
Gross ESTATE Land Area	**40.24 ha**
Less: Estate Allocations	
Estate Road Lot 1	1.14 ha
Estate Road Lot 2	0.85 ha
Estate Road Lot 3	0.79 ha
Total Estate Allocations	(2.78 ha)
Nett Development LOTS	**37.46 ha**
Development Lot 1A	5.55 ha
Development Lot 1B	3.90 ha
Development Lot 1C	3.60 ha
Development Lot 2A	7.03 ha
Development Lot 2B	6.05 ha
Development Lot 3	11.33 ha

Legend

- Oakdale Concept Plan (CP #2)
- Existing Boundary
- Proposed Precinct Boundary
- Proposed Boundary/ Road Reserve
- (1) Development Lot
- (B1) Bridge

Goodman

Extent of Old Wallgrove Road Upgrade via M7 Hub

Link Road Segment Construct 2 new western lanes of 4 lane divided road on 20m road widening from Transgrid land.

M7 HUB

Link Road Option A (or Estate Road) Construct 7m Carraigeway as Estate Road. Provision for 40m road reserve as Link Road.

Temporary Access Road to 1A + 2A

Bridge B1

Bridge B2

Line of Existing Road Reserve

Conservation Lot B

Conservation Lot C

Conservation Lot A

1A

1B

1C

2A

2B

3

Estate Road 1

Estate Road 2

Estate Road 3

Services Lot (4)

Services Lot (3) (Water)

Services Lot (2) (Sub - Station)

Services Lot (1) (Sewage)

EAST

WEST

SOUTH

Development Lot 1A + 2A Extent of Proposed Building Works

design+	Oakdale CENTRAL	Project Application (PA #1)	Estate Works + DHL	Scope of Application	1:5000 @ A1 1:10000 @ A3
	Horsley Park	(Lot 2 DP120673)	0 100 500	28 Feb 08 JH	SP DHL SK52 (B)

Goodman

Extent of drawing
OAK CEN DA003
shown dashed

Conservation
Lot B

Link Road (Option A) Lot

1A

1B

1C

3

Conservation
Lot C

Conservation
Lot A

Estate Road Lot 1

Estate Road Lot 2

Estate Road Lot 3

Services
Lot (4)

Services
Lot (3)
(Water)

Services
Lot (2)
(Sub -
station)

Services
Lot (1)
(Sewage)

2A

2B

OLD WALLGROVE ROAD

Oakdale
WEST
Lot 1
DP 120679

Oakdale
SOUTH
Lot 82
DP 75204

Oakdale
EAST
Lot 1
DP 843901

design+	Oakdale CENTRAL	Project Application (PA #1)	Estate Works + DHL	Site Plan	1:2500 @ A1 1:5000 @ A3
	Horsley Park	(Lot 2 DP 120673)			28 Feb 08 JH

SP DHL SK69 (A)

Goodman

Development Area Schedule

SITE 1A	
Leasing Site 1 Area	41,550 sqm
Warehouse 1	20,000 sqm
Office(2 Levels)	620 sqm
Dock Offices	200 sqm
Carpark	178
Site Cover	49.36 %

SITE 2A	
Leasing Site 2 Area	68,350 sqm
Warehouse 2	32,550 sqm
Office(2 Levels)	600 sqm
Dock Offices	380 sqm
Carpark	264
Site Cover	48.65 %

TOTAL BUILDING AREA	
Leasing Site Area	109,900 sqm
Building Area	54,350 sqm

254800
15000
175350
17500
115200
20000
125170
X-X DA 004
Y-Y DA 004
Hardstand
Office (2 levels) 600 sqm
Dock Office (80 sqm)
Site 2A Warehouse 2 32,800 sqm (REFER TO DRAWINGS- OAK CEN DA201-203)
Dock Office (100 sqm)
11.0m Wide Drainage Swale
Carpark (264)
PROPOSED TEMPORARY ACCCESS ROAD 1
Office (2 levels) 620 sqm
Site 1A Warehouse 1 20,000 sqm (REFER TO DRAWINGS- OAK CEN DA101-103)
Carpark (178)
Dock Office (20 sqm)
PROPOSED TEMPORARY ACCESS ROAD 1
Oakdale Central Leasing Boundary Line
Oakdale Site Boundary Line (refer to Survey Plan)
OLD WALLGROVE ROAD

design+	Oakdale CENTRAL	Project Application (PA #1)	DHL 1A + 2A	Site Plan	1:1000 @ A1 1:2000 @ A3
	Horsley Park	(Lot2 DP120673)	0 20 100	21 Feb 08 JH	OAK CEN DA003 (B)

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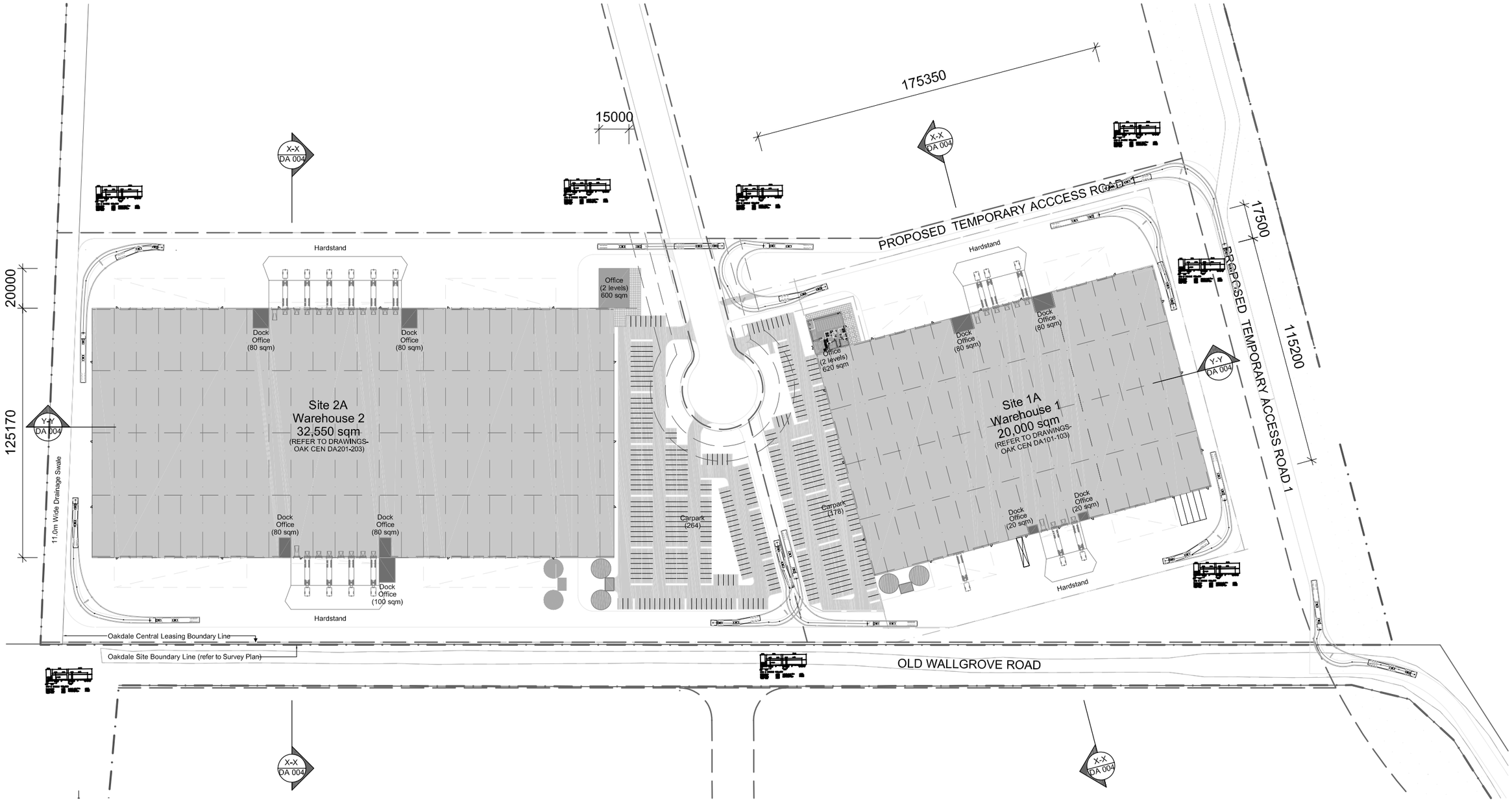
APPENDIX B:

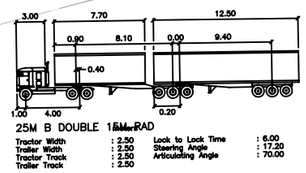
B Double Swept Path Analysis



25m B Double Access
TRAFFIX 18 March 2008

Dock
Office
(20 sqm)

stand

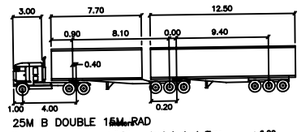


25M B DOUBLE 15M RAD

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		

S ROAD 1

25m B Double Access
1 in 500 at A3
TRAFFIX 18 March 2008



25M B DOUBLE 15.5m RAD

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		

TEMPORARY ACCCESS ROAD 1

Hardstand

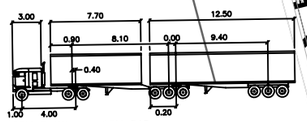
Dock Office (80 sqm)

Dock Office (80 sqm)

PROPOSED TEMPO

17500

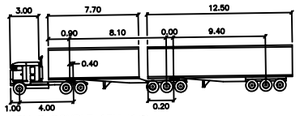
11520



25M B DOUBLE 15.5m RAD

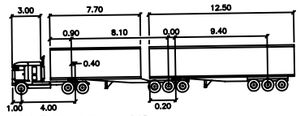
Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		

25m B Double Access
1 in 500 at A3
TRAFFIX 18 March 2008



25M B DOUBLE 15M RAD

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		



25M B DOUBLE 15M RAD

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		

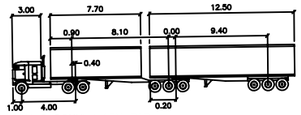
PROPO

Office
(2 levels)
600 sqm

Office
(2 levels)
620 sqm

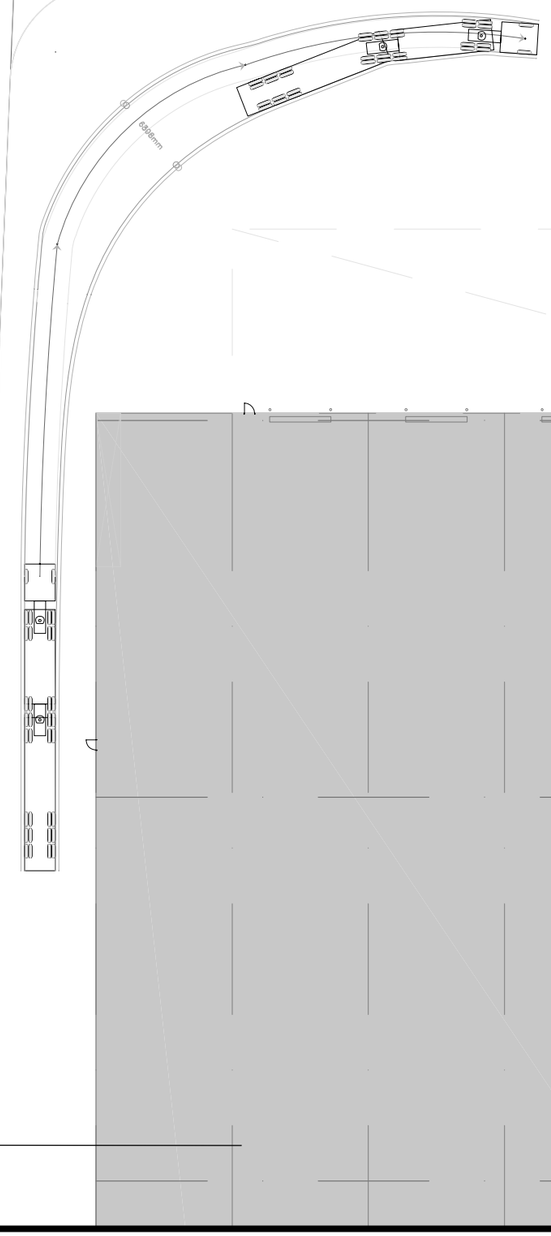
25m B Double Access
1 in 500 at A3
TRAFFIX 18 March 2008

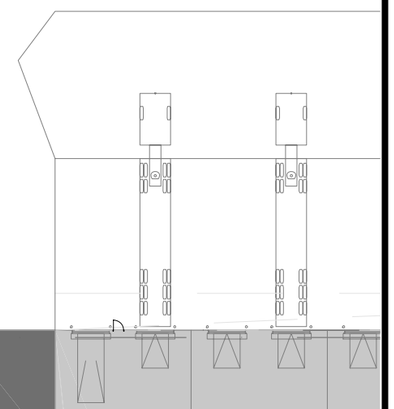
DA 004



25M B DOUBLE 15.5m RAD

Tractor Width	: 2.50	Lock to Lock Time	: 8.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		





Dock
Office
(80 sqm)

2000

5170

Y-Y
DA 004

25m B Double Access
1 in 500 at A3
TRAFFIX 18 March 2008

Ha

Sit
Ware
32,5

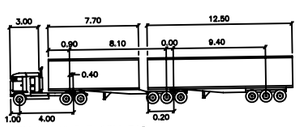
11.0m Wide Drainage Sw

Dock
Office
(80 sqm)

Hardstar

Oakdale Central Leasing Boundary Line

Oakdale Site Boundary Line (refer to Survey Plan)



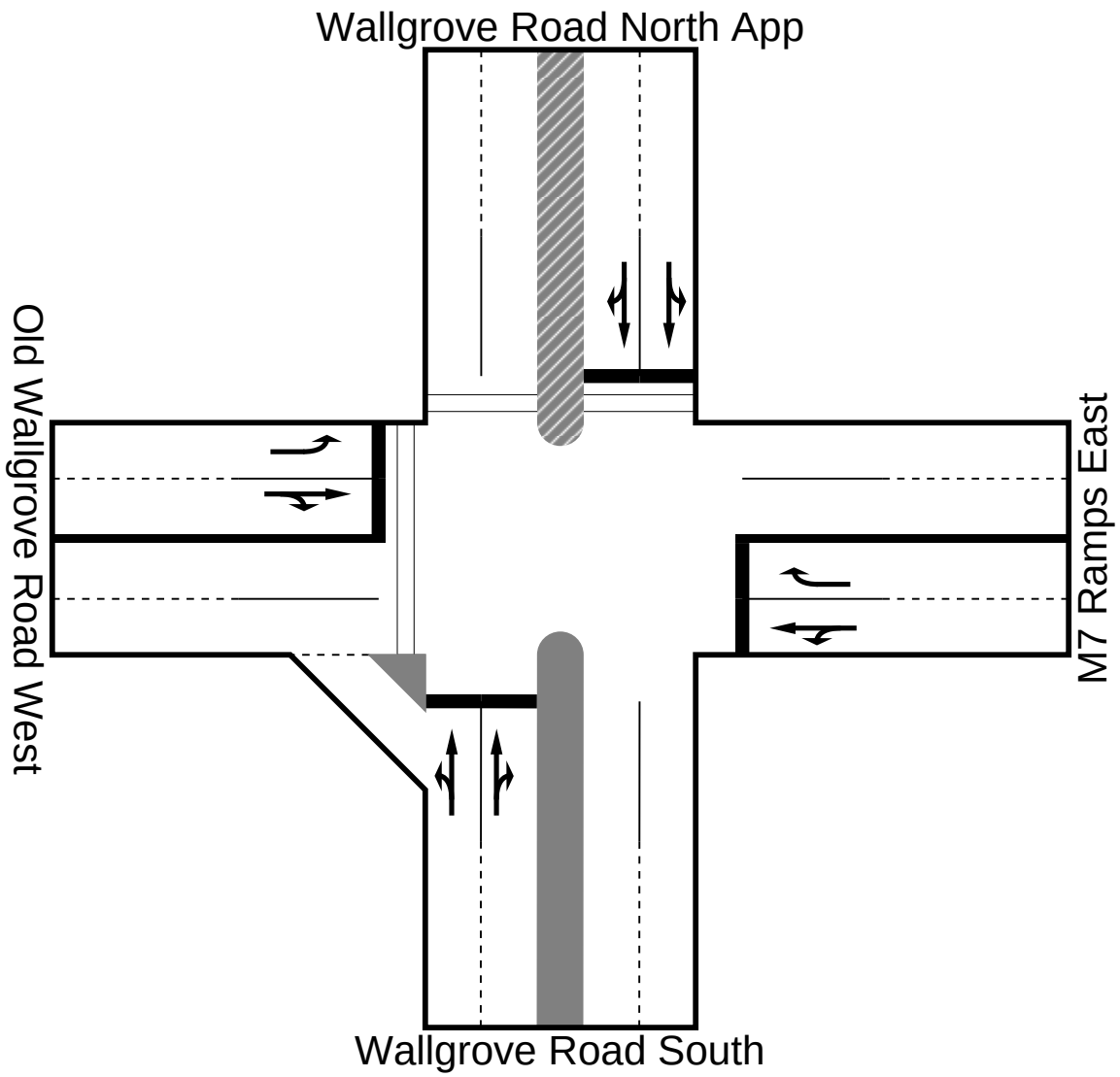
25M B DOUBLE 19M RAD

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 17.20
Tractor Track	: 2.50	Articulating Angle	: 70.00
Trailer Track	: 2.50		

25m B Double Access
1 in 500 at A3
TRAFFIX 18 March 2008

APPENDIX C:

SIDRA Modelling Results



EXISTING GEOMETRY

SIDRA INTERSECTION

Output Tables

Wallgoove/Old Wallgrove Existing

PA1 Future AM

Run Information

```
Cycle Time =   70  (Practical Cycle Time)

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: Standard Left
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  Delay definition: Control delay
                    Geometric delay included
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* Iteration Data:
  No. of Main (Timing-Capacity) Iterations =  3
  Comparison of last two iterations:
    Difference in intersection degree of satn =  0.0 %
    Largest difference in eff. green times =  0 secs
    (max. value for stopping = 0 secs)
```

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-------------------------------------------------------------------
 From      To          Mov          Flow Rate   Flow   Peak Flow
 Approach  Approach    ID    Turn     LV    HV   Scale    Factor
-------------------------------------------------------------------
 South: Wallgrove Road South
           East          3   Right     5     0    1.00     0.95*
           North         2   Thru    723    63    1.00     0.95*
           West          1   Left    116    10    1.00     0.95*
-------------------------------------------------------------------
 East: M7 Ramps East
           South         4   Left      4     0    1.00     0.95*
           North         6   Right   100     9    1.00     0.95*
           West          5   Thru     37     3    1.00     0.95*
-------------------------------------------------------------------
 North: Wallgrove Road North App
           South         8   Thru    985    86    1.00     0.95*
           East          7   Left     10     1    1.00     0.95*
           West          9   Right   182    16    1.00     0.95*
```

```
-------------------------------------------------------------
 West: Old Wallgrove Road West
           South        12   Right    56     5    1.00     0.95*
           East         11   Thru     33     3    1.00     0.95*
           North        10   Left    126    11    1.00     0.95*
-------------------------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

  *  The Unit Time for Volumes is less than the implied Minimum Total Flow
     Period for peaking purposes.  Check the specified values of Unit Time
     for Volumes, Peak Flow Period and Peak Flow Factor to ensure that they
     are as intended.  Refer to the User Guide section on the Volumes
     input dialog for further information.
```

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-----------------------------------------------
  Mov          Left       Through       Right
  ID        ---------    ---------    ---------
             LV    HV     LV    HV     LV    HV
-----------------------------------------------
Demand flows in veh/hour as used by the program
South: Wallgrove Road South
    1 L     116    10      0     0      0     0
    2 T       0     0    723    63      0     0
    3 R       0     0      0     0      5     1
-----------------------------------------------
East: M7 Ramps East
    4 L       4     1      0     0      0     0
    5 T       0     0     37     3      0     0
    6 R       0     0      0     0    100     9
-----------------------------------------------
North: Wallgrove Road North App
    7 L      10     1      0     0      0     0
    8 T       0     0    985    86      0     0
    9 R       0     0      0     0    182    16
-----------------------------------------------
West: Old Wallgrove Road West
   10 L     126    11      0     0      0     0
   11 T       0     0     33     3      0     0
   12 R       0     0      0     0     56     5
-----------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-------------------------------------------------
  Mov          Left        Through        Right
  ID        ----------    ----------    ----------
```

```
            Total  %HV    Total  %HV    Total  %HV
-------------------------------------------------
Demand flows in veh/hour as used by the program
South: Wallgrove Road South
    1 L      126   7.9       0   0.0       0   0.0
    2 T        0   0.0     786   8.0       0   0.0
    3 R        0   0.0       0   0.0       6  16.7
-------------------------------------------------
East: M7 Ramps East
    4 L        5  20.0       0   0.0       0   0.0
    5 T        0   0.0      40   7.5       0   0.0
    6 R        0   0.0       0   0.0     109   8.3
-------------------------------------------------
North: Wallgrove Road North App
    7 L       11   9.1       0   0.0       0   0.0
    8 T        0   0.0    1071   8.0       0   0.0
    9 R        0   0.0       0   0.0     198   8.1
-------------------------------------------------
West: Old Wallgrove Road West
   10 L      137   8.0       0   0.0       0   0.0
   11 T        0   0.0      36   8.3       0   0.0
   12 R        0   0.0       0   0.0      61   8.2
-------------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.3 - Pedestrian Flow Rates

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

---------------------------------------
 Mov        Flow Rate   Flow   Peak Flow
 ID   Stage  (ped/h)    Scale   Factor
---------------------------------------
Across North Approach
  P5            53       1.00    0.95*
---------------------------------------
Across West Approach
  P7            53       1.00    0.95*
---------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

  *  The Unit Time for Volumes is less than the implied Minimum Total Flow
     Period for peaking purposes.  Check the specified values of Unit Time
     for Volumes, Peak Flow Period and Peak Flow Factor to ensure that they
     are as intended.  Refer to the User Guide section on the Volumes
     input dialog for further information.
```

Table S.1 - Movement Phase and Timing Parameters

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-------------------------------------------------------------------------------------------
 Mov     Mov           P H A S E  M A T R I X          Lost Tim  Req.Mov.Time     Eff. Grn
```

ID	Typ	First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green Op Pr	1st Grn	2nd Grn	1st Grn	2nd Grn	1st Grn	2nd Grn
South: Wallgrove Road South													
1	L (Slp)	A	B		*B	A		6	6	24.5	20.0Min	44	14
2	T	A	B					6		26.0		44	
3	R	A	B	Y				32		40.2		18	
East: M7 Ramps East													
4	L	B	A					6		20.0Min		14	
5	T	B	A					6		20.0Min		14	
6	R	B	A	Y				10		20.0Min		10	
North: Wallgrove Road North App													
7	L	A	B					6		44.9		44	
8	T	A	B					6		45.4		44	
9	R	*A	B	Y				16		46.4		34	
West: Old Wallgrove Road West													
10	L	B	A					6		20.0Min		14	
11	T	B	A					6		20.0Min		14	
12	R	B	A	Y				7		20.0Min		13	
Pedestrian Movements													
P5	(Ped)	B	A					14		20.0Min		6	
P7	(Ped)	A	B					14		20.0Min		36	

Current Phase Sequence: Two-phase
Input phase sequence: A B
Output phase sequence: A B

* Critical Movement/Green Period

Movement Types:
Slp Slip Lane Movement
Ped Pedestrian
Dum Dummy

Under heading 'Op':
Y If opposed turn

Table S.2 - Movement Capacity Parameters

Wallgoove/Old Wallgrove Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time = 70 (Practical Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: Wallgrove Road South											
1 L	126	7.9	462	88	0.238	0.180	308	0.90	120	100	0.409
2 T	786	8.0	3059		0.257		1923	0.90	120	100	0.409
3 R	6	16.7	57		0.105		15	0.90	120	100	0.409
East: M7 Ramps East											
4 L	5	20.0	203		0.025		41	0.90	631	100	0.123
5 T	40	7.5	1627		0.025		325	0.90	632	100	0.123
6 R	109	8.3	1473		0.074		210	0.90	74	100	0.518
North: Wallgrove Road North App											
7 L	11	9.1	22		0.500		14	0.90	13	100	0.795
8 T	1071	8.0	2115		0.506		1329	0.90	12	100	0.806*
9 R	198	8.1	506		0.391		246	0.90	12	100	0.806*
West: Old Wallgrove Road West											
10 L	137	8.0	1756		0.078		351	0.90	131	100	0.390

```
  11 T      36    8.3   563        0.064         113  0.90   181   100  0.320
  12 R      61    8.2  1027        0.059         191  0.90   181   100  0.320
--------------------------------------------------------------------------------
Pedestrian Movements
  P5        53        12000        0.004        1029  0.90           0  0.052
  P7        53        12000        0.004        6171  0.90           0  0.009
--------------------------------------------------------------------------------
```

Table S.3 - Intersection Parameters

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

--------------------------------------------------------------------------
   Crit App.  Green   Phases   Adjusted    Adjusted   Required   Required
   Mov  and   Period  ------     Lost        Flow     Grn Time   Movement
   ID   Turn          Fr  To     Time        Ratio     Ratio       Time
--------------------------------------------------------------------------
     9  N_R          A    B       16        0.391      0.435       46.4
     1  S_L    2nd   B    A       20           -          -        20.0Min
                                 ----       ------     ------     ------
                         Total:   36        0.391      0.435       66.4
--------------------------------------------------------------------------
  -  Flow ratio not used for cycle time calculations and
     the adjusted lost time equals the required movement time
     (=Min or Max as shown in Table S.1)

   Cycle Time:
     Minimum   Maximum   Practical   Chosen
        40       150         64         70


   Intersection Level of Service             =         B
   Worst movement Level of Service           =         C
   Average intersection delay (s/pers)       =      17.0
   Largest average movement delay (s)        =      40.5
   Largest back of queue, 95% (m)            =       198
   Performance Index                         =     91.11
   Degree of saturation (highest)            =     0.806
   Practical Spare Capacity (lowest)         =        12 %
   Effective intersection capacity, (veh/h)  =      3210
   Total vehicle flow (veh/h)                =      2586
   Total pedestrian flow (ped/h)             =       106
   Total person flow (pers/h)                =      3985
   Total vehicle delay (veh-h/h)             =     12.18
   Total pedestrian delay (ped-h/h)          =      0.55
   Total person delay (pers-h/h)             =     18.83
   Total effective vehicle stops (veh/h)     =      1867
   Total effective pedestrian stops (ped/h)  =        74
   Total effective person stops (pers/h)     =      2875
   Total vehicle travel (veh-km/h)           =    1567.6
   Total cost ($/h)                          =   1390.74
   Total fuel (L/h)                          =     215.7
   Total CO2 (kg/h)                          =    540.96
```

Table S.4 - Phase Information

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)
```

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	6	6	44	50	6	50	71%
B	50	6	56	14	70	6	20	29%

Current Phase Sequence: Two-phase
Input phase sequence: A B
Output phase sequence: A B

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Longest Queue 95% Back (m)	Perf. Index	Aver. Speed (km/h)
South: Wallgrove Road South									
1 L	0.49	0.74	14.1	0.52	0.77	9.0	67	3.50	43.5
2 T	1.55	2.33	7.1	0.55	0.49	9.7	72	19.74	50.2
3 R	0.03	0.04	16.4	0.57	0.78	9.7	72	0.18	41.6
East: M7 Ramps East									
4 L	0.05	0.07	33.8	0.85	0.74	1.9	15	0.21	31.2
5 T	0.28	0.42	25.3	0.85	0.64	1.9	15	1.53	35.4
6 R	1.23	1.84	40.5	0.97	0.79	5.1	38	5.06	28.5
North: Wallgrove Road North App									
7 L	0.07	0.10	21.7	0.82	0.92	26.5	198	0.42	37.7
8 T	4.42	6.62	14.8	0.83	0.82	26.5	198	39.35	42.6
9 R	1.85	2.77	33.6	0.89	1.02	14.0	105	9.41	31.3
West: Old Wallgrove Road West									
10 L	1.36	2.04	35.7	0.91	0.79	5.7	42	5.92	30.4
11 T	0.27	0.40	26.9	0.90	0.71	4.2	31	1.45	34.5
12 R	0.60	0.90	35.3	0.90	0.78	4.2	31	2.62	30.5
Pedestrian Movements									
P5	0.43	0.43	29.3	0.91	0.91	0.1	0	1.08	2.2
P7	0.12	0.12	8.3	0.49	0.49	0.1	0	0.64	3.5

Table S.6 - Intersection Performance

Wallgoove/Old Wallgrove Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time = 70 (Practical Cycle Time)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: Wallgrove Road South									
918	0.409	2.07	3.11	8.1	0.55	0.53	72	23.42	49.1
East: M7 Ramps East									
154	0.518	1.55	2.33	36.3	0.94	0.75	38	6.80	30.1
North: Wallgrove Road North App									
1280	0.806	6.33	9.49	17.8	0.84	0.85	198	49.18	40.3

```
West: Old Wallgrove Road West
  234   0.390    2.22     3.34    34.2   0.91  0.77    42    9.99    31.0
--------------------------------------------------------------------------
Pedestrians:
   53   0.009    0.12     0.12     8.3   0.49  0.49     0    0.64     3.5
--------------------------------------------------------------------------
ALL VEHICLES:
 2586   0.806   12.18    18.27    17.0   0.74  0.72   198   89.39    41.0
--------------------------------------------------------------------------
INTERSECTION (persons):
 3985   0.806            18.83    17.0   0.74  0.72         91.11    40.1
--------------------------------------------------------------------------
Queue values in this table are 95% back of queue (metres).
```

Table S.7 - Lane Performance

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

------------------------------------------------------------------------------
        Effective Red and   Dem                              Q u e u e
        Green Times (sec)  Flow  Cap  Deg.  Aver.  Eff.   95% Back     Lane
 Lane   -----------------  (veh (veh  Satn  Delay  Stop  -----------  Length
 No.     R1  G1   R2  G2     /h)  /h)   x   (sec)  Rate  (vehs) (m)    (m)
------------------------------------------------------------------------------
 South: Wallgrove Road South
 1 LT    19  44    6   1    477 1167 0.409    8.2  0.55   9.0   67.4   500.0
 2 TR    28  42    0   0    441 1079 0.409    8.1  0.50   9.7   72.3   500.0
------------------------------------------------------------------------------
 East: M7 Ramps East
 1 LT    56  14    0   0     45  366 0.123   26.3  0.65   1.9   14.6   500.0
 2 R     60  10    0   0    109  210 0.518   40.5  0.79   5.1   37.9   500.0
------------------------------------------------------------------------------
 North: Wallgrove Road North App
 1 LT    26  44    0   0    938 1164 0.806   13.3  0.80  26.5  198.5   500.0
 2 TR    34  36    0   0    342  425 0.806   30.0  0.98  14.0  104.6   500.0
------------------------------------------------------------------------------
 West: Old Wallgrove Road West
 1 L     56  14    0   0    137  351 0.390   35.7  0.79   5.7   42.5   220.0
 2 TR    56  14    0   0     97  303 0.320   32.2  0.75   4.2   31.2   500.0
------------------------------------------------------------------------------
```

Table S.8 - Lane Flow and Capacity Information

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

------------------------------------------------------------------------------
                                 Saturation Flow  End  Tot
 Lane     Dem Flow (veh/h)   Lane   Adj. Aver Aver  Cap  Cap  Deg.  Lane
 No.    -------------------  Width Basic 1st  2nd  (veh (veh  Satn  Util
         Lef Thru  Rig  Tot   (m)  (tcu) (veh)(veh)  /h)  /h)   x     %
------------------------------------------------------------------------------
 South: Wallgrove Road South
 1 LT    126  351    0  477  3.30  1950 1827  1292    0 1167 0.409  100
 2 TR      0  435    6  441  3.30  1950 1798     0   47 1079 0.409  100
------------------------------------------------------------------------------
 East: M7 Ramps East
 1 LT      5   40    0   45  3.30  1950 1830     0    0  366 0.123  100
 2 R       0    0  109  109  3.30  1950 1473     0  110  210 0.518  100
```

```
------------------------------------------------------------------------
 North: Wallgrove Road North App
 1 LT     11  927    0  938  3.30  1950 1852     0    0 1164 0.806  100
 2 TR      0  144  198  342  3.30  1950  826     0   84  425 0.806  100
------------------------------------------------------------------------
 West: Old Wallgrove Road West
 1 L     137    0    0  137  3.30  1950 1756     0    0  351 0.390  100
 2 TR      0   36   61   97  3.30  1950 1516     0   87  303 0.320  100
------------------------------------------------------------------------

  Basic Saturation Flow in this table is adjusted for lane width, approach
  grade, parking manoeuvres and number of buses stopping.  Saturation flow
  scale applies if specified.
```

Table S.9 - Signal Timing Diagram

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

Displayed (Phase) Green Times

                     Phase A                          Phase B

0                                                   50                  70
I-------------------------------------------------I-------------------I
......GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.......GGGGGGGGGGGGG.
     6                                                  56


Effective (Movement) Green Times


 South: Wallgrove Road South

Mov.     1 (L)
I                                                   I                   I
GGG......GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG......GGGGGGGGGGGG
  3     9                                             53     59

Mov.     2 (T)
I                                                   I                   I
.........GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..................
         9                                             53

Mov.     3 (R)
I                                                   I                   I
.................................GGGGGGGGGGGGGGGGG..................
                                 35                 53


 East: M7 Ramps East

Mov.     4 (L)
I                                                   I                   I
GG.....................................................GGGGGGGGGGG
  3                                                   59

Mov.     5 (T)
I                                                   I                   I
GG.....................................................GGGGGGGGGGG
  3                                                   59

Mov.     6 (R)
I                                                   I                   I
GG.........................................................GGGGGGG
  3                                                       63


 North: Wallgrove Road North App
```

```
Mov.     7 (L)
I                                                  I                   I
.........GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..................
        9                                            53

Mov.     8 (T)
I                                                  I                   I
.........GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..................
        9                                            53

Mov.     9 (R)
I                                                  I                   I
..................GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..................
                19                                   53


 West: Old Wallgrove Road West

Mov.    10 (L)
I                                                  I                   I
GG.....................................................GGGGGGGGGGG
  3                                                      59

Mov.    11 (T)
I                                                  I                   I
GG.....................................................GGGGGGGGGGG
  3                                                      59

Mov.    12 (R)
I                                                  I                   I
GG.....................................................GGGGGGGGGGG
  3                                                      60


 Pedestrian Movements

Mov.    P5
I                                                  I                   I
.....................................................GGGGG.......
                                                     58     64

Mov.    P7
I                                                  I                   I
........GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.........................
        8                                      44


I-----I------I------I------I------I------I------I------I------I------I---->
0      7     14     21     28     35     42     49     56     63     70

                                T I M E  (s)
```

Table S.10 - Movement Capacity and Performance Summary

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

--------------------------------------------------------------------------------
 Mov     Mov  Dem   Total  Lane  Deg.  Eff. Grn  Aver.  Eff.    95%    Perf.
 ID      Typ  Flow   Cap.  Util  Satn  --------  Delay  Stop  Back of  Index
              (veh  (veh               1st  2nd         Rate   Queue
               /h)   /h)   (%)     x   Grn  Grn  (sec)         (veh)
--------------------------------------------------------------------------------
South: Wallgrove Road South
   1 L  (Slp)  126   308   100  0.409   44   14*  14.1  0.77    9.0    3.50
   2 T         786  1923   100  0.409   44         7.1  0.49    9.7   19.74
   3 R           6    15   100  0.409   18        16.4  0.78    9.7    0.18
--------------------------------------------------------------------------------
East: M7 Ramps East
   4 L           5    41   100  0.123   14        33.8  0.74    1.9    0.21
```

```
   5 T          40   325   100  0.123   14        25.3  0.64    1.9    1.53
   6 R         109   210   100  0.518   10        40.5  0.79    5.1    5.06
--------------------------------------------------------------------------------
North: Wallgrove Road North App
   7 L          11    14   100  0.795   44        21.7  0.92   26.5    0.42
   8 T        1071  1329   100  0.806*  44        14.8  0.82   26.5   39.35
   9 R         198   246   100  0.806*  34*       33.6  1.02   14.0    9.41
--------------------------------------------------------------------------------
West: Old Wallgrove Road West
  10 L         137   351   100  0.390   14        35.7  0.79    5.7    5.92
  11 T          36   113   100  0.320   14        26.9  0.71    4.2    1.45
  12 R          61   191   100  0.320   13        35.3  0.78    4.2    2.62
--------------------------------------------------------------------------------
Pedestrian Movements
  P5    (Ped)   53  1029   100  0.052    6        29.3  0.91    0.1    1.08
  P7    (Ped)   53  6171   100  0.009   36         8.3  0.49    0.1    0.64
--------------------------------------------------------------------------------
  *  Maximum degree of saturation, or critical green periods
```

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

------------------------------------------------------------
  Mov            Fuel    Cost     HC      CO     NOX     CO2
  ID             Total   Total   Total   Total   Total   Total
                  L/h   $/h      kg/h    kg/h    kg/h    kg/h
------------------------------------------------------------
South: Wallgrove Road South
    1 L          10.8    64.51   0.043    2.22   0.067    27.0
    2 T          56.2   344.35   0.207    9.29   0.309   141.0
    3 R           0.5     3.17   0.002    0.11   0.003     1.3
               ---------------------------------------------
                 67.5   412.04   0.251   11.62   0.379   169.3
------------------------------------------------------------
East: M7 Ramps East
    4 L           0.5     3.32   0.002    0.09   0.003     1.2
    5 T           3.5    23.90   0.014    0.67   0.020     8.9
    6 R          10.7    78.16   0.045    2.09   0.062    26.8
               ---------------------------------------------
                 14.7   105.38   0.061    2.85   0.085    36.8
------------------------------------------------------------
North: Wallgrove Road North App
    7 L           1.0     6.33   0.004    0.21   0.006     2.5
    8 T          91.0   555.87   0.360   18.12   0.547   228.3
    9 R          19.2   132.76   0.080    3.95   0.116    48.3
               ---------------------------------------------
                111.3   694.95   0.445   22.29   0.669   279.1
------------------------------------------------------------
West: Old Wallgrove Road West
   10 L          13.1    93.09   0.055    2.60   0.077    32.9
   11 T           3.3    22.04   0.013    0.63   0.019     8.2
   12 R           5.8    41.31   0.024    1.15   0.034    14.6
               ---------------------------------------------
                 22.2   156.44   0.092    4.38   0.130    55.7
------------------------------------------------------------
Pedestrian Movements
   P5                    13.55
   P7                     8.36
               ---------------------------------------------
                         21.91
------------------------------------------------------------
 ALL VEHICLES:  215.7  1368.82   0.850   41.15   1.264   541.0
------------------------------------------------------------
 INTERSECTION:  215.7  1390.74   0.850   41.15   1.264   541.0
------------------------------------------------------------


PARAMETERS USED IN COST CALCULATIONS
```

```
-----------------------------------

   Pump price of fuel ($/L)                 =     1.200
   Fuel resource cost factor                =      0.50
   Ratio of running cost to fuel cost       =       3.0
   Average income ($/h)                     =     28.00
   Time value factor                        =      0.60
   Light vehicle mass (1000 kg)             =       1.4
   Heavy vehicle mass (1000 kg)             =      11.0
   Light vehicle idle fuel rate (L/h)       =     1.350
   Heavy vehicle idle fuel rate (L/h)       =     2.000
```

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-------------------------------------------------------------
  Mov            Fuel    Cost     HC      CO     NOX     CO2
  ID             Rate    Rate    Rate    Rate    Rate    Rate
              L/100km  $/km     g/km    g/km    g/km    g/km
-------------------------------------------------------------
South: Wallgrove Road South
    1 L          14.0     0.84   0.555   28.85   0.866   351.3
    2 T          11.8     0.72   0.434   19.50   0.649   295.8
    3 R          14.4     0.87   0.576   29.87   0.888   361.6
              ----------------------------------------------
                 12.1     0.74   0.451   20.85   0.681   303.9
-------------------------------------------------------------
East: M7 Ramps East
    4 L          15.7     1.10   0.652   31.21   0.925   395.5
    5 T          14.6     0.99   0.588   27.75   0.844   365.9
    6 R          16.2     1.19   0.681   31.70   0.939   406.4
              ----------------------------------------------
                 15.8     1.13   0.656   30.65   0.914   395.5
-------------------------------------------------------------
North: Wallgrove Road North App
    7 L          15.1     0.95   0.619   31.88   0.935   379.6
    8 T          14.0     0.86   0.555   27.90   0.843   351.5
    9 R          16.1     1.11   0.673   33.05   0.966   403.5
              ----------------------------------------------
                 14.3     0.90   0.573   28.73   0.862   359.8
-------------------------------------------------------------
West: Old Wallgrove Road West
   10 L          15.9     1.12   0.661   31.42   0.931   397.7
   11 T          14.9     1.01   0.606   28.88   0.870   374.3
   12 R          15.8     1.12   0.657   31.22   0.927   396.0
              ----------------------------------------------
                 15.7     1.11   0.651   30.98   0.920   393.6
-------------------------------------------------------------
Pedestrian Movements
   P5                     7.70
   P7                     4.75
              ----------------------------------------------
                          6.23
-------------------------------------------------------------
 ALL VEHICLES:   13.8     0.87   0.542   26.25   0.806   345.1
-------------------------------------------------------------
 INTERSECTION:   13.8     0.89   0.542   26.25   0.806   345.1
-------------------------------------------------------------
```

Table S.14 - Summary of Input and Output Data

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

--------------------------------------------------------------------------------
 Lane   Demand Flow (veh/h)       Adj.  Eff Grn   Deg   Aver. Longest Shrt
 No.   --------------------  %HV  Basic  (secs)   Sat   Delay  Queue  Lane
         L    T    R   Tot       Satf. 1st 2nd    x    (sec)   (m)   (m)
--------------------------------------------------------------------------------
 South: Wallgrove Road South
1 LT    126  351        477    8  1950   44   1  0.409    8.2    67   500
2 TR         435    6   441    8  1950   42      0.409    8.1    72   500
        ----------------------------------------------------------------------
        126  786    6   918    8                 0.409    8.1    72
--------------------------------------------------------------------------------
 East: M7 Ramps East
1 LT      5   40         45    9  1950   14      0.123   26.3    15   500
2 R               109   109    8  1949   10      0.518   40.5    38   500
        ----------------------------------------------------------------------
          5   40  109   154    8                 0.518   36.3    38
--------------------------------------------------------------------------------
 North: Wallgrove Road North App
1 LT     11  927        938    8  1950   44      0.806   13.3   198   500
2 TR         144  198   342    8  1950   36      0.806   30.0   105   500
        ----------------------------------------------------------------------
         11 1071  198  1280    8                 0.806   17.8   198
--------------------------------------------------------------------------------
 West: Old Wallgrove Road West
1 L     137             137    8  1949   14      0.390   35.7    42   220
2 TR         36   61    97    8  1949   14      0.320   32.2    31   500
        ----------------------------------------------------------------------
        137   36   61   234    8                 0.390   34.2    42
--------------------------------------------------------------------------------
 Pedestrians
  Across N approach      53               6      0.052   29.3   0.1
  Across W approach      53              36      0.009    8.3   0.1
================================================================================
 ALL VEHICLES          Total   %       Cycle      Max   Aver.   Max
                       Flow   HV       Time        X    Delay  Queue
                       2586    8         70    0.806   17.0   198
================================================================================
Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for
      grade, lane widths, parking manoeuvres and bus stops.
```

Table S.15 - Capacity and Level of Service

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

--------------------------------------------------------------------------------
 Mov     Mov    Green Time  Total  Total    Deg.   Aver.   LOS  Longest Queue
 ID      Typ    Ratio (g/C) Flow    Cap.     of    Delay          95% Back
               ------------ (veh   (veh     Satn                (vehs)  (m)
                1st   2nd     /h)    /h)    (v/c)  (sec)
                grn   grn
--------------------------------------------------------------------------------
South: Wallgrove Road South
   1 L  (Slp) 0.629  0.200*   126    308   0.409    14.1    A      9.0     67
   2 T        0.629           786   1923   0.409     7.1    A      9.7     72
   3 R        0.257             6     15   0.409    16.4    B      9.7     72
--------------------------------------------------------------------------------
East: M7 Ramps East
   4 L        0.200             5     41   0.123    33.8    C      1.9     15
   5 T        0.200            40    325   0.123    25.3    B      1.9     15
   6 R        0.143           109    210   0.518    40.5    C      5.1     38
```

North: Wallgrove Road North App									
7	L	0.629	11	14	0.795	21.7	B	26.5	198
8	T	0.629	1071	1329	0.806*	14.8	B	26.5	198
9	R	0.486*	198	246	0.806*	33.6	C	14.0	105
West: Old Wallgrove Road West									
10	L	0.200	137	351	0.390	35.7	C	5.7	42
11	T	0.200	36	113	0.320	26.9	B	4.2	31
12	R	0.186	61	191	0.320	35.3	C	4.2	31
Pedestrian Movements									
P5	(Ped)	0.086	53	1029	0.052	29.3	C	0.1	0
P7	(Ped)	0.514	53	6171	0.009	8.3	A	0.1	0
ALL VEHICLES:			2586		0.806	17.0	B	26.5	198
INTERSECTION (persons):			3985			17.0		26.5	198

Level of Service calculations are based on
average control delay including geometric delay (RTA NSW criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
SIDRA Output Guide or the Output section of the on-line help.
Intersection capacity is calculated considering vehicle movements only.

* Maximum v/c ratio, or critical green periods

" Movement Level of service has been determined using adjacent lane
v/c ratio rather than short lane v/c ratio (v/c=1.0)

Table S.16 - SCATS MF Parameter

Wallgoove/Old Wallgrove Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time = 70 (Practical Cycle Time)

Lane No.		Stopline Flow (veh/h)	Capacity (veh/h)	SCATS Satn Flow	SCATS MF	Deg. Satn x	Lane Util. %
South: Wallgrove Road South							
1	LT	477	1167	1925	NA	0.409	100
2	TR	441	1079	1949	1637	0.409	100
East: M7 Ramps East							
1	LT	45	366	1939	1357	0.123	100
2	R	109	210	1857	929	0.518	100
North: Wallgrove Road North App							
1	LT	938	1164	1949	1715	0.806	100
2	TR	342	425	1895	1365	0.806	100
West: Old Wallgrove Road West							
1	L	137	351	1857	1300	0.390	100
2	TR	97	303	1891	1323	0.320	100

NA Not Applicable - SCATS MF was not calculated for this lane due to one
of the following reasons:
- the lane is not controlled by signals (slip or continuous lane)
- two movements share this lane and do not run in the same phases

STOPLINE FLOW: Departure flow rate in veh/h as measured at the stop line.
This cannot exceed capacity.

SCATS SATURATION FLOW: This allows for lane width, approach grade and
turning vehicles. Saturation flow scale applies if specified.
The effects of heavy vehicles, parking manoeuvres, number of buses
stopping and conflicting pedestrian volume are not included.

SCATS MF: This emulates the MF (Maximum Flow) parameter used in the SCATS
control system. It is calculated from the SCATS SATURATION FLOW parameter.

```
  DEG. SATN: The Demand (Arrival) Flow Rate may exceed the Stopline Flow
  Rate, therefore x > 1 is possible.
```

Table D.0 - Geometric Delay Data

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

--------------------------------------------------------------------------------
                            Negn  Negn   Negn   Appr.   Downstream  Distance
 From      To               Radius Speed  Dist.  Dist.   ----------
 Approach  Approach  Turn     (m)  (km/h)  (m)    (m)      (m)     User Spec?
--------------------------------------------------------------------------------
 South: Wallgrove Road South
             East   Right   10.9   20.9   17.2    500     112         No
            North   Thru       S   60.0   16.5    500     113         No
             West   Left    15.0   23.5   23.6    500     116         No
--------------------------------------------------------------------------------
 East: M7 Ramps East
            South   Left    10.0   20.2   15.7    500     111         No
            North   Right    9.9   20.1   15.6    500     111         No
             West   Thru       S   60.0   18.5    500     113         No
--------------------------------------------------------------------------------
 North: Wallgrove Road North App
            South   Thru       S   60.0   16.5    500     113         No
             East   Left    10.0   20.2   15.7    500     111         No
             West   Right    9.9   20.1   15.6    500     111         No
--------------------------------------------------------------------------------
 West: Old Wallgrove Road West
            South   Right   10.9   20.9   17.2    500     112         No
             East   Thru       S   60.0   18.5    500     113         No
            North   Left    10.0   20.2   15.7    500     111         No
--------------------------------------------------------------------------------

  Downstream distance is distance travelled from the stopline until exit
  cruise speed is reached (includes negotiation distance).  Acceleration
  distance is weighted for light and heavy vehicles.  The same distance
  applies for both stopped and unstopped vehicles.
```

Table D.1 - Lane Delays

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

------------------------------------------------------------------------
                   ----------  Delay (seconds/veh)  ----------
         Deg.   Stop-line Delay  Acc.   Queuing   Stopd
 Lane    Satn   1st   2nd Total  Dec.  Total MvUp (Idle) Geom Control
 No.       x     d1    d2   dSL   dn    dq   dqm    di    dig   dic
------------------------------------------------------------------------
 South: Wallgrove Road South
 1 LT   0.409   6.0   0.0   6.0   3.9   2.1   0.2   1.9   2.1    8.2
 2 TR   0.409   8.0   0.0   8.0   4.8   3.2   0.0   3.2   0.1    8.1
------------------------------------------------------------------------
 East: M7 Ramps East
 1 LT   0.123  25.3   0.0  25.3   6.9  18.5   0.0  18.5   0.9   26.3
 2 R    0.518  32.0   0.0  32.0   3.9  28.1   0.0  28.1   8.5   40.5
------------------------------------------------------------------------
 North: Wallgrove Road North App
```

```
 1 LT   0.806  10.5   2.7  13.2   6.9   6.3   0.4   5.9   0.1   13.3
 2 TR   0.806  15.9   9.2  25.1   5.3  19.8   2.1  17.7   4.9   30.0
-------------------------------------------------------------------
 West: Old Wallgrove Road West
 1 L    0.390  27.2   0.0  27.2   3.7  23.5   0.0  23.5   8.5   35.7
 2 TR   0.320  26.9   0.0  26.9   5.2  21.7   0.0  21.7   5.3   32.2
-------------------------------------------------------------------
  dn is average stop-start delay for all vehicles queued and unqueued
```

Table D.2 - Lane Stops

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-----------------------------------------------------
                                              Queue
        Deg.  -- Effective Stop Rate --   Prop. Move-up
 Lane   Satn             Geom. Overall  Queued  Rate
 No.      x    he1   he2   hig     h       pq     hqm
-----------------------------------------------------
 South: Wallgrove Road South
 1 LT  0.409  0.46  0.01  0.08   0.55    0.524   0.06
 2 TR  0.409  0.50  0.00  0.00   0.50    0.568   0.00
-----------------------------------------------------
 East: M7 Ramps East
 1 LT  0.123  0.64  0.00  0.01   0.65    0.853   0.00
 2 R   0.518  0.77  0.00  0.02   0.79    0.970   0.00
-----------------------------------------------------
 North: Wallgrove Road North App
 1 LT  0.806  0.75  0.05  0.00   0.80    0.815   0.06
 2 TR  0.806  0.79  0.15  0.04   0.98    0.889   0.26
-----------------------------------------------------
 West: Old Wallgrove Road West
 1 L   0.390  0.73  0.00  0.06   0.79    0.912   0.00
 2 TR  0.320  0.71  0.00  0.04   0.75    0.896   0.00
-----------------------------------------------------
  hig is the average value for all movements in a shared lane
  hqm is average queue move-up rate for all vehicles queued and unqueued
```

Table D.3A - Lane Queues (veh)

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-------------------------------------------------------------------------------------
        Deg.  Ovrfl.   Average (veh)              Percentile (veh)            Queue
 Lane   Satn  Queue ------------------  ---------------------------------  Stor.
 No.      x    No      Nb1    Nb2     Nb     70%    85%    90%    95%    98%  Ratio
-------------------------------------------------------------------------------------
 South: Wallgrove Road South
 1 LT  0.409    0.0     4.5    0.0    4.5     5.6    6.8    7.6    9.0   10.4   0.13
 2 TR  0.409    0.0     4.9    0.0    4.9     6.1    7.4    8.3    9.7   11.1   0.14
-------------------------------------------------------------------------------------
 East: M7 Ramps East
 1 LT  0.123    0.0     0.8    0.0    0.8     1.0    1.3    1.5    1.9    2.4   0.03
 2 R   0.518    0.0     2.3    0.0    2.3     2.9    3.6    4.1    5.1    6.0   0.08
-------------------------------------------------------------------------------------
 North: Wallgrove Road North App
 1 LT  0.806    0.8    14.8    1.4   16.2    19.5   22.8   24.6   26.5   28.5   0.40
```

2 TR	0.806	1.0	6.2	1.5	7.7	9.4	11.3	12.4	14.0	15.6	0.21
West: Old Wallgrove Road West											
1 L	0.390	0.0	2.6	0.0	2.6	3.3	4.1	4.6	5.7	6.7	0.19
2 TR	0.320	0.0	1.8	0.0	1.8	2.3	2.9	3.4	4.2	5.0	0.06

Values printed in this table are back of queue (vehicles).

Table D.3B - Lane Queues (metres)

Wallgoove/Old Wallgrove Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time = 70 (Practical Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nb1	Nb2	Nb	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: Wallgrove Road South											
1 LT	0.409	0.0	33.6	0.0	33.6	41.6	51.1	57.2	67.4	77.6	0.13
2 TR	0.409	0.0	36.6	0.0	36.6	45.3	55.4	61.8	72.3	82.9	0.14
East: M7 Ramps East											
1 LT	0.123	0.0	6.0	0.0	6.0	7.7	9.9	11.5	14.6	17.8	0.03
2 R	0.518	0.0	16.9	0.0	16.9	21.4	27.0	30.8	37.9	45.0	0.08
North: Wallgrove Road North App											
1 LT	0.806	5.9	110.7	10.4	121.1	145.8	171.0	184.0	198.5	213.0	0.40
2 TR	0.806	7.4	46.6	11.1	57.6	70.4	84.4	92.6	104.6	116.5	0.21
West: Old Wallgrove Road West											
1 L	0.390	0.0	19.3	0.0	19.3	24.4	30.5	34.8	42.5	50.2	0.19
2 TR	0.320	0.0	13.6	0.0	13.6	17.3	21.9	25.1	31.2	37.3	0.06

Values printed in this table are back of queue (metres).

Table D.4 - Movement Speeds (km/h) and Geometric Delay

Wallgoove/Old Wallgrove Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time = 70 (Practical Cycle Time)

Mov ID	App. Speeds Cruise	Negn	Exit Speeds Negn	Cruise	Queue Move-up 1st Grn	2nd Grn	Av. Section Spd Running	Overall	Geom Delay (sec)
South: Wallgrove Road South									
1 L	60.0	23.5	23.5	60.0	6.4		46.7	43.5	8.1
2 T	60.0	60.0	60.0	60.0	0.0		53.0	50.2	0.0
3 R	60.0	20.9	20.9	60.0			46.5	41.6	8.4
East: M7 Ramps East									
4 L	60.0	20.2	20.2	60.0			45.4	31.2	8.5
5 T	60.0	60.0	60.0	60.0			50.0	35.4	0.0
6 R	60.0	20.1	20.1	60.0			45.0	28.5	8.5
North: Wallgrove Road North App									

```
    7 L     60.0  20.2   20.2  60.0    50.5           45.1    37.7     8.5
    8 T     60.0  60.0   60.0  60.0    47.8           49.5    42.6     0.0
    9 R     60.0  20.1   20.1  60.0    30.5           43.4    31.3     8.5
--------------------------------------------------------------------------
 West: Old Wallgrove Road West
   10 L     60.0  20.2   20.2  60.0                   45.2    30.4     8.5
   11 T     60.0  60.0   60.0  60.0                   49.6    34.5     0.0
   12 R     60.0  20.9   20.9  60.0                   45.2    30.5     8.4
--------------------------------------------------------------------------

  "Running Speed" is the average speed excluding stopped periods.
```

Table D.5 - Progression Factors and Actuated Signal Parameters

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

------------------------------------------------------------------------
                                 Delay   Queue   Disp. Grn. Settings
  Mov                    Arrival Prog.   Prog.    1st Grn   2nd Grn
  ID      Control  Coord.  Type   Factor  Factor  Gmin Gmax Gmin Gmax
------------------------------------------------------------------------
 South: Wallgrove Road South
    1 L     FT      No       3     1.000   1.000     6   NA    6   NA
    2 T     FT      No       3     1.000   1.000     6   NA
    3 R     FT      No       3     1.000   1.000     6   NA
------------------------------------------------------------------------
 East: M7 Ramps East
    4 L     FT      No       3     1.000   1.000     6   NA
    5 T     FT      No       3     1.000   1.000     6   NA
    6 R     FT      No       3     1.000   1.000     6   NA
------------------------------------------------------------------------
 North: Wallgrove Road North App
    7 L     FT      No       3     1.000   1.000     6   NA
    8 T     FT      No       3     1.000   1.000     6   NA
    9 R     FT      No       3     1.000   1.000     6   NA
------------------------------------------------------------------------
 West: Old Wallgrove Road West
   10 L     FT      No       3     1.000   1.000     6   NA
   11 T     FT      No       3     1.000   1.000     6   NA
   12 R     FT      No       3     1.000   1.000     6   NA
------------------------------------------------------------------------
 Pedestrians
   P5       FT      No       3     1.000   1.000
   P7       FT      No       3     1.000   1.000
------------------------------------------------------------------------
```

Table D.6 - Gap Acceptance Parameters

```
Wallgoove/Old Wallgrove  Existing
PA1 Future AM
Intersection ID: C0
Fixed-Time Signals, Cycle Time =  70 (Practical Cycle Time)

-----------------------------------------------------------
                         Critical Gap
                Opng     ------------   Foll-up   Entry
  Mov     Mov   Flow     Hdwy    Dist   Headway    HV
  ID      Type  (pcu/h)  (s)     (m)      (s)     Equiv
-----------------------------------------------------------
 South: Wallgrove Road South
    3 R   Normal   1116   5.03    83.2     2.90     2.00
```

East: M7 Ramps East							
4	L	Normal	0	4.60	76.7	2.76	2.00
6	R	Normal	178	4.65	36.7	2.69	2.00
North: Wallgrove Road North App							
9	R	Normal	940	4.64	70.9	2.68	2.00
West: Old Wallgrove Road West							
10	L	Normal	0	4.12	68.7	2.47	2.00
12	R	Normal	47	4.65	72.5	2.68	2.00

Values in this table are adjusted for heavy vehicles in the entry stream.

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Site: 07098 W/OWR PA1 Future AM
C:\Documents and Settings\graham.pindar\My Documents\TRAFFIX\2007\07098\9 May 2008 Modelling\OWR-WR Layout.aap
Processed May 11, 2008 03:15:06PM

A1835, Traffix, Small Office
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