Traffic Impact Assessment

Proposed Coles CDC Expansion, Roberts Road
M7 Business Hub, Eastern Creek

Prepared on Behalf of Goodman Property Services by **TRAFFIX** Traffic & Transport Planners

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1. Introduction

TRAFFIX has been commissioned by Goodman Property Services (Aust) Pty Ltd (GPS) to undertake a traffic impact assessment in support of a development application relating to an expansion of the existing Coles Chilled Distribution Centre (CDC) at Roberts Road, Eastern Creek. The development is located within the Blacktown Council LGA and is subject to the provisions of SEPP (Western Sydney Employment Area), which supplements the provisions of SEPP 59.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately by McKenzie Group Consulting. The development proposes an increased industrial floor area of 12,319m^2 on a site located more than 90 metres from a classified road and is therefore not considered of a size that will require formal referral to the Roads & Maritime Services (RMS) 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 parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.

2. Location and Site

The site is located within Release Area 3 of the Eastern Creek Precinct in an area generally referred to as the M7 Business Hub. More specifically, the overall site is located within the block bounded by Old Wallgrove Road to the north, Roberts Road to the west and Capicure Drive to the south. The existing Coles CDC warehouse occupies Lot 451 in DP 1109136 and has a total site area of approximately 138,790m^2.

However, this proposal generally relates to expansion works within the south-eastern section of Lot 4 in DP 1159804, to the south of the existing Coles CDC warehouse.

The expansion site is irregular in configuration with a total area of approximately 26,435m^2. It has an eastern boundary of 99 metres to Reedy Creek Industrial Estate (under construction), irregular northern boundary to the existing Coles CDC of approximately 382 metres and a southern frontage to Capicure Drive.

Vehicle access to the Coles CDC is provided via 3 driveways to Roberts Road, including a combined commercial vehicle entry and exit, plus two access driveways to the on-site car park. Short 20 metre right turn storage lanes are provided within Roberts Road at these car park access driveways.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

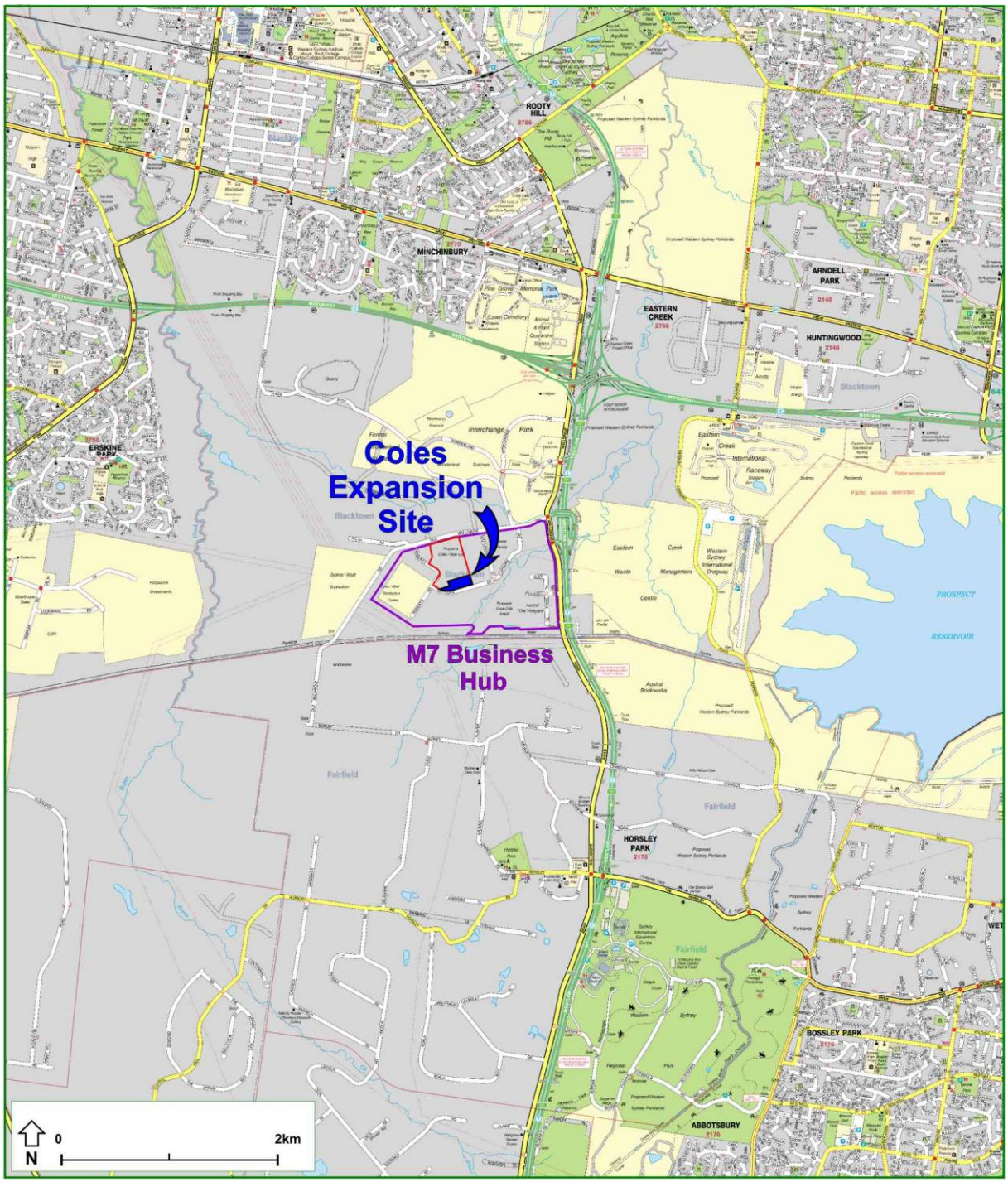


Figure 1: Location

Figure 2: Site

3. Existing Traffic Conditions

3.1 Road Hierarchy

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- M7 Motorway: a major arterial road that provides Sydney with a key orbital connection between numerous radial arterial roads including the M4 and M5 motorways to the north and south, respectively.
- Wallgrove Road: a classified road (MR 515) that runs in a north-south direction to the east of the site. It historically carried in the order of 31,500 vehicles per day (vdp), however this has reduced to approximately 25,750vpd with the completion of the M7 Motorway.
- Old Wallgrove Road: a local road that runs in an east-west direction to the north of the site. It provides localised access to the industrial land within the M7 Business Hub and surrounds. It is identified as a future sub-arterial road within the Stage 3 Eastern Creek Precinct Plan.
- Southridge Street: a local road that runs in a north-south direction to the east of the site.
- Roberts Road: a local road that runs generally runs in a north-south direction to the west of the site. It provides vehicle access to the site in addition to other industrial premises in the locality.
- Capicure Drive: a local road that runs in an east-west direction between Roberts Road and Old Wallgrove Road. Access to Old Wallgrove Road is not currently constructed to its full length such that Capicure Drive terminates in a cul-de-sac at its eastern end.

It can be seen from Figure 3 that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

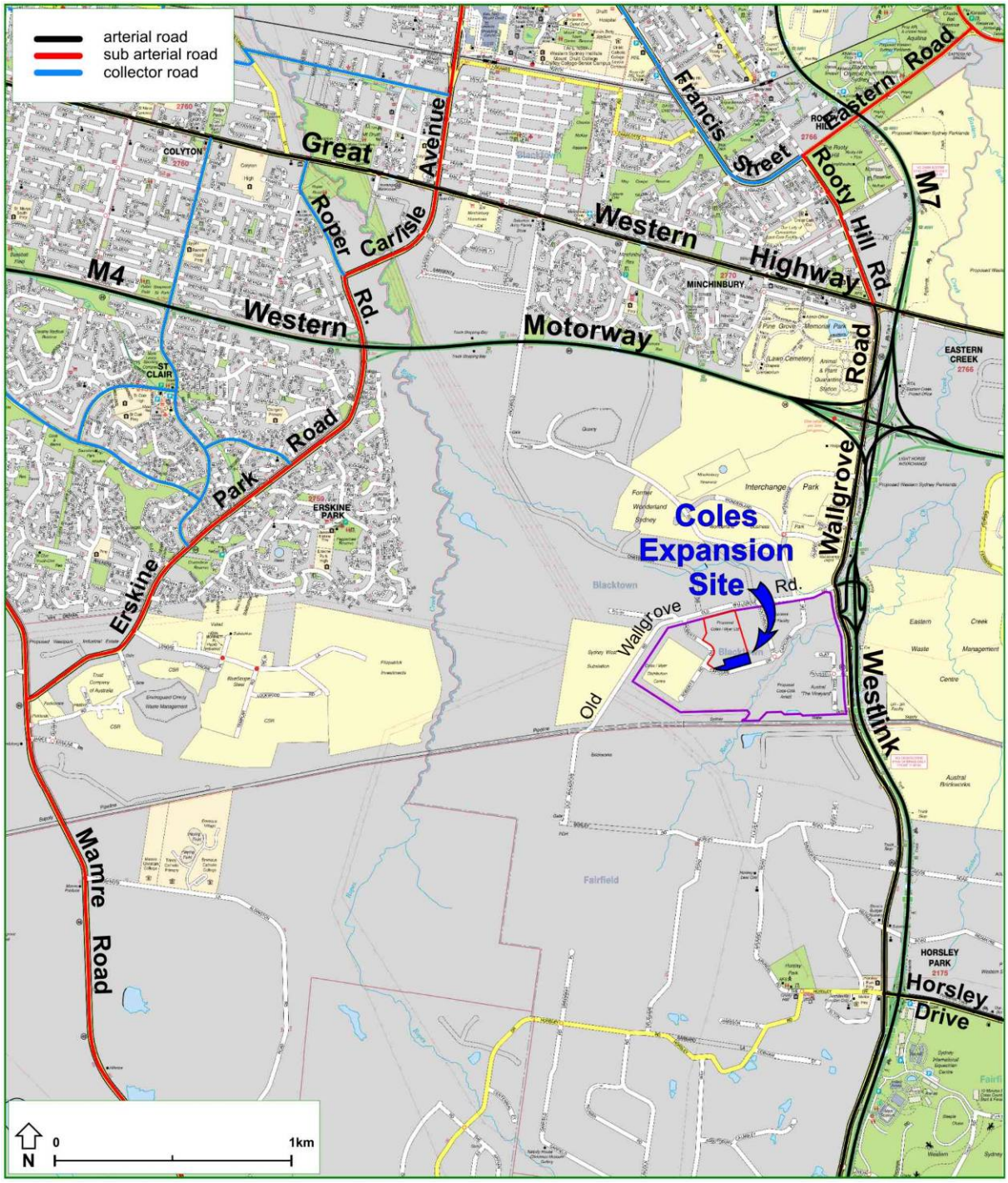


Figure 3: Road Hierarchy

3.2 General Description of Road Environment

Wallgrove Road is constructed with a 15.5 metre divided carriageway and carries two lanes of traffic in either direction, subject to a 70km/hr speed zoning. It forms a signalised intersection with Old Wallgrove Road and the on/off-ramps of the M7 (southbound), to the east of the site. A 50 metre and 130 metre right turn storage lane, respectively, are provided on the northern and southern approaches of this intersection.

Old Wallgrove Road is constructed with a 6.5 metre carriageway and generally carries a single lane of traffic in either direction. Widening on approach to Wallgrove Road allows for the provision of a four lane western approach to this intersection.

Future strategic planning for the wider locality has identified the need for road widening within Old Wallgrove in the future. In this regard, the Review of Environmental Factors (REF) for these works identifies the need for the widening of Old Wallgrove Road to 6 lanes (3 lanes in each direction) between Roberts Road and Walllgrove Road. These works include changes at the intersection of Old Wallgrove Road and Wallgrove Road, as indicated on the extract included in **Appendix B**.

Southridge Street currently forms a 'T-junction' with Old Wallgrove Road, to the north of the site. It is planned to create a four-way signalised intersection at this location in the future, subject to development of lands on the northern side of Old Wallgrove Road.

The intersection between Southridge Street and Capicure Drive is under roundabout control, with a central island diameter of approximately 20 metres. Both Capicure Drive and Southridge Street are constructed with a 15.5 metre undivided carriageways.

3.3 Public Transport

Public transport options are currently limited within the Precinct, as shown in **Figure 4**. Viable public transport services in the immediate vicinity of the site are not expected until such time that a number of surrounding sites are developed which would be expected to increase the potential commuter catchment density. In this regard, the use of public transport services should be encouraged as far as

practicable. Notwithstanding, this is not relied upon by this assessment, which takes a conservative (worst case) approach with no public transport usage.

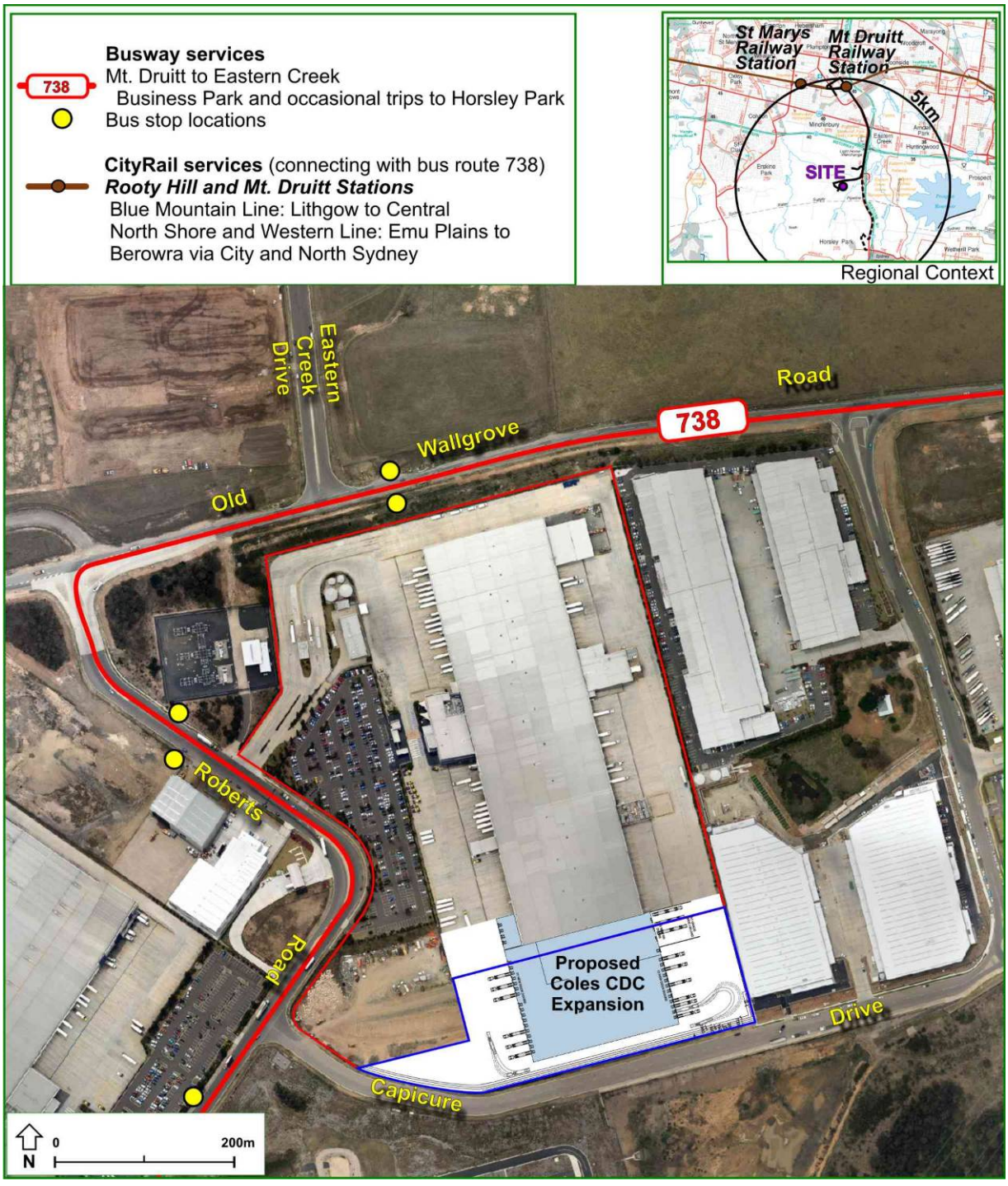


Figure 4: Public Transport Routes

3.4 Existing Site Generation

The RMS *Guide to Traffic Generating Developments* recommends the following generic traffic generation rates for the existing development, indicated in **Table 1**. The RMS Guide nominally includes ancillary office areas within the warehouse area for the calculation of traffic and parking demands where this ancillary area equates to up to 20% of floor area as ancillary office for industrial developments. However, this has not been relied upon for the purposes of this assessment, so that traffic impacts are potentially overstated.

Table 1: RMS Traffic Generation Rates - Existing

Use	Gross Floor Area (m^2)	Trip Rate	Total Trips
Industrial	36,895	0.5 trips / 100m^2	184
Office	4,996	2 trips / 100m^2	100
Total	41,891		286

The above is however consistent with information provided by CDC management whereby shift changeovers occur outside typical on-street peak periods. Indicative staff and truck numbers are presented in **Table 2** below. This conservatively assumes that all staff access the site via car, with an average car occupancy of 1.1 persons per vehicle. While this may be lower in practice, this rate in effect accounts for limited use of the public transport services shown in Figure 4.

Table 2: Operational Traffic Distributions – Existing

	INBOUND			OUTBOUND			TOTAL
	LV	HV	Combined	LV	HV	Combined	
12:00 AM		24	24		15	15	39
1:00 AM		4	4		15	15	19
2:00 AM		0	0		11	11	11
3:00 AM		27	27		10	10	37
4:00 AM		89	89		0	0	89
5:00 AM	154	46	200		2	2	201
6:00 AM		57	57	87	9	97	154
7:00 AM		85	85		9	9	94
8:00 AM		84	84		9	9	93
9:00 AM		44	44		4	4	48
10:00 AM		47	47		9	9	56
11:00 AM		38	38		9	9	47
12:00 PM		28	28		9	9	37
1:00 PM	182	16	198		9	9	206
2:00 PM		9	9	154	4	158	167
3:00 PM		3	3		11	11	14
4:00 PM		0	0		6	6	6
5:00 PM		0	0		7	7	7
6:00 PM		2	2		7	7	9
7:00 PM		8	8		11	11	19
8:00 PM		1	1		15	15	16
9:00 PM	87	2	89		14	14	104
10:00 PM		2	2	182	15	196	198
11:00 PM		1	1		14	14	15
TOTAL	**423**	**617**	**1040**	**423**	**221**	**644**	**1685**

It can be seen from above that the traffic generation during on-street peak periods associated with the existing Coles CDC operations are significantly less than envisaged under the RMS Guide rates. That is, the RMS published peak hour rates are not representative of existing (or future) volumes.

3.5 Existing Intersection Performance

For the purposes of the assessment of traffic impacts of this development, surveys were undertaken of key intersection in the immediate vicinity of the site, being the intersection of Wallgrove Road / Old

Wallgrove Road / M7 Ramps (southbound). The results of these surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

DOS - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LOS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

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

A summary of the modelled results are provided below. Reference should also be made to the SIDRA outputs provided in **Appendix C** which provide detailed results for individual lanes and approaches.

Table 3: Base Case Intersection Performance: AM & PM Peak Periods

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Wallgrove Rd / Old Wallgrove Road	Signals	AM	0.896	42.4	C
		PM	0.818	30.0	C

It can be seen from Table 3 that this intersection operates satisfactorily under the existing 'base case' scenario, with Level of Service C during both periods and with moderate delays. This includes the effect of the additional traffic volumes associated with the recently approved TOLL expansion at Southridge Street.

Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 6.

4. Description of Proposed Development

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately by McKenzie Group Consulting. In summary, the development for which approval is now sought comprises the following components:

- Extension of the existing Coles CDC warehouse building, as follows:
  - 12,028m^2 warehouse floor area (to a total of 48,923m^2), plus
  - 291m^2 new office (to a total of 5,287m^2)
- Retention of the existing 476 space car park, and
- New hardstand areas and additional on-site truck and trailer loadings areas.

The parking and traffic impacts arising from the development are discussed in Sections 5 and 6, respectively. Reference should be made to the plans, prepared by SBA Architects, which are included at a reduced scale in **Appendix D**.

5. Parking Requirements

5.1 Council Controls

The Eastern Creek Precinct Plan – Stage 3 (ECPP-3) outlines the following parking provisions in relation to industrial development:

- 1 space per 100m^2 for buildings with a floor area of less than 7,500m^2.
- 1 space per 200m^2 for the area over 7,500m^2.
- 1 space per 40m^2 for commercial/office component.

Part E of Council's DCP also states:

"*Where a building is intended to be divided into lettable units, parking will be calculated for each unit and the appropriate spaces must be nominated on the Development Application plan and/or strata plan in respect of each unit*"

Application of the above rates to the overall development, including the subject expansion, results in a total site parking requirement for 414 spaces, as demonstrated by **Table 4**, below.

Table 4: Council Car Parking Requirement (Total)

Use	Gross Floor Area (GFA - m^2)	Parking Rate	Spaces Required	Spaces Provided
Industrial (first 7,500m^2)	7,500	1 space / 100m^2	75	
Industrial (remaining)	41,423	1 space / 200m^2	207	
Office	5,287	1 space / 40m^2	132	
Total	54,210		414	476

It can be seen from Table 4 that the existing car parking provision of 476 spaces is more than sufficient to accommodate Council's parking requirement of 414 spaces for the expanded facilitywith

further spare capacity which will assist in accommodating non-design peak events in the unlikely event that these should occur in the future. As such, the proposed car parking complies with Council's requirements and is therefore supportable.

5.2 Disabled Parking

The development provides a total of 5 accessible spaces which equates to between 1% of the total parking provision, as required by the *Disability (Access to Premises - Buildings)* for a Class 7 building, and is therefore considered an acceptable provision.

These spaces are designed in accordance with AS2890.1 (1993) with a width of 3.2 metres as per the applicable BCA controls at the time of construction. Current standards would require additional width to these spaces in accordance with AS2890.6, however this is not considered warranted as this an existing car park.

5.3 Servicing

The existing distribution centre is provided with a total of 99 loading docks and doors which equates to a rate of approximately 1 service dock / door per 372m^2 of warehousing floor area. Application of this rate to the additional 12,028m^2 warehouse area proposed will result in a demand for an additional 32 docks.

In response, an additional 34 loading docks and roller shutter doors are proposal along the perimeter of the proposed expansion.

6. Traffic Impacts

6.1 Trip Generation

RMS Guideline

As discussed in Section 3, The RMS *Guide to Traffic Generating Developments* recommends the following traffic generation rates for warehouse developments:

- 0.5 peak hourly trips per 100m^2 of warehouse floor area, including ancillary office, and
- 2 trips per 100m^2 of office floor area

Application of the above rates to the additional 12,028m^2 of warehouse floor area and 291m^2 of office floor area results in an additional traffic generation of 66 vehicles per hour associated with the proposed expansion. However, it is known that the current facility does not follow the RMS Guideline trip rate (as discussed in Section 3) and in these circumstances, it is appropriate to examine the trip generation based on the expected operational parameters.

Operational Performance

The future traffic generation is shown in **Table 5** below which assumes that existing truck numbers increase proportionally above the existing activity profile discussed in Section 3, having regard to the increased warehouse floor area.

Table 5: Operational Traffic Distributions – Existing + Expansion

	INBOUND			OUTBOUND			TOTAL
	LV	HV	Combined	LV	HV	Combined	
12:00 AM		32	32		20	20	52
1:00 AM		5	5		20	20	26
2:00 AM		0	0		14	14	14
3:00 AM		36	36		14	14	49
4:00 AM		118	118		0	0	118
5:00 AM	200	61	261		2	2	263
6:00 AM		76	76	114	12	126	201
7:00 AM		113	113		11	11	124
8:00 AM		111	111		11	11	123
9:00 AM		58	58		6	6	64
10:00 AM		62	62		11	11	74
11:00 AM		50	50		11	11	62
12:00 PM		37	37		11	11	48
1:00 PM	236	21	258		11	11	**269**
2:00 PM		12	12	200	6	206	218
3:00 PM		4	4		14	14	18
4:00 PM		0	0		8	8	8
5:00 PM		0	0		9	9	9
6:00 PM		3	3		9	9	12
7:00 PM		11	11		14	14	25
8:00 PM		1	1		19	19	21
9:00 PM	114	3	116		19	19	135
10:00 PM		3	3	236	19	256	258
11:00 PM		1	1		19	19	20
TOTAL	**550**	**818**	**1368**	**550**	**294**	**844**	**2212**

Based on Table 5, the additional traffic during typical on-street peak periods is as follows when comparing to the existing traffic distribution presented in Table 2, previously.

- AM peak (7.00-10.00am) 31 veh/hr (28 trucks in, 3 trucks out)
- PM peak (3.00- 6.00pm) 4 veh/hr (1 truck in, 3 trucks out)

It is expected that these trips will be distributed proportionally to the turning movements at respective intersections.

6.2 Traffic Impacts

The future performance of key intersections in the vicinity of the site based on the known traffic volumes associated with the existing operations is summarised in Table 6, below.

Table 6: 'Existing + Development' Intersection Performance: AM & PM Peak Periods

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Wallgrove Rd / Old Wallgrove Road	Signals	AM	0.896	43.9 (42.4)	D (C)
		AM (alternate cycle time)	0.801	37.3 (42.4)	C (C)
		PM	0.818	30.0 (30.0)	C (C)

It can be seen from Table 6 that all intersections will continue to operate with acceptable Levels of Service and moderate delays post development. Alternate cycle timings have the potential to improve delays, particularly during the AM peak however this is a detailed matter for RMS officers to consider in the future and is not relied upon. Having regard for the above, the traffic impacts associated with the development can be readily accommodated by the surrounding road network.

Notwithstanding the above, the future strategic planning for the wider locality has identified the need for additional works to this intersection to accommodate the future growth within the Western Sydney Employment Area. This strategic modelling includes 100 percent of development within the Eastern Creek Precinct, which includes the subject site, and therefore the traffic volumes associated with the development have been accounted for in this modelling. As such, the development will not impact the reported future intersection performance stated within the *Old Wallgrove Road Widening* REF. The REF identifies a future intersection Level of Service C and B during the AM and PM peak periods, respectively, for 2021 conditions following the proposed road works.

7. Design Aspects

7.1 Access & Internal Design

No change to the existing accesses or car park are proposed or considered necessary as part of the proposed development. Parking spaces generally satisfy the requirements of AS2890.1 with a minimum space width of 2.4 metres and aisle width of 6.2 metres.

Circulation within the subject site by B-doubles and loading dock access by up to 19 metre articulated trucks is demonstrated by the swept paths included in **Appendix E**.

8. Conclusions

In summary:

- The existing development is approved with 476 parking spaces and this is more than Council's requirements and more that is currently needed, with spare capacity available to accommodate the proposed expansion. In this regard, the expanded facility now proposed requires a total of 414 parking spaces under the Eastern Creek Precinct Plan.

- A total of 476 parking spaces are currently provided on-site and therefore no additional car parking is considered necessary in support of the proposal. Indeed, some spare parking capacity will remain available following the expansion.

- An increased traffic generation of 31 veh/hr will occur as a result of the development at peak times. These can be readily accommodated by the surrounding road network with no changes to current infrastructure. Peak volumes typically occur around midday, with approximately 63 veh/hr generated which is moderate and occurs against low 'background' traffic volumes. Furthermore, future road improvements identified within strategic planning for the wider Western Sydney Employment Area will provide additional capacity and improve traffic conditions in the locality.

- All access and internal design aspects are similar to the current arrangements and are generally considered acceptable as discussed in Section 7. Indeed, no changes to the existing access arrangements are proposed (or required) and the internal circulation is generally an extension of existing arrangements.

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

Appendix A

Photographic Record

View looking west along the site frontage to Capicure Drive, from the south-eastern corner of the site.

View looking north-west along Capicure Drive, on approach to its intersection with Roberts Road.

View looking north-east at the heavy vehicle to the Coles site, across Roberts Road.

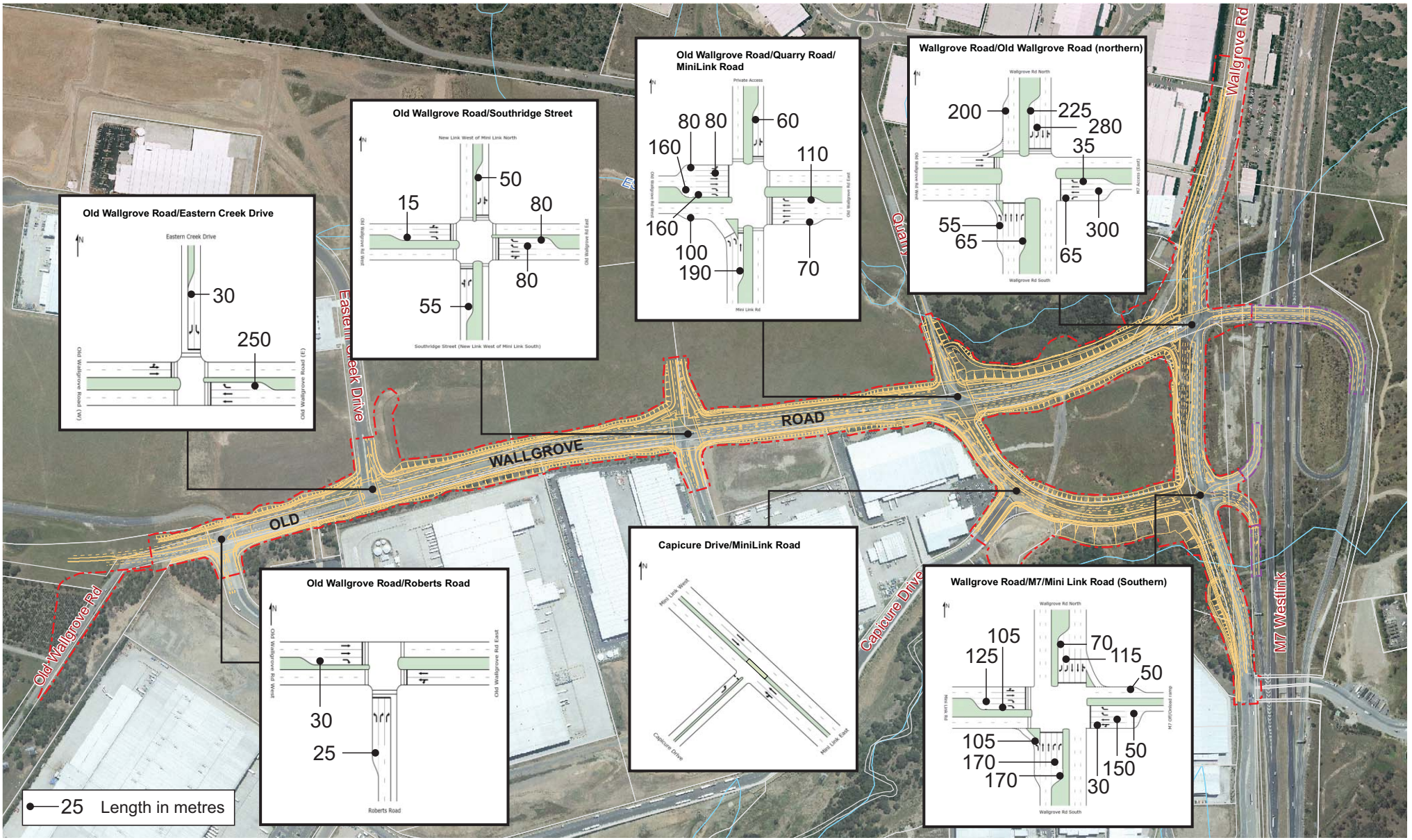
View looking north-east at the westernmost access to the Coles car park, across Roberts Road.

View looking east at the easternmost access to the Coles car park, across Roberts Road.

View looking north along Roberts Road, on approach to its intersection with Old Wallgrove Road.

Appendix B

Extract from Old Wallgrove Road Widening REF



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SCALE

0 100 200m

Old Wallgrove Road **REF**

FIGURE 3-3: Intersection layouts

Appendix C

SIDRA Outputs

Appendix C1

Base Case Scenario

LANE SUMMARY

Wallgrove Rd / Old Wallgrove Rd
Period: AM
Scenario: Existing + TOLL Expansion
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Wallgrove Rd																
Lane 1	137	272	0	409	17.5	471	0.869	100	43.0	LOS D	18.4	148.3	230	–	0.0	0.0
Lane 2	0	430	0	430	12.7	495	0.869	100	39.6	LOS C	19.3	149.5	230	–	0.0	0.0
Lane 3	0	0	4	4	50.0	154	0.027	100	44.9	LOS D	0.2	1.5	130	Turn Bay	0.0	0.0
Approach	137	702	4	843	15.2		0.869		41.3	LOS C	19.3	149.5				
East: M7 Ramps																
Lane 1	55	27	0	81	33.2	188	0.433	57[6]	25.8	LOS B	1.8	16.2	345	Turn Bay	0.0	0.0
Lane 2	0	53	35	88	35.1	116	0.758	100	48.7	LOS D	3.9	35.1	500	–	0.0	0.0
Approach	55	80	35	169	34.2		0.758		37.7	LOS C	3.9	35.1				
North: Wallgrove Rd																
Lane 1	73	373	0	446	10.2	497	0.896	100	44.9	LOS D	21.1	160.5	500	–	0.0	0.0
Lane 2	0	460	0	460	7.1	513	0.896	100	43.1	LOS D	21.7	160.8	500	–	0.0	0.0
Lane 3	0	0	151	151	18.2	185	0.814	100	52.9	LOS D	6.6	53.4	50	Turn Bay	0.0	10.9
Approach	73	833	151	1056	10.0		0.896		45.3	LOS D	21.7	160.8				
West: Old Wallgrove Rd																
Lane 1	35	27	0	62	83.4	341	0.182	100	29.6	LOS C	1.9	22.5	175	Turn Bay	0.0	0.0
Lane 2	0	12	41	53	77.6	289	0.182	100	34.8	LOS C	1.7	19.8	500	–	0.0	0.0
Approach	35	39	41	115	80.7		0.182		32.0	LOS C	1.9	22.5				
Intersection				2183	17.6		0.896		42.4	LOS C	21.7	160.8				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

6 Lane underutilisation due to downstream effects

LANE SUMMARY

Wallgrove Rd / Old Wallgrove Rd
Period: PM
Scenario: Existing + TOLL
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Wallgrove Rd																
Lane 1	45	535	0	581	8.9	710	0.818	100	31.9	LOS C	25.2	189.7	230	–	0.0	0.0
Lane 2	0	607	0	607	3.4	742	0.818	100	30.8	LOS C	26.1	188.1	230	–	0.0	0.0
Lane 3	0	0	4	4	50.0	188	0.022	100	25.1	LOS B	0.1	0.9	130	Turn Bay	0.0	0.0
Approach	45	1142	4	1192	6.3		0.818		31.3	LOS C	26.1	189.7				
East: M7 Ramps																
Lane 1	18	12	0	30	71.7	124	0.240	57[6]	30.1	LOS C	0.8	9.3	345	Turn Bay	0.0	0.0
Lane 2	0	20	19	39	56.5	92	0.420	100	52.2	LOS D	1.8	18.7	500	–	0.0	0.0
Approach	18	32	19	68	63.1		0.420		42.6	LOS D	1.8	18.7				
North: Wallgrove Rd																
Lane 1	138	316	0	454	6.4	716	0.634	100	26.7	LOS B	16.3	120.0	500	–	0.0	0.0
Lane 2	0	466	0	466	4.8	735	0.634	100	24.1	LOS B	16.7	121.6	500	–	0.0	0.0
Lane 3	0	0	40	40	39.5	175	0.229	100	28.6	LOS C	0.9	8.9	50	Turn Bay	0.0	0.0
Approach	138	782	40	960	7.0		0.634		25.5	LOS B	16.7	121.6				
West: Old Wallgrove Rd																
Lane 1	229	0	0	229	9.6	599	0.383	100	32.6	LOS C	7.7	58.1	175	Turn Bay	0.0	0.0
Lane 2	0	34	98	132	17.6	354	0.371	97[5]	39.8	LOS C	5.1	40.9	500	–	0.0	0.0
Approach	229	34	98	361	12.5		0.383		35.2	LOS C	7.7	58.1				
Intersection				2581	8.9		0.818		30.0	LOS C	26.1	189.7				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

Appendix C2

Existing + Development Scenario

LANE SUMMARY

Wallgrove Rd / Old Wallgrove Rd
Period: AM
Scenario: Existing + TOLL Expansion + Coles CDC Expansion
Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Wallgrove Rd																
Lane 1	147	263	0	411	19.7	463	0.886	100	45.8	LOS D	19.2	157.0	230	–	0.0	0.0
Lane 2	0	439	0	439	12.7	495	0.886	100	41.9	LOS C	20.3	157.9	230	–	0.0	0.0
Lane 3	0	0	4	4	50.0	154	0.027	100	44.9	LOS D	0.2	1.5	130	Turn Bay	0.0	0.0
Approach	147	702	4	854	16.3		0.886		43.8	LOS D	20.3	157.9				
East: M7 Ramps																
Lane 1	55	30	0	85	35.8	180	0.471	57[6]	25.8	LOS B	1.9	17.3	345	Turn Bay	0.0	0.0
Lane 2	0	59	35	94	39.4	114	0.824	100	50.7	LOS D	4.2	39.7	500	–	0.0	0.0
Approach	55	89	35	179	37.6		0.824		38.9	LOS C	4.2	39.7				
North: Wallgrove Rd																
Lane 1	73	373	0	446	10.2	497	0.896	100	44.9	LOS D	21.1	160.5	500	–	0.0	0.0
Lane 2	0	460	0	460	7.1	513	0.896	100	43.1	LOS D	21.7	160.8	500	–	0.0	0.0
Lane 3	0	0	159	159	22.5	180	0.883	100	58.0	LOS E	7.4	62.1	50	Turn Bay	0.0	24.7
Approach	73	833	159	1064	10.7		0.896		46.1	LOS D	21.7	160.8				
West: Old Wallgrove Rd																
Lane 1	35	27	0	62	83.4	341	0.182	100	29.6	LOS C	1.9	22.5	175	Turn Bay	0.0	0.0
Lane 2	0	12	41	53	77.6	289	0.182	100	34.8	LOS C	1.7	19.8	500	–	0.0	0.0
Approach	35	39	41	115	80.7		0.182		32.0	LOS C	1.9	22.5				
Intersection				2212	18.7		0.896		43.9	LOS D	21.7	160.8				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

6 Lane underutilisation due to downstream effects

LANE SUMMARY

Wallgrove Rd / Old Wallgrove Rd
Period: AM
Scenario: Existing + TOLL Expansion + Coles CDC Expansion
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Wallgrove Rd																
Lane 1	147	263	0	411	19.7	524	0.783	100	37.5	LOS C	17.9	146.2	230	–	0.0	0.0
Lane 2	0	439	0	439	12.7	560	0.783	100	33.8	LOS C	18.9	147.1	230	–	0.0	0.0
Lane 3	0	0	4	4	50.0	182	0.023	100	47.0	LOS D	0.2	1.7	130	Turn Bay	0.0	0.0
Approach	147	702	4	854	16.3		0.783		35.7	LOS C	18.9	147.1				
East: M7 Ramps																
Lane 1	55	30	0	84	35.7	184	0.458	57[6]	28.7	LOS C	2.3	20.9	345	Turn Bay	0.0	0.0
Lane 2	0	60	35	95	39.4	118	0.801	100	54.7	LOS D	4.7	43.9	500	–	0.0	0.0
Approach	55	89	35	179	37.6		0.801		42.5	LOS C	4.7	43.9				
North: Wallgrove Rd																
Lane 1	73	373	0	446	10.2	562	0.792	100	35.8	LOS C	19.4	148.0	500	–	0.0	0.0
Lane 2	0	460	0	460	7.1	580	0.792	100	34.2	LOS C	20.0	148.3	500	–	0.0	0.0
Lane 3	0	0	159	159	22.5	213	0.745	100	53.8	LOS D	7.4	61.7	50	Turn Bay	0.0	24.1
Approach	73	833	159	1064	10.7		0.792		37.8	LOS C	20.0	148.3				
West: Old Wallgrove Rd																
Lane 1	35	27	0	62	83.4	304	0.204	100	35.0	LOS C	2.2	26.5	175	Turn Bay	0.0	0.0
Lane 2	0	12	41	53	77.6	257	0.204	100	40.4	LOS C	2.0	23.0	500	–	0.0	0.0
Approach	35	39	41	115	80.7		0.204		37.5	LOS C	2.2	26.5				
Intersection				2212	18.7		0.801		37.3	LOS C	20.0	148.3				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

6 Lane underutilisation due to downstream effects

LANE SUMMARY

Wallgrove Rd / Old Wallgrove Rd
Period: PM
Scenario: Existing + TOLL + Coles CDC Expansion
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Wallgrove Rd																
Lane 1	45	535	0	581	8.9	710	0.818	100	31.9	LOS C	25.2	189.7	230	–	0.0	0.0
Lane 2	0	607	0	607	3.4	742	0.818	100	30.8	LOS C	26.1	188.1	230	–	0.0	0.0
Lane 3	0	0	4	4	50.0	188	0.022	100	25.1	LOS B	0.1	0.9	130	Turn Bay	0.0	0.0
Approach	45	1142	4	1192	6.3		0.818		31.3	LOS C	26.1	189.7				
East: M7 Ramps																
Lane 1	18	12	0	30	72.1	123	0.245	57[6]	30.0	LOS C	0.8	9.4	345	Turn Bay	0.0	0.0
Lane 2	0	20	19	39	57.2	92	0.428	100	52.2	LOS D	1.8	19.1	500	–	0.0	0.0
Approach	18	33	19	69	63.6		0.428		42.6	LOS D	1.8	19.1				
North: Wallgrove Rd																
Lane 1	138	316	0	454	6.4	716	0.634	100	26.7	LOS B	16.3	120.0	500	–	0.0	0.0
Lane 2	0	466	0	466	4.8	735	0.634	100	24.1	LOS B	16.7	121.6	500	–	0.0	0.0
Lane 3	0	0	40	40	39.5	175	0.229	100	28.6	LOS C	0.9	8.9	50	Turn Bay	0.0	0.0
Approach	138	782	40	960	7.0		0.634		25.5	LOS B	16.7	121.6				
West: Old Wallgrove Rd																
Lane 1	231	0	0	231	10.0	597	0.386	100	32.7	LOS C	7.7	58.6	175	Turn Bay	0.0	0.0
Lane 2	0	35	99	134	18.9	352	0.380	98[5]	39.9	LOS C	5.2	42.0	500	–	0.0	0.0
Approach	231	35	99	364	13.3		0.386		35.3	LOS C	7.7	58.6				
Intersection				2585	9.1		0.818		30.0	LOS C	26.1	189.7				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

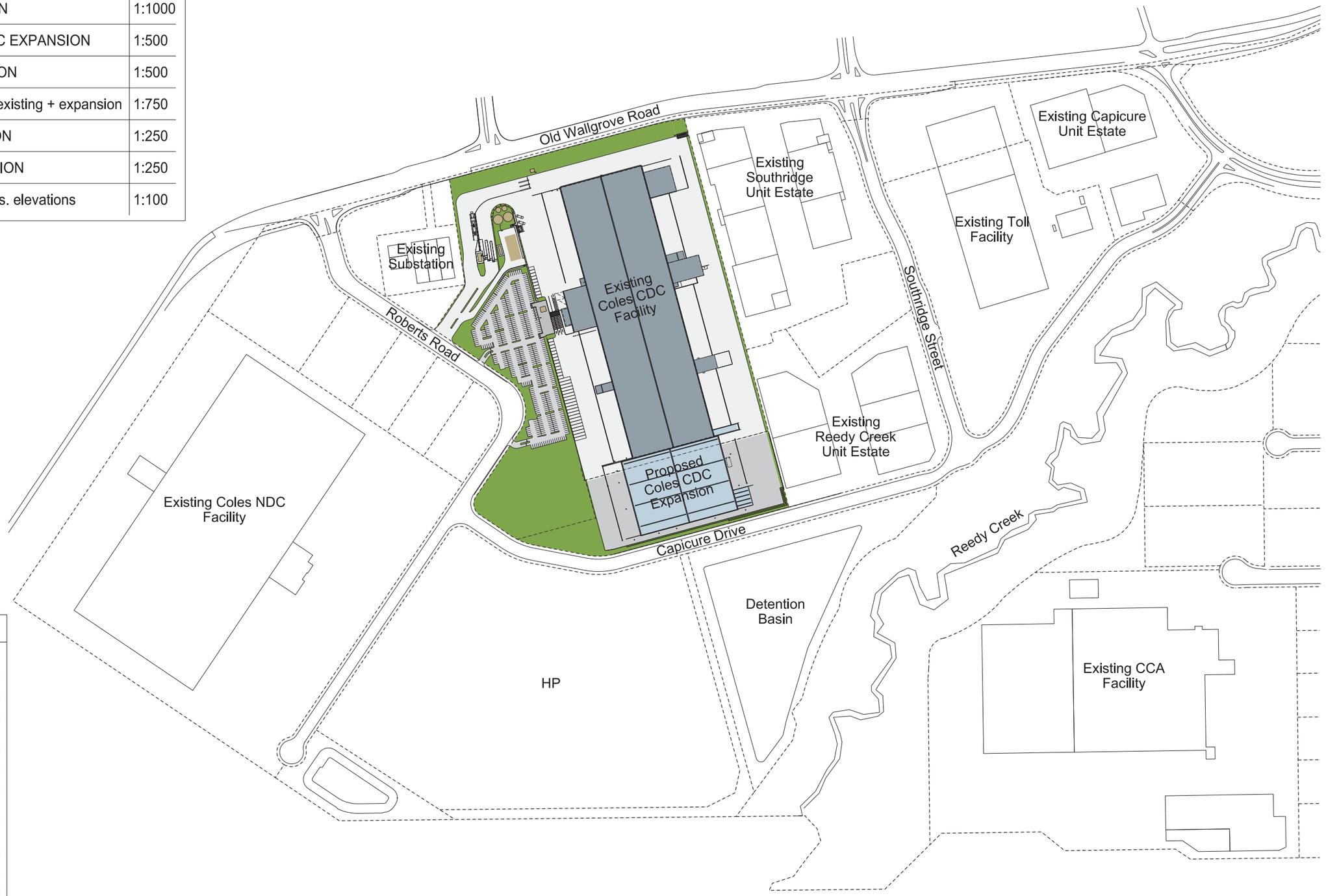
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

Appendix D

Reduced Plans

Schedule of Drawings

DA 01	LOCATION PLAN / COVER SHEET	1:2500
DA 02	SITE PLAN CDC EXPANSION	1:1000
DA 03	GROUND FLOOR PLAN CDC EXPANSION	1:500
DA 04	ROOF PLAN CDC EXPANSION	1:500
DA 05	SECTIONS + ELEVATIONS existing + expansion	1:750
DA 06	SECTIONS CDC EXPANSION	1:250
DA 07	ELEVATIONS CDC EXPANSION	1:250
DA 08	DOCK OFFICE plan, sections. elevations	1:100



Development Area Schedule

Existing Site Area	138,790- sqm
Expansion Site Area	26,435- sqm
Total Site Area	165,225- sqm
CDC Existing Building	43,070- sqm
CDC Expansion Building	12,028- sqm
Expansion Dock Office	291- sqm
Total Building Area	55,389- sqm
Expansion Awning	595- sqm
Site Cover (exc. awning)	34 %
Floor Space Ratio	0.34 : 1
Carparking	476

ISSUE	REV.	DESCRIPTION	DATE
	E	DA ISSUE	12.02.13
	D	DA ISSUE	08.02.13
	C	FOR CLIENT REVIEW	06.02.13
	B	PRELIMINARY	23.01.13
	A	PRELIMINARY	15.01.13

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Goodman

PROJECT
Coles CDC Expansion
M7 Business Hub
Old Wallgrove Road, Eastern Creek

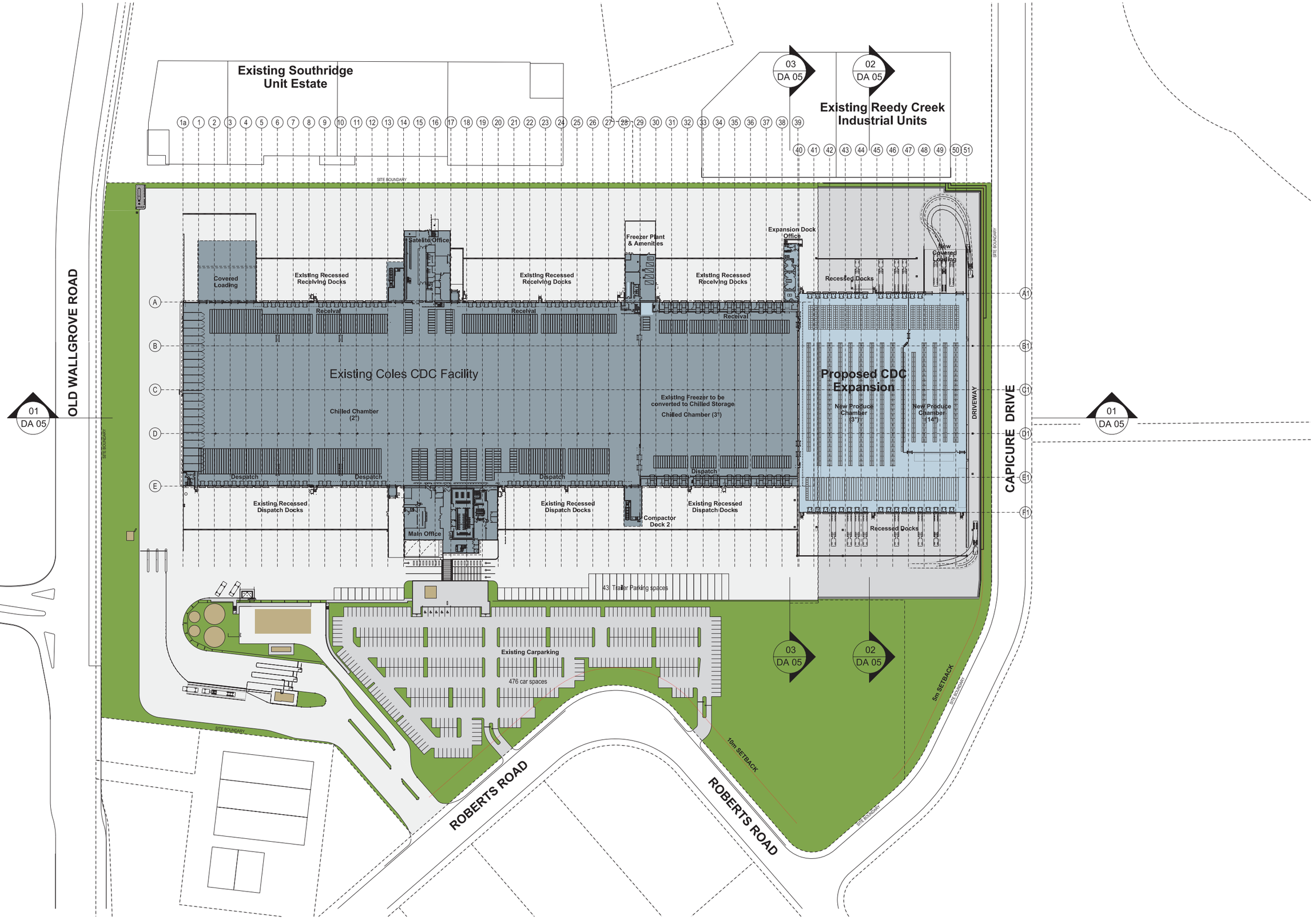
TITLE
LOCATION PLAN / COVER SHEET

DATE	07.12.1013
SCALE	1:2500@A1/1:5000@A3
DRAWN	SBA
CHECKED	
APPROVED	

PROJECT No. 12210

DWG No. DA - 01

ISSUE / E



ISSUE	REV.	DESCRIPTION	DATE
	F	DA ISSUE	12.02.13
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	A	PRELIMINARY	08.01.13

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PROJECT
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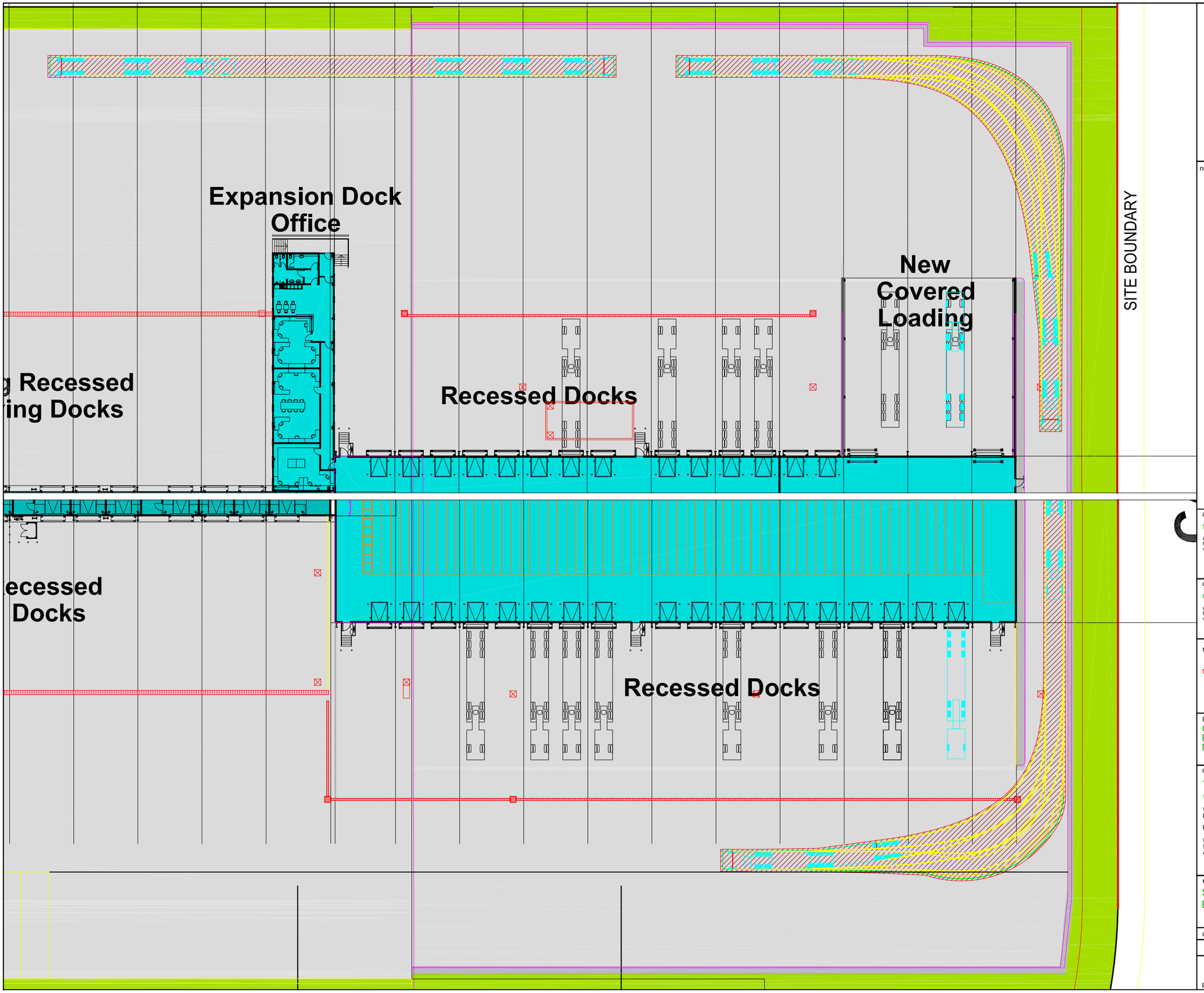
M7 Business Hub
Old Wallgrove Road, Eastern Creek

TITLE
SITE PLAN CDC EXPANSION

DATE	07.12.1013	PROJECT No.	12210
SCALE	1:1000@A1/1:2000@A3		
DRAWN	SBA		
CHECKED		DWG No.	DA - 02
APPROVED		ISSUE	/ F

Appendix E

Swept Paths



no. revision note by. date

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scale
1:500 @ A3
m 5 10 15 20
0

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drawing title
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B-Double (26m) Circulation

drawn:	checked:	date:
TL	-	12 Feb 2013

12.454	-	TX.01	-
project no.	drawing phase.	drawing no.	rev

Expansion Dock Office

New Covered Loading

Recessed Docks

SITE BOUNDARY

New Covered Loading

Recessed Docks

SITE BOUNDARY

no. revision note by. date

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drawing title
Swept Paths
19m Semi-trailer Dock Access & Egress

drawn:	checked:	date:
TL	-	12 Feb 2013

12.454	-	TX.02	-
project no.	drawing phase.	drawing no.	rev