ROAD DELAY SOLUTIONS

PROPOSED WAREHOUSE AND DISTRIBUTION FACILITY

Eastern Creek Stage 3

Traffic Impact Report

Prepared for...

AUSTRALAND

June 2010
Reference: 20100082

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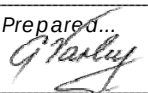
B	*Original Issue*	*Date...* *10 June 2010*	*Prepared...* 	*Verified...* AUSTRALAND
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ABSTRACT

Road Delay Solutions Pty Ltd has been engaged by Australand Commercial and Industrial Division to undertake investigation into the traffic implications associated with the Development Application (DA) for the construction of a proposed industrial warehouse and distribution complex in the Eastern Creek Precinct, Stage 3.

Located within the Western Sydney Employment Hub, Eastern Creek, the proposed site occupies a total of 10.7317 ha, as shown in *Figure 5*.

The proposed development involves the construction of a distribution warehouse facility with a total floor area of 51,660m^{2}.

The breakup of floor space, excluding hardstand and overhead awning provisions, as shown in *Figure 5*, is as follows...

- Warehouse Area(incl. 400m^{2} workshop) 49,850m^{2}
- Office 1,140m^{2}
- Despatch Office 285m^{2}
- Receiving Office 285m^{2}
- Gatehouse 25m^{2}
- Pump Room 50m^{2}
- Fire Control Centre 25m^{2}

The facility will be operated by KMart for the purpose of warehousing and the distribution of general retail merchandise.

Dangerous goods will not be warhoused on site and no retail or manufacturing activities will be undertaken.

The development footprint provides secure car parking for 250 cars and provisional spaces for 80 vehicles.

In accordance with the administration of the State Environment Planning Policy No.11 – Traffic Generating Developments (SEPP 11), this development must follow the prescribed path of consultation and referral, as outlined in Schedule 1 of SEPP 11, and requires acceptance by the Roads and Traffic Authority, N.S.W. (RTA).

PLANNING

As part of the approval process, this Traffic Impact Report has been undertaken to address issues associated with the environmental assessment requirements of the accompanying warehouse and distribution DA.

Aspects of the environmental assessment requirements under part 3A of the Environmental Planning and Assessment Act 1979, identified and to be addressed in this DA submission, include,,,

- Strategic transport policy matters,
- Opportunities to minimise traffic on sensitive road frontages,
- Efficiency of new roads, including proposed access and circulation and car parking provisions,
- Intersection operational performance assessment and any necessary mitigation measures,
- Emergency and service vehicle accessibility,
- Integration with proposed infrastructure on the wider road network, as well as detailing the opportunities and constraints offered by alternative vehicular access points,
- Measures to promote public transport usage and influence mode share,
- Pedestrian and bicycle provisions, and
- Initiatives to reduce the reliance on private vehicle usage.

NSW Government Planning Strategies, pertaining to this development, have been articulated in the following documents and have served as a reference in preparing this report…

- Metropolitan Strategy 'City of Cities', (2005),
- Action for Transport 2010 – an Integrated Transport Plan for Sydney,
- Shaping our Cities (1999).
- Shaping Western Sydney (1998),
- Action for Air (1999), and
- Draft SEPP 66 –'Integration of Landuse and Transport'.

LOCATION

Situated within the Western Sydney Employment Hub, Eastern Creek Precinct, the site occupies a total of 10.7317 ha, as shown in *Figure 5*, and is generally located on the southern side of a private access road to the south, hereby referred to as 'Hansen Quarry' Road, east of a north/south connector road and to the west of the planned extension of Wonderland Drive.

A proposed secure, gatehouse controlled, access is proposed from the north/south connector road, as presented in *Figure 5*.

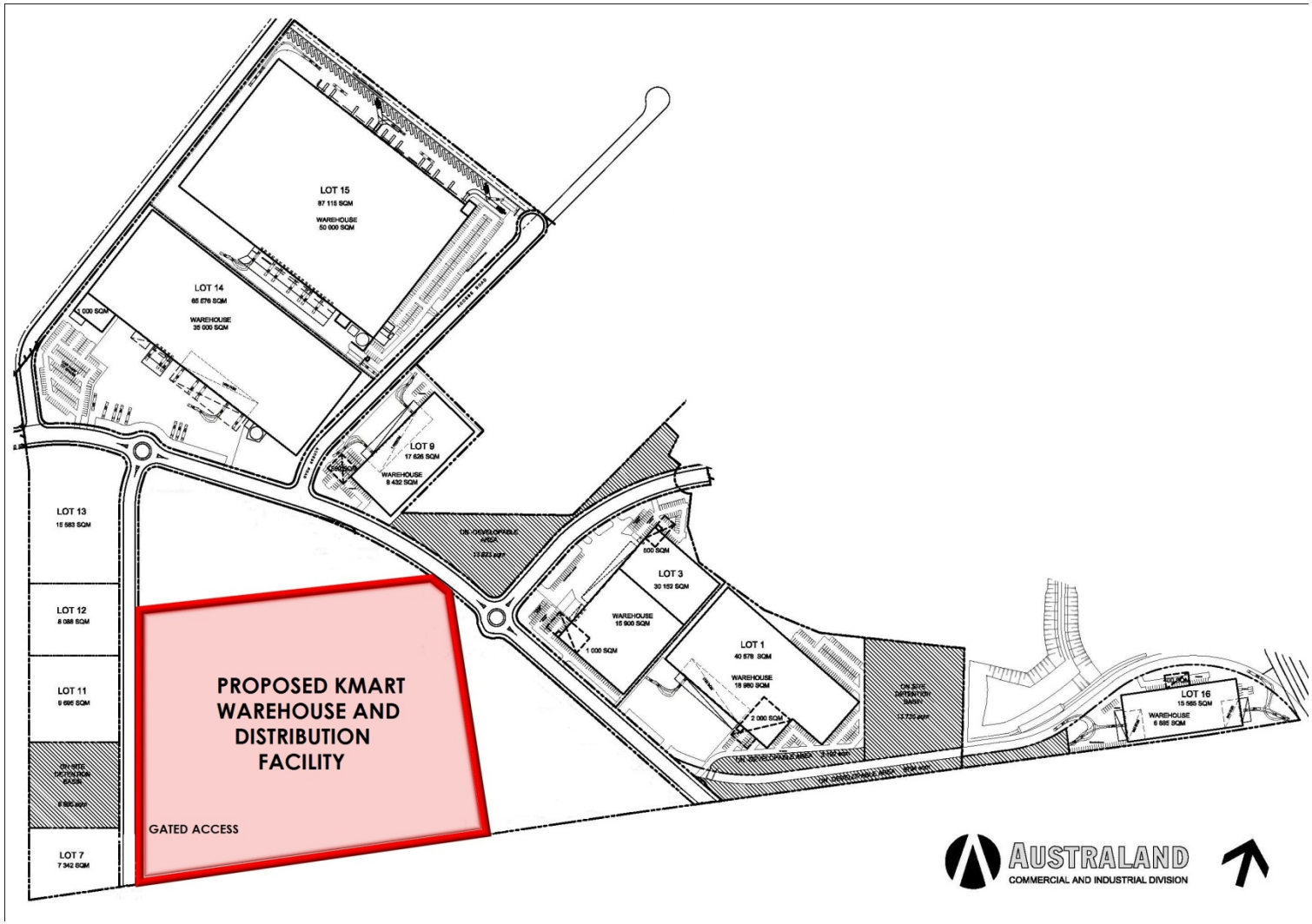
The access will cater for the movement of numerous vehicle classifications, including...

- Class 1 passenger vehicles,
- Class 3 and Class 4 (Rigid trucks), and
- Class 7 (Articulated vehicles) through to Class 10 (B-Doubles).

Figure 1: Location Context

Source: Google Earth, 2010

Figure 2: Site Plan



Source: AUSTRALAND Commercial and Industrial Division, 2010

Figure 3: Wester Sydney Employment Hub

THE DEVELOPMENT

A detailed description of the proposed development is provided in a separate submission, prepared by Australand. The development footprint and proposed structure of the site is presented in *Figure 5*.

Generally, the development, for which acceptance is currently sought, can be summarised...

- The site is intended for general retail commodity warehousing and distribution,
- The proposed Kmart warehouse and distribution facility has a total floor area, including office and staff amenities of 51,660m^2 with an overall site area of 10.73174ha,
- No manufacturing or direct to public retail operations will occur on the site,
- No dangerous goods will be warehoused or distributed on the site,
- Generally, the hours of operation will be 24 hours per day, seven (7) days a week,
- The warehouse, distribution and office operations will employ some 220, full time staff,
- The proposed development affords employees and visitors access to parking within a secure car park facility to the west of the site. Entry to the 250 nspace car park is proposed via two (2) gated driveways located on the North/South Access Road B, as shown in *Figure 5.*
- Heavy vehicle entry has been designed to accommodate the intended ingress and egress of vehicle classes 1 through 10 (refer to *Figure 4* for vehicle classifications). Access is proposed from the North/South Access Road B, at the south western corner of the site, through a secure, manned, gatehouse.
- The car parking provisions, for Warehouse 1 and Warehouse 2, yield 133 spaces,
- Provision has been made in the hardstand area, on site, for an additional 80 car parking spaces, yielding a total of 330 parking spaces, should demand dictate or the intended operator, or subsequent operator(s), elect to undertake or engage in alternative operations to those described above, in accordance with the regulated zoning policy.

Figure 4: Vehicle Classification Chart

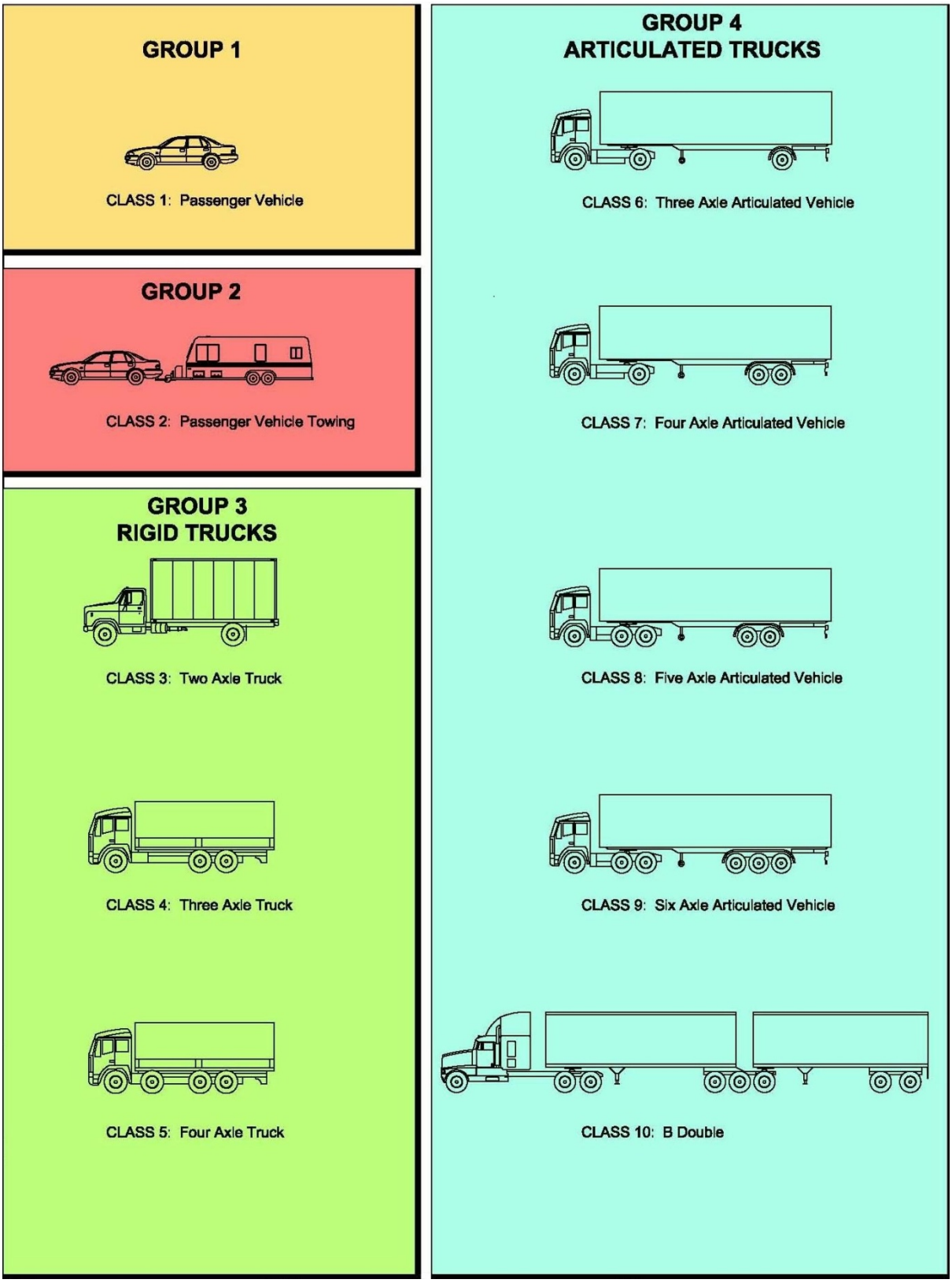
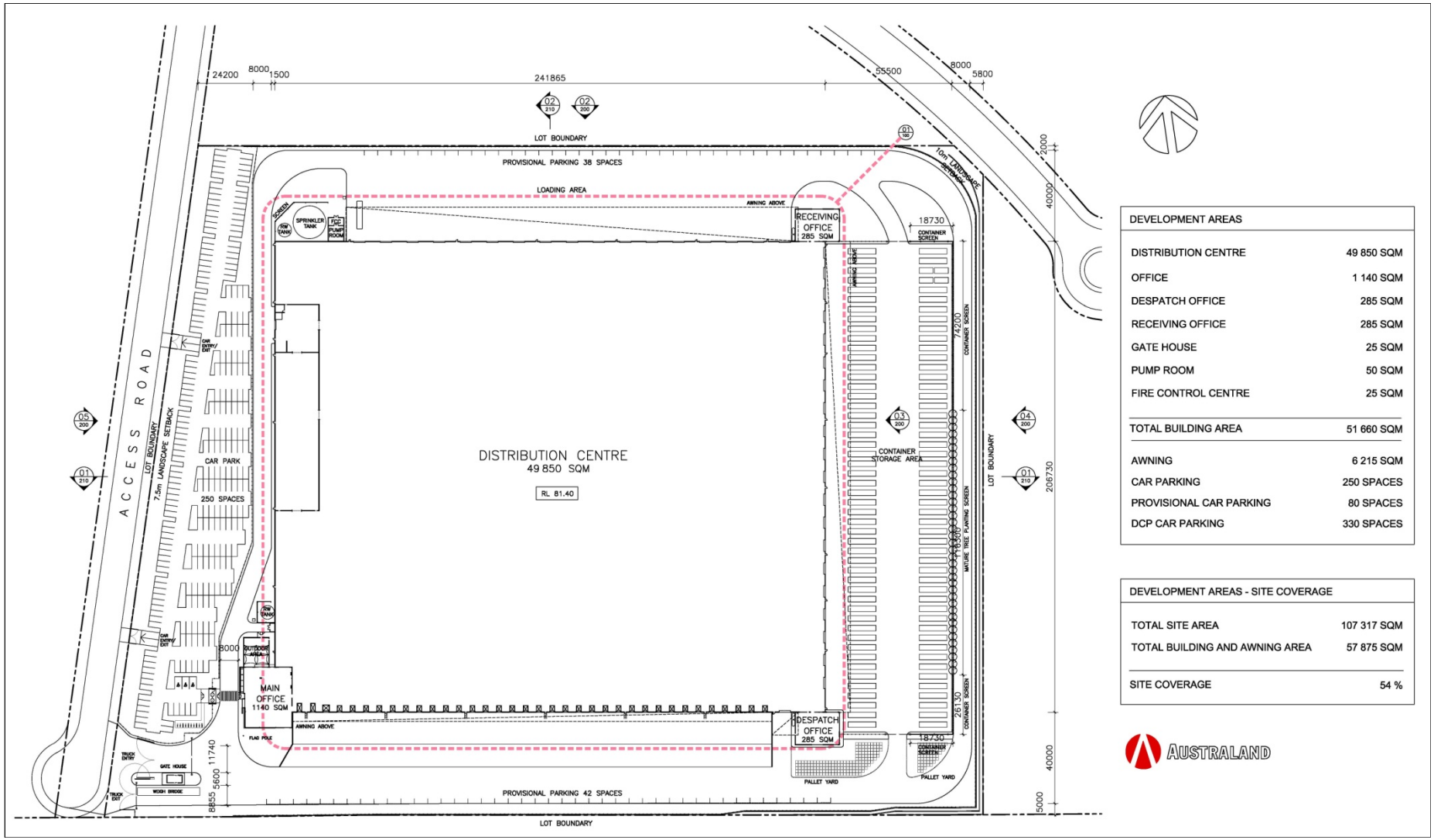


Figure 5: Site Structure



Source: AUSTRALAND Commercial and Industrial Division, 2010

ROAD NETWORK

The Eastern Creek Precinct is located within the region known as the Western Sydney Employment Hub, near the interchange of the M4 and the M7 Motorways, as shown on *Figure 3.*

The M4 Motorway, M7 Motorways, Wallgrove Road and Great Western Highway provide the major arterial links to and from the Eastern Creek Precinct, supplemented by Old Wallgrove Road and the future Archbold Road connection over the M4 Motorway.

Heavy vehicle access to the development is proposed from the North/South Access Road B, to the west of the site, via a secure gatehouse.

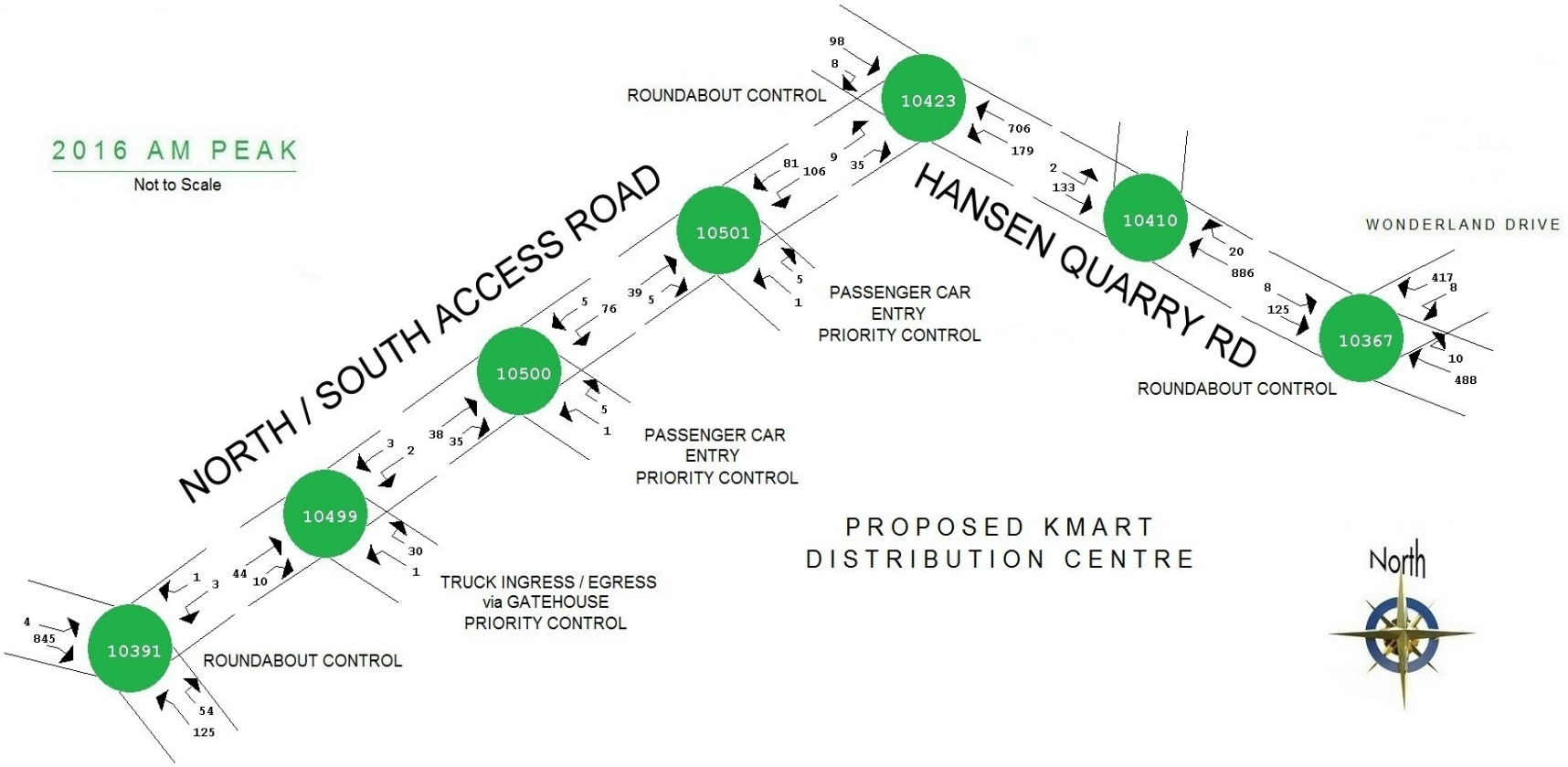
Passenger vehicle access, to an allocated 250 car parking spaces to the west of the site, is proposed via two (2), 6.2m wide, swing gate controlled driveways.

Generally, left turn entry, to the site, will be possible from the kerbside lane. The future projected turn movements, modelled and utilised in this study, are presented in *Figure 6*.

Given the vast disparity between the existing conditions at the site and the planned development of the precinct, it is considered prudent to afford Council the opportunity to comment on the relevence and/or location of any existing traffic counts.

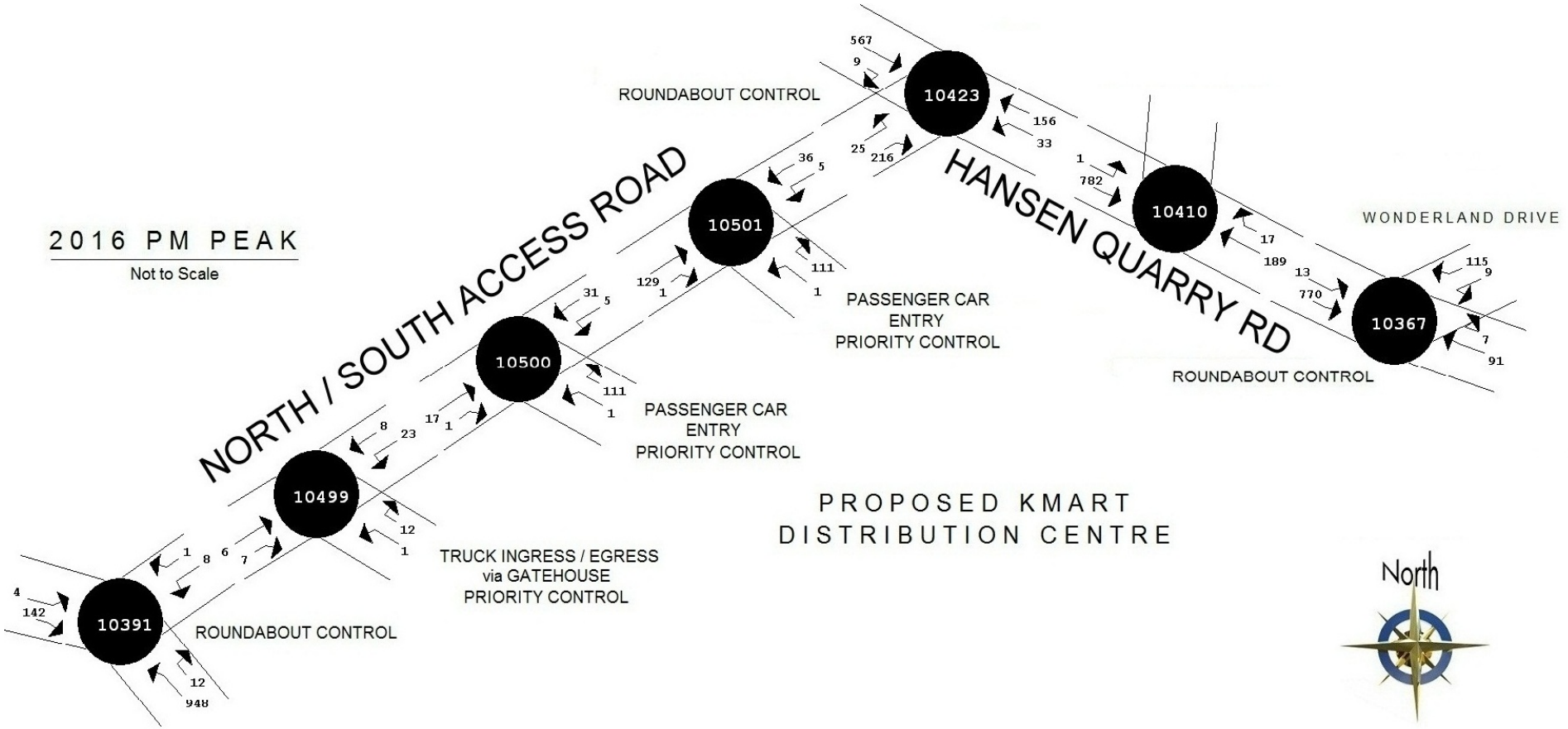
This report utilises projected count information taken from strategic modelling of the Eastern Creek Precinct for the future year 2016.

Figure 6: Year 2016 AM Projected Vehicle Movements



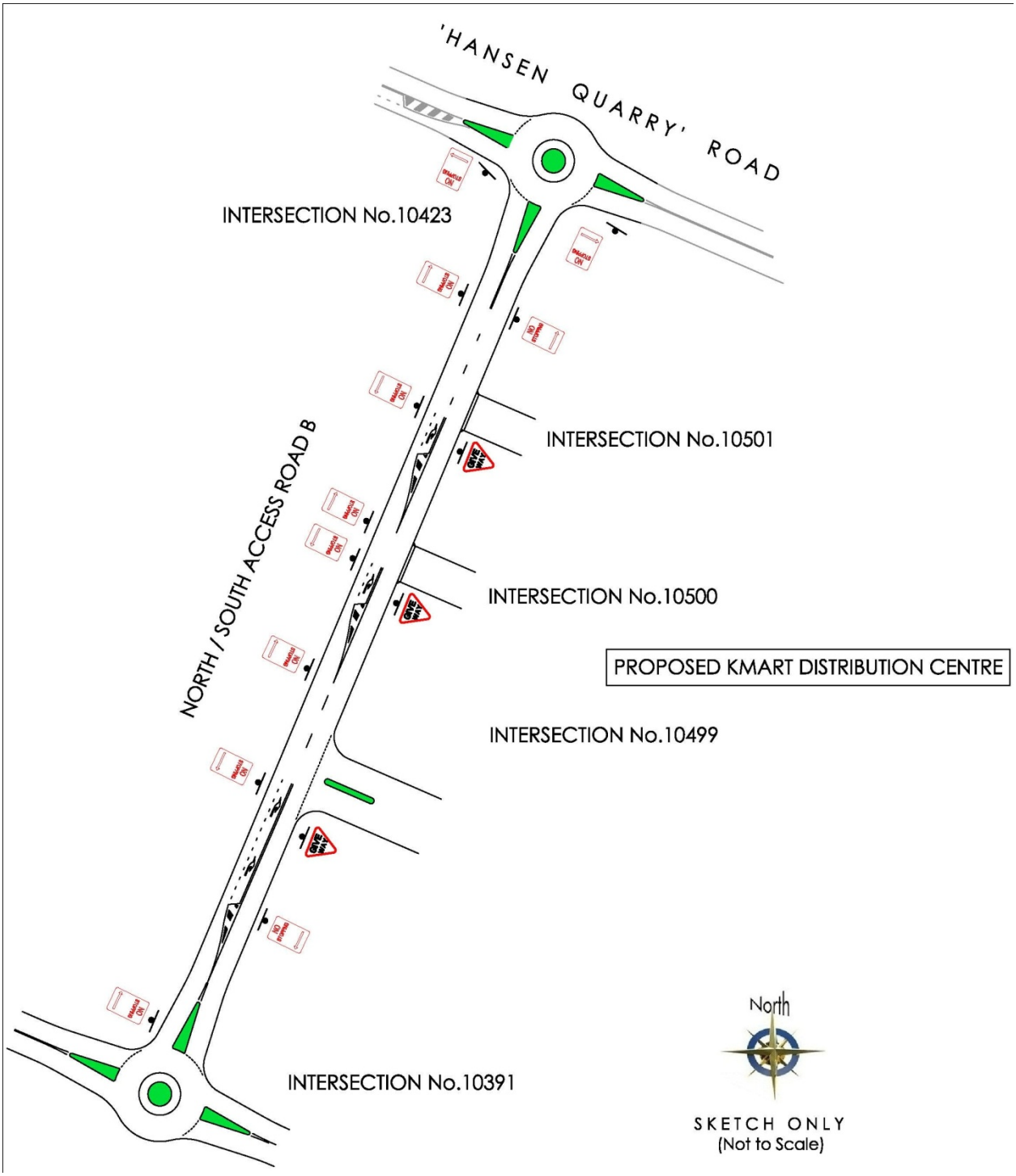
Revised Eastern Creek Precinct Netanal Model (16AMK.PLT and 16PMK.PLT) - Road Delay Solutions, 2010

Figure 7: Year 2016 PM Projected Vehicle Movements



Revised Eastern Creek Precinct Netanal Model (16AMK.PLT and 16PMK.PLT) - Road Delay Solutions, 2010

Figure 8: Year 2016 Proposed Access Treatments



TRAFFIC IMPACTS

Preliminary investigations into the traffic impacts associated with the Eastern Creek Precinct were undertaken in...

- *'Eastern Creek Precinct Study',* ARUP/Sims Varley Traffic Systems, 2005, and
- *'Eastern Creek* TMAP', SKM, 2005.

Both previous studies adopted differing peak hour vehicle trip generation rates.

Generation rates utilised in the ARUP report were preliminary while the trip generation rates prescribed by SKM, formed the basis for the TMAP and planning undertaken for the Precinct, including the Stage 3 development of the Eastern Creek Business Park. They have also been employed in the developer agreements which embody the TMAP study as a suitable basis for assessment.

Currently, government authorities have adopted a generation rate of 15 vehicles per developable hectare per hour, as a broad approach to future warehouse development.

The generation rates adopted in the fore mentioned studies are marginally lower than those prescribed in the RTA's publication, *'Guide to Traffic Generating Developments'*.

The future traffic generation, as utilised in the Netanal model for the Blacktown LGA, have been factored to reflect a 10% modal shift away from private motor vehicle usage, in select precincts and regions, through the introduction of strategic public transport initiatives, improved pedestrian amenity, revitalised urban cohesion between transport modes and increased focus on the differing community priorities. Given that 10% is of a whole (100%), a percentage correction must be applied to achieve the modal reduction associated with only 74% of JTW trips made by private motor vehicle. The percentage of modal shift can be calculated by applying the following formula...

$$\frac{10\%\ Modal\ Shift}{*\ 74\%\ Journey\ by\ Car} = \frac{x}{100}$$

Where x = the percentage shift applied to JTW trips made by private vehicle (~13.5%)
* *Refer to Figure 14*

No significant modal shift or use of public transport is envisaged within the Eastern Creek Precinct. Accordingly, no shift has been applied to the precinct models.

This development must follow the prescribed path of consultation and referral, as outlined in Schedule 1 of SEPP 11, and given the anticipated high proportion of vehicle dependency, the trip generation rate adopted for this DA follows the RTA guide, as shown in *Table 1*.

Table 1: RTA Traffic Generation Rates

Development Component	Area (m^2)	Daily RTA Trip Rate	Peak Hour RTA Trip Rate	Peak Hour Generation (vph)
Warehouse and Ancillary Facilities	50,520	4/100m^2 (GFA)	0.5/100m^2 (GFA)	253
Office	1,140	10/100m^2 (GFA)	2/100m^2 (GFA)	23
Total Peak 1 Hour Generation				**276**

NB: No retail or manufacturing operations are envisaged at the site.

Based on the RTA guide, the development will generate 2,135 vehicle trips daily, with 552 vehicle trips occurring during the conbined morning and evening peaks.

Generally, the morning peak hour generation can be split in the ratio 85/15 between inbound and outbound trips respectively, while the evening peak hour trips can be split 15/85, as shown...

- 276 vehicle trips during the morning peak split to reflect 235 inbound, 41 outbound, and
- 276 vehicle trips during the evening peak split to reflect 41 inbound, 235 outbound.

The traffic generation, pertaining to the operational requirements of the development, have been based on the operational characteristics of comparable facilities.

Passenger car, or commuter trips, will primarily occur during the morning and evening peak periods and constitute some 85% of the development's inbound and outbound peak hour generation (235vph).

Heavy vehicle movements will predominantly occur during business and off peak hours. To reflect a worst case scenario, some 42 heavy vehicle trips have been modelled, during each peak (morning AM and evening PM) on the basis that the morning will yield some 30vph outbound (1 truck trip every 2 minutes) and 12vph

inbound (1 truck will arrive every 5 minutes). The converse has been applied in the evening peak model with some 30vph inbound and 12vph outbound.

The development will generate a total of 552 vehicle trips in both the morning and evening peak periods, being 468 passenger car trips and 84 heavy vehicle movements.

Intersection analysis of the access conditions and surrounding road network has been undertaken for the projected year 2016 demand, to adequately accommodate the development within the context of the Eastern Creek Precinct.

Extensive modelling has been undertaken by a number of major infrastructure consultancies and the RTA of the Eastern Creek Precinct, which has included the planned Lenore Lane extension to Old Wallgrove Road. Linking Erskine Park Road to Old Wallgrove Road, the corridor will significantly impact the Eastern Creek Precinct, as has been determined and reported in previous studies.

For the purpose of this study, it is envisaged the construction of the Lenore Lane link will be completed later than 2016 and accordingly, has been omitted from the 2016 strategic Netanal model of the Eastern Creek Precinct.

Detailed operational intersection analysis has been undertaken utilising the computer based program, Intanal. Turn movements from the year 2016 Netanal model, form the basis on which the traffic models, at key intersections were employed in the operational modelling.

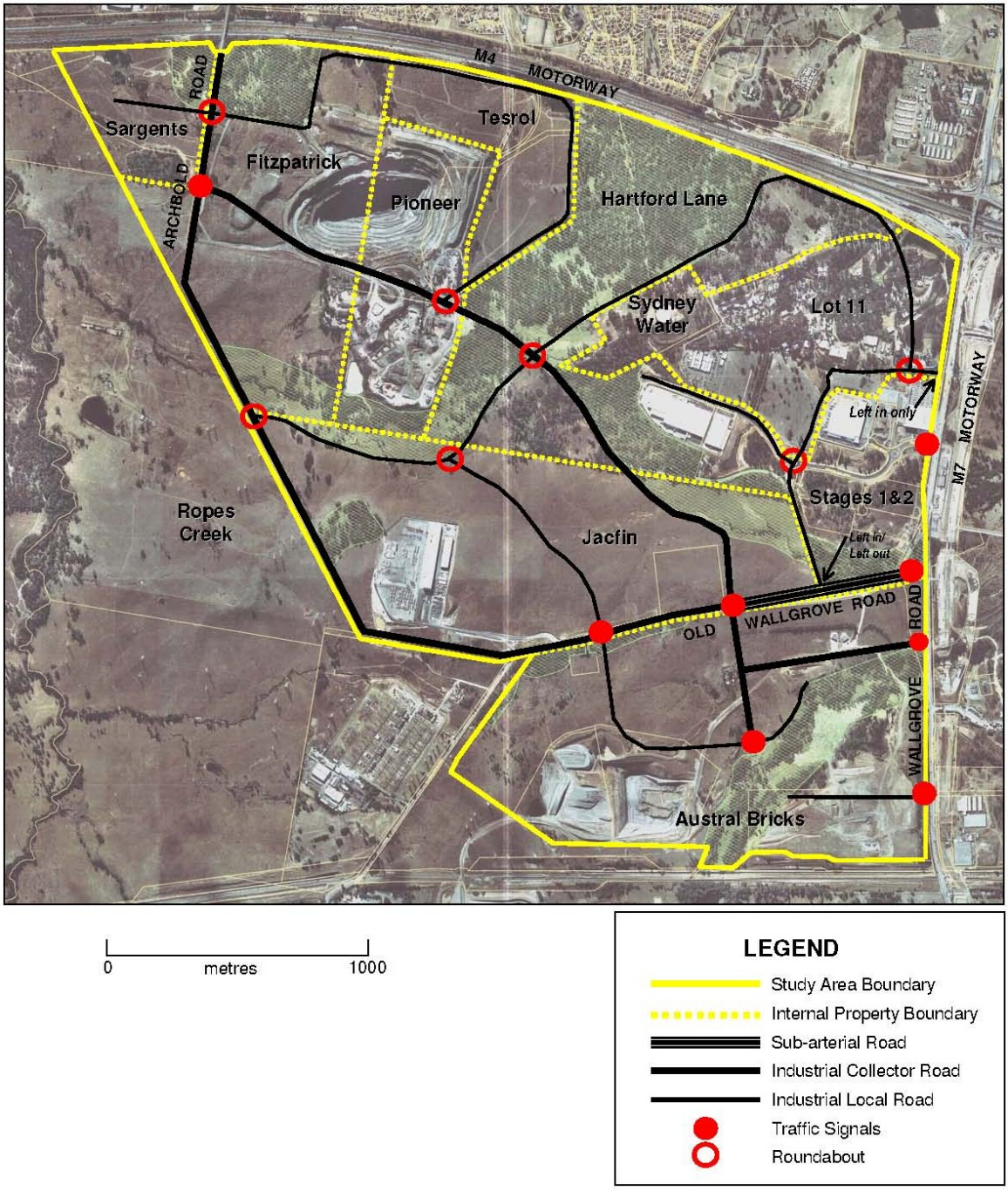
The north/south access road is to be classified an industrial local road within the road hierarchy of the Eastern Creek Precinct. *Figure 9* depicts an indicative layout of the internal road hierarchy, at this time.

The modelling of the North/South Access Road B suggests that the volume of traffic, projected in the year 2016, and the interaction between local traffic and the associated development vehicle generations, will result in a satisfactory level of service during the morning and evening peak traffic periods, as evidenced in *Table 2.*

Table 2: Year 2016 Intersection and Access Performances

Netanal Intersection No. Facility Location (Control Mode)	**DS**		**AVD** (sec)		**LoS**	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
10423 Handsen Quarry Road and North/South Road B (Roundabout)	0.42	0.47	4	4	A	A
10501 Car Park North/South Road B - Passenger Car Driveway (Sign Priority)	0.12	0.10	3	3	A	A
10501 Car Park North/South Road B Passenger Car Driveway (Sign Priority)	0.10	0.10	2	2	A	A
10499 Secure Truck Gateway North/South Road B -Truck Access (Sign Priority)	0.10	0.10	2	3	A	A
10391 North/South Road B and East/West Local Road (Roundabout)	0.39	0.37	10	10	A	A

Figure 9: Indicative Eastern Creek Road Hierarcy



Source: 'Eastern Creek Precinct – Local Traffic Study, ARUP, 2005

HEAVY VEHICLE ACCESS

Individual heavy vehicle access will be provided, from the local North/South Access Road B, to the west of the proposed development site.

Heavy vehicle ingress and egress is proposed via a secure gatehouse to be located at the south west corner of the site and has been subject to an '*AutoTurn*' assessment.

The heavy vehicle movement assessment indicates that trucks, up to Class 10, B-Doubles, are capable of entering and manouvering around the site, in a forward direction, as indicated in *Figures 10 and 11*.

Figure 10: Proposed Class 10 Left Turn Entry

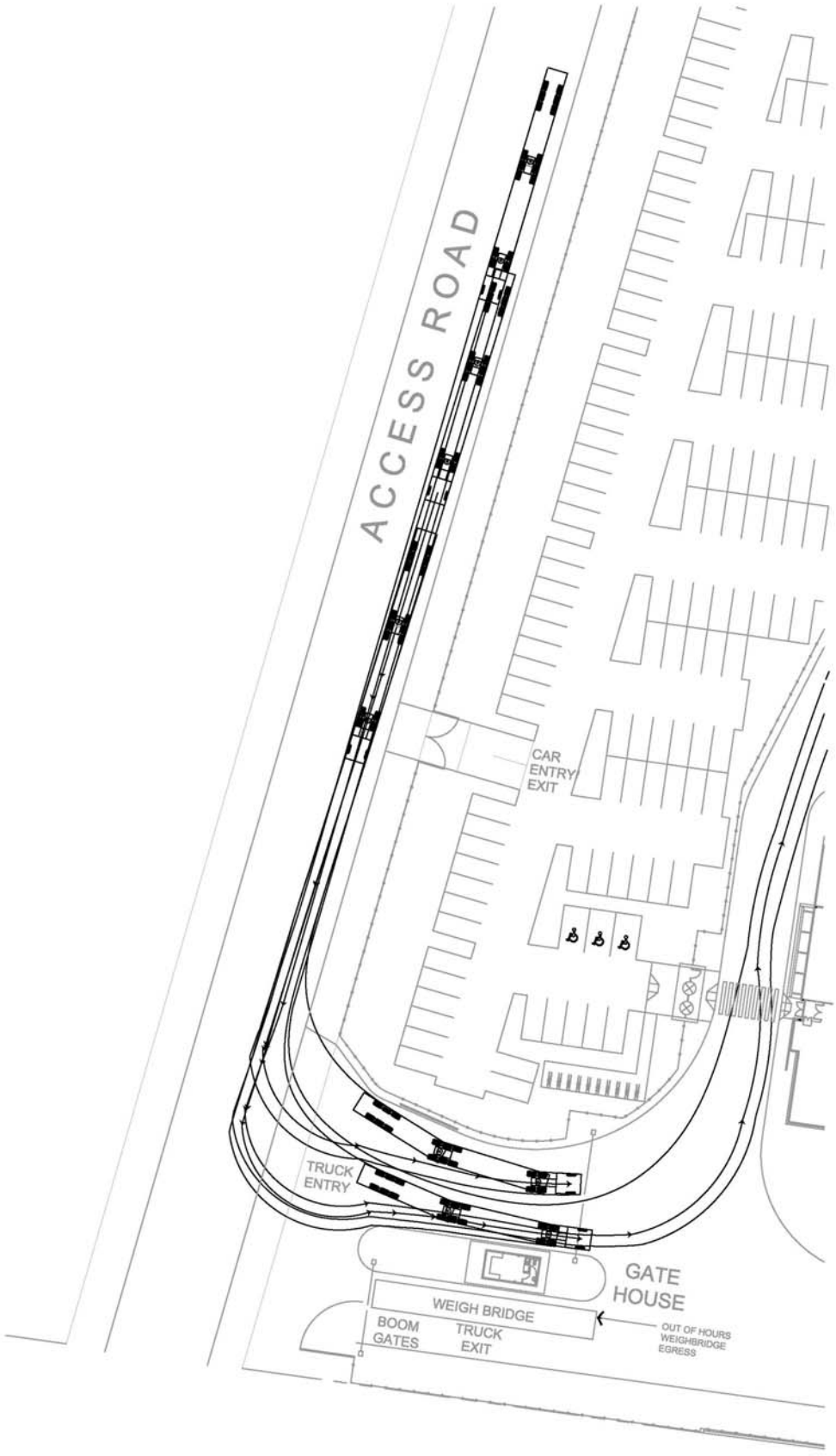
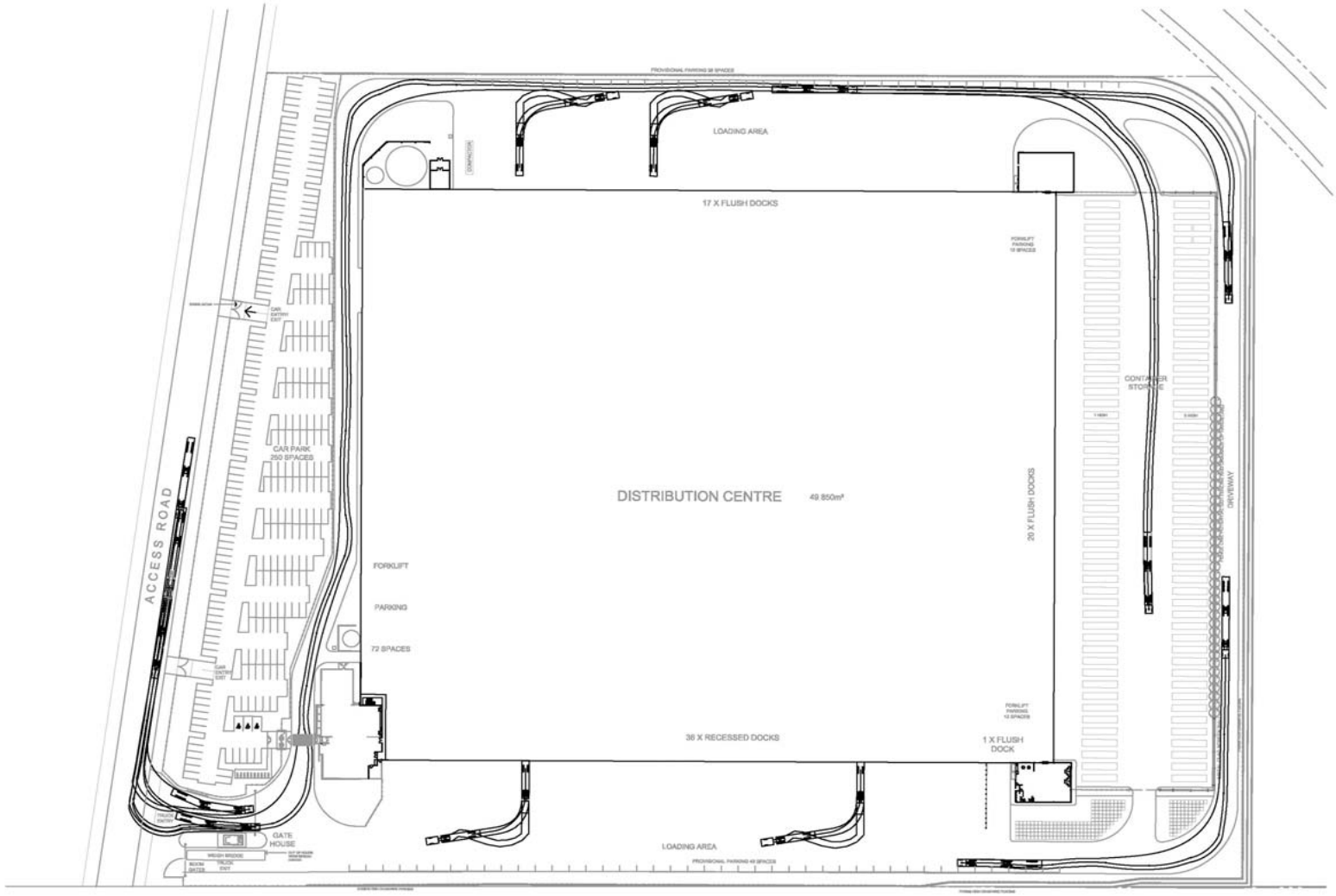


Figure 11: Proposed Class 10 Internal Movement and Articulated Vehicle Loading Dock Access



PARKING

The associated parking for the warehouse development is based upon the RTA's document entitled *'Guide to Traffic Generating Developments'*. Under this guideline, the RTA require...

- **Warehouse** - 1 space per 300m² of GFA, and
- **Office** – 1 space per 40m² of GFA.

Concurrently, Blacktown City Council's DCP, Part A, requires consideration of...

- **Warehouse** 1 space per 100m² of GFA for the first 7,500m²
  thence, 1 space per 200m² of remaining GFA, and
- **Office** – 1 space per 40m² of GFA.

Table 3: Indicative Parking Requirements by Land Use

Use	GFA (m²)	RTA Guide		Council DCP	
		Rate	Spaces	Rate	Spaces
Warehouse	50,520	1/300m²	169	75+1/200m²	290
Office	1,140	1/40m²	29	1/40m²	29
			198		**319**

The parking requirements prescribed by the RTA and Council above, are indicative averages of warehouse development across the Metro Area and within Blacktown LGA, respectively. As outlined in the RTA guide, the prescribed rates should consider the particular requirements of the intended tenants and nature of business to be conducted.

Given the site is not intended for any retail or manufacturing operations, 250 allocated parking spaces are proposed within a secure parking area to the west of the site.

Parking for heavy vehicles is proposed on the hardstand area and within recessed loading docks, skirting the perimeter of the warehouse structure.

The proposed parking allocation is commensurate with the projected employee numbers and traffic generation from the site.

Should parking demand exceed the proposed allocation during an unforeseen occurance, provision is available for a further 80 passenger cars along both the northern and southern boundaries of the site.

In total, the proposed allocation for passenger vehicle parking, on site during heavy demand periods, is 330 spaces.

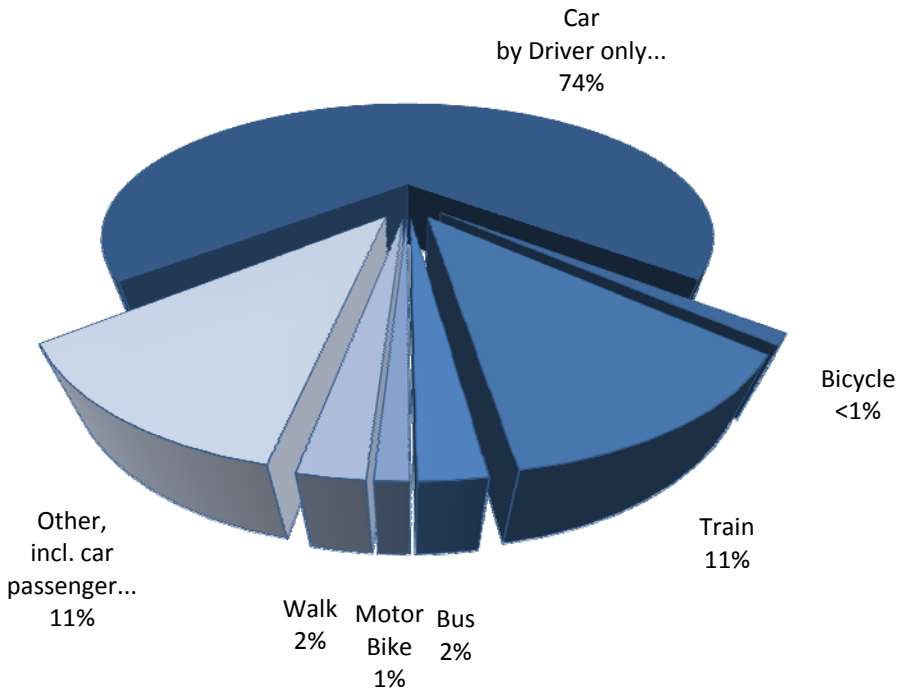
PUBLIC TRANSPORT

The Metropolitan Strategy, under the auspices of *'Draft SEPP 66 – Integration of Land Use and Transport'*, prescribes guiding provisions that aim to ensure the urban structure, building forms, land use locations, development design, subdivision and street layouts to help achieve the following planning objectives...

- Improving accessibility to housing, employment and services by walking, bicycling and public transport,
- Improving the choice of transport and reducing the dependancy on private vehicle usage,
- Moderating growth in the demand for travel and the distances travelled, especially by car,
- Support the efficient and viable operation of public transport services, and
- Providing for the efficient movement of freight.

The provision seeks to influence mode choice made by community and business.

Figure 12: Blacktown LGA JTW Mode Share – Journey by Single Mode



Source: 2006 ABS Census data – 'Basic Community Profile- Blacktown

Car usage for Journey to Work (JTW) in Western Sydney is greater than compared with the Sydney Metropolitan Area average. The 2006 census data indicates that the overall mode split for the Blacktown LGA is 74% car driver, in the context of a single mode journey. This is, however, an area wide average and must not be taken to apply equally to all local precincts. Previous studies have identified a mode share, attributed to private vehicle usage, greater than 80%.

Public transport accessibility to Eastern Creek Precinct, within the Western Sydney Employment Hub, has been improved and is under further investigation at this time.

The State Government's has invested in 300 new buses across the state, which has resulted in 400 new jobs for bus drivers and 150 jobs in bus construction.

Commuter trips to the Eastern Creek Precinct will be improved with increased services along Route No.738 from Mount Druitt railway station to Old Wallgrove Road and Wonderland Drive.

Current bus services travel to and from Rooty Hill railway station and have been extended to serve the next stage of the Eastern Creek Business Park along Old Wallgrove Road and Roberts Road.

The service runs at 30 minutes intervals between 4.30am - 8.30am and 2.30pm - 5.30pm. The service structure is designed to accommodate the commencement and completion of varying shifts during the typical working week within the Eastern Creek Precinct.

No services are planned, at this time, along 'Hansen Quarry' road. However, it is envisaged that with further development of the Eastern Creek Precinct and the prolongation of Archbold Road to Old Wallgrove Road, connectivity imporovements would suggest future bus services may be introduced.

The government is yet to investigate a possible Western Sydney modal interchange within the precinct, incorporating a heavy rail spur connection to the Main West Rail Line as outlined in the '*Metropolitan Strategy*'. This initiative has the potential to influence the mode share of future freight movements to and from the precinct.

While investigations into the potential of heavy and light rail networks are ongoing and with recent improvements to bus services, no mode shift has been applied to the forecast peak hour generation rates, as calculated in *Table 1*.

PEDESTRIANS AND CYCLISTS

Under the guidelines prescribed by Blacktown City Council's DCP and bikeplan, all road reserves within the Eastern Creek Precinct should provide shared pedestrian and cycle paths within the road footway area.

No provision is required on the road carriageway under the current formation width guidelines for new development.

CONCLUSION

In conclusion, the warehouse and distribution facility for KMart, as proposed, complies with the requirements setout by Blacktown City Council and the RTA with regard to traffic generating developments. This report supports the Development Application by Australand.

In support, the following issues are considered relevant...

- The proposed warehouse development and its associated traffic generation of 276vph, during the morning and evening peak traffic flow periods, will be capably managed on the planned road network within the Eastern Creek precinct, as evidenced by the computer based strategic and operational modelling,
- The access arrangements, detailed in this report, in juxtaposition with the internal structure of the development site, is capable of accommodating the manouvreabilty and storage of the identified vehicle classifications, including Class 10, B-Doubles, employed in the daily operation of the distribution facility. The internal structure and design of the development conform with the requirements prescribed in AS 2890.1 and AS 2890.2,
- The parking provisions proposed, exceed the requirements prescribed by the RTA in the *'Guide to Traffic Generating Developments'* and are considered acceptable in facilitating the development.
- The issue of on street parking has not been addressed in this report and is a point of determination by Council under the conditions of the DCP, and
- Provision has been made in the design to cater for an additional 80 provisional car parking spaces, to be located along the northern and southern boundaries of the site, should demand dictate or the nominated operator, or subsequent operators, elect to engage in alternate operations, contrary to those outlined in this DA application, in accordance with the regulated zoning policy.
- The total parking provision, catering for 330 vehicles, satisfies Blacktown City Council's requirements, as prescribed in the precinct DCP.