Traffic Impact Assessment

Oakdale Central
Proposed Warehouse Developments for Lot 1C, Lot 2B and Lot 3

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1. Introduction

1.1 Introduction

TRAFFIX has been commissioned by 'Goodman Property Services (AUST) Pty Ltd' to undertake a Traffic Impact Assessment relating to Lot 1C, Lot 2B and Lot 3 of the Oakdale Central Precinct which forms part of the Western Sydney Employment Area (WSEA). The WSEA was created in 2009 by the NSW State Government and includes a total area of 2,200 hectares of land generally bounded by the M4 to the north, the M7/Wallgrove Road to the east and Mamre Road to the west.

The Oakdale Precinct consists of 64 hectares of land within the WSEA and is located within the Western Sydney Employment Hub (WSEH) known as "Lands South of Sydney Water Pipeline". The Precinct was subject to a Major Project Application (MP 08_065) to the Department of Planning and Infrastructure (DPI – formerly the Department of Planning) in 2008. The application was subsequently approved on the 2nd January 2009 and generally included:

- The subdivision, as modified, to create:
  - 8 development lots;
  - 3 environmental/recreation lots (total area ~10.5ha);
  - 3 road corridor lots; and
  - 1 services lot.
- Eight industrial buildings with a combined gross floor area of 150,000m², and associated infrastructure;
- Upgrades of a 0.5 km section of Old Wallgrove Road from the Sydney Catchment Authority (SCA) crossing to the estate entry road to facilitate access to the revised estate entry location.

Subsequent to the Concept Plan approval, separate Project Application approvals have been received for Lots 1A, 1B and 2A. This subject application now seeks approval for Lot 1C, Lot 2B and Lot 3 and is proposed in accordance with the general terms of approval as outlined in the original Concept Plan Approval.

This report documents the findings of our investigations and should be read in the context of the Environmental Assessment Report for this Application prepared separately. The development is a major development and requires referral to the NSW Roads and Maritime Service (RMS – formerly the Roads and Traffic Authority, 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 the strategic context
- Section 4: Describes the existing traffic conditions
- Section 5: Describes the proposed development
- Section 6: Assesses the parking requirements
- Section 7: Assesses traffic impacts
- Section 8: Discusses access and internal design aspects
- Section 9: Presents the public transport opportunities and constraints
- Section 10: Presents the overall study conclusions.

1.2 Planning Context

A Part 3A Concept Plan and concurrent Project Application was prepared in accordance with Division 3 of Part 3A of the Environmental Planning Assessment Act 1979. The concept plan application related to lands within the Oakdale Central Precinct and incorporated a total site area of 61.21ha. The application was approved on 2nd January 2009 and related to a net developable area of approximately 45.27ha. Approval was also granted for warehouse 1A and 2A at this time.

At the time of the Concept Plan approval, neither the WSEA State Environmental Planning Policy (SEPP) nor the Northern Link Road Concept Plan had been finalised. As such, the original Concept Plan application made a number of allowances to ensure the future extension of Archbold Road could be accommodated.

In 2009 both the WSEA SEPP and the Link Road Concept Plan were approved and the final alignment of the Archbold Road extension was finalised. Subsequently a modified Oakdale Central Concept Plan was submitted in response to the WSEA SEPP arterial road infrastructure map. The modification included the deletion of two of the proposed future north-south connections to Archbold Road, the realignment of the internal estate road and a proposal to undertake remedial road works to a 0.5 km section of Old Wallgrove Road.

The final Concept Plan approval required all subsequent Project Applications to provide a traffic assessment for any proposed development within the Estate Concept Plan area in accordance with the RMS *Guide to Traffic Generating Developments*. The Part 3A Concept Plan approval also required that a Transport Management and Accessibility Plan (TMAP) be undertaken and provided to the DPI for approval which occurred in 2012. This report has been prepared having regard for the key findings of the TMAP assessment.

2. Location and Site

The site is located within the south-western part of the Eastern Creek Precinct Plan area, to the west of Wallgrove Road on the alignment of Old Wallgrove Road, immediately south of the Sydney Water Supply Pipeline. It is centrally located within the Oakdale Central Concept Plan area, to the south-west of the existing alignment (and termination) of Old Wallgrove Road.

The application relates to three individual warehouse and industrial buildings located within the western portion of the Oakdale Central Precinct with a combined site area of 262,327m^2. The location of each lot is as follows:

- Lot 1C is located on the northern side of the Oakdale Central Estate Road approximately 370 metres west of Old Wallgrove Road. The Lot has an eastern boundary to Lot 1B, a northern boundary to the Sydney Water Supply Pipeline and a western boundary to a riparian zone referred to as Lot B;
- Lot 2B is located on the southern side of the Oakdale Central Estate Road approximately 250 metres west of Old Wallgrove Road. The Lot has an eastern boundary to the existing Toll development located on Lot 2A, a southern boundary to the Chandos Parkway road reservation and a western boundary to a riparian zone referred to as Lot A; and
- Lot 3 is located in the far western extent of the Oakdale Central Precinct, approximately 650 metres west of Old Wallgrove Road. The site is situated on the northern side of the Oakdale Central Estate Road and has an eastern frontage to Lot B, a western frontage to another riparian zone known as Lot C and a northern boundary to the Sydney Water Supply Pipeline.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**.

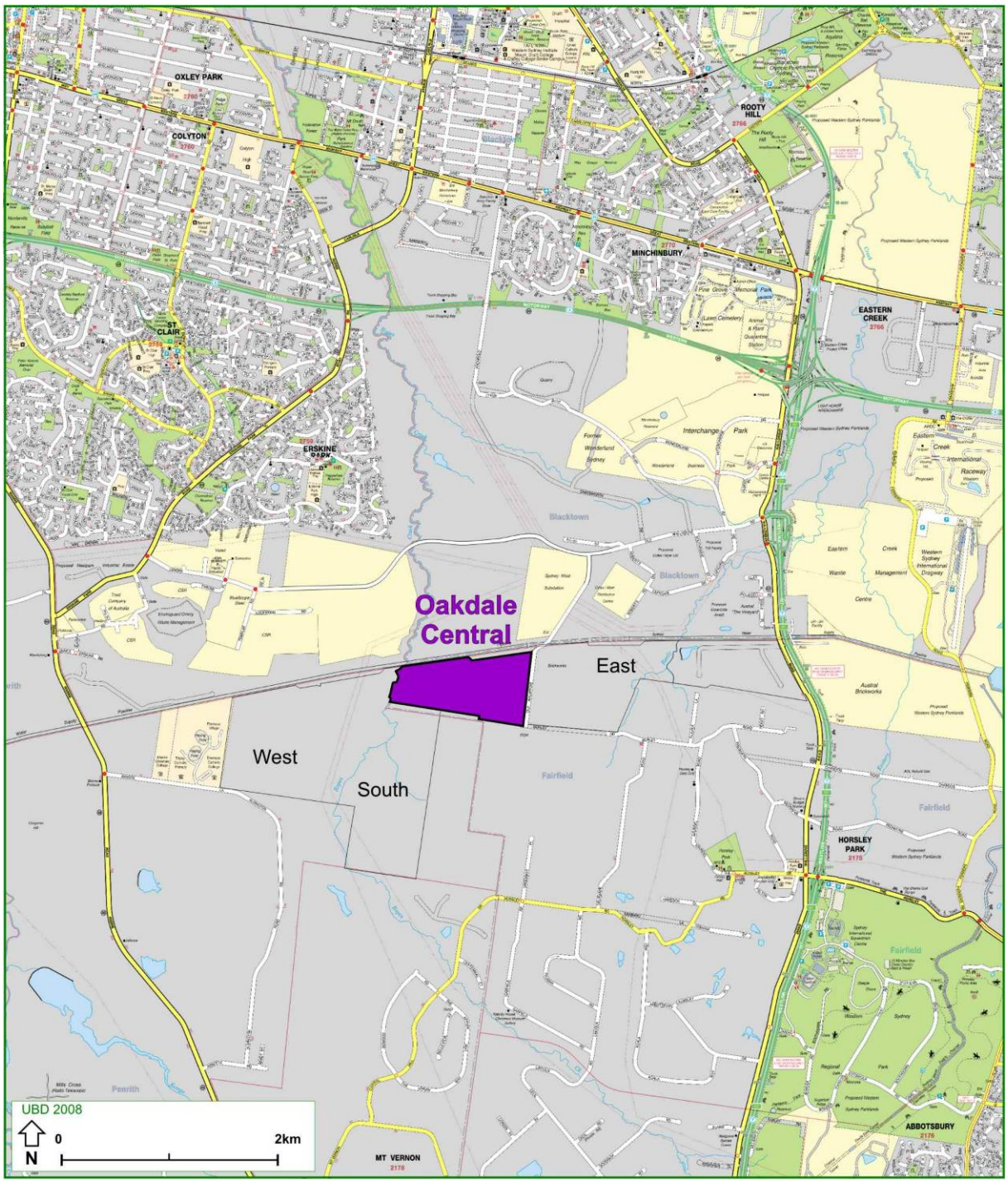


Figure 1: Location Plan

Figure 2: Site Plan

3. Strategic Context

3.1 Relevant State and Local Planning Policies

The strategic context of the study area is governed by State and Regional Planning Policies. The NSW planning policies and strategies applicable to the subject site and those considered as part of the development of the TMAP include:

- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (Western Sydney Employment Area);
- The NSW State Plan;
- The Metropolitan Plan (2036);
- The Metropolitan Transport Plan; and
- Planning Guidelines for Walking and Cycling.

A summary of these policies is provided below, together with an overview of local planning policies.

3.1.1 State Environmental Planning Policy (Infrastructure) 2007

This Policy contains provisions for referral of certain development applications, considered to be traffic generating development, to the RMS. The Oakdale Central Precinct is for an industrial purpose and all significant development within the precinct will need to be referred to RMS. Previous Traffic Impact Assessments (TIA) reports have been prepared relating to both approved and submitted development applications These TIA's have addressed the accessibility of the site, including:

- the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips,
- the potential to minimise the need for travel by car and to maximise movement of freight in containers, and
- any potential traffic safety, road congestion or parking implications of the Development

3.1.2 State Environmental Planning Policy (Western Sydney Employment Area)

State Environmental Planning Policy (Western Sydney Employment Area) 2009 was gazetted in August 2009. The SEPP seeks to protect and enhance the Western Sydney Employment Area ("WSEA") for future employment purposes. The aims of the SEPP are as follows:

> *"(a) to promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities,*
>
> *(b) to provide for the co-ordinated planning and development of land in the Western Sydney Employment Area,*
>
> *(c) to rezone land for employment or environmental conservation purposes,*
>
> *(d) to improve certainty and regulatory efficiency by providing a consistent planning regime for future development and infrastructure provision in the Western Sydney Employment Area,*
>
> *(e) to ensure that development occurs in a logical, environmentally sensitive and cost-effective manner and only after a development control plan (including specific development controls) has been prepared for the land concerned,*
>
> *(f) to conserve and rehabilitate areas that have a high biodiversity or heritage or cultural value, in particular areas of remnant vegetation."*

Development applications (both approved and submitted) within Oakdale Central are generally consistent with these aims. The land has been zoned appropriately, and is being developed in a staged manner in accordance with an approved concept plan on land that is suitable for the intended purpose.

Part 4 of the SEPP requires that consent must not be granted for development of land within the Western Sydney Employment Area unless a development control plan (DCP) applies to that land, unless as otherwise agreed in writing by the Director-General. However, Clause 75M(4) of the Act states:

"(4) If an environmental planning instrument requires the preparation of a development control plan before any particular or kind of development is carried out on any land, the obligation may be satisfied for a project by an application for approval and approval of a concept plan in respect of the land concerned (but only if the Minister authorises or requires an application for approval of the concept plan)."

As outlined previously, an approved Concept Plan is already in place and the Oakdale Central Concept Plan is considered to have satisfactorily addressed all matters for consideration in Schedule 4 for previously submitted and approved developments within the precinct.

3.1.3 Metropolitan Plan 2036

The Metropolitan Plan 2036 is to be reviewed every 5 years and forms an integrated plan for Sydney to 2036. It focuses on transforming Sydney from a single-centred city to a more connected, multi centred city where the regional cities of Parramatta, Liverpool and Penrith in particular deliver increased jobs and improved services. The long term vision is to develop Sydney as a "city of cities" and includes the following objectives:

- radial public transport links feeding into each city.
- cross regional transport connections linking more subregions to the Global Economic Corridor, and
- a developing network of transport connections serving a range of different trips and strategic centres that support economic activity across more locations

3.1.4 Metropolitan Transport Plan

This plan produced in 2010 provides a 25 year vision for the connection of Sydney's land use planning with the transport network. The plan incorporates ten year funding for transport infrastructure and includes the following noteworthy services:

- A $4.5 billion Western Express City Rail Service which is intended to significantly reduce commuting times between Western Sydney and the city.
- Commencement of works on the North West rail connection from Epping to Rouse Hill with an estimated cost of $6.75 billion.

- Improvement to bus services which includes 100 new buses in strategic bus corridors.
- New trains with an additional 626 rail carriages
- $158 million for cycleway
- $400 million for commuter car parks
- $483 million to deliver important freight works In Sydney
- $21.9 million of State and Federal Funded road projects.

3.1.5 Planning Guidelines for Walking and Cycling (2004)

The aim of this guideline is to assist land-use planners and other related professionals to improve consideration of walking and cycling in their work. The intention of the guideline is to ultimately create further opportunities for people to live in places with easy walking and cycling access to urban services and public transport and reducing private vehicle usage.

3.1.6 NSW Bike Plan (2010)

The Metropolitan Transport Plan committed $158 million towards improving urban cycle networks and lead to the development of the NSW Bikeplan which outlined a 10 year bicycle infrastructure plan including:

- $80 million over ten years to connect Sydney's district centres by building missing links in the Metro Sydney Bike Network.
- $78 million over ten years to fast-track subregional bike networks for Parramatta, Liverpool and Penrith to grow cycling in these three River Cities.
- at least $5 million every year for regional cities and local councils across NSW to complete neighbourhood cycleway networks.

3.1.7 Summary

The plans and strategies discussed above are relevant to the Oakdale Central Precinct and underpin the previously submitted Transport Management and Accessibility Report which forms the basis of this report.

4. Existing Traffic Conditions

4.1 Road Network

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. The approved Northern Link Road will form a connection between Wallgrove Road and Lenore Lane/Mamre Road in the west;
- 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 surroundings. It is identified as a future sub-arterial road within the Stage 3 Eastern Creek Precinct Plan;
- Lenore Drive: a major RMS road providing an east-west connection between Erskine Park and Wallgrove Road. This is discussed further below.
- Southridge Street: a local road that runs in a north-south direction to the east of the site.
- Capicure Drive: a local road that runs in an east-west direction between Roberts Road and Old Wallgrove Road. Capicure Drive forms a roundabout intersection with Southridge Street.
- Estate Road: a local road that runs in an east-west direction to the south of the site. It will provide all access to the proposed development.

It is evident that the site is located within close proximity to both existing and future arterial road connections. In addition, a number of significant infrastructure upgrades are currently under consideration as discussed above which will further improve accessibility to the regional road network from that which is currently provided.

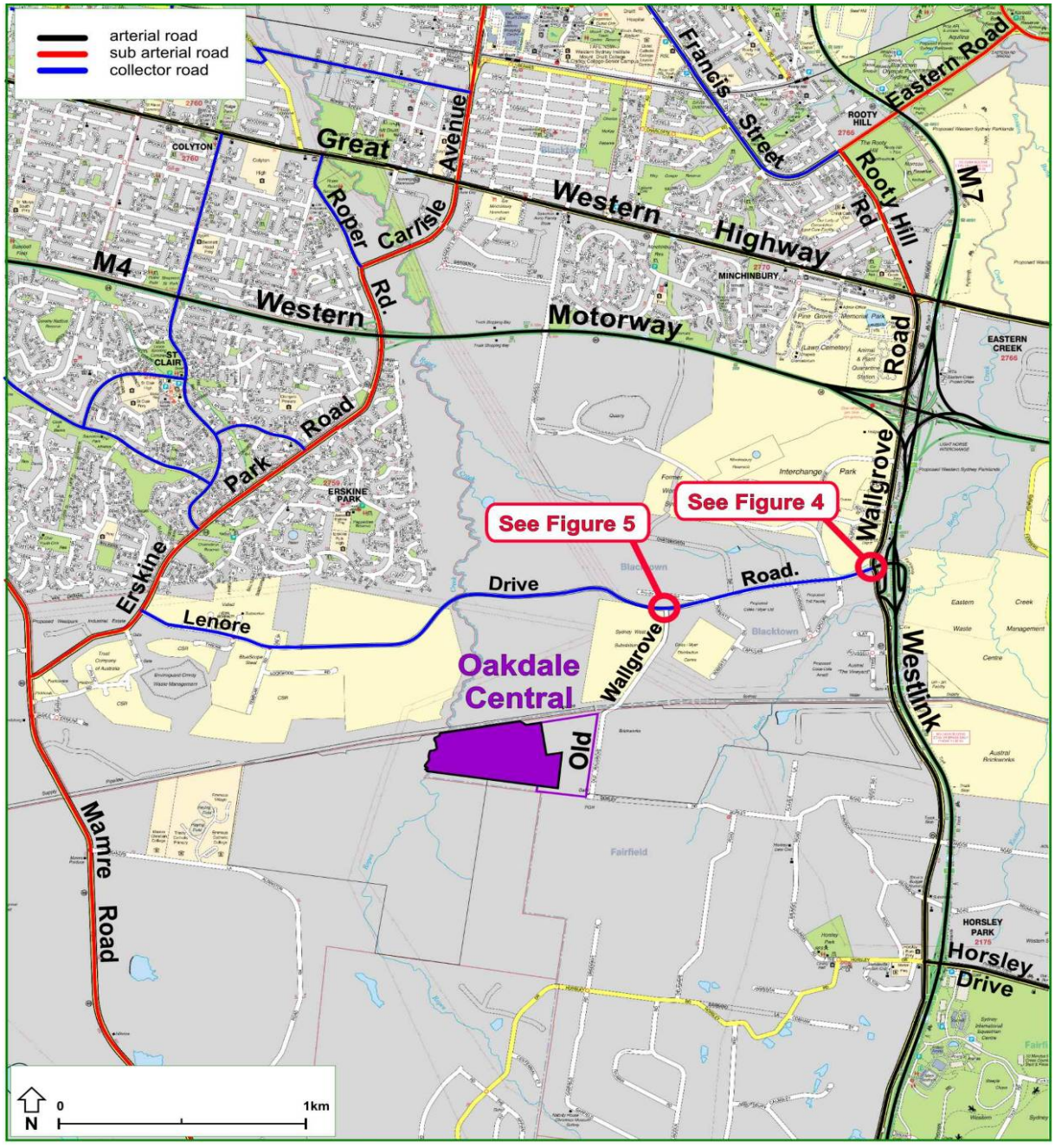


Figure 3: Road Hierarchy

4.2 Key Intersections

The key intersection in the vicinity of the site is shown below and provides an understanding of the existing road geometry and alignment:

Source: Near Map

Figure 4: Intersection of Old Wallgrove Road/ Wallgrove Road

It can be seen from **Figure 4** that Old Wallgrove Road generally carries two lanes of traffic in either direction and is separated by a median at the intersection. This intersection will accommodate the main entry and exit movements associated with the proposed development. The upgrade of this intersection is also intended to facilitate the Mini Link Road. The layout of the 'Ultimate Design' of the intersection is documented in the GHD Traffic Impact Assessment Report undertaken as part of the Review of Environmental Factors currently exhibited by the DPI and discussed in more detail below.

Source: Near Map

Figure 5: Intersection of Old Wallgrove Road/ Lenore Drive

Figure 5 shows the intersection of Lenore Drive and Old Wallgrove Road will facilitate all entry and exit movements associated with development to the south of the Lenore Drive in the short to medium term. The intersection facilitates all turning movements and has been designed to accommodate the future traffic generation of the greater WSEA up to 2031.

5. Description of Proposed Development

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

- Construction of three new warehouse developments with a combined total floor space of 149,000m^2 including 144,150m^2 of warehouse GFA and 4,490m^2 of office GFA;
- The provision of a total of 865 car parking spaces (Including 39 provisional spaces);
- Extension of the Estate Road in accordance with the approved concept plan;
- Staged upgrade of Old Wallgrove Road between the Estate Road and its intersection with Lenore Drive to four (4) lanes; and
- Construction of a temporary turning head at the western extent of the Estate Road.

A summary of the key components of the three proposed developments is provided below.

Lot 1C

- Construction of a 27,505m^2 warehouse facility including 26,700m^2 of warehouse floor space and 805m^2 of office floor space;
- The provision of 169 parking spaces accessed via a single combined entry / exit driveway to the Estate Road. It is proposed that 11 of these spaces be provided as provisional parking should they be required; and
- Construction of two heavy vehicle access driveways including an entry driveway located on the western site boundary and a combined entry / exit driveway on the eastern site boundary.

Lot 2B

- Construction of a 33,025m^2 warehouse facility including 31,530m^2 of warehouse floor space and 1,495m^2 of office floor space;

- The provision of 182 parking spaces accessed via a single combined entry / exit driveway to the Estate Road. It is proposed that 28 of these spaces be provided as provisional parking should they be required;
- Construction of two heavy vehicle access driveways located on the eastern and western site boundaries.

Lot 3

- Construction of a 88,470m^2 warehouse facility including 86,280m^2 of warehouse floor space and 2,190m^2 of office floor space;
- The provision of 502 parking spaces; and
- Access to the site via a combined entry / exit driveway which will ultimately form the third leg of a roundabout controlled intersection with the Estate Access Road.

The traffic and parking impacts arising from the development are discussed in Sections 5 and 6. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix A**.

6. Parking Requirements

6.1 Council Controls

The approved Oakdale Central Concept Plan parking rates have been assessed and require parking to be determined at the rates shown in **Table 1**:

Table 1: Council & RMS Parking Rates

Lot	Land Use	Area (m^2)	Concept Plan Approved Parking Rate	Parking Requirement	Provision
Lot 1C	Warehouse	26,700	1 space per 200m^2	134	134
	Office	805	1 space per 40m^2	20	35
Lot 1C Total				154	169[1]
Lot 2B	Warehouse	31,530	1 space per 200m^2	157	154
	Office	1,495	1 space per 40m^2	37	40
Lot 2B Total				194	194[2]
Lot 3	Warehouse	86,280	1 space per 200m^2	431	447
	Office	2,190	1 space per 40m^2	55	55
Lot 3 Total				486	502*

1: Parking provision includes 11 Provisional Spaces to be constructed if necessary

2: Parking provision includes 40 Provisional Spaces to be constructed if necessary

It can be seen from Table 1 above that the provision of parking for all lots either complies or exceeds the requirements set out in the Oakdale Central Concept Plan approval. It is noted that the proposal includes the provision of 51 parking spaces as “provisional parking” with these spaces located within the hardstand area (11 in Lot 1C and 40 in Lot 2B). These additional spaces are not considered necessary based on tenant enquires for this and similar developments in the locality. However, in the event that any future tenant requires parking in excess of that provided, these provisional spaces would be line marked and used by staff as necessary.

Accordingly, the parking proposed complies fully with the requirements of the Concept Plan approval and is considered supportable on traffic planning grounds.

6.2 Disabled Parking

As documented in the Oakdale Central Concept Plan, developments with more than 50 car parking spaces are to provide a minimum of 2% allocated to disabled parking. Accordingly, the proposal provides the following disabled parking spaces:

- Lot 1C: 3 spaces;
- Lot 2B: 4 spaces;
- Lot 3: 10 spaces.

These spaces shall be designed in accordance with AS 2890.6 (2009), which requires 2.4 metres width and a 2.4 metre wide adjacent shared area.

7. Traffic Impacts

7.1 Trip Generation

7.1.1 Concept Plan Trip Generation

The future traffic generation of the completed Oakdale Central precinct was assessed based on the trip rates published in the Erskine Park Link Road, Review of Environmental Factors, undertaken by RMS. In this regard, the Review of Environmental Factors states that the modelling undertaken by the RMS adopted a trip generation rate of 10 vehicle trips per developable hectare per two hours for the precincts within Penrith LGA and 21 vehicle trips per developable hectare per two hours for the proposed precincts within Blacktown LGA. The Oakdale Central Precinct however lies within the Fairfield Council LGA and as such an average of these two rates, being 15.5 trips per developable hectare per 2 hours (or 7.75 trips per hectare per hour) was adopted. This resulted in an overall generation of 315 veh/hr.

Notwithstanding the above, additional modelling has been undertaken by GHD on behalf of the RMS and DPI. The assessments have informed the geometric design of key intersections in the locality for the design years of 2021 and 2031. In this regard, GHD have recently completed two relevant assessments including:

1. Identification of the future intersection layouts and operation associated with the widening of Old Wallgrove Road, and

2. Impacts associated with development within WSEA to guide the development of the north-south road network in the locality.

The analysis undertaken by GHD adopted a traffic generation rate of 21 per developable hectare per 2 hours (or 10.5 trips per hectare per hour) for the subject site and this level of generation is implicit in all intersection modelling and subsequent intersection designs. Application of this rate to the developable area associated with the Oakdale Central Precinct (approximately 40.6Ha) results in an overall generation of 426 veh/hr.

7.1.2 RMS Traffic Generation

This current application relates to the development of three industrial/warehouse developments with a total GFA of 149,000m^2 on 26.2 hectares of site area. Application of the rates adopted in the recent strategic traffic modelling adopted for WSEA precinct undertaken by GHD (10.5 trips per hectare per hour) results in a future generation of 275 veh/hr.

Notwithstanding, surveys of comparable facilities have been undertaken by RMS and published in the August 2013 Technical Direction, "Guide to Traffic Generating Developments Updated Traffic Surveys". The surveys undertaken by RMS and published in the above mentioned document included two major industrial precincts similar in nature to the Oakdale Central Precinct being; Wonderland Business Park and the Erskine Park Industrial Estate (located to the north and west of the subject site respectively). The surveys identified the following peak hour traffic generation rates:

- Wonderland Business Park: 0.202 vehicle trips per 100m^2 of GFA;
- Erskine Park Industrial Estate: 0.163 vehicle trips per 100m^2 of GFA.

Application of the above rates to the proposed floor space associated with this application (149,000m^2) results in a future generation of between 245 veh/hr and 300 veh/hr respectively. It is therefore evident that the rates adopted by the RMS and DPI strategic analysis for the Old Wallgrove Road upgrades and the future north-south connections to the Southern Link Road of 275 veh/hr is consistent with surveyed rates of similar developments in the locality.

7.2 Proposed Infrastructure Projects

Lenore Drive (formerly referred to as the Northern Link Road and Erskine Park Link Road) was approved by the DPI in 2010 and completed in August 2013. The proposal related to the construction of a 3.1km roadway between Lenore Lane to the west and Old Wallgrove Road to the east. The project included the construction of a four lane divided carriageway and 3.0 metre shared pedestrian cycle way.

The original Concept Plan Application for the Lenore Drive extension submitted in 2008 included a Traffic Impact Assessment undertaken by Maunsell Australia Pty Ltd titled "Proposed Erskine Park

Link Road Network". This report assessed the likely impacts of the development on the existing and future road networks using EMME2 modelling. A supplementary assessment was later undertaken in December 2008 which assessed the likely impacts in further detail to that of the original Traffic Impact Assessment. This report included SIDRA modelling of critical intersections in the locality including the key intersection of Wallgrove Road and Old Wallgrove Road. The Concept Plan was subsequently approved in August 2009.

As part of the Review of Environmental Factors, a traffic and transport technical paper was produced by 'Parsons Brinckerhoff' (PB), titled "Erskine Park Link Road Concept Plan Approval Review of Environmental Factors" in July 2010. This report investigated the mid-block capacity of Lenore Drive as well as the operational performance of the nearby key intersections. The report recommendations and conclusions relevant to this application included:

- A four lane carriageway on Erskine Park Link Road would be required to support the fully developed Western Sydney Employment Area by 2031 (now completed);
- That Old Wallgrove Road be widened to four lanes by 2016 between Roberts Road and the M7 Motorway;
- That the intersection Old Wallgrove Road with Wallgrove Road should be upgraded to include the following:
    - The existing north and southbound approaches be widened to provide dedicated left and right turn lanes by 2016;
    - The eastern and western approaches be widened to provide two through lanes for eastbound and westbound traffic by 2016; and
    - The western approach be widened to provide an additional westbound through lane by 2031.

Construction of the Northern Link Road (NLR – subsequently renamed Lenore Drive) was completed in August 2013. Funding for the remaining infrastructure upgrades was announced in July 2013 with works expected to commence in 2014. This is discussed in more detail below.

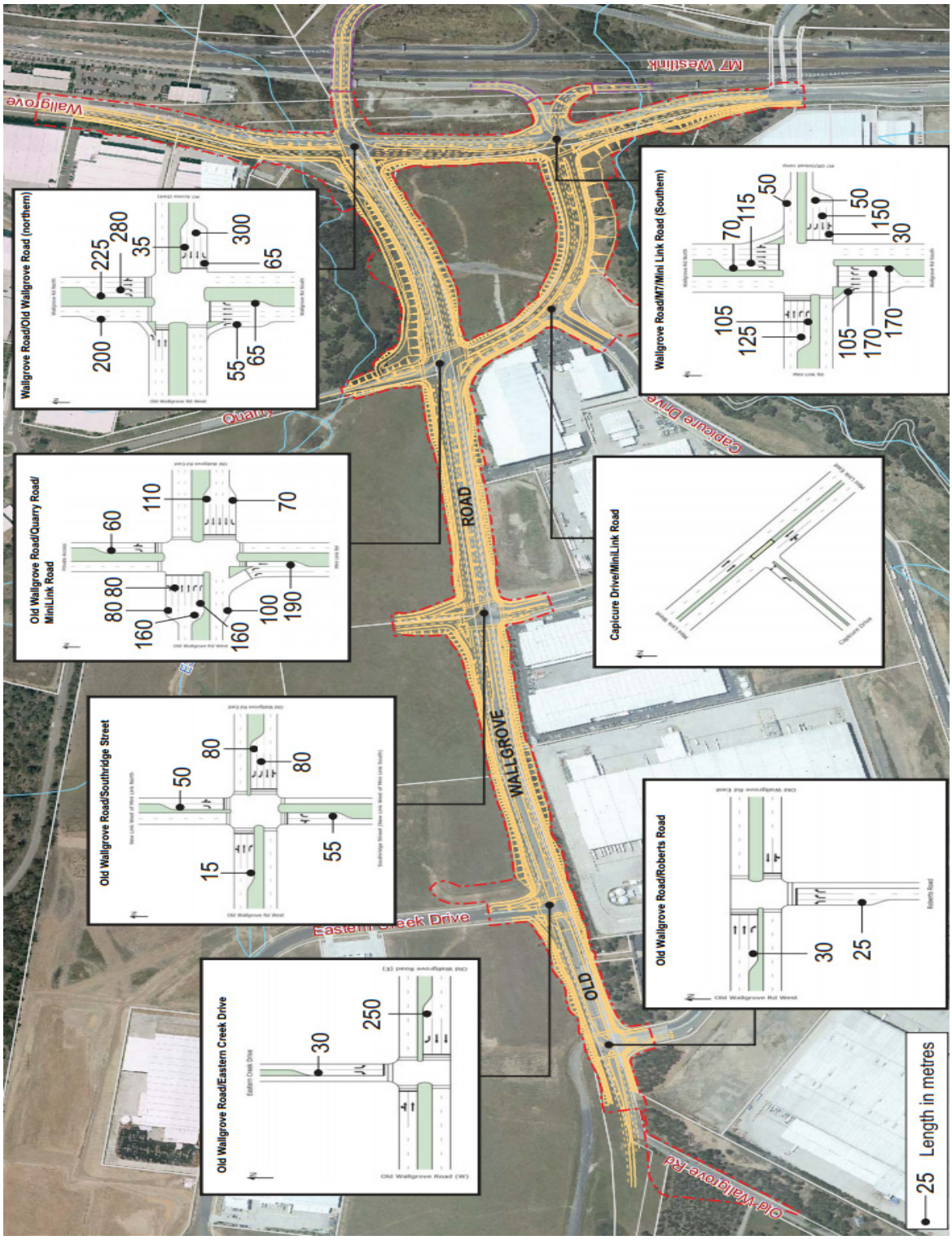
7.2.1 Old Wallgrove Road Upgrade and Mini Link Road

The "Erskine Park Link Road Concept Plan Approval Review of Environmental Factors" PB report outlined the need for the future upgrade of the intersection of Old Wallgrove Road with Wallgrove Road and the need to upgrade Old Wallgrove Road between the NLR and Wallgrove Road intersection. The objectives of the upgrade are to:

- Provide a vital connection from Erskine Park Link Road;
- Support the WSEA;
- Provide a new shared cycle/pedestrian path and a connection to the M7 Cycleway; nad
- Reduce transport costs for industry located in the WSEA.

The upgrade of the Old Wallgrove Road and Wallgrove Road intersections identifies the need for additional capacity to accommodate the likely increase in traffic associated with Lenore Drive. This included the construction of a "mini-link road" which is to form the western leg of a new signalised intersection with the northbound M7 Interchange. To the north it will form a new intersection with Old Wallgrove Road.

The future designs of these intersections were documented in the Review of Environmental Factors published in October 2012, undertaken by GHD, and the proposed intersection layouts associated with this assessment is provide in **Figure 6**. The NSW State Government has allocated $120 million for the completion of this project which is expected to commence construction in March 2014.



Source: Old Wallgrove Road Upgrade – Traffic and Transport Report (GHD)

Figure 6: Proposed Intersection Upgrades Wallgrove Road & Old Wallgrove Road

7.2.2 Southern Link Road

The Southern Link Road Network is required to accommodate travel demand generated by employment within the WSEA. The southern link road is currently being investigated by the DPI and comprises:

- An east-west route between Bakers Lane and Wallgrove Road or the M7 Interchange, to the sough of the Oakdale Central Precinct; and
- Eastern and western north-south links connecting the southern link road with the Northern Link Road.

A meeting with RMS and the DPI was held on 14th February 2012 in order to discuss and gain further understanding of the status and timing of the Southern Link Road Assessment. It was identified in this meeting that:

- The Old Wallgrove Road connection with the Southern Link Road currently has no status or projected timeframe for construction;
- Should the proposed construction of the Southern link proceed, the current preferred alignment will be as per **Figure 7;**
- The Southern Link Road is intended to comprise a four lane carriageway (two-way) and will include the north-south Archbold Road Link; and
- The regional road network is proposed to be finalised by approximately September 2012

Subsequent to this meeting, GHD were engaged in 2013 to assess alternative north-south connections between the Southern Link Road and Lenore Drive and in particular the two alignment options shown in **Figure 8**, referred to as the "Red" and "Green" routes. The assessment aimed at identifying future intersection operation at key locations under the two possible future alignment scenarios.

It is noted that the previous assessment undertaken by AECOM, gave limited weighting to the Green route option shown in Figure 8 as Transgrid (the land owner on the western boundary of this route), did not provide approval for this alignment. Transgird have however subsequently provided in-

principle approval for this alignment and as such was considered by GHD. The results of the GHD assessment were presented to the DPI and Goodman in July 2013 as discussed below.

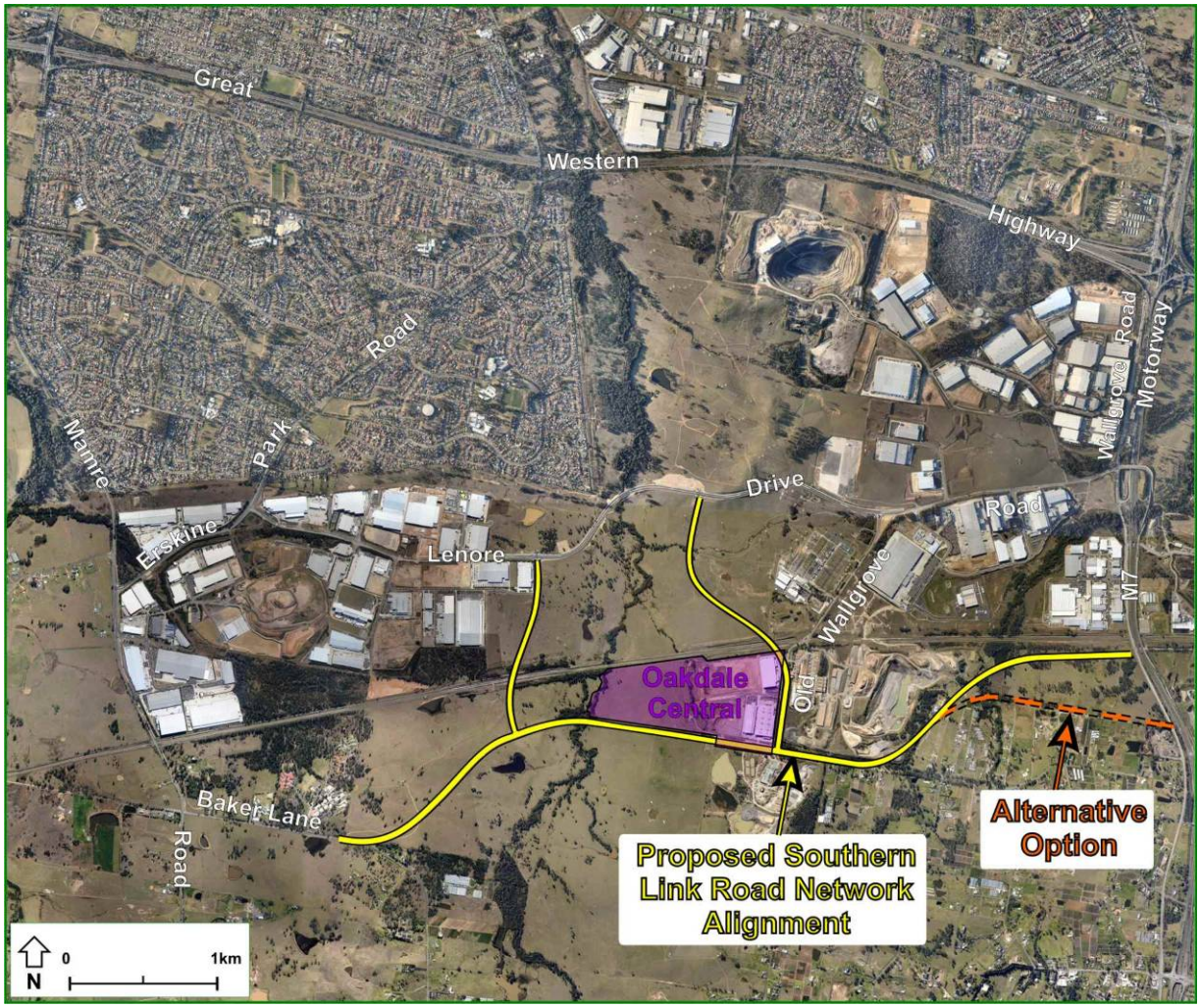


Figure 7: Southern Link Road Network

The assessment undertaken by GHD identified the preferred north-south link would be as per the alignment demonstrated in Figure 7 (which reflects the Red route); however, also concluded that the upgrade of Old Wallgrove Road (Green Route) to a regional road between Lenore Drive and the Southern Link Road would be required due to capacity constraints at key intersections.

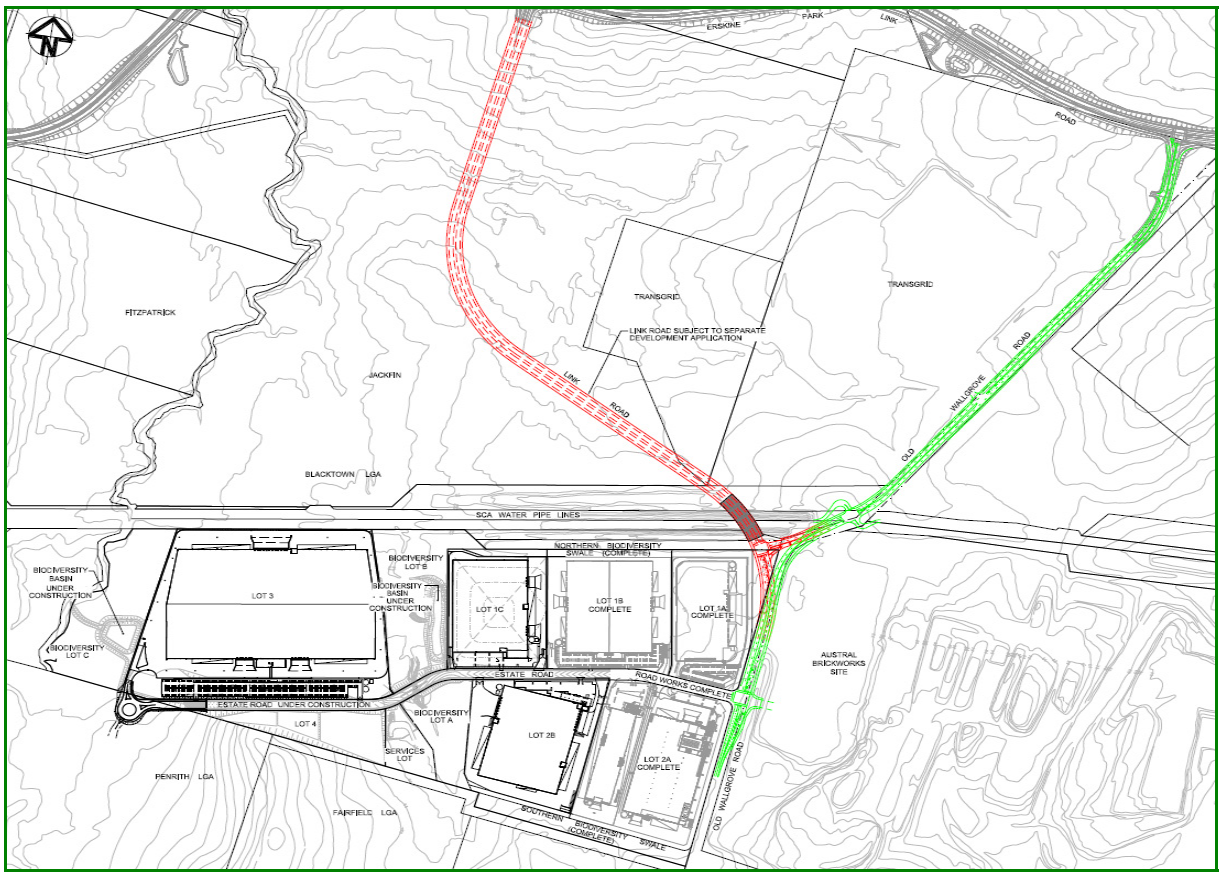


Figure 8: North-South Route Options

Whilst the final alignment of the southern link road and associated infrastructure including the North-South connections to Lenore Drive are not yet finalised, the results of the GHD modelling has been adopted as part of this assessment as it represents the most relevant information currently available.

7.3 Peak Period Intersection Performances

The future operation of key intersections in the locality has been based on the intersection modelling results undertaken on behalf of the Department of Planning for the following strategic assessments:

- The Wallgrove Road upgrade undertaken by GHD and Aurecon, and
- The Southern Link Road north-south connections also undertaken by GHD.

The reliance on the future intersection operations identified in the relevant traffic impact assessments for the above mentioned projects was endorsed by RMS, and is justified given the future traffic generation of the proposed development is consistent with the inherent land use assumptions adopted for these studies as identified in Section 7.1 of this report. A summary of the future operation of intersections in the locality is provided in **Table 2** and includes the following key intersections as shown in **Figure 9.** It is noted that the intersection results identified in Table 2 include both regional and local traffic associated with future development within WSEA and the generation associated with the future Southern Link Road:

- Intersection 1: Wallgrove Road and Old Wallgrove Road;
- Intersection 2: Old Wallgrove Road and Lenore Drive;
- Intersection 3: Old Wallgrove Road and future North-South connection; and
- Intersection 4: Future North-South connection and Lenore Drive.

It is noted that for the purpose of this assessment, it is assumed that to Old Wallgrove Road (south of Lenore Drive) will be constructed with a four (4) lane divided carriageway consisting of two lanes in both the northbound and southbound direction as discussed above.

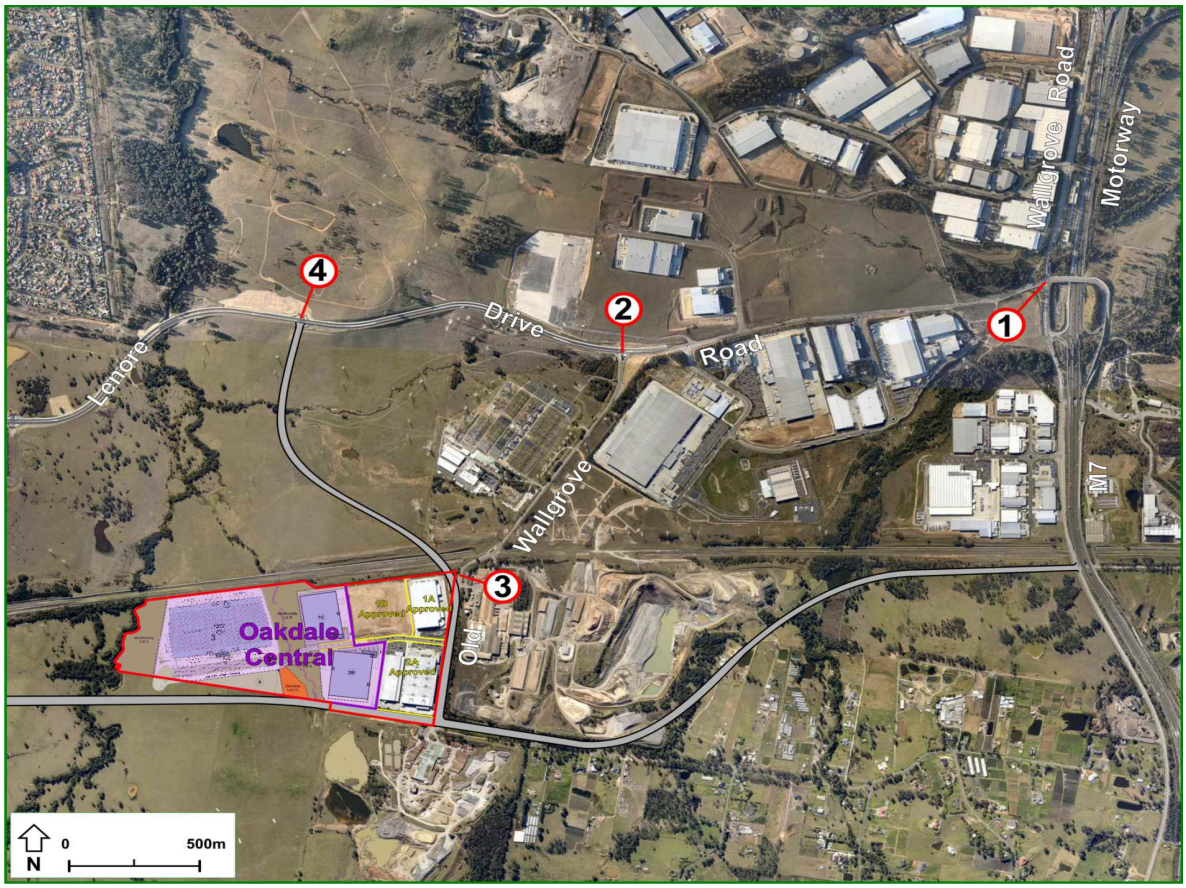


Figure 9: Key Intersection Locations

Table 2: 2021 & 2036 Intersection Performance: AM and PM Peak Hour

Intersection Description	Control Type	Period	Design Year 2021		Design Year 2031	
			Delay	Level of Service	Delay	Level of Service
Intersection 1*	Signals	AM	41.5	C	46.5	D
		PM	23.6	B	25.8	B
Intersection 2**	Signals	AM	17.1	B	18.0	B
		PM	25.1	B	27.3	B
Intersection 3**	Signals	AM	23.3	B	46.9	D
		PM	25.3	B	51.9	D
Intersection 4**	Signals	AM	34.5	C	43.6	D
		PM	45.9	D	53.2	D

* Source: Old Wallgrove Road Upgrade (Roberts Road – M7 Motorway) Response to REF Submissions, GHD 21 February 2013

** Source: Old Wallgrove Road Extension – Traffic and Transport Analysis, Summary of Modelling Findings GHD 18 July 2013

It is evident that the external road network will operate with a satisfactorily level of service and with only moderate delays at all key intersections under both the 2021 and 2031 modelling scenarios. This represents a significant improvement (particularly at the intersection of Wallgrove Road & Old Wallgrove Road) to that which occurs currently.

It is noted that whilst Table 2 demonstrates satisfactory operation of the network, the final layout of these key intersections has not yet been confirmed by the DPI. Notwithstanding, any future modelling that may result in the refinement of the intersection layouts will include the traffic generation of Oakdale Central Precinct.

It is noted that the DGR's request analysis of the future operation of the intersection of the Estate Road and Old Wallgrove Road. In this regard, the intersection currently operates as a priority controlled T Junction with priority given to the through movement along Old Wallgrove Road. The intersection currently accommodates traffic generally associated with the Oakdale Precinct and the existing CSR Bricks development at the end of Old Wallgrove Road. The intersection has been observed to operate with a Level of Service A at all times.

Insufficient information is available at this time to accurately model the future operation of this intersection in the horizon years of 2021 or 2031. It is however noted that this is expected to be undertaken by the DPI and relevant consent authorities as part of the ongoing assessment of the Southern Link Road. Notwithstanding, allowances have been made for the future signalisation of this intersection as per the relevant engineering plans prepared by AT&L.

7.4 Old Wallgrove Road Connection (Green Route)

Approval is now sought for the staged construction of a sub-arterial road connection between the Estate Access Road and the intersection of Old Wallgrove Road and Lenore Drive (shown as the Green Route in Figure 7). The proposal is in response to the modelling conclusions reached by GHD, undertaken on behalf of the DPI relating to the future north-south connections. The report identified that:

"Traffic modelling of the revised Scenario 4, reflecting the Red Link as the only north-south link through the Oakdale area shows that while there is sufficient mid-block capacity under a four-lane arrangement, the proposed intersection layouts would not have sufficient capacity for the forecast traffic demand and would require further improvement to increase capacity."

It is therefore proposed that Old Wallgrove Road be ultimately upgraded to a four lane regional road carrying two lanes of traffic in both the northbound and southbound direction. The ultimate design is shown in the plans prepared by AT&L and generally includes the provision of a 22 metre carriageway carrying two through lanes in both directions and 3.5-4.0 metre wide verges

It is proposed that the upgrade of the Green Route be undertaken in two stages. Stage 1 would include the construction of western carriageway including two lanes and a central median adjacent to the Transgrid Site. Stage 2 (being the completion of the project) would occur subject to agreement with the Government on funding obligations.

Whilst approval for the upgrade of this road is now sought, it is noted that provision has been made for an alternate road connection (Red route) being provided via the Jacfin land, consistent with discussions with the DoPI and Jacfin. Accordingly, the design makes allowance for the future signalisation of key intersections along the corridor (in particular the intersection of the Oakdale Estate Road with Old Wallgrove Road and the future intersection of the Red and Green routes). It is however proposed that these intersections be constructed as priority controlled T-Junctions until such time that the warrants for signalisation of these intersections is met.

It is noted that this proposal is additional to the works undertaken in relation to the relevant conditions of consent under MP 08-0066.

8. Access & Internal Design Aspects

8.1 Car and Visitor Access

Lot 1C

Access to the employee and visitor car park is proposed via a 6.0 metre combined entry and exit driveway to the Estate Road located approximately 85 metres west of the eastern site boundary. The development includes the provision of 169 spaces and therefore requires the provision of a Category 2 driveway being a combined entry exit driveway with a clear width of between 6.0-9.0 meters. The proposed 6.0 metre driveway therefore complies with the requirements of AS2890.1.

Lot 2B

Access to the employee and visitor car park is proposed via a 6.0 metre combined entry and exit driveway to the Estate Road located approximately 50 metres west of the eastern site boundary. The development includes the provision of 154 spaces within the formal car park and therefore requires the provision of a Category 2 driveway being a combined entry exit driveway with a clear width of between 6.0-9.0 meters. The proposed 6.0 metre driveway therefore complies with the requirements of AS2890.1. An additional 36 provisional spaces are provided within the hardstand. Access to these spaces, if required, will be via the heavy vehicle accesses located on the eastern and western boundaries, discussed further below.

Lot 3

Access to the employee and visitor car park is proposed via two 7.5 metre combined entry and exit driveway to the Estate Road located approximately 60 metres and 360 metres west of the eastern site boundary respectively. The development includes a total of 502 parking spaces and two access locations and therefore requires the provision of a Category 2 driveway being a combined entry exit driveway with a clear width of between 6.0-9.0 meters. The proposed 7.5 metre driveways therefore comply fully with the requirements of AS2890.1.

A swept path analysis is provided in **Appendix B** which demonstrates satisfactory entry and exit movements to the site and accordingly compliance with the intent of the standard. As such the proposed access arrangements are considered supportable on traffic planning grounds.

8.2 Service Vehicle Access

Lot 1C

Service vehicle access to Lot 1C is proposed via two separate driveway crossings located on the eastern and western site boundaries. The driveway located on the eastern site boundary is proposed with a 17.2 metre clear width and will accommodate both entry and exit movements by vehicles up to and including 19 metre articulated vehicles. The western access is proposed with a clear width of 12.5m and will generally accommodate entry movements only.

Lot 2B

Service vehicle access to Lot 2B is proposed via two separate combined entry and exit driveways driveway crossings located on the eastern and western site boundaries. The driveway located on the eastern site boundary is proposed with a 25.0 metre clear width and will accommodate both entry and exit movements by vehicles up to and including 19 metre articulated vehicles. The western access is proposed with a clear width of 12.0 metres and will generally operate as a secondary access. Both driveways crossings comply with the requirements of AS289.2.

Lot 3

Access to Lot 3 is proposed via a consolidated driveway crossing located on the western site boundary. The proposed access will ultimately form the 3rd leg of a roundabout controlled intersection with the Estate Road and the future connection to Oakdale South. The access is proposed with a clear width of 11.5 metres and can accommodate simultaneous access by vehicles up to and including 26.0m B-Doubles.

All proposed accesses either meet or exceed (are superior to) the minimum requirements of AS2890.2 and are supportable. A swept path analysis has been undertaken in accordance with AS2890.2 and is provided in Appendix B which demonstrates compliance with the relevant standards.

8.3 Internal Design

The internal design of all buildings comply with the requirements of AS 2890.1 (2004) and AS 2890.2, with the following characteristics considered noteworthy:

8.3.1 Car Park Design

- All staff and visitor parking spaces exceed (are superior to) the requirements for a Class 1A user under AS2890.1. In this regard the design includes the provision of a minimum space length of 5.4m a minimum width of 2.5m and a minimum aisle width of 6.2m.
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with Figure 2.3 of AS2890.1.
- All disabled parking spaces are designed in accordance with AS2890.6. Spaces are provided with a clear width of 2.4m and located adjacent to a minimum shared area of 2.4m.
- Appropriate visual splays are to be provided in accordance with the requirements of Figure 3.3 of AS2890.1 at all accesses.
- A swept path analysis of all critical movements has been undertaken to confirm geometry and compliance with the relevant standards. The swept path assessment is included in Appendix B.

8.3.2 Internal Circulation and Access

- The internal hardstand area of Lot 1C has been designed to allow for two-way circulation along the eastern site boundary in close proximity to the majority of service docks. A one-way circulation roadway (accessed via the western driveway) is also proposed to provide access to the western and northern building facades. Appropriate signposting and line marking will be provided and will clearly outline appropriate circulation paths and internal intersection priorities.

- Lot 2B has been designed to allow two way circulation along the eastern and western boundaries however only one-way westbound flow is permitted along the southern site boundary. This allows for flexibility in access and the internal traffic management for any future tenant.

- Lot 3 is designed with a one-way clockwise circulation only and can accommodate all vehicle types including B-doubles.

8.3.3 Service Area Design

- The internal design of the service areas have been undertaken in accordance with the requirements of AS28090.2 for the maximum length vehicle accessing each dock. A swept path analysis has been undertaken to confirm compliance.

- A minimum clear head height of 4.5m is provided within all areas traversed by service vehicles.

- All ramps have been tested in accordance with Section 3.3.3 of AS2890.2 and are considered satisfactory.

- A minimum bay width of 3.5m is provided for all service bays.

- A swept path analysis has been undertaken as permissible under AS2890.2 and confirms the internal design. The swept path assessment is included in Appendix B.

In summary the internal configuration of the car park and loading areas comply with the relevant requirements of both AS2890.1 and AS2890.2. Notwithstanding the above, it is expected that a condition of consent can be imposed requiring compliance with AS 2890.1 (2004) and AS 2890.2 (2002) and any minor adjustments which may be required (if any) can be made at construction certificate stage.

8.3.4 Estate Road Roundabout

The proposal includes the construction of a roundabout controlled intersection at the western extent of the Estate Access road within the Penrith Council LGA. As a result of consultation with Penrith Council and the RMS it is proposed that this be designed in accordance with the requirements of Austroads however be constructed as a turning head only until such time that development to the south warrants the full development of the intersection. Reference should be made to the engineering plans prepared by AT&L which demonstrate the ultimate and interim layout.

9. Public Transport & Cycleway Linkages

9.1 Achieving Target Mode Splits

The strategy to improve public transport facilities will be enhanced once the WSEA road network is further developed and in particular the completion of the Wallgrove Road upgrade. These improved public transport facilities will assist in achieving a realistic shift from private car usage. The following sections provide an overview of the existing public transport facilities and potential improvements that may be provided.

9.2 Bus Services

The existing bus services within the vicinity of Oakdale Central are shown in **Figure 10**. It is evident that the site is not currently serviced by the existing bus network, generally due to the lack of employment in the area at this time.

The 738 bus services Mt Druitt to Eastern Creek Business Park terminating at Roberts Road/Capicure Road which is approximately 1.5km from Oakdale Central and adjacent to the Coles Myer Distribution Centre. This services represents the most “usable” service for the site at this time.

9.2.1 Bus Opportunities

The Northern Link Road will provide a key infrastructure upgrade enabling the development of public transport and in particular bus services within WSEA. Discussions undertaken by PB with Transport NSW in July 2010 indicated that the construction of the Northern Link Road will provide the opportunity to extend current routes further into the Western Sydney Employment Hub. This is consistent with the NSW Service Planning Guidelines (NSW Ministry of Transport 2006) which identifies Regional Centres including Penrith and Mt Druitt for increased services and frequencies in the future.

The development within the Oakdale Central Precinct is insufficient to necessitate the required demand for additional bus services in the locality on its own. As such, until such time that the lands

south of the pipeline are developed to a level of higher density no specific services are likely to be provided.

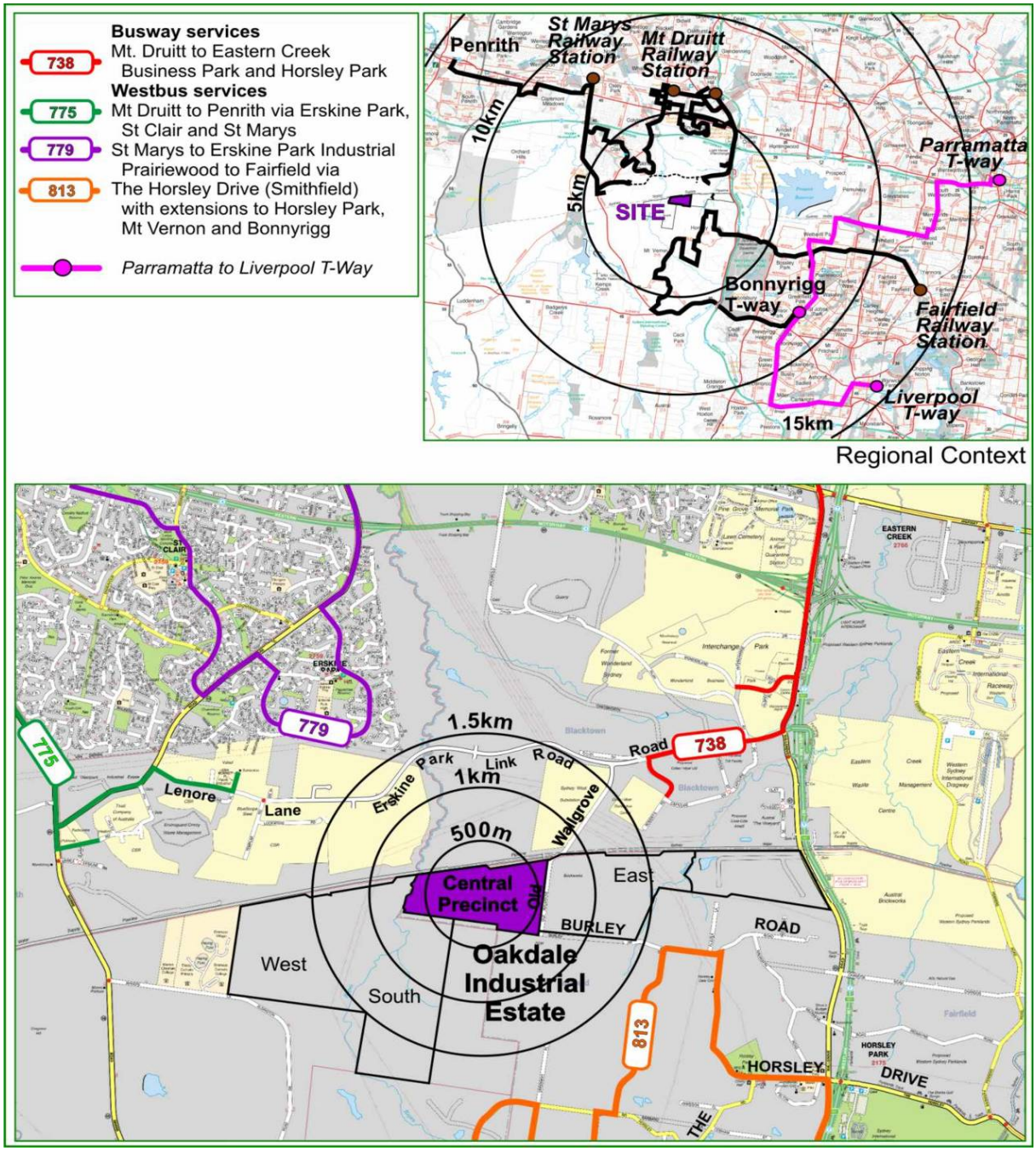


Figure 10: Bus Services

9.3 Rail Services

Railway Stations are located at St Marys and Mt Druitt to the north and north-west of Oakdale Central. **Figure 11** illustrates the location of railway stations in a regional context.

9.3.1 Rail Opportunities

The metropolitan Transport Plan produced in 2010 incorporated ten year funding which intends to provide a $4.5 billion Western Express City Rail Service. This service intends to significantly reduce commuting times between Western Sydney and the city. The project includes the construction of a new 5 kilometre priority tunnel linking Central Station with Redfern Station, Town Hall and Wynyard. This will allow express services from the Richmond, Penrith, Blacktown and Parramatta to the Sydney CBD.

This will however have only a minor impact on accessibility of the site to rail services without the provision of bus services linking the WSEA with these stations. It is however envisaged that a consolidated regional assessment would be undertaken as part of this proposal to ensure that accessibility to these improved service is provided to employment areas within Greater Western Sydney.

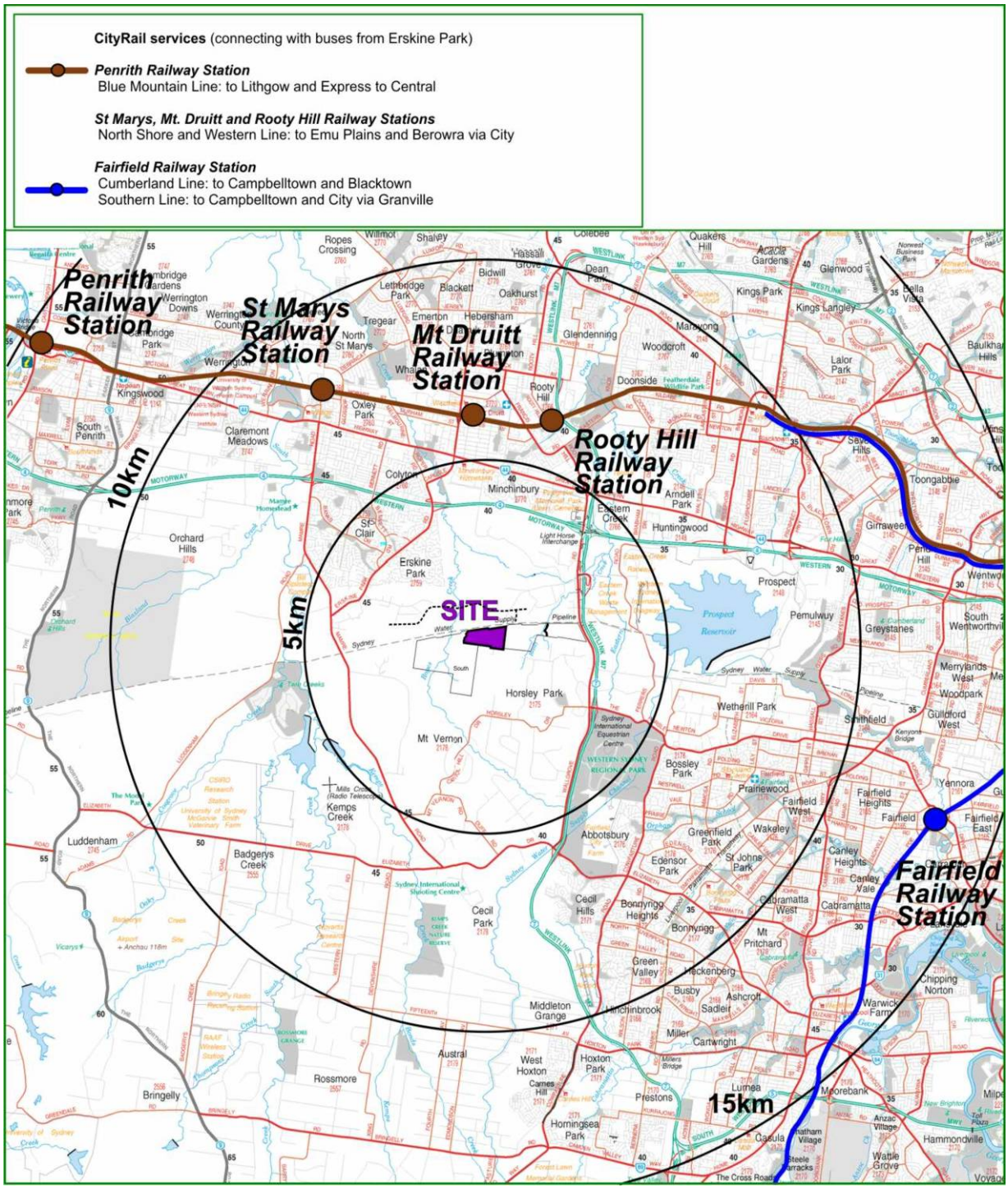


Figure 11 Rail Services

9.4 Cycling

The NSW Government's Metropolitan Plan for Sydney 2036 published in 2010, outlines the following objectives:

- The RMS in cooperation with local government is to continue to upgrade walking and cycling facilities; and
- That future planning of walking and cycling networks should be developed to ensure appropriate linkages with both existing and proposed public transport routes with the aim of improving overall network connectivity.

These objectives have been adopted in the NSW Bike Plan (2010) which outlines a ten-year bicycle infrastructure implementation schedule to improve the existing accessibility to local and regional bike networks. The plan states the RMS will provide on an average $5 million in 50/50 funding each year for the upgrade of cycleways and shared paths to local Councils. Additionally, the NSW Bike Plan seeks to deliver cycleways as an integrated component of road upgrades.

The existing and proposed cycle network upgrades in the vicinity of the site are outlined in **Figure 12**.

9.4.1 Cycling Opportunities

Cycleway / shared path upgrades are proposed on Lenore Drive and on Horsley Drive in Horsley Park. These will provide links to existing commercial centres and the M7 motorway and provide a framework for the future cycleway development. It is noted that future cycleway development is dependent on future road construction and progressive development of the region.

In particular the existing M7 shared path which runs parallel to the M7 motorway between Prestons and West Baulkham Hills with an overall length of 40 kilometres provides extensive opportunities to implement future cycle networks in accordance with the objectives of the NSW Bike Plan. There are existing connections in the vicinity of the site at The Horsley Drive, Redmayne Road, Chandos Road, The Austral Bricks access road, Wallgrove Road and Old Wallgrove Road. These connections provide a basis for potential future cycleway upgrades linking the WSEA.

The provision of adequate bicycle facilities for all future developments within the Oakdale Central Precinct will further encourage the use of the existing networks and will assist in the reduction of trips associated with private vehicles for the journey to work.

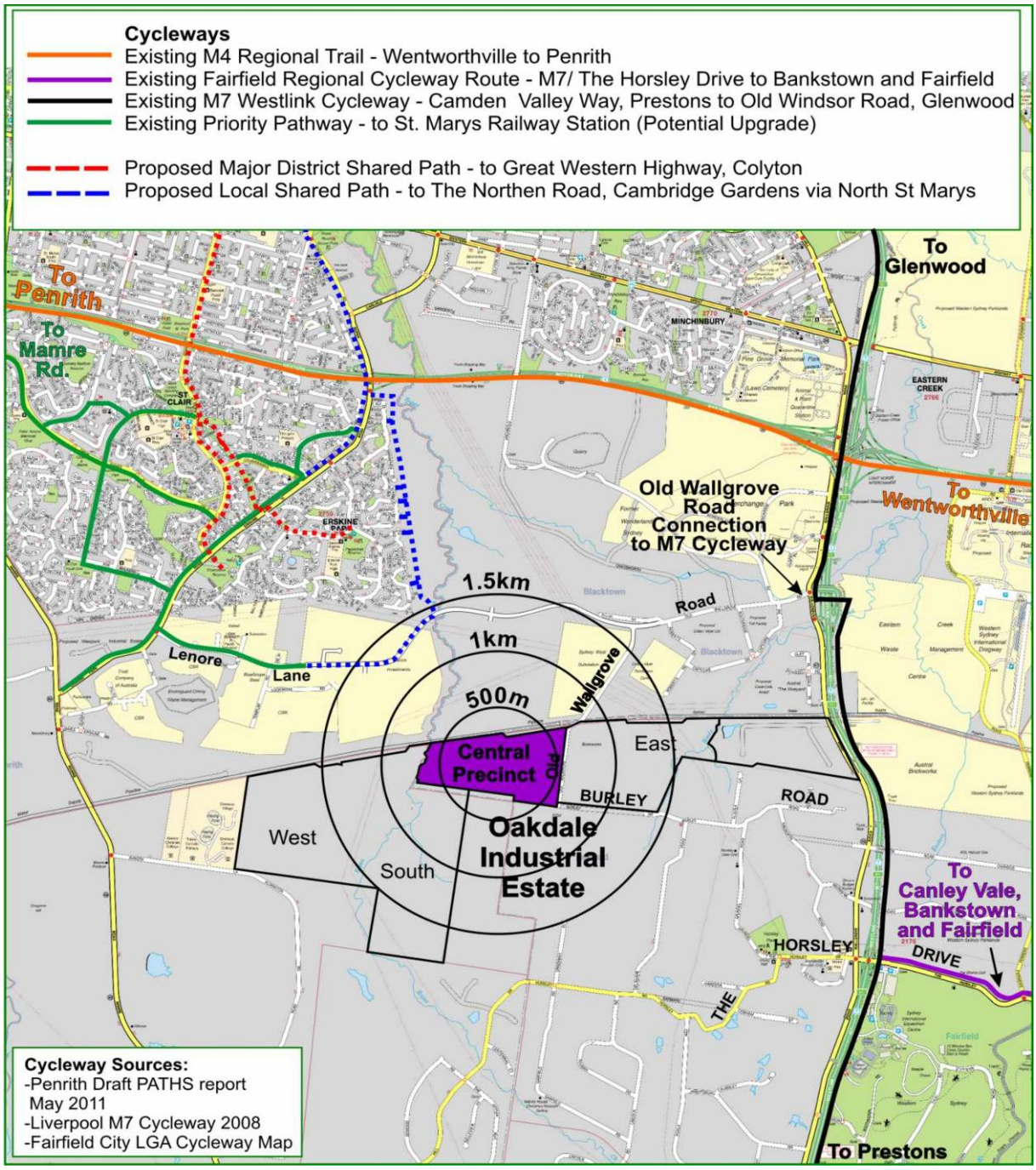


Figure 12: Cycleway

9.5 Workplace Travel Plan

A Workplace Travel Plan (WTP) is the term used to describe the package of measures required by a development to promote alternative travel choices whilst reducing private vehicle usage. The WTP requires the implementation of initiatives and targets that will enable the precinct to reduce the impact of transport on the nearby environment. Such a plan is recommended to achieve the objectives of relevant state government goals, progressively over time, given the relative isolation of the subject site with respect to public transport, both now and in the future. A suitable condition requiring this plan to be prepared and to be reviewed every five years is therefore considered appropriate. The plan will therefore be able to evolve in line with the ongoing development of the WSEA and the progressive implementation of public transport and other infrastructure improvements. The plan should be issued to all staff and provided in common areas and should include a Travel Information Pack as part staff induction procedures. The following initiatives should be considered:

- Local bus network maps and timetables;
- Rail network maps and timetables;
- Cycle route maps;
- Location of critical services within walking distances; and
- Taxi contact numbers.

In addition, the opportunity exists to implement initiatives to further reduce car dependency. Initiatives implemented at similar developments which have resulted in a demonstrated reduction in car trips include:

- Promoting a car-pooling scheme for work related journeys;
- Staff sharing scheme for fleet vehicles;
- Use of taxis for work related journeys;
- Provision of a mini-bus facility and interchange area;
- Possible shuttle bus services from railway stations;

- Providing staff with a discount or subsidy on public transport costs;
- Employee cycling allowance; and
- Provision of on-site facilities, which may include change rooms, showers, lockers and storage facilities, to encourage cycling and walking as a mode of transport.

The implementation of a shuttle bus services from nearby railway stations or bus interchanges and the encouragement of car-pooling is a realistic method of reducing private vehicle usage given the overall accessibility to public transport. It is however acknowledged that the implementation of such services would be the responsibility of tenants. Having regard for the above, it is expected that a Workplace Travel Plan for staff would be prepared for all developments within the precinct, prior to issue of an occupation certificate. The transport options currently available to commuters are inhibited by a lack of development within the area and the progressive construction of the surrounding infrastructure. Viable public transport services in the immediate vicinity of the site are not expected until such time that construction of vital road networks such as the Wallgrove Road upgrade are completed.

10. Conclusions

In summary:

- The future generation of the site is anticipated to be in the order of 245 – 300 veh/hr during peak periods as discussed in Section 7 of this report. The impacts of this application have been assessed having regard for the committed infrastructure upgrades in the locality currently being reviewed by the Department of Planning and Infrastructure. In this regard, the modelling undertaken by the relevant authorities associated with these upgrades takes full account of the Oakdale Precinct traffic generation (including the developments that form part of this application) and as such the results of these assessments have been relied upon. This approach was discussed and endorsed by the RMS. The analysis undertaken by the Department demonstrates that the generation of the Oakdale Precinct can be accommodated with the key intersections in the locality to operate at a satisfactory level of service and with acceptable delays in 2021 and 2031. Accordingly, the traffic generation of the developments proposed under this application are considered supportable.

- The provision of parking for all lots either complies with or exceeds the requirements set out in the Oakdale Central Concept Plan approval. It is noted that the proposal includes the provision of 51 parking spaces as "provisional parking" with these spaces located within the hardstand area (11 in Lot 1C and 40 in Lot 2B). These spaces are not considered necessary based on tenant enquires for this and similar developments in the locality. However, in the event that any future tenant does require parking in excess of that initially provided, these provisional spaces would be line marked and used by staff as necessary and ensure full compliance with the Concept Plan approval is met.

- It is proposed as part of this application to upgrade Old Wallgrove Road ultimately to a four lane sub-arterial road connection between the Estate Access Road and the intersection with Lenore Drive. The proposal is in response to the GHD strategic modelling results as discussed in Section 7.4. The design therefore makes allowances for the future intersections of the Oakdale Estate Road with Old Wallgrove Road and the future north-south connection through the Jacfin lands and Old Wallgrove Road.

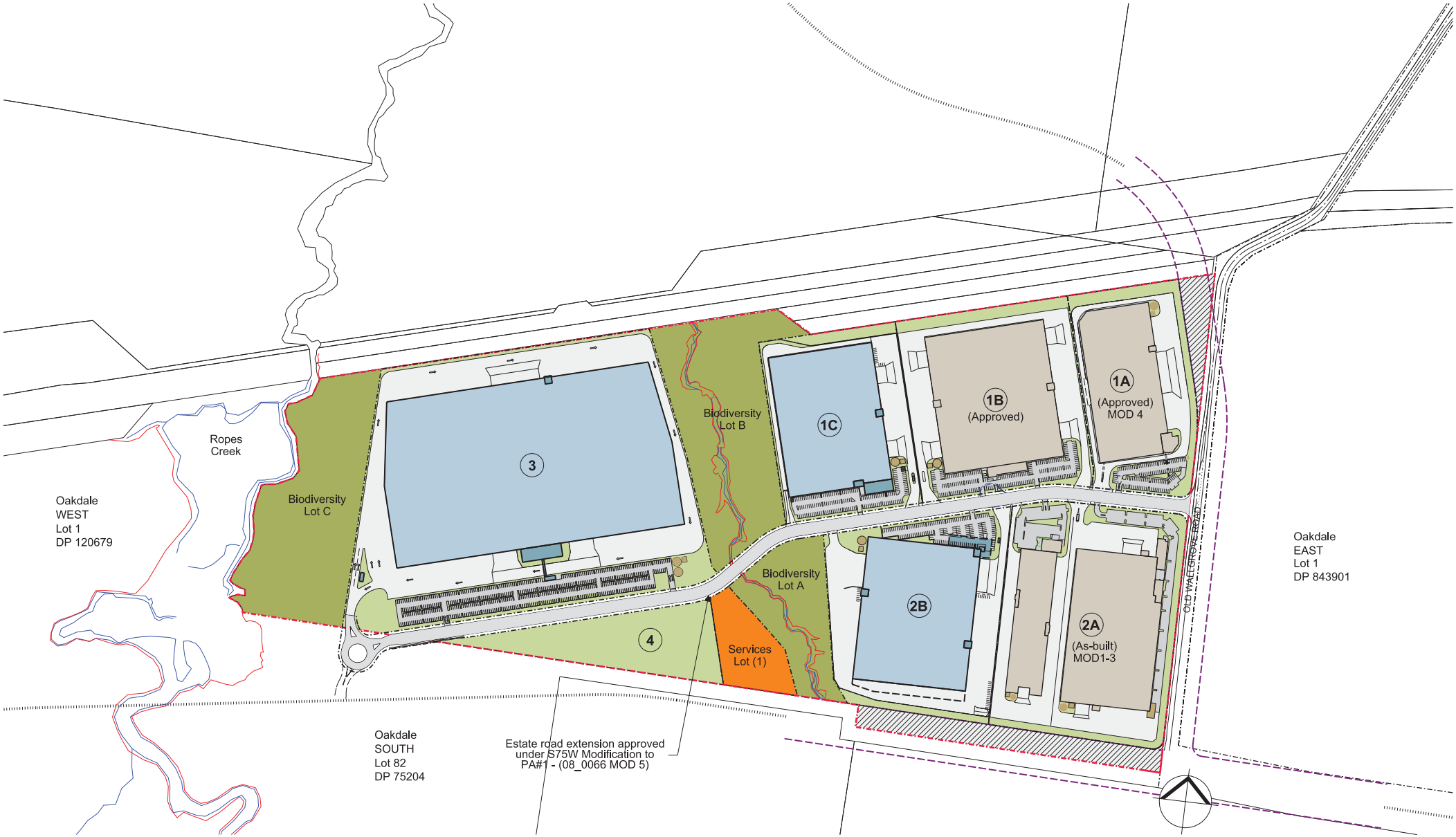
- The application seeks approval for the construction of a roundabout controlled intersection at the western extent of the Estate Access Road. The proposed roundabout lies within the Penrith City Council LGA and subsequent to consultation with Council's engineers, it is proposed that the intersection be constructed as a turning head only until such time that the future southern connection to Oakdale South is required, and

- The internal design aspects comply fully with the requirements of AS2890.1 and AS2890.2 and are therefore considered supportable. Notwithstanding, it is envisaged that a condition of consent will require compliance with the relevant standards and as such any non compliances or other design issues identified by the Department or Council can be amended prior to the issue of the relevant Construction Certificates.

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

Appendix A

Reduced Plans



SBA ARCHITECTS

Oakdale CENTRAL Proposed Industrial Facilities - Lot 1C, 2B, and 3

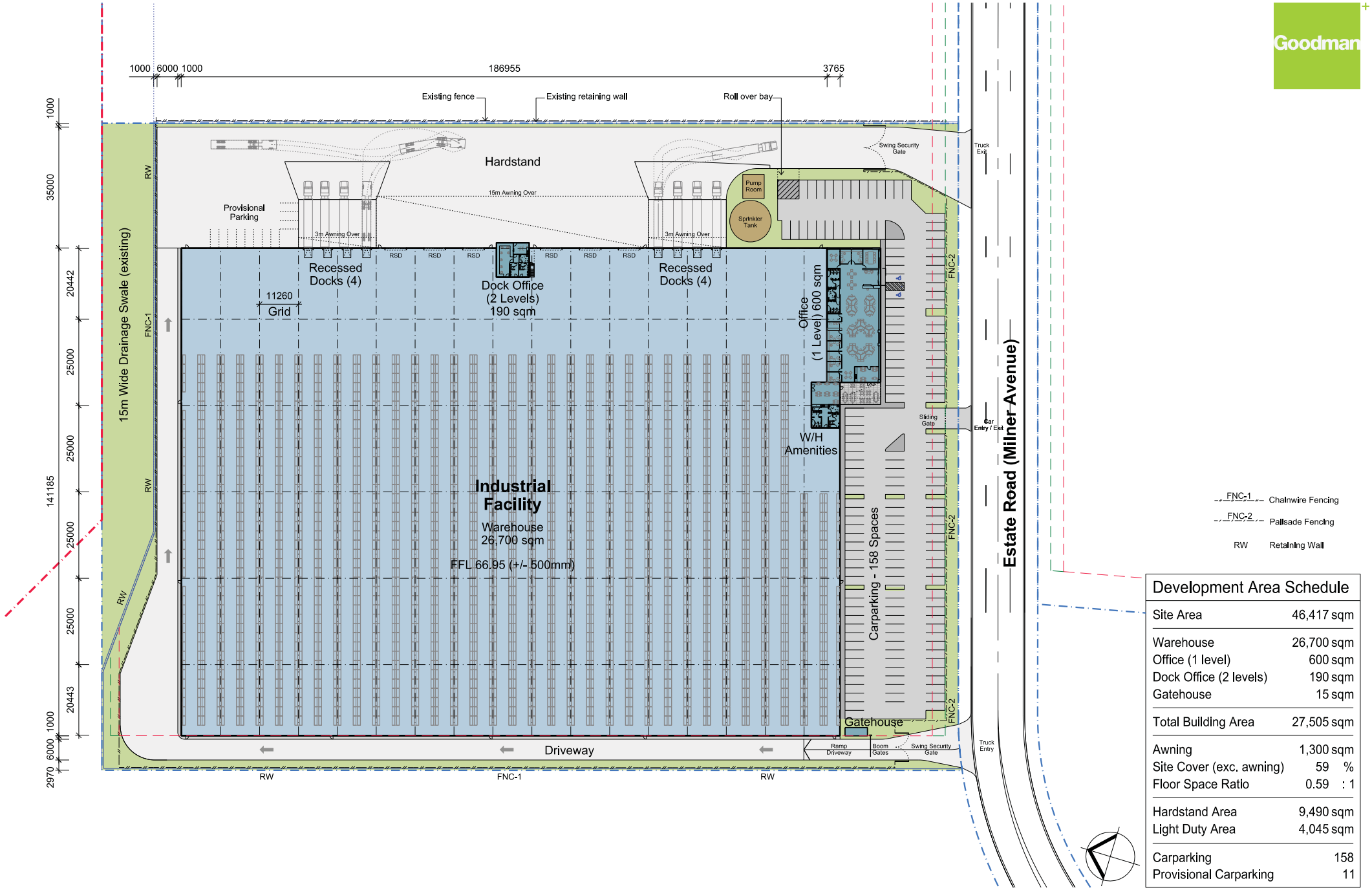
Horsley Park

Estate Masterplan

1:2500 @ A1
1:5000 @ A3

09 Oct 2013

OAK DA 02 (E)



FNC-1 Chainwire Fencing

FNC-2 Palisade Fencing

RW Retaining Wall

Development Area Schedule

Site Area	46,417 sqm
Warehouse	26,700 sqm
Office (1 level)	600 sqm
Dock Office (2 levels)	190 sqm
Gatehouse	15 sqm
Total Building Area	27,505 sqm
Awning	1,300 sqm
Site Cover (exc. awning)	59 %
Floor Space Ratio	0.59 : 1
Hardstand Area	9,490 sqm
Light Duty Area	4,045 sqm
Carparking	158
Provisional Carparking	11

SBA ARCHITECTS

Oakdale CENTRAL

Horsley Park

Proposed Industrial Facility - Lot 1C

Site Plan / Floor Plan

1:500 @ A1
1:1000 @ A3

16 Oct 2013

OAK 1C DA 10 (G)

Development Area Schedule	
Site Area	60,010 sqm
Warehouse	29,480 sqm
Stage 3	2,050 sqm
Office (1 level)	1,000 sqm
Office entry	100 sqm
Dock Office 1 (2 levels)	190 sqm
Dock Office 2 (2 levels)	190 sqm
Gatehouse	15 sqm
Total Building Area	33,025 sqm
Awning	3,365 sqm
Site Cover (exc. awning)	55 %
Floor Space Ratio	0.55 : 1
Hardstand Area	20,175 sqm
Light Duty Area	3,541 sqm
Carparking	154
Provisional Carparking	40

SBA ARCHITECTS

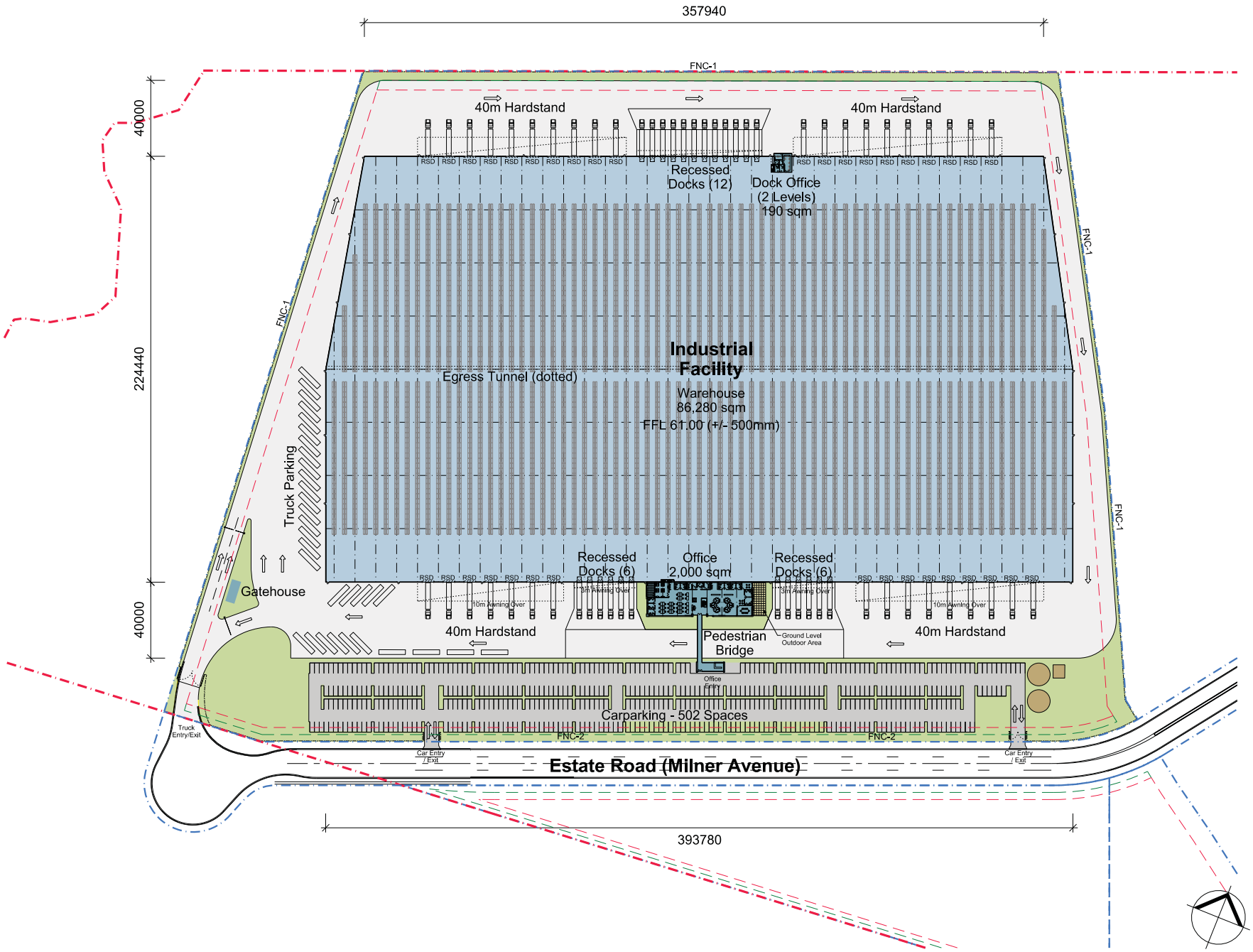
Oakdale CENTRAL — Proposed Industrial Facility - Lot 2B — **Site Plan / Floor Plan**

Horsley Park

1:500 @ A1
1:1000 @ A3

16 Oct 2013

OAK 2B DA 20 (G)



Development Area Schedule		
Total Lot 3 Site Area	155,900	sqm
Warehouse	86,280	sqm
Office	2,000	sqm
Dock Office	190	sqm
Total Building Area	88,470	sqm
Site Cover (exc. awning)	56	%
Floor Space Ratio	0.56	: 1
Total Hardstand Area	43,415	sqm
Total Light Duty Area	12,774	sqm
Carparking	502	

SBA ARCHITECTS

Oakdale CENTRAL — Horsley Park

Proposed Industrial Facility - Lot 3

Site Plan / Floor Plan

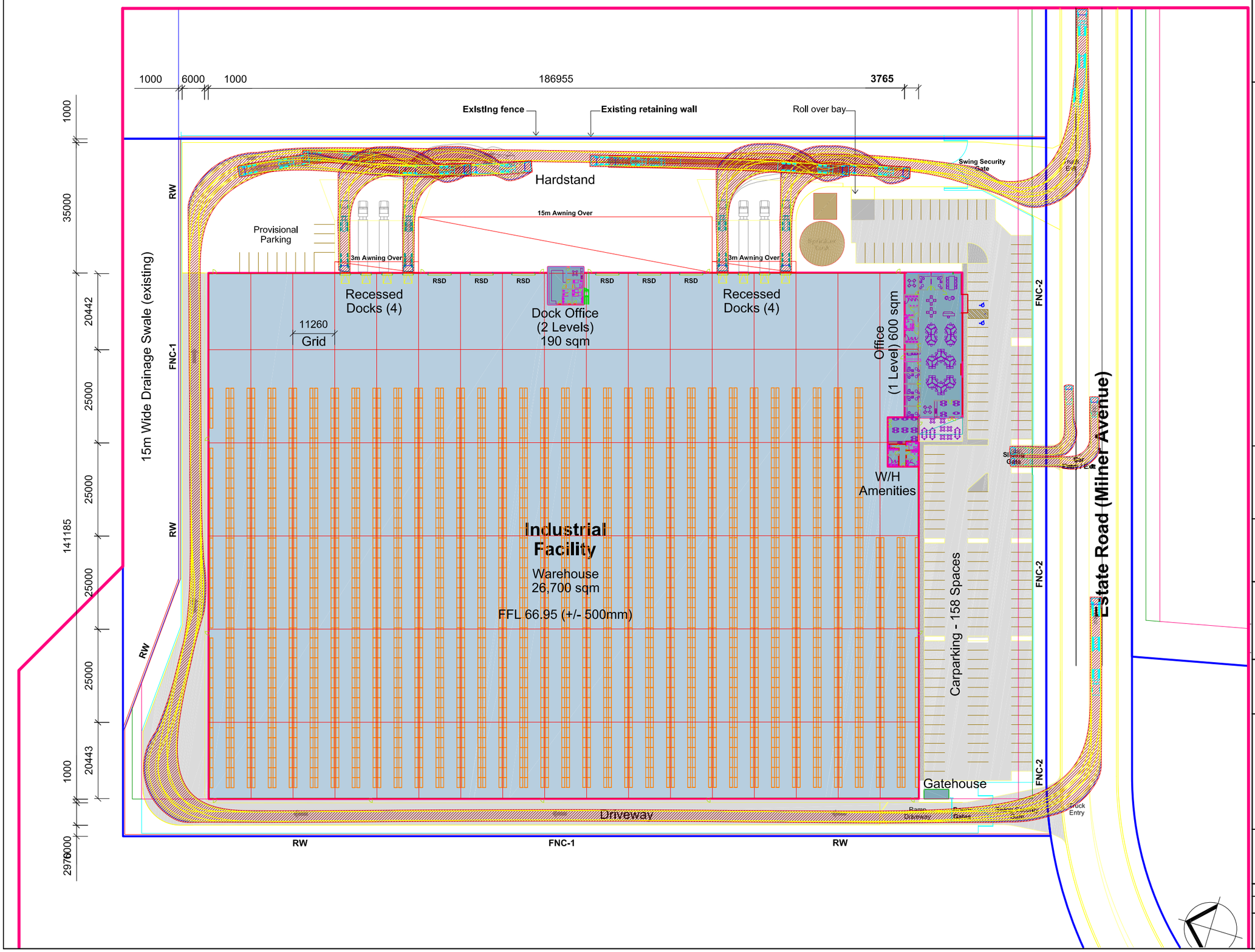
1:1000 @ A1
1:2000 @ A3

16 Oct 2013

OAK 3 DA 30 (E)

Appendix B

Swept Path Analysis



notes

This drawing is prepared for information purposes only. It is not to be used for construction.

no.	revision note	by.	date

architect

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North Sydney NSW 2060

client

Goodman Property Services (Aust) Pty Ltd
Level 17, 60 Castlereagh Street
Sydney NSW 2000

scale

1:1000 @ A3

0m 10 20 30 40

project

Proposed Warehouse Development
Oakdale Horsley Park

drawing prepared by

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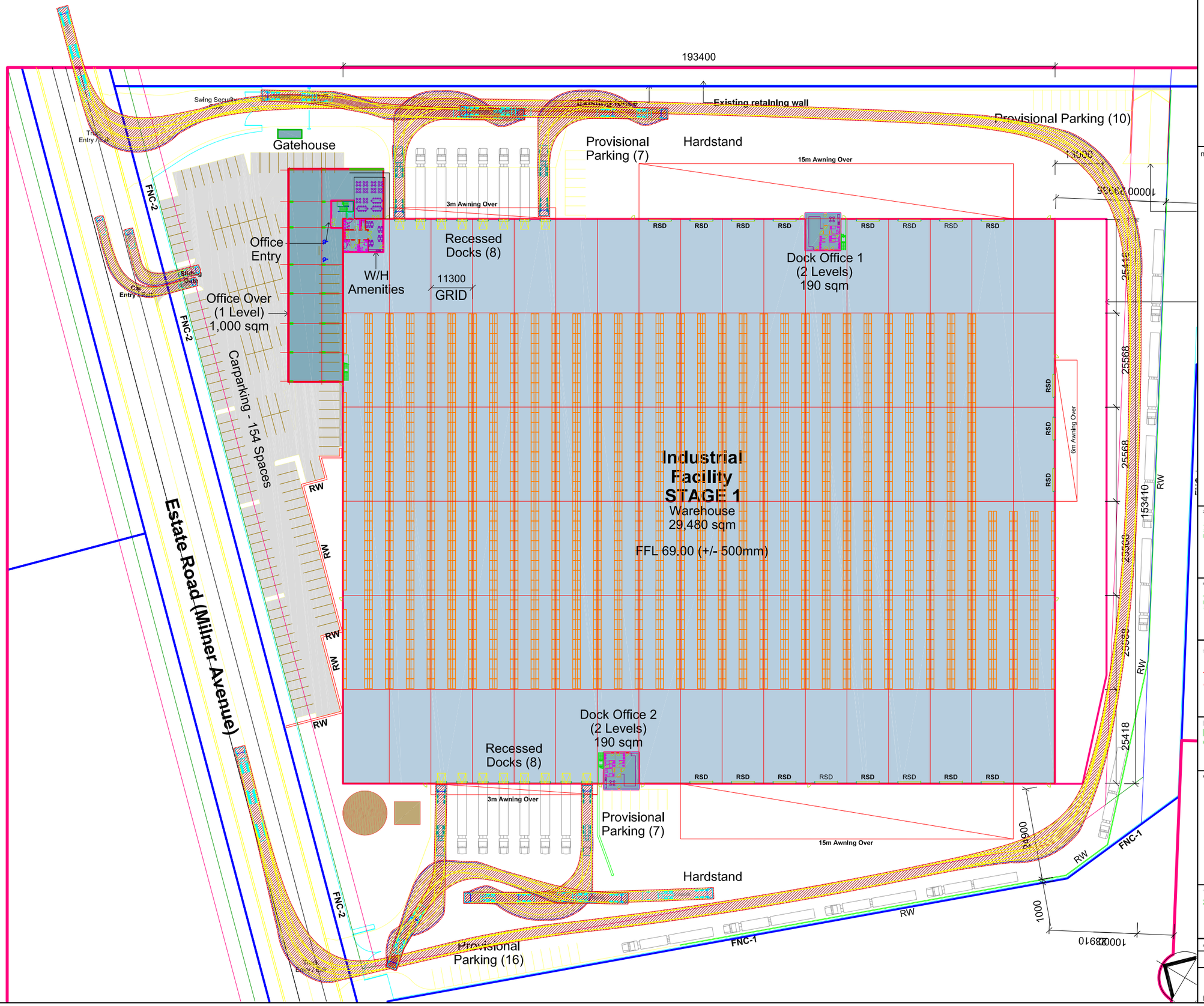
drawing title

Site 1C - Swept Paths

drawn:	checked:	date:
MR	-	21/10/13

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



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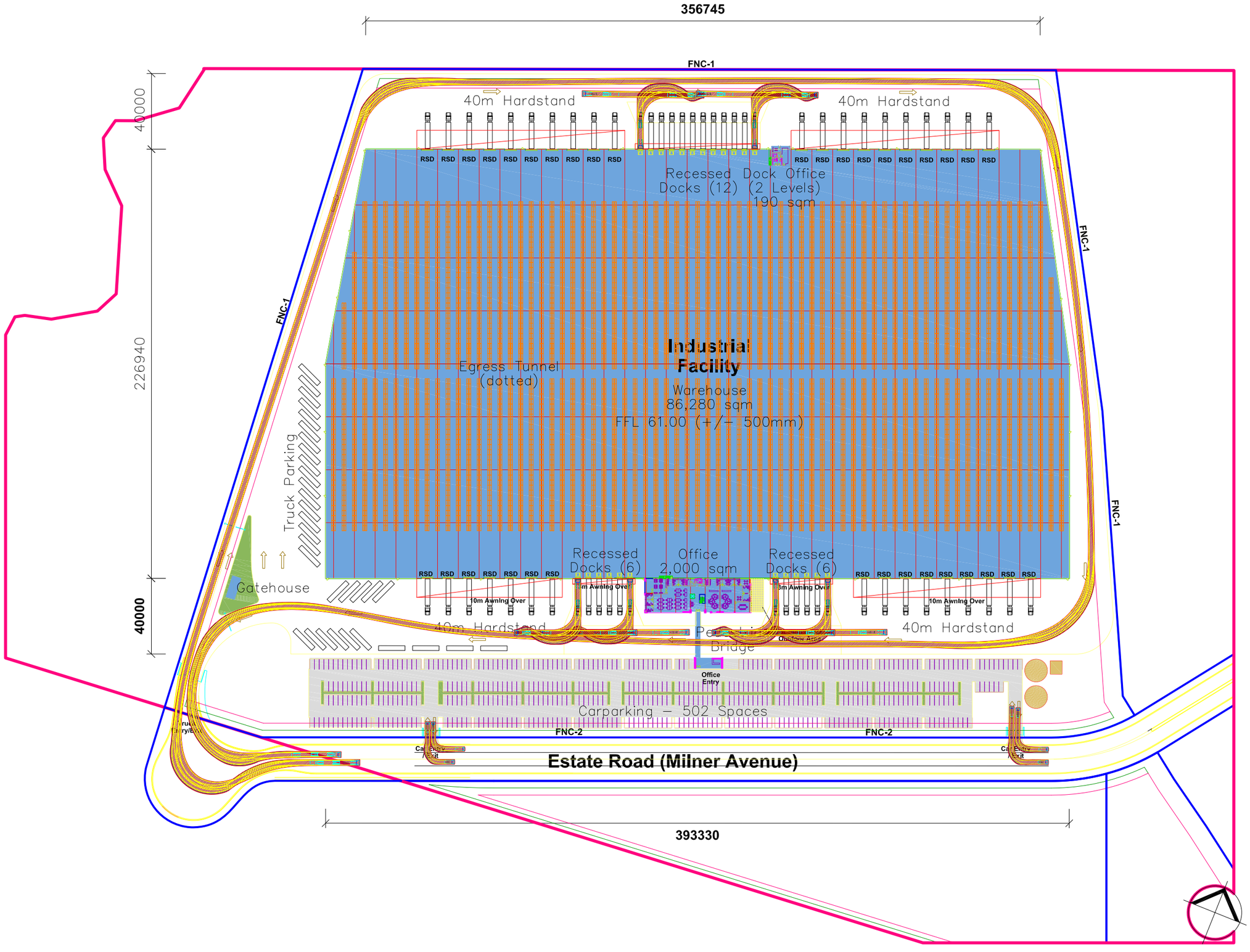
traffix
traffic & transport planners

drawing title

Site 2B - Swept Paths

drawn:	checked:	date:
MR	-	21/10/13

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



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no.	revision note	by.	date

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traffix
traffic & transport planners

drawing title

Site 3 - Swept Paths

drawn:	checked:	date:
MR	-	21/10/13

project no.	drawing phase.	drawing no.	rev
13.282	-	TX.03	-