

DEXUS PROPERTY GROUP

TRAFFIC REPORT FOR PROPOSED  
MODIFICATIONS OF THE PROJECT  
APPROVAL FOR DEXUS ESTATE,  
SOUTHERN EMPLOYMENT LANDS,  
GREYSTANES

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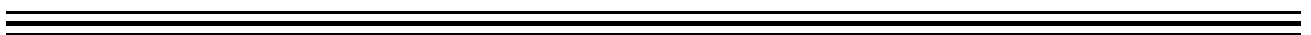
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## 1. INTRODUCTION

- 1.1 Colston Budd Hunt & Kafes Pty Ltd has been commissioned by Hansen Yunken Pty Ltd on behalf of Dexus Property Group to assess the traffic aspects of the proposed modifications of the project approval for the Dexus Estate, located within the Southern Employment Lands at Greystanes (Greystanes SEL). The Greystanes SEL is located within the Greystanes Industrial Estate (identified for development under the framework of SEPP59 Western Sydney Employment). The site location is shown on Figure 1.
- 1.2 The approved masterplan for the industrial park, located on the 47 hectare portion of the Greystanes SEL, included some 220,865m<sup>2</sup> warehouse, some 20,900m<sup>2</sup> office with associated road works, including the provision of three signalised intersections on Reconciliation Drive. Construction of the Dexus Estate has commenced on a number of warehouse developments with several developments completed within Precincts A and B.
- 1.3 This report assesses the traffic aspects of the proposed modifications to Precinct C of the approved masterplan. The proposed changes include the reconfiguration of industrial lots within Precinct C and the deletion of a section of Bellevue Circuit between Basalt Road and Reconciliation Drive, located adjacent to Precinct C. The proposed modifications result in an increase in warehouse area for Precinct C of some 6,372m<sup>2</sup> and a reduction in office and ancillary retail/café area of some 320m<sup>2</sup>.
- 1.4 The regional and local traffic effects of the Greystanes SEL have previously been assessed through a number of studies. These include:-
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- ❑ Regional Transport Requirements for Boral's Greystanes Estate (Sinclair Knight Merz, 1999);
  - ❑ Greystanes Estate Transport Plan (Environmental Resources Management Australia, 2000);
  - ❑ Boral Greystanes Estate, Local Traffic Study (Sinclair Knight Merz, 2001);
  - ❑ Greystanes Estate, Southern Employment Land Traffic and Transport Assessment, (Sinclair Knight Merz, 2006); and
  - ❑ Traffic Review of Proposed DEXUS Estate Masterplan, Southern Employment Lands, Greystanes, (Colston Budd Hunt & Kafes Pty Ltd, 2009).

1.4 The traffic aspects of the proposed modifications of the project approval for the Dexus Estate are assessed through the following chapter.

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## 2. TRAFFIC ASPECTS

- 2.1. The Greystanes SEL is located on the former Prospect Quarry within the Greystanes Industrial Estate, in Western Sydney, as shown on Figure 1. The Greystanes Estate is approximately 330 hectares and comprises the Northern Employment Lands (Greystanes NEL), Residential Lands (Nelson's Ridge), Southern Employment Lands (Greystanes SEL) and open space. The Greystanes SEL occupies a total area of some 156 hectares.
- 2.2. To the north of the site is the predominantly established Greystanes NEL, comprising warehouse/distribution centres and the Boral office building. Total development within the Northern Employment Lands will comprise some 245,000m<sup>2</sup>.
- 2.3. The approved masterplan for the industrial park included some 220,865m<sup>2</sup> warehouse, some 20,900m<sup>2</sup> office with associated road works, including the provision of three signalised intersections on Reconciliation Drive. Construction of the Dexus Estate has commenced on a number of warehouse developments with several developments, completed within Precincts A and B.
- 2.4. The main access to the Greystanes Estate is provided via a north-south spine road through the estate (Reconciliation Drive). This road combines with Prospect Highway to connect to the M4 Western Motorway and the Great Western Highway located to the north of the estate. Currently Reconciliation Drive terminates south of Butu Wargun Drive within the Greystanes SEL. It has been constructed as a divided carriageway with one to two traffic lanes in each direction, clear of intersections. The intersections of Reconciliation Drive with
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Prospect Highway/Reservoir Road and the M4 on/off ramps are controlled by roundabouts.

- 2.5. Butu Wargun Drive and Foundation Place are internal access roads within the estate, servicing warehouse/distribution centres located within the Greystanes NEL. These roads provide undivided roads with one traffic lane and one parking lane in each direction, clear of intersections. Butu Wargun Drive and Foundation Place intersect with Reconciliation Drive at roundabout controlled intersections.
- 2.6. In association with the development of the Greystanes SEL, Reconciliation Drive will be extended to connect to Widemere Road, located to the south of the estate. It will be upgraded to provide a divided carriageway, with two traffic lanes in each direction and right turn lanes provided to improve safety and intersection capacity. The main intersections within the estate will be signalised. The intersections of Prospect Highway with Great Western Highway, M4 Motorway and Reservoir Road will be upgraded to cater for development traffic.
- 2.7. As part of the redevelopment of the Greystanes SEL, a bus transitway will be provided along Reconciliation Drive, connecting Blacktown with the Liverpool to Parramatta Bus Transitway.
- 2.8. The traffic aspects of the proposed modifications to Precinct C are assessed, through the following sections:-
- ❑ proposed modifications;
  - ❑ internal road network;
  - ❑ access arrangements;
  - ❑ parking provision;
  - ❑ b-double routes;
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- ❑ pedestrian network;
  - ❑ cycle network;
  - ❑ traffic generation and effects; and
  - ❑ summary.

### Proposed Modifications

- 2.9. The proposed modifications within Precinct C include the reconfiguration of industrial lots and the deletion of a section of Bellevue Circuit between Basalt Road and Reconciliation Drive, located adjacent to Precinct C. The proposed modifications result in an increase in warehouse area for Precinct C of some 6,372m<sup>2</sup> and a reduction in office and ancillary retail/café area of some 320m<sup>2</sup>.
- 2.10. The proposed modifications, shown on plans prepared by Concept Architecture Pty Ltd, include the following:-
- ❑ subdivision of individual sites within Precinct C;
  - ❑ construction of internal estate roads and site services;
  - ❑ earthworks; and
  - ❑ construction and use of industrial/warehouse facilities.
- 2.11 Access to Precinct C will be provided via the construction of internal estate roads and the extension and upgrade of Reconciliation Drive through the Greystanes SEL. Reconciliation Drive will be extended to the south to connect into the Wetherill Park Industrial Area via Widemere Road. Intersections along Reconciliation Drive within the Greystanes SEL will be controlled by traffic signals. Boral will undertake these works within the Greystanes SEL, in accordance with the Deed of Agreement.
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- 2.12 The transport assessment for the Greystanes SEL has previously been prepared in association with the approved concept plan and approved masterplan for the Dexus Estate. The reports concluded that the surrounding road network, incorporating the proposed road improvements would operate at appropriate levels of service.

#### Internal Road Network

- 2.13 The internal road network within the Greystanes SEL is shown on Figure 2. The road network incorporates a logical hierarchy of road functions and appropriate design to facilitate vehicle, pedestrian and cycle activity.
- 2.14 In accordance with the approved masterplan and the Deed of Agreement, Reconciliation Drive will be extended to connect to Widemere Road, located to the south of the estate. It will be upgraded to provide a divided carriageway, with two traffic lanes in each direction and right turn lanes provided to improve safety and intersection capacity. The three main intersections within the estate will be signalised. The intersections of Prospect Highway with Great Western Highway, M4 Motorway and Reservoir Road will be upgraded to cater for development traffic. These works will be undertaken by Boral, in accordance with the deed.
- 2.15 As part of the redevelopment of the Greystanes SEL, a bus transitway will be provided along Reconciliation Drive connecting Blacktown with the Liverpool to Parramatta Bus Transitway.
- 2.16 The estate access roads within the subject site include Bellevue Circuit and Basalt Road. Bellevue Circuit provides an undivided industrial road, with one traffic lane and one parking lane in each direction, clear of intersections. It circulates through the northern and eastern parts of the estate, providing access to the industrial developments. In association with the proposed modifications to Precinct C,
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Bellevue Circuit provides a loop road between Reconciliation Drive (southern boundary of Precinct A) and Basalt Road (southern boundary of Precinct B). The intersection of Reconciliation Drive and Bellevue Circuit will be controlled by traffic signals. The intersection of Basalt Road and Bellevue Circuit is controlled by a roundabout.

- 2.17 Basalt Road provides the main east-west access road through the estate linking Bellevue Circuit to Reconciliation Drive. It incorporates a divided road with one traffic lane and one parking lane in each direction, clear of intersections.
- 2.18 The internal road network within the estate has been designed to accommodate industrial traffic, including b-doubles. These arrangements are considered appropriate to provide efficient and appropriate access to the industrial development within the estate.

#### Access Arrangements

- 2.19 The proposed access arrangements for the various industrial developments within the estate will be designed to cater for the swept paths of service vehicles, including articulated vehicles and b-doubles. For the larger warehouse distribution centres, separate access driveways will be provided for staff/visitor parking and industrial traffic.
- 2.20 The final access arrangements will be determined at the time of the development applications for the individual sites, with access arrangements being designed in accordance with Australian Standards for Off-street car parking facilities (AS2890.1-2004) and Off-street commercial vehicle facilities (AS2890.2-2002).
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- 2.21 As discussed with Council and RTA, the proposed access arrangements to Lots 9, 10 and 11 within Precinct C, will be provided via a driveway onto Basalt Road and via the southern part of Bellevue Circuit (signalised intersection onto Reconciliation Drive). A through-site access will be provided between these two access driveways.
- 2.22 In regards to the proposed access driveway onto Basalt Road, it is proposed to provide a break in the median to provide for right turn entry movements into the site. The proposed access driveway will provide appropriate sight lines for entering and exiting traffic and will be designed in accordance with Australian Standards for Off-street commercial vehicle facilities (AS2890.2-2002).

#### Parking Provision

- 2.23 Car parking provision within the Greystanes SEL will be determined at the time of the development applications for the individual sites. Car parking will be provided in accordance with the following approved parking rates:-
- ❑ Warehouse
    - one space per 300m<sup>2</sup> GFA;
  - ❑ Commercial
    - one space per 40m<sup>2</sup> GFA; and
  - ❑ Café
    - one space per 20m<sup>2</sup> GFA.

#### B-Double Routes

- 2.24 Roads within the area approved for use by 25 and 26 metre b-doubles include the M4 Motorway, Great Western Highway, Prospect Highway, Blacktown Road,
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Reservoir Road, Reconciliation Drive, Widemere Road, Davis Road and Hassall Street. The approved routes are shown in Figure 3.

- 2.25 In association with the development of the Greystanes SEL and the extension and upgrade of Reconciliation Drive through to Widemere Road, it would be appropriate to classify all roads within the Greystanes NEL and SEL for b-double access. The Roads and Traffic Authority's *"Route Assessment Guidelines for Restricted Access Vehicles"* outlines the procedure for having roads classified for b-double use.

#### Pedestrian Network

- 2.25 In accordance with the approved masterplan, a network of pedestrian footpaths will be provided within the road reserves, and through landscape areas within the Greystanes SEL. The network will be incorporated into controlled pedestrian crossings at the three signalised intersections along Reconciliation Drive. Local roads within the site will have pedestrian footpaths on both sides.
- 2.26 The pedestrian and cycle networks will be designed to maximise clear and unobstructed sight lines at all crossing points. All path crossings will be at-grade, incorporating pram ramps. Paths will be designed and constructed in accordance with the Australian Standards AS1428.

#### Cycle Network

- 2.27 Cycleway provision will be made in the Transitway road reserve, which is to be constructed by the Roads and Traffic Authority, as part of the Transitway works. This cycleway will link to the cycleway network north and south of the Greystanes
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Estate and integrate with “*Bikeplan 2010*” as issued by the Roads and Traffic Authority.

### Traffic Generation and Effects

2.28 The traffic generated by the proposed modifications to Precinct C will have its greatest effects during the morning and afternoon periods when it combines with commuter traffic. Surveys undertaken by the Roads and Traffic Authority found the following two-way peak hour traffic generation rates for industrial/warehouse and commercial developments:-

- ❑ Warehouse
  - 0.5 vehicles per hour per 100m<sup>2</sup> GFA;
  
- ❑ Commercial
  - two vehicles per hour per 100m<sup>2</sup> GFA.

2.29 Based on these rates, the approved masterplan for the Dexus Estate plus the proposed additional industrial development in Precinct C, would result in traffic generations of some 1500 to 1700 vehicles per hour two-way (in plus out) during the morning and afternoon peak periods. By way of comparison the traffic assessment (Sinclair Knight Merz, 2006) assessed a traffic generation for the overall development of some 4800 vehicles per hour two-way during peak periods, including traffic generations of some 2700 to 2800 vehicles per hour two-way for the approved Dexus Estate masterplan. That report concluded that the surrounding road network incorporating the proposed road improvements would operate at appropriate levels of service.

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2.30 The proposed development within the Dexus Estate, including the proposed modifications to Precinct C, will generate considerably less traffic during peak periods than was previously assessed by SKM. Hence the road network will be able to cater for the proposed modifications.

2.31 The traffic generated by the proposed development has been combined with the traffic generated by the overall Greystanes Industrial Estate (NEL and SEL) for 2016. The morning and afternoon peak period traffic flows within the Greystanes SEL are shown on Figures 4 and 5.

2.32 The operations of the proposed three signalised intersections on Reconciliation Drive, incorporating the road network changes, have been analysed using the SIDRA program. The program simulates the operation of the intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):-

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:-

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode
>70	=	"F"	Unsatisfactory and requires additional capacity.

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- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to the following LOS:-

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode.

2.33 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.34 The SIDRA analysis found that the proposed signalised intersections would operate at levels of service C or better during the morning and afternoon peak periods in 2016. Average delays per vehicle were found to be less than 42 seconds per vehicle during peak periods. This represents a level of service C, a satisfactory level of service.

2.35 In addition to the SIDRA analysis for the signalised intersections on Reconciliation Drive, Council and the RTA have requested an assessment of the proposed access driveway to Lots 9, 10 and 11 onto Basalt Road. As previously discussed, it is

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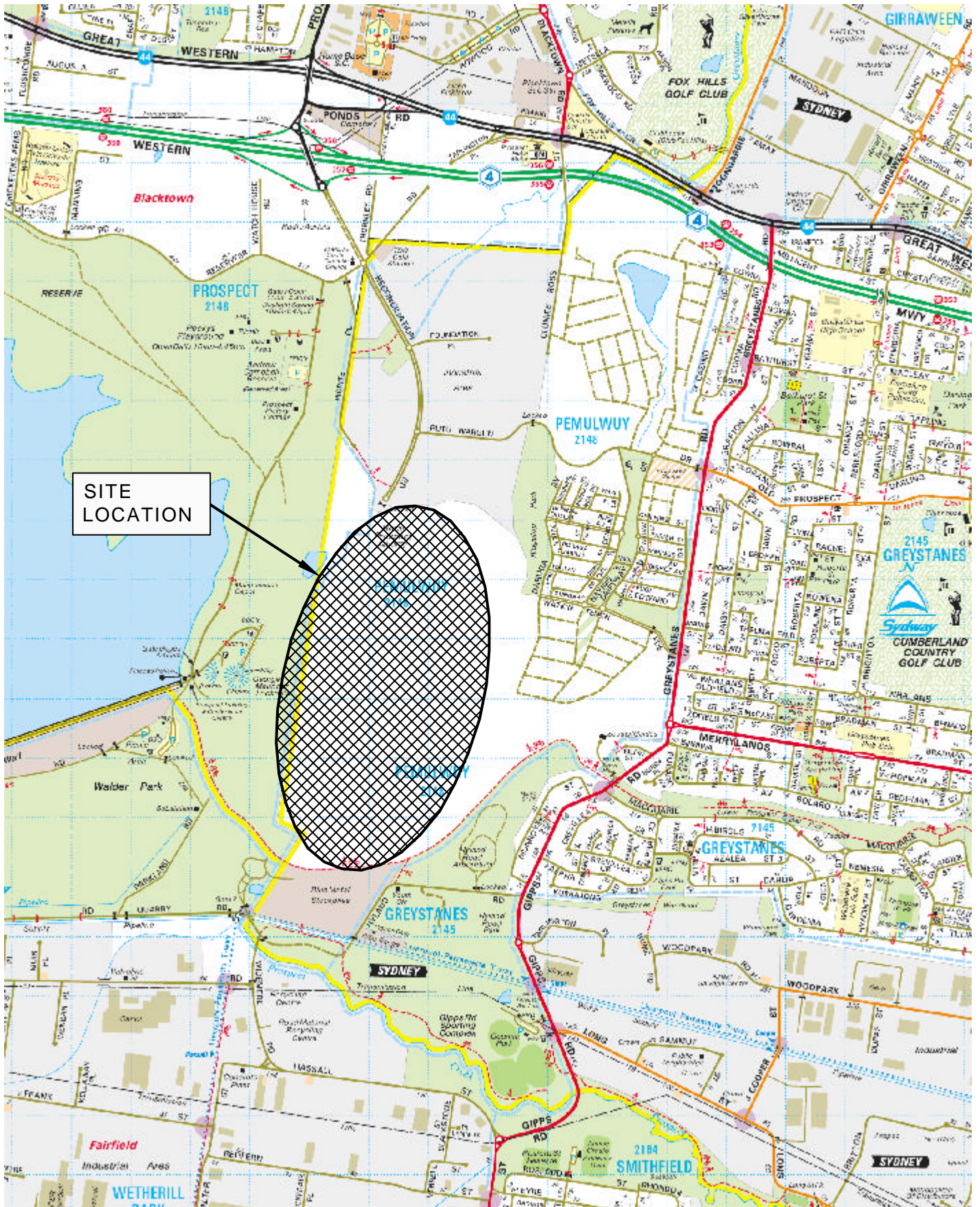
proposed to provide a break in the median in Basalt Road to allow right turn entry movements into the site. Figure 5 shows the forecast 2016 traffic flows at the access driveway during the morning and afternoon peak periods.

- 2.36 The SIDRA analysis found that the access driveway will operate with average delays, for the movement with the highest average delay, of less than 10 seconds per vehicle during the morning and afternoon peak periods. This represents a level of service A, a good level of service.
- 2.37 In regards to vehicle queue distances at the access driveway, the SIDRA analysis found a 95% Back of Queue for the right turn movement into the driveway of less than one vehicle during peak periods. This represents a good level of operation.

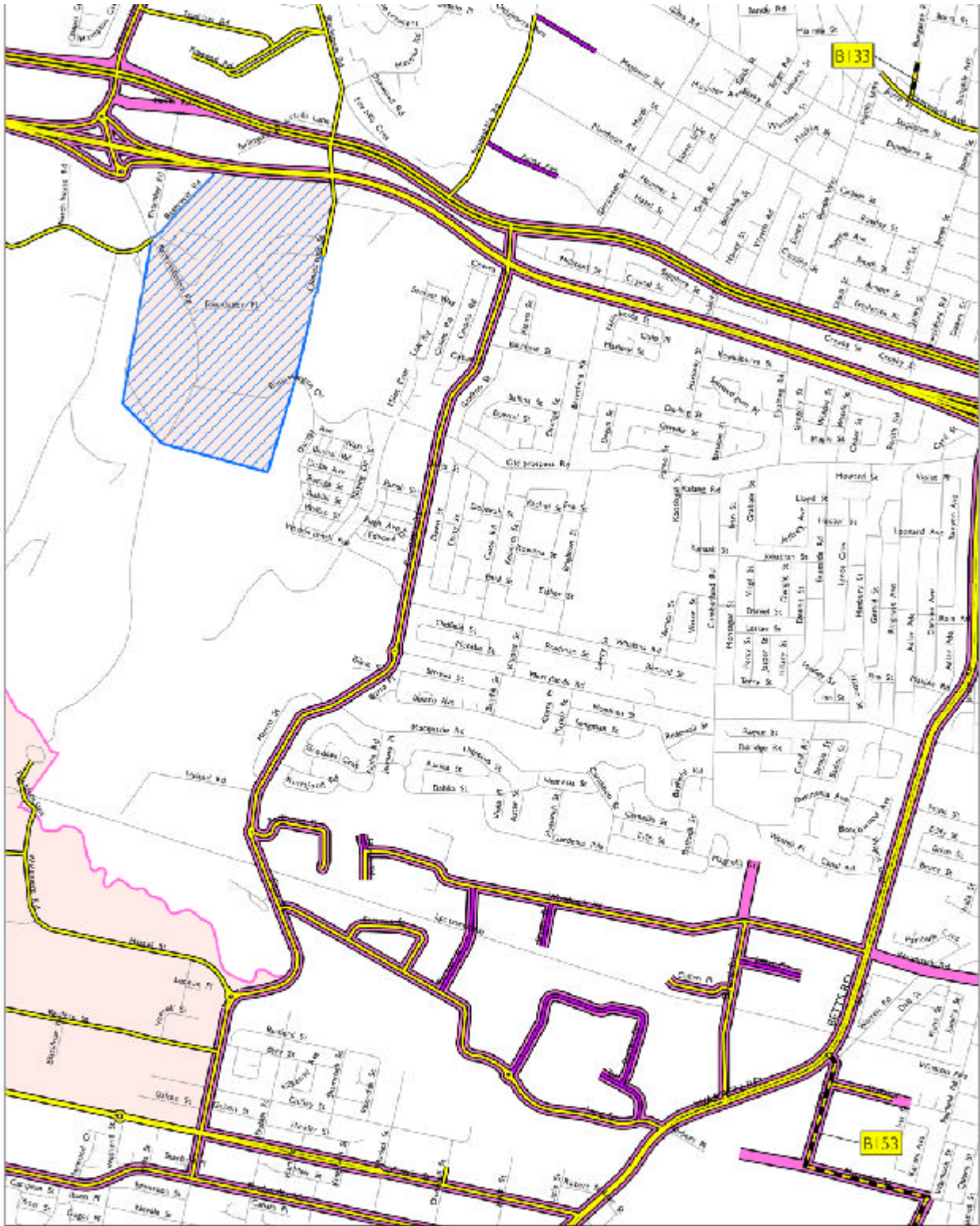
#### Summary

- 2.38 In summary, the main points relating to the traffic aspects of the proposed modifications to the project approval for the Dexus Estate are:-
- i) the site is located within the Greystanes SEL;
  - ii) the Dexus Estate masterplan included some 220,865m<sup>2</sup> warehouse, some 20,900m<sup>2</sup> office area with associated road works, including the provision of three signalised intersections on Reconciliation Drive;
  - iii) the proposed modifications to Precinct C include the reconfiguration of industrial lots and the deletion of a section of Bellevue Circuit between Basalt Road and Reconciliation Drive. The proposed modifications result in an increase in warehouse area for Precinct C of some 6,372m<sup>2</sup> and a reduction in office and ancillary retail/café area of some 320m<sup>2</sup>;
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- iv) the internal road network within the estate will be designed to accommodate industrial traffic, including b-doubles;
  - v) the proposed access and car parking arrangements will be designed in accordance with the Australian Standards AS2890.1-2004 and AS2890.2-2002;
  - vi) the pedestrian and cycle network will be designed in accordance with the Australian Standard AS1428;
  - vii) the regional and local traffic effects of the Greystanes SEL have previously been assessed;
  - viii) the proposed development, including the proposed modifications to Precinct C will generate considerably less traffic during peak periods than was previously assessed;
  - ix) the proposed road network, incorporating the network improvements within the overall Greystanes Industrial Estate, will be able to cater for the proposed development.
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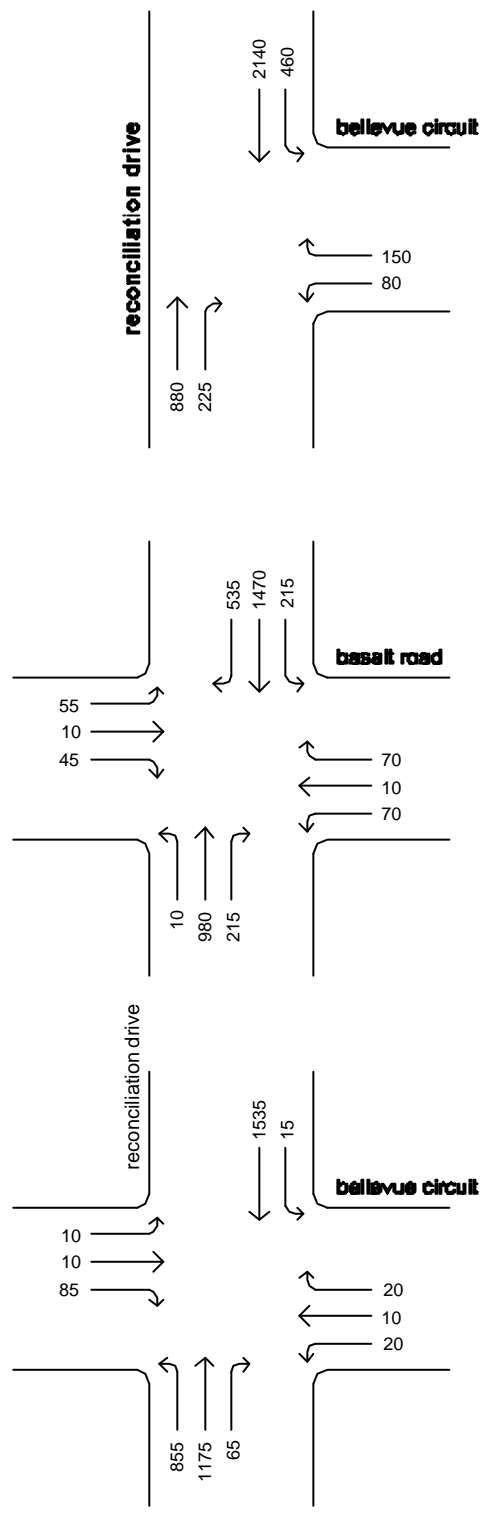


Location Plan



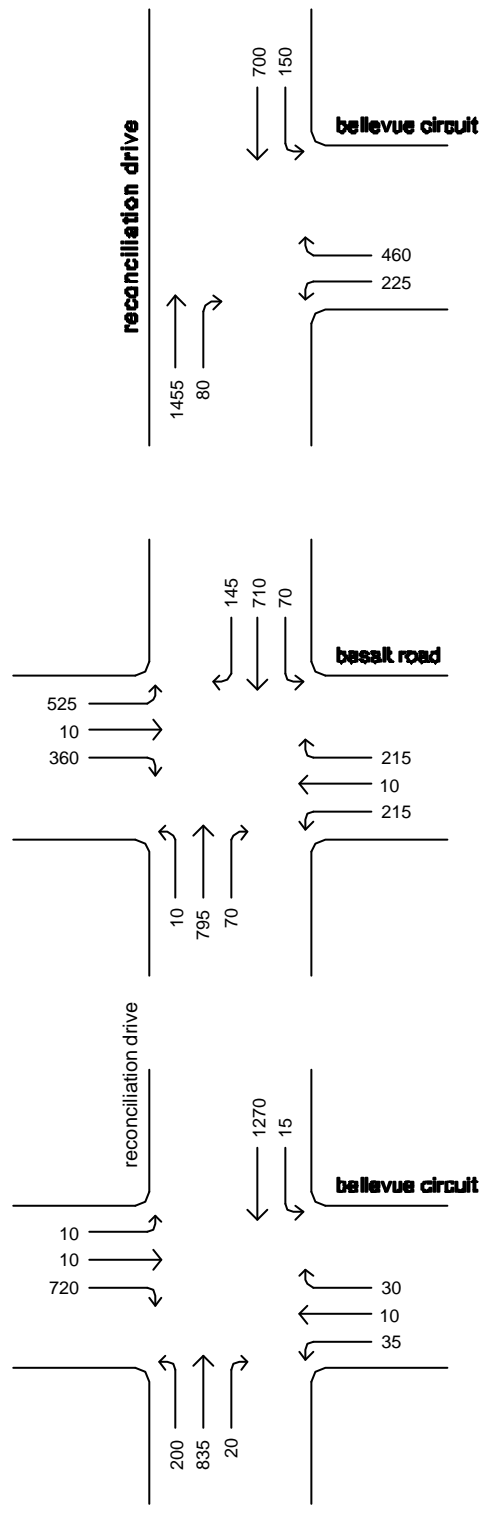
<b>TRAVEL RESTRICTIONS VEHICLE ROUTES</b>  	<b>Sydney Area</b> <b>Greystanes</b>	<b>LEGEND</b> <ul style="list-style-type: none"> <li><span style="color: yellow;">—</span> 2.0m Approved Routes</li> <li><span style="color: purple;">—</span> 4.6m High Vehicle Routes</li> <li><span style="color: blue;">—</span> 15m Approved Routes</li> <li><span style="background-color: lightblue; border: 1px solid blue;"> </span> B-Double Approved Zones</li> </ul>	<b>Restrictions</b> <ul style="list-style-type: none"> <li><span style="border: 1px solid black; padding: 2px;"> </span> Travel Restriction Apply</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> Classified Roads</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> Local Roads</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> Regional Roads</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> State Road</li> </ul>
	Scale 1:25,000  Map produced by RTA, RIA/ITS Unit Map data copyright (c) 2007 Roads & Traffic Authority NSW Some spot data courtesy of NSW Department of Land		<ul style="list-style-type: none"> <li><span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> 4.6m High Vehicle Approver Zones</li> <li><span style="background-color: purple; border: 1px solid black; padding: 2px;"> </span> 2.0m Approved Routes</li> <li><span style="background-color: blue; border: 1px solid black; padding: 2px;"> </span> 15m Approved Routes</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> B-Double Restriction</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> 4.6m High Vehicle Restriction</li> </ul>

travel restrictions vehicle routes



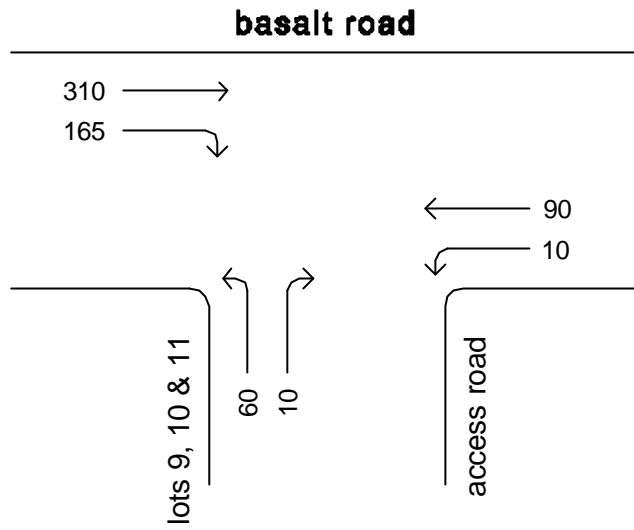
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Merz, 2006 forecast traffic flows

Forecast morning peak hour 2016  
traffic flows

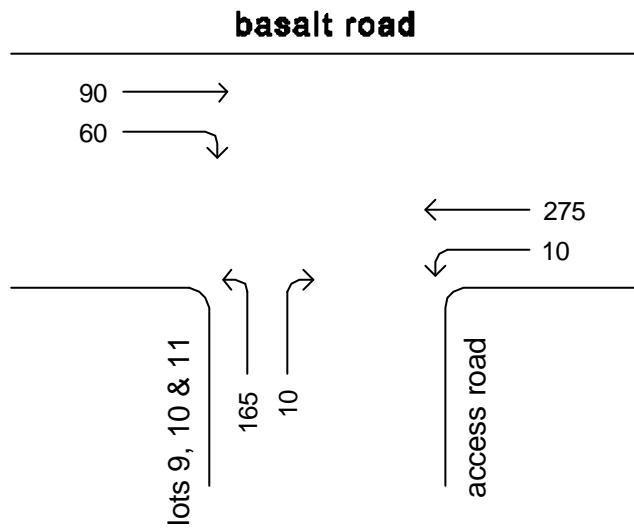


Source -  
Based on modified Sinclair Knight  
Merz, 2008 forecast traffic flows

Forecast afternoon peak hour 2016  
traffic flows



**AM Peak Period**



**PM Peak Period**

Source -  
Based on modified Sinclair Knight  
Merz, 2006 forecast traffic flows

**Forecast peak hour 2016 traffic flows**