



# Transport and Accessibility Study

## Project Application for the Development of Miranda Dental Hospital at 84-86 Kiara Road, Miranda

Prepared on behalf of Geoform Design Architects by **TRAFFIX** Traffic & Transport Planners  
Ref: 11 041 Report\_v1 May 2011

**traffix**  
traffic & transport planners

po box 1061  
potts point nsw 1335  
t: +61 2 8324 8700  
f: +61 2 9380 4481  
w: [www.traffix.com.au](http://www.traffix.com.au)  
abn: 66065132961



# Contents

<b>1. Introduction</b>	<b>1</b>
<b>2. Location and Site</b>	<b>3</b>
<b>3. Existing Traffic Conditions</b>	<b>6</b>
3.1 Road Hierarchy	6
3.2 General Description of Road Environment	9
3.3 Public Transport	10
3.4 Existing Site Generation	13
3.5 Existing Intersection Performances	13
<b>4. Description of Proposed Development</b>	<b>16</b>
<b>5. Traffic and Parking Assessment</b>	<b>17</b>
5.1 Traffic Relevant Planning Guidelines and Documentation	17
5.2 Parking Requirements	17
5.3 Transport Access Guide	19
5.4 Pedestrian and Bicycle Facilities	20
5.5 disabled parking	20
5.6 Servicing	21
5.7 Traffic Impacts	21
5.8 Construction Traffic Management	22
5.9 Access	23
5.10 Internal Design	23
<b>6. Response to DGR's</b>	<b>25</b>
<b>7. Conclusions</b>	<b>28</b>

Appendix A: Photographic Record

Appendix B: Reduced Plans

Appendix C: Sidra Outputs



# 1. Introduction

---

TRAFFIX has been commissioned by Geoform Design Architects on behalf of Comserv No 462 Pty Ltd to undertake a transport and accessibility report in support of a Project Application for the development of Miranda Dental Hospital at 84-86 Kiora Road, Miranda. The report is to accompany an Environmental Assessment prepared separately and responds to the relevant issues raised by the Director General's Requirements dated 25 February 2011.

The Project Application seeks approval for the construction of a five storey commercial building comprising a total of 1,659m<sup>2</sup> of net usable floor space generally for the purpose of dental uses and ancillary retail within car parking for a total of 44 spaces.

The relevant Director General's Requirements for the transport and accessibility impacts are as follows:

- *Provide an estimate of the total trips generated by the proposed development and identify measures to manage travel demand, increase the use of public and non-car transport modes, and assist in achieving the objectives and targets of the relevant State Plan;*
- *Provide an analysis of public transport provision, walking and cycling connections within the vicinity of the site and address the adequacy of the proposal to meet the likely future demand and the potential for improving accessibility to and from the site and connections to the wider region via sustainable transport modes;*
- *Identify potential traffic impacts during the construction stage of the project, and measures to mitigate any potential impacts to accessibility, amenity and safety of public transport use, walking and cycling during construction;*
- *Describe the measures to be implemented to promote sustainable means of transport including public transport usage and pedestrian and bicycle linkages in addition to addressing the potential for implementing a location specific sustainable travel plan;*
- *Daily and peak traffic movements likely to be generated by the proposed development, including the impact on nearby intersections and the need associated funding for upgrading or road*



*improvement works (if required). The traffic impact assessment should consider base models with future traffic generated by the proposal;*

- ⑦ Details of the proposed access, parking provisions and service vehicle movements associated with the proposed development; and*
- ⑦ Minimal levels of on site car parking for the proposed development having regard to the high public transport accessibility of the site, opportunities for car sharing, local planning controls and RTA guidelines (note: The Department supports reduced parking provisions, if adequate public transport is available to access the site).*



## 2. Location and Site

---

The site lies within the Miranda commercial centre precinct to the south and east of Westfield, Miranda. More specifically, it is situated on the southeast corner of the intersection between Kiora Road and Urunga Parade. It is legally identified as Lot C in DP 415413 and is known as 84-86 Kiora Road, Miranda. Urunga Lane forms the eastern site boundary, with Miranda train station approximately 40 metres to the south of the site, along Kiora Road.

The site currently consists of a two-storey commercial development which is currently occupied by a Priceline discount retail store on ground level, with commercial offices above. It is rectangular in configuration and has a site area of 490.5m<sup>2</sup>. It has a northern frontage of 36.58 metres to Urunga Parade, a western frontage of 13.41 metres to Kiora Road, an eastern frontage of 13.41 metres to Urunga Lane and a southern site boundary of length 36.58 metres to neighbouring commercial properties.

There is currently an eight metre wide driveway crossing on Urunga Lane that provides access to the surface car park at the rear of the existing development. Additionally, there is a six metre wide driveway crossing on Urunga Parade that is currently not in use.

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

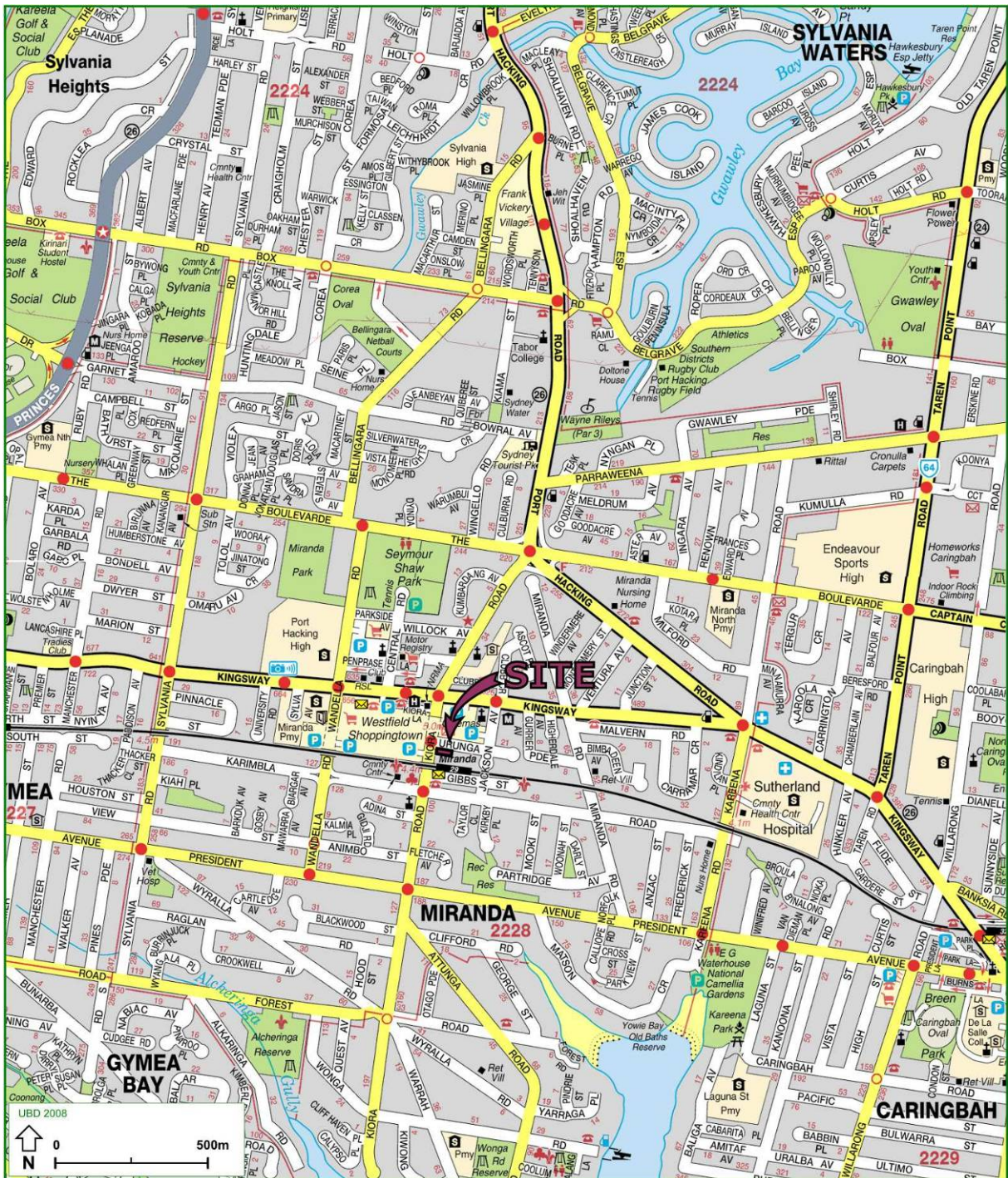


Figure 1: Location Plan



Figure 2: Site Plan



## 3. Existing Traffic Conditions

---

### 3.1 Road Hierarchy

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

- Kingsway: an RTA Main Road (MR 227) that generally runs in an east-west direction between the Princes Highway in the west and Cronulla in the east. The Kingsway carries in the order of 23,550 vpd in the vicinity of the site;
- President Avenue: an RTA State Road (SR 2027) that runs in an east-west direction between Sutherland in the west and the Kingsway in the east. President Avenue carries approximately 31,650 vpd;
- Kiora Road: a local collector road that generally runs in a north-south direction between Yowie Bay in the south and Port Hacking Road in the north;
- Karimbla Road: a local road that runs in an east-west direction between Sylvania Road in the west and Kareena Road in the east;
- Urunga Parade: a local road that runs in an east-west direction between Kiora Road in the west and Jackson Avenue in the east. Urunga Parade is divided into two separated sections with an additional section between Gurrier Avenue and Miranda Road. The section immediately east of Jackson Avenue is a no through road. A single (unused) site access is currently located on Urunga Parade;
- Jackson Avenue: a local road that runs in a north-south direction to the east of the site between Kingsway to the north and Urunga Parade to the south, and;



- ① **Urunga Lane:** a local no-through road that runs in a north-south direction to the east of the site which provides rear access to properties with frontages to Kiora Road. The primary vehicular site access is located on Urunga Lane.

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

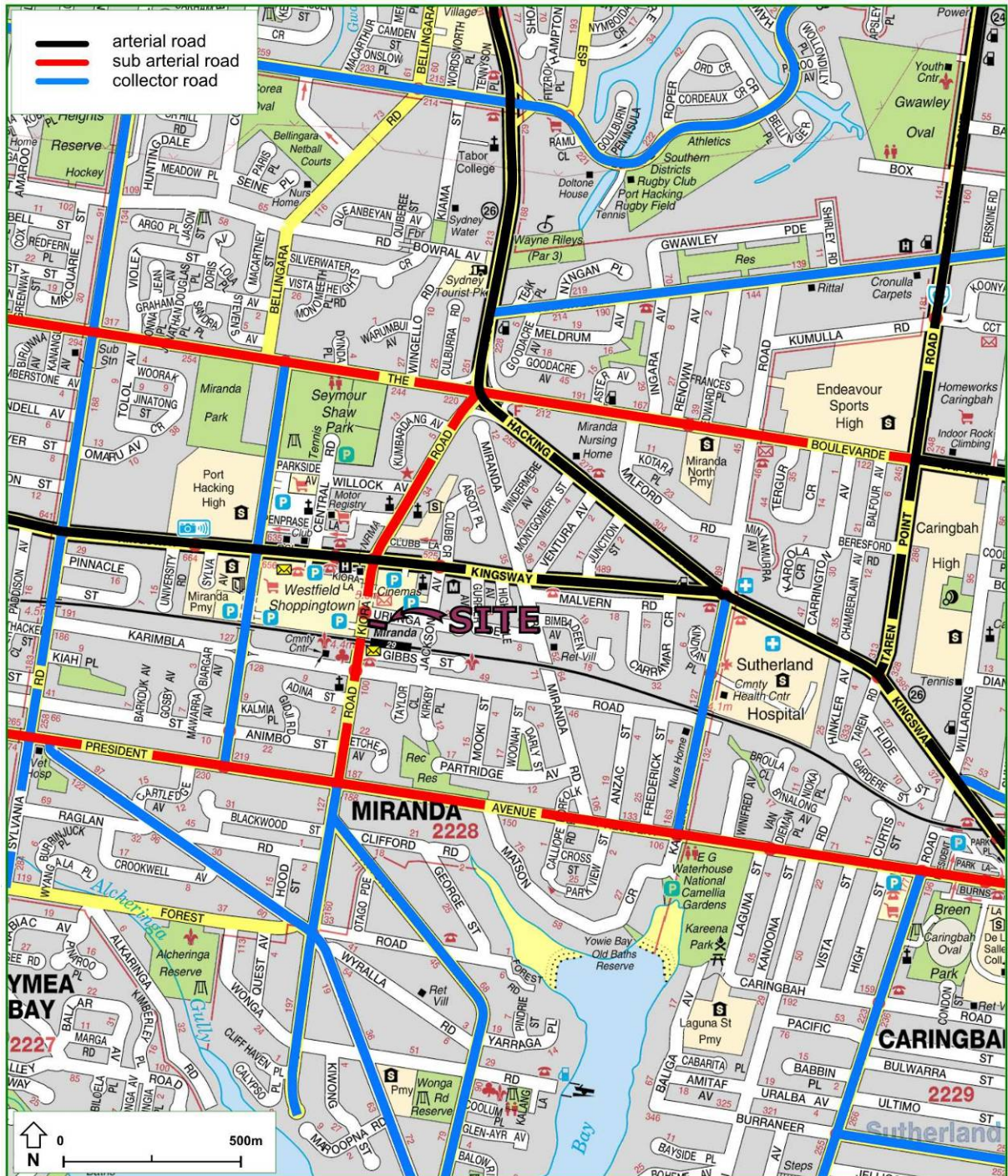


Figure 3: Road Hierarchy



## 3.2 General Description of Road Environment

Kingsway is constructed with a 22 metre divided carriageway and generally carries three lanes of traffic in either direction. Kingsway forms a four-way signal controlled intersection with Kiora Road which includes right turn storage lanes for both the eastbound and westbound approaches. It also forms a signal controlled 'T-junction' with Jackson Avenue to the north-east of the site. An 80 metre right turn storage lane is provided on the western approach for vehicles turning south into Jackson Avenue.

President Avenue is constructed with a 12.8 metre divided carriageway and generally carries two lanes of traffic in either direction. President Avenue forms a four-way signal controlled intersection with Kiora Road to the south of the site where it expands to three lanes in either direction through the addition of right turn lanes.

Kiora Road is constructed with a 16 metre divided carriageway carrying two lanes of traffic in either direction and is subject to a 50 km/hr speed limit adjacent the site. Kiora Road forms a signal controlled 'T-junction' with Urunga Parade adjacent to the site. A 70 metre right turn storage lane is provided on the southern approach to the intersection for vehicles turning east onto Urunga Parade. It forms a four-way signal controlled intersection with Karimbla Road to the south of the site. Kiora Road provides indented parking bay along its eastern side adjacent to the site. This parking is subject to period (1/4hr 8.30am-6.00pm Mon-Sun).

Karimbla Road is constructed with a 10.8 metre undivided carriageway and generally carries a single lane of traffic in either direction. At its intersection with Kiora Road, this expands to two lanes through the restriction of kerbside parking.

Urunga Parade is constructed with a 12.5 metre undivided carriageway, generally carries a single lane of traffic in either direction and is subject to a 50 km/hr speed limit adjacent the site. At its intersection with Kiora Road, this expands to two lanes through the restriction of kerbside parallel parking. Parking is restricted on Urunga Parade and a Taxi Zone occupies the section of northern side of Urunga Parade, opposite the site.



Urunga Lane is constructed with a 4.5 metre undivided carriageway and carries a single lane of traffic in either direction. It forms a priority controlled 'T-junction' with Urunga Parade at the northeast corner of the site.

### 3.3 Public Transport

The existing bus and train services that operate in the locality are shown in **Figure 4**. It is evident that the site benefits from excellent access to the public transport system with trains travelling to the city along the Eastern Suburbs and Illawarra line. Numerous bus routes traverse the locality serving the nearby metropolitan centres of Bankstown, Cronulla, Hurstville, Sutherland and Sylvania. These operate along Kiara Road and the Kingsway.

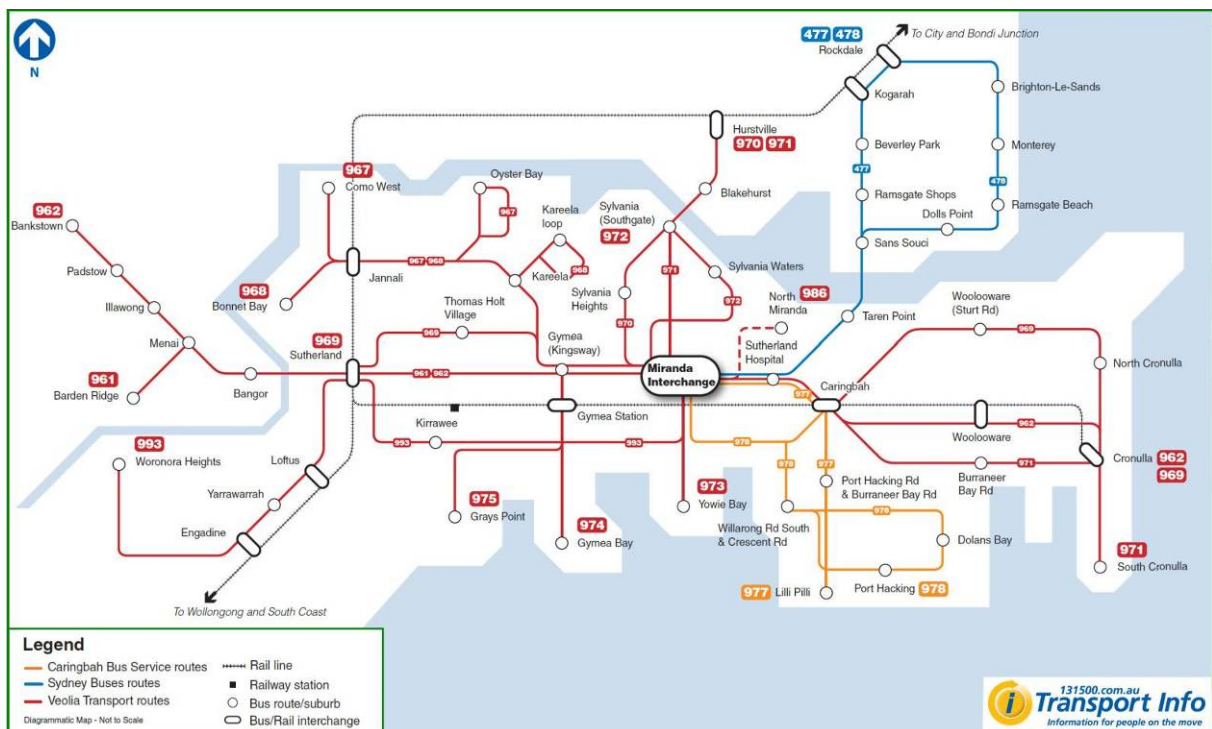


Figure 4: Network Map



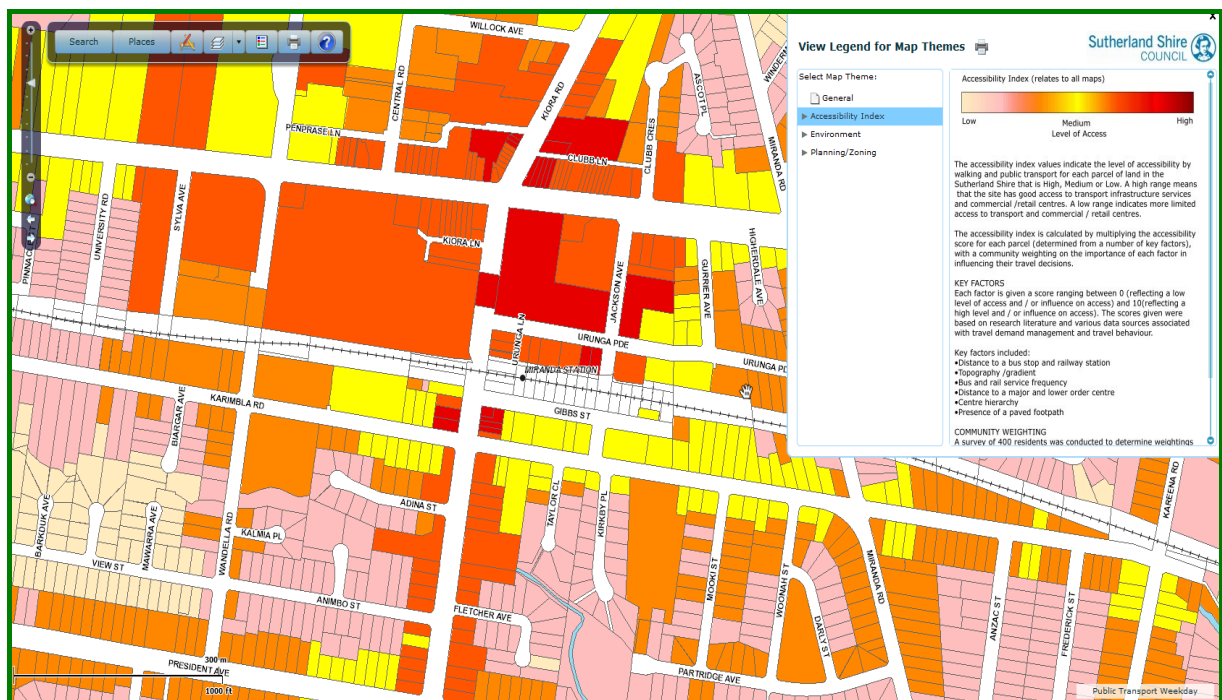
The site is also positioned within the Miranda Interchange as can be seen from **Figure 5**. The Miranda Interchange comprises of numerous designated bus stands, a set down area on the eastern kerb of Kiora Road and a taxi zone on the northern kerb of Urunga Parade. As seen previously in Figure 4 the Miranda Interchange serves as a major transport hub for the surrounding region.



**Figure 5: Service Location Map**



As identified on the Sutherland Accessibility Map, shown in **Figure 6** the site is situated within an area identified as having a high accessibility to walking and public transport facilities. Indeed, review of the 2006 Journey to Work Data, indicates that 19% of employees in the area utilise public transport for work related trips. This is considerably higher than most commercial zones which generally experience lower levels of alternative transport uses.



**Figure 6: Sutherland Accessibility Map**

In summary, the site is exposed to extensive public transport services and excellent footpath systems within the Miranda Interchange. Notably the site is within 200 metres of excess of 7 bus stops, a taxi rank and the Miranda Railway Station.



### 3.4 Existing Site Generation

The existing two-storey commercial development has a building footprint of approximately 219m<sup>2</sup> with the ground floor used for secondary retail purposes and the first floor used for commercial office purposes. The RTA Guide to Traffic Generating Developments recommends the following trip generation rates for these uses:

- 5.55 trips per 100m<sup>2</sup> GLFA for specialty retail; plus
- 2.0 trips per 100m<sup>2</sup> GFA for office uses.

Application of these rates results in a total site generation of 17 trips per hour. However, the parking provided on-site is primarily for staff purposes and therefore the majority of this traffic generation is expected to be distributed onto surrounding streets. In this regard, the on-site traffic generation is expected to be significantly reduced and in the order of 5-7 vehicles per hour.

### 3.5 Existing Intersection Performances

For the purposes of the assessment of traffic impacts of this development, surveys were undertaken of the most critical intersection immediately adjacent to the site, being the intersection of Kiora Road with Urunga Parade, during the critical PM peak period.

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

**DOS** - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at



1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

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

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

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

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



**Table 1: Existing Intersection Performance: PM Peak Hour**

<b>Intersection Description</b>	<b>Period</b>	<b>Control Type</b>	<b>Degree of Saturation</b>	<b>Intersection Delay</b>	<b>Level of Service</b>
Kiora Rd & Urunga Pde	PM	Signals	0.472	17.3	B

It can be seen from Table 1 that the intersection operates satisfactorily under the existing 'base case' scenario, with a level of service B during the critical PM peak period and with moderate delays. Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 6.



## 4. Description of Proposed Development

---

A detailed description of the proposed development is provided in the Project Application report prepared by Geoform Design Architects. In summary, the development for which approval is now sought comprises the following components:

- Construction of a 7 storey commercial development with the following attributes:
  - 1,659m<sup>2</sup> dental hospital on 7 storeys, including additional ancillary medical uses
  - 41m<sup>2</sup> shop / café on the upper ground floor
- The provision of fully automatic basement level car parking with a total of 43 staff spaces in addition to a single disabled/loading bay accessed via Urunga Lane.
- Pedestrian access via both Urunga Lane and Kiora Road, and
- Provision of a single waiting bay accessed via Kiora Road to ensure queuing does not occur on-street.

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 B**.



## 5. Traffic and Parking Assessment

---

### 5.1 Traffic Relevant Planning Guidelines and Documentation

The NSW State Government policies that are particularly relevant for consideration in relation to this application are as follows:

- Metropolitan Transport Plan 'Connecting the City of Cities';
- NSW State Plan;
- NSW Planning Guidelines for Walking and Cycling;
- Integrated Land Use and Transport Policy Package;
- RTA's to Traffic Generating Development; and
- NSW Bike Plan.

Generally the primary objective of Government is reflected in a Transport Access Guide for a major development which is aimed at reducing the reliance on private vehicle usage associated with the proposed development. Part of reducing private vehicle use will involve promoting the use of other travel modes including public transport, cycling and walking. These are discussed further in the following sections.

### 5.2 Parking Requirements

The site is subject to the controls of Sutherland Shire Council including the relevant DCP and LEP. The Sutherland Shire Council DCP – Chapter 7 has been reviewed and utilised to calculate the parking provision for the proposed development based on information provided by the client outlining the likely number of Doctors, employees and beds. The resulting parking requirement is provided in **Table 2**. It should be noted that Chapter 7, Part 1.b.40 of Council's DCP states that parking rates for Zone 8 are provided as a *maximum* parking rates.



**Table 2: Sutherland Shire Parking Rates and Provision**

Use	Area / No.	Council Rates (Maximum)	Spaces Required	Spaces Provided
Medical facilities	1,659m <sup>2</sup>			
<i>Doctor</i>	28	1 / doctor	28	28
<i>Employees</i>	58	1 space / 3 employees	19	14
<i>Visitor</i>	36 beds	1 space / 3 beds	12	1
Shop	41m <sup>2</sup>	1 space / 30m <sup>2</sup> GFA	1	1
			60	44

It can be seen from Table 2 that the development nominally requires the provision of up to 60 parking spaces under Council's DCP. The development proposes the provision of 44 spaces which fully complies with the requirements of Council's DCP and meets the requirements of the Director General by providing minimal levels of on-site car parking.

The development proposes the construction of a multi level car stacking system accessed via the service lane at the rear of the site. The construction of the car stacker was identified as the only viable option for providing a satisfactory level of car parking on-site due to the site constraints, namely the narrow width of the site. Accordingly due to the complexity of the car stacker system and the potential delays associated with access by visitors not familiar with the operational procedures, it is proposed that no visitor parking be provided. This is however considered supportable for the following reasons:

- The site lies within close proximity of the Miranda interchange which provides exceptional access to a significant public transport network. The site is within 200 metres walking distance of 7 bus stop locations and is also directly adjacent to the Miranda Railway Station. Accordingly it is expected that a high proportion of visitors will use public transport.
- Many visitors will be within the commercial centre for other reasons and will walk to the site; and
- The reduced parking provision (although in accordance with Council's DCP) is sound planning policy that meets the objectives of State Government.



In summary, provision of 43 spaces is expected to provide sufficient parking such that no reliance on on-street parking results. The subject site, with its excellent accessibility to public transport, is a prime candidate for a more 'restrictive' parking approach to be adopted when compared to the maximum provision under Council's DCP. Conversely, adoption of the maximum parking rate would be a poor planning outcome that does not reflect the requirements of the Director General or State planning objectives. Accordingly the parking proposed is considered supportable on traffic planning grounds.

## 5.3 Transport Access Guide

### 5.3.1 General

Both the Metropolitan Transport Plan and Integrating Land Use and Transport – A Planning Policy Package, seek to reduce car usage and promote public transport and alternate transportation modes through integrated transport plans; and promoting development within close proximity to public transport.

The implementation of a transport plans is recommended for the proposed dental hospital as it is a destination land use, which provides opportunities to influence travel demand through walking, car pooling etc., both for employees and visitors. Sustainable travel can also be maximised for all trip types through the promotion of public transport and the use of car share vehicles. This is also essential where parking is restricted, as is proposed, with the adoption of moderate parking rates. This ensures that visitors and staff are aware of the availability, relative convenience and frequency of public transport services. For this reason the preparation of a Transport Access Guide (TAG) is proposed and can be prepared during the CC Stage in response to a suitable condition of consent. It would be located in common areas and would identify such aspects as:

- Local bus stop locations;
- Bus and rail time tables;
- Location of taxi ranks in the locality;
- Location of local services within walking distance such as convenience stores, supermarkets and other retail related areas;
- Location of car share vehicles within reasonable walking distance (if any); and



Knowledge of these services and the specific locations of the services will ensure that the development provides maximum opportunity for visitors and staff to use non car travel modes. The development is also situated within a zone with 'highest accessibility by walking', as identified on the Sutherland accessibility map.

### **5.3.2 Taxis**

Taxi services will be available opposite the site, on Urunga Parade. There is an existing taxi zone in addition to on-street parking and stopping opportunities, such as the drop-off zone on Kiora Road.

## **5.4 Pedestrian and Bicycle Facilities**

An extensive footpath system exists within the Miranda commercial centre, combined with additional off-street connections through the Westfield shopping centre. The Westfield shopping centre includes various pedestrian links to the Miranda interchange and includes a multi-storey shopping centre bridge over Kiora Road. The proposed development efficiently utilises the existing footpath network, and provides a benefit for all the commuters within the Miranda commercial centre by renewing the urban environment and streetscape.

Bicycle facilities will be provided in accordance with Council's requirements. Bicycle facilities including lockers or racks will be provided in convenient locations.

## **5.5 disabled parking**

A single disabled parking space is provided adjacent to the access ramp and Urunga Lane. This space is 3.5 metres wide including 300mm wall clearance which satisfies AS2890.1 (1993). It is noted however that Council's DCP requires compliance with AS2890.6 (2009) which requires an increased width of 4.8metres. The increased width can effectively be achieved through shared use with the driveway access however this would require support from a suitably qualified access consultant. This space is shared with the loading bay (in a limited way) as discussed below.



## 5.6 Servicing

The servicing demands of the subject development are expected to be moderate due to the size and nature of uses provided and will generally be limited to couriers and small vans which can utilise the shared loading / accessible space accessed from Urunga Lane. Should larger deliveries be required (albeit on a very infrequent basis) these can make use of the short term period parking provided within Kiora Road adjacent to the site. Garbage collection will be undertaken from the kerbside on Urunga Parade.

## 5.7 Traffic Impacts

### 5.7.1 Trip Generation

Due to the extended and staggered operating hours of medical centres of the nature proposed, traffic generation will be dispersed over a broader peak period than the traditional AM and PM peaks. Accordingly, for the purpose of assessment a peak generation rate of 0.4 trips per space has been adopted and this is supported through surveys of comparable facilities.

Accordingly, with the provision of 43 spaces, application of the adopted rate results in a generation of up to (say) 18 vehicles per hour with 80% expected to occur in the direction of peak flow (that is, 15 in and 3 out during the AM peak period with the reverse during the PM peak)

### 5.7.2 Peak Period Intersection Performances

The addition of 20 vehicles per hour will have a negligible impact on the performance of the critical intersection during the PM peak period with delays remaining relatively unchanged (0.1 seconds) from that of the existing scenario modelled in Section 3, as demonstrated by Table 4 below.



**Table 4: Future Intersection Performance: PM Peak Hour**

Intersection Description	Period	Control Type	Degree of Saturation	Intersection Delay	Level of Service
Kiora Rd / Urunga Pde	PM	Signals	0.472	17.4	B

An increased spread of activity would be expected to further reduce traffic generation and improve the operation of the road network.

## 5.8 Construction Traffic Management

It is anticipated that a detailed construction traffic management plan (CTMP) will be prepared in response to a suitable condition of consent when more detailed information will be available and a builder is appointed. Nevertheless, some construction principles have been developed and will guide this on-going process through the Project Application stage/s. It will need to address requirements during each stage (demolition, site preparation, excavation, construction, fit-out and landscaping) and will need to include consideration of times of operation, truck access routes, site access, average truck frequencies, truck sizes, parking for construction workers, work zone requirements, pedestrian control, traffic management plans and any road occupancy applications. These are matters that cannot be addressed at this time although in principle, there are considered to be no obvious constraints to the preparation of a safe and efficient Construction Traffic Management Plan.

It is recommended that all construction employee parking demands be contained within the site as far as practicable. Investigations will be undertaken as to the staging of the construction activities and these will take into account the need to provide adequate parking for employee prior to the completion of the basement car park. The use of basement car parks will be available following their completion. The CTMP will address all relevant matters in detail as discussed above.



## 5.9 Access

All vehicle entry and egress from the site is proposed via Urunga Lane, on the eastern site frontage. Reference should be made to the swept paths provided in **appendix c** which demonstrate access by a B99 vehicle from the waiting bay.

Due to the limited width of Urunga Lane, it is recommended that a signal be provided at the northeast corner of the site, visible from Urunga Parade, advising drivers in the event that both the waiting bay and car stacker are in use. This is intended to prevent additional site related vehicles from entering Urunga Lane during peak times. Any additional vehicles can then re-circulate on surrounding road until such time as there is an opportunity to enter the site. It is expected that any delays would be expected to naturally encourage a more dispersed arrival pattern which would limit the amount of potential for on-street queuing.

The gradient of the entry driveway and waiting bay is 5.5% which is a minor departure from the standards which permit a maximum grade of 5.0%. Nevertheless, it will operate effectively and is considered supportable.

## 5.10 Internal Design

The development proposes the use of a mechanical car stacking system accessed via Urunga Lane and designed by Klaus Multiparking. The proposed car stacking system (which automatically stores and retrieves vehicles) and the associated waiting areas have been designed to minimise on-street queuing. Under AS2890.1 vehicle storage areas within a development generally need to be designed to accommodate the 98<sup>th</sup> percentile queue within the site. With this in mind, the development proposes to provide two waiting bays on-site; one on either side of the vehicle delivery pallet. The waiting bay to the south will operate as a waiting bay at all times while the space to the north of the pallet will only be used as a waiting bay prior to 9.30am after which time it will operate as the disabled/loading space. This is to accommodate the peak AM arrivals and is a sensible response to the site constraints.



Based on the two waiting bays and a worst case service time of 90 seconds per vehicle, an assessment was undertaken to calculate the probability of having more than three vehicles in the system at any one time. The assessment which was based on the queuing theory analysis published in the Austroads Part 2: Traffic Theory, shows that the probability of there being greater than 3 vehicles in the system at any one time was 4%. Hence the proposal can accommodate the 96<sup>th</sup> percentile queue. Although this does not technically comply with AS2890.1, the minor non compliance (2%) is considered acceptable and will operate satisfactorily.

The car park stacker has been designed to relevant standards. Notwithstanding this Klaus Multiparking will be responsible for the certification of the design and as built development.

The disabled parking space as discussed above is designed with a 3.5 metres width including 300mm wall clearance which satisfies AS2890.1 (1993). It is noted however that Council's DCP requires compliance with AS2890.6 (2009) which requires an increased width of 4.8metres. The increased width can effectively be achieved through shared use with the driveway access however this would require support from a suitably qualified access consultant.

The waiting bay on the southern side of the driveway is also proposed with a 3.5 metres width including 300mm wall clearance which satisfies AS2890.1 and is considered supportable.



## 6. Response to DGR's

---

The matters discussed below are in direct response to the specific requests for information outlined in the Director General's Requirements (DGR's) relating to the transport and accessibility impacts of the proposed development.

- *Provide an estimate of the total trips generated by the proposed development and identify measures to manage travel demand, increase the use of public and non-car transport modes, and assist in achieving the objectives and targets of the relevant State Plan;*

Traffic generation for the proposed development has been estimated at 18 vehicles per hour during the critical AM and PM peak periods. This level of generation will have a negligible impact on the operation of key intersections or the surrounding road network during either the AM or critical PM peak period;

The development also takes advantage of its exceptional accessibility to public transport by providing a lower parking provision than the maximum permissible under Council's DCP. This will encourage alternative transport usage by both staff and visitors to the site.

- *Provide an analysis of public transport provision, walking and cycling connections within the vicinity of the site and address the adequacy of the proposal to meet the likely future demand and the potential for improving accessibility to and from the site and connections to the wider region via sustainable transport modes;*

Excellent pedestrian linkages exist throughout the Miranda commercial centre as discussed in Section 3.3. The development site is served by an extensive footpath system which connects the site with the Miranda bus/train interchange as well as other services and facilities within Miranda. The public transport services has been detailed in the report and there is sufficient capacity to accommodate the increased patronage resulting from the proposed development, which spreads visitations throughout the day.

- *Identify potential traffic impacts during the construction stage of the project, and measures to mitigate any potential impacts to accessibility, amenity and safety of public transport use, walking and cycling during construction;*

It has been identified in Section 5.11 that a Construction Traffic Management Plan (CTMP) will be prepared in response to a condition of consent when more detailed information will be available



and a builder is appointed. It is recommended that all construction employee parking demands be contained within the site as far as practicable. Investigations will be undertaken as to the staging of the construction activities and these will take into account the need to provide adequate parking for employee prior to the completion of the basement car park.

- *Describe the measures to be implemented to promote sustainable means of transport including public transport usage and pedestrian and bicycle linkages in addition to addressing the potential for implementing a location specific sustainable travel plan;*

It is proposed that the Transport Travel Guide/Workplace Travel Plan be prepared in response to a suitable condition of consent. This would include the promotion of alternate travel modes and travel demand measures including car sharing, public transport availability (bus, train and taxi), cycle and pedestrian routes and linkages, bicycle end-user facilities and motorcycle parking

- *Daily and peak traffic movements likely to be generated by the proposed development, including the impact on nearby intersections and the need associated funding for upgrading or road improvement works (if required). The traffic impact assessment should consider base models with future traffic generated by the proposal;*

Section 3.5 (Existing Intersection Performances) discusses the existing base case scenario which was modelled using aaSIDRA for the key intersection, being the intersection of Kiora Road and Urunga Parade. Section 5.10 investigates the traffic impacts of the development using the RTA'S Guide to Traffic Generating Developments. In total the traffic generated by the development is 18 veh/hr during the PM peak, which in fact is a net increase of only 13 veh/hr. This is considered moderate and will have no measurable impact on the operation of key intersections during the critical PM peak period.

- *Details of the proposed access, parking provisions and service vehicle movements associated with the proposed development;*

The proposed primary vehicular access is located on Urunga Lane and will give access to the 44 parking spaces located within the proposed car stacker. Section 6 (Access & Internal Design) discusses the access driveway and the standard dimensions required by AS 2890.1(2004). A shared loading / accessible space is accessed from Urunga Lane and will be available for use after 9.30am. Outside these times, loading vehicles will make use of the loading zones and period parking within Urunga Parade and Kiora Road.

- *Minimal levels of on site car parking for the proposed development having regard to the high public transport accessibility of the site, opportunities for car sharing, local planning controls and*



*RTA guidelines (note: The Department supports reduced parking provisions, if adequate public transport is available to access the site).*

The development proposes the provision of 44 spaces compared to the maximum permissible provision under Council's DCP of 60 spaces. This is considered sufficient to meet the expected peak parking demands of the development, with limited or no reliance on on-street parking. The reduced provision for staff (and visitors) is considered acceptable due to the location of the site within close proximity to extensive public transport and as such is considered supportable on traffic planning grounds.



## 7. Conclusions

---

In summary:

- The proposed use of the site as a dental hospital is a moderate traffic-generating use and the assessment undertaken has demonstrated that it is supportable on traffic/transport planning grounds;
- Traffic generation of the development is estimated at 18 vehicles per hour during the critical PM peak period. This traffic can be readily accommodated by the surrounding road network;
- Council's DCP nominally requires a maximum provision of 60 parking spaces, including both employee and visitor parking. However, this is considered to be very excessive and does not meet the objectives of the DGR's. Accordingly an overall provision of 44 spaces is proposed which is considered supportable and will accommodate the needs of the development on-site whilst encouraging the use of alternative travel modes;
- An automatic car parking system is proposed with a capacity for 43 spaces. Due to the nature of this parking, these spaces are all intended for use by staff only. The development also proposes a dedicated waiting bay at all times with an additional waiting bay to be provided during the AM peak period to ensure the 96<sup>th</sup> percentile queue is accommodated on-site;
- The access arrangements are considered acceptable having regard for the site constraints;
- The DGR's have been considered and addressed within this Transport and Accessibility Report with a summary of these matters provided in Section 7.

It is therefore concluded that the proposed development is supportable on traffic planning grounds.



## Appendix A

---

Photographic Record



View looking southeast across Kiora Road at the site.



View looking south along Kiora Road on approach to Urunga Parade.





View looking west at the existing site access to Urunga Lane.



View looking south along Urunga Lane, from Urunga Parade.





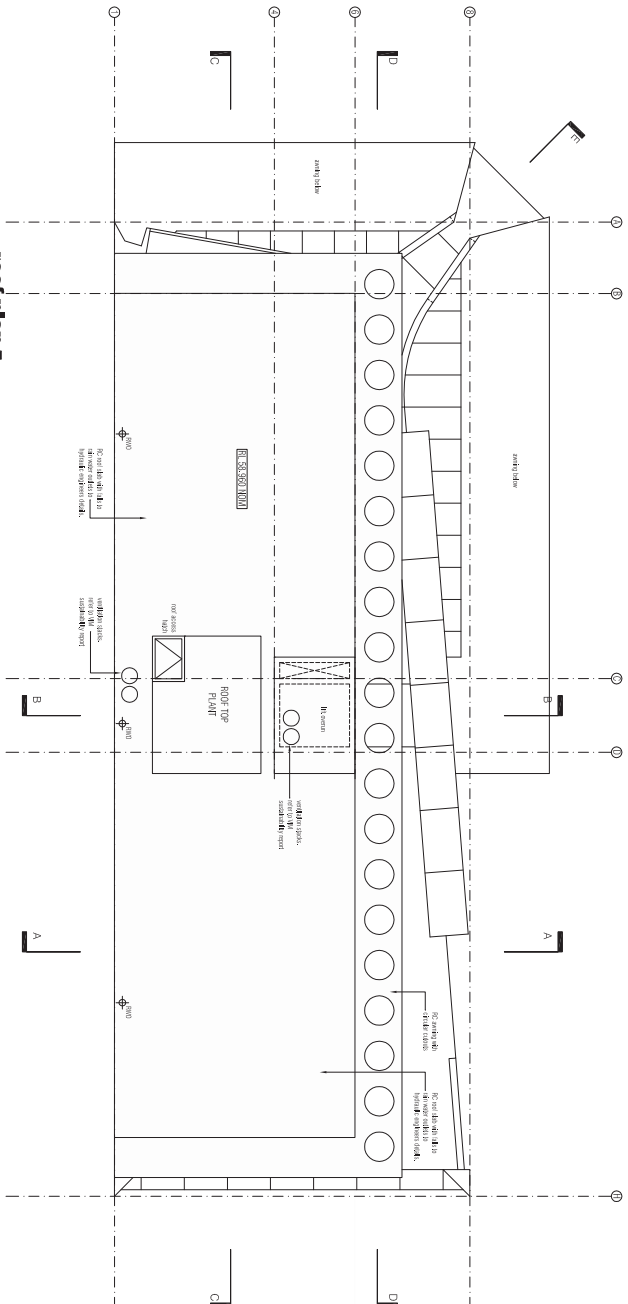
---

## Appendix B

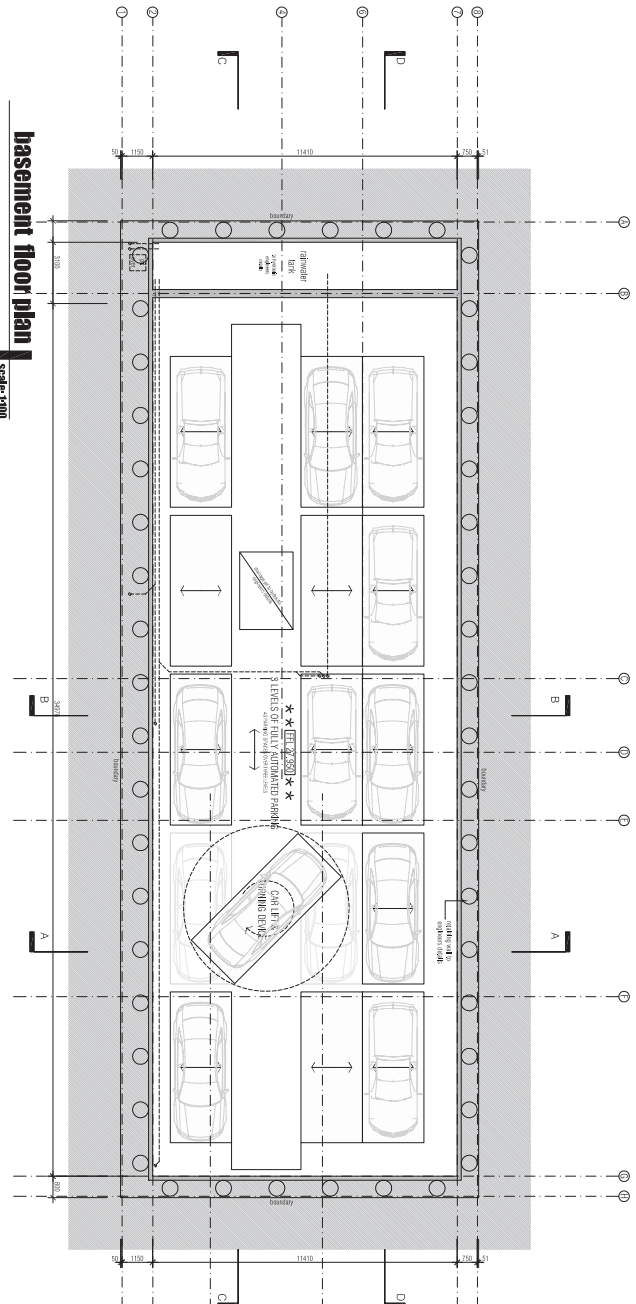
Reduced Plans

**GREEN PRINCIPLES**

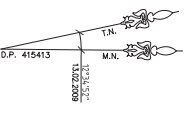
- NATURAL VENTILATION**  
natural cross-ventilation system  
the side and the core added to side exhaust chimneys  
night purging
- FEATURE DOUBLE GLAZED SKINNED FACADE**  
feature double glazed skinned facade  
feature double glazed skinned facade  
feature double glazed skinned facade
- FEATURE STACK EFFECT VENTILATION IN GLAZED CHIMNEY**  
have podium floor for roof level corner of building  
low EXHAUSTY DOUBLE GLAZING  
horizontal
- INTELLIGENT BUILDING MANAGEMENT SYSTEM**  
controlling natural ventilation, window control, lighting  
cooling, air conditioning, security, shading  
control, air conditioning, security, shading
- RENEWABLE ENERGY PHOTOVOLTAICS ON ROOF**  
**THERMAL MASS CONSTRUCTION**  
infrared concrete floors and recess concrete walls  
to improve summer and winter comfort
- LOW TONIC FINISHES**
- ENVIRONMENTAL CONSCIOUSNESS**  
feature in water saving, water saving of fixtures and  
washing down of their surfaces
- WATER EFFICIENT FIXTURES & FITTINGS**
- MAINTAINED NATURAL DRAINAGE**  
and low energy appliances
- SOLAR HOT WATER UNITS**
- REFER TO ENVIRONMENTAL SUSTAINABILITY CONSULTANT**  
BY W/ Sustainability



**Roof plan**  
Scale: 1:100



**basement floor plan**  
Scale: 1:100



<b>applicant</b> City of Greater Melbourne No. 02 9819 1288	<b>respondent</b> City of Greater Melbourne No. 02 9819 1288	<b>lead</b> Vivian K. Williams No. 02 9819 1288	<b>sustainability</b> Vivian K. Williams No. 02 9819 1288	<b>structural</b> Vivian K. Williams No. 02 9819 1288	<b>mechanical</b> Vivian K. Williams No. 02 9819 1288	<b>traffic</b> Vivian K. Williams No. 02 9819 1288	<b>landscape</b> Vivian K. Williams No. 02 9819 1288
---	--	---	---	---	---	--	--







## Appendix C

---

Sidra Outputs

# MOVEMENT SUMMARY

Site: Kiora / Urunga\_PM - Existing

Kiora Rd / Urunga Pde  
 Period: PM  
 Scenario: Existing  
 Signals - Actuated Cycle Time = 59 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kiora Rd (south)											
2	T	568	5.0	0.306	10.1	LOS A	6.5	47.5	0.62	0.53	27.8
3	R	131	2.0	0.339	22.2	LOS B	4.0	28.5	0.83	0.77	20.4
Approach		699	4.4	0.339	12.4	LOS A	6.5	47.5	0.66	0.57	26.0
East: Urunga Pde (east)											
4	L	299	2.0	0.383	16.5	LOS B	7.0	49.5	0.63	0.77	25.6
6	R	135	2.0	0.315	24.5	LOS B	4.4	31.0	0.79	0.76	20.9
Approach		434	2.0	0.383	19.0	LOS B	7.0	49.5	0.68	0.77	24.0
North: Kiora Rd (north)											
7	L	173	2.0	0.327	25.4	LOS B	5.5	38.9	0.81	0.78	18.7
8	T	514	5.0	0.472	19.9	LOS B	8.0	58.1	0.85	0.71	20.0
Approach		686	4.2	0.472	21.3	LOS B	8.0	58.1	0.84	0.73	19.7
All Vehicles		1819	3.8	0.472	17.3	LOS B	8.0	58.1	0.73	0.68	22.8

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	211	24.8	LOS C	0.3	0.3	0.90	0.90
P3	Across E approach	211	23.8	LOS C	0.3	0.3	0.90	0.90
P5	Across N approach	158	25.3	LOS C	0.3	0.3	0.90	0.90
All Pedestrians		580	24.6				0.90	0.90

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: Kiora / Urunga\_PM - Existing  
+Development

Kiora Rd / Urunga Pde  
Period: PM  
Scenario: Existing + Development  
Signals - Actuated Cycle Time = 59 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kiora Rd (south)											
2	T	568	5.0	0.306	10.1	LOS A	6.5	47.5	0.62	0.53	27.8
3	R	131	2.0	0.339	22.2	LOS B	4.0	28.5	0.83	0.77	20.4
Approach		699	4.4	0.339	12.4	LOS A	6.5	47.5	0.66	0.57	26.0
East: Urunga Pde (east)											
4	L	309	2.0	0.396	16.6	LOS B	7.2	51.4	0.64	0.77	25.6
6	R	145	2.0	0.340	24.6	LOS B	4.7	33.4	0.80	0.77	20.8
Approach		455	2.0	0.396	19.2	LOS B	7.2	51.4	0.69	0.77	23.8
North: Kiora Rd (north)											
7	L	173	2.0	0.327	25.4	LOS B	5.5	38.9	0.81	0.78	18.7
8	T	514	5.0	0.472	19.9	LOS B	8.0	58.1	0.85	0.71	20.0
Approach		686	4.2	0.472	21.3	LOS B	8.0	58.1	0.84	0.73	19.7
All Vehicles		1840	3.8	0.472	17.4	LOS B	8.0	58.1	0.73	0.68	22.8

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).  
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).  
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	211	24.8	LOS C	0.3	0.3	0.90	0.90
P3	Across E approach	211	23.8	LOS C	0.3	0.3	0.90	0.90
P5	Across N approach	158	25.3	LOS C	0.3	0.3	0.90	0.90
All Pedestrians		580	24.6				0.90	0.90

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).  
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).