

Randwick City Council
**Kensington and Kingsford Town
Centres**
Response to TfNSW

Issue | 16 January 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 272771

Arup Australia Pty Ltd ABN 76 625 912 665

Arup
Level 5
151 Clarence Street
Sydney NSW 2000
Australia
www.arup.com

ARUP

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1 Introduction

Arup provided the traffic and transport input to the Kensington and Kingsford Town Centres study in 2017 producing two reports:

- Stage 1 Transport Assessment – 20 January 2017
- Stage 2 Transport Modelling Reports – 18 May 2017

TfNSW has provided feedback and requested further information in a letter of 4 Oct 2019. Arup is pleased to provide the additional information requested. The items of work prepared by Arup are outlined below.

Mode Share

An explanation of the differing assumptions on mode share and traffic generation rates will be provided.

Traffic Modelling

Electronic copies of the traffic model will be provided.

Proposed Intersection Arrangements

Arup has developed a concept sketch for the two intersection improvements as follows:

- Anzac Parade/ Todman Avenue
- Anzac Parade/ Barker Street

Active Transport

Arup has prepared an area wide plan showing how the study precinct is connected into existing and proposed bicycle facilities

2 Mode Share

2.1 Comment

Table 7 of the Planning Proposal states the following:

“The different mode share assumptions were made by different consultants preparing reports based on different methodology, including different assumptions on bus services to be provided in addition to the light rail. The different mode share assumptions do not materially change the outcome of the Planning Proposal, particularly the proposed dwelling uplift. An explanation of the differing assumptions will be provided to TfNSW and RMS. See advice provided by TfNSW on 16 June 2017 regarding the ability of TfNSW to adjust bus services according to demand.”

2.2 Recommendation

It is requested that an explanation of the differing assumptions on mode share and traffic generation rates be provided to the satisfaction of TfNSW and Roads & Maritime.

2.3 Response

The following information is provided in the traffic and transport reports prepared to support the planning proposal in relation to public transport mode share from the new development:

- *Based on the EMM report, there has been no increase assumed in the peak hour public transport travel mode share as there are concerns regarding the capacity of the future Anzac Parade Light rail system to accommodate increased passenger volumes, in comparison to the existing Anzac Parade and Bunnerong Road bus based public transport systems.*
- *Based on the EMM Addendum Report, there has been an increase of 20% assumed in the peak hour public transport travel mode share for the period between 2020 (the opening of the Light Rail) and 2031. This assumption is supported by the transport-oriented nature of the new development, the new residents that would be attracted to the area by the Light Rail and the perceived reliability of the Light Rail as opposed to buses.*
- *Based on the Arup Report, public transport mode share is predicted to increase from 37% to 42% for the residential component of the development with the Sydney Light Rail in place. This is an increase of public transport mode share by approximately 14% compared to without the Sydney Light Rail. It is noted that while the Arup report suggests an increase of PT mode share overall, they have predicted a reduction in train trips to 0%.*

The 6% train mode for residents was assumed to be accessed by a bus connection. With the LRT it is assumed that train trips will connect using LRT and the 6% train has been included in the 30% LRT. Based on a target 10% car reduction, a 14% PT increase is required. Currently 90% of residents who live in Kensington and work in the Sydney CBD travel by bus. New residents moving into high density apartments with lower car parking provision will continue to be focused on travel towards the Sydney CBD given the LRT supporting the target PT increase. The DCP parking rates for residential will be reduced in this area – potentially from an existing average of 1.17 car spaces/dwelling to 0.7 car spaces/dwelling.

We have reviewed the change in mode for Harold Park as an example of where major high density development has occurred between the 2011 and 2016 census periods. This location is adjacent to the Jubilee Park LRT stop which was open in both census periods.

The tram mode went up to 8% and car mode went down by 5%. Overall PT is 40%.

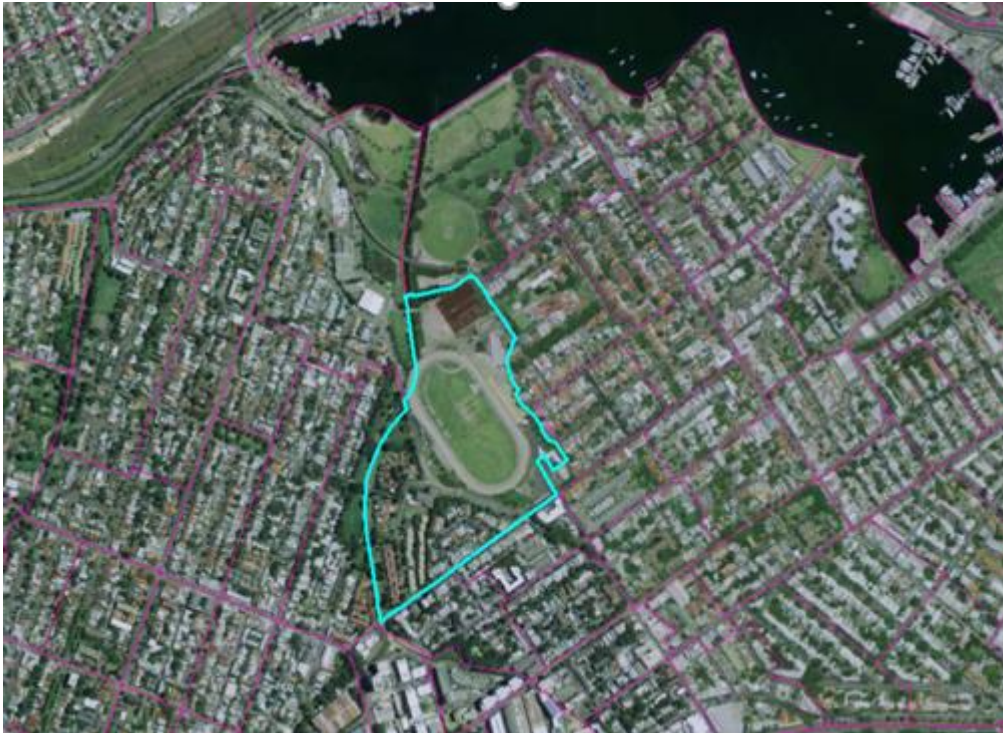
Harold Park	2011		2016	
	Trips	Percentage	Trips	Percentage
Train	9	5%	100	10%
Tram	0	0%	87	8%
Bus	51	27%	233	22%
Ferry	0	0%	0	0%
Taxi	0	0%	13	1%
Car	85	45%	421	40%
Truck	0	0%	0	0%
Motorbike/scooter	3	2%	24	2%
Bicycle	15	8%	42	4%
Walked only	24	13%	130	12%
Total	187	100%	1050	100%



Harold Park 2011



Harold Park 2016



Census zone captured

The Arup report suggests that there will be a reduction in private vehicle mode share (drivers and passengers) for journeys to work. Further evidence and justification should be provided for the reduction (ie from 66% to 40% journey to work by private vehicle in the subject travels zones).

There are a number of things that will influence employee travel choice and reduced car mode:

- improved public transport accessibility, convenience and frequency of service.
- constrained car parking provision for new development and reduced all day on street car parking. The DCP parking rates for business premises will be significantly reduced in this area - potentially from 1/40m² to 1/125m².
- businesses with a larger number of employees tend to have a wider spread of modes used.
- there could be expected to be a greater level of self-containment with workers able to live locally.
- improved active transport infrastructure.

The reduction to approximately 40% (and potentially lower) private vehicle use within the travel zone for employees is consistent with the Harold Park precinct and aligns with the 2016 Census data trends (see the Transport Modelling and Assessment Statement of Currency letter provided by Arup to Council on 14 November 2019).

3 Proposed Intersection Arrangements

3.1 Comment

Table 7 of the Planning Proposal states the following:

“The proposed intersection improvements are proposed through the planning strategy, and are not a matter for consideration at Planning Proposal stage. The required modelling will be undertaken as part of the implementation of the planning strategy.”

Whilst details of intersection improvements are not required at the strategy stage, Council is seeking to amend its LEP which provides the opportunity to identify land that might be required for a public purpose including land for transport related infrastructure improvements. It is advised that the layout and geometric requirements of the any required intersection improvements at concept level should be identified and form part of the planning proposal so as to ensure that any required land components such as intersection improvements form part of the Planning Proposal.

3.2 Recommendation

It is requested that the layout and geometric requirements of the any required intersection improvements be identified and agreed with TfNSW and Roads & Maritime and form part of the Planning Proposal.

3.3 Response

Arup has developed a concept sketch for the two intersection improvements as follows:

- Anzac Parade/ Todman Avenue – noting that the double right turn lanes have already been installed as part of the CSLER works. We have included a segregated two-way cycleway along the northern kerb line which is proposed by the Randwick City Council bike plan.
- Anzac Parade/ Barker Street - adding an extra westbound lane to the Barker Street approach by requiring an increased setback and land dedication from the petrol station and potentially also the McDonalds.

3.4 Intersection modelling

The Sydney Light Rail SCATSIM Aimsun model, developed by GTA consultants, models the road network from North Sydney through the Sydney CBD to Kingsford under the CBD South East Light Rail (CSELR) and forms the basis of this investigation. The Sydney Light Rail model was itself developed from the Sydney Transit Model (STM), adding mesoscopic dynamic user equilibrium (DUE) simulation of the whole area to the strategic assessment of the CSELR project.

An appropriate subnetwork of the received model has been used to investigate the Kingsford / Kensington area as described in the Arup modelling report (18 May 2017).

3.5 Anzac Parade / Todman Avenue

The proposed arrangement for the Anzac Parade / Todman Avenue intersection with a segregated cycleway on the northern side of Todman Avenue is shown in Figure 1. The lane arrangements with the additional eastbound traffic lane have been completed as part of the light rail infrastructure works.

To achieve the segregated cycleway, the eastbound traffic lanes on Todman Avenue have been moved to the south and the westbound lanes have been narrowed. It is recommended that the westbound bus stop be relocated to the west to permit two travel lanes westbound without the bus zone blocking the traffic flow.

The pedestrian crossing of Anzac Parade is configured as a staggered crossing with a storage area which accesses the Light Rail stop. This enables it to be run as a staged crossing. No changes are proposed to the pedestrian operations.

The proposed cycleway phase would run in parallel to the Todman Avenue traffic with a start hold on the left turn traffic movement.

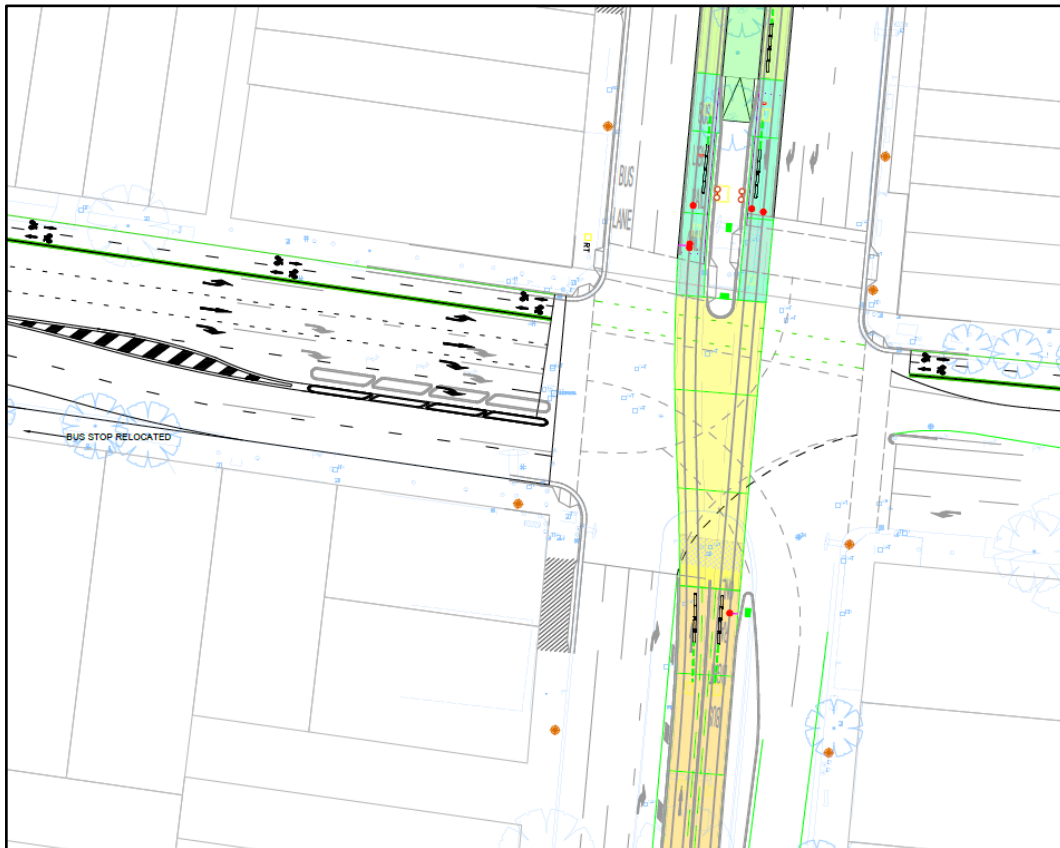


Figure 1: Proposed Anzac Parade / Todman Avenue intersection

The turning paths for the MRV and HRV movements have been checked as appropriate for each movement and road type and are provided in Appendix A.

SKT01 - Todman: proposed intersection lane arrangements

SKT02 - Todman: swept paths for right turns

SKT03 - Todman: swept paths for left turns

3.5.1 Todman Avenue segregated cycleway

The segregated cycleway would continue east from Anzac Parade to Doncaster Avenue as shown in Figure 2. This would require the reorientation of the car parking from 90° to parallel parking.



Figure 2: Possible segregated cycleway arrangement on Todman Avenue east of Anzac Parade

3.5.2 SIDRA Intersection modelling

The SIDRA intersection modelling package has been used to model the revised intersection arrangements with the addition of the segregated cycleway. The traffic volumes have been extracted from the Aimsun model

The existing and future operation for the AM and PM peak hours are shown in Table 1 to Table 4.

- In the AM peak the LoS remains at C with the overall DoS remaining the same at 0.73.
- In the PM peak the LoS remains at C with the overall DoS remaining the same at 0.67.

On this basis the implementation of a segregated cycleway appears to be achievable within the existing road carriageway.

Table 1: Existing AM Peak

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Anzac Parade												
1	L2	46	0.0	0.722	43.2	LOS D	15.6	113.3	0.97	0.88	1.18	20.9
2	T1	974	5.5	0.722	38.5	LOS C	15.6	113.3	0.97	0.87	1.07	19.0
3	R2	138	0.0	0.539	49.2	LOS D	6.5	45.4	0.98	0.79	0.98	17.4
Approach		1158	4.6	0.722	40.0	LOS C	15.6	113.3	0.97	0.86	1.06	18.8
East: Todman Avenue												
4	L2	36	0.0	0.092	22.9	LOS B	0.8	5.5	0.85	0.70	0.85	26.2
5	T1	99	0.0	0.428	52.4	LOS D	2.5	17.5	1.00	0.74	1.00	16.8
Approach		135	0.0	0.428	44.5	LOS D	2.5	17.5	0.96	0.73	0.96	18.5
North: Anzac Parade												
7	L2	1	0.0	0.717	43.1	LOS D	14.9	115.4	0.97	0.86	1.01	17.5
8	T1	646	13.8	0.717	38.5	LOS C	14.9	115.4	0.97	0.86	1.01	19.1
9	R2	369	0.0	0.726	52.3	LOS D	9.2	64.6	1.00	0.88	1.11	15.4
Approach		1017	8.8	0.726	43.5	LOS D	14.9	115.4	0.98	0.87	1.05	17.6
West: Todman Avenue												
10	L2	31	0.0	0.146	22.4	LOS B	3.6	25.0	0.63	0.56	0.63	27.2
11	T1	214	0.0	0.146	18.2	LOS B	3.6	25.0	0.64	0.54	0.64	29.3
12	R2	586	0.0	0.721	36.8	LOS C	12.3	85.8	0.87	0.83	0.93	22.1
Approach		831	0.0	0.721	31.5	LOS C	12.3	85.8	0.80	0.75	0.84	23.6
All Vehicles		3140	4.6	0.726	39.1	LOS C	15.6	115.4	0.93	0.83	0.99	19.6

Table 2: Future AM Peak

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Anzac Parade												
1	L2	46	0.0	0.722	43.2	LOS D	15.6	113.3	0.97	0.88	1.18	21.0
2	T1	974	5.5	0.722	38.5	LOS C	15.6	113.3	0.97	0.87	1.07	19.1
3	R2	138	0.0	0.539	49.2	LOS D	6.5	45.4	0.98	0.79	0.98	17.4
Approach		1158	4.6	0.722	40.0	LOS C	15.6	113.3	0.97	0.86	1.06	19.0
East: Todman Avenue												
4	L2	36	0.0	0.092	22.9	LOS B	0.8	5.5	0.85	0.70	0.85	26.2
5	T1	152	0.0	0.428	50.9	LOS D	2.5	17.5	0.99	0.72	0.99	14.8
Approach		187	0.0	0.428	45.5	LOS D	2.5	17.5	0.96	0.72	0.96	16.1
North: Anzac Parade												
7	L2	1	0.0	0.717	43.1	LOS D	14.9	115.4	0.97	0.86	1.01	17.7
8	T1	646	13.8	0.717	38.5	LOS C	14.9	115.4	0.97	0.86	1.01	19.2
9	R2	369	0.0	0.726	52.2	LOS D	9.2	64.6	1.00	0.88	1.11	15.5
Approach		1017	8.8	0.726	43.5	LOS D	14.9	115.4	0.98	0.87	1.05	17.7
West: Todman Avenue												
10	L2	31	0.0	0.032	17.4	LOS B	0.7	5.1	0.52	0.64	0.52	27.8
11	T1	266	0.0	0.259	25.1	LOS B	6.6	46.4	0.74	0.60	0.74	26.2
12	R2	586	0.0	0.727	37.1	LOS C	12.3	86.4	0.87	0.84	0.94	22.1
Approach		883	0.0	0.727	32.8	LOS C	12.3	86.4	0.82	0.76	0.86	22.9
All Vehicles		3245	4.4	0.727	39.5	LOS C	15.6	115.4	0.93	0.83	1.00	19.4

Table 3: Existing PM Peak

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Anzac Parade												
1	L2	23	0.0	0.469	34.7	LOS C	11.0	79.8	0.85	0.74	1.03	24.0
2	T1	824	5.6	0.469	29.6	LOS C	11.0	79.8	0.85	0.73	0.91	22.2
3	R2	58	0.0	0.264	49.1	LOS D	2.7	18.6	0.95	0.75	0.95	17.4
Approach		905	5.1	0.469	31.0	LOS C	11.0	79.8	0.86	0.73	0.91	21.8
East: Todman Avenue												
4	L2	79	0.0	0.224	24.7	LOS B	1.9	13.3	0.89	0.74	0.89	25.3
5	T1	97	0.0	0.419	52.3	LOS D	2.4	17.1	1.00	0.74	1.00	16.8
Approach		176	0.0	0.419	39.9	LOS C	2.4	17.1	0.95	0.74	0.95	19.7
North: Anzac Parade												
7	L2	1	0.0	0.646	36.2	LOS C	16.2	119.7	0.92	0.79	0.92	19.8
8	T1	772	7.4	0.646	31.5	LOS C	16.2	119.7	0.91	0.79	0.91	21.5
9	R2	292	0.0	0.668	52.7	LOS D	7.2	50.6	1.00	0.84	1.07	15.4
Approach		1064	5.3	0.668	37.3	LOS C	16.2	119.7	0.94	0.80	0.96	19.4
West: Todman Avenue												
10	L2	52	0.0	0.242	26.5	LOS B	5.9	41.5	0.71	0.64	0.71	24.7
11	T1	306	0.0	0.242	22.4	LOS B	5.9	41.5	0.72	0.61	0.72	26.7
12	R2	494	0.0	0.669	39.4	LOS C	10.5	73.8	0.91	0.82	0.93	21.2
Approach		852	0.0	0.669	32.5	LOS C	10.5	73.8	0.83	0.73	0.84	23.0
All Vehicles		2997	3.4	0.669	34.2	LOS C	16.2	119.7	0.88	0.76	0.91	21.1

Table 4: Future PM Peak

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Anzac Parade												
1	L2	23	0.0	0.484	35.6	LOS C	11.2	81.1	0.86	0.75	1.04	23.7
2	T1	824	5.6	0.484	30.5	LOS C	11.2	81.1	0.86	0.74	0.92	22.0
3	R2	58	0.0	0.264	49.1	LOS D	2.7	18.6	0.95	0.75	0.95	17.5
Approach		905	5.1	0.484	31.8	LOS C	11.2	81.1	0.87	0.74	0.92	21.6
East: Todman Avenue												
4	L2	79	0.0	0.224	24.6	LOS B	1.9	13.0	0.89	0.74	0.89	25.3
5	T1	149	0.0	0.419	50.8	LOS D	2.4	17.1	0.99	0.72	0.99	14.8
Approach		228	0.0	0.419	41.7	LOS C	2.4	17.1	0.96	0.73	0.96	17.3
North: Anzac Parade												
7	L2	1	0.0	0.667	37.1	LOS C	16.5	121.6	0.93	0.80	0.93	19.6
8	T1	772	7.4	0.667	32.5	LOS C	16.5	121.6	0.93	0.80	0.93	21.3
9	R2	292	0.0	0.668	52.7	LOS D	7.2	50.6	1.00	0.84	1.07	15.5
Approach		1064	5.3	0.668	38.0	LOS C	16.5	121.6	0.95	0.81	0.97	19.3
West: Todman Avenue												
10	L2	52	0.0	0.062	21.0	LOS B	1.4	9.8	0.59	0.67	0.59	25.6
11	T1	359	0.0	0.409	27.3	LOS B	10.8	75.7	0.80	0.67	0.80	24.8
12	R2	494	0.0	0.645	38.0	LOS C	10.3	72.1	0.89	0.80	0.90	21.8
Approach		904	0.0	0.645	32.8	LOS C	10.8	75.7	0.84	0.74	0.84	22.7
All Vehicles		3102	3.3	0.668	35.0	LOS C	16.5	121.6	0.89	0.76	0.92	20.7

3.6 Anzac Parade / Barker Street

Two intersection design plans have been prepared to show how the implementation of the third westbound approach lane on Barker Street could be achieved.

- Additional lane with existing petrol station and McDonalds driveway arrangement.
- Additional lane lengthened with land redevelopment.

The proposed arrangement for the Anzac Parade / Barker Street intersection interim plan is shown in Figure 3 and the ultimate plan is shown in Figure 4.

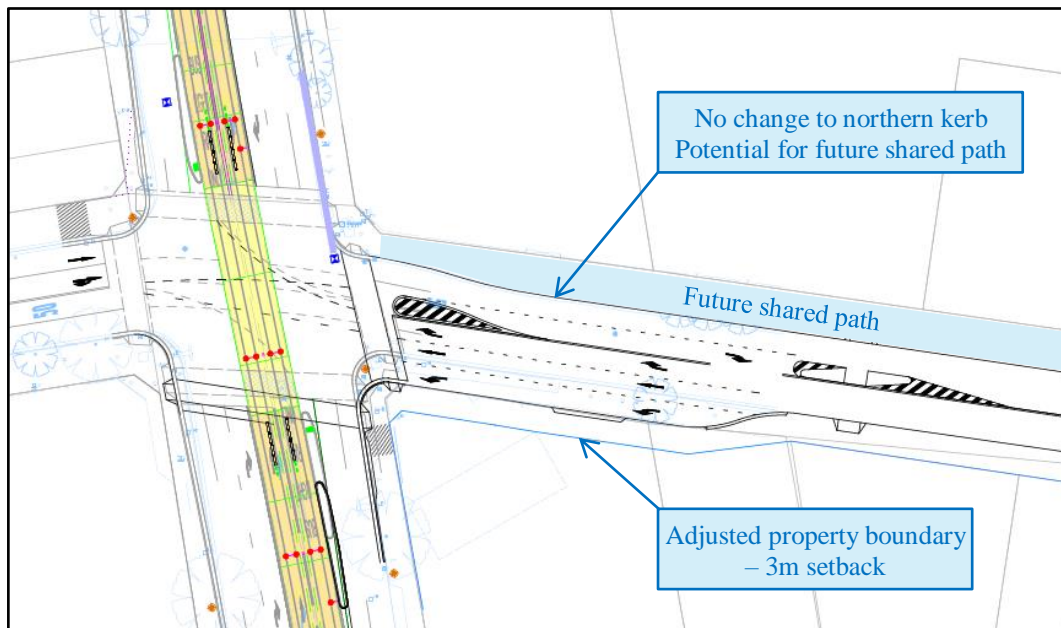


Figure 3: Interim intersection plan

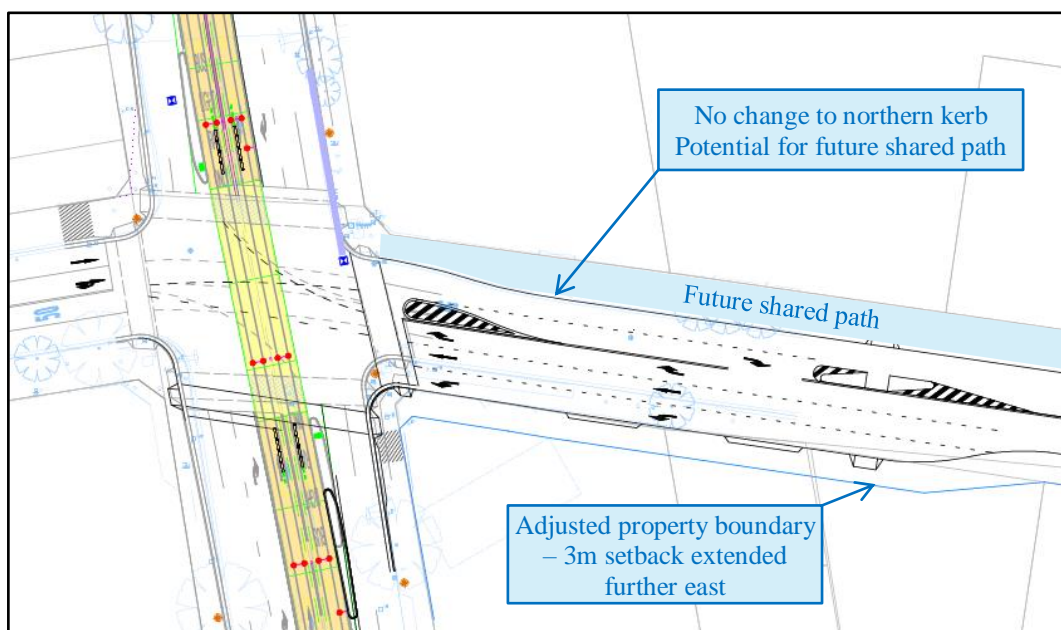


Figure 4: Ultimate intersection plan

The plans have been developed with the minimum property boundary adjustments to achieve the additional traffic lane. On the northern side there will be room for a shared path between Anzac Parade and UNSW Gate 13. This will accommodate the growing number of students/staff riding bikes and improve access on the southern side of the campus. On the southern side a 3m wide footpath verge is maintained however additional setback may be required if increased landscaping and public domain improvement is desired as part of future development.

The turning paths for the MRV and HRV movements have been checked as appropriate for each movement and road type and are provided in Appendix A.

SKT01 – Barker: proposed interim intersection lane arrangements

SKT02 – Barker: interim swept paths

SKT03 – Barker: interim swept paths

SKT04 – Barker: proposed ultimate intersection lane arrangements

SKT05 – Barker: ultimate swept paths

SKT06 – Barker: ultimate swept paths

4 Active Transport

4.1 Comment

The Future Transport 2056 supports the following:

- Walking or cycling to be the most convenient option for short, everyday trips up to 2km;
- Planning for emerging and future forms of micromobility; and
- The incorporation of the Principal Bicycle Network into local council land use and local road network planning.

4.2 Recommendation

It is requested that the proposal should consider:

- The provision of safe, high quality walking and cycling links that cater for local community movement to centres, stations and bus stops, schools, parks (including on the Green Grid) and other trip attractors (hospitals), and can accommodate increased use;
- New walking and cycling links are designed to comfortably cater for growing volumes and different types of micromobility devices; and
- Planning for interconnected paths and cycleways immediately outside the subject site and between adjacent local government areas and connecting regional routes, including routes on the Principal Bicycle Network.

4.3 Response

Randwick City Council has a number of programs underway to improve the active transport networks to connect centres, stations, bus stops and other key attractors within the LGA and broader region.

4.3.1 Bicycle plan and construction priorities map

Randwick City Council's Bicycle Plan identifies existing and proposed key bicycle routes in the City of Randwick.

The Bicycle Plan is designed to:

- improve links to key destinations within Randwick City, such as the University of New South Wales, Hospital Campus, town centres, Coogee Beach, Maroubra Beach and Heffron Park;
- identify a network of on- and off-road cycle paths and shared paths that can be used by the whole community;
- establish a practical works program for cycling infrastructure with priorities for construction; and
- link in with the Bike Plans of our neighbouring councils in the Southern Sydney Region of Councils.

A map showing the Bicycle Plan Route Priorities is shown in Figure 5.

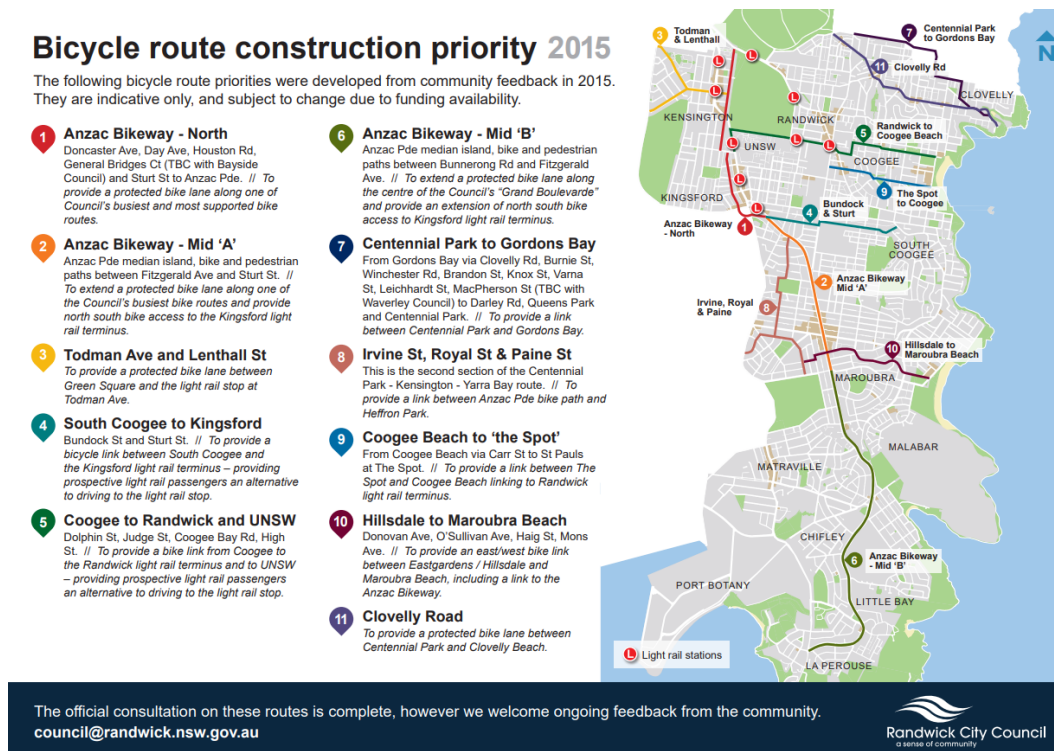


Figure 5: Randwick Council Bicycle Plan Route Priorities

4.3.2 Kensington and parts of West Kingsford Pedestrian Access and Mobility Plan

In 2010, Arup prepared a Pedestrian Access and Mobility Plan for Kensington and parts of West Kingsford. Walking routes and key crossing locations were prioritised and Council has been working towards achieving many of the recommendations of the PAMP.

4.3.3 The Greater Sydney Green Grid

The Greater Sydney Green Grid is Objective 32 of A Metropolis of Three Cities. It connects communities to the landscape. It is a long-term vision for a network of high quality green areas – from regional parks to local parks and playgrounds – that connect centres, public transport and public spaces to green infrastructure and landscape features. Within the public realm it includes enhanced waterway corridors, transport routes, suburban streets, footpaths and cycleways.

The delivery of the Greater Sydney Green Grid will build on past investments in the Regional Tracks and Trails Framework. Transport for NSW is establishing the Principal Bicycle Network which will provide high quality priority cycling routes across Greater Sydney. Opportunities to integrate the Principal Bicycle Network with the Greater Sydney Green Grid will be an important part of linking centres.

The Greater Sydney Green Grid will be delivered incrementally over decades, as opportunities and connections are refined and funded. Councils and the NSW Government will continue to use a range of land use planning tools, funding

programs such as the Metropolitan Greenspace Program and transport initiatives to deliver the Greater Sydney Green Grid.

Open space along the foreshores of beaches, harbours and bays of the Eastern Harbour City form the backbone of its green grid. The popular walking tracks along the coast and Sydney Harbour will be enhanced and complemented by improved connections through tree-lined streets and established urban parks, towards open space along coastal waterways, such as the Northern Beaches coastal lagoons, Cooks River and Georges River.

The Eastern City District Plan

Increasing urban tree canopy cover and delivering Green Grid connections is Planning Priority E17 of the Eastern City District Plan. The plan identifies 5 priority corridors and 6 projects important to the district.

Of particular relevance to the Kensington and Kingsford precinct is priority corridor 4 - Mill Stream and Botany Wetlands Open Space Corridor. Projects important to the district include 6 - The Great Coastal Walk and 10 – Eastern Beaches Walk. These are shown in Figure 6 which shows an extract of the Eastern City District Plan (shown in full in Figure 7).

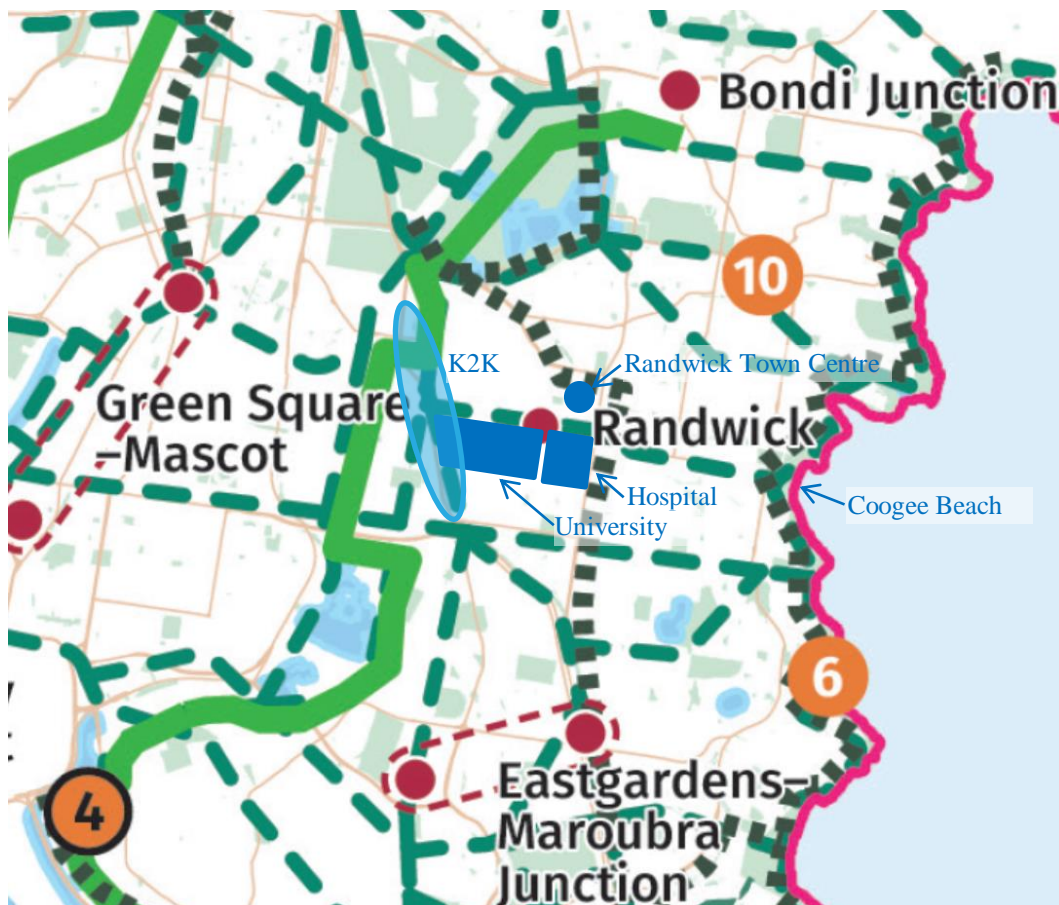


Figure 6: Extract from the Eastern City District Plan – Green Priority Corridors within the K2K Precinct

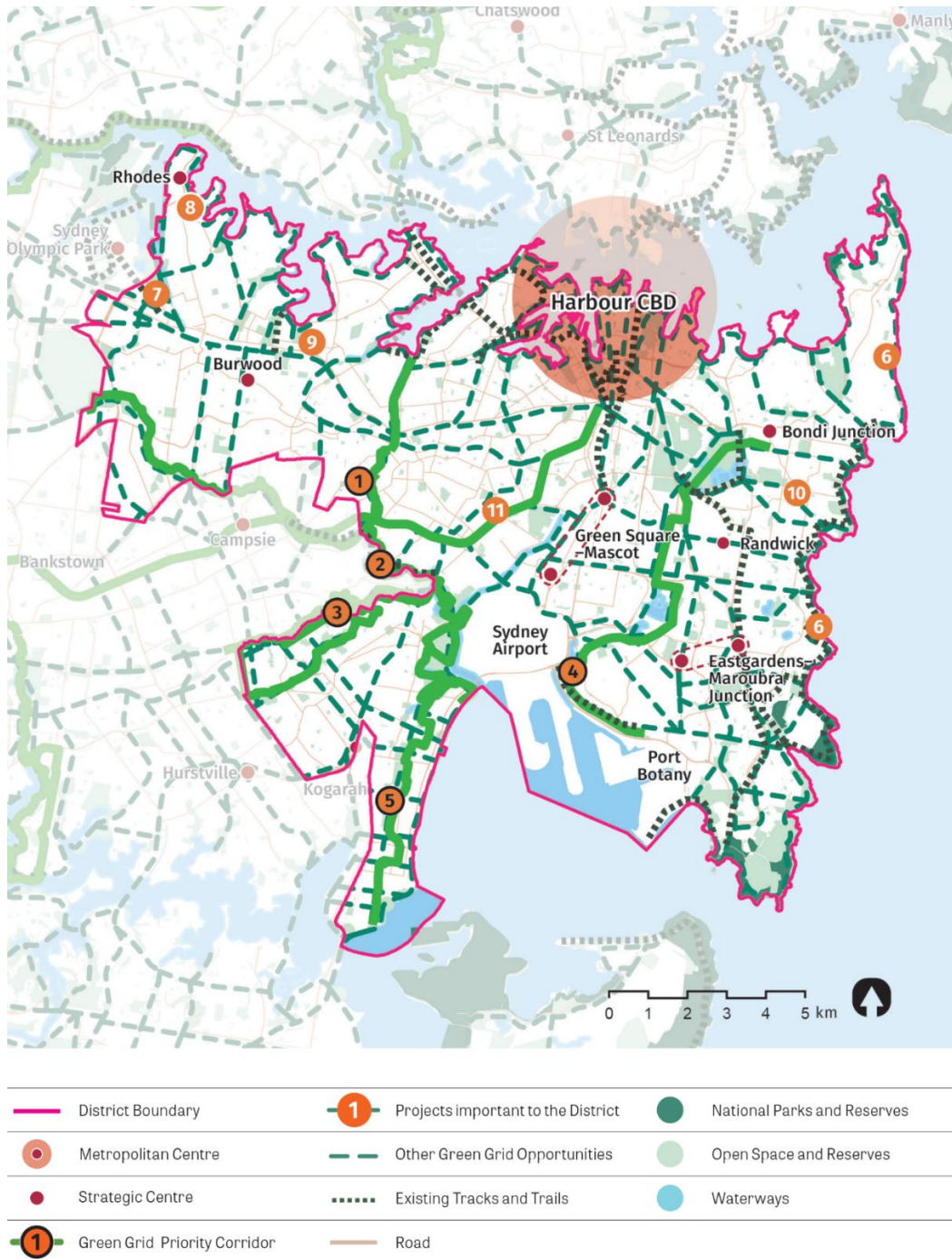
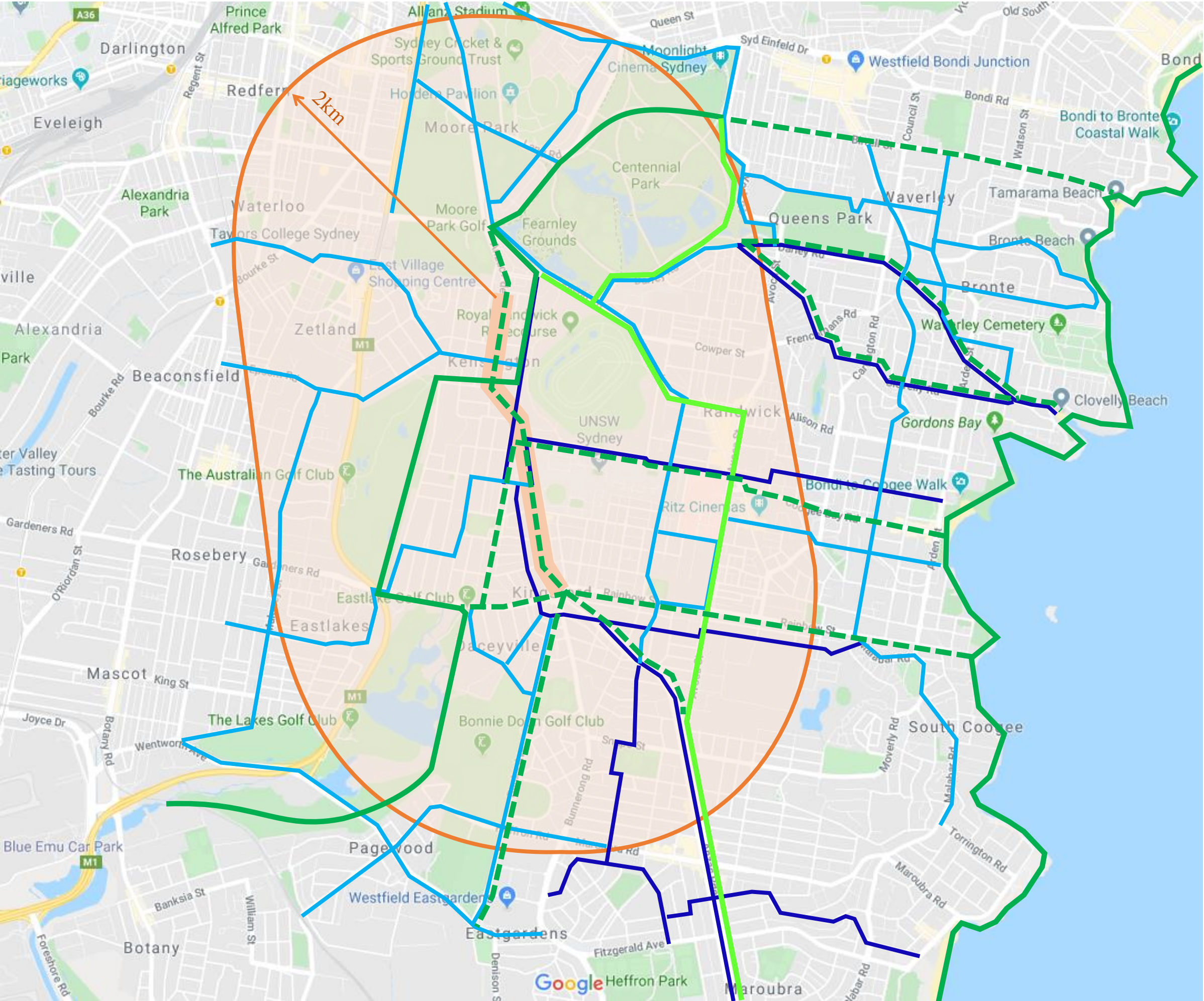


Figure 7: Eastern City District Plan

Arup has prepared an area wide plan showing how the study precinct is connected into existing and proposed pedestrian and bicycle facilities. The map covers the 2km active transport area around the study corridor overlaying the Greater Sydney walking priority items and the cycle routes - both existing and future priorities.

It is evident that a well connected active transport network is in development. Further information regarding Council's directions, priorities and actions for walking, cycling and green grid connections can be found in the draft Randwick LSPS (available on Council's website). Council is also currently preparing an integrated Transport Strategy to prioritise walking and cycling connections to key destinations.



Legend:

Kensington and Kingsford Town Centres

- 2km active transport

Greater Sydney Green Grid

- Priority Corridor
- Important to District
- Existing Trail

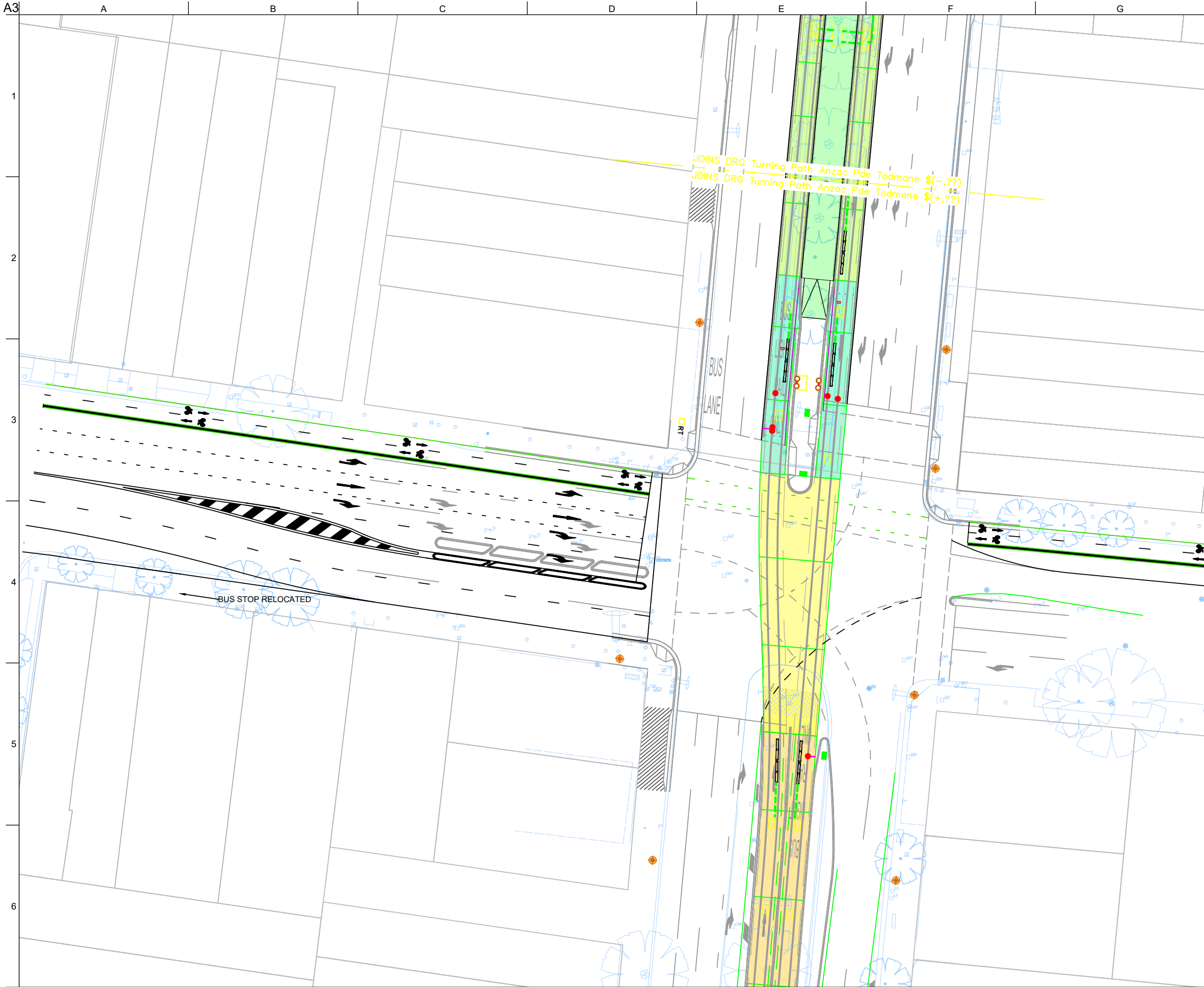
Cycleways

- Priority Cycleways
- Existing cycle routes

Active Transport Connections

Appendix A

Intersection diagrams



Legend

A	11/12/19	JG	JT	JT
For drafting				
Issue	Date	By	Chkd	Appd

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Arup, Level 5, 151 Clarence St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client

Randwick City Council

Job Title

Kensington and Kingsford
Planning Strategy

Drawing Title

Anzac Parade / Todman Avenue
Plan

Scale at A3

1:500

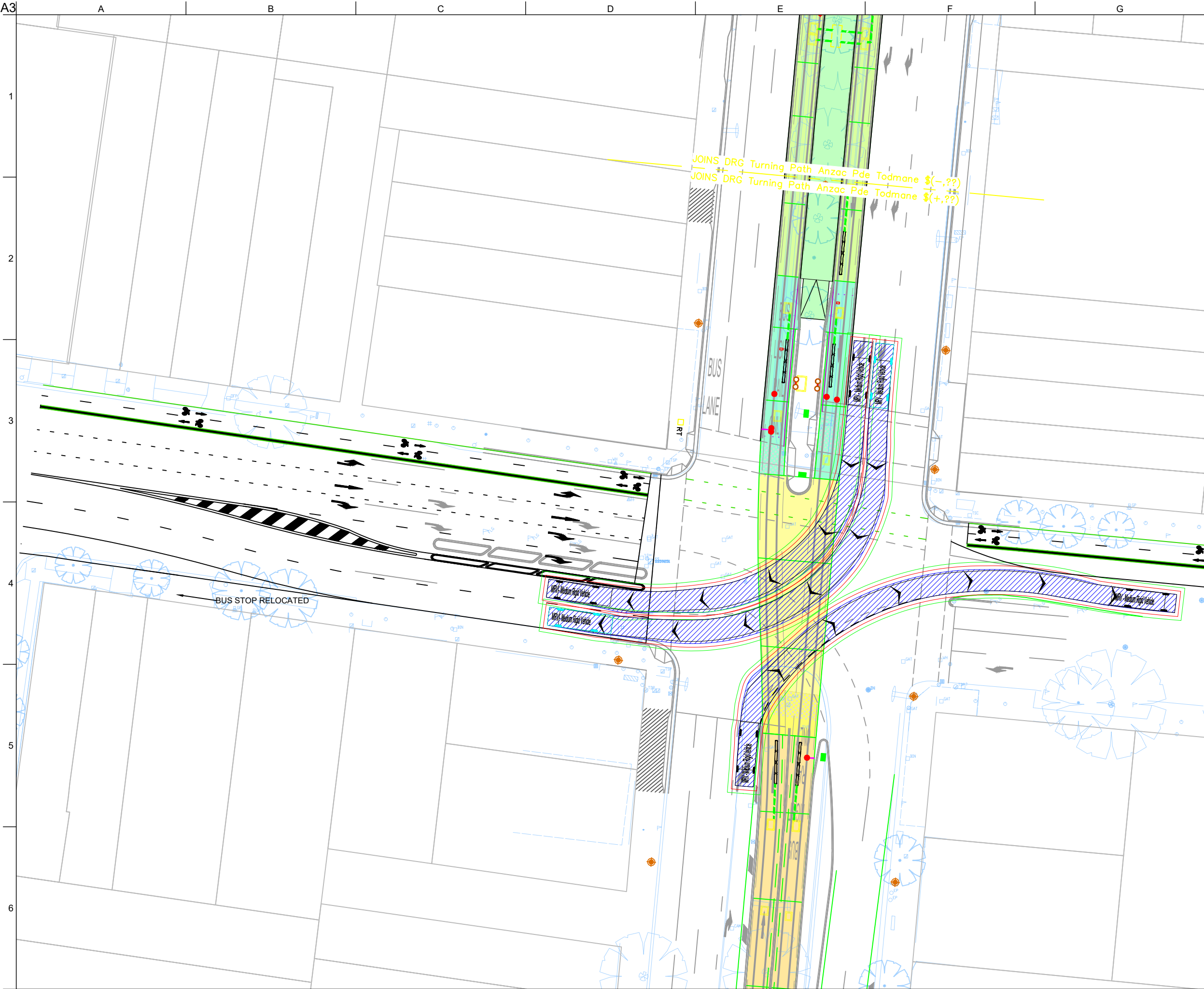
Discipline

Transport

Drawing Status

Draft

Job No	Drawing No	Issue
252756	SKT01	A



Legend

Body Envelope

500mm Envelope

Design Vehicle(s)

8.8

1.5

5

MRV - Medium Rigid Vehicle

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock to Lock Time

Curb to Curb Turning Radius

8.800m

2.500m

3.633m

0.428m

2.500m

4.00 sec

10.000m

12.5

2.4

6.133

1.4

HRV - Heavy Rigid Vehicle

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock to Lock Time

Curb to Curb Turning Radius

12.500m

2.500m

4.300m

0.417m

2.500m

6.00 sec

12.500m

A	11/12/19	JG	JT	JT
For drafting				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client

Randwick City Council

Job Title

Kensington and Kingsford
Planning Strategy

Drawing Title

Anzac Parade / Todman Avenue
Swept path right turn

Scale at A3

1:500

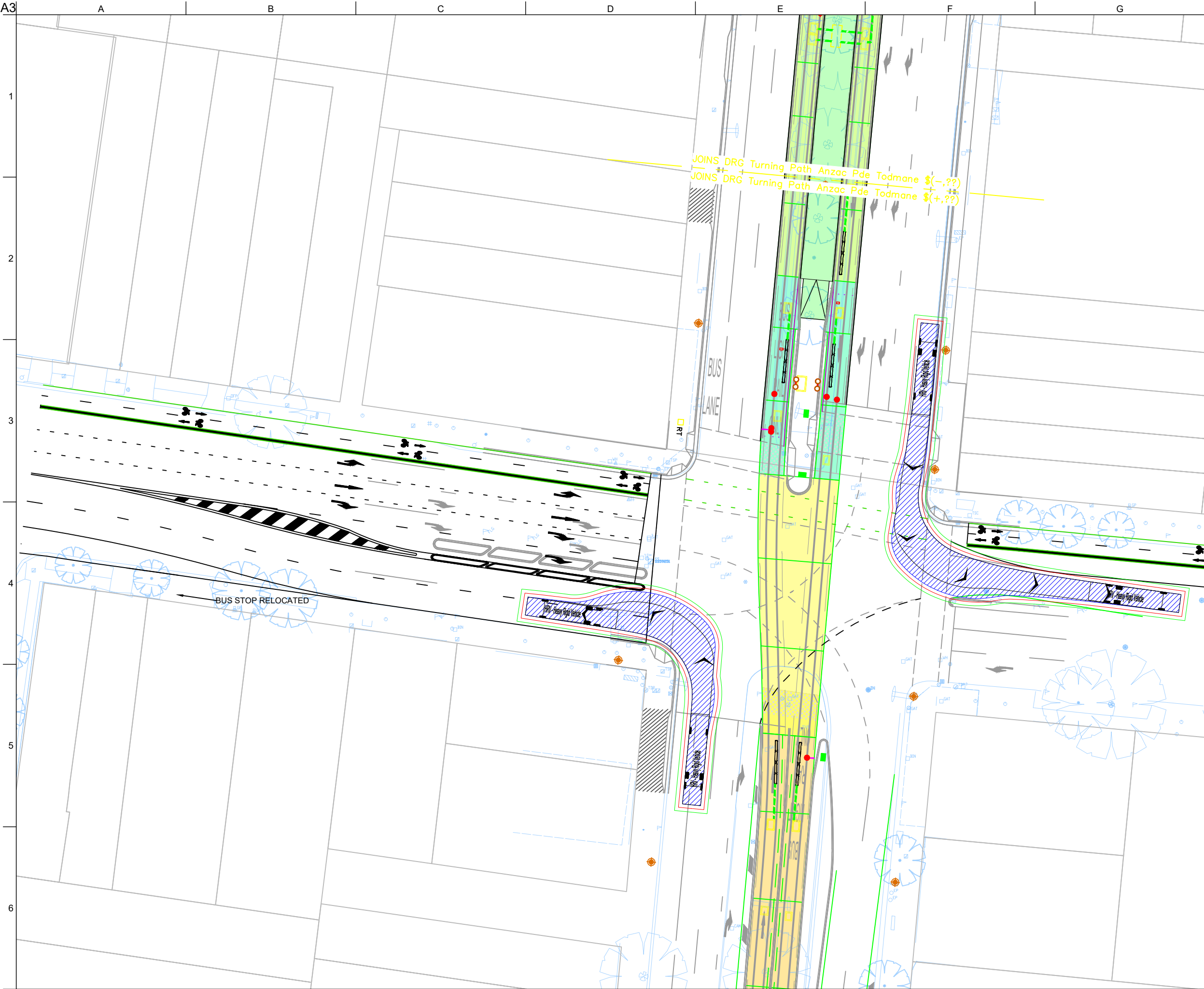
Discipline

Transport

Drawing Status

Draft

Job No	Drawing No	Issue
252756	SKT02	A



Legend

- Body Envelope
- 500mm Envelope
- 1000mm Envelope
- Wheel Envelope

Design Vehicle(s)

HRV - Heavy Rigid Vehicle
Overall Length 12.500m
Overall Width 2.500m
Overall Body Height 4.300m
Min Body Ground Clearance 0.417m
Track Width 2.500m
Lock to Lock Time 6.00 sec
Curb to Curb Turning Radius 12.500m

A	11/12/19	JG	JT	JT
For drafting				
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Sydney, NSW, 2000
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Client
Randwick City Council

Job Title
**Kensington and Kingsford
Planning Strategy**

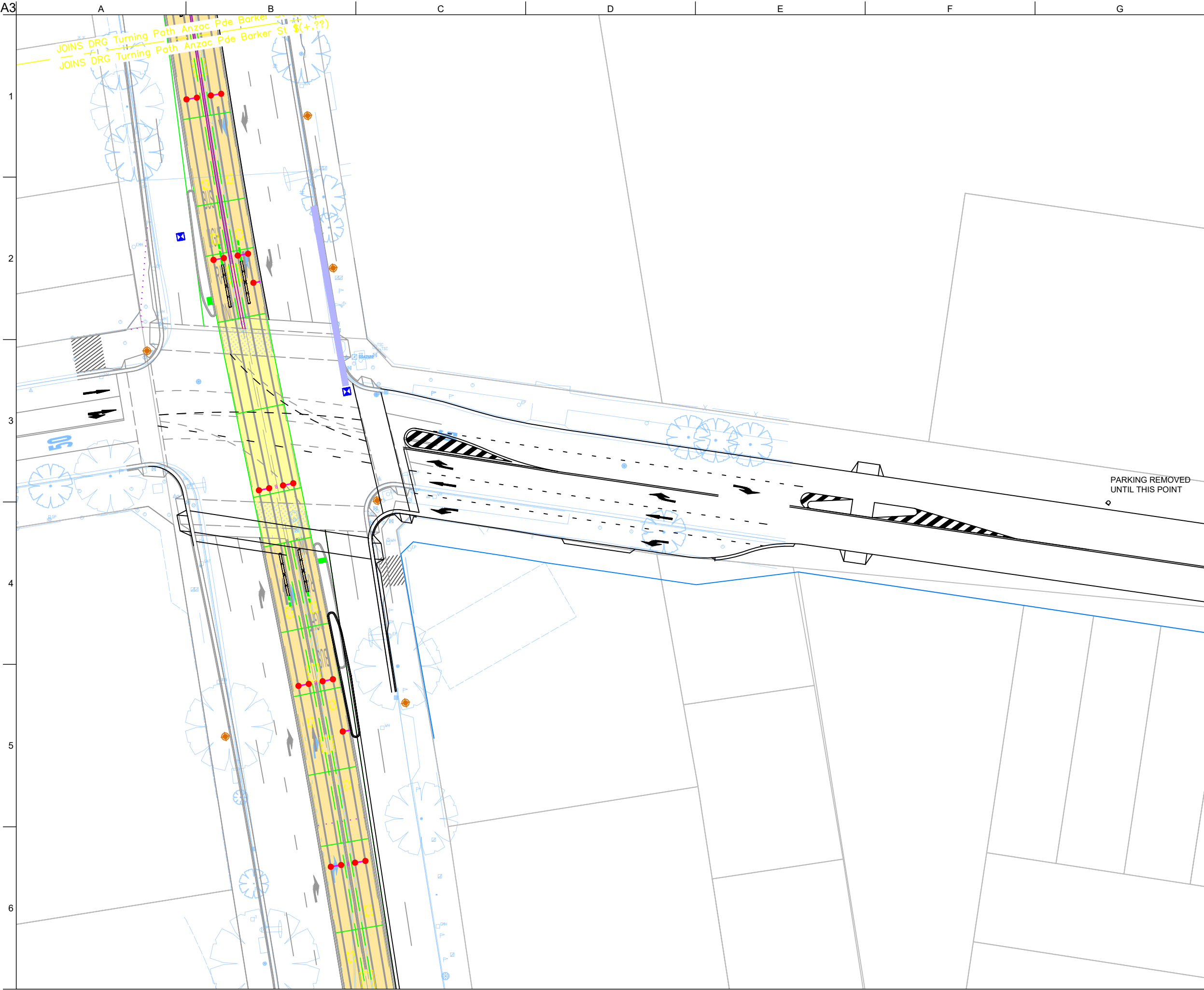
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Swept path left turn**

Scale at A3 1:500

Discipline Transport

Drawing Status
Draft

Job No 252756	Drawing No SKT03	Issue A
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Legend

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
Randwick City Council

Job Title
Kensington and Kingsford
Planning Strategy

Drawing Title
Anzac Parade / Baker Street
Interim Design
Plan

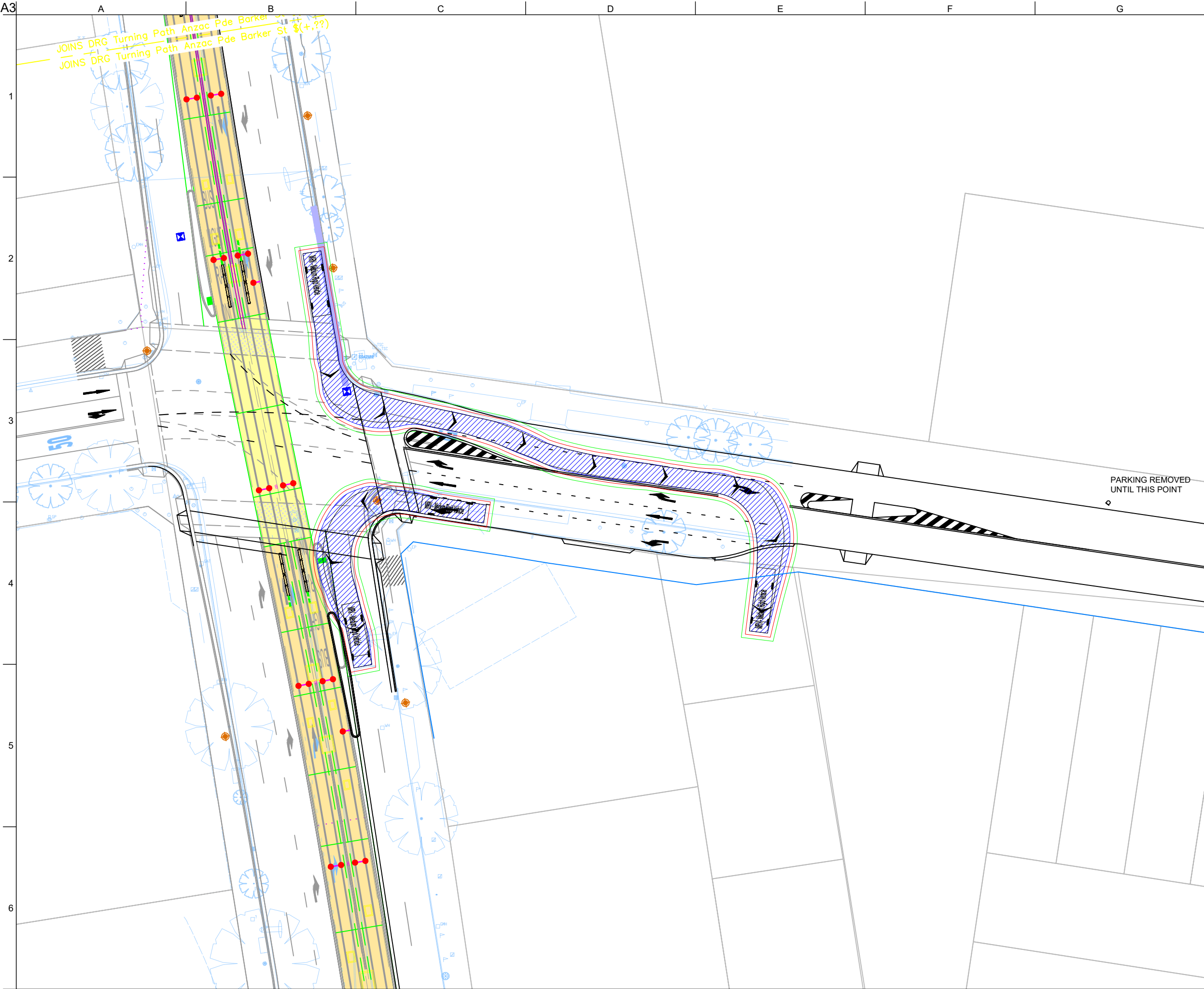
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Discipline Transport

Drawing Status

Draft

Job No 252756	Drawing No SKT01	Issue A
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Legend

Body Envelope

500mm Envelope

1000mm Envelope

Wheel Envelope

Design Vehicle(s)

MRV - Medium Rigid Vehicle

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock to Lock Time

Curb to Curb Turning Radius

8.800m

2.500m

3.633m

0.428m

2.500m

4.00 sec

10.000m

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000

Tel +61(02)9320 9320 Fax +61(02)9320 9321

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Client

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Job Title

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Planning Strategy

Drawing Title

Anzac Parade / Baker Street
Interim Design
Swept Path

Scale at A3

1:500

Discipline

Transport

Drawing Status

Draft

Job No

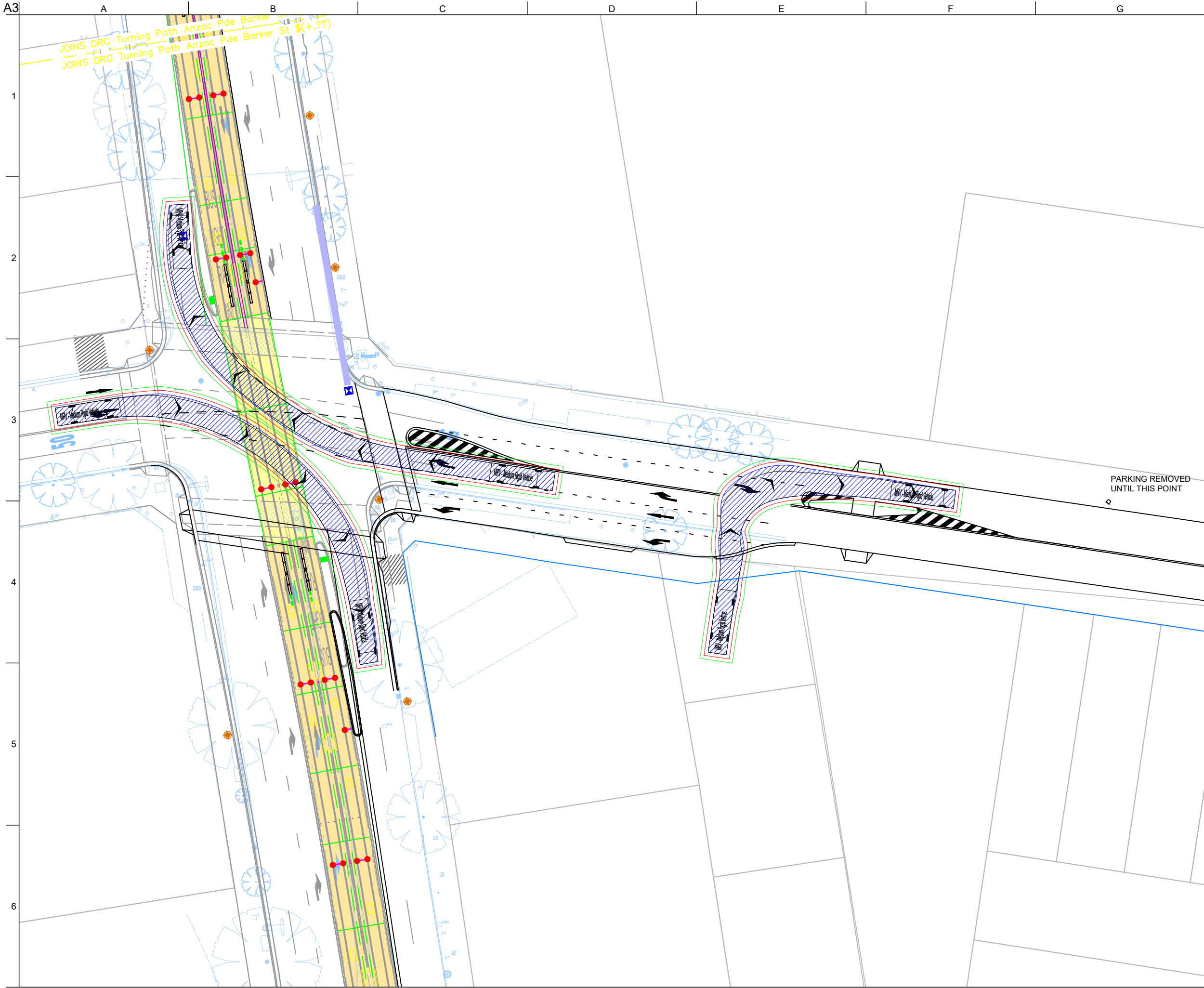
252756

Drawing No

SKT02

Issue

A



Legend

Body Envelope

500mm Envelope

1000mm Envelope

Wheel Envelope

Design Vehicle(s)

8.8

1.5

5

MRV - Medium Rigid Vehicle

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock to Lock Time

Curb to Curb Turning Radius

8.800m

2.500m

3.633m

0.428m

2.500m

4.00 sec

10.000m

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Arup, Level 5, 151 Clarence St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client

Randwick City Council

Job Title

Kensington and Kingsford
Planning Strategy

Drawing Title

Anzac Parade / Baker Street
Interim Design
Swept Path

Scale at A3

1:500

Discipline

Transport

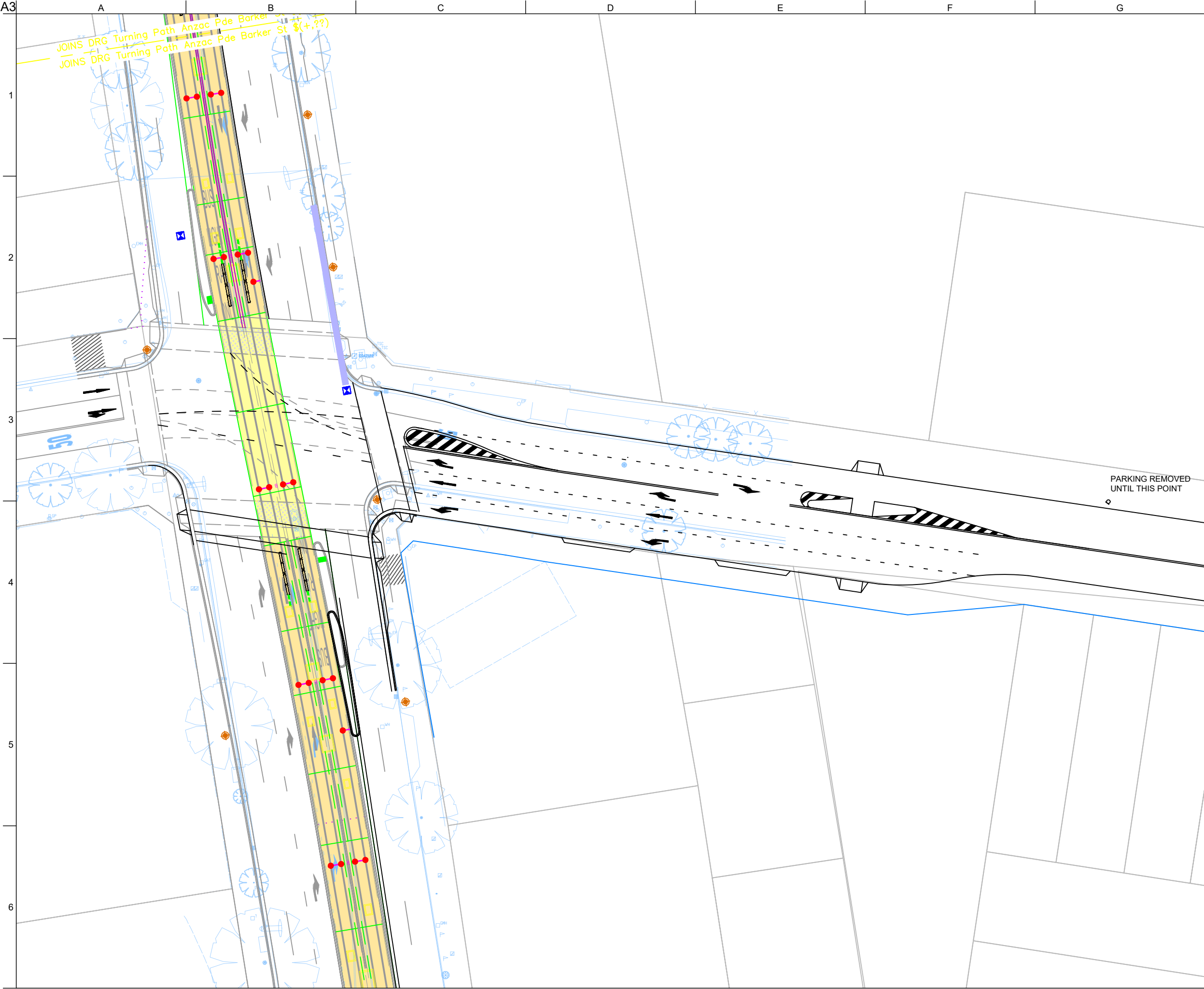
Drawing Status

Draft

Job No	Drawing No	Issue
252756	SKT03	A

Do not scale

© Arup



Do not scale

Legend

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client
Randwick City Council

Job Title
Kensington and Kingsford
Planning Strategy

Drawing Title
Anzac Parade / Baker Street
Final Design
Plan

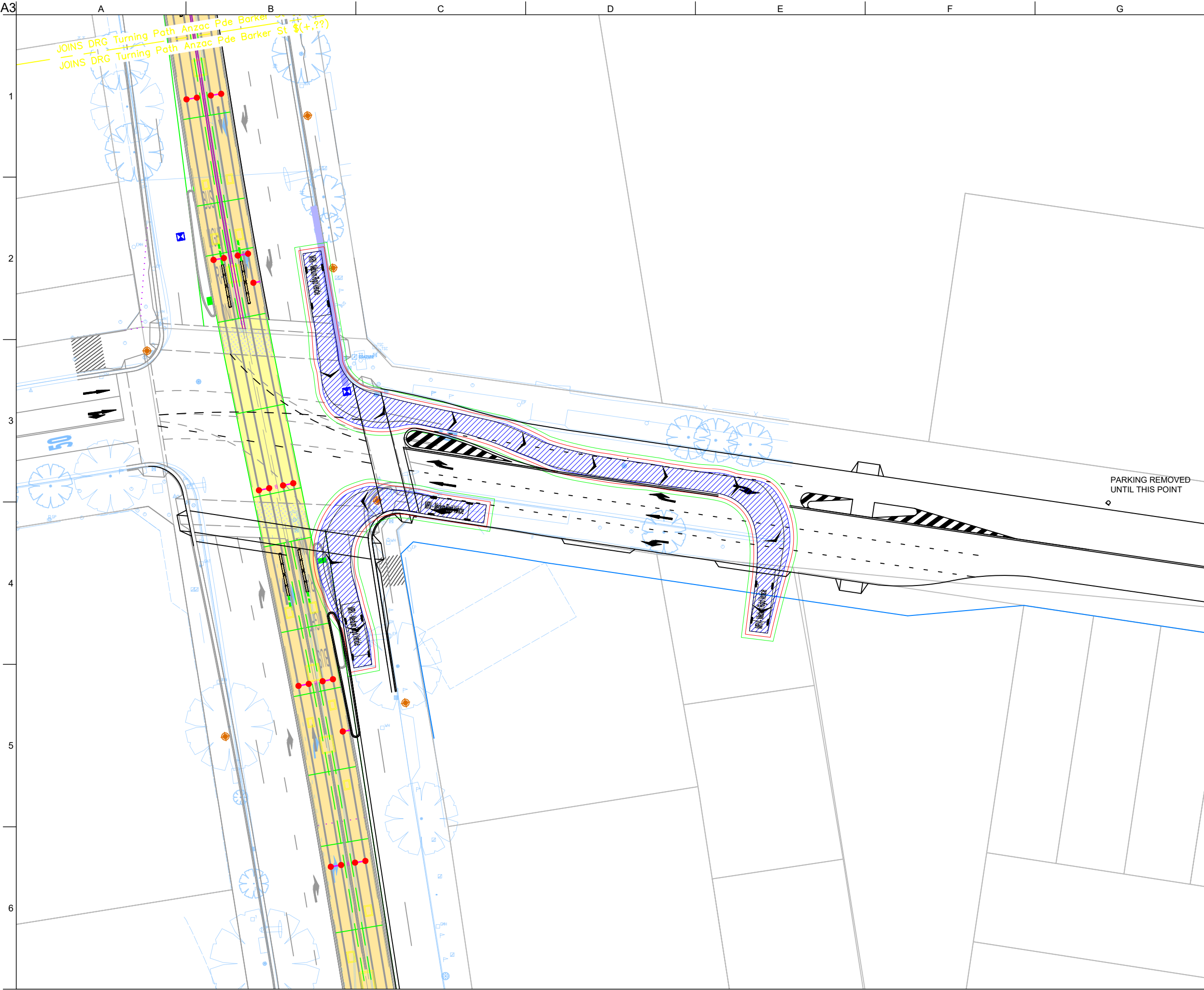
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Discipline Transport

Drawing Status

Draft

Job No 252756	Drawing No SKT04	Issue A
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Legend

Body Envelope

500mm Envelope

1000mm Envelope

Wheel Envelope

Design Vehicle(s)

MRV - Medium Rigid Vehicle

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock to Lock Time

Curb to Curb Turning Radius

8.800m

2.500m

3.633m

0.428m

2.500m

4.00 sec

10.000m

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000

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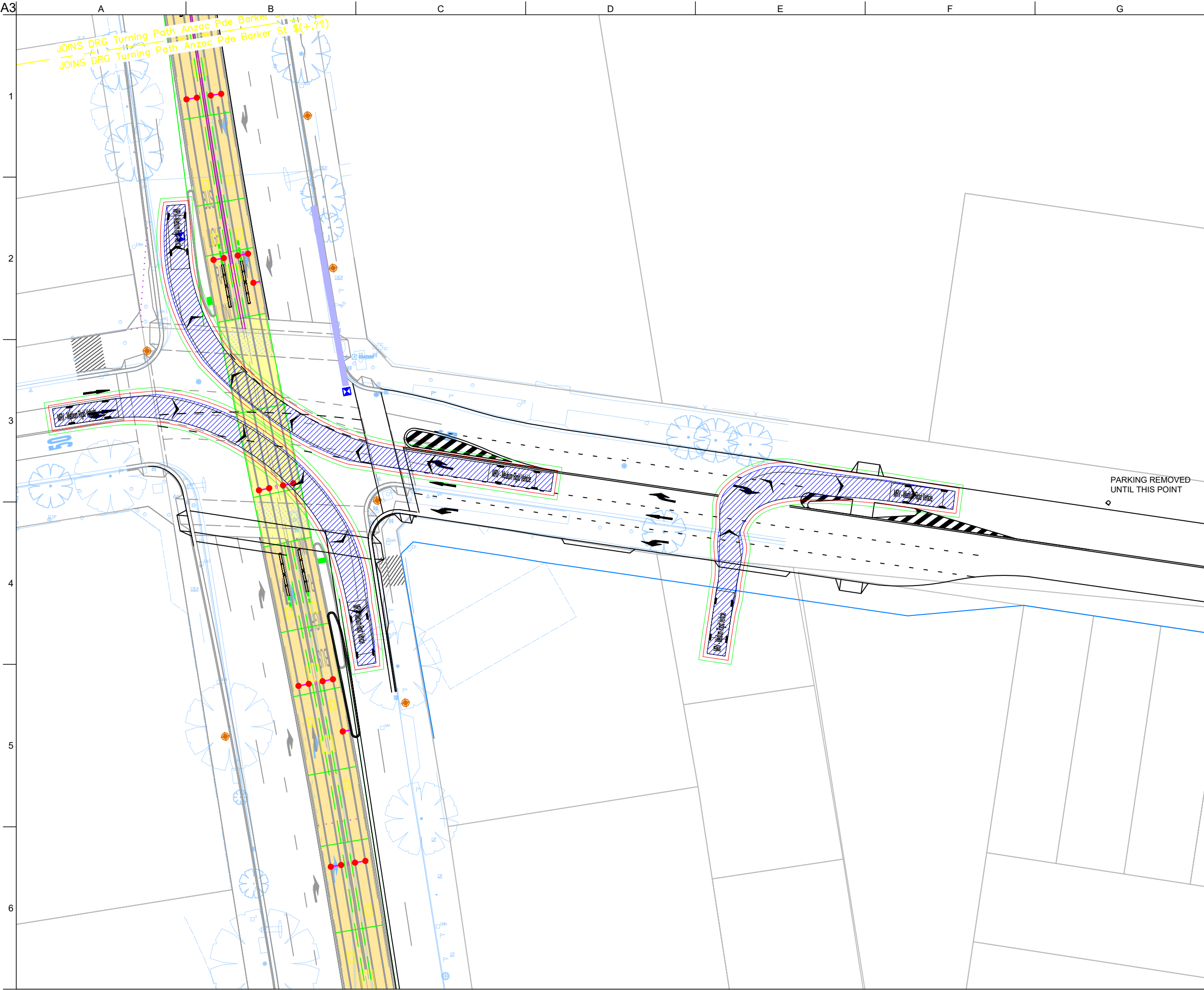
Job Title

Kensington and Kingsford
Planning Strategy

Drawing Title

Anzac Parade / Baker Street
Final Design
Swept Path

Scale at A3 1:500		
Discipline Transport		
Drawing Status		
Draft		
Job No	Drawing No	Issue
252756	SKT05	A

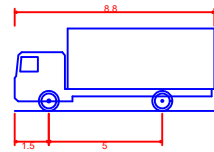


Legend

Body Envelope

500mm Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle
Overall Length 8.800m
Overall Width 2.500m
Overall Body Height 3.633m
Min Body Ground Clearance 0.428m
Track Width 2.500m
Lock to Lock Time 4.00 sec
Curb to Curb Turning Radius 10.000m

A	11/12/19	JG	JT	JT
For reference				
Issue	Date	By	Chkd	Appd

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Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client
Randwick City Council

Job Title
Kensington and Kingsford
Planning Strategy

Drawing Title
Anzac Parade / Baker Street
Final Design
Swept Path

Scale at A3 1:500

Discipline Transport

Drawing Status

Draft

Job No	Drawing No	Issue
252756	SKT06	A