

Proposed “River Gardens” Cemetery

1290 Greendale Road, Wallacia

Traffic and Parking Assessment

Ref: 20080
Date: November 2020
Issue: B

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1.0 Introduction

This report has been prepared to accompany Development Applications (Masterplan and Stage 1) to Liverpool City Council for the proposed new River Gardens Cemetery complex on Greendale Road at Wallacia (Figure 1).

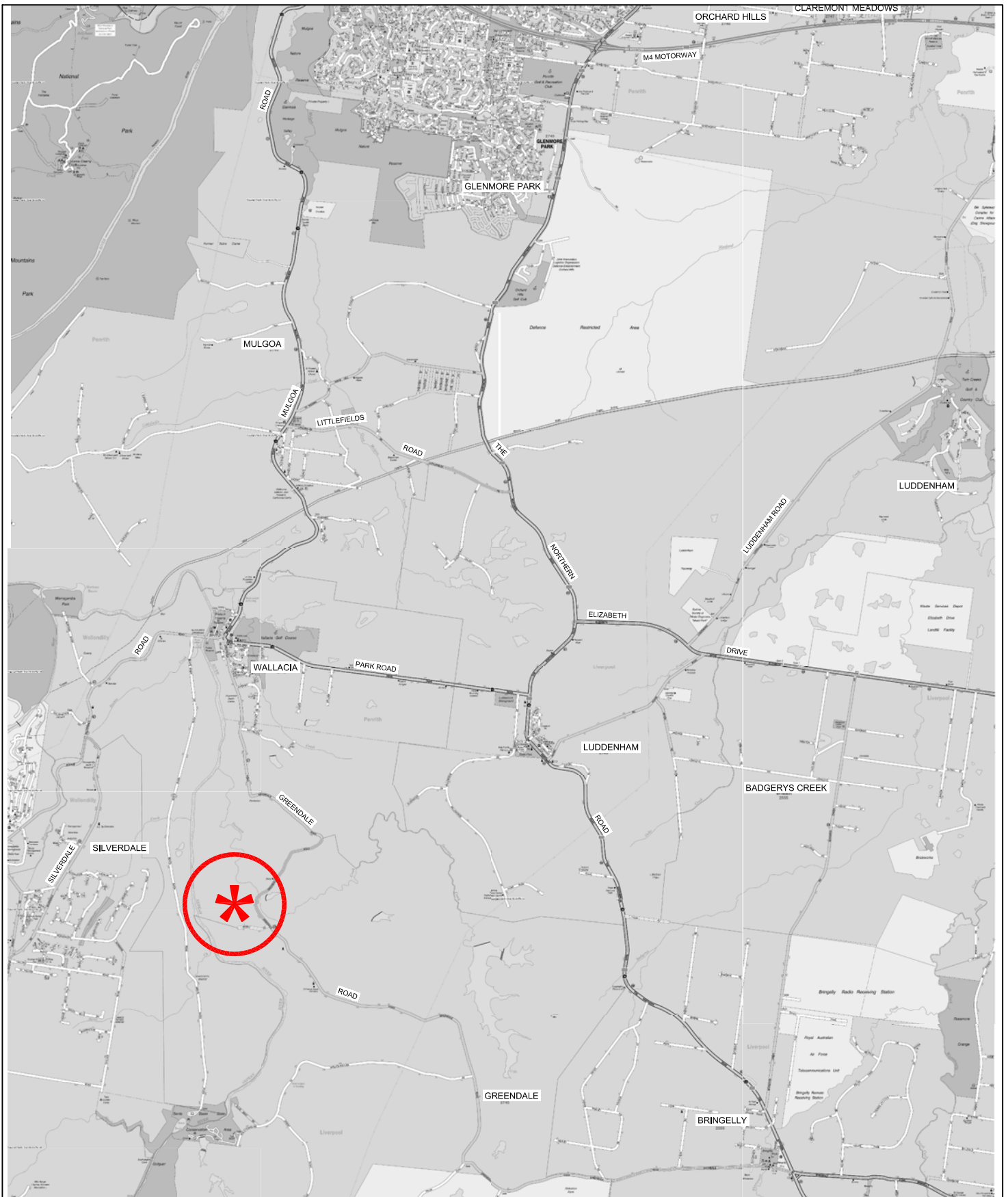
The existing cemeteries serving the Sydney Metropolitan Area generally have limited spare capacity and authorities are anxiously seeking potential new sites to meet the increasing burial demands of the aging and increasing populations within the area. These needs are greatest in the outer developing areas which are experiencing rapid urban growth, none more so than the Western Sydney Priority Growth Area. This area includes the proposed new Badgerys Creek Airport and the Western Sydney Employment Area which is spurring the accelerating residential development.

The Masterplan development scheme at Wallacia involves a large rural site with frontage to the Nepean River which is bisected by Duncans Creek. The scheme comprises:

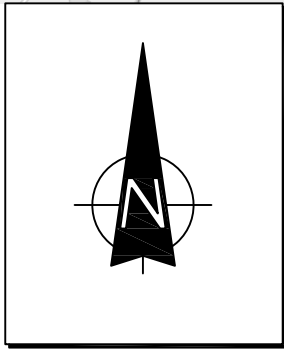
- traditional graves
- cremation plots (inground and wall)
- mausoleum vaults
- chapel and function facilities
- administration building
- water features and vehicle / pedestrian circulation

The purpose of this report is to:

- ❖ describe the site, its context and the proposed Masterplan and Stage 1 development schemes
- ❖ describe the existing and future road network, traffic and transport circumstances
- ❖ assess the proposed vehicle access arrangements and the potential traffic implications
- ❖ assess the adequacy of the proposed parking provision
- ❖ assess suitability of the proposed internal circulation and servicing arrangements



LEGEND



LOCATION

FIG 1

2.0 Proposed Development Scheme

2.1 Site, Context and Existing Circumstances

The site (Figure 2) is Lot 1 in 77665 which occupies an irregular shaped area of some 73.46ha with an extensive frontage to Greendale Road located generally midway between Luddenham and Warragamba being some 4km to the south of Wallacia.

The lands to the north and east are largely unutilized former grazing land, the lands adjoining to the south and on the western side of the river are active farm lands while there are very few dwellings in the vicinity of the site.

The undulating site is currently used for grass lawn production and there are a number of farm buildings in the north eastern part of the site with a vehicle access on Greendale Road at the northern site boundary.

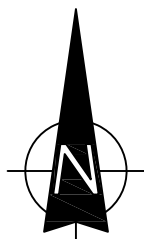
2.2 Proposed Masterplan Development

It is proposed to clear the site and undertake significant earthworks to provide “pads” for the buildings as well as the access road system and water features. The proposed development comprises:

	Capacity (persons)
- Chapel (480m ²)	480
- Crematorium (1,000m ²)	300
- Mausoleums	-
- Function Rooms (485m ²)	485
- Administration buildings (565m ²)	50
- Café & Florist (500m ²)	300
- Workshop / Maintenance building	-



LEGEND



SITE

FIG 2

The proposed capacity of the cemetery would be some 775,000 burial plots comprising:

- in-ground plots (approx. 120,000)
- cremation wall plots (approx. 100,000)
- mausoleum plots (approx. 555,000)

There is a proposed channelised access road connection to Greendale Road with comprehensive internal vehicle and pedestrian networks. There are also proposed pedestrian board walks over the extensive water features linking to mausoleum elements and a walkway with viewing points along the river frontage.

There will be a formal at-grade parking area adjacent to the main building elements and parallel parking and a footway along the access road system.

Details of the proposed Masterplan development are provided on the diagrams prepared by MKD architects which are reproduced in Appendix A.

2.3 Proposed Stage 1 Development

The proposed Stage 1 works comprise:

- PAD 1 earthworks
- Crematorium
- Chapel
- Administration building
- Gate house
- PAD 1 car park
- PAD 1 access road and intersection with Greendale Road

Details of the proposed Stage 1 elements are provided on the plans prepared by MKD Architects which accompany the Development Application and are reproduced in part in Appendix B.

3.0 Operational Circumstances of Cemeteries

There are a number of comparable existing cemeteries in the Sydney Metropolitan Area which provide a good indication of the operational circumstances which are likely to occur at the proposed cemetery.

The principal difference however, is the fact that as a new cemetery there will not (for many years) be the visitation associated with existing graves that is experienced with long-established cemeteries. A good example of this circumstance is the data from the Macquarie Park site (Appendix C) where there are very few ceremonies on Saturday or Sunday but there are still some 400 to 550 vpd accessing the site compared to some 800 vpd on a busy weekday.

Also, it is inevitable that the proposed cemetery will be developed on a staged basis as the demand for burials increases in response to the increasing population in the Western Metropolitan Area.

One particular feature of ceremonies at major cemeteries is that the Administrations are very careful in programming the ceremonies to ensure that they do not start/finish at the same time, overlap to any great extent or conflict with the occasional very large ceremony.

A comparison between 5 existing major cemeteries and the envisaged cemetery is made in the following researched data:

	Envisaged Greendale	Macquarie Park	Northern Suburbs	Pine Grove	Forest Lawn
Date Established	N.K.	1922	1933	1962	1962
Size (ha)	73.4	145	40	70.8	60
Chapels	1	5	4	3	2
Function Facility	1	5	1	1	1
Crematorium	✓	✓	✓	✓	✓

Burial Plots incl.	742,000	250,000	NK	40,000	120,000
Crem. & Mausoleum					
Av. Weekday Funerals	NK	12	10-12	10-11	10
Max. Funerals p.d.	NK	23	NK	NK	NK
Peak Time	NK	10am-3pm	10am-3pm	10am-3pm	11am-3pm
Parking Spaces	NK	260 + on-road	350	516	380
Normal Peak Access Movements	NK	200 vtph	150 vtph	180 vtph	140 vtph
Av. Car visitations Per Day	NK	600	500	550	450

The available data, for the comparable Macquarie Park site indicates that there is significant fluctuation in the number of persons accessing on a daily basis throughout the year and this is clearly illustrated by the vehicle ingress / egress surveys and daily “Car Log” of vehicles ingressing which are reproduced in Appendix C. Features of the recorded access movements are summarised in the following:

	Cars Ingressing Per Day
Thursdays	460 – 1,010
Fridays	630 – 1,010
Sat – Sun	240 – 600

The Car Log record also details the number of ceremonies held on each day together with the weather conditions. Assessment of this data enables an estimate of the average number of cars which each ceremony generated when allowance is made for staff vehicle and casual visitor movements. It is apparent for the period May – July that the average number of cars generated per ceremony (burial or cremation) was 50 and the normal maximum was 100.

The results of automatic “tube” counts undertaken for a week in October on the ingress and egress driveways indicate peak ingress movements occurring between 10am and 2pm with a maximum of 209 and an average peak of 150vph. The peak egress movements occurred between midday and 3pm with a maximum of 245 and again an average peak of some 150vph.

Transport and Traffic Planning Associates

Services are generally held between 9.30am and 3.00pm and traditionally, Thursday and Friday have the greatest number of ceremonies occurring and it is apparent that MPCC take considerable care to program the ceremonies and subsequent functions to avoid as much as possible undue “peaking” of arrivals and departures.

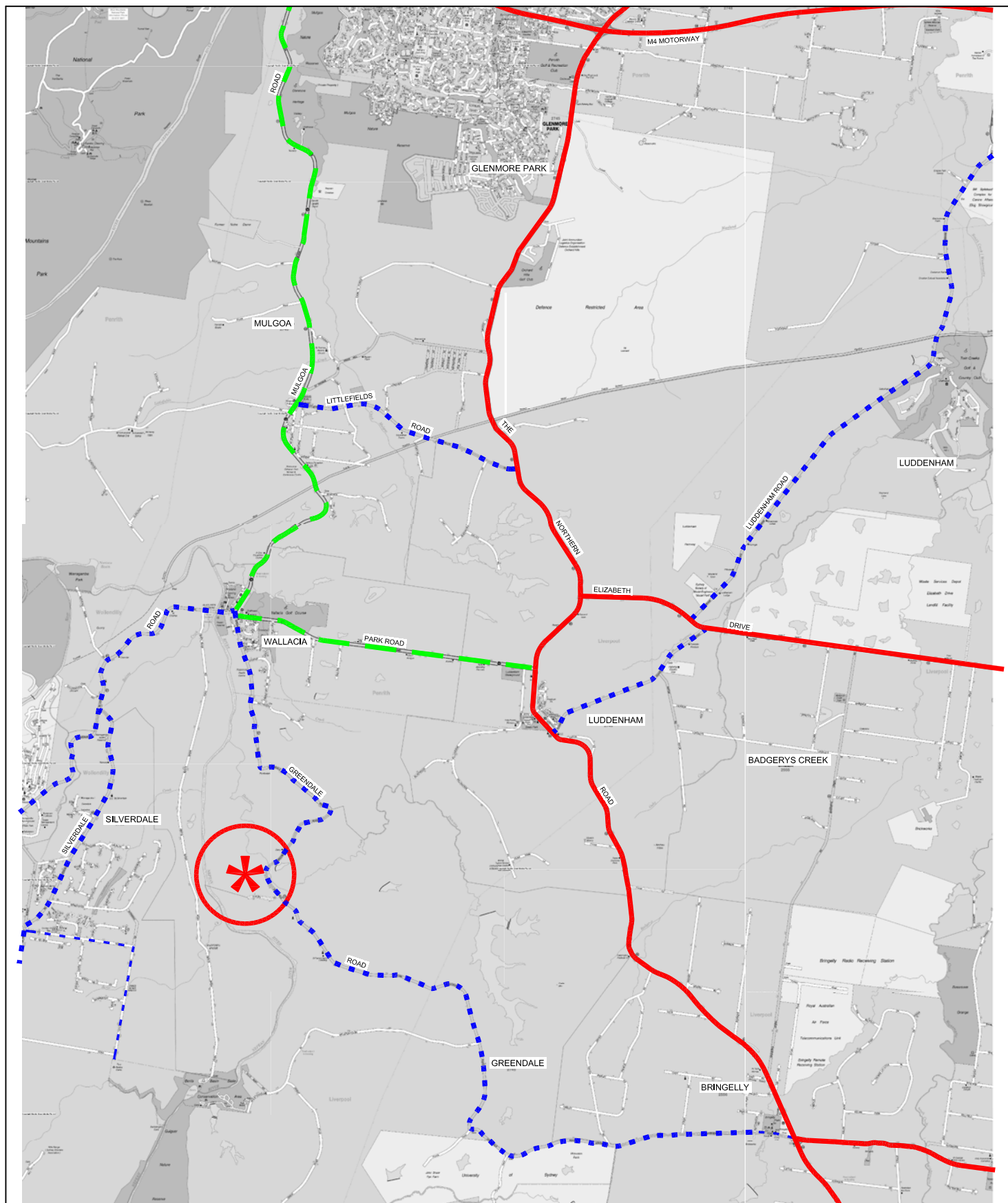
4.0 Existing Road Network and Transport Circumstances

4.1 Road Network

The road network serving the site (Figure 3) comprises:

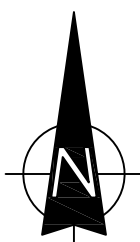
- ❖ *M4 Western Motorway* – a State Road and part of the major arterial route involving the M7 and Warringah / Gore Hill Freeways which extend between the Harbour crossings and Penrith. Interchange on/off ramps are provided at the Mulgoa Road interchange
- ❖ *The Northern Road* – a State Road and north-south arterial route linking between Penrith and Narellan (currently subject to major upgrading works)
- ❖ *Elizabeth Drive* – a State Road and east-west arterial route linking between Liverpool and The Northern Road with an interchange with the M7 Motorway
- ❖ *Bringelly Road* – a State Road and east-west arterial route connecting between Leppington and The Northern Road which has recently been upgraded significantly
- ❖ *Park Road* – a major collector road connecting between The Northern Road and Mulgoa Road
- ❖ *Greendale Road* – a minor collector road connecting between Mulgoa Road and The Northern Road

Greendale Road in the vicinity of the site has one lane in each direction with supplementary lanes at with a slightly curvilinear alignment and is 7.0m wide with 1.0m wide sealed shoulders.



LEGEND

- ARTERIAL
- SUB-ARTERIAL
- - - COLLECTOR



ROAD NETWORK

FIG 3

4.2 Traffic Controls

The existing traffic controls in the vicinity of the site are limited to:

- ❖ The 80 kmph speed restriction on Greendale Road
- ❖ the double centre line extending along Greendale Road

Further 'afield' the controls include:

- ❖ the traffic signals at the intersection of Greendale Road with The Northern Road and Bringelly Road
- ❖ the roundabout at the intersection of Park Road, Silverdale Road and Mulgoa Road and adjacent "channelised" intersection of Greendale Road and Park Road

4.3 Traffic Conditions

Traffic surveys were undertaken on Greendale Road at the site between 8.00am and 6.00pm for the period Monday 2 December and Sunday 8 December 2019.

The results of these surveys (i.e. total 2-way movement) are provided in the following:

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
8am-9am	79	61	81	59	68	27	16
9am-10am	52	49	40	38	31	19	15
10am-11am	11	14	21	15	18	12	9
11am-12pm	19	10	14	12	21	16	12
12pm-1pm	23	9	19	12	10	20	11
1pm-2pm	12	18	13	13	22	11	7
2pm-3pm	19	30	26	35	29	10	18
3pm-4pm	45	33	38	26	31	29	20
4pm-5pm	49	58	66	59	78	34	27
5pm-6pm	44	37	41	50	32	18	22

It is apparent that the traffic movements along Greendale Road are relatively minor with the maximum recorded 2-way movement being some 80 vtpd.

4.4 Accident History

Details of a 5 year accident history (2014 – 2018) for a significant length of Greendale Road in the vicinity of the site (see details overleaf) only reveal 2 recorded accidents both being “single vehicle off road” accidents occurring at night.

4.5 Transport Services

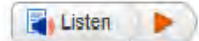
There are no bus services operating along Greendale Road at the present time and the nearest available services (see Appendix D details) are:

Route 789	Penrith - Luddenham
Route 795	Penrith – Warragamba (via Wallacia) 17 services each way Mon – Fri.

The nearest railway stations are located at Leppington and Penrith and these have frequent services connecting to the Metropolitan Rail Network.



Crash and casualty statistics - LGA view



[LGA Summary](#) [Crashes - characteristics](#) [Crashes - contributing factors](#) [Crashes - map](#) [Casualties - characteristics](#) [Casualties - contributing factors](#) [MVCs - characteristics](#)



Transport
for NSW

Crashes Map - Liverpool

Navigation
and Help

Select your LGA:

Liverpool

Reporting year

(All)

- ☒ (All)
- ☒ 2014
- ☒ 2015
- ☒ 2016
- ☒ 2017
- ☒ 2018

(All)

RUM code group

(All)

Type of location group

(All)

Speeding involved in crash

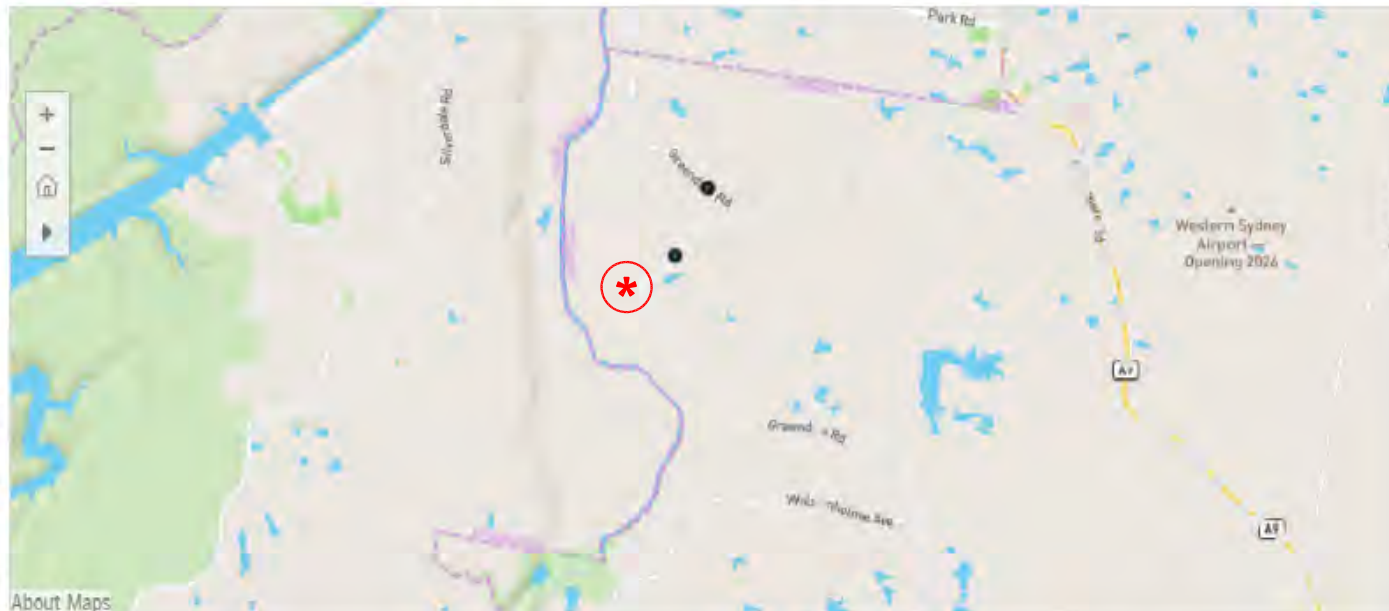
(All)

Fatigue involved in crash

(All)

Road classification

(All)



About Maps

Degree of crash

☒ Fatal ☒ Serious Injury ☒ Moderate Injury ☒ Minor/Other Injury ☒ Non-casualty (towaway)

Repor...	Crash ID	Degree of crash	RUM - code	RUM - descripti..	Type of location	Natural L..	Longitude	Latitude	No ..	No Inju..
2016	1118931	Serious Injury	80	Off left/right bend	2-way undivided	Daylight	150.652518	-33.890923	-	1
2018	1182611	Serious Injury	73	Off rd right => obj	2-way undivided	Darkness	150.648308	-33.897951	-	1

DATA AVAILABILITY

Finalised data is available for the 5 year period 2014 to 2018.

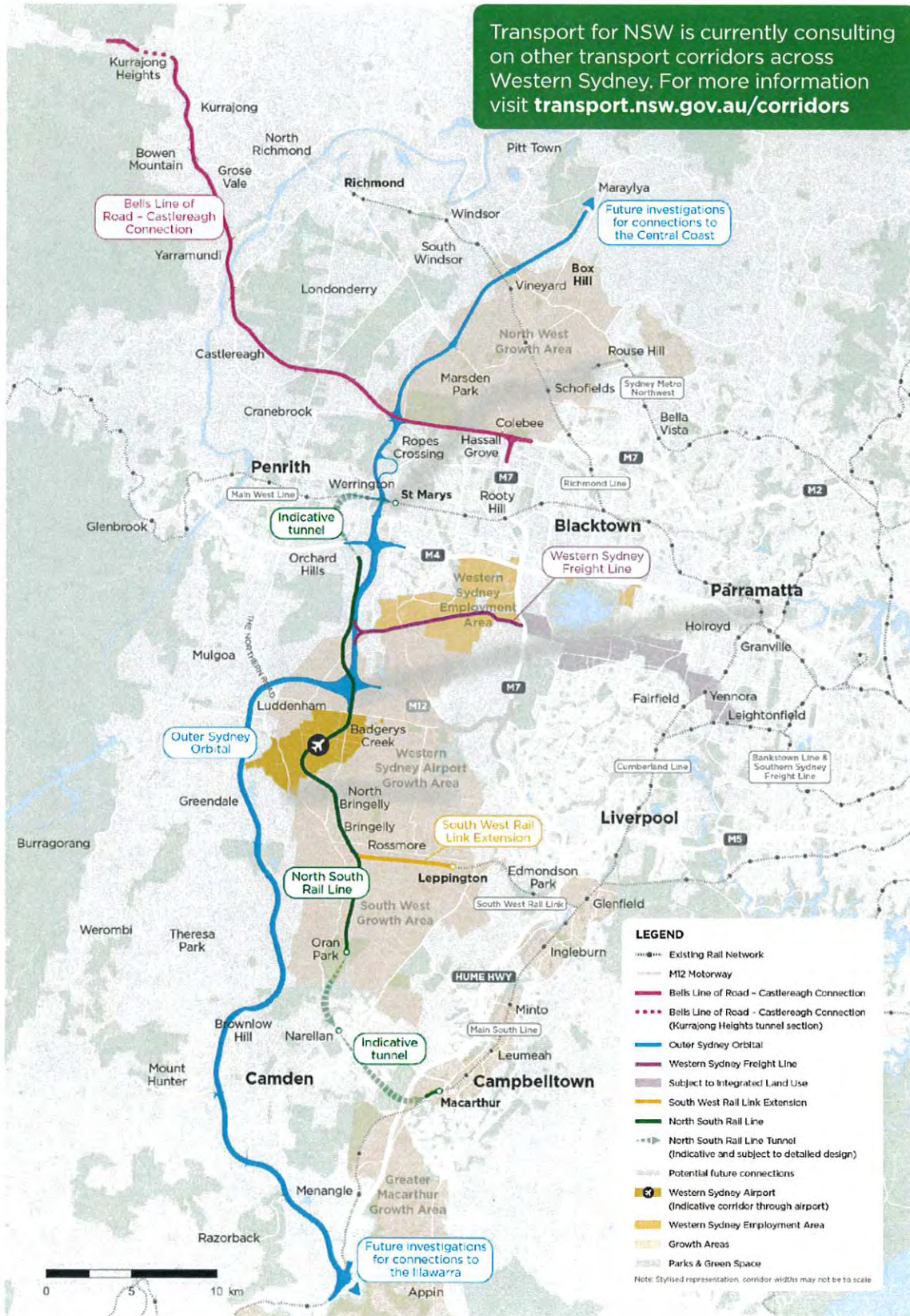
5.0 Future Road Network and Transport Circumstances

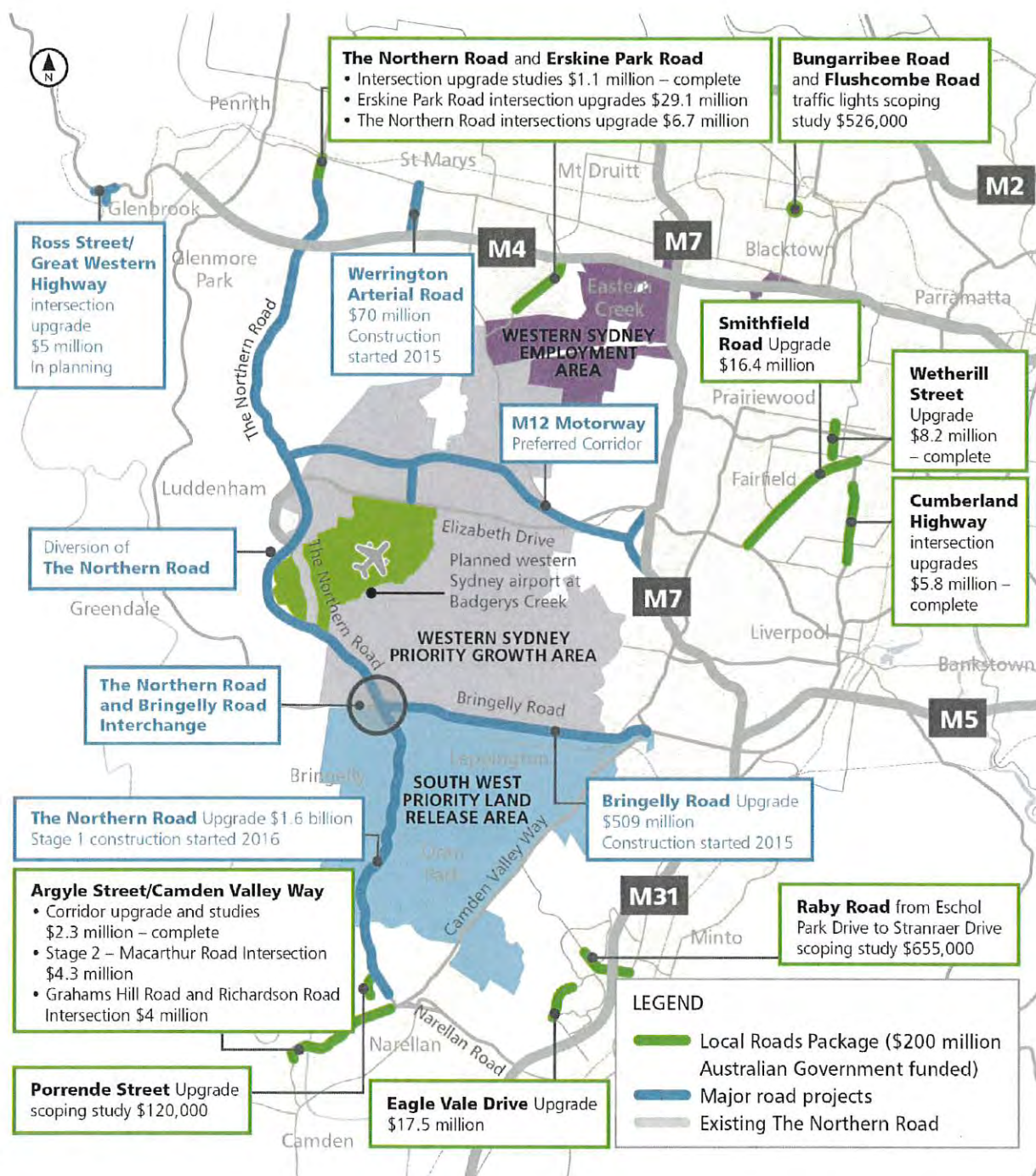
The decision to proceed with the Badgerys Creek Airport has “spurred” the planning and implementation of road and transport infrastructure. Planning has not been finalized however principal elements of the envisaged infrastructure are shown on the diagrams overleaf being:

- extension of the South – West Rail Line with a station at Bringelly
- construction of a new North – South Rail Line linking between Campbelltown and St Marys with stations at Oran Park, Bringelly, Badgerys Creek Airport
- the continued upgrading of The Northern Road route
- construction of the M12 Motorway linking between the M7 and The Northern Road and the Airport
- construction of the Outer Sydney Orbital between the M12 / The Northern Road interchange and the Hume Highway via Greendale

It is also inevitable that connecting bus services will extend into the newly developing areas.

Figure 1. The Western Sydney corridors





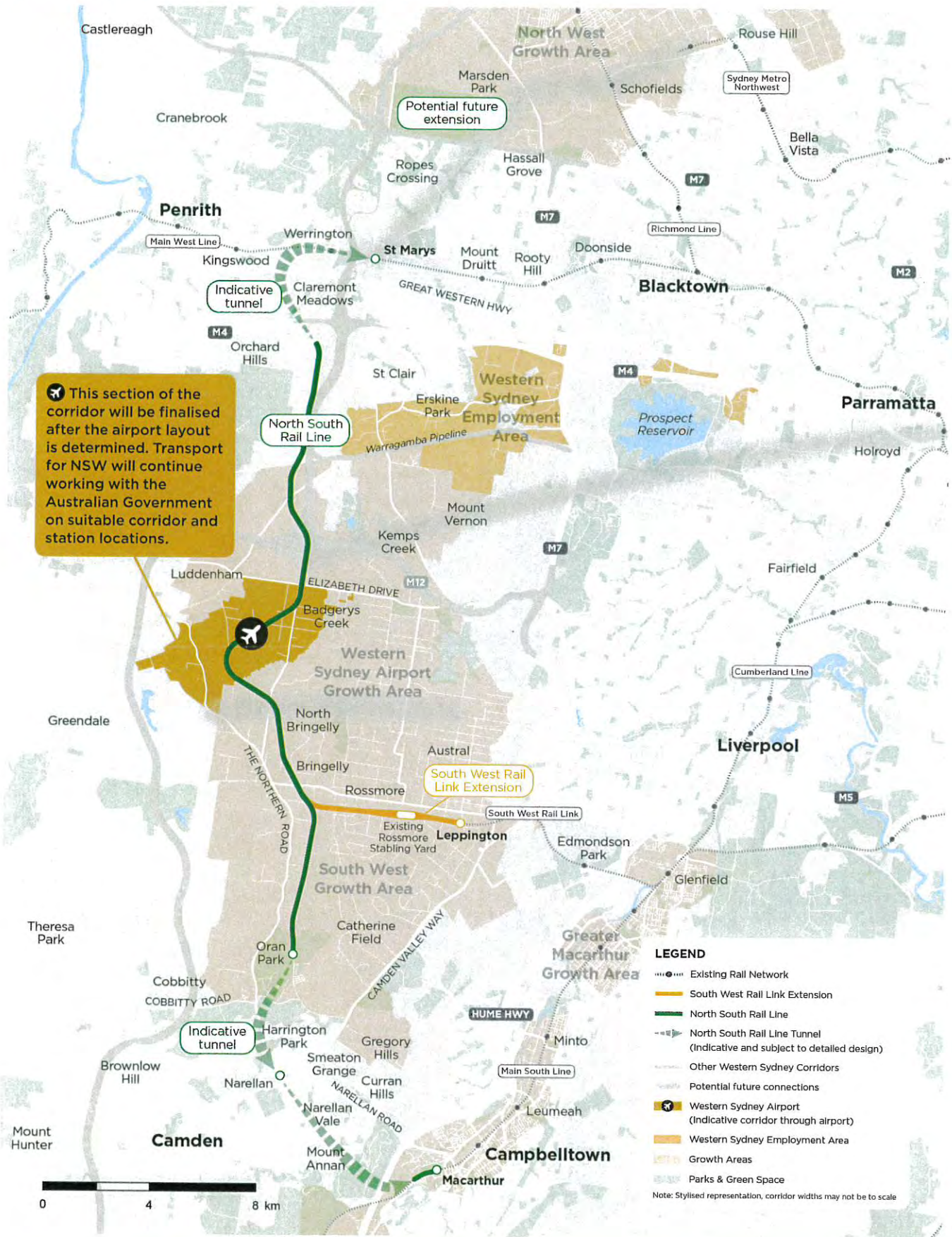
NOT TO SCALE

M12 Strategic Route Options Analysis **Preferred corridor route report**

Source: Roads and Maritime

FIGURE 1.1: Western Sydney Infrastructure Plan strategic map

Map of the recommended corridors for the North South Rail Line and the South West Rail Link Extension



Greater Sydney Commission's vision for three cities

The Greater Sydney Commission is leading metropolitan planning to make Greater Sydney more productive, sustainable and liveable. Its role is to coordinate and align the strategic land use planning that will shape the future of Greater Sydney.

The Greater Sydney Commission is working towards developing Greater Sydney as a metropolis of three cities. This concept would see the development of three distinct cities of Greater Sydney – the Eastern Harbour City (centred around the Harbour CBD), the Central River City (centred around Greater Parramatta) and the Western Parkland City (centred around

Western Sydney Airport, the Badgerys Creek Aerotropolis and the surrounding areas of Camden, Campbelltown, Liverpool and Penrith). This is further discussed in Section 5.4.2.

These three cities will have different strengths and are at different stages of their evolution. The growth of Greater Sydney and especially the Western Parkland City, has been considered in the Scoping Study. Population and employment changes considered in the long term assessment of rail links were developed in consultation with the Greater Sydney Commission and the NSW Department of Planning and Environment and utilised the best information available at the time.

Figure 4 Summary map of the draft Greater Sydney Region Plan



Source: Greater Sydney Commission, Draft Greater Sydney Region Plan

6.0 Traffic and Transport

Traffic

The peak generated vehicle movements at comparable cemeteries such as Macquarie Park occur in the period 10am to 3pm which is outside of the normal morning and afternoon peak periods on the road network while heightened traffic generation is largely limited to Thursday, Friday and a few special days each year.

The potential traffic generation of the proposed cemetery will be somewhat less than that of the Macquarie Park site and most likely similar or less than the Forest Lawn and Pine Grove Cemeteries particularly during the early decades of use due to limited number of visitations to burial plots. The distribution of traffic will reflect the established road network and the urban development in the Cemetery Catchment Area and again this will also change as further urban development occurs in the Region.

However, it is apparent that some 25% of traffic will distribute to / from the south on Greendale Road and some 75% to / from the north. Thus, if the normal peak access movements (10.00am – 3.00pm weekdays) there will be some 160 – 180 vtpd (two-way) through the access intersection.

It is quite apparent that vehicle movements of this projected magnitude will not present any adverse operational circumstances at the proposed access intersection given:

- the low order of vehicle movements along Greendale Road
- the high capacity of the intersection with separate right and left turn lanes
- the good sight distances available
- the fact that the access movements will only occur in day light hours and largely outside of the AM and PM peak periods

Transport Services

Particular consideration has been given to the issue of the provision of transport services for the proposed development as it is understood that this has been an identified issue in relation to other proposed cemetery developments in the Liverpool City Council area.

The reality is however that the travel mode for public transport for mourners and visitors to travel to / from cemeteries is in reality very low. Macquarie Park Cemetery is located within convenient proximity to both rail and bus services however as with similar locations such as Sutherland Cemetery the experience is that the mode share to public transport services is only 1 – 2 %.

The apparent reasons for this are:

- the people attending are in mourning
- there is a strong empathy for family and friends to car share
- the funeral ceremonies are often held in churches quite some distance away before moving to the cemetery for burial / cremation

In reality land is not available for new cemeteries in locations where there are rail or good bus services simply because these services are provided to serve urban development where large vacant sites with no environmental impact are available.

None the less it is proposed and would be accepted as a Condition of Consent that the cemetery operator be required provide and maintain a bus service for the transport of mourners, visitors and staff to / from the major railway stations (be it Leppington, Penrith or Liverpool or in the future Bringelly) where there are bus interchange facilities available.

7.0 Parking

A large parking area with 112 spaces, including 13 accessible spaces, will be provided adjacent to the principal elements in the north eastern part of the site appropriate to the demands of those elements (see details overleaf). There will also be parallel parking accommodated along one side of the access road system with the some 3000m providing for some 400 to 500 parking spaces.

As with large cemeteries the roadway parking will generally be used for:

- parking related to separated elements (eg Mausoleum)
- parking related to visitation to burial plots (in their various forms)
- overflow parking for occasional large ceremonies
- parking related to scenic elements

The provision of 112 space plus the available on-road parking will be more than adequate for Stage 1 of the development while the large vacant areas on the site would be able to accommodate additional formal parking in the future should operational experience indicate this need (eg in the north eastern part)

It is apparent therefore that:

- the proposed parking provision for Stage 1 will be quite adequate
- there is the ability to provide significant additional parking for the completed development should this be shown to be necessary
- all large existing cemeteries “schedule” the timing of services based on the anticipated attendants, the requested length of services, the orderly use of the facilities (ie chapels and function areas)



Total Car Spaces = 112

8.0 Access, Internal Circulation and Servicing

Access

The Masterplan proposes an access intersection on Greendale Road in the northern part of the site frontage and a “gated” emergency vehicle access in the southern part. The location of the access intersection has had regard for the ability to achieve suitable sight distances. The proposed CHR / AUL arrangement for this intersection is shown on the Figure 4 concept diagram while images of the available sight distances at the proposed access and emergency access points are provided in Appendix E.

The design of the proposed access intersection will comply with the Austroads requirements and this will be provided as part of the Stage 1 works.

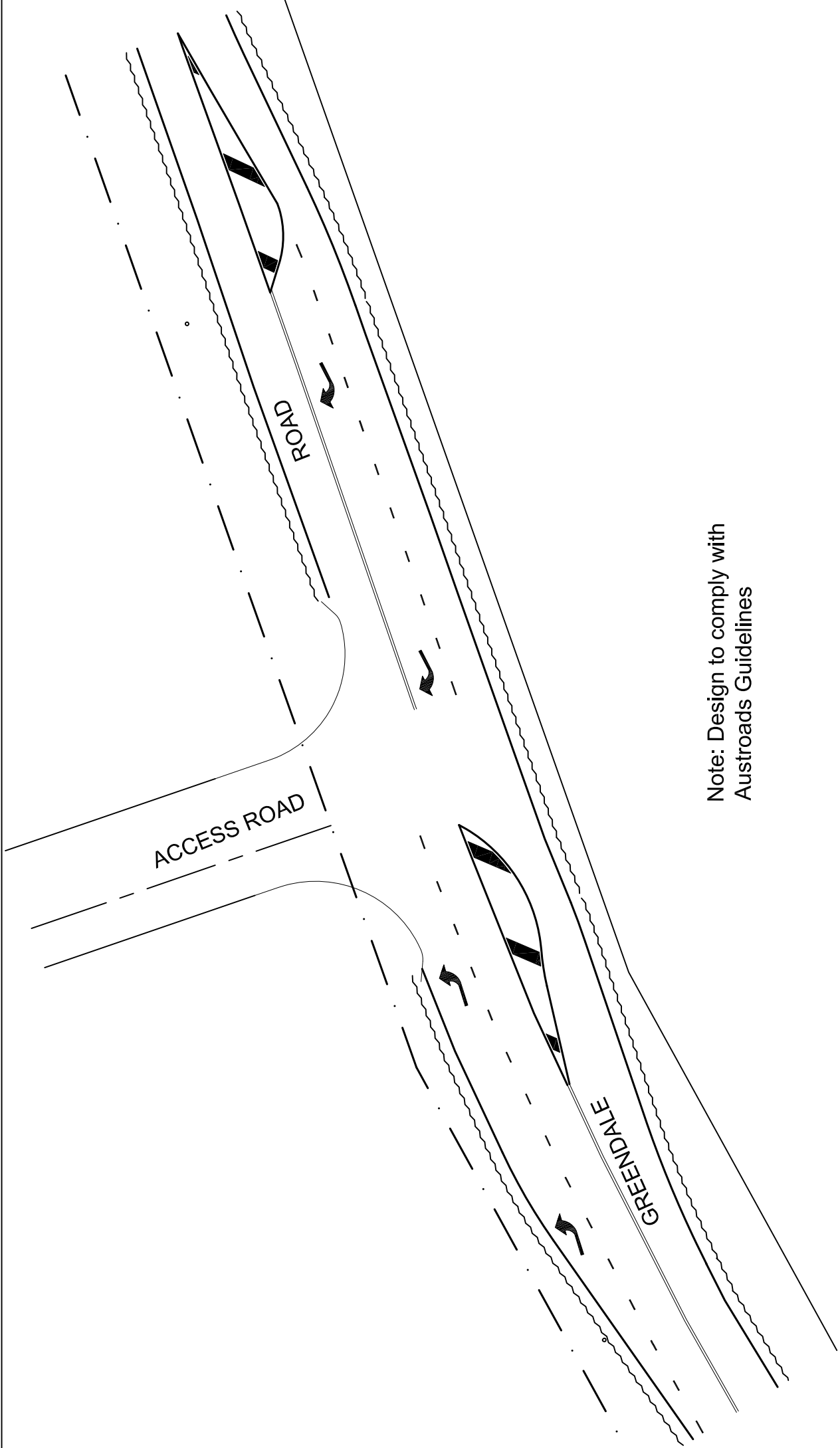
Internal Circulation

The design of the proposed access road (6.0m wide with 2.2m kerbside parking) complies with the requirements of AS2890 Austroads and there is generous provision for manoeuvring and parking. Details of the proposed roadways with parallel parking and 3.6m wide footway (on one side) are provided in Appendix F.

Servicing

The 6.0m wide carriage way in this low speed environment will be more than adequate to provide for all service and maintenance vehicles requiring access the site including:

- refuse removal
- materials delivery
- shuttle buses
- maintenance vehicles and machinery
- gas delivery (crematorium)



Note: Design to comply with
Austroads Guidelines

LEGEND



PROPOSED ACCESS
INTERSECTION
ARRANGEMENT

FIG 4

This is particularly the case when use of kerbside parking will be largely limited to “peak visitation days” (eg Mother’s Day) or significant funerals while design provision will be given hearses to manoeuvre and park at the relevant cemetery elements.

9.0 Issues

Clarification has been sought for a number of issues in relation to the proposal namely:

Parking Provision

There is no criteria for parking provision for Cemetery use in Councils DCP or the TfNSW Development Guidelines. Details of the parking provision at a number of major existing cemeteries in the Sydney Metropolitan Area are provided in Section 3 of this report. On the basis of the development plans there will be 112 spaces provided in the formal parking area and some 400 to 500 kerbside spaces along the access road system. There will also be large unused areas on the site which could provide for additional parking in the future if there is such a need. However, the fact is that all large cemeteries carefully schedule services to ensure an orderly use of the chapels and function facilities and there is a keen awareness of any major services with an anticipated large attendance.

This scheduling by the cemetery administration will invariably act to “temper” both the demand for parking and traffic generation.

Access Road

The proposed access road comprises 6.0m for 2 way traffic movement with 2.2 for kerbside parking and 3.6m for footway (on one side).

It is considered that this design is quite appropriate because:

- 6.0m is quite adequate and appropriate for a low speed environment particularly when there will only be infrequent/intermittent use of the kerbside parking
- 3.6m is a traditional width for footways and providing for street light, sign parking etc

10.0 Conclusion

This assessment undertaken in relation to the proposed River Gardens Cemetery on Greendale Road at Wallacia has concluded that:

- ❖ there would not be any unsatisfactory traffic implications
- ❖ the proposed parking provision would be quite adequate
- ❖ the vehicle access, internal circulation and servicing provisions would be suitable and appropriate

Appendix A

Development Masterplan







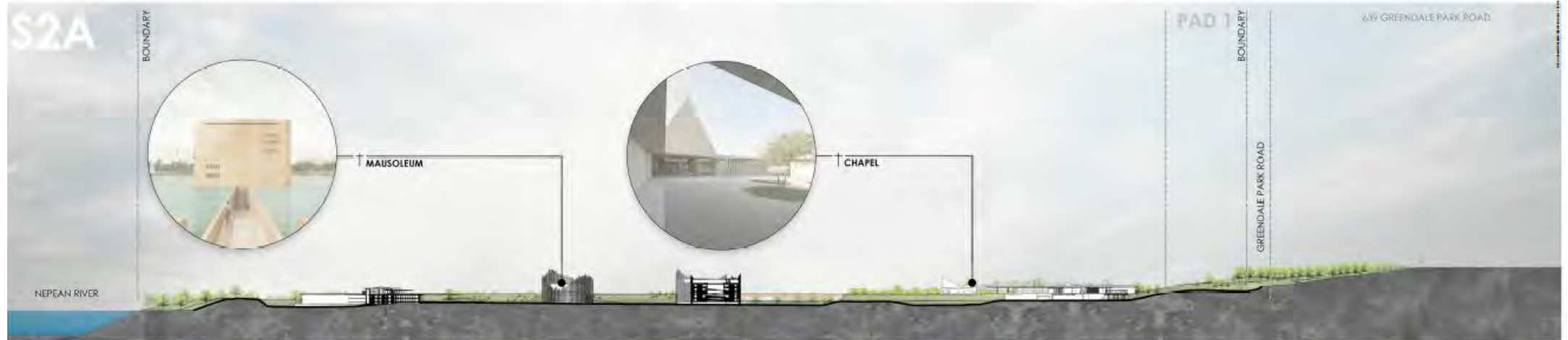
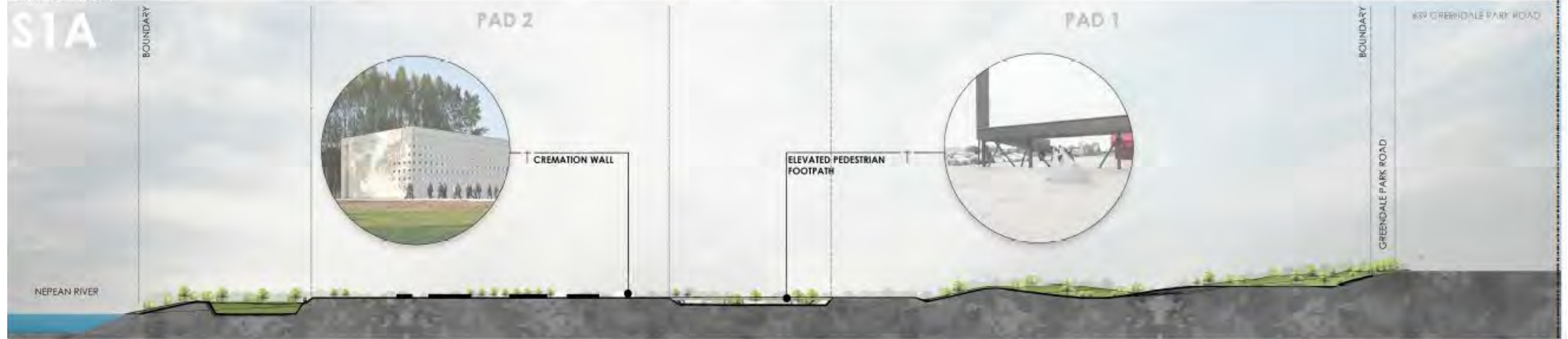
MAUSOLEUM
 + FLOOD PROOF < RL 44.80
 + VERTICAL STACKING SYSTEM
 + INDIVIDUAL BURIAL PLOTS
 + PRIVATE BURIAL AREAS
 + BCA CLASS 7B

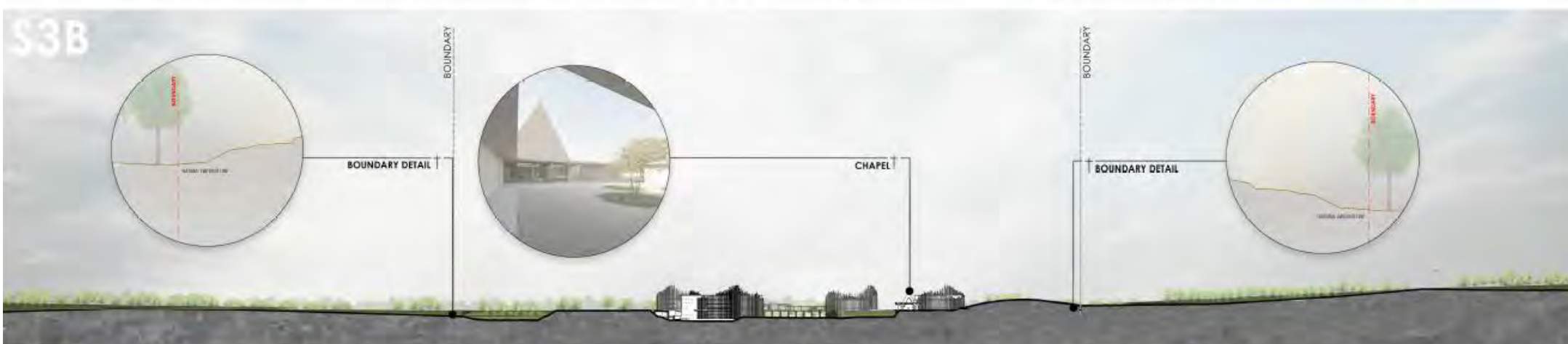
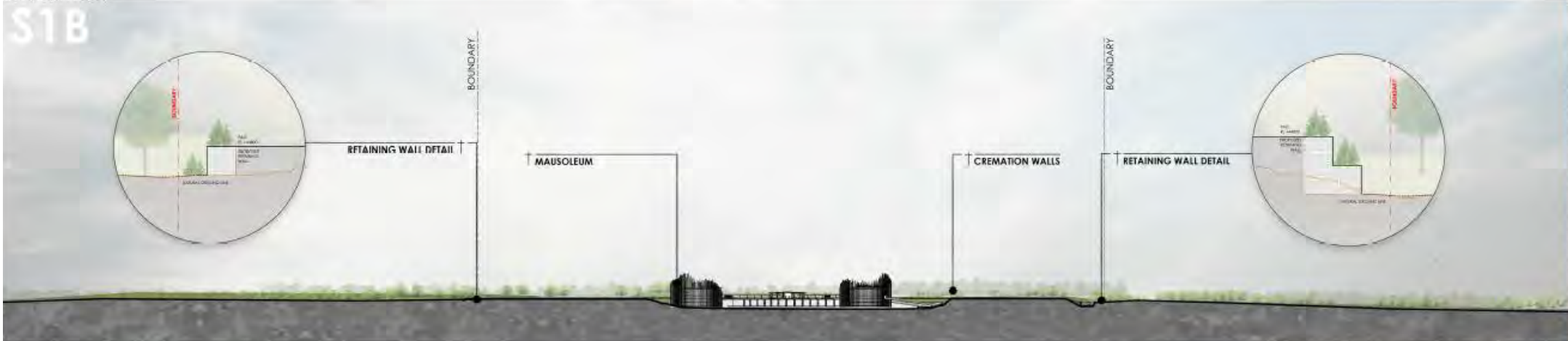
IN-GROUND
 + TRADITIONAL / GREEN
 + SINGLE TOMB OR VERTICAL STACKING VAULTS

CREMATION WALLS
 + VERTICAL STACKING SYSTEM
 + URN NICHES

MAUSOLEUM
 + VERTICAL STACKING SYSTEM
 + INDIVIDUAL BURIAL PLOTS
 + PRIVATE BURIAL AREAS
 + BCA CLASS 7B

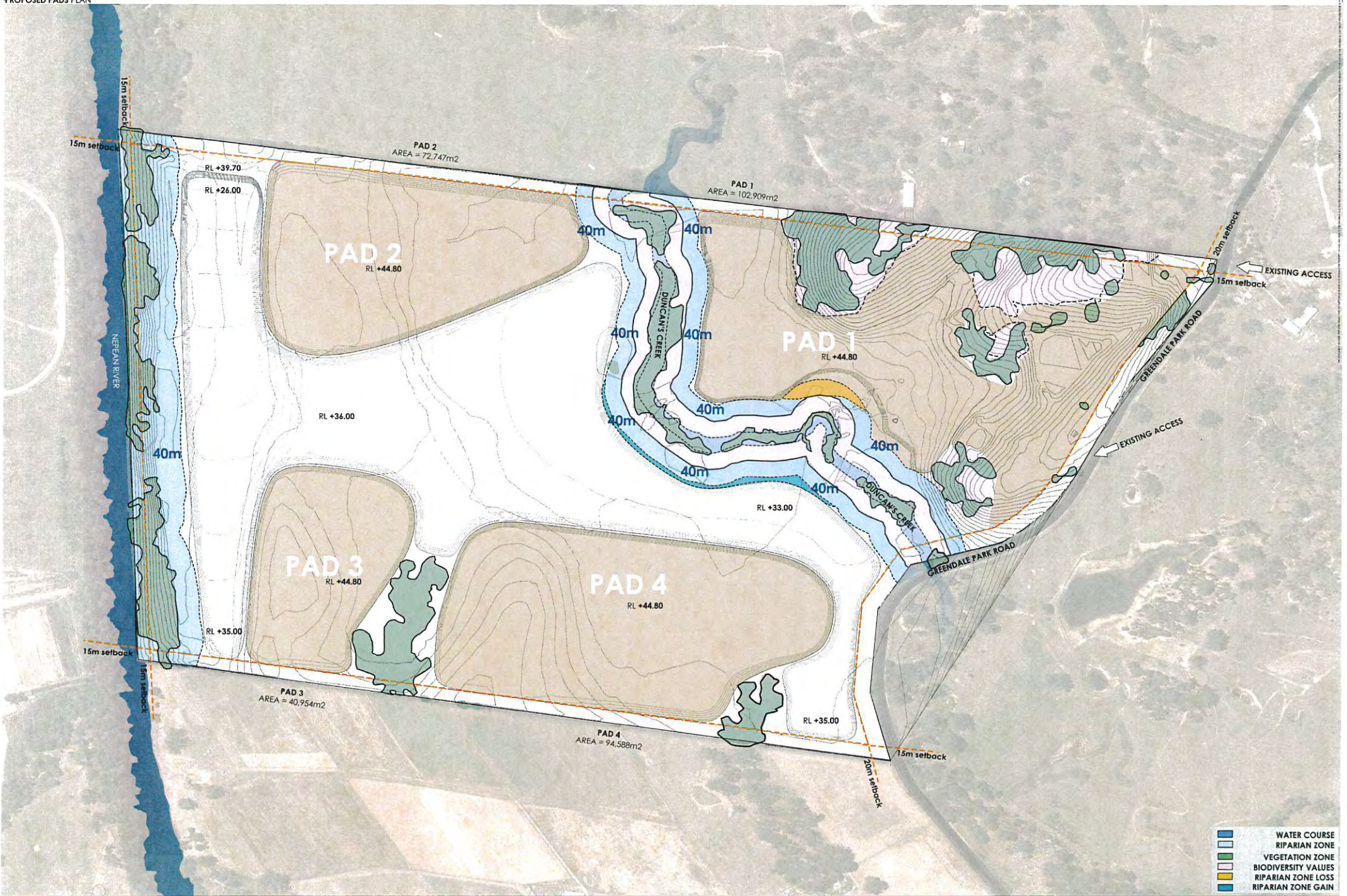
IN-GROUND BURIAL PLOTS = 120,000
 MAUSOLEUM PLOTS = 555,000
 CREMATION WALL BURIAL PLOTS = 100,000
 TOTAL BURIAL PLOTS = 775,000





Appendix B

Stage 1 Plans



- WATER COURSE
- RIPARIAN ZONE
- VEGETATION ZONE
- BIODIVERSITY VALUES
- RIPARIAN ZONE LOSS
- RIPARIAN ZONE GAIN

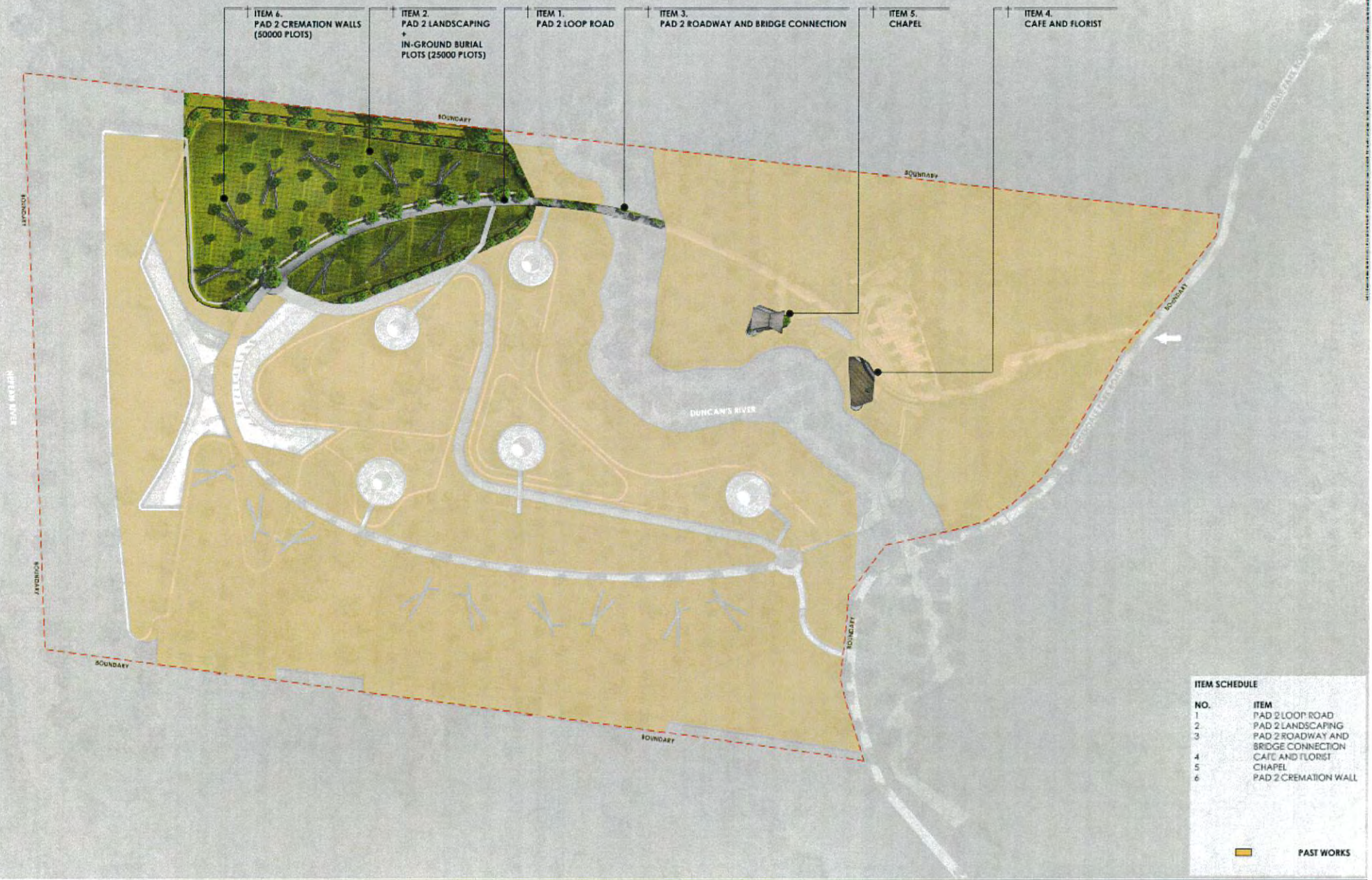
STAGE 1



ITEM SCHEDULE	
NO.	ITEM
0	DEMOLISH EXISTING STRUCTURES
1	CONSTRUCTION OF PAD 1
2	CONSTRUCTION OF PAD 2
3	CONSTRUCTION OF PAD 3
4	CONSTRUCTION OF PAD 4
5	SLIP LANE
6	PAD 1 LOOP ROAD
7	PAD 1 CARPARK
8	PAD 1 LANDSCAPING + IN GROUND BURIAL PLOTS
9	FLOOD WALL
10	VALLEY EARTHWORKS
11	GATEHOUSE
12	ADMINISTRATION BUILDING
13	CREMATORIUM

	PAST WORKS
	DEMOLISHED

STAGE 2



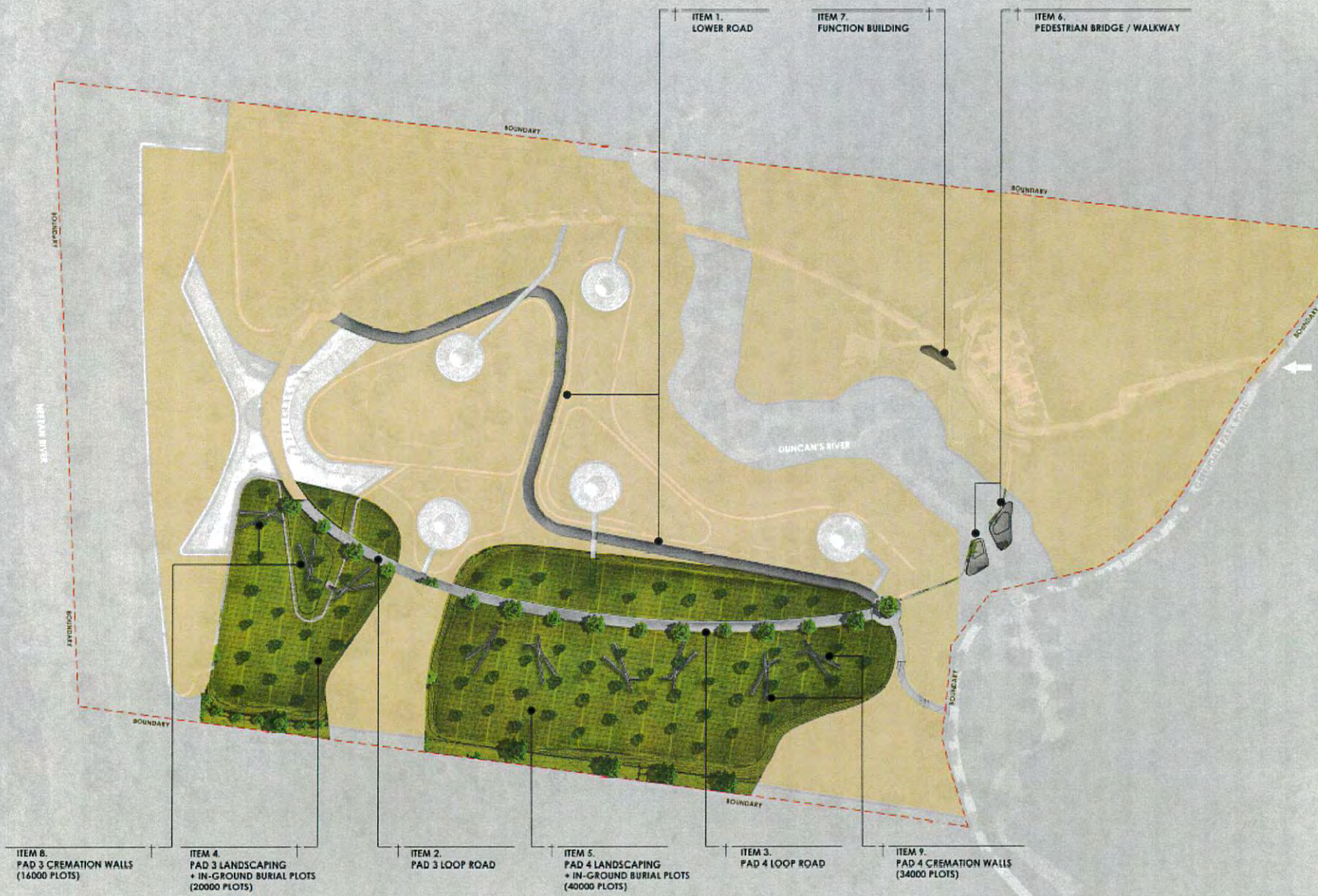
ITEM SCHEDULE

NO.	ITEM
1	PAD 2 LOOP ROAD
2	PAD 2 LANDSCAPING
3	PAD 2 ROADWAY AND BRIDGE CONNECTION
4	CAFE AND FLORIST
5	CHAPEL
6	PAD 2 CREMATION WALL



PAST WORKS

STAGE 3



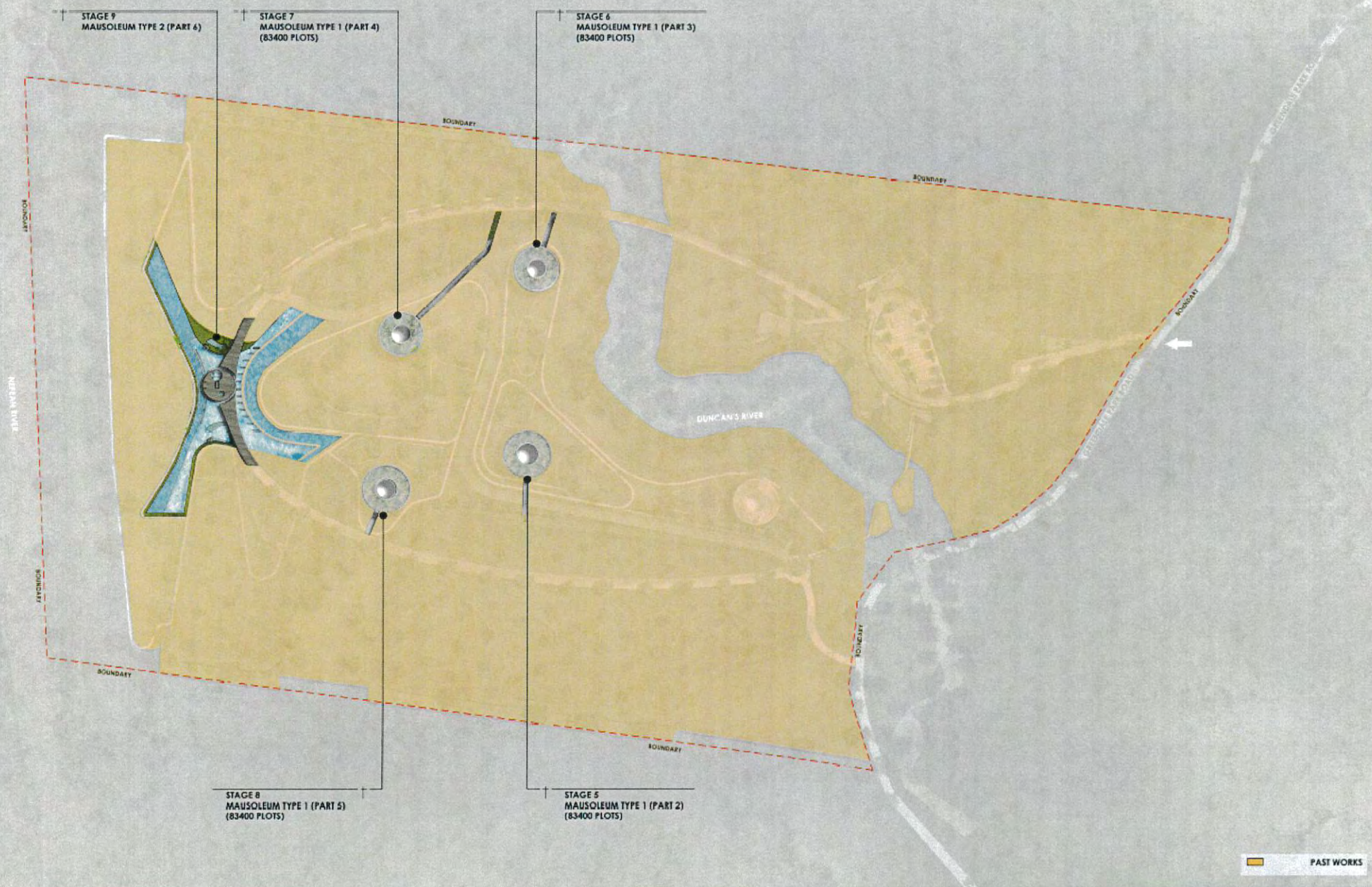
ITEM SCHEDULE	
NO.	ITEM
1	LOWER ROAD
2	PAD 3 LOOP ROAD
3	PAD 4 LOOP ROAD
4	PAD 3 LANDSCAPING + IN-GROUND BURIAL PLOTS
5	PAD 4 LANDSCAPING + IN-GROUND BURIAL PLOTS
6	PEDESTRIAN BRIDGE/ WALKWAY
7	FUNCTION BUILDING
8	PAD 3 CREMATION WALL
9	PAD 4 CREMATION WALL
	PAST WORKS

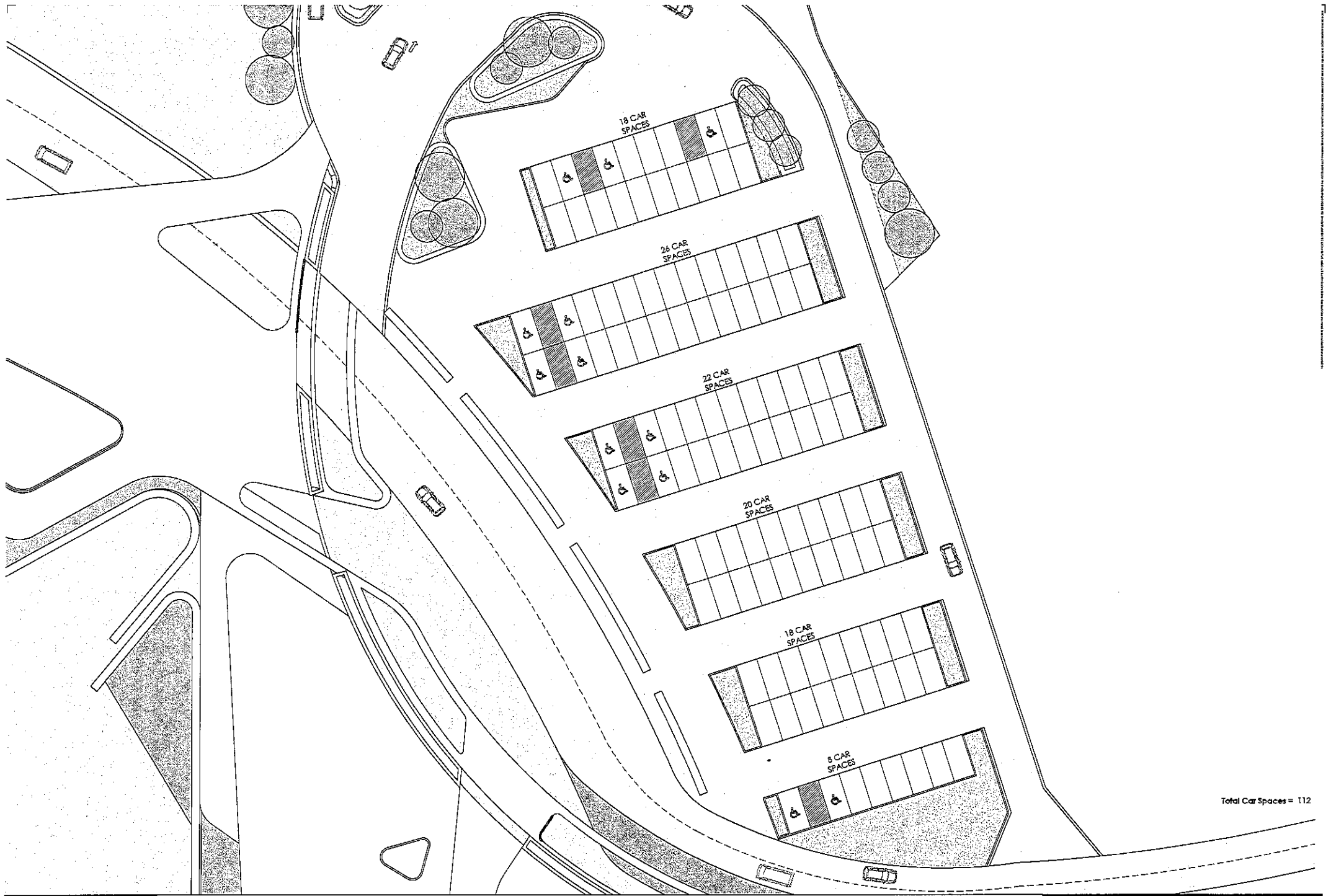
STAGE 3



NO.	ITEM
1	LOWER ROAD
2	PAD 3 LOOP ROAD
3	PAD 4 LOOP ROAD
4	PAD 3 LANDSCAPING + IN-GROUND BURIAL PLOTS
5	PAD 4 LANDSCAPING + IN-GROUND BURIAL PLOTS
6	PEDESTRIAN BRIDGE / WALKWAY
7	FUNCTION BUILDING
8	PAD 3 CREMATION WALL
9	PAD 4 CREMATION WALL

PAST WORKS





Total Car Spaces = 112

Appendix C

Macquarie Park Cemetery Vehicle Access Data

Traffic Count Summary Report

Count Number 7985 Ref : TTP Lat/Long : S33 47 37.3 / E151 08 31.1 UBD 194 J-9
 Street PLASSEY ROAD, MACQUARIE PARK : From DELHI ROAD to LANE COVE NATIONAL PARK ENTRANCE : NORTH WEST
 Location Entry Lane to Macquarie Cemetery (Pauline Tritton 0425 297 817). On flag pole. Carriageway 1A

Weekly 50th Percentile Speed 19
 Weekly 85th Percentile Speed 27
 Five Day AADT 687
 Seven Day AADT 644

Start Date 07-OCT-11
 Start Time 100
 Duration 7 DAYS
 Interval 1 HOUR

TOTAL COUNT MATRIX

	MON 10TH	TUE 11TH	WED 12TH	THU 13TH	FRI 14TH	SAT 15TH	SUN 16TH	5 Day Total	5 Day Average	Total	7 Day Average
Midnight - 1am	0	0	0	0	1	0	0	1	0	1	0
1am - 2am	0	0	0	0	0	0	0	0	0	0	0
2am - 3am	0	0	0	0	0	0	0	0	0	0	0
3am - 4am	0	0	0	0	0	0	0	0	0	0	0
4am - 5am	1	1	0	0	0	0	0	0	0	0	0
5am - 6am	7	7	8	6	9	2	1	37	7	40	6
6am - 7am	24	29	20	26	23	6	4	122	24	132	19
7am - 8am	21	18	28	23	21	8	14	111	22	133	19
8am - 9am	18	8	11	15	35	29	31	87	17	147	21
9am - 10am	92	62	32	60	60	19	37	306	61	362	52
10am - 11am	140	62	104	135	52	160	125	493	99	778	111
11am - Midday	154	60	63	100	125	87	99	502	100	688	98
Midday - 1pm	85	32	119	152	164	49	61	552	110	662	95
1pm - 2pm	139	23	50	209	96	42	58	517	103	617	88
2pm - 3pm	106	28	33	61	136	46	49	364	73	459	66
3pm - 4pm	25	20	23	21	100	19	36	189	38	244	35
4pm - 5pm	22	11	14	15	17	13	37	79	16	129	18
5pm - 6pm	10	9	9	11	13	16	17	52	10	85	12
6pm - 7pm	8	3	6	0	3	3	5	20	4	28	4
7pm - 8pm	1	1	0	1	0	0	0	3	1	3	0
8pm - 9pm	0	0	0	0	0	0	0	0	0	0	0
9pm - 10pm	0	0	0	0	0	0	0	0	0	0	0
10pm - 11pm	0	0	0	0	0	0	0	0	0	0	0
11pm - Midnight	0	0	0	0	0	0	0	0	0	0	0
Total	853	374	520	835	855	499	574	3437	687	4510	644

Traffic Count Summary Report

Count Number 7986 Ref : TTP Lat/Long : S33 47 37.3 / E151 08 31.7 UBD 194 J-9
 Street PLASSEY ROAD, MACQUARIE PARK : From DELHI ROAD to LANE COVE NATIONAL PARK ENTRANCE : SOUTH EAST
 Location Exit Lane from Macquarie Cemetery (Pauline Tritton 0425 297 817), On flag pole. Carriageway

TOTAL COUNT MATRIX

Start Date 07-OCT-11
 Start Time 100
 Duration 7 DAYS
 Interval 1 HOUR

Weekly 50th Percentile Speed 20
 Weekly 85th Percentile Speed 27
 Five Day AADT 664
 Seven Day AADT 628

	MON 10TH	TUE 11TH	WED 12TH	THU 13TH	FRI 7TH	SAT 8TH	SUN 9TH	5 Day Total	5 Day Average	Total	7 Day Average
Midnight - 1am	0	0	0	0	1	0	0	1	0	1	0
1am - 2am	0	0	0	0	0	0	0	0	0	0	0
2am - 3am	0	0	0	0	0	0	0	0	0	0	0
3am - 4am	0	0	0	0	0	0	0	0	0	0	0
4am - 5am	0	0	0	0	0	0	0	0	0	0	0
5am - 6am	1	1	1	1	0	0	0	1	0	1	0
6am - 7am	1	2	2	1	4	4	2	10	2	16	2
7am - 8am	8	4	6	7	4	4	5	29	6	38	5
8am - 9am	8	3	3	8	11	13	20	33	7	66	9
9am - 10am	20	12	14	12	17	21	42	75	15	138	20
10am - 11am	44	46	40	38	51	43	44	219	44	306	44
11am - Midday	149	64	58	84	66	57	142	421	84	620	89
Midday - 1pm	108	73	94	105	71	153	73	451	90	677	97
1pm - 2pm	111	36	96	106	93	75	65	442	88	582	83
2pm - 3pm	63	35	52	122	126	62	61	398	80	521	74
3pm - 4pm	139	48	79	245	156	24	37	667	133	728	104
4pm - 5pm	107	24	50	50	155	18	40	386	77	444	63
5pm - 6pm	52	14	8	18	34	22	30	126	25	178	25
6pm - 7pm	19	9	7	5	10	4	13	50	10	67	10
7pm - 8pm	1	1	0	1	0	0	0	3	1	3	0
8pm - 9pm	0	0	0	0	0	0	0	0	0	0	0
9pm - 10pm	0	0	0	0	0	0	0	0	0	0	0
10pm - 11pm	0	0	0	1	0	0	0	1	0	1	0
11pm - Midnight	0	0	0	0	0	0	0	0	0	0	0
Total	831	372	510	806	799	501	575	3318	663	4394	627

MPCC Car Log

May-11

Day	Date	Car Count	Weather	# Cremations incl. NSNA	# Burials only	Special Occasions
Sunday	1/05/2011	506	fine/sunny			
Monday	2/05/2011	751	fine/sunny	6	4	
Tuesday	3/05/2011	736	fine/showers	9	5	
Wednesday	4/05/2011	585	fine/sunny	12	5	
Thursday	5/05/2011	783	fine/sunny	12	1	
Friday	6/05/2011	892	fine/sunny	17	6	
Saturday	7/05/2011	574	fine/sunny	4	1	
Sunday	8/05/2011	2639	sunny/warm	0	0	MOTHERS DAY
Monday	9/05/2011	717	cold/overcast	10	4	
Tuesday	10/05/2011	618	cold/sunny	7	8	
Wednesday	11/05/2011	889	sunny/cold	13	4	
Thursday	12/05/2011	1011	sunny/cold	13	6	
Friday	13/04/2011	808	sunny/cold	6	2	
Saturday	14/05/2011	308	sunny/cold	0	1	
Sunday	15/05/2011	547	sunny/cold	0	0	
Monday	16/05/2011	583	fine/sunny	11	2	
Tuesday	17/05/2011	658	fine/sunny	6	5	
Wednesday	18/05/2011	400	fine/sunny	2	1	
Thursday	19/05/2011	807	fine/sunny	9	4	
Friday	20/05/2011	566	sunny/fine	8	4	
Saturday	21/05/2011	405	sunny/fine	2	0	
Sunday	22/05/2011	556	sunny/fine	0	1	
Monday	23/05/2011	553	sunny/fine	5	2	
Tuesday	24/05/2011	591	sunny/showers	9	5	
Wednesday	25/05/2011	514	very cold	8	4	
Thursday	26/05/2011	872	fine/sunny	5	6	
Friday	27/05/2011	961	fine/sunny	13	2	
Saturday	28/05/2011	514	fine/overcast	1	1	
Sunday	29/05/2011	482	fine/rain	0	0	
Monday	30/05/2011	384	heavy rain	4	3	
Tuesday	31/05/2011	564	heavy rain/clearing	3	5	
		21,774		195	92	

MPCC Car Log

Jun-11

Day	Date	Car Count	Weather	# Cremations incl. NSNA	# Burials only	Special Occassions
Wednesday	1/06/2011	486	fine/showers	6	1	
Thursday	2/06/2011	463	fine/showers	5	2	
Friday	3/06/2011	648	fine	7	6	
Saturday	4/06/2011	361	fine/sunny	1	0	
Sunday	5/06/2011	471	fine/sunny	0	0	
Monday	6/06/2011	997	cold/sunny	10	4	
Tuesday	7/06/2011	1097	cold/sunny	11	6	
Wednesday	8/06/2011	793	cold/sunny	11	1	
Thursday	9/06/2011	631	cold/sunny	9	3	
Friday	10/06/2011	872	cold/sunny	8	3	
Saturday	11/06/2011	238	fine/showers	0	0	
Sunday	12/06/2011	264	rain	0	0	
Monday	13/06/2011	234	rain	0	0	
Tuesday	14/06/2011	690	rain/fine	5	3	
Wednesday	15/06/2011	434	rain	9	5	
Thursday	16/06/2011	408	rain/fine	5	4	
Friday	17/06/2011	695	cold/sunny	11	4	
Saturday	18/06/2011	385	cold/sunny	2	1	
Sunday	19/06/2011	498	cold/sunny	0	0	
Monday	20/06/2011	982	cold/sunny	10	3	
Tuesday	21/06/2011	510	cold/sunny/windy	6	4	
Wednesday	22/06/2011	590	sunny/cold	8	3	
Thursday	23/06/2011	608	sunny/fine	8	6	
Friday	24/06/2011	1008	sunny/fine	11	8	
Saturday	25/06/2011	334	sunny/fine	0	0	
Sunday	26/06/2011	505	sunny/fine	0	0	
Monday	27/06/2011	926	sunny/fine	14	3	
Tuesday	28/06/2011	693	overcast/showers	7	3	
Wednesday	29/06/2011	726	fine/showers	10	5	
Thursday	30/06/2011	619	fine	10	3	
		18,166		184	81	

MPCC Car Log

Jul-11

Day	Date	Car Count	Weather	# Crematio ns incl. NSNA	# Burials only	Special Ocassions
Friday	1/07/2011	790	fine/sunny	7	6	
Saturday	2/07/2011	366	fine/sunny	3	0	
Sunday	3/07/2011	536	fine/sunny	0	0	
Monday	4/07/2011	579	fine/sunny	2	3	
Tuesday	5/07/2011	607	sunny/cold	11	5	
Wednesday	6/07/2011	496	windy/sunny	6	5	
Thursday	7/07/2011	875	windy/sunny	9	6	
Friday	8/07/2011	633	cold/sunny	5	4	
Saturday	9/07/2011	542	cold/sunny	0	0	
Sunday	10/07/2011	351	cold/sunny	1	0	
Monday	11/07/2011	471	cold/sunny	9	1	
Tuesday	12/07/2011	522	cold/sunny	9	6	
Wednesday	13/07/2011	601	overcast/cold	10	3	
Thursday	14/07/2011	670	fine/sunny	5	2	
Friday	15/07/2011	710	showers/cold	12	4	
Saturday	16/07/2011	383	overcast/showers	1	0	
Sunday	17/07/2011	474	showers/fine	0	0	
Monday	18/07/2011	850	cold/fine	7	7	
Tuesday	19/07/2011	484	showers/cold	7	2	
Wednesday	20/07/2011	435	heavy rain	12	5	
Thursday	21/07/2011	727	rain	8	5	
Friday	22/07/2011	904	rain/fine	11	7	
Saturday	23/07/2011	444	rain/fine	0	1	
Sunday	24/07/2011	523	fine/sunny	0	0	
Monday	25/07/2011	755	fine/showers	11	1	
Tuesday	26/07/2011	526	fine/sunny	7	5	
Wednesday	27/07/2011	573	fine/sunny	7	0	
Thursday	28/07/2011	672	fine/sunny	8	5	
Friday	29/07/2011	920	fine/sunny	14	5	
Saturday	30/07/2011	602	fine/sunny	0	2	
Sunday	31/07/2011	471	fine/sunny	0	0	
		18,492		182	90	

MPCC Car Log

Aug-11

Day	Date	Car Count	Weather	# Crematio ns incl. NSNA	# Burials only	Special Ocassions
Monday	1/08/2011	521	fine/sunny	7	5	
Tuesday	2/08/2011	724	sunny/warm	6	3	
Wednesday	3/08/2011	612	sunny/warm	6	2	
Thursday	4/08/2011	709	sunny/warm	8	1	
Friday	5/08/2011	777	fine	9	3	
Saturday	6/08/2011	437	fine/sunny	1	1	
Sunday	7/08/2011	403	fine/showers	0	0	
Monday	8/08/2011	459	fine/sunny	10	2	
Tuesday	9/08/2011	445	fine/sunny	6	1	
Wednesday	10/08/2011	500	fine/sunny	7	2	
Thursday	11/08/2011	791	fine/sunny	11	3	
Friday	12/08/2011	770	rain	16	2	
Saturday	13/08/2011	471	fine	2	2	
Sunday	14/08/2011	492	fine/showers	1	0	
Monday	15/08/2011	785	fine	10	0	
Tuesday	16/08/2011			9	3	
Wednesday	17/08/2011			10	2	
Thursday	18/08/2011			7	2	
Friday	19/08/2011			13	4	
Saturday	20/08/2011					
Sunday	21/08/2011					
Monday	22/08/2011					
Tuesday	23/08/2011					
Wednesday	24/08/2011					
Thursday	25/08/2011					
Friday	26/08/2011					
Saturday	27/08/2011					
Sunday	28/08/2011					
Monday	29/08/2011					
Tuesday	30/08/2011					
Wednesday	31/08/2011					
		8,896		139	38	

Appendix D

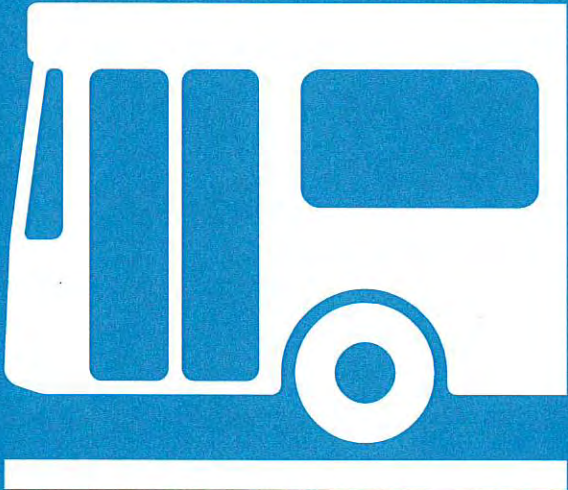
Bus Services

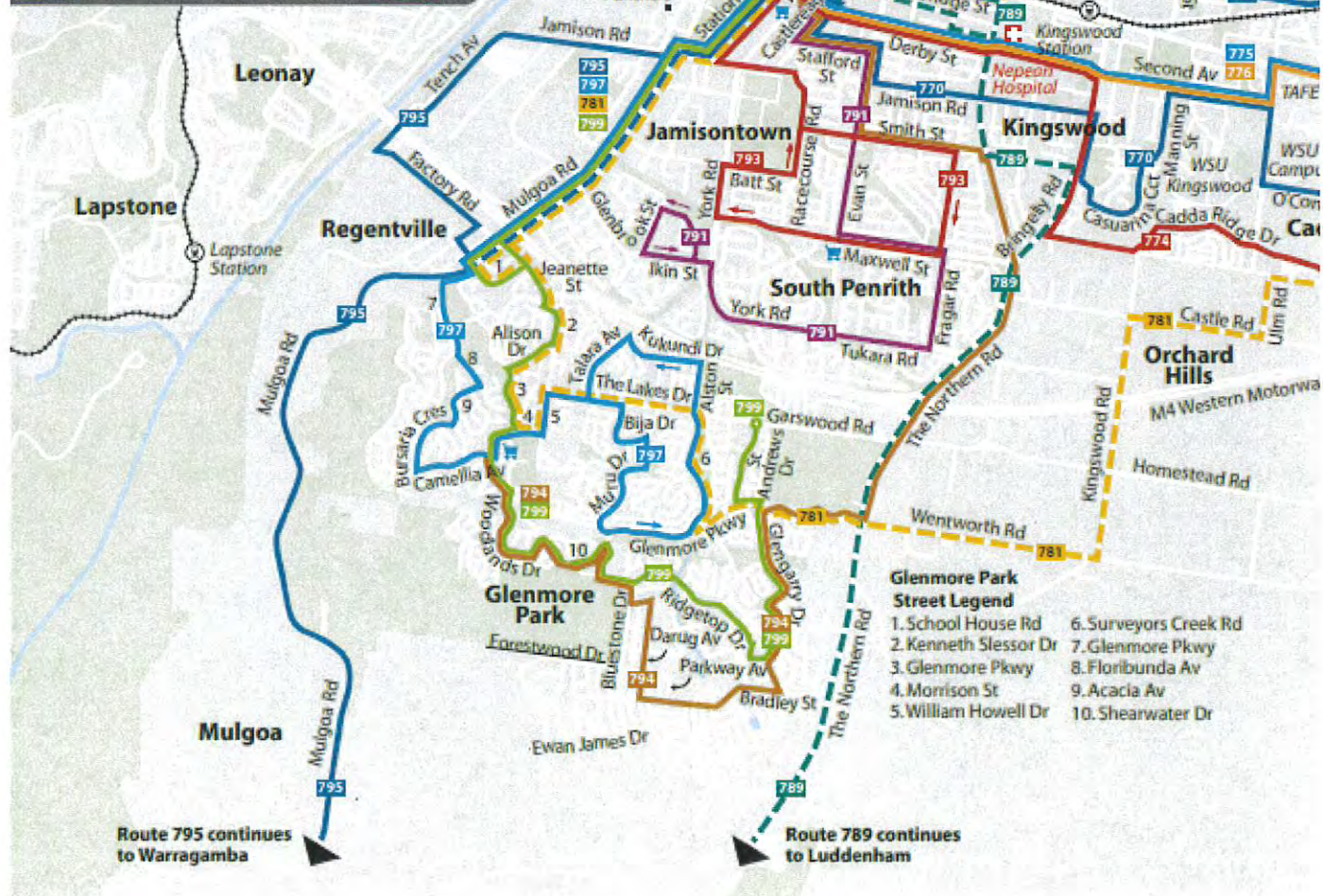
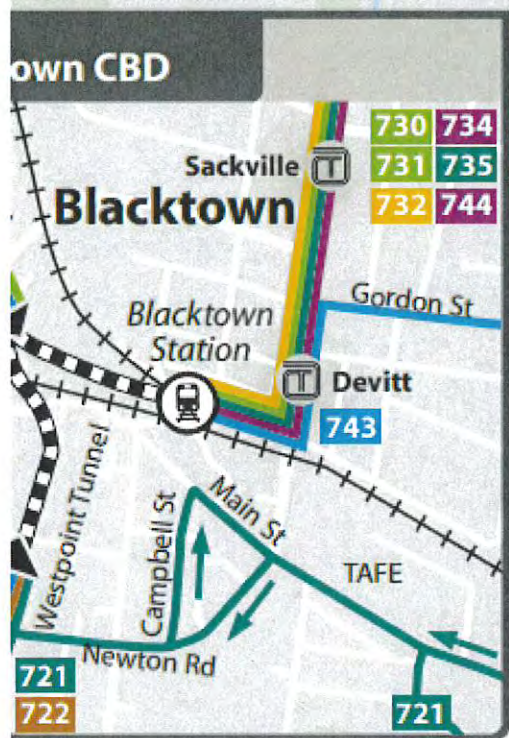


781 789 795

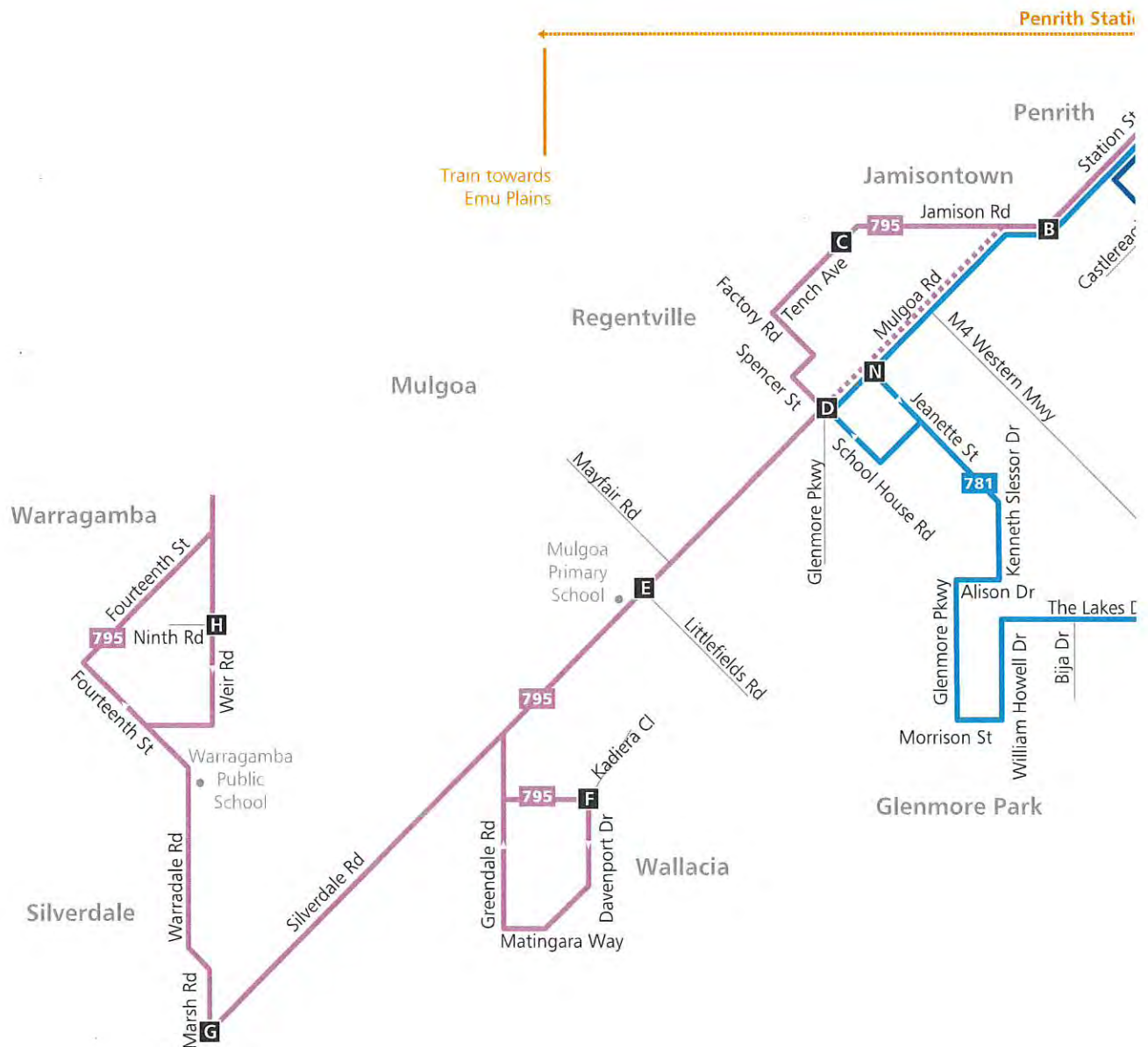
Penrith, St Marys, Luddenham and Warragamba

servicing Jamisontown, Glenmore Park, Warragamba, Orchard Hills, Luddenham & Claremont Meadows

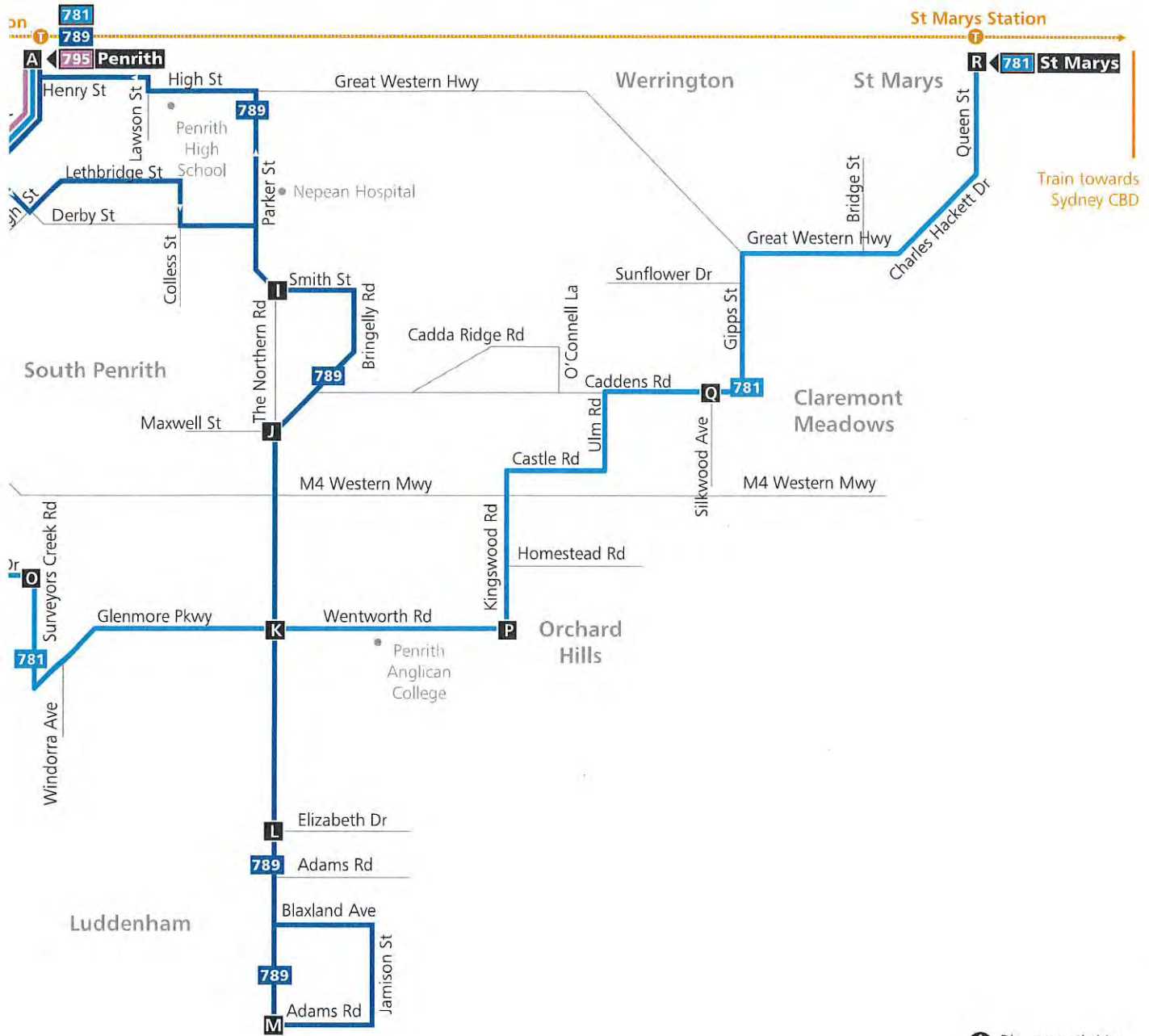




Routes 781, 789, 795



B



Diagrammatic Map
Not to Scale

Monday to Friday					
map ref	Service information	781	781	781	781
R	St Marys Interchange	-	-	-	14:59
Q	Claremont Meadows Caddens Road & Silkwood Ave	J07:33	08:34	R15:07	
P	Orchard Hills Wentworth Road & Kingswood Road	07:52	08:41	15:22	
O	Glenmore Park Surveyors Creek Rd & The Lakes Dr	08:02	08:49	-	
D	Regentville Mulgoa Road & Spencer Street	08:13	09:00	-	
B	Penrith Station Street & Jamison Road	08:20	09:07	-	
A	Penrith Interchange	08:27	09:15	-	

Monday to Friday					
map ref	Service information	781	781	781	781
A	Penrith Interchange	-	06:56	-	16:26
B	Penrith Station Street & Jamison Road	-	06:59	-	16:31
N	Regentville Jeanette Street & Mulgoa Road	-	07:04	-	16:38
O	Glenmore Park Surveyors Creek Rd & The Lakes Dr	-	07:13	-	16:45
P	Orchard Hills Wentworth Road & Kingswood Road	R06:59	07:21	08:00	16:51
Q	Claremont Meadows Caddens Road & Silkwood Ave	07:13	07:31	08:10	17:02
R	St Marys Interchange	07:23	07:41	08:20	-

Monday to Friday					
map ref	Service information	789	789	789	789
M	Luddenham Adams Road & The Northern Road	07:28	16:26		
L	Luddenham The Northern Road & Elizabeth Drive	07:32	16:29		
K	Orchard Hills The Northern Road & Wentworth Road	07:41	16:37		
J	Kingswood Bringelly Road & The Northern Road	07:46	16:42		
I	Nepean Hospital Derby Street & Parker Street	07:54	16:48		
A	Penrith Interchange	08:02	16:56		

Monday to Friday					
map ref	Service information	789	789	789	789
A	Penrith Interchange	D06:57	S15:37	HQ15:41	
I	Nepean Hospital Derby Street & Parker Street	07:05	S15:49	H15:49	
J	Kingswood Bringelly Road & The Northern Road	P07:11	S15:54	H15:54	
K	Orchard Hills The Northern Road & Wentworth Road	07:15	S16:05	H15:59	
L	Luddenham The Northern Road & Elizabeth Drive	07:23	S16:12	H16:07	
M	Luddenham Adams Road & The Northern Road	07:27	S16:18	H16:11	

Monday to Friday													
map ref	Service information	795	795	795	795	795	795	795	795	795	795	795	795
H	Warragamba Weir Road & Ninth Street	05:34	06:37	06:59	08:02	09:21	10:38	13:38	13:38	13:38	13:38	13:38	13:38
G	Silverdale Marsh Road & Silverdale Road	05:39	06:42	07:04	08:07	09:25	10:42	13:42	13:42	13:42	13:42	13:42	13:42
F	Wallacia Davenport Drive & Kadierra Close	05:49	06:52	07:16	08:18	09:35	10:52	13:52	13:52	13:52	13:52	13:52	13:52
E	Mulgoa Mulgoa Road & Littlefields Road	05:58	07:01	07:28	08:27	09:43	11:00	14:00	14:00	14:00	14:00	14:00	14:00
D	Regentville Mulgoa Road & Spencer Street	06:05	07:08	07:39	08:38	09:50	11:07	14:07	14:07	14:07	14:07	14:07	14:07
C	Nepean Shores Resort Tench Avenue	–	07:13	–	08:43	09:55	11:12	14:12	–	–	–	–	–
B	Penrith Station Street & Jamison Road	06:10	07:20	07:47	08:48	10:00	11:17	14:17	14:17	14:17	14:17	14:17	14:17
A	Penrith Interchange	06:16	07:27	07:56	08:57	10:09	11:26	14:26	14:26	14:26	14:26	14:26	14:26

Saturday													
map ref	Service information	795	795	795	795	795	795	795	795	795	795	795	795
H	Warragamba Weir Road & Ninth Street	08:17	10:22	14:37	M16:37	–	–	–	–	–	–	–	–
G	Silverdale Marsh Road & Silverdale Road	08:22	10:27	14:42	–	–	–	–	–	–	–	–	–
F	Wallacia Davenport Drive & Kadierra Close	08:31	10:36	14:51	–	–	–	–	–	–	–	–	–
E	Mulgoa Mulgoa Road & Littlefields Road	08:39	10:44	14:59	W16:48	–	–	–	–	–	–	–	–
D	Regentville Mulgoa Road & Spencer Street	08:47	10:52	15:07	16:55	–	–	–	–	–	–	–	–
C	Nepean Shores Resort Tench Avenue	08:52	10:57	15:12	–	–	–	–	–	–	–	–	–
B	Penrith Station Street & Jamison Road	08:56	11:01	15:16	17:02	–	–	–	–	–	–	–	–
A	Penrith Interchange	09:04	11:09	15:24	17:10	–	–	–	–	–	–	–	–

Sunday & Public Holidays													
map ref	Service information	795	795	795	795	795	795	795	795	795	795	795	795
H	Warragamba Weir Road & Ninth Street	–	10:43	–	M17:03	–	–	–	–	–	–	–	–
G	Silverdale Marsh Road & Silverdale Road	–	10:47	–	–	–	–	–	–	–	–	–	–
F	Wallacia Davenport Drive & Kadierra Close	–	10:57	–	–	–	–	–	–	–	–	–	–
E	Mulgoa Mulgoa Road & Littlefields Road	–	11:04	–	W17:16	–	–	–	–	–	–	–	–
D	Regentville Mulgoa Road & Spencer Street	09:24	11:11	14:24	17:23	–	–	–	–	–	–	–	–
C	Nepean Shores Resort Tench Avenue	–	11:15	–	–	–	–	–	–	–	–	–	–
B	Penrith Station Street & Jamison Road	09:29	11:19	14:29	17:31	–	–	–	–	–	–	–	–
A	Penrith Interchange	09:37	11:28	14:37	17:39	–	–	–	–	–	–	–	–

Monday to Friday											
map ref	Service information	795	795	795	795	795	795	795	795	795	795
A	Penrith Interchange	S06:26	H06:36	07:22	08:28	09:47	14:09	15:30	15:44	16:33	18:03 19:03
B	Penrith Station Street & Jamison Road	S06:29	H06:39	07:26	08:32	09:52	14:14	15:35	15:49	16:38	18:08 19:07
C	Nepean Shores Resort Tench Avenue	-	-	-	-	09:56	14:18	15:39	-	-	-
D	Regentville Mulgoa Road & Spencer Street	S06:34	H06:44	07:31	08:37	10:01	14:23	15:45	15:56	16:45	18:13 19:11
E	Mulgoa Mulgoa Road & Littlefields Road	SW06:42	HW06:52	W07:39	08:51	10:08	14:32	15:52	16:05	16:52	18:20 19:18
F	Wallacia Davenport Drive & Kadijera Close	-	-	-	08:58	10:15	14:40	16:00	16:13	17:00	18:27 19:25
G	Silverdale Marsh Road & Silverdale Road	-	-	W07:51	09:10	10:27	14:55	16:14	16:28	17:13	18:40 19:38
H	Warragamba Weir Road & Ninth Street	SU06:56	HU07:06	07:58	09:17	10:34	15:03	16:22	16:36	17:21	18:48 19:46


Saturday											
map ref	Service information	795	795	795	795	795	795	795	795	795	795
A	Penrith Interchange	09:47	13:47	15:47	18:47						
B	Penrith Station Street & Jamison Road	09:52	13:52	15:52	18:52						
C	Nepean Shores Resort Tench Avenue	-	13:55	15:55	18:55						
D	Regentville Mulgoa Road & Spencer Street	09:56	14:00	16:00	19:00						
E	Mulgoa Mulgoa Road & Littlefields Road	W10:04	14:08	16:08	19:08						
F	Wallacia Davenport Drive & Kadijera Close	-	14:16	16:16	19:16						
G	Silverdale Marsh Road & Silverdale Road	-	14:28	16:28	19:28						
H	Warragamba Weir Road & Ninth Street	U10:19	14:35	16:35	19:35						

Sunday & Public Holidays											
map ref	Service information	795	795	795	795	795	795	795	795	795	795
A	Penrith Interchange	09:10	10:10	14:10	16:10						
B	Penrith Station Street & Jamison Road	09:14	10:14	14:14	16:14						
C	Nepean Shores Resort Tench Avenue	09:17	-	14:17	16:17						
D	Regentville Mulgoa Road & Spencer Street	09:23	10:19	14:23	16:23						
E	Mulgoa Mulgoa Road & Littlefields Road	-	W10:27	-	16:31						
F	Wallacia Davenport Drive & Kadijera Close	-	-	-	16:40						
G	Silverdale Marsh Road & Silverdale Road	-	-	-	16:51						
H	Warragamba Weir Road & Ninth Street	-	U10:41	-	16:58						

Timing Points

- A** Penrith Interchange
- B** Penrith Station Street & Jamison Road
- C** Nepean Shores Resort Tench Avenue
- D** Regentville Mulgoa Road & Spencer Street
- E** Mulgoa Mulgoa Road & Littlefields Road
- F** Wallacia Davenport Drive & Kадiera Close
- G** Silverdale Marsh Road & Silverdale Road
- H** Warragamba Weir Road & Ninth Street
- I** Nepean Hospital Derby Street & Parker Street
- J** Kingswood Bringelly Road & The Northern Road
- K** Orchard Hills The Northern Road & Wentworth Road
- L** Luddenham The Northern Road & Elizabeth Drive
- M** Luddenham Adams Road & The Northern Road
- N** Regentville Jeanette Street & Mulgoa Road
- O** Glenmore Park Surveyors Creek Road & The Lakes Dr
- P** Orchard Hills Wentworth Road & Kingswood Road
- Q** Claremont Meadows Caddens Road & Silkwood Ave
- R** Claremont Meadows Gipps Street & Great Western Highway
- S** St Marys Interchange

Explanation of definitions and symbols

- D** Bus operates via Derby St, omitting Castlereagh St, Lethbridge St & Colless St.
- H** Bus operates public school holidays only.
- J** Public school holidays bus operates through timing point 10 minutes later than time shown.
- M** Bus operates from Weir Rd via Farnsworth Ave to Silverdale Rd, omitting Warradale Rd, Marsh Rd & part of Silverdale Rd. Passengers from Silverdale to Penrith should join bus on outward journey.
- P** Bus operates via Parker St direct, omitting Smith St & Bringelly Rd. Time shown is in the Northern Rd.
- Q** Public school holidays bus operates via Dery St, omitting Casstlereagh St, Lethbridge St & Colless St.
- R** Bus operates from Caddens Rd & Ulm Rd via Caddens Rd, O'Connell La, Cadda Ridge Dr, Caddens Rd, Braeburn St, Cadda Ridge Dr, O'Connell La & Caddens Rd, returning to Ulm Rd.
- S** Bus operates public school days only.
- U** Bus operates from Silverdale Rd via Farnsworth Ave to Weir Rd, omitting part of Silverdale Rd, Warradale Rd & Marsh Rd. Passengers for Silverdale should stay on bus & alight on return journey.
- W** Bus operates via Mulgoa Rd direct to Silverdale Rd, omitting Wallacia loop.
-  Wheelchair Accessible

Valid from: 27 April 2020

Creation date: 28 April 2020

NOTE: Information is correct on date of download.

Monday to Friday									
Service Information									
Penrith Station	-	-	06:26	-	07:22	-	08:28	-	09:47
Station St at Jamison Rd, Penrith	-	-	06:29	-	07:26	-	08:32	-	09:52
Nepean Shores Resort Tench Av, Jamisontown	-	-	-	-	-	-	-	-	09:56
Regentville Auto Mulgoa Rd near Spencer St, Regentville	-	-	06:34	-	07:31	-	08:37	-	10:01
Nepean District Christian School, Mulgoa	-	-	-	-	-	-	08:45	-	-
Mulgoa Public School Mulgoa Rd, Mulgoa	-	-	B06:42	-	B07:39	-	08:51	-	10:08
Weir Rd opp Ninth St, Warragamba	05:34	06:37	-	T06:59	-	08:02	-	09:21	-
Weir Rd (Warragamba PS), Warragamba	05:35	06:38	-	07:00	-	08:03	-	09:22	-
Marsh Rd opp Silverdale Rural Fire Brigade, Silverdale	05:39	06:42	-	07:04	-	08:07	-	09:25	-
Davenport Dr before Kадiera Cl, Wallacia	05:49	06:52	-	07:16	-	08:18	08:58	09:35	10:15
Mulgoa Public School Mulgoa Rd, Mulgoa	05:58	07:01	-	07:28	-	08:27	-	09:43	-
Nepean District Christian School, Mulgoa	-	-	-	-	-	08:31	-	-	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	06:05	07:08	-	07:39	-	08:38	-	09:50	-
Nepean Shores Resort Tench Av, Jamisontown	-	07:13	-	-	-	08:43	-	09:55	-
Na Hunter Oval Station St, Penrith	06:10	07:20	-	07:47	-	08:48	-	10:00	-
Penrith Station	06:16	07:27	-	07:56	-	08:57	-	10:09	-
Silverdale Rural Fire Brigade, Marsh Rd, Silverdale	-	-	-	-	B07:51	-	09:10	-	10:27
Weir Rd at Ninth St, Warragamba	-	-	A06:56	-	07:58	-	09:17	-	10:34
Monday to Friday									
Service Information									
Penrith Station	-	-	14:09	-	15:30	15:44	-	16:33	-
Station St at Jamison Rd, Penrith	-	-	14:14	-	15:35	15:49	-	16:38	-
Nepean Shores Resort Tench Av, Jamisontown	-	-	14:18	-	15:39	-	-	-	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	-	-	14:23	-	15:45	15:56	-	16:45	-
Mulgoa Public School Mulgoa Rd, Mulgoa	-	-	14:32	-	15:52	16:05	-	16:52	-
Weir Rd opp Ninth St, Warragamba	10:38	13:38	-	15:07	-	16:42	-	D17:25	-
Weir Rd (Warragamba PS), Warragamba	10:39	13:39	-	15:10	-	16:43	-	17:26	-
Marsh Rd opp Silverdale Rural Fire Brigade, Silverdale	10:42	13:42	-	15:15	-	16:46	-	-	-
Davenport Dr before Kадiera Cl, Wallacia	10:52	13:52	14:40	15:55	16:00	16:13	16:56	17:00	-
Mulgoa Public School Mulgoa Rd, Mulgoa	11:00	14:00	-	16:03	-	-	17:04	-	B17:35
Regentville Auto Mulgoa Rd near Spencer St, Regentville	11:07	14:07	-	16:11	-	-	17:12	-	17:43
Nepean Shores Resort Tench Av, Jamisontown	11:12	14:12	-	-	-	-	-	-	-
Na Hunter Oval Station St, Penrith	11:17	14:17	-	16:18	-	-	17:19	-	17:50
Penrith Station	11:26	14:26	-	16:27	-	-	17:28	-	17:58
Silverdale Rural Fire Brigade, Marsh Rd, Silverdale	-	-	14:55	-	16:14	16:28	-	17:13	-
Weir Rd at Ninth St, Warragamba	-	-	15:03	-	16:22	16:36	-	17:21	-
Monday to Friday									
Penrith Station	18:03	19:03	-	-	-	-	-	-	-
Station St at Jamison Rd, Penrith	18:08	19:07	-	-	-	-	-	-	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	18:13	19:11	-	-	-	-	-	-	-
Mulgoa Public School Mulgoa Rd, Mulgoa	18:20	19:18	-	-	-	-	-	-	-
Davenport Dr before Kадiera Cl, Wallacia	18:27	19:25	-	-	-	-	-	-	-
Silverdale Rural Fire Brigade, Marsh Rd, Silverdale	18:40	19:38	-	-	-	-	-	-	-
Weir Rd at Ninth St, Warragamba	18:48	19:46	-	-	-	-	-	-	-
Saturday									
Penrith Station	-	09:47	-	13:47	-	15:47	-	18:47	-
Station St at Jamison Rd, Penrith	-	09:52	-	13:52	-	15:52	-	18:52	-
Nepean Shores Resort Tench Av, Jamisontown	-	-	-	13:55	-	15:55	-	18:55	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	-	09:56	-	14:00	-	16:00	-	19:00	-
Mulgoa Public School Mulgoa Rd, Mulgoa	-	B10:04	-	14:08	-	16:08	-	19:08	-
Weir Rd opp Ninth St, Warragamba	08:17	-	10:22	-	14:37	-	D16:37	-	-
Weir Rd (Warragamba PS), Warragamba	08:18	-	10:23	-	14:38	-	16:38	-	-
Marsh Rd opp Silverdale Rural Fire Brigade, Silverdale	08:22	-	10:27	-	14:42	-	-	-	-
Davenport Dr before Kадiera Cl, Wallacia	08:31	-	10:36	14:16	14:51	16:16	-	19:16	-
Mulgoa Public School Mulgoa Rd, Mulgoa	08:39	-	10:44	-	14:59	-	B16:48	-	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	08:47	-	10:52	-	15:07	-	16:55	-	-
Nepean Shores Resort Tench Av, Jamisontown	08:52	-	10:57	-	15:12	-	-	-	-
Na Hunter Oval Station St, Penrith	08:56	-	11:01	-	15:16	-	17:02	-	-
Penrith Station	09:04	-	11:09	-	15:24	-	17:10	-	-
Silverdale Rural Fire Brigade, Marsh Rd, Silverdale	-	-	-	14:28	-	16:28	-	19:28	-
Weir Rd at Ninth St, Warragamba	-	A10:19	-	14:35	-	16:35	-	19:35	-

795

Warragamba to Penrith

B

Sunday & Public Holidays

	6	6	6	6	6	6
Penrith Station	09:10	10:10	-	14:10	16:10	-
Station St at Jamison Rd, Penrith	09:14	10:14	-	14:14	16:14	-
Nepean Shores Resort Tench Av, Jamisontown	09:17	-	-	14:17	16:17	-
Regentville Auto Mulgoa Rd near Spencer St, Regentville	L09:23	10:19	-	L14:23	16:23	-
Mulgoa Public School Mulgoa Rd, Mulgoa	-	B10:27	-	-	16:31	-
Weir Rd opp Ninth St, Warragamba	-	-	10:43	-	-	D17:03
Weir Rd (Warragamba PS), Warragamba	-	-	10:44	-	-	17:04
Marsh Rd opp Silverdale Rural Fire Brigade, Silverdale	-	-	10:47	-	-	-
Davenport Dr before Kадiera Cl, Wallacia	-	-	10:57	-	16:40	-
Mulgoa Public School Mulgoa Rd, Mulgoa	-	-	11:04	-	-	B17:16
Regentville Auto Mulgoa Rd near Spencer St, Regentville	09:24	-	11:11	14:24	-	17:23
Nepean Shores Resort Tench Av, Jamisontown	-	-	11:15	-	-	-
Na Hunter Oval Station St, Penrith	09:29	-	11:19	14:29	-	17:31
Penrith Station	09:37	-	11:28	14:37	-	17:39
Silverdale Rural Fire Brigade, Marsh Rd, Silverdale	-	-	-	-	16:51	-
Weir Rd at Ninth St, Warragamba	-	A10:41	-	-	16:58	-

Appendix E

Road Images at Access Points







1176 Greendale Rd
Greendale, New South Wales
[View on Google Maps](#)

Close



Appendix F

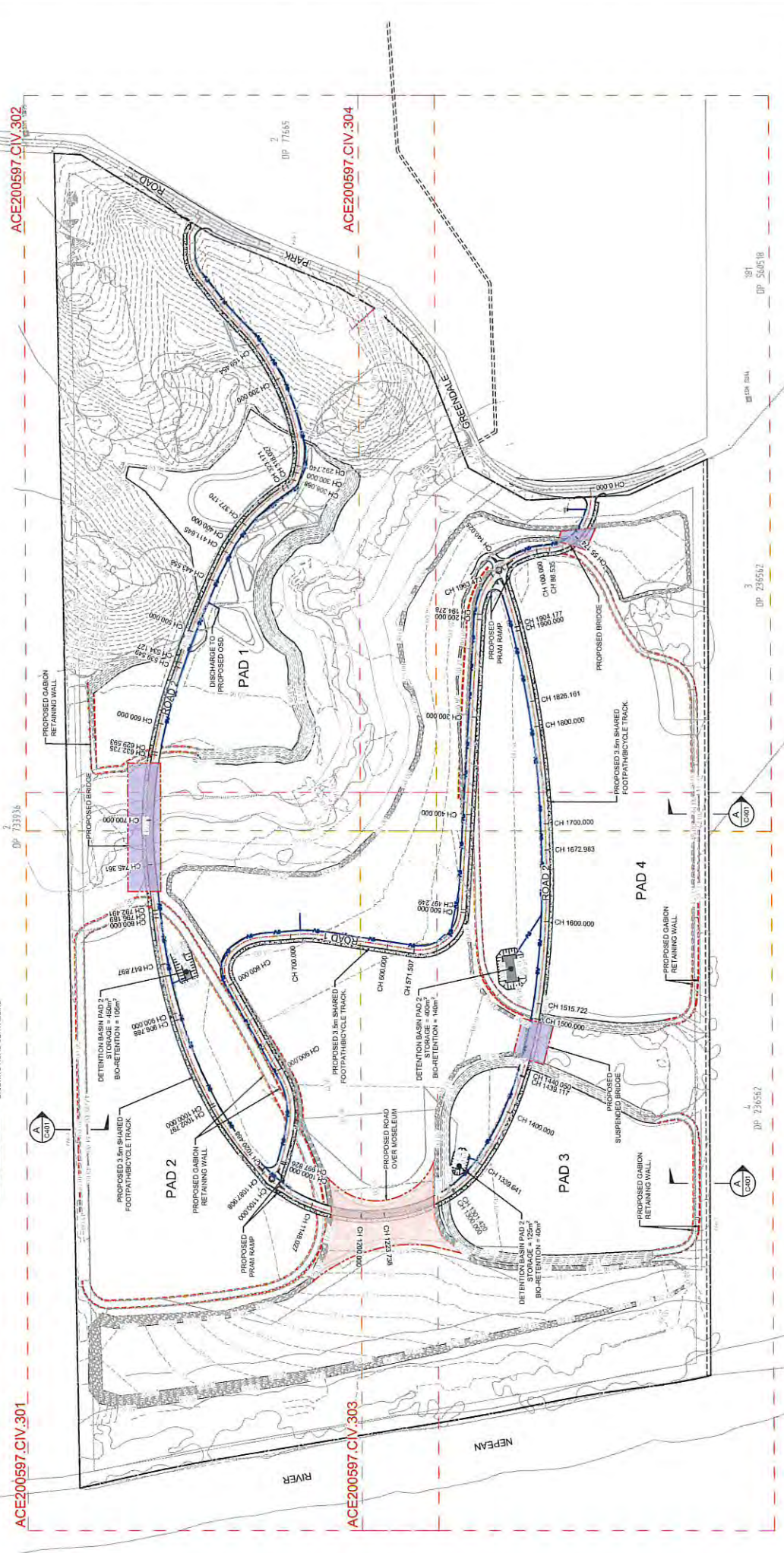
Road Design Plans



LEGEND

- LOT BOUNDARY
- PROPOSED KERB ONLY
- PROPOSED ROAD CENTRELINE
- FINISHED CONTOURS
- PROPOSED STORMWATER PIPE
- PROPOSED SULLY PIT
- PROPOSED ROAD PAVEMENT
- PROPOSED ROAD OVER MOSELEUM
- PROPOSED BRIDGE
- PROPOSED CONCRETE FOOTPATH
- PROPOSED FRAM RAMP
- PROPOSED GABION RETAINING WALL
- EXISTING ROAD CENTRELINE

NOTE:
FOR GENERAL NOTES REFER TO
PROJ No. ACE200597.CIV.DA.000



NOT FOR CONSTRUCTION

Project
1290 GREENDALE ROAD, GREENPARK
PUBLIC DOMAIN WORKS
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION

Client
AUSTRALIAN CONSULTING ENGINEERS
P.L.C.
CONSULTING
11/107 A72 DRIVE "A" LOT 3 A72 A75
SYDNEY NSW 1500
Phone: 02 9550 0000

Scale
0 40 80 120 m
SCALE 1:200 @ A1

Architect
mkd architects

No.	Date	By	Check	Rev
1	27/11/2020	N.M.	J.B.	1

Issue	Change No.	Date	By	Check	Rev
A	1	27/11/2020	N.M.	J.B.	1

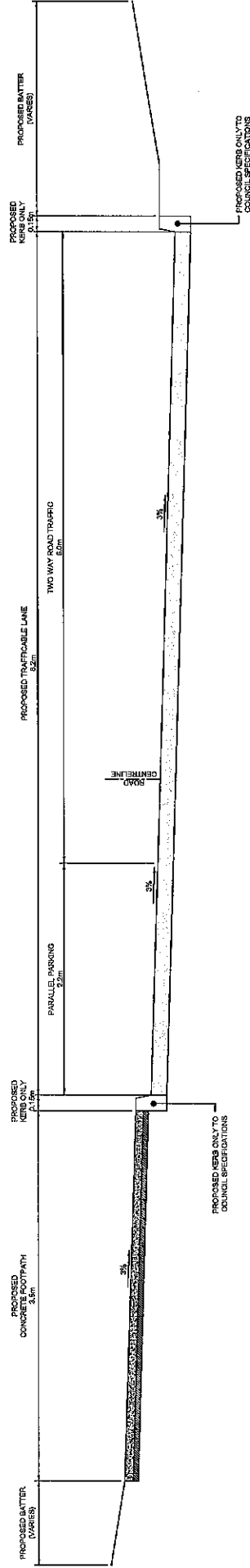
Issue for Development Application

Drawn By
200597

Scale
1:2000

Sheet No.
300

Total
A



TYPICAL CROSS ROAD SECTION
SCALE 1:20

NOT FOR CONSTRUCTION

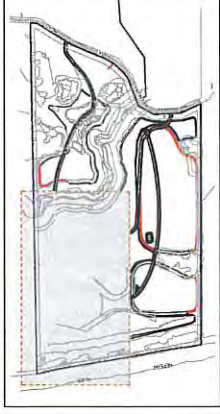
				AUSTRALIAN CONSULTING ENGINEERS PTY LTD - A.C.N. 924 015 921 (INCORPORATED IN AUSTRALIA) 11/07/470 000 725 600 FAX 08 (NSW) 08 924 015 921		1290 GREENDALE ROAD, GREENPARK PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION		Drawing Title TYPICAL ROAD CROSS SECTION AND SWALE SECTION	
Date 27/11/2020		Date 27/11/2020		Project No. 200557		Scale 1:20		Sheet No. 305	
Issue A		Description ISSUE FOR DEVELOPMENT APPLICATION		Author [Name]		Check [Name]		Date 27/11/2020	

LEGEND

- LOT BOUNDARY
- PROPOSED KERB ONLY
- PROPOSED ROAD CENTRELINE
- FINISHED CONTOURS
- PROPOSED STORMWATER PIPE
- PROPOSED DULY PIT

- PROPOSED ROAD PAVEMENT
- PROPOSED ROAD OVER MUSSELM
- PROPOSED BRIDGE
- PROPOSED CONCRETE FOOTPATH
- PROPOSED PRAM RAMP
- PROPOSED GARDEN RETAINING WALL
- EXISTING ROAD CENTRELINE

NOTE:
FOR GENERAL NOTES REFER TO
DRG No ACE200597 CIV DA 000



KEY PLAN
N.T.S.

2
DP 734936

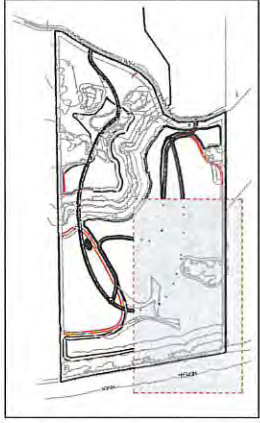
PAD 2 = 10.4m (34'6")



CONTINUES ON SHEET ACE200597 CIV DA 303

NOT FOR CONSTRUCTION

AUSTRALIAN CONSULTING ENGINEERS <small>AUSTRALIAN P. E. S. 112 A.C.N. 114 053 451 CONSULTING ENGINEERS PH 02 974 1100 FAX 02 974 1105 EMAIL: info@aec.com.au</small>		1290 GREENDALE ROAD, GREENPARK PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION		Drawing Title ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 1 OF 4	Scale 1:1000	Project No 200597	Date 30/1	Issue A
mkd architects				Scale 1:1000 @ A1 SCALE 1:1000 @ A1		Project No 200597		Issue A
Issue A		Description ISSUE FOR DEVELOPMENT APPLICATION		Date 27/11/2020		Design J.B.		Manager J.B.



NOTE:
FOR GENERAL NOTES REFER TO
DRG No. ACE200597.CIV.DA.000

-

- LOT BOUNDARY
PROPOSED KERB ONLY
PROPOSED ROAD CENTERLINE
FINISHED CONTOURS
PROPOSED STORMWATER PIPE
PROPOSED GULLY PIT

KEY PLAN
N.T.S.

CONTINUES ON SHEET ACE200597.CIV.DA.301

CONTINUES ON SHEET ACE200597.CIV.DA.304

PAD 4

PAD 3

PAD 3 = 10,000 m²/m²

NOT FOR CONSTRUCTION

Drawing Title

00 GREENDALE ROAD, GREENPARK
PUBLIC DOMAIN WORKS
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION

**AUSTRALIAN
CONSULTING
ENGINEERS.**

P O BOX 10000 A C H 384 019 9411
LEVEL 4, 470 CHURCH STREET NORTH PARARAMATTA
NSW 1077 973 1608 TA (02) 9763 126
E info@aceng.com.au

 AUSTRALIAN
CONSULTING
ENGINEERS

mkd architects

Architect

Carlson, Jr.

Issue	Description	Date	Design	M.I.	J.B.	Manager
A	ISSUE FOR DEVELOPMENT APPLICATION	27/11/2020				

**CONSULTING
ENGINEERS**
LEVEL 4, 470 CHURCH STREET NORTH PARLAMATTA NSW 2150
PH (02) 9763 1500 FX (02) 9763 1505
E MAIL: info@acreeg.com.au

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1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Inhalt	Dienstag	Mittwoch	Donnerstag	Freitag	Samstag	Sonntag	Montag
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78. ...							

LEGEND

- LOT BOUNDARY
- PROPOSED KERB ONLY
- PROPOSED ROAD CENTRELINE
- FINISHED CONTOURS
- PROPOSED STORMWATER PIPE
- PROPOSED GULLY PIT

- PROPOSED ROAD PAVEMENT
- PROPOSED ROAD OVER MOSELEIM
- PROPOSED BRIDGE
- PROPOSED CONCRETE FOOTPATH
- PROPOSED PAVEMENT RAMP
- PROPOSED GABION RETAINING WALL
- EXISTING ROAD CENTRELINE

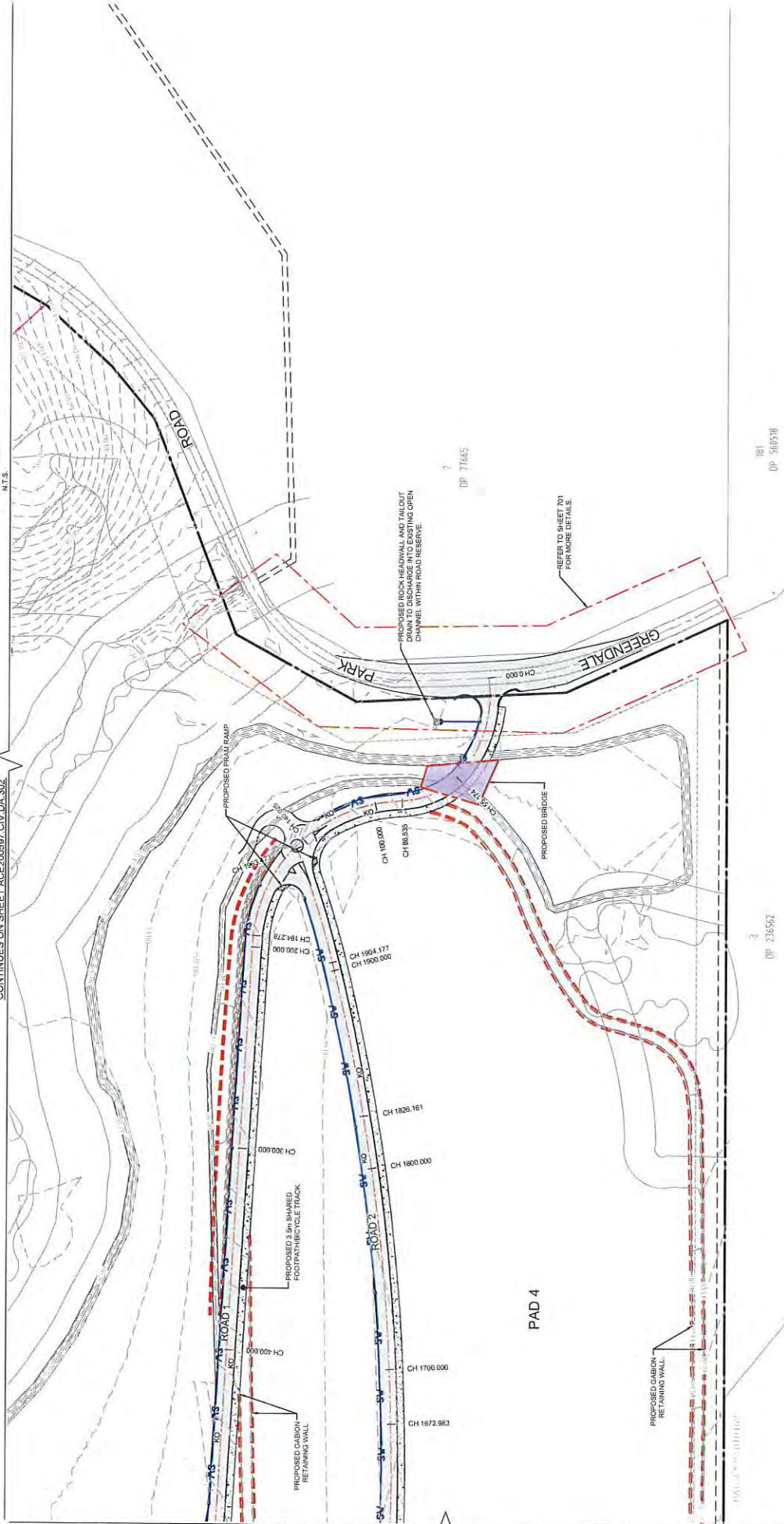
NOTE:
FOR GENERAL NOTES REFER TO
DRAWING NO. ACE200597 CIV DA 100



KEY PLAN

CONTINUES ON SHEET ACE200597 CIV DA 302

CONTINUES ON SHEET ACE200597 CIV DA 303



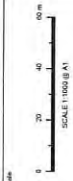
DP 236562

DP 560598

Issue	Description	Date	Drawn	Checked	Manager
A	ISSUE FOR DEVELOPMENT APPLICATION	27/11/2020	M.B.	J.B.	

Signature of M.B.

mkd architects



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Project: 1290 GREENDALE ROAD, GREENPARK
PUBLIC DOMAIN WORKS
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

Drawing Title	ROADWORKS AND DRAINAGE LAYOUT PLAN
Sheet	4 of 4
Scale	1:1000
Drawn By	200597
Check By	304
Issue	A