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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

20 November 2019 Reference: 190740.01FA

Lendlease CO TLP Consulting Pty Ltd 2 Newlands Street Wollstonecraft 2065 Attention: Timothy Laing-Peach

## CONSTRUCTION TRAFFIC MANAGEMENT PLAN FOR THE CONSTRUCTION OF BASIN C AND BASIN V6 AT JORDAN SPRINGS

Dear Timothy,

Reference is made to your request to provide a Construction Traffic Management Plan (CTMP) for the construction of the approved stormwater detention basins identified as Basin C and Basin V6 at Jordan Springs, as depicted on the reduced plan provided in **Annexure A**. This CTMP is to address the requirements provided by in the Secretary's Environmental Assessment Requirements (SEARS) issued on 14 October 2019 by the Department of Planning, Industry and Environment. The relevant extract from the 14 October 2019 SEARS is reproduced below:

traffic and transport - including:

- details of road transport routes and access to the site;
- road traffic predictions for the development during construction and operation; and
- an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development.

#### 1 Project Description

The proposal involves the construction of two detention basins (Basins C and V6) to detain, treat and attenuate stormwater runoff from Village 3 and Village 6; the Jordan Springs development. The basins are located within the north-western extent of the St Marys Development Site and within the Wianamatta Regional Park. Basins C and V6 will be constructed wetlands and act as water quality improvement basins with the provision for active stormwater detention during high flows.

Basin C will have a surface area of approximately 1.8 hectares and a notional depth of 1.7m. Whereas Basin V6 approximately 0.3 hectares and a notional depth of 1.6m.

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Each basin is designed to contribute to the water quantity and quality management objectives under the Sydney Regional Environmental Plan No. 30 – St Marys (SREP 30) and Penrith City Council's (Council) Water Sensitive Urban Design Policy (December 2013). The basins will incorporate the features for both water quality treatment and detention including a drainage inlet point, low-level culvert outlet, spillway with erosion protection and vegetated slopes to provide effective nutrient removal. An access track along the side of each basin with access ramps will be constructed for regular inspection and maintenance access.

#### 2 Site Location

Basin C is to be constructed on Lot 4 of DP1216994 and Basin V6 on Lot 5 of DP1216994. Both Lots are situated directly to the south of low-density residential dwellings which are part of the ongoing development of the former Australian Defence Industries site at St Marys. The location of each site is depicted on an aerial image in **Figure 1**.



**Not to Scale** 

Site Boundary

Indicative Basin Location

#### FIGURE 1: SITE CONTEXT - AERIAL IMAGE

All road access to the two sites will be made via Delany Circuit. In addition to the established road network, a temporary haulage road is proposed to connect the two sites.

Delany Circuit has the following existing characteristics at the point of construction:

- Unclassified LOCAL Road
- Generally 8m wide, providing for two-way traffic flow and kerbside parking;
- Pedestrian footpath on the eastern side of the carriageway and a shared pedestrian-cyclist path on the western side of the carriageway;
- Default 50km/h speed restriction applies.

The proposed haulage routes are discussed in Section 10 of this report.

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#### 3 Proposed Development

The development involves the following works:

- Site establishment works, including the construction of temporary haulage roads;
- The concurrent excavation of two stormwater detention basins;
- Civil works and landscape embellishment.

Plans of the proposed development have been reproduced within **Annexure A** for reference.

### 4 <u>Duration of Construction</u>

Construction is expected to occur over a total duration of 34 weeks. The expected milestones and durations are provided in **Table 1**.

**TABLE 1: CONSTRUCTION PROGRAM** 

Activity	Duration
Site Establishment	2 weeks
Excavation	12 weeks
Civil/Landscape Works	16 weeks
Finishing Works	4 weeks

This timeframe is indicative only and can possibly change due to delays, weather and construction certification details.

#### 5 Construction Hours of Work

The work associated with the construction of the development is expected to be carried out between  $7:00\,\text{AM}-6:00\,\text{PM}$  Monday to Friday and Saturday  $8\,\text{AM}-1\,\text{PM}$ . No construction works are expected to occur on Sundays or Public Holidays.

The enforcement of these hours of work is the responsibility of the site contractor and any other delegated authority. All sub-contractors and associated workers are to follow the hours of work as instructed by the site contractor. Any works outside of the approved hours of work must be approved by Council prior to carrying out the work.

### 6 Construction Site Access

Direct vehicular access to the two sites during construction will be made via Delany Circuit, with the use of an internal haul road proposed to facilitate access to the Basin C site. The Delany Circuit access will be designed to accommodate vehicles up to 23m in length, being B-Double vehicles. All construction activities will be undertaken completely within the boundaries of the two sites and no works zone will be required.

Any damage done to Council property including the existing road, verge or street trees along the haulage routes by construction traffic related to the subject site is to be a repaired as part of the dilapidation survey and bond.

#### 7 Work Zones

It is expected that all loading/unloading of deliveries/materials will be undertaken wholly on-site and not require a construction work zone along the site road frontage. If a construction work zone is required along these roadways, this is subject to a separate application and approval by Council and appropriate amendment of this CTMP.

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#### 8 Construction Staff & Parking Requirements

The expected staff requirements for the construction are outlined in **Table 2**.

**TABLE 2: CONSTRUCTION STAFF REQUIREMENTS** 

Activity	Duration	Maximum Expected Staff On-Site
Site Establishment	2 weeks	6
Excavation	12 weeks	12
Civil/Landscape Works	16 weeks	12
Finishing Works	4 weeks	6

It is expected that as a worst case, a total of 12 workers will be on-site at any one-time. Assuming car occupancy of 1 worker per vehicle would equate to 12 parked vehicles. There is more than sufficient room on-site for the parking of workers vehicles throughout the duration of the construction activities. It is not expected that there will be any reliance on on-street car parking during the proposed construction.

#### 9 Construction Traffic

Peak construction traffic movements will occur during the excavation stage of the project, during which it is estimated that 2,000m³ of materials will be removed from the site each day. Based on a truck capacity of approximately 14m³, this will result in a total of approximately 140 - 150 daily outgoing truck movements for a 10-hour day. Assuming a shallow peak of truck movements, it is expected that a peak of 16 trucks will enter and depart the site in a single peak hour, resulting in 32 movements (16 IN/16 OUT).

Peak staff traffic movements are expected to occur immediately prior to the commencement and immediately after the conclusion of daily construction hours. Considering the number of staff required on-site as outlined in **Table 2**, the staff peak traffic movements are likely to be less than the heavy vehicle movements throughout the day.

To reduce the impact of the construction vehicles on the surrounding area, the following restrictions will be enforced:

- All trucks will travel at 40km/h or below on local roads;
- No construction vehicles will enter or leave either site between the hours of 8:30 AM to 9:30 AM and 2:30 PM – 3:30 PM to reduce conflict with school traffic.

#### 10 Construction Vehicle Haulage

All heavy construction vehicles required to access each of the sites will enter from Delany Circuit and use the temporary haul road to Basin C if necessary. All material is to be exported to the Dunheved Precinct via one of two routes as depicted in **Figure 2** and described below:

- Route 1, to be used by all vehicles up to 23m long B-Doubles (including other combinations of this length or less):
  - Delany Circuit;
  - Ninth Avenue;



- The Northern Road;
- Dunheved Road;
- Christie Street;
- Forrester Road;
- Links Road into Dunheved Precinct.
- Route 2, to be used by all vehicles up to 19m long Articulated Vehicles (including other combinations of this length or less):
  - Delany Circuit;
  - Third Avenue;
  - Eighth Avenue;
  - Palmyra Avenue;
  - Forrester Road;
  - Links Road into Dunheved Precinct.

Swept Path Tests have been undertaken to ensure the relevant construction vehicles can adequately manoeuvre the proposed haulage route to and from both proposed works zones. The swept path results are reproduced within **Annexure B**.

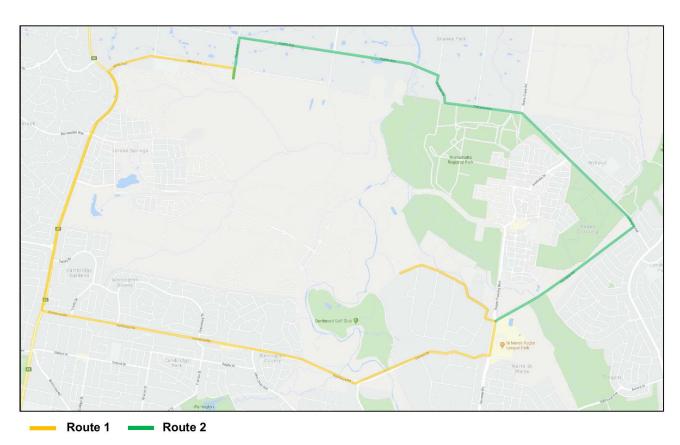


FIGURE 2: PROPOSED HAULAGE ROUTES



#### 10.1 Modifications to Road Network to Facilitate Haulage

Due to the geometry of the existing line marking at the intersection of Eighth Avenue and Third Avenue, 19m long articulated vehicles are unable to successfully traverse the intersection without straying into the opposing traffic lanes. To enable use of this route, it is proposed that the stop line on the eastern Eighth Avenue approach be shifted east by approximately 6.5m, as depicted in **Figure 3**.

This modification would have no adverse effects on the function of the intersection and could be made as either a temporary or permanent change.



FIGURE 3: PROPOSED MODIFICATION OF EIGHTH/THIRD INTERSECTION

#### 11 Construction Traffic Impacts

The increase in traffic at the intersections along the two proposed routes as a result of the peak-hourly construction traffic has been evaluated based on the traffic volume plots provided in **Annexure C**. It should be noted that some intersections to be used along the routes are not provided with volumes on the plots, however all major intersections are included which allows for a sufficiently detailed assessment of the impact of the project. The results are summarised in **Table 3**.

As shown, the construction traffic will cause between 1% and 4% increase on any given single intersection assuming that the construction traffic is all utilising the one route, rather than being distributed between the two routes. This level of traffic generation will have no noticeable effect on the existing intersections and no further assessment of the impacts of the construction traffic on the road network is required.

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#### 12 Pedestrian Management

The site frontage along Nagle Street and Delany Circuit have existing pedestrian footpaths which are to remain open to pedestrian access at all times. These frontages on the outside of the construction fence are to be free of any waste, construction material or trip hazards associated with the development. Only authorised personnel are permitted on-site and must be inducted by the site manager / OH&S officer. Site fencing on the along the frontages should also be regularly inspected for potential trip hazards or encroachment onto the verge where pedestrians will walk.

If necessary during construction, the site foreman/manager must install appropriate type A or type B hoarding to allow free access to pedestrians at all times.

TABLE 3: IMPACT OF PROJECT ON TRAFFIC VOLUMES

Intersection	Route	Existing		During Construction <sup>(1)</sup>		Change	
mersection		AM	PM	АМ	PM	AM	PM
Third Avenue/Eighth Avenue	2	1201	1003	1233	1035	+3%	+3%
Ninth Avenue/Terrybrook Road	1	1221	973	1253	1005	+3%	+3%
Ninth Avenue/The Northern Road	1	2676	2437	2708	2469	+1%	+1%
The Northern Road/Dunheved Road	1	3804	4547	3836	4579	+1%	+1%
Dunheved Road/Christie Street	1	2655	2947	2687	2979	+1%	+1%
Christie Street/Forrester Road	1	3210	3416	3242	3448	+1%	+1%
Forrester Road/Links Road	1&2	2949	2857	2981	2889	+1%	+1%
Forrester Road/Palmyra Avenue	2	2525	2501	2557	2533	+1%	+1%
Palmyra Avenue/Stony Creek Road	2	1718	1509	1750	1541	+2%	+2%
Palmyra Avenue/Eighth Avenue	2	956	768	988	800	+3%	+4%

Notes:

#### 13 Traffic Control Plan

All vehicle movements into and out of the two sites will be made in a forward direction onto a local road with very low existing traffic volumes. In consideration of this, the vehicular access to the site will perform as would any normal driveway and no traffic control is necessary to maintain safe vehicular access to the site for construction vehicles.

Whilst none are proposed as part of this Construction Traffic Management Plan, any proposed additional signage and road closures are to be approved by Council's Local Traffic Committee. Residents and businesses in the area are to be formally informed of the traffic changes via letterbox drop prior to the commencement of any construction activities. VMS signage will also be erected in order to keep local traffic informed of any changes to traffic conditions.

#### 14 Traffic Management Plan Checklist

Reference is made to the RMS (previously RTA) *Procedures for Use in the Preparation of a Traffic Management Plan*, version 2.0 December 2001. The following list addresses the required CTMP details.

<sup>(1) 32</sup> vehicles are assumed to travel through each of the intersections as a worst case. It is more likely that the vehicles will be split between the two routes.



- A. Description or detailed plan of proposed measures Is the detailed plan of the proposed measures necessary?

  Yes
- B. Identification and assessment of impact of proposed measures *Is a detailed assessment required?* 
  - **No** The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surrounding network performance.
- C. Measures to ameliorate the impact of re-assigned traffic *Is an assessment required?* 
  - **No** The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surrounding network performance. The site is located close to the arterial road of The Northern Road therefore minimising infiltration to local streets.
- D. Assessment of public transport services affected *Is an assessment required?* 
  - **No** There are no existing bus stops which will be affected by the proposed works. The required staff levels are also not expected to add loading above what the surrounding public transport network can cater for with its current services and frequency and as such, public transport will not be affected.
- E. Details of provision made for emergency vehicles, heavy vehicles, cyclists and pedestrians *Are these details required?* 
  - **No** The proposed works will not adversely impact the current on-street conditions, including access around the site for pedestrians.
- F. Assessment of effect on existing and future developments with transport implications in the vicinity of the proposed measures

Is an assessment required?

- **No** There are no existing bus stops which will be affected by the proposed works. The required staff levels are also not expected to add loading above what the surrounding public transport network can cater for with its current services and frequency and as such, public transport will not be affected.
- G. Assessment of effect of proposed measures on traffic movements in adjoining Council areas *Is an assessment required?* 
  - **No** The expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on surround network performance. The site is located close to the arterial road of The Northern Road therefore minimising infiltration to local streets and impact on residential amenity.
- H. Public consultation process

Is a public consultation process required?

**No** – The current traffic flow conditions will remain unaltered and therefore no impact on existing traffic flows along local and arterial roads will be evident.



#### 15 Response to SEARS

Each of the relevant SEARs as issued on 14 October 2019 are reproduced in *italics* and directly responded to in the following sub-sections.

### 15.1 Transport Routes To/From Site

- details of road transport routes and access to the site;

The details of the proposed haulage routes are provided in **Section 10** of this report.

### 15.2 Road Traffic Generation of Development

 road traffic predictions for the development during construction and operation; and

The estimated road traffic generation of the site during construction is provided in **Section 9** of this report.

The development is not expected to generate any regular road traffic during its ongoing operation.

#### 15.3 Assessment of Impacts on Road Network

 any loading/unloading of impacts to the safety and function of the road network and the details of any road upgrades required for the development.

As detailed in **Section 11**, an assessment of the impact of the construction on the safety and function of the road network is not necessary based on the extremely low increase in peak hourly traffic which will occur.

One minor modification to the road network is proposed to facilitate haulage and is outlined in **Section 10.1**.

Please contact the undersigned should you require further information or assistance.

Yours faithfully

McLaren Traffic Engineering

**Tom Steal** 

**Senior Traffic Engineer** 

**BE Civil AMAITPM MIEAust** 

RMS Accredited Level 1 Road Safety Auditor

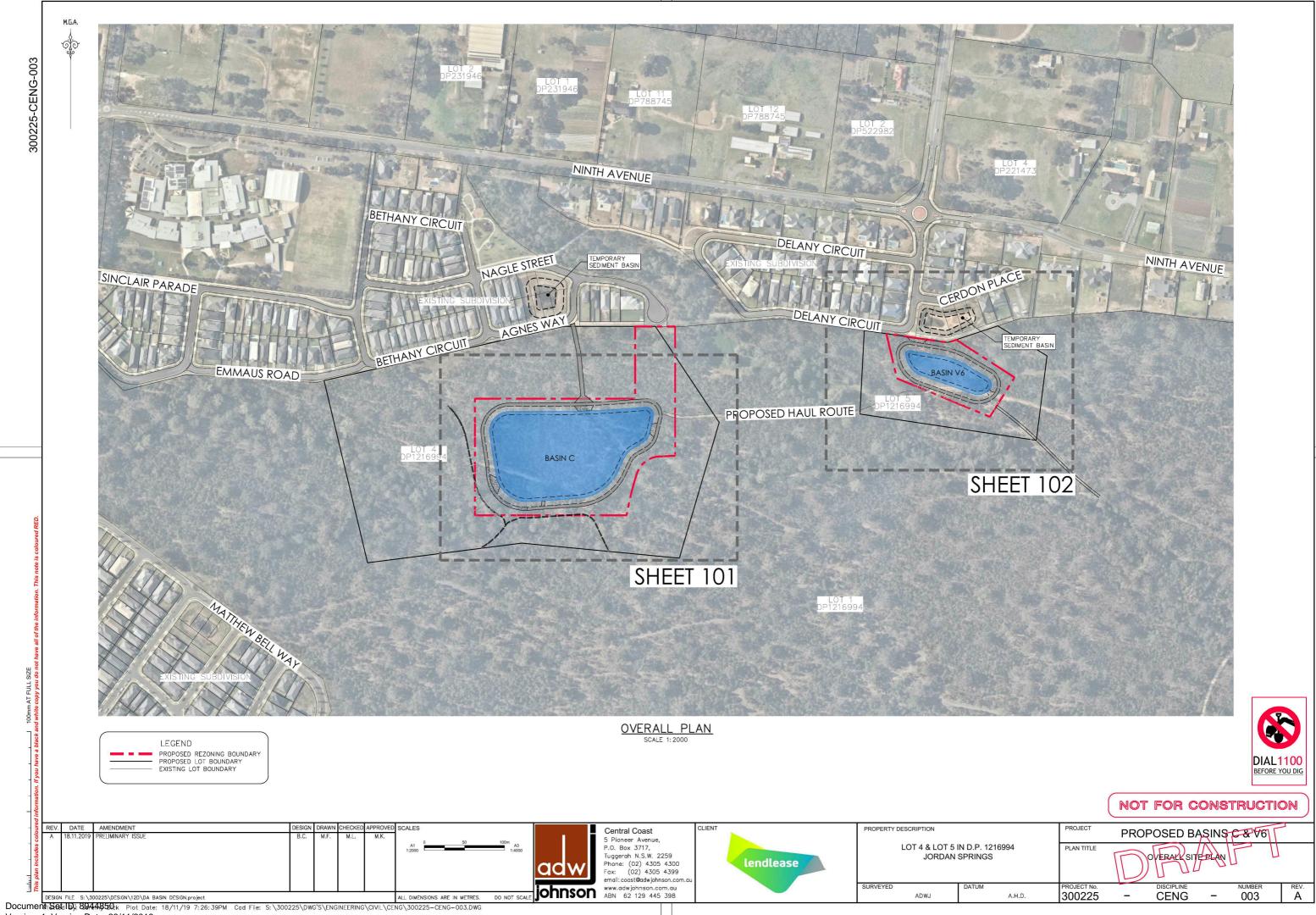
RMS Accredited Work Zone Traffic Management Plan Designer and Inspector

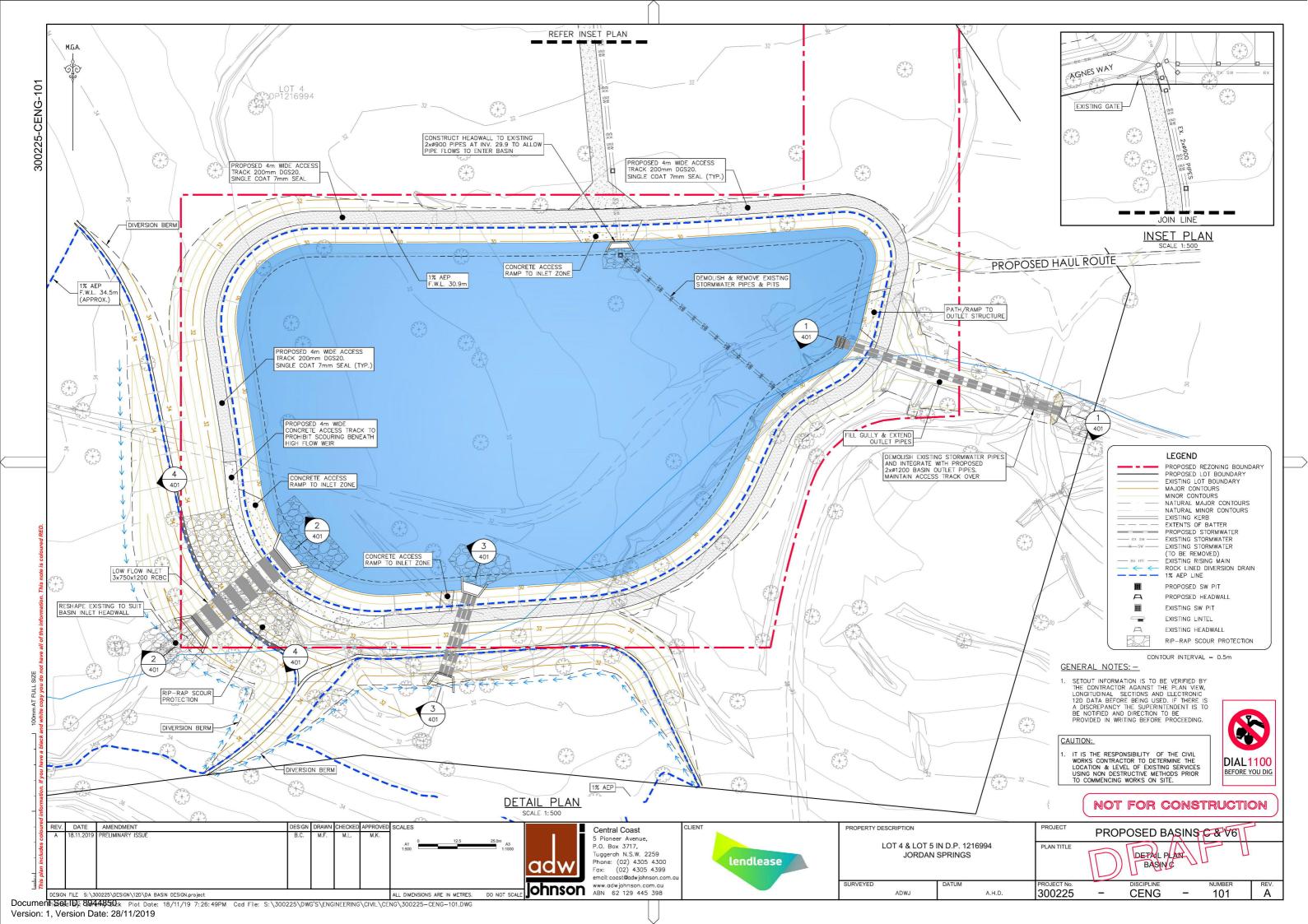
Basin C and Basin V6 Jordan Springs 190740.01FA - 20 November 2019 Page 9 of 9

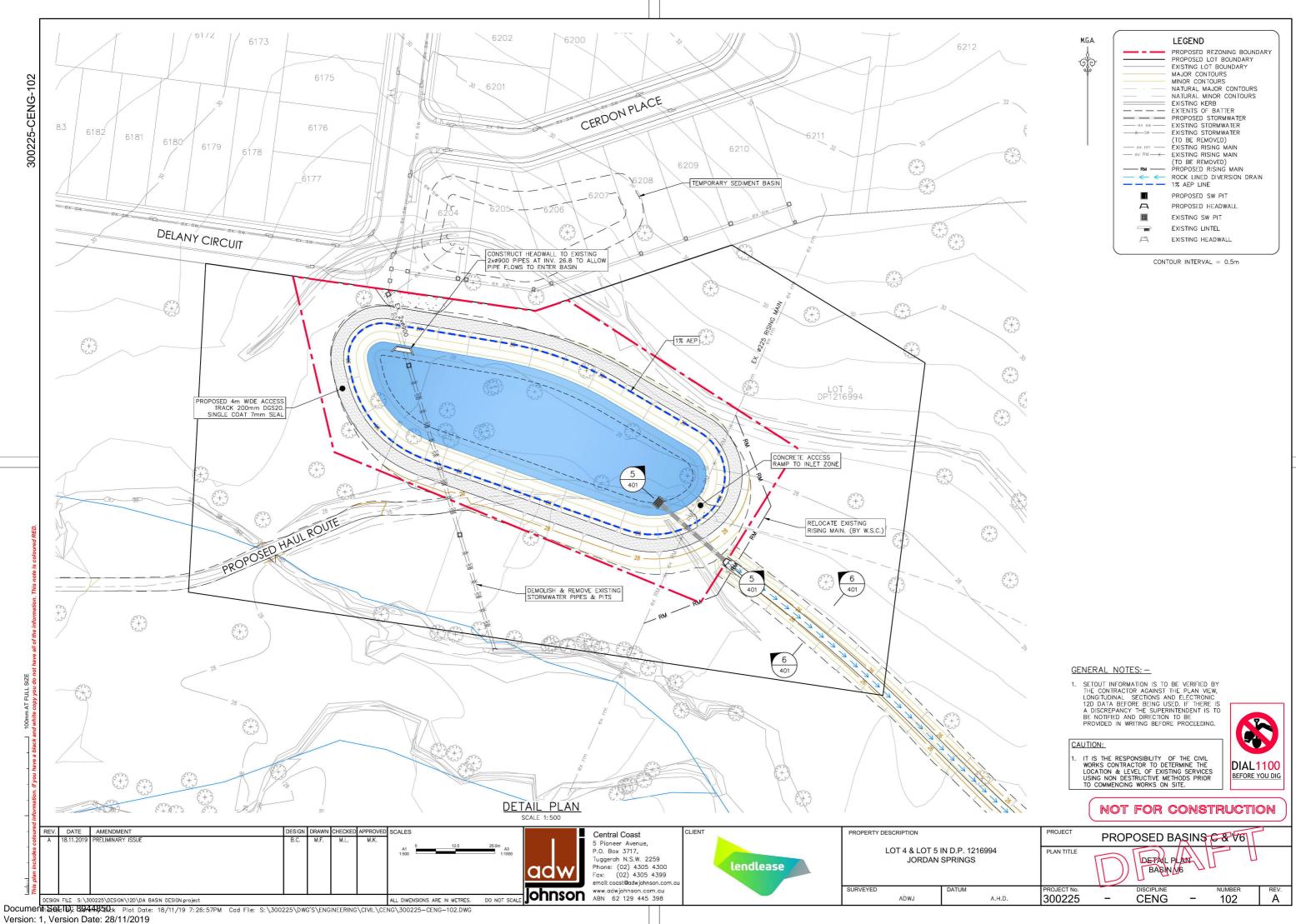


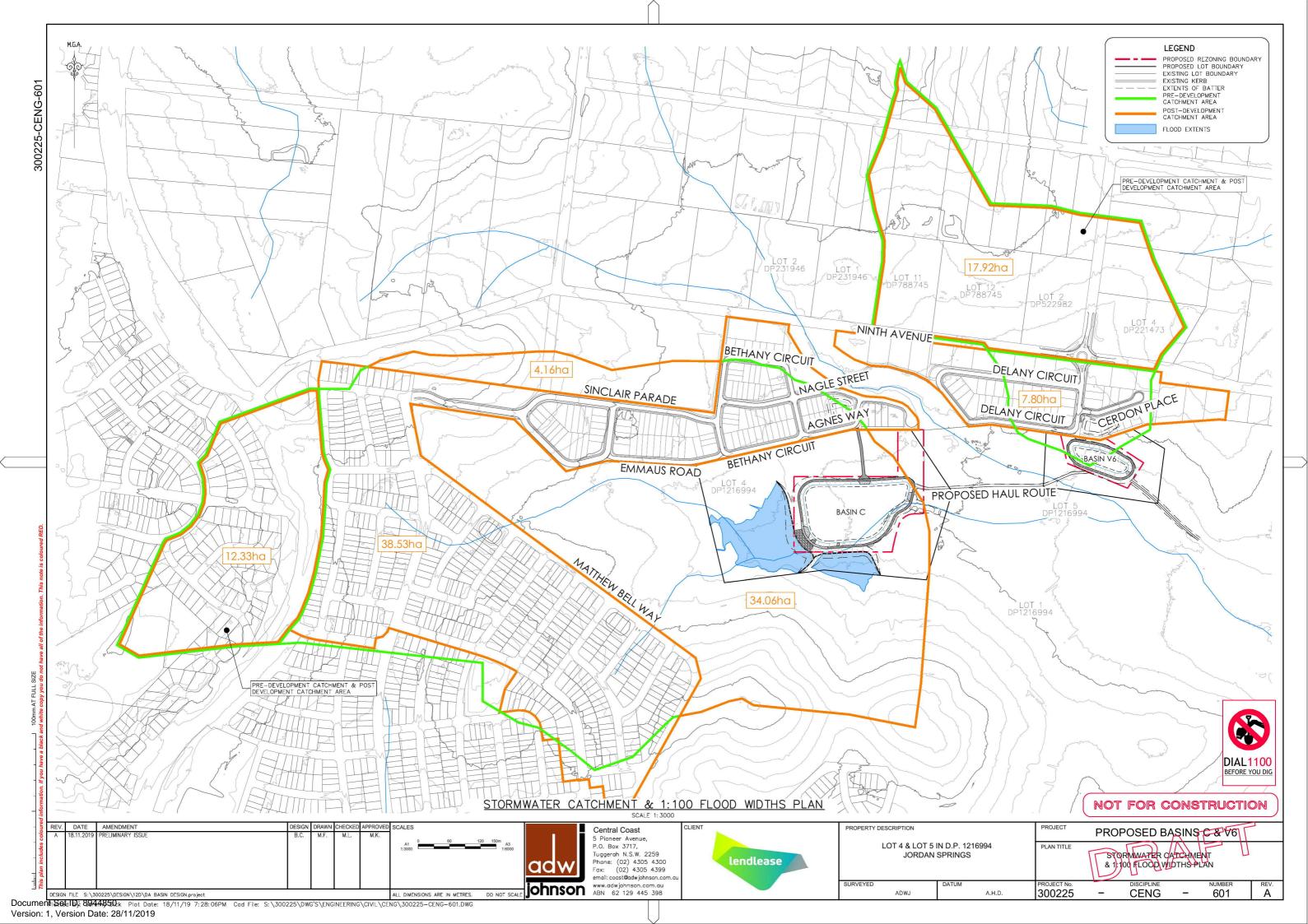
ANNEXURE A: REDUCED PLANS (4 SHEETS)

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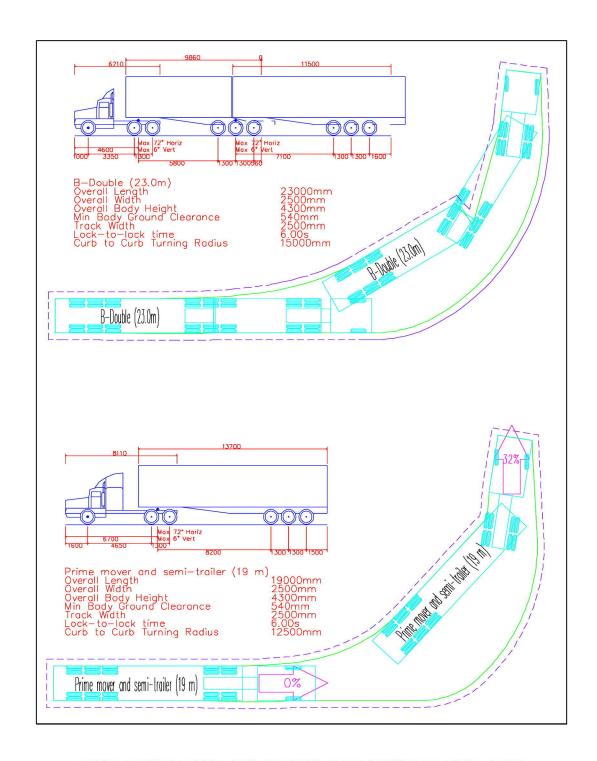






ANNEXURE B: SWEPT PATH TESTING (14 SHEETS)

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23M B-DOUBLE AND 19M ARTICULATED VEHICLE TEMPLATES

GREEN – VEHICLE CHASSIS

PURPLE – 500MM CLEARANCE

ALL PATHS AT 5KM/H FORWARD

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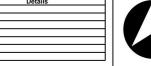
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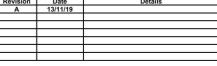
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SPT - Delaney and Ninth

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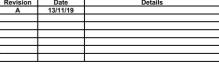
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SPT - Terrybrook and Ninth

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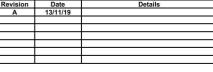


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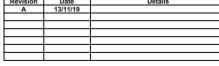


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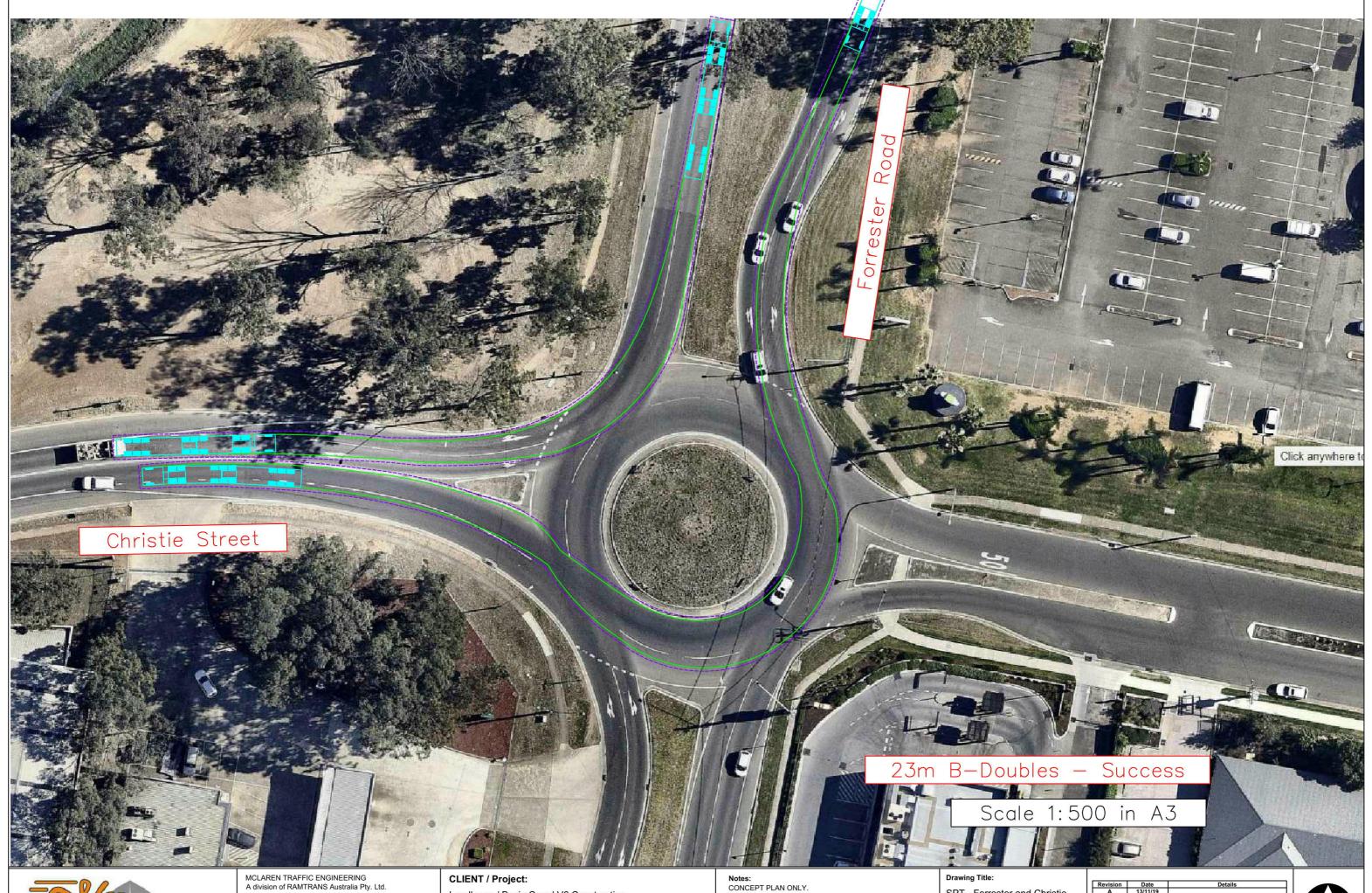
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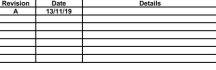
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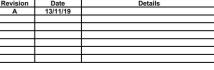
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SPT - Forrester and Links

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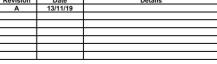
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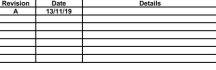
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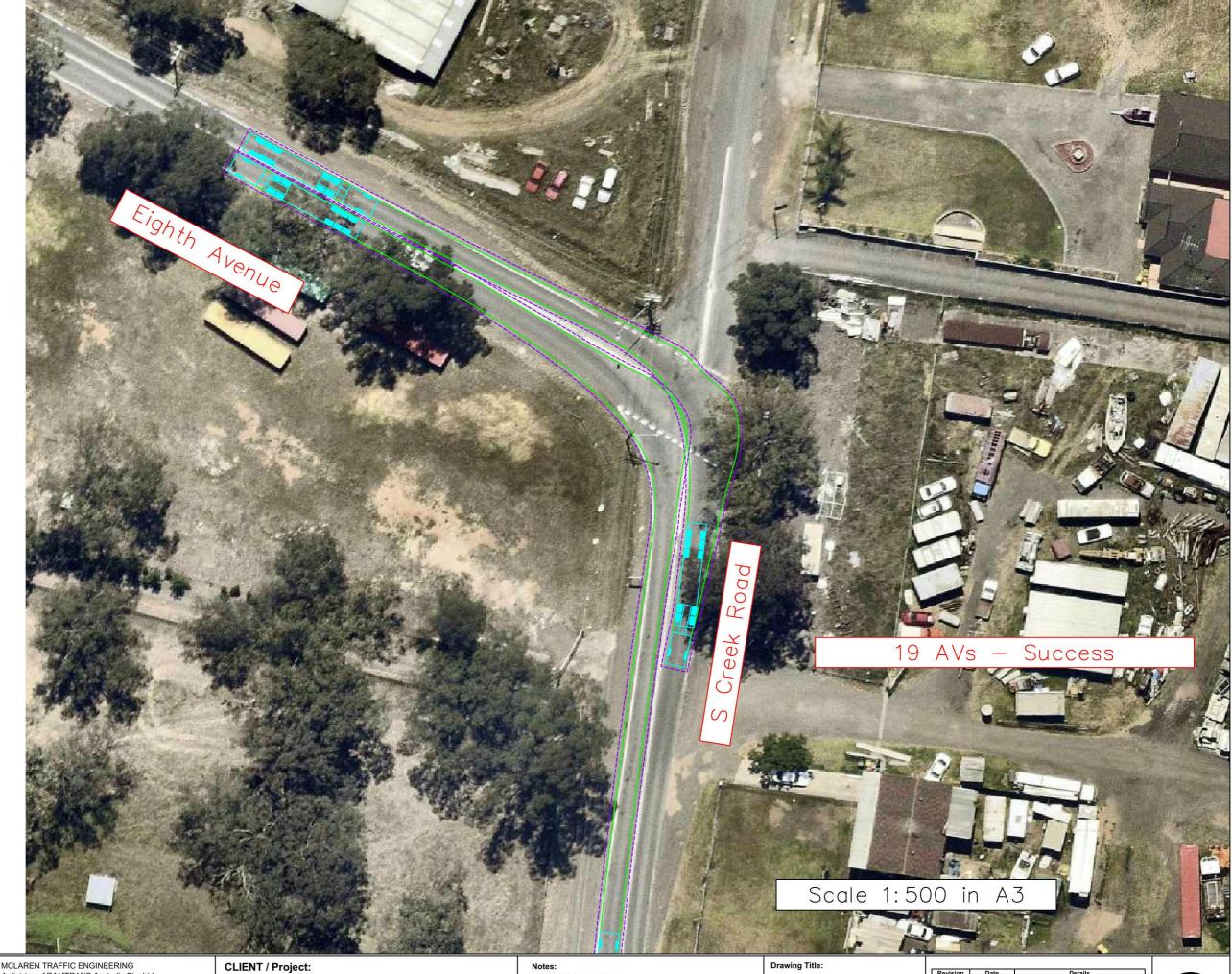
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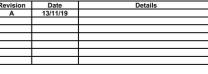
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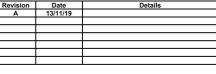
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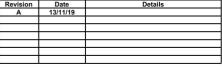
Jordan Springs

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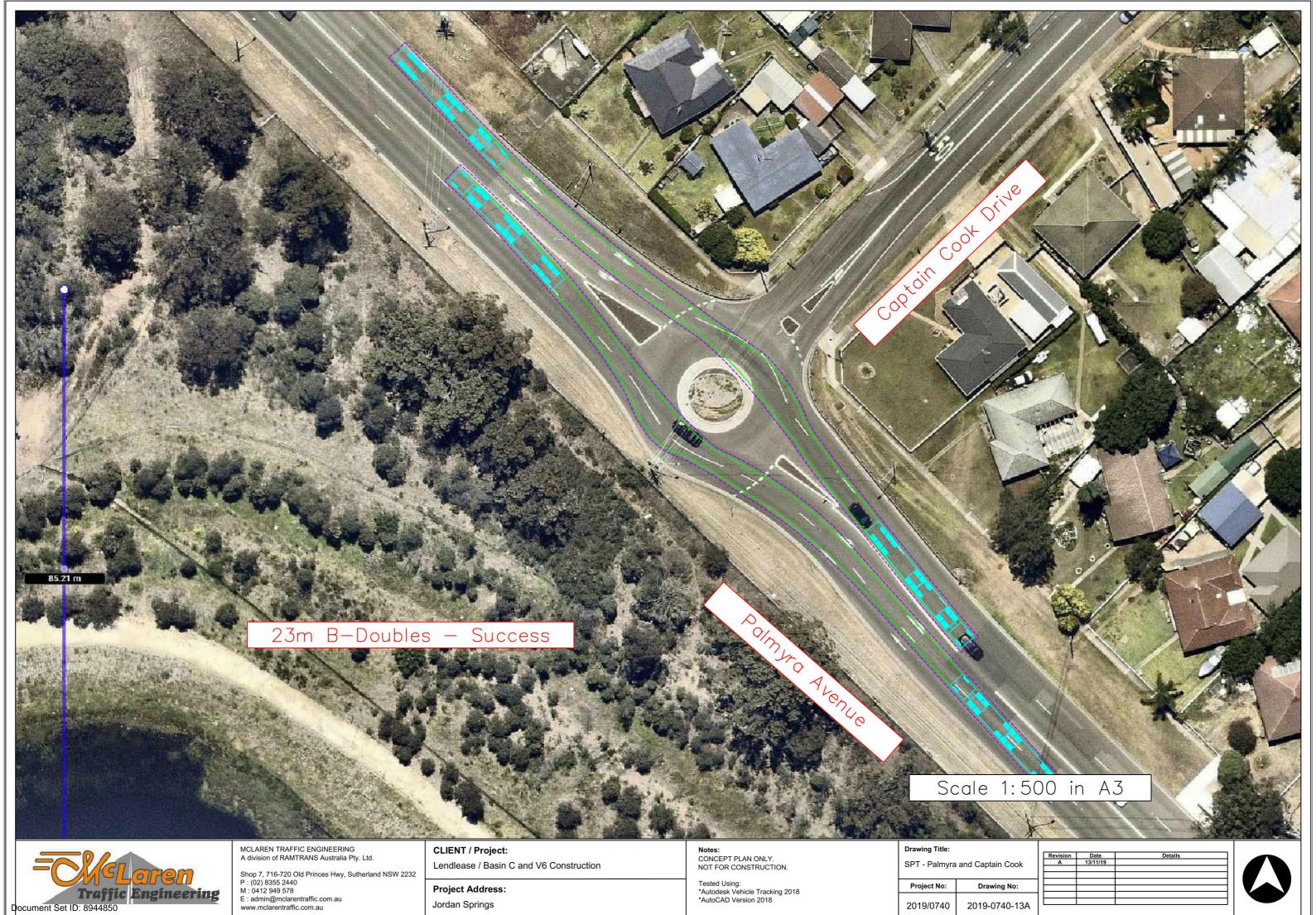
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ANNEXURE C: TRAFFIC VOLUME PLOTS (2 SHEETS)

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