57 Station Road, Seven Hills
Traffic Impact Assessment

Prepared for:

Lehr Consultants International Pty Ltd

8 June 2022

The Transport Planning Partnership

57 Station Road, Seven Hills
Traffic Impact Assessment

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APPENDICES

1 Introduction

The Transport Planning Partnership (TTPP) has prepared this Traffic Impact Assessment (TIA) report on behalf of Lehr Consultants International (LCI) to accompany a State Significant Development Application (SSD-33781208) to be submitted to the Department of Planning and Environment (DPE). The application is for a proposal which seeks to construct a new data storage premise at 57 Station Road, Seven Hills (Lot B in DP 404669).

The proposed development will have a total power consumption of 19.2 megawatts (MW) which exceeds 10 MW, and therefore, is considered to be a State Significant Development (SSD) in accordance with the State Environmental Planning Policy (Transport and Infrastructure) 2021.

The proposed data centre has been designed as a two staged development:

- Stage 1: SYD09 – 1.2 MW capacity data hall
- Stage 2: SYD08 – 19.2 MW capacity two storey ballard data hall.

Development approval was granted for Stage 1 (SYD09) (DA-21-01058) which is to be located in the front half of the site. It will comprise a single-storey data centre, and two new site access driveways to replace the existing driveways. Construction of Stage 1 of the development is currently underway.

The approved data centre at the front of the site, SYD09, is known as a Rapid Deployment data centre. These are smaller structures which enable an operator to provide a service in a particular geography as quickly as possible, with shorter approval and construction timeframes. SYD09 has a data storage capacity of 1.2 MW, though ultimately a much greater capacity is required by the operator.

The proposed development, SYD08, will act as an expansion of SYD09, providing the same function by supporting data storage for the same operator. SYD09 will rely heavily on the proposed building for operational support, ultimately resulting in the site operating as a single campus with shared facilities such as carparking.

This TIA pertains to Stage 2 (SYD08) of the development, which will be located at the rear of the site.

This report addresses aspects of the Secretary's Environmental Assessment Requirements (SEARs) pertaining to traffic, parking, transport, and accessibility. Table 1.1 presents the SEARs and where these items have been addressed in this report. According to the NSW Government Major Project website, there are no further requirements by Transport for NSW and Blacktown City Council.

Table 1.1: Secretary's Environmental Assessment Requirements

Condition 9	Addressed In
Provide a transport and accessibility impact assessment, which includes: • details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access and haul routes	Section 3.3 & 4.2
• an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections (using industry standard modelling).	Section 4.3
• plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.	Section 4.8
• details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards.	Section 4.1 & 4.8
• swept path analysis for the largest vehicle requiring access to the development	Appendix C
• details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary	Section 3.1 & 3.3
Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.	Separate Construction Traffic Management Plan
Provide a Green Travel Plan or equivalent.	Section 5

2 Existing Conditions

2.1 Site Context

The subject site is located at 57 Station Road, Seven Hills (Lot B DP 404669) which has an area of approximately 2.57 hectares (ha). The site is located within the Blacktown City Council local government area and is zoned as IN1 – General Industrial according to the Blacktown Local Environmental Plan (LEP) 2015.

The site is a corner lot with frontages on Station Road (south) and McCoy Street road reserve (east). To the north of the site is Blacktown Creek and to the south of the site is the Main Western Railway. Neighbouring industrial developments are located along the north-west boundary of the site and McCoy Park is located south-east of the site.

The site is currently occupied by a range of buildings and other structures, including shipping containers, which were associated with the previous industrial use(s) of the site. The buildings occupy an area of approximately 3,000 m^2. A HV transmission tower is also located on the land. Currently vehicular access is available via three two-way driveways off Station Road.

Stage 2 of the development (the Proposal) is located within the rear half of the site, while Stage 1 (DA-21-01058) is located within the front half of the site. Figure 2.1 illustrates the Proposal site and nearby surrounds.

Figure 2.1: Subject Site and Surrounds

2.2 Surrounding Road Network

Station Road is a two-way, two-lane divided road linking Prospect Highway to the north and Fitzwilliam Road (and Old Windsor Road) to the south. In the vicinity of the subject site, there is a posted speed limit of 60 km/h and No Stopping restrictions on both sides of the road. The width of the carriageway is 12.5 m, which includes a painted median of 1.5 m width.

McCoy Street is a local access road adjacent to the subject site. It provides access to McCoy Park, and roughly 14 angled on-street car parking spaces.

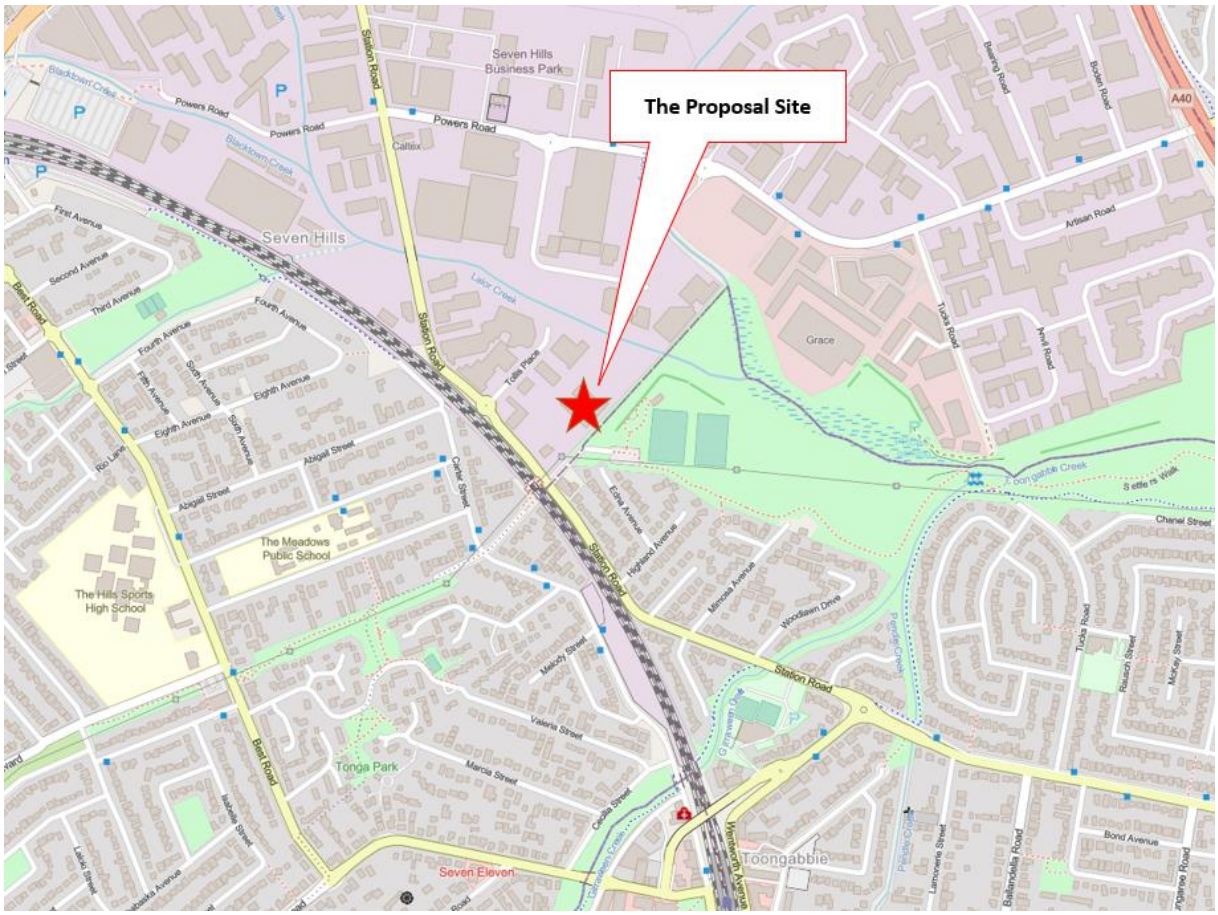
Tollis Place is two lane, two-way road, connecting with Station Road via a roundabout, located approximately 60m north of the subject site. It has a posted speed limit of 50 km/hr with unrestricted parking available on both sides of the road.

In the wider road network context, **Prospect Highway** is a six-lane, two-way arterial road that is located north of the subject site. It is the main east-west arterial connection in the vicinity. It is classified as a State road and intersects with other State roads, Seven Hill Road, Abbott Road and Johnson Avenue at a signalised junction. It provides the link to other main highways towards the north, including the M2 Motorway, M7 Motorway, and old Windsor Road. It has a posted speed limit of 60 km/h with clearway conditions.

To the south of the site, Station Road adjoins **Fitzwilliam Road** which intersects with **Old Windsor Road** further in the east direction. It is a key arterial road in Sydney spanning between Kellyville and Northmead. Generally, the carriageway is configured as a four-lane, two-way road having a posted speed limit of 80 km/h and clearway conditions. The North-West T-way runs alongside the entire length of Old Windsor Road.

Figure 2.2 shows the site within the broader surrounding road network.

Figure 2.2: Surrounding Road Network



2.3 Public Transport Facilities

The closest bus stop is located on Carter Street which is 300 m walking distance from the subject site. This bus stop is located south of the railway line and is accessed by the pedestrian overpass across the railway line. Bus routes 705 and 711 Blacktown to Parramatta service this bus stop. The frequency of services is summarised in Table 2.1.

The subject site is located at the midpoint between Seven Hills train station and Toongabbie train station. However, Toongabbie train station is slightly closer, located a 1 km walk in the south direction (13-minute walk) while Seven Hills station is 1.7 km away (22-minute walk). Both train stations are serviced by the T1 North Shore & Western Line and T5 Cumberland Line.

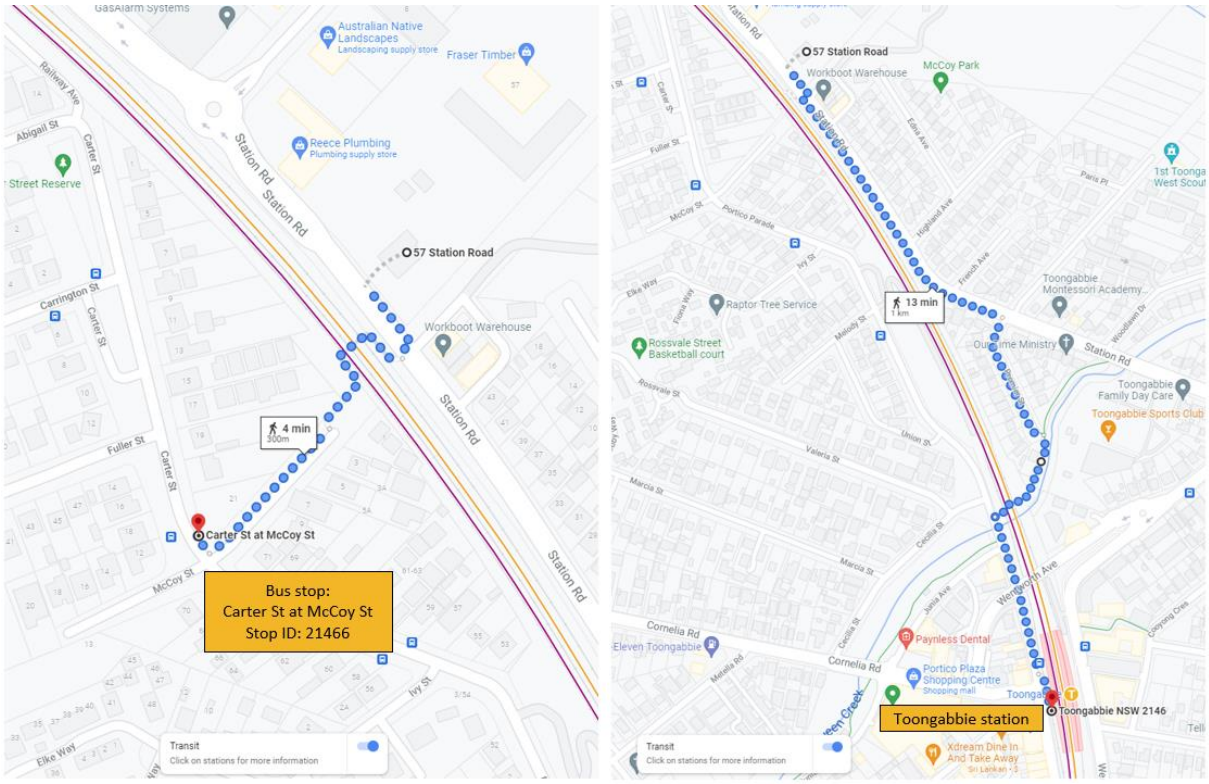
Figure 2.3 shows the site's proximity to the nearby public transport infrastructure.

Table 2.1: Existing Bus Services

Bus Route	Route Description	Frequency
705	Blacktown to Parramatta via Seven Hill	Peak: every 30 minutes Off-peak: every 1 hour
711	Blacktown to Parramatta via Wentworthville	Peak: every 15 – 30 minutes Off-peak: every 1 hour

Information Source: Transport for NSW

Figure 2.3: Site Nearby Public Transport



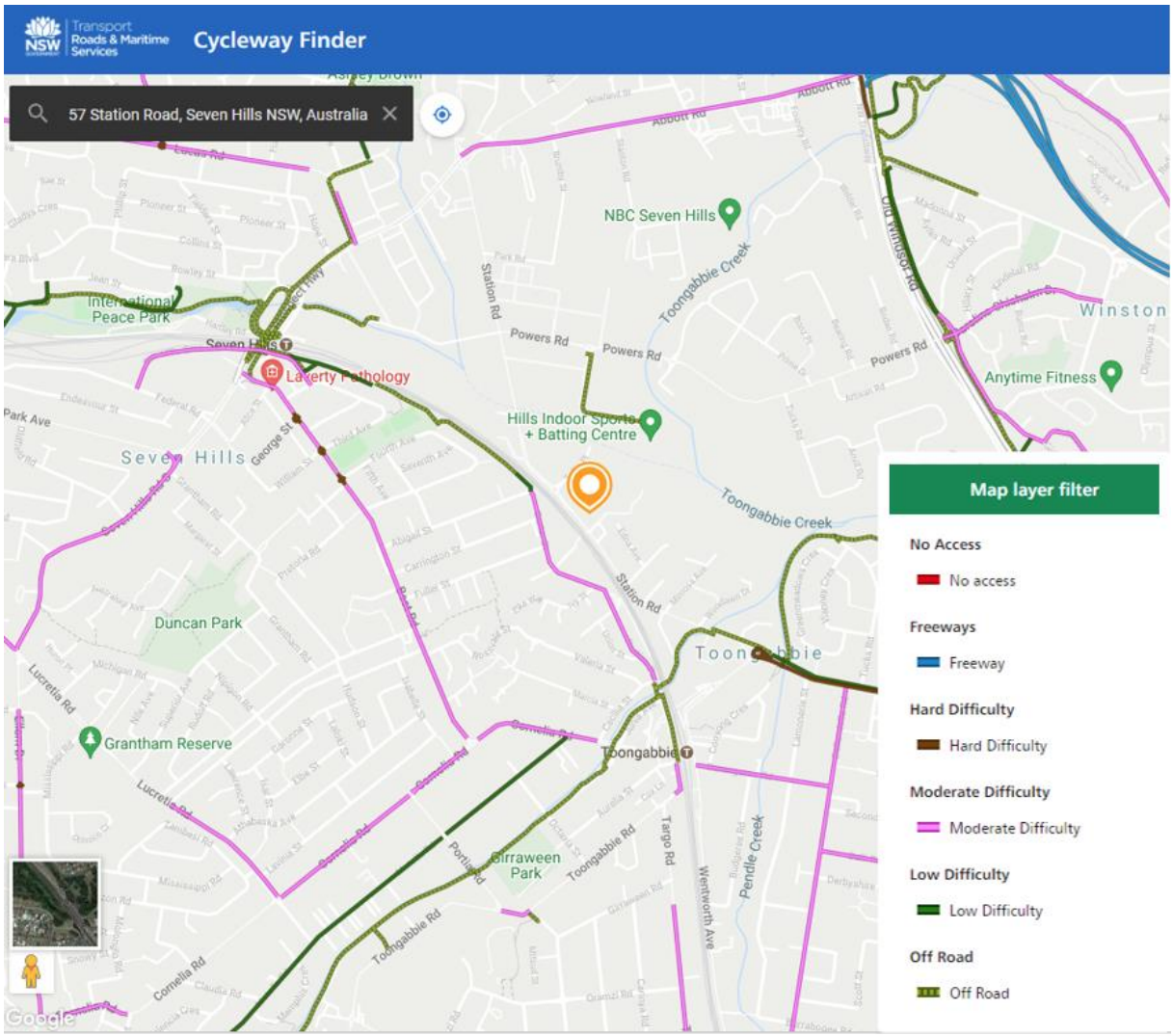
Basemap Source: Google Maps, accessed online 03/02/22

2.4 Pedestrian and Cyclist Infrastructure

There is an established footpath on the north side of Station Road (development side), and kerb ramps at McCoy Street. A zebra pedestrian crossing is located south of McCoy Street, which leads directly towards the pedestrian overpass across the railway line.

Within the immediate vicinity of the site, there are no dedicated cycleways. In the broader areas, there is mixture of on-road and off-road cycling paths as shown in Figure 2.4.

Figure 2.4: Existing Cycling Infrastructure



Basemap Source: Transport for NSW Cycleway Finder, accessed online 03/02/22

2.5 Existing Traffic Volume

Traffic turning movement surveys were carried out on Tuesday, 8 February 2022 at the following nearby intersections:

- Station Road – Tollis Place (roundabout)
- Station Road – Wentworth Avenue – Fitzwilliam Road (roundabout)
- Station Road – McCoy Street (priority)
- Station Road – Site Access Driveway.

On this day, the traffic surveys were carried out in the morning and evening periods between 6:00 am – 9:00 am and 4:00 pm – 7:00pm.

The road network peak periods are identified as the 60-minute period in morning and evening with the greatest traffic volumes recorded at the surveyed locations. From the survey data, the road network peak periods have been identified as follows:

- AM peak period: 7:30 am – 8:30 am.
- PM peak period: 4:15 pm – 5:15 pm.

An automatic tube count (ATC) was undertaken on Station Road near the subject site for a period of one week to record traffic flows 24 hours per day. The survey was conducted between 8 February to 14 February 2022 (inclusive). The survey was conducted after the return of school when traffic is considered to have returned back to normal.

Table 2.2 presents the peak hourly traffic flows for Station Road in each direction and combined.

The turning movement survey data and ATC survey data are contained in Appendix A.

Table 2.2: Station Road Traffic Flows

Period	Two-way Traffic Flow
AM Peak Hour, 7am – 8am	1,756
PM Peak Hour, 4pm – 5pm	1,909
Average Weekday (5 days)	23,034
Average Daily (7 days)	20,980

According to the RTA Guide to Traffic Generating Developments (2002), the road capacity threshold for Station Road, which is a two-lane two-way divided road, is 2,000 cars per hour (two-way). The ATC survey data shows that Station Road is operating below the capacity threshold.

3 Proposed Development

3.1 Proposal Description

The Proposal seeks approval to construct a two-storey data hall in the back half of the site at 57 Station Road, Seven Hills. The proposal will also include the installation of an external plant yard, internal circulation roads and on-site car parking. The indicative site layout is shown in Figure 3.1 while the full set of architectural plans for the are contained in Appendix B.

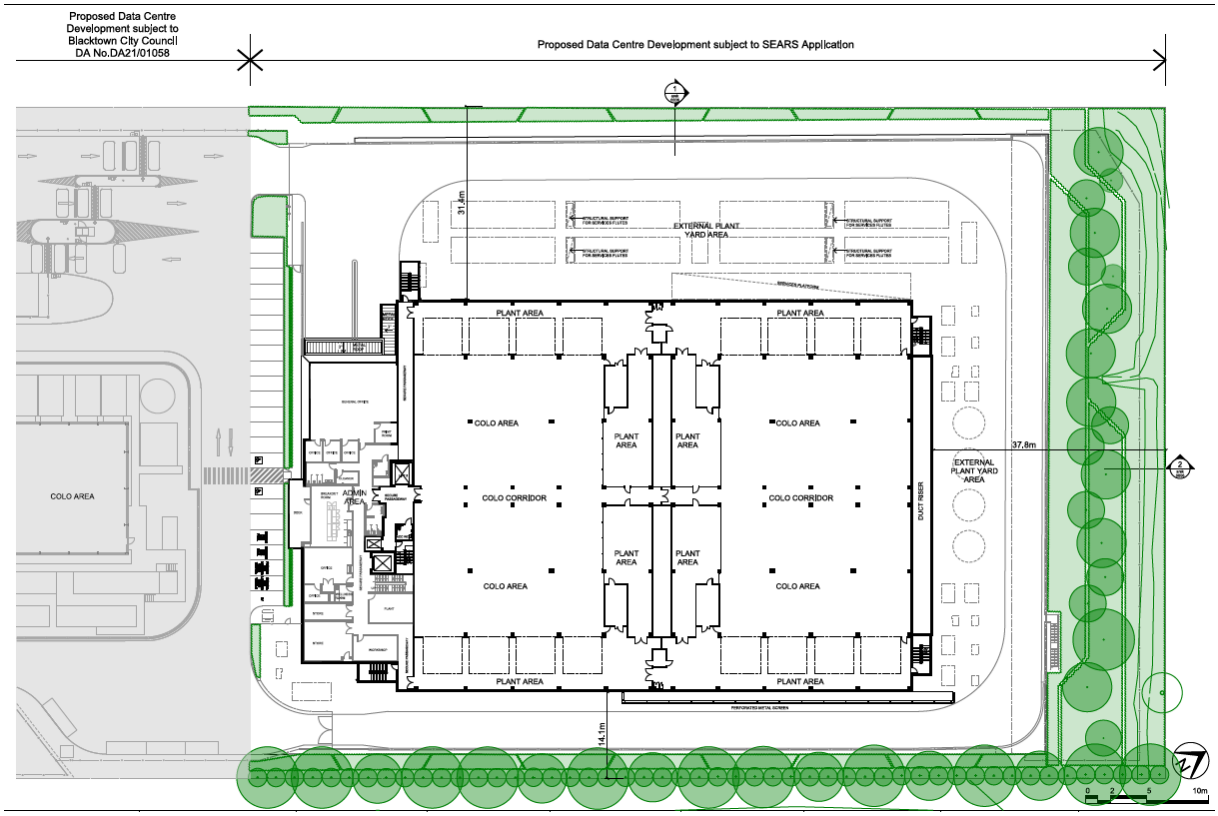
An overview of the Proposal is as follows:

- Construction of a new two-storey 19.2 MW data centre at the rear of the Site including ancillary office space. A total floor area of 8,076 m^2.
- Provision of external plant in plant yards to the west, north and south of the proposed data hall, as well as rooftop plant, which will be screened.
- Provision of nine (9) new generators, for a site total of 12 generators.
- Capacity for up to 289,000L of diesel fuel storage.
- Operation to take place 24 hours a day, 7 days a week.
- New vehicular circulation to provide access to Station Road, connecting into new driveways already approved under DA-21-01058.
- Parking for 31 vehicles
- Landscaping works.

The majority of the data hall would be used for accommodating the data storage infrastructure (server racks), while the remaining indoor space will be allocated for amenities, electrical room, and office space.

The Proponent has advised that the entire workforce would include 59 employees across three shift-times throughout the day/ night.

Figure 3.1: Proposed Site Layout



3.2 Hours of Operation and Workforce

The proposed development, SYD08, will act as an expansion of SYD09, providing the same function by supporting data storage for the same operator. SYD09 will rely heavily on the proposed building for operational support, ultimately resulting in the site operating as a single campus.

The campus is proposed to operate 24-hours per day, 7 days a week. Staff would be employed across various shifts throughout the daytime and night time. The Proponent has advised the staff shift times would be as presented in Table 3.1.

Visitors/ contractors could be on-site any time between 9am and 5pm.

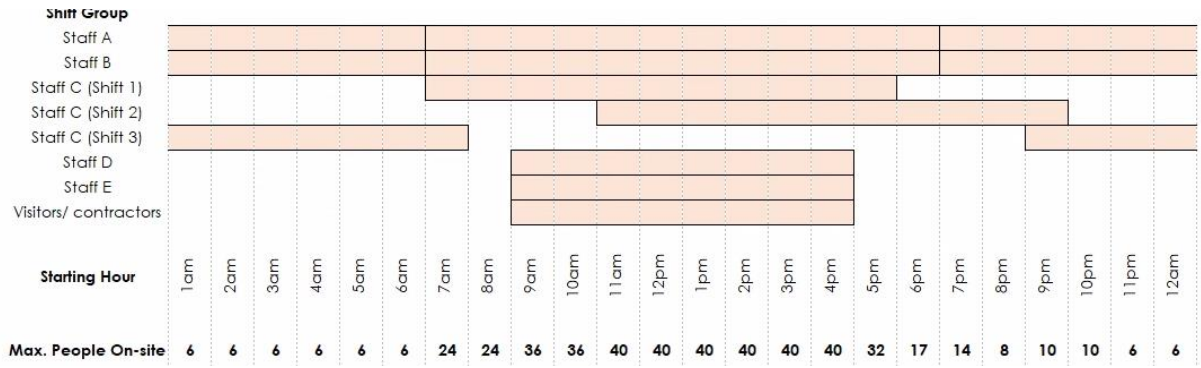
Table 3.1: Staff Shift Times

Shift Group	Shift 1	Shift 2	Shift 3
Staff A	7am-7pm	7pm-7am	-
Staff B	7am-7pm	7pm-7am	-
Staff C	7am-6pm	11am-10pm	9pm-8am
Staff D	9am-5pm	-	-
Staff E	9am-5pm	-	-

As part of the operation for the entire campus (SYD08 plus SYD09), there would be up to 36 staff at the busiest time of the day. During this period, there could also be up to 4 visitors/ contractors on-site. Thus, there would be a maximum of 40 people on-site at one time. Across a 24-hour period, the anticipated staffing and visitation would be as presented in Figure 3.2.

It is noted that whilst the "Visitors/ contractors" Group appears on the shift chart, visitors and contractors would not be employed under a "shift work" arrangement as the Staff Groups would be. Rather, they could be on-site any time between 9am and 5pm.

Figure 3.2: People On-site



3.3 Site Access Arrangements

There will be two access driveways for the subject site which will be constructed as part of the Approved DA (DA-21-0108). All vehicular access will be via Station Road.

The main site access will be a two-way driveway which is located closer to the northern boundary of the site. As part of day-to-day operation, vehicles would enter and exit the site using this driveway. It will be controlled via boom gates, which can be opened via swipe card. Visitors/ contractors and delivery drivers will need to confirm their ID with the security at the gatehouse prior to access within the site. The second site access driveway will be a gated emergency access.

3.4 Car Parking

As described in Section 3.2, the proposed SYD08 development will act as an expansion of SYD09, providing the same function by supporting data storage for the same operator. Ultimately, the site will operate as a single campus with shared facilities such as carparking. Some staff currently operating out of SYD09 will be relocated to SYD08 upon opening which will result in SYD09 operating with four (4) staff at any one time, and SYD08 operating with 32 staff at any one time.

A first-principles approach has been used to determine the required parking for the development site as a whole, which will operate as a single campus. Applying the DCP rates for the entirety of the development would result in a likely oversupply of parking for a data centre use. Hence, a more appropriate assessment of parking demand has been carried out based on staffing numbers, local travel patterns, and potential mode share targets. Full details of the car parking assessment are presented in Section 4.1.

4 Operation Stage

4.1 Car Parking

Having due regard to the objectives and guidelines as set by Council for industrial developments, the provision for car parking of the proposed development has been assessed in accordance with the Blacktown Development Control Plan (DCP) 2015.

A first-principles approach has also been used to determine the required parking for the development site as a whole, which will operate as a single campus. Applying the DCP rates for the entirety of the development would result in a likely oversupply of parking for a data centre use. Hence, a more appropriate assessment of parking demand has been carried out based on staffing numbers, local travel patterns, and potential mode share targets.

The Blacktown DCP stipulates parking requirements for different land uses, however, there is no parking requirement rate specifically for data centre uses. Therefore, the proposed development has been considered under the category of 'light industry, general industry and warehouse or distribution' uses.

According to the DCP, a minimum car parking provision of 122 spaces would be required for the proposed development. The DCP parking calculations are presented Table 4.1.

Table 4.1: DCP Car Parking Requirement

Land Use	Gross Floor Area (m^2)	DCP Parking Rate	Car Parking Requirement
Data Hall	8076.2 m^2	1 space per 75 m^2 GFA	108 spaces
Office	545.5 m^2	1 space per 40 m^2 GFA	14 spaces
Total			**122 spaces**

Notes:
Gross Floor Area (GFA)

As presented in Section 3.2, the maximum number of staff and visitors/ contractors estimated to be on-site would be 40 people for the whole campus.

According to TfNSW's Journey to Work data (2016), around 84% of people who work in the Seven Hills area travel to work by car (as the driver), while the remaining proportion of people travel as a car passenger, or by public transport, walking, or cycling. An excerpt of the journey to work data is presented in Figure 4.1. Applying this rate to the maximum number of people on-site generates a demand for 34 parking spaces.

Figure 4.1: Journey to Work (Seven Hills Area)

<< DZN (POW)	113070001	Total
MTW15P Method of Travel to Work (15 travel modes)		
Train	4.19%	4.19%
Bus	1.02%	1.02%
Car, as driver	84.19%	84.19%
Car, as passenger	5.58%	5.58%
Motorbike/scooter	0.59%	0.59%
Bicycle	0.34%	0.34%
Walked only	0.62%	0.62%
Ferry	0.00%	0.00%
Tram	0.00%	0.00%
Taxi	0.18%	0.18%
Truck	2.16%	2.16%
Other Mode	0.28%	0.28%
Worked at home	0.55%	0.55%
Total	100.00%	100.00%

Data Source : Census of Population and Housing, 2016, TableBuilder
For further information see About this data, Data Confidentiality

Implementation of green travel initiatives, as outlined in Chapter 5 of this report, aims to promote more sustainable travel by those travelling to the site. As detailed in Chapter 5, a car modal shift target of 7.5% has been adopted for the site. As such, the on-site car parking provision has been provided at a rate of 76.5% of the maximum number of people on-site at any one time (40) which generates a parking demand for 31 car parking spaces on-site.

A breakdown of the car parking demand associated with the SYD09, and SYD08, is presented in Table 4.2. It is calculated that 30 parking spaces will be required. Notwithstanding, it is proposed to supply 31 car parking spaces on-site.

Table 4.2: First Principles Car Parking Demand

Site	Max. On-site at One Time	Car Mode Share (with Green Travel Plan)	Parking Demand
SYD08	Staff x 32 Visitor/ Contractors x 4 SYD08 Total = 36	0.765% x 36	28 spaces
SYD09	Staff x 4	0.765% x 4	3 spaces
Campus Total			**31 spaces**

DA-21-01058 was approved with a requirement for 16 car parking spaces to be provided across the site, which was based on Blacktown DCP parking rates which could be provided on the site at that time. The Conditions of Consent required that 11 spaces were to be permanent, and five (5) spaces were to be provisional and only made permanent in the instance that eleven spaces did not satisfy demand.

This assessment has identified the need for the campus as a whole to ultimately provide car parking spaces, with demand for three (3) spaces arising from the approved SYD09 and 28 spaces from SYD08. This therefore satisfies both the existing Conditions of Consent, as more than 16 car parking spaces remain provided for the site, as well as satisfying the parking demands for the operation as a whole.

In addition, there are examples of data centre developments across NSW listed on the NSW Planning Portal website which have been approved on the basis that a first principles approach for estimating parking demand is the more appropriate method. A description of two recently approved data centre developments most similar in nature to the Proposal are provided below.

Robert Road Data Centre, Eastern Creek

The development application (SSD-10330) sought to construct an additional three data centre buildings on-site. Collectively, the four (4) buildings would operate as a single campus, comprising a total GFA of approximately 92,617 m^2, including 46,466 m^2 GFA for warehouse and 5,279 m^2 GFA for office area.

According to the Blacktown DCP, the four buildings required a total of 587 car parking spaces. However, this would be excessive for the development and did not consider the nature of the data centre operating differently to a general warehouse development. The parking demand of the development was calculated based on the number of staff and visitors on the campus as opposed to the GFA, which was approved at 90 parking spaces.

Sirius Road Data Centre, Lane Cove

The development application (SSD-9741) was approved in 2019 for the construction of data centre with offices, comprising a total GFA of approximately 39,500 m^2. Located within the Lane Cove Council local government area, it was required to provide 123 car parking spaces according to the DCP. The development, however, adopted a first-principles approach which considered number of staff, visitors, and mode share. On this basis, the development was approved for 76 car parking spaces.

The two data centre development applications mentioned above show that data centres operate in different ways from a typical warehouse/ industry development. The number of required parking spaces, adopting DCPs' warehouse / industrial rate is generally considered excessive for the parking demand which a data centre would generate.

Further to the above, it is noted that in 2021 DPE published "Building Business Back Better" – Explanation of Intended Effect (EIE), which documents reforms to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to accelerate capital investment. Part F of the publication contains information regarding data centre developments and associated car parking requirements. It stipulates a minimum site car parking rate of 1 space per 450 m^2, which has been the rate adopted in other recently approved data centre development applications.

Accordingly, a GFA of 8,076 m^2 for SYD08 generates a minimum requirement for 18 car parking spaces. As part of the proposed development (SYD08), there would be an additional 10 car parking spaces which satisfies such requirement. Considering the campus as a whole, SYD08 and SYD09 collectively comprise a total GFA of 8,706 m^2. Therefore, the single campus would require a minimum of 19 car parking spaces. The campus proposes a total of 31 car parking spaces which also meets this requirement.

4.1.1 Accessible Parking

Blacktown DCP refers to the Building Code of Australia to determine the accessible parking requirements for a development. The proposed development is classified as a Class 5 building which is defined as an office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8 or 9. BCA requires Class 5 buildings to provide one accessible space for every 100 car parking spaces or part thereof.

For SYD08, a minimum of one accessible space is required to be provided on-site. It is proposed to provide two (2) accessible spaces which would be located near the SYD08 building entrance (admin area).

For SYD09, which generates a minimum requirement for one (1) accessible space, there would be one (1) accessible space provided on-site. It is noted that under DA-21-01058, an accessible parking space was proposed adjacent to the SYD09 office, which will be provided to satisfy the accessible parking space requirement in this assessment.

4.1.2 Parking and Site Access Layout

The proposed parking layout has been reviewed in accordance with the design requirements set out in AS2890.1, AS2890.2 and AS2890.6.

All car parking spaces are designed as 90-degree spaces with 2.5 m width and 5.5 m length. This includes accessible parking spaces with an adjacent shared area of the same dimensions. A minimum aisle width of 6.3 m is provided adjacent to the parking spaces. Based on this, the proposed car parking spaces and aisles are compliant with the minimum dimensions for as stipulated in AS2890.1:2004, and accessible parking as stipulated in AS2890.6:2009.

The access driveways are to be maintained as per the Approved DA for SYD09.

In detail, the western driveway has a kerb-to-kerb width of 6 m which is adequate to accommodate two-way car access as per AS2890.1. The eastern driveway is designed with 9 m entry lane width and 6.51 m exit lane width. A 1.5 m median island is provided to separate the entry and exit lanes. Further into the site, the entry lane splits into two lanes with 5.3 m and 6.4 m width, and the exit lane tapers to 4.2 m width. The proposed truck lane widths are compliant with AS2890.2 requirements.

A swept path analysis of the longest vehicle to access the site (19 m semi-trailer) has been undertaken to assess manoeuvrability at the site access and on site. The swept path analysis demonstrates that the main site access driveway and site layout could accommodate the proposed truck movements. Swept path diagrams are contained in Appendix C.

4.2 Traffic Generation

Existing and future trip generation of the subject site have been estimated using trip rates for 'Business parks and industrial estates' as stipulated by the TfNSW Technical Direction TDT 2013/ 04a. Trip generation of the proposed development has been based on the following rates for industrial land uses:

- 0.52 trip per 100 m^2 for AM peak.
- 0.57 trip per 100 m^2 for PM peak.

Application of 'business parks and industrial estates' trip rates has been deemed most appropriate for the subject site on the basis that the site is zoned as "'IN1 - General Industrial' as per the Blacktown LEP 2015. RTA trip rates for 'office and commercial', which include developments such as "*computers/ high tech, health, finance/ banking, insurance, accounting/ management, [and] legal*" would not be appropriate for the subject site. Categorically, the proposed development does not align with such land uses.

According to the RTA Guide to Traffic Generating Developments (2002), a 'business park' typically contains developments with elements of "*industrial, manufacture, research, warehousing, office space, retail, commercial, refreshment and recreational activity. They are generally located in industrial areas and the uses within the park are generally to a scale appropriate for the anticipated workforce and zoning. The business parks selected for the survey ranged in size from some 7,300 m2 to some 38,200 m2*".

The proposed development aligns more closely with the elements of a business park as defined in the RTA Guide, and the size of the site falls within the range of surveyed developments used to determine the business park trip rate.

It is understood that the back portion of the site was previously used as a timber yard, known as 'Fraser Timber', and included a large central two storey building with another two storey 'L-shaped' building wrapping around it. Based on an approximate GFA of 3,500 m^2 (as measured on Nearmap historic aerial imagery), the former site is estimated to have generated:

- 18 trips in the AM peak hour.
- 20 trips in the PM peak hour.

The proposed development, having a GFA of 8,076 m^2, is estimated to generate:

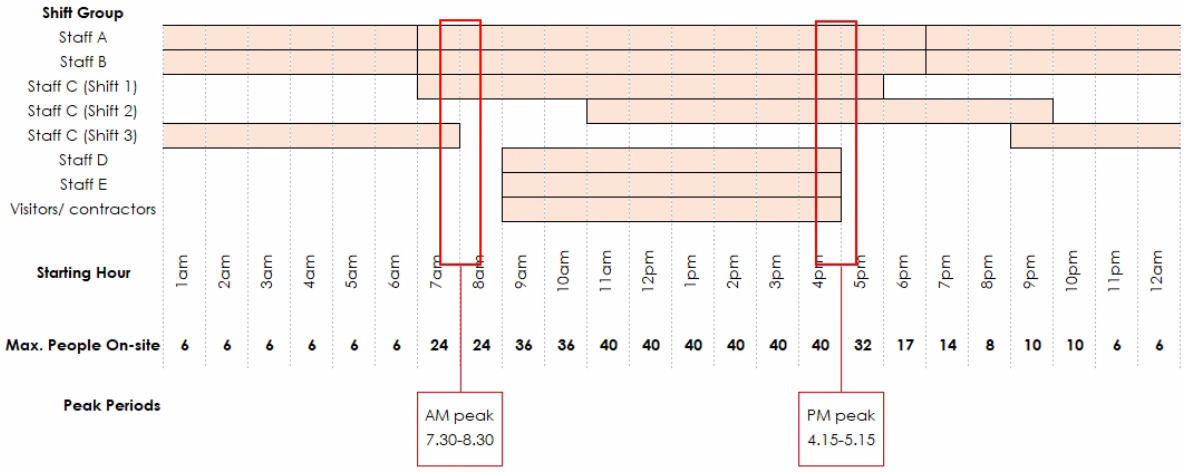
- 42 trips in the AM peak hour.
- 46 trips in the PM peak hour.

However, as with the car parking assessment, a first principles approach would be better suited to determine the likely trip generation associated with the Proposal. This approach generates a more realistic and practical trip generation for the proposed development in accordance with the proposed shift times and maximum number of people on-site.

Figure 3.2, which illustrates the maximum number of people on-site across a 24-hour period, has been overlaid with the road network peak periods and reproduced in Figure 4.2. Within the red peak hour boxes are the shift groups that would either be starting or ending their shift i.e. travelling to/from the site. Figure 4.2 indicates the following:

- During the AM peak hour, Staff Group C (Shift 3) would be ending their shift.
- During the PM peak hour, Staff Groups D and E would be ending their shift.
- Whilst the "Visitors/ contractors" Group appears to finish during the PM peak hour on the shift chart, visitors and contractors would not be employed under a "shift work" arrangement as the Staff Groups would be. Rather, they could be on-site any time between 9am and 5pm.

Figure 4.2: Peak Hourly Site Trip Generation



The Proponent has advised that the staffing numbers per shift group is confidential information and therefore could not be presented in this report. Notwithstanding, the Proponent has also informed that there would be approximately 8 vehicles exiting the site in each of the identified peak periods i.e. 8 vehicle trips.

The Proponent has advised that there would be up to 10 deliveries each day generally during the site's core business hours (7am-7pm). To assess the worst-case scenario, it has been assumed that 50% of these deliveries would occur in each peak period.

Based on the proposed waste collection and delivery schedule advised by the Proponent (detailed in Section 4.8), delivery vehicles would comprise the following mix:

- 60% heavy vehicles, such as waste collection trucks.
- 40% light vehicles, such as courier vans.

This would be in-line with the loading and waste collection schedule as detailed in Section 4.8 where it is stated that 6 out of 10 deliveries/ collections would be waste collection and fuel deliveries, which would typically be undertaken using heavy vehicles. The remaining 4 out of 10 vehicles are related to rack deployments and small courier deliveries which are expected to be carried out using light vehicles such as vans. Whilst Section 4.8 presents the number of deliveries on a weekly basis, a similar split has been used to estimate the general split of deliveries on a daily basis.

Therefore, the delivery/ collection vehicle trip generation during each peak hour is anticipated as follows:

- 3 heavy vehicles (6 trips), plus
- 2 light vehicles (4 trips).

Overall, the total peak hourly site trip generation in a worst-case scenario is estimated as follows:

- 8 staff light vehicles exiting the site (8 trips), plus
- 3 heavy vehicles entering then exiting the site in the same hour (6 trips), plus
- 2 light vehicles entering then exiting the site in the same hour (4 trips).

At the time of the February 2022 traffic surveys, the former development was demolished and so its traffic flows were not captured by the survey. As such, traffic modelling in this assessment considers the full trip generation of the Proposal i.e. 18 trips in each peak period.

Notably, the peak hourly trip generation of the Proposal (18 trips per hour) is estimated to be the same as the former development (18 trips in the AM peak and 20 trips in the PM peak).

4.3 Traffic Modelling

4.3.1 Trip Distribution on Surrounding Network

Vehicles would access the subject site from the arterial road network via the signalised intersection of Prospect Highway/ Abbott Road/ Station Road. Vehicles travelling from the south and the east would access the site using Old Windsor Road and Fitzwilliam Road.

The traffic surveys show a directional split along the site frontage, which includes Station Road eastbound and Station Road westbound. The future site-generated trips have been apportioned based on the existing trip distribution, which is as follows:

- AM Peak:
  - At site access:
    - 47% Station Road east approach.
    - 53% Station Road west approach.
  - Intersection of Seven Hills Road/ Fitzwilliam Road/ Wentworth Avenue:
    - 31% Fitzwilliam Road east approach.
    - 36% Wentworth Avenue south approach.
    - 32% Station Road west approach.
- PM Peak:
  - At site access:
    - 54% Station Road east approach.
    - 46% Station Road west approach.
  - Intersection of Seven Hills Road/ Fitzwilliam Road/ Wentworth Avenue.
    - 32% Fitzwilliam Road east approach.
    - 32% Wentworth Avenue south approach.
    - 36% Station Road west approach.

4.3.2 Directional Split at Site Access

Based on the activities on the site during the peak periods as described above, the trip directional split would be as follows:

- 8 staff light vehicles exiting the site. i.e. 8 outbound trips.
- 3 heavy vehicles entering then exiting the site in the same hour. i.e. 3 inbound trips plus 3 outbound trips.
- 2 light vehicles entering then exiting the site in the same hour i.e. 2 inbound trips plus 2 outbound trips.

4.3.3 Level of Service Criteria

TfNSW uses level of service as a performance measure to indicate the operating efficiency of a given intersection. The level of service ranges from A to F. Level of service between A and D indicate the intersection is operating within capacity. With LoS A providing exceptionally good performance to LoS D indicating satisfactory performance, LoS E and F indicate the intersection is operating at or near capacity and generally would require intersection improvement works to maintain reasonable performance.

The level of service is directly related to the average delay experienced by vehicles travelling through the intersection. At signalised intersections, the average delay is the volume of weighted average delay over all movements. For roundabouts and priority (give way and stop sign) controlled intersections, the average delay relates to the movement with the highest average delay per vehicle.

Table 4.3 shows the criteria that TfNSW adopt in assessing the level of service at intersections.

Table 4.3: Intersection Level of Service Criteria

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

4.4 Background Traffic Growth

Future traffic growth has been estimated based on the Sydney's Strategic Travel Forecast Model (STFM) provided by TfNSW. The STFM is a strategic transport planning model that considers population and employment growths and is used for higher level of assessment of major infrastructure proposals, transport strategies and policy decision making.

The STFM provides future year traffic volume to determine the relative traffic growth between years of application to the baseline traffic to provide estimations for future year traffic conditions.

STFM growth rates from 2022-2025 has been applied to the relevant intersections in the local road network to determine future base volumes.

4.5 Cumulative Traffic Impacts

DPIE's Major Projects website and Council's online DA tracker have been reviewed for projects within the vicinity which are proposed or have been approved. At the time of preparing this TIA, both sources indicate that there are no relevant projects to be considered in the cumulative traffic assessment.

4.6 Modelled Scenarios

The following scenarios have been modelled using SIDRA Intersection, an industry-standard software package that analyses the operating characteristics of intersections:

- Scenario 0 – Existing conditions (base case).
- Scenario 1 – Future conditions with background traffic growth only i.e. no development traffic (opening development year, 2025).
- Scenario 2 – Future conditions with background traffic growth plus development traffic (opening development year, 2025).

Development traffic refers to the vehicle trips estimated to be generated by the proposed development operation. In this case, it takes into consideration the campus as a whole i.e. the operation of both SYD08 and SYD09 sites.

4.7 Traffic Modelling Results

The SIDRA modelling results indicate the modelled nearby intersections currently operate at an acceptable level of service (LoS) C or better.

Having consideration for background traffic growth and site-generated trips in future scenarios, these intersections would continue to operate at a good level of service.

However, there is an exception for the Station Road/ McCoy Street intersection. The worst performing movement at this intersection has a LoS E and LoS F in the AM peak and PM peak periods, respectively. Detailed analysis of the operation at this intersection is provided herein.

4.7.1 Station Road / McCoy Street Intersection

S0 – Existing Conditions

It is important to recognise that the LoS E in the AM peak period is as a result of the right-turn movement out of McCoy Street north approach onto Station Road. There is one vehicle turning right-out of McCoy Street across the one-hour period. In reality, circulating vehicles at the roundabouts located either side of McCoy Street (at Tollis Place and Wentworth Avenue) would cause gaps in traffic flow on Station Road which would allow the vehicle to exit McCoy Street.

The next worst approach is the right-turn movement from Station Road east approach onto McCoy Street. This movement operates at LoS B under existing and future conditions in the peak periods. Thus, it is apparent that the right-turn movement out of McCoy Street is the cause of the overall poor level of service for the intersection, and therefore, is considered as not giving a true representation of the performance of this intersection as a whole. As such, the second worst movement has been reported in the SIDRA results summary in Table 4.2.

In the PM peak period, the overall intersection LoS F is also due to the right-turn movement out of the McCoy Street approach. This occurs on the basis that SIDRA software does not process turning movements with a zero value and, during the surveyed peak hour, there were no vehicles turning right onto Station Road. However, in order to perform this analysis, one vehicle trip has been input in SIDRA for the right-turn movement which generates the poor performance. Reporting this movement as the 'worst movement' for the intersection is considered to inaccurately present the actual intersection performance. As such, the second worst movement has been reported in Table 4.4.

S1 – Future Base Case (Background Traffic Growth Only)

The second worst movement has been reported in the construction period for a like-for-like comparison with existing conditions.

S2 – Future Base Case + Development

Similarly, the second worst movement has been reported in the construction period for a like-for-like comparison with existing conditions and future base case conditions.

4.7.2 Station Road / Site Access Intersection

S0 – Existing Conditions

As the site is currently vacant, there were no turning movements in or out of the site. Therefore, the site access not been modelled under existing conditions.

S1 – Future Base Case (Background Traffic Growth Only)

In this scenario, the development is not considered and there would be no turning movements in or out of the site. Therefore, the site access not been modelled under existing conditions.

S2 – Future Base Case + Development

Having consideration for the site-generated vehicles, the Station Road / Site Access intersection would operate at LoS F as a result of the 8 staff vehicles and 5 service vehicles exiting the site onto Station Road. However, this does not provide a true representation of the actual intersection performance as circulating vehicles at the roundabouts located either side of the site access (at Tollis Place and Wentworth Avenue) would cause gaps in traffic flow on Station Road which would allow the construction vehicles to exit site.

The next worst movement would be the right-turn movement into the site from Station Road, operating at a LoS B in both peak hours. In each peak hour, there would be 5 service vehicles entering site (2-3 vehicles turning into the site from either direction). In reality, this would not result in any impacts to traffic flow on Station Road as there would be gaps in the traffic flow caused by the upstream roundabout at Tollis Street. Furthermore, there would be sufficient space within the traffic lane and painted median along the site frontage for the through movement on Station Road to pass the vehicles entering the site. The width of the north-west traffic lane including median is 7.0m which would adequately accommodate the width of two passing vehicles.

Therefore, reporting the above-mentioned movements as the 'worst movement' for the intersection is considered to inaccurately present the actual intersection performance. As such, the next worst movement has been reported in Table 4.4

SIDRA modelling results for the road network peak periods are summarised in Table 4.4 while the detailed SIDRA movement summary outputs are contained in Appendix D.

Table 4.4: SIDRA Modelling Results

Intersection	Peak Period	Scenario 0		Scenario 1		Scenario 2	
		Ave Delay (s)	LoS	Ave Delay (s)	LoS	Ave Delay (s)	LoS
Station Rd/ Tollis Pl	AM	16	B	18	B	18	B
	PM	21	B	23	B	23	B
Station Rd/ Site Access	AM	N/A [a]	N/A [a]	N/A [a]	N/A [a]	19	B
	PM	N/A [a]	N/A [a]	N/A [a]	N/A [a]	33	C
Station Rd/ McCoy St	AM	17	B	26	B	26	B
	PM	26	B	33	C	34	C
Station Rd/ Fitzwilliam Rd/ Wentworth Ave	AM	17	B	19	B	19	B
	PM	20	B	28	B	29	C

Notes:
a) Not applicable as the site is currently vacant, there were no turning movements in or out of the site. Therefore, the site access not been modelled under existing conditions.

4.8 Loading and Waste Collection

A loading dock comprising (3) loading bays is proposed on the north side of the data hall building. These bays would be used for receiving deliveries. Routine services, such as waste collection, will also be carried out through this loading dock.

Deliveries and waste collections are expected as follows:

- Waste collection:
  - General waste: 1 per week.
  - Comingled recycling: 1 per week.
  - Cardboard: 1 per week.
  - Soft plastic, e-waste (cabling), timber pallets: as required.
- Fuel delivery (for generators) - 1 per week.
- Full rack deployments: 1-2 per week.
- Small courier deliveries – Approx. 3 per week.

Vehicles would enter the site in a forward direction, and then reverse into the loading bays. Then, vehicles would exit the loading dock in a forward direction using the internal circulation road to exit the site. The longest vehicle which the loading dock can accommodate would be a 19 m semi-trailer.

A swept path analysis has been undertaken of the 19 m semi-trailer which demonstrates adequate vehicle accessibility on-site. The swept path analysis is provided in Appendix C.

Unloading of fuel would occur in bunker that is positioned adjacent to the generators on the north side of the data hall building. Fuel would be delivered by a heavy/medium/small rigid vehicle, pending availability at the time. It would reverse into the bunker and exit forward out, following the internal circulation road towards the site exit.

5 Green Travel Plan

5.1 Introduction

Travel demand management is a term for strategies to encourage a modal shift from single-occupant private vehicle trips and influence the way people move to/from a site to deliver better environmental outcomes to encourage sustainable travel and reduce traffic and parking impacts within communities.

A key element of travel demand management is the preparation of a Green Travel Plan (GTP). The primary purpose of GTPs is to encapsulate a strategy for managing travel demand that embraces the principles of sustainable transport. In its simplest form, GTPs encourage travel using transport modes that have low environmental impacts, for example active transport modes including public transport, walking and cycling, and encourages better management of car use.

5.2 Drivers of the Travel Plan

There are a number of social, environmental, and economic drivers for developing and implementing a GTP for developments as detailed below.

- Car Parking: Car parks utilise valuable land resources and impact amenity. If the area continues to grow and there is no modal shift towards non-car transport modes, the car parking demand could increase significantly. As such, the provision of car parking must reflect the site's proximity to public transport to influence a modal shift to sustainable transport modes. Furthermore, the cost to provide parking is significant and therefore, there are strong economic imperatives to reduce car parking demand by incentivising non-car travel modes.
- Environmental Impacts: The transport sector (road, rail, air and ship) is Australia's third largest source of greenhouse gas emissions (GHG), accounting for 18 % of emissions in Australia in 2015 (Climate Council of Australia, 2016). Mitigating this impact is a key driver of the GTP. Within Australia, the transport sector has the highest rate of growth of GHG emissions per year having risen by 51 % since 1990 with private vehicles responsible for almost half of transport emissions. In comparison, travel modes such as walking and cycling have the lowest emissions while public transportation has significantly lower impact than private vehicles.

- Health Benefits: The use of sustainable transport modes can have wide-ranging health benefits due to a corresponding reduction in greenhouse gas emissions and increase in physical activity from walking and cycling. The shift from private cars to sustainable transport "can yield much greater immediate health "co-benefits" than improving fuel and vehicle efficiencies" (World Health Organisation, 2011). The potential benefits can include reduced respiratory diseases from better air quality, prevention of heart disease, some cancers, type 2 diabetes and some obesity-related risks.
- Social Equity: Transport has a fundamental role in supporting social equity, that is the equitable distribution of services, amenities, and opportunities. The provision of sustainable transport modes can provide a more affordable alternative to car use.

5.3 Mode Shift Target

Historically, a modal shift between 3-5% is considered to be achievable based on knowledge of local and international GTPs, and as stated by experts in Land Environment Court proceedings.

Notably, the Sirius Road Data Centre in Lane Cove (see Section 4.1) was approved with a mode shift target of 10% through the implementing a Sustainable Travel and Access Plan with a Transport Access Guide (TAG). This would identify aspects such as local bus stop locations and bus timetables, the nearest train stations and taxi ranks, local cycle routes, encourage car-sharing and carpooling for work-related journeys, and provide priority parking for staff who carpool. Similar sustainable transport measures will be implemented as part of the proposed development through the implementation of a Green Travel Plan initiatives (this Chapter) and site-specific TAG (contained in Appendix E).

Further to the above, it is important to point out the Sirius Road Data Centre is located within the Lane Cove Business Park which is served by buses that run in certain periods of the day only (6:00 am - 9:30 am and 5:00 pm -7:30 pm). Furthermore, the sloping terrain between the Lane Cove Business Park and surrounding residential areas or Epping Road bus services would increase the level of difficulty for reaching the site by walking and cycling. In comparison, the proposed development is located near two train stations and several bus stops which run services throughout the day. The terrain surrounding the subject site is predominately flat which enables the proposed development to be easily accessible by walking and cycling.

As a minimum, the Proponent aims to achieve a car mode shift target of 7.5% for the development. The proposed target is mid-range between the historical industry standard and the recent target set by a similar development.

5.4 Initiatives

The Proponent has proposed to dedicate two (2) of the 31 car parking spaces on-site as carpool/ car share bays to deduce car dependency and move away from single occupancy car trips.

In addition, it is proposed to dedicate two (2) parking spaces for low-emissions vehicles, and one (1) parking space for electric vehicles (EVs) with a charging station also provided for this space.

Bike racks for four (4) bicycles will be provided on-site which is available to staff and visitors. Also, a bathroom with shower will be provided for staff for end-of-trip use.

A Transport Access Guide (TAG) is a concise presentation of how to reach a site using low-energy forms of transport - public transport, walking or cycling. A site-specific TAG has been developed which shows walking routes, distance and walk-times to nearby public transport, Also, the TAG shows the location of carpool, low-emission vehicles and EV car parking spaces on-site. The TAG would be distributed to staff before their first day at work and to visitors/ contractors prior to visiting the site so that people can plan their journey by non-car means. The TAG is contained in Appendix E.

Further travel strategies that could be considered to encourage more green travel include:

- Public transport: Provide easy-to-read train and bus service timetables and public transport maps on noticeboards in the workplace where they will be visible to all employees (e.g. staff lunch room).
- Carpooling: Senior Management can help match employees living in the same area to travel together to/from work. Given there will be a small group of employees at the facility, it may be acceptable to display a map of the general travel routes which staff use on the way to/from work to encourage carpooling.
- Active travel: Implement a '10,000 steps per day initiative'. Employees who have achieved the 10,000 step goal over a set period could be rewarded.

6 Summary and Conclusion

This transport impact assessment report relates to the proposed development for a data centre located at 57 Station Road, Seven Hills.

The key findings from this assessment are provided below:

- The proposed development comprises the construction of a two-storey data centre building, circulation road, external plant yard and car parking spaces.
- The subject site will be operating as a single campus with the front site (SYD09) (DA-21-01058), with shared facilities. Majority of staff at the front site will be relocated to the subject site upon completion.
- The subject site will be sharing two access driveways with the front site, which was approved as part of DA-21-01058.
- According to the Blacktown DCP, 122 car parking spaces would be required to be provided for the proposed development. However, this is considered excessive. Instead, it would be more appropriate to base car parking requirements on peak staffing and visitation.
- It is proposed to provide a total of 31 car parking spaces, including three (3) accessible spaces, which will be utilised by the campus as a whole i.e. SYD08 with SYD09 (DA-21-01058). This is considered sufficient to accommodate the anticipated future parking demand at the subject site.
- Three (3) loading bays have been proposed on-site which would accommodate the 10 deliveries per day expected on a daily basis.
- Notably, the peak hourly trip generation of the Proposal (18 trips per hour) is estimated to be the same as the former development (18 trips in the AM peak and 20 trips in the PM peak periods).
- SIDRA modelling results indicate that the future road network operation would be comparable with existing conditions, and would not result in any adverse impacts to the safety and operation of key nearby intersections.

Overall, the traffic and parking implications of the proposed development are considered satisfactory.

Appendix A

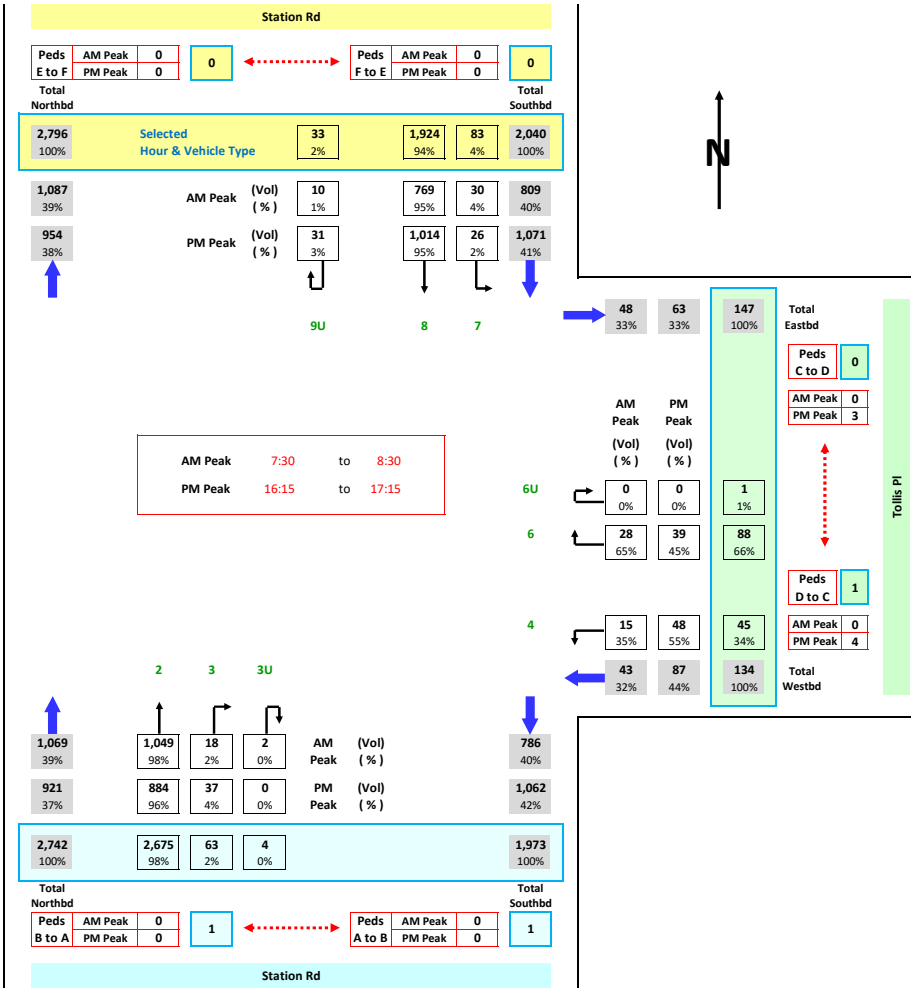
Traffic Survey Data

Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 1. Station Rd / Tollis Pl

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting	Vehicle Type
AM Totals	All Vehicles

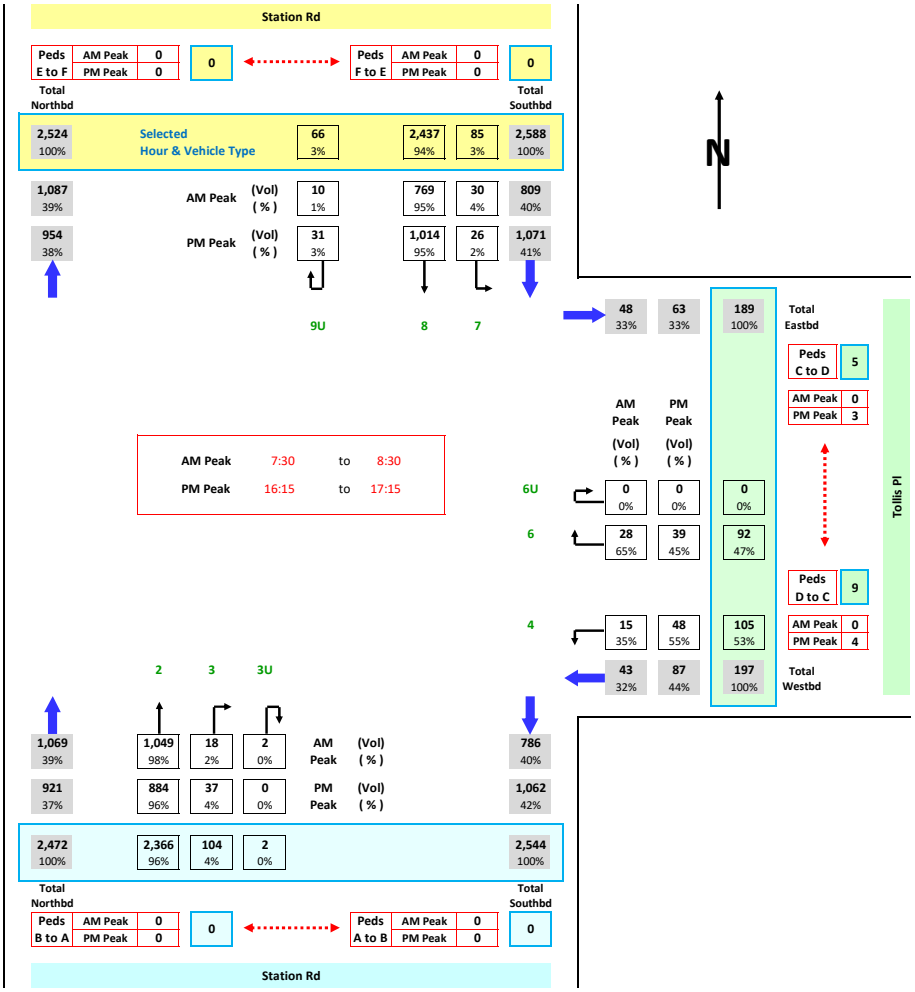


Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 1. Station Rd / Tollis Pl

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

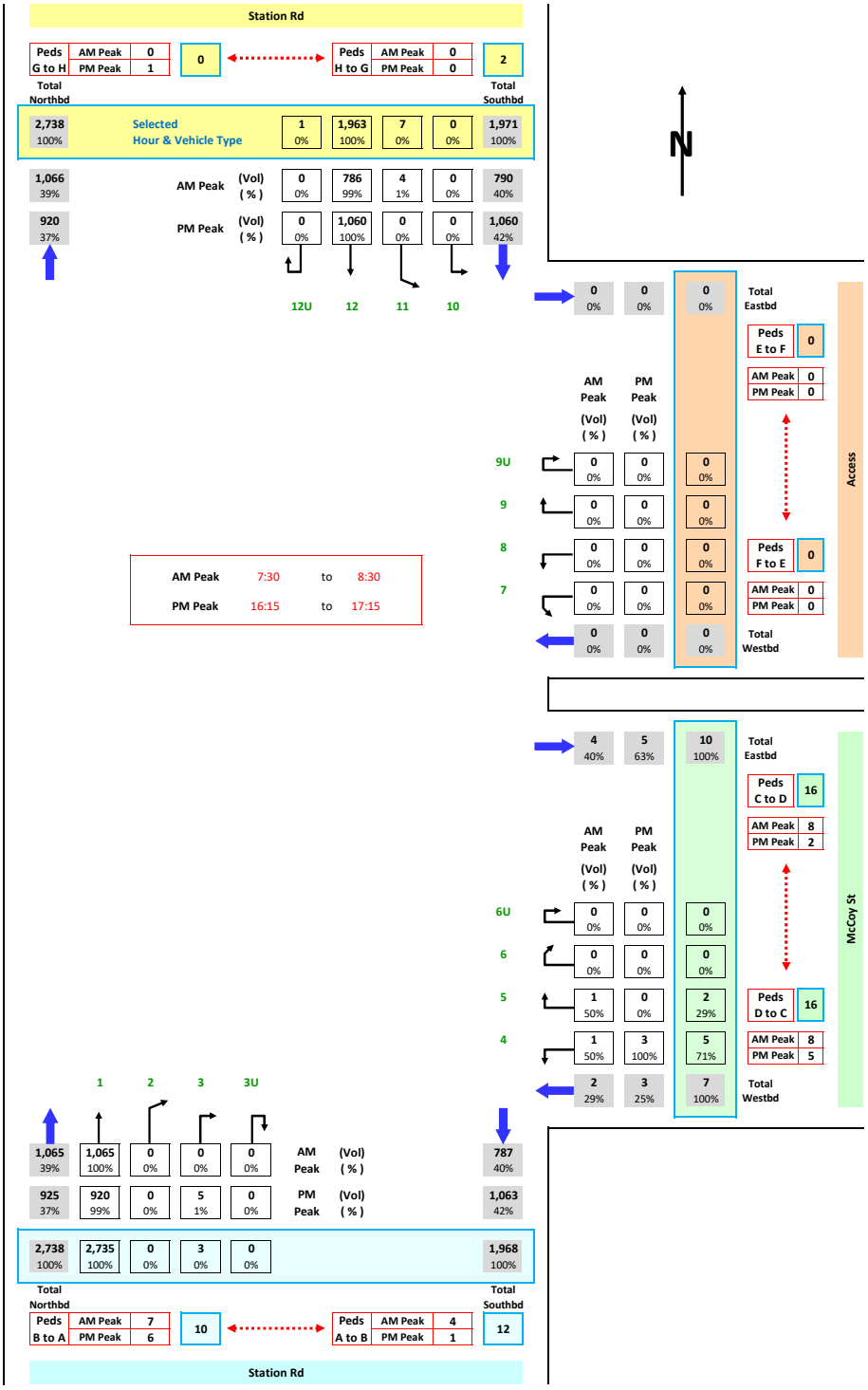
Hour Starting	Vehicle Type
PM Totals	All Vehicles



Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 2. Station Rd / McCoy St / Site Access Driveway

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

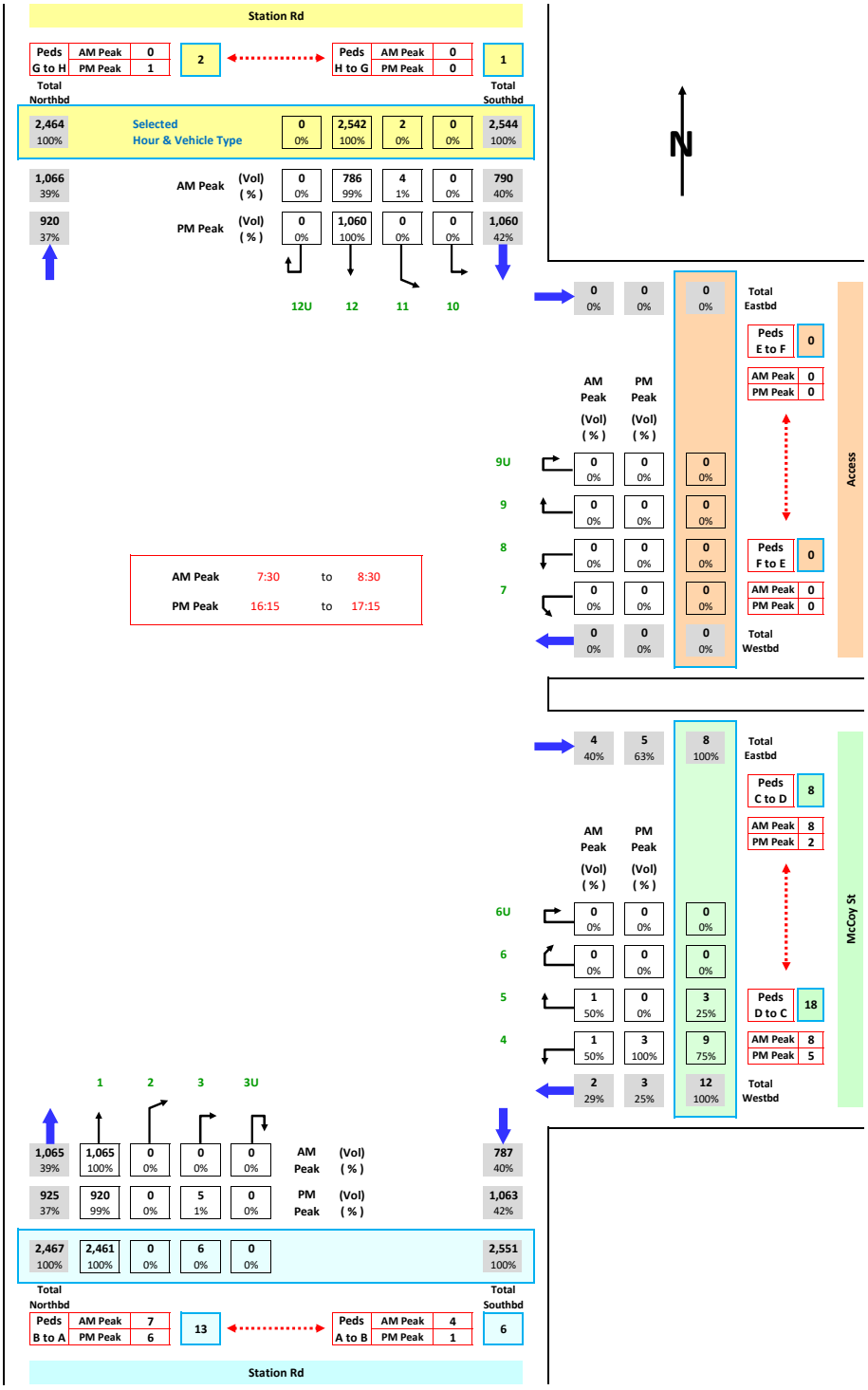
Hour Starting	Vehicle Type
AM Totals	All Vehicles



Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 2. Station Rd / McCoy St / Site Access Driveway

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

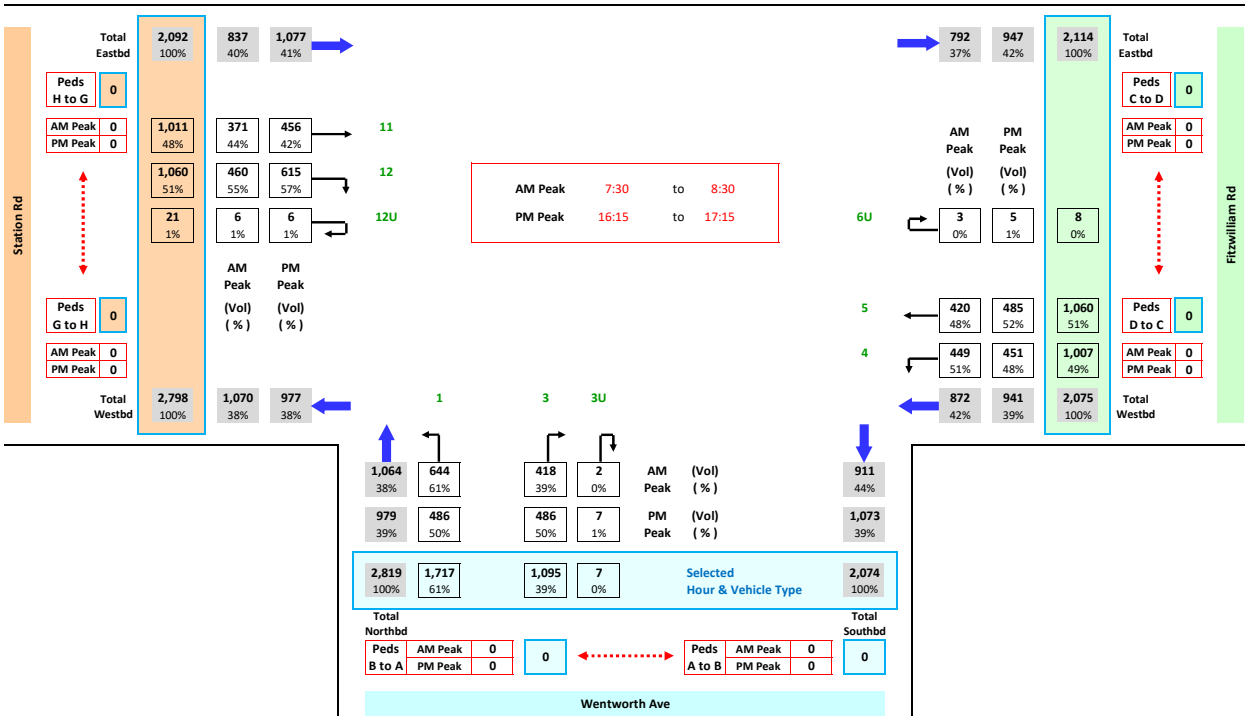
Hour Starting	Vehicle Type
PM Totals	All Vehicles



Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 3. Station Rd / Wentworth Ave / Fitzwilliam Rd

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

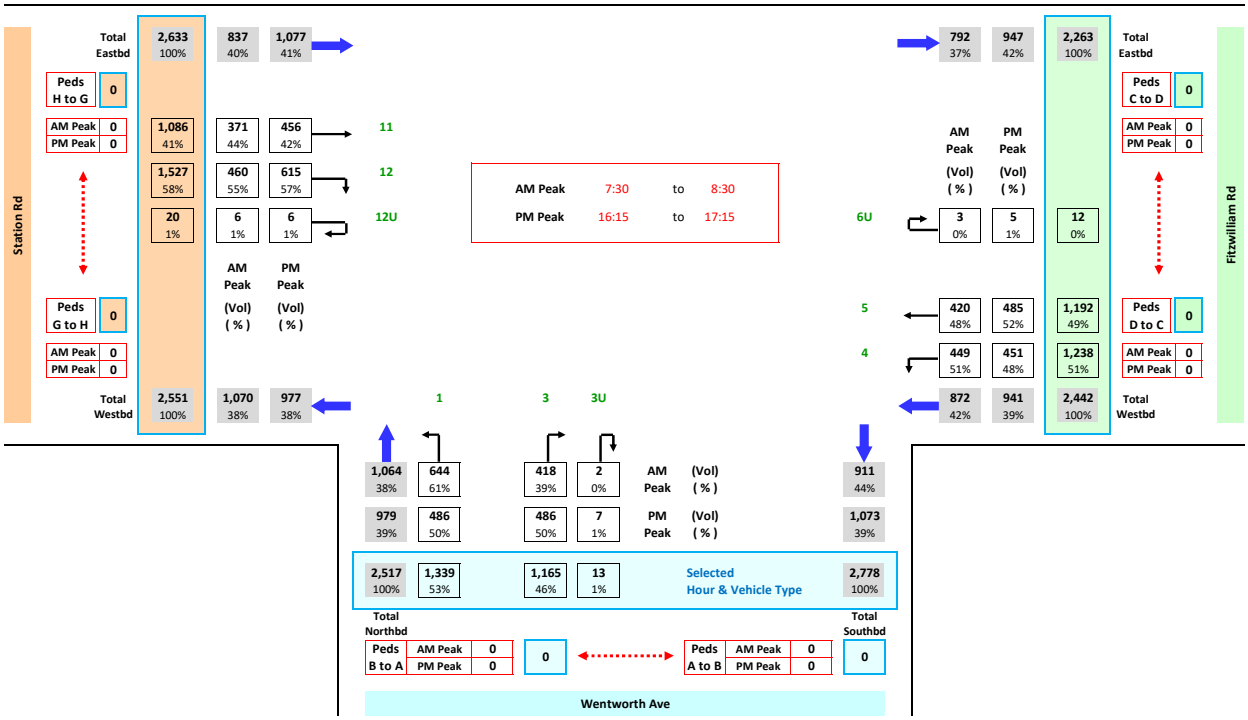
Hour Starting AM Totals
Vehicle Type All Vehicles



Job No. : AUNSW2575
Client : The Transport Planning Partnership Pty Ltd
Suburb : Seven Hills
Location : 3. Station Rd / Wentworth Ave / Fitzwilliam Rd

Day/Date : Tuesday, 8th February 2022
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting PM Totals
Vehicle Type All Vehicles



Job No	Seven Hills AUNSW2575
Client	TTPP
Site	ATC1 - Station Rd (in front of No. 57)
Location	0
Site No	1
Start Date	8-Feb-22
Description	Volume Summary
Direction	Combined

MATRIX Traffic and Transport Data

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	14-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb		
AM Peak	1769	1760	1785	1809	1789	1554	1001		
PM Peak	1875	1951	1988	1891	1898	1549	1142	**23034**	**20980**
0:00	108	96	101	94	118	230	211	103	137
1:00	57	65	69	56	67	118	108	63	77
2:00	43	38	62	69	58	84	85	54	63
3:00	69	71	65	77	82	57	61	73	69
4:00	193	203	216	218	196	82	52	205	166
5:00	659	665	661	673	629	244	127	657	523
6:00	1324	1248	1345	1307	1198	548	245	1284	1031
7:00	1769	1760	1757	1809	1685	758	327	1756	1409
8:00	1731	1692	1785	1769	1789	946	520	1753	1462
9:00	1344	1274	1317	1331	1277	1216	817	1309	1225
10:00	1120	1047	1121	1138	1252	1401	898	1136	1140
11:00	1093	1071	1017	1151	1147	1554	1001	1096	1148
12:00	1099	1175	1117	1182	1428	1549	1142	1200	1242
13:00	1227	1245	1269	1166	1368	1378	1007	1255	1237
14:00	1523	1533	1559	1579	1623	1269	940	1563	1432
15:00	1714	1821	1909	1891	1898	1194	919	1847	1621
16:00	1875	1951	1988	1845	1886	1090	941	1909	1654
17:00	1745	1731	1758	1721	1633	1038	918	1718	1506
18:00	1223	1254	1382	1252	1273	913	763	1277	1151
19:00	893	881	927	957	906	695	710	913	853
20:00	713	686	761	764	671	529	665	719	684
21:00	516	484	543	585	569	506	505	539	530
22:00	371	317	373	381	470	454	362	382	390
23:00	188	189	200	206	329	337	177	222	232
Total	22597	22497	23302	23221	23552	18190	13501	23034	20980

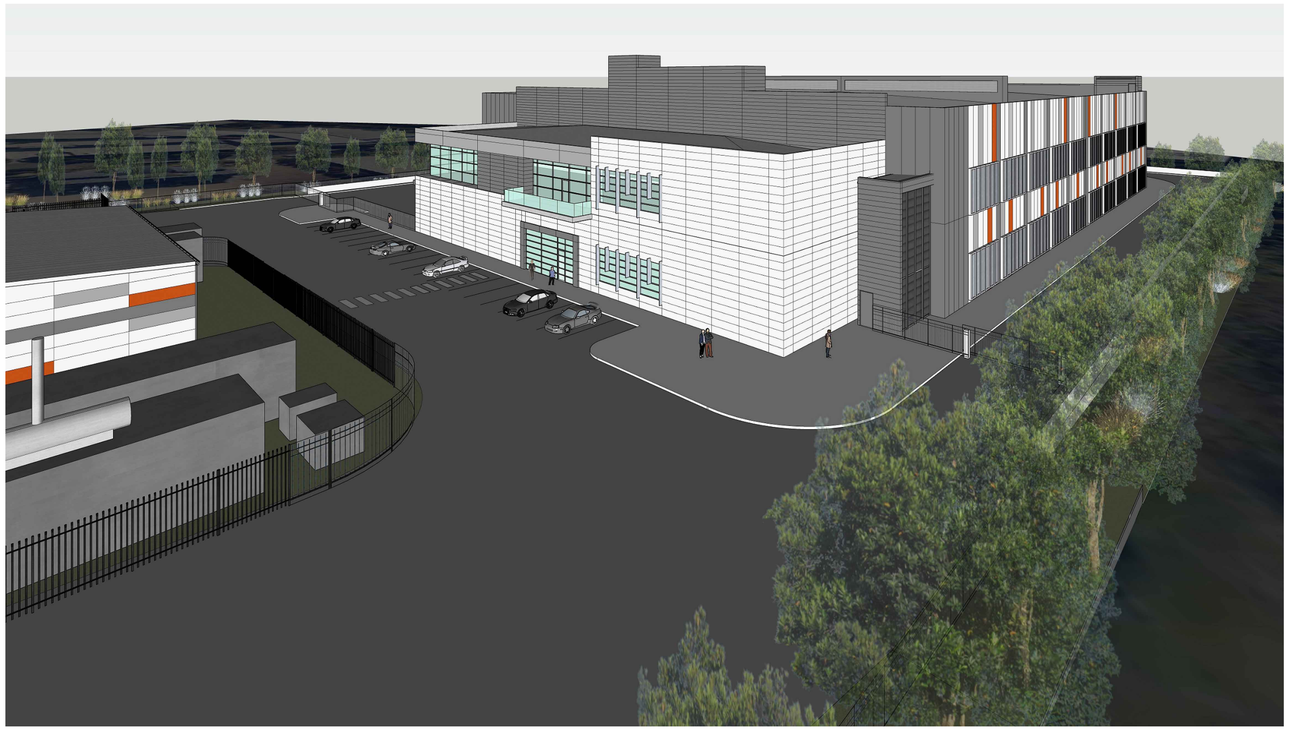
7-19	17463	17554	17979	17834	18259	14306	10193	17818	16227
6-22	20909	20853	21555	21447	21603	16584	12318	21273	19324
6-24	21468	21359	22128	22034	22402	17375	12857	21878	19946
0-24	22597	22497	23302	23221	23552	18190	13501	23034	20980

Appendix B

Architectural Plans

SYD08 DATA CENTRE

CIVIL SERVICES



CIVIL DRAWING LIST

NSW202013_C101.01	COVER SHEET AND DRAWING LIST
NSW202013_C101.02	LEGENDS SHEET
NSW202013_C101.03	NOTES
NSW202013_C101.05	DETAILS SHEET 1
NSW202013_C101.06	DETAILS SHEET 2
NSW202013_C101.07	DETAILS SHEET 3
NSW202013_C101.08	DETAILS SHEET 4
NSW202013_C101.10	GENERAL ARRANGEMENT AND PHASING PLAN
NSW202013_C103.01	CIVIL WORKS PLAN
NSW202013_C103.10	STORMWATER CATCHMENT PLAN
NSW202013_C103.11	WATER BALANCE CATCMENT PLAN
NSW202013_C105.01	SOIL AND WATER MANAGEMENT PLAN
NSW202013_C107.01	VEHICLE TURN PATHS PLAN

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures

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dem

Civil

AC OR CONSULTANTS

Client

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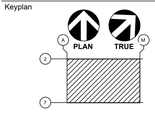
ABN: 92 124 107 973

Keyplan



Project

SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title

COVER SHEET AND DRAWING LIST

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG www.1100.com.au

IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

COMMERCIAL IN CONFIDENCE

Status: ISSUE FOR SSDA

Scale @ A0: N/A

Project No.: NSW202013

Drawing No.: NSW202013_C101.01 B

A0

150

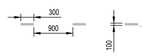
LEGEND - CIVIL WORKS

P34.52	PROPOSED FINISHED SURFACE LEVEL
EX34.50	EXISTING FINISHED SURFACE LEVEL
DD900	DISH DRAIN WITH WIDTH
IK	INTEGRAL KERB
K&G	KERB AND GUTTER
K&T	KERB AND TOE
WK	WIDE KERB
ET	EDGE THICKENING
RW1	RETAINING WALL AND NUMBER
FALL	INDICATIVE DIRECTION OF SURFACE FALL
	PHASE 1 STORMWATER DRAINAGE STRUCTURE
D1	PHASE 2 STORMWATER DRAINAGE STRUCTURE WITH NUMBER (REFER TO STORMWATER PLANS AND PIT SCHEDULE)
S.W	PHASE 1 STORMWATER DRAINAGE PIPELINE
S.W	PHASE 2 STORMWATER DRAINAGE PIPELINE
	DEMOLITION LINE
	PROPOSED REUSE TANK
	PRAM RAMP
	WHEEL STOP
34.2	FINISHED SURFACE CONTOUR
GD1	GD1 ACO KLASSIKDRAIN K100 WITH CLASS 'B' GRATE OR APPROVED EQUIVALENT
GD2	GD2 ACO KLASSIKDRAIN K200 WITH CLASS 'D' GRATE OR APPROVED EQUIVALENT
B1	BOLLARD AND TYPE
	SIGN POST

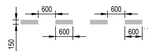
SOIL EROSION AND SEDIMENT CONTROL LEGEND-PROPOSED WORKS

	SEDIMENT FENCE
	PIT INLET TRAP
	SAND BAG SEDIMENT TRAP
	ROCK CHECK DAM
	STABILISED CONSTRUCTION EXIT
	CUT OFF DRAIN
	STOCKPILE

PAVEMENT MARKING LEGEND



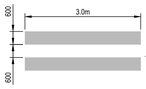
S1 TWO LANE ROAD DIVIDING LINE



TB1 GIVE WAY LINE

E5 EDGE LINE

P1 PARKING BAY LINE



PX PEDESTRIAN CROSSING LINE

BB DIVIDING BARRIER LINES (TWO-WAY)

DIRECTIONAL ARROW

DIRECTIONAL ARROW


PROPOSED DISABLED CAR PARKING SPACE AND SHARED ZONE WITH BOLLARD. REFER TO DETAIL ON DRAWING SYD09-C-F-03-0

PROPOSED KEEP CLEAR LINEMARKING

CHEVRON

NOTES
1. ALL PAVEMENT MARKING AND SIGNAGE SHALL BE IN ACCORDANCE WITH AS1742, 1743, 2890 AND RMS QA SPECIFICATIONS.

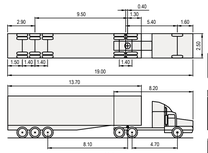
VEHICLE TURN PATHS LEGEND

VEHICLE SWEPT PATH ENVELOPE - FORWARD MOVEMENT

0.5m VEHICLE SWEPT PATH CLEARANCE ENVELOPE

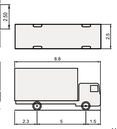
VEHICLE SWEPT PATH ENVELOPE - REVERSE MOVEMENT

0.5m VEHICLE SWEPT PATH CLEARANCE ENVELOPE



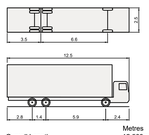
	Metres
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418
Track Width	2.500m
Lock-to-lock time	6.00s
Kerb to Kerb Turning Radius	12.500m

AV - ARTICULATED VEHICLE (AV 19.0m).
NTS



	Metres
Overall Length	8.80m
Overall Width	2.50m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.50m
Lock-to-lock time	4.00s
Kerb to Kerb Turning Radius	10.00m

MRV - MEDIUM RIGID VEHICLE (MRV 8.8m) (SERVICE VEHICLE)
NTS



	Metres
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	6.00s
Kerb to Kerb Turning Radius	12.500m

HRV - HEAVY RIGID VEHICLE (HRV 12.5m)
NTS

NOTES:

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

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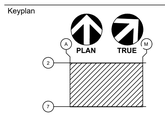

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
LEGENDS SHEET

Status: ISSUE FOR SSDA
Scale @ A0: N/A
Project No.: NSW202013
Drawing No.: NSW202013_C101.02 B

COMMERCIAL IN CONFIDENCE

A0
150

GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND STRUCTURAL CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED.
2. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE BLACKTOWN CITY COUNCIL CIVIL WORKS SPECIFICATION (2005)
3. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION
4. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.
5. ALL DIMENSIONS ON DETAILS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. ALL PLANS AND LEVELS ARE EXPRESSED IN METRES.
6. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURAL STABILITY OF THE WORKS AND ENSURE NO PARTS BE OVER STRESSED UNDER CONSTRUCTION ACTIVITIES.
7. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT S.A.A. CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
8. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM ACOR ENGINEER BUT IS NOT AN AUTHORISATION FOR A VARIATION. ANY VARIATIONS INVOLVED MUST BE TAKEN UP WITH ACOR CONSULTANTS / PRINCIPAL'S REPRESENTATIVE BEFORE THE WORK COMMENCES.
9. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE ENGINEER FOR A DECISION BEFORE PROCEEDING WITH THE WORK.
10. THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS. ALL INSPECTIONS AND CERTIFICATIONS TO BE INCLUDED IN CONTRACTORS COST.
11. BUILDING FROM THESE DRAWINGS IS NOT TO COMMENCE UNTIL APPROVED BY THE PRINCIPAL CERTIFYING AUTHORITY.
12. THE WORD 'ENGINEER' USED IN THESE NOTES REFER TO AN EMPLOYEE OR NOMINATED REPRESENTATIVE OF **ACOR CONSULTANTS PTY LTD.**
13. ALL CONSTRUCTION ACTIVITIES SHALL COMPLY WITH THE RELEVANT CURRENT WORKPLACE HEALTH AND SAFETY LEGISLATION.

SITEWORKS NOTES

1. ORIGIN OF LEVELS :- AUSTRALIAN HEIGHT DATUM (A.H.D.)
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE PRINCIPAL'S REPRESENTATIVE.
4. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE PRINCIPAL'S REPRESENTATIVE. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
5. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATIONS OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
8. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH AN APPROVED NON-NATURAL GRANULAR MATERIAL AND COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS.1289.5.1.1.
9. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
10. ON COMPLETION OF PIPE INSTALLATION ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
11. PROVIDE 10mm WIDE EXPANDING CORK JOINTS BETWEEN CONCRETE PAVEMENTS AND ALL BUILDINGS , WALLS, FOOTINGS, COLUMNS, KERBS, DISH DRAINS, GRATED DRAINS, BOLLARD FOOTINGS ETC
12. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS.
13. ALL BATTERS TO BE GRASSED LINED WITH MINIMUM 100 TOPSOIL AND APPROVED COUCH LAID AS TURF.
14. MAKE SMOOTH TRANSITION TO EXISTING SERVICES AND MAKE GOOD.
15. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS.
16. ON COMPLETION OF WORKS ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL INCLUDING, BUT NOT LIMITED TO, KERBS, FOOTPATHS, CONCRETE AREAS, GRASS AND LANDSCAPED AREAS.

EXISTING SERVICES AND FEATURES

1. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, REMOVAL AND DISPOSAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
2. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
3. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN WRITTEN APPROVAL OF HIS PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
4. EXISTING BUILDINGS, EXTERNAL STRUCTURES, AND TREES SHOWN ON THESE DRAWINGS ARE FEATURES EXISTING PRIOR TO ANY DEMOLITION WORKS.
5. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
6. INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. CONTRACTOR TO GAIN APPROVAL OF SUPERINTENDENT FOR TIME OF INTERRUPTION.

COMPACTION NOTES

1. REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY MARTENS CONSULTING ENGINEERS, REF: P2007944JR05V03 DATED: FEBRUARY 2022
2. STRIP TOPSOIL TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE FOR SELECTIVE RE-USE OR DISPOSE OFF-SITE AS DIRECTED BY THE SUPERINTENDENT. DEPTH OF TOPSOIL TO BE STRIPPED SHOWN ON THE BULK EARTHWORKS PLANS IS INDICATIVE ONLY BASED ON AVAILABLE GEOTECHNICAL INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ALLOW TO STRIP TOPSOIL TO THE APPROPRIATE DEPTH TO EXPOSE THE UNDERLYING NATURALLY OCCURRING MATERIAL.
3. UNCONTROLLED FILLING IS TO BE REMOVED FROM THE FOOTPRINT OF THE BUILDING AND PAVEMENT AREAS. THE STRIPPED SURFACE SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER.
4. PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF EIGHT PASSES OF A SMOOTH DRUM ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) THE FINAL PASS SHALL BE IN THE PRESENCE OF A GEOTECHNICAL ENGINEER.
5. ALL SOFT, WET OR UNSUITABLE MATERIAL TO BE REMOVED AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
6. WASTE CLASSIFICATION OF SPOIL MATERIAL, INCLUDING PROVISION OF APPROPRIATE HAZARDOUS MATERIALS HANDLING (AS REQUIRED) IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO UNDERTAKING THE EXCAVATION WORKS.
7. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE GEOTECHNICAL ENGINEER AND SHALL COMPLY WITH THE FOLLOWING :
   a. FREE FROM ORGANIC, PERISHABLE AND CONTAMINATED MATTER
   b. MAXIMUM PARTICLE SIZE 75MM
   c. PLASTICITY INDEX BETWEEN 2% AND 15%
8. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 300MM THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS 1289 5.3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 E5.1.1 :

LOCATION	STANDARD DRY DENSITY
UNDER BUILDING SLABS	98%
AREAS OF SERVICE TRENCHES	98%
EXTERNAL PAVED AREAS, ROADS AND CARPARKS	98%
LANDSCAPED AREAS	90%

THE UPPER 0.5m THICKNESS FOR THE FOLLOWING AREAS MUST BE COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR -2%) AS FOLLOWS

LOCATION	STANDARD DRY DENSITY
UNDER BUILDING SLABS	100%
PAVEMENTS AND CARPARKS	100%

9. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR COST.
10. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.TESTING FREQUENCY SHALL BE IN ACCORDANCE WITH THE FREQUENCY SPECIFIED IN AS1289
11. DO NOT CARRY OUT BACKFILLING UNTIL AT LEAST 100% OF THE SPECIFIED MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH OF THE STRUCTURE HAS BEEN ACHIEVED, BUT IN ANY CASE NOT EARLIER THAN 7 DAYS AFTER CONCRETE PLACEMENT
12. DO NOT USE VIBRATING ROLLERS OF MASS EXCEEDING ONE TONNE, OR ANY OTHER EQUIPMENT THAT MAY POTENTIALLY CAUSE DAMAGE TO EARTH RETAINING STRUCTURES, TO COMPACT FILL MATERIAL LOCATED WITHIN 2m BEHIND THE STRUCTURE.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

E1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT AT THE SUBJECT SITE.

E2. THE PRINCIPAL'S REPRESENTATIVE WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE GUIDELINES OF "MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION", DEPT OF HOUSING, 2004 (BLUE BOOK).

E3. ALL BUILDERS AND SUB-CONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.

CONSTRUCTION SEQUENCE

E4. THE SOIL EROSION POTENTIAL ON THIS SITE SHALL BE MINIMISED. HENCE WORKS SHALL BE UNDERTAKEN IN THE FOLLOWING SEQUENCE :

   a. INSTALL SEDIMENT FENCES, TEMPORARY CONSTRUCTION EXIT AND SANDBAG KERB INLET SEDIMENT TRAP.
   b. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

E5. DURING WINDY CONDITIONS, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

E6. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

FENCING

E7. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.

E8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.

E9. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.

E10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

E11. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.

E12. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE PRINCIPAL'S REPRESENTATIVE.

SITE INSPECTION & MAINTENANCE

E13. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AFTER RAINFALL EVENTS TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIR AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED.

STORMWATER NOTES

1. ALL 225 DIA. DRAINAGE PIPES AND LARGER SHALL BE CLASS "2" APPROVED SPIGOT AND SOCKET FRC OR RCP PIPES WITH RUBBER RING JOINTS. (U.N.O.)
2. ALL PIPE JUNCTIONS UP TO AND INCLUDING 450 DIA. AND TAPERS SHALL BE VIA PURPOSE MADE FITTINGS.
3. CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
4. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
5. PRECAST PITS SHALL NOT BE USED UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER.
6. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50MM CONCRETE BED (OR 75MM THICK BED OF 12MM BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75MM THICK SAND BED. IN ALL CASES BACKFILL THE TRENCH WITH SAND TO 200MM ABOVE THE PIPE. WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150MM LAYERS TO 98% STANDARD MAX. DRY DENSITY.
7. BEDDING SHALL BE (U.N.O.) TYPE HS2, IN ACCORDANCE WITH CURRENT RELEVANT AUSTRALIAN STANDARDS.
8. WHERE STORMWATER LINES PASS UNDER FLOOR SLABS SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
9. WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS UNSLOTTED UPVC SEWER GRADE PIPE SHALL BE USED.
10. PROVIDE 3.0M LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK, AT UPSTREAM END OF EACH PIT.

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures

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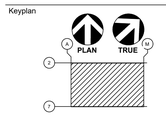


Project

SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title

NOTES

Status: ISSUE FOR SSDA

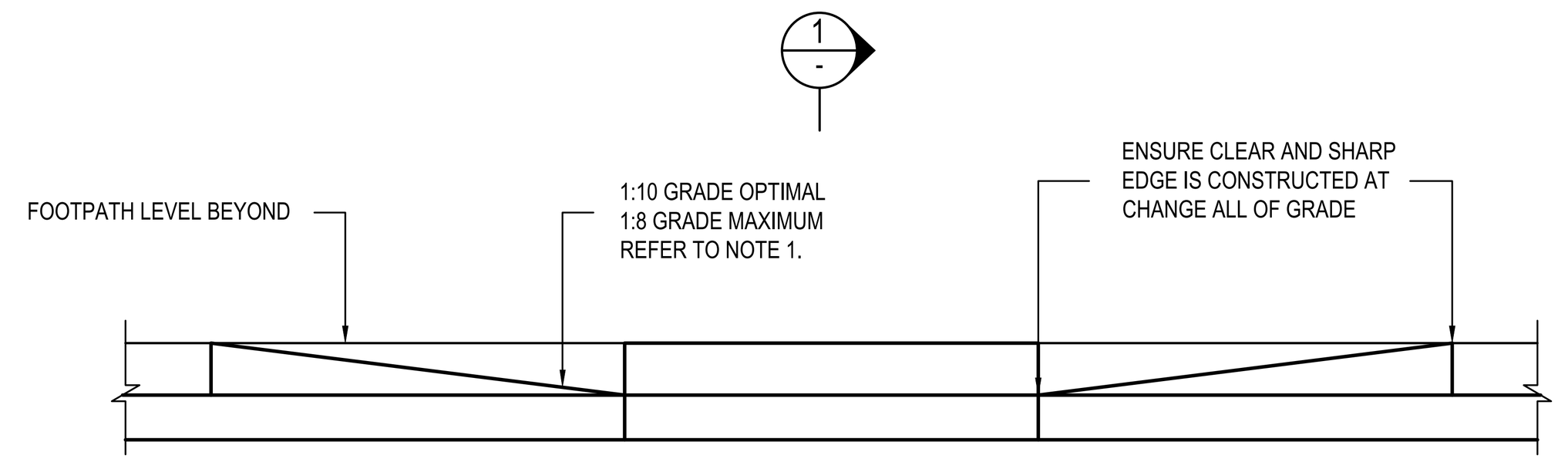
Scale @ A0: N/A

Project No.: NSW202013

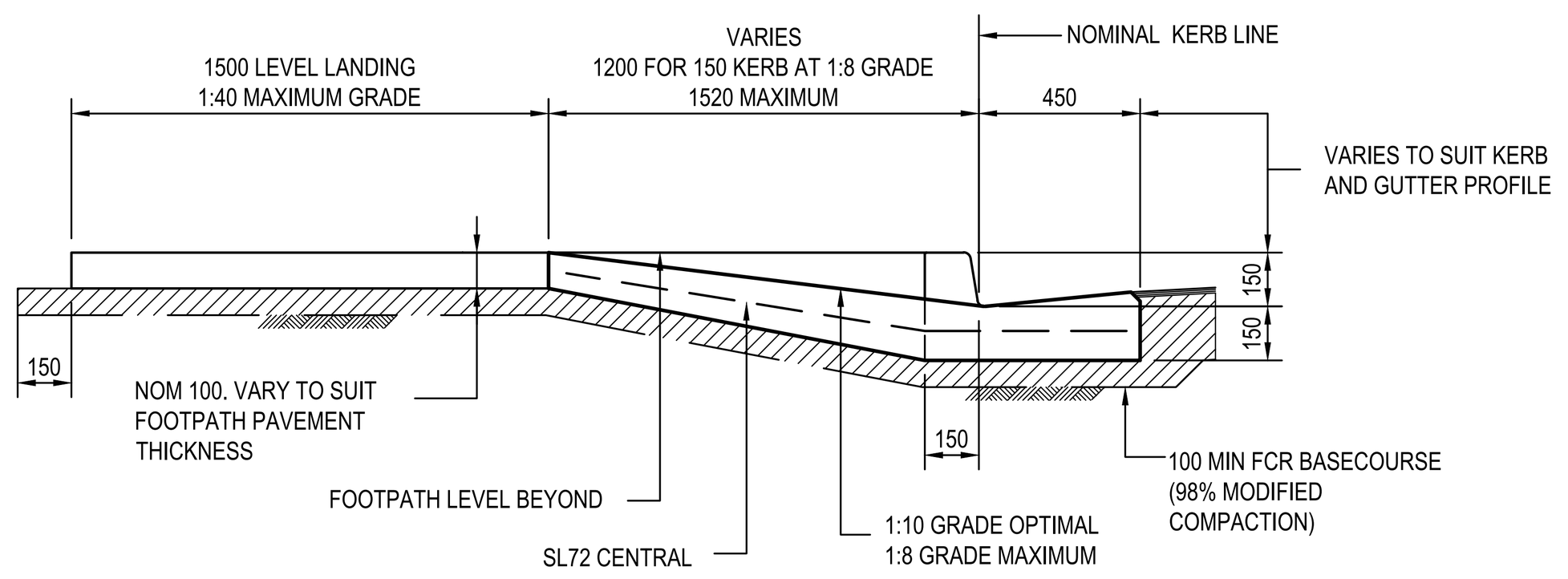
Drawing No.: NSW202013_C101.03 B

COMMERCIAL IN CONFIDENCE

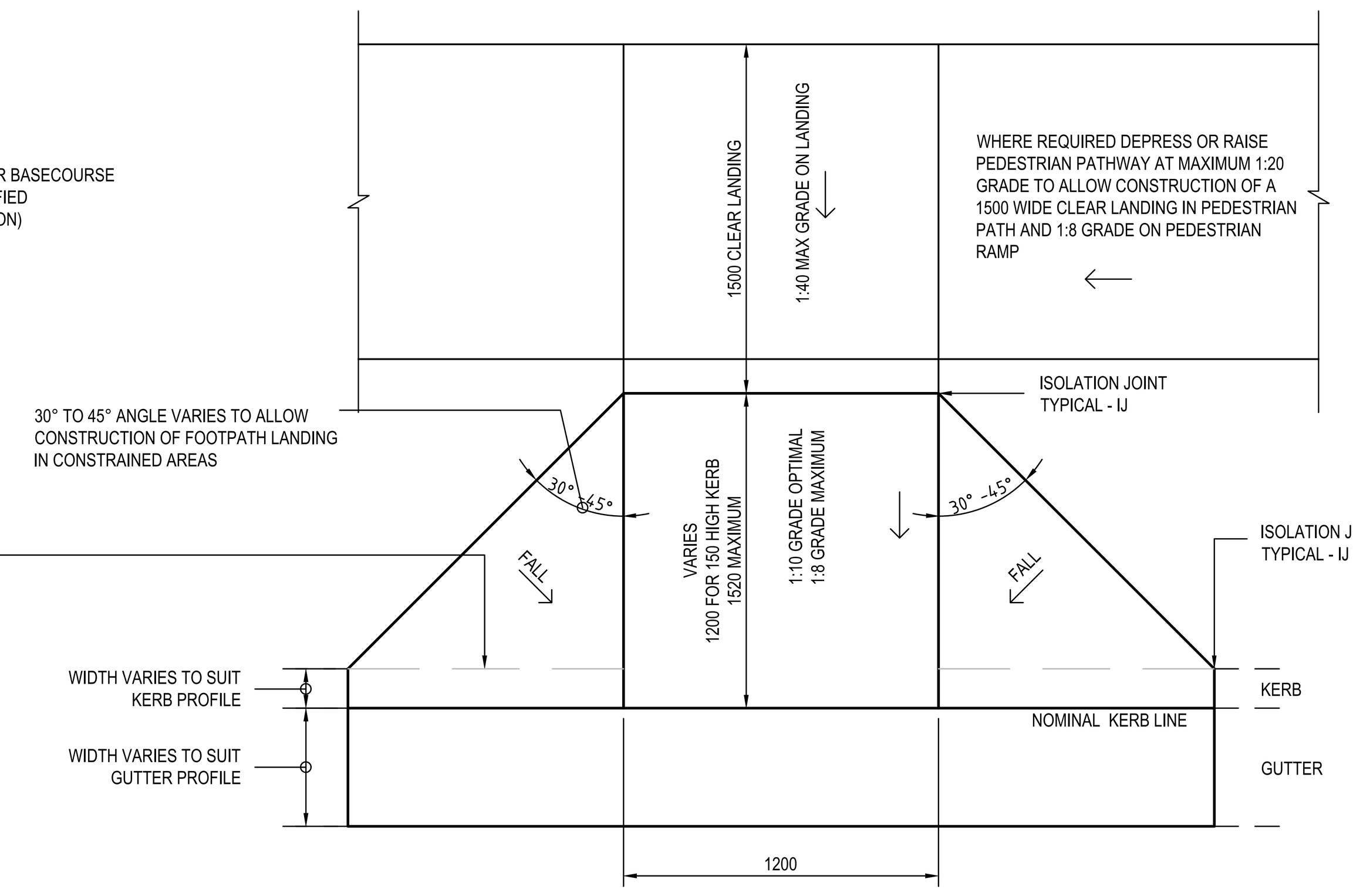
A0 scale bar: 0 50



ELEVATION



SECTION 1
SCALE 1:20

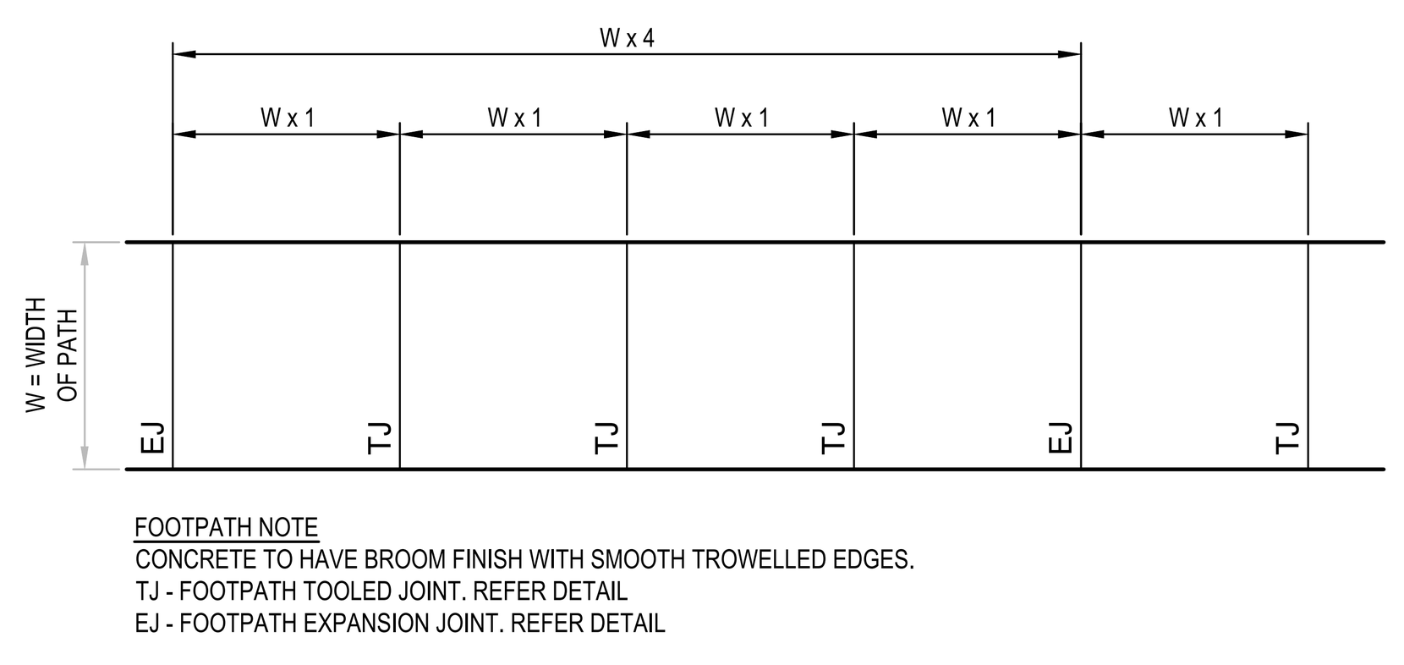


NOTE 1: GRADE AT 1:8 UP TO A MAXIMUM OF 1:4 GRADE IF REQUIRED TO ALLOW CONSTRUCTION OF FOOTPATH CLEAR LANDING IN CONSTRAINED AREAS. GREATER THAN 1:8 GRADE ONLY ALLOWABLE WHERE RAMP DOES NOT FORM PART OF THE PEDESTRIAN PATHWAY. 1:4 GRADE ON RAMP SPLAY REQUIRES HANDRAIL TO AS/NZS 1428.1:2001

NOTE 2: REFER TO AS/NZS 1428.4:2002 FOR TACTILE INDICATOR REQUIREMENTS

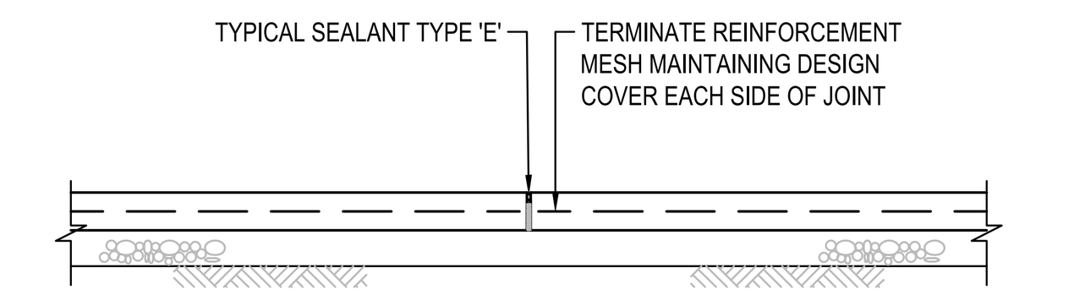
PRAM RAMP DETAIL
SCALE 1:20

PLAN

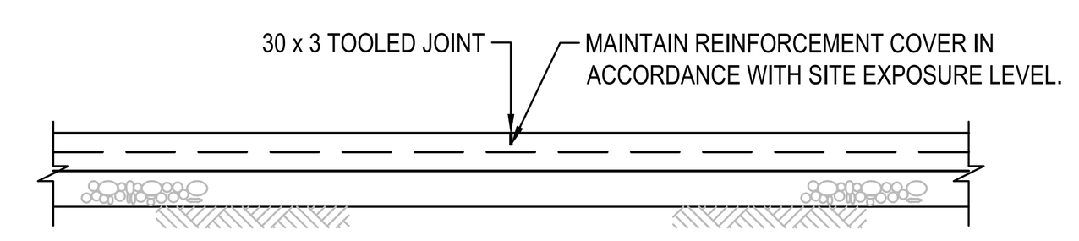


FOOTPATH NOTE
CONCRETE TO HAVE BROOM FINISH WITH SMOOTH TROWELLED EDGES.
TJ - FOOTPATH TOOLED JOINT. REFER DETAIL
EJ - FOOTPATH EXPANSION JOINT. REFER DETAIL

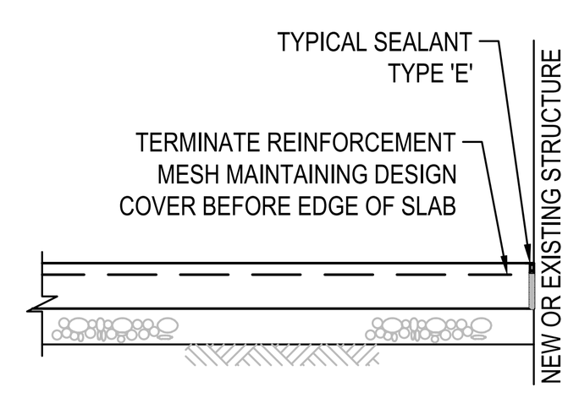
TYPICAL JOINT PLAN FOR FOOTPATHS
NTS



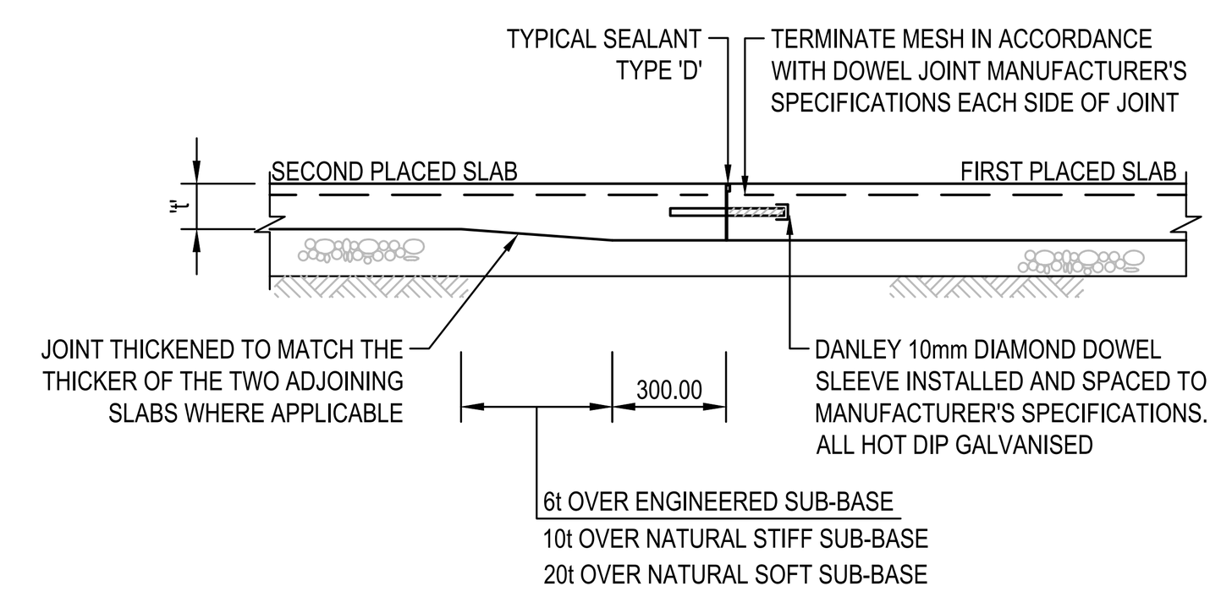
TYPICAL FOOTPATH EXPANSION JOINT - EJ
SCALE 1:20



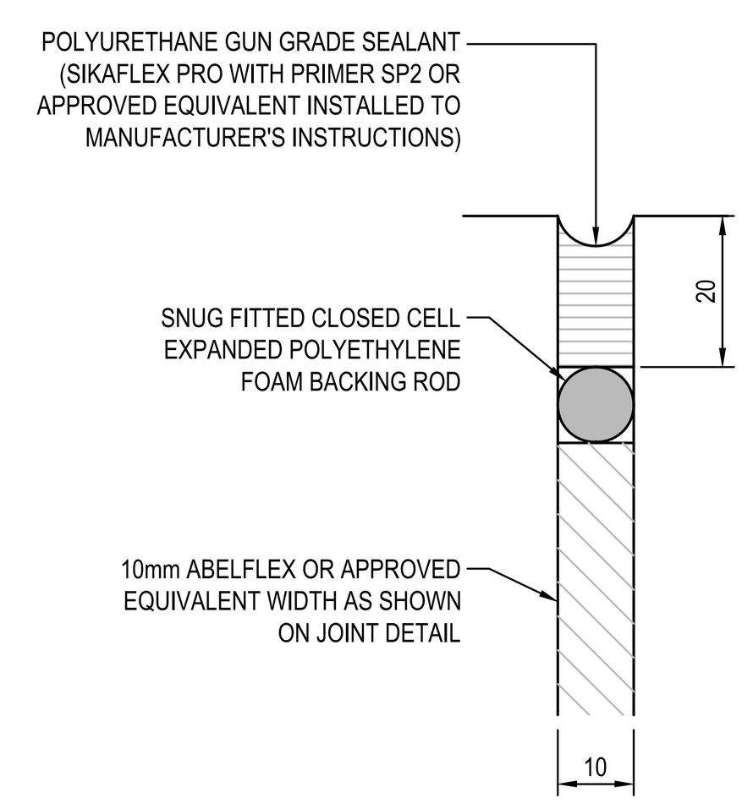
TYPICAL FOOTPATH TOOLED JOINT -TJ
SCALE 1:20



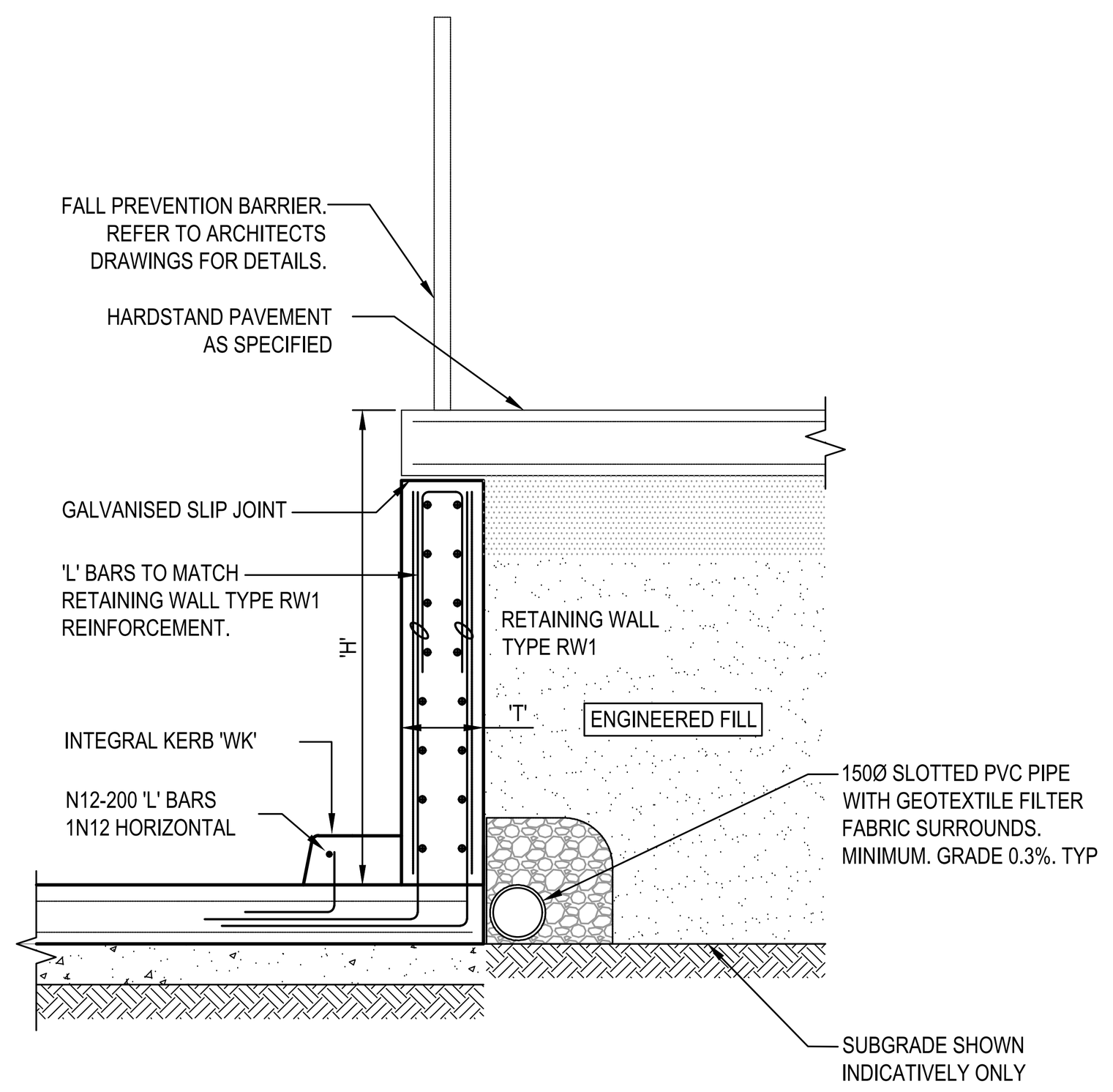
TYPICAL ISOLATION JOINT - IJ
SCALE 1:20



TYPICAL DIAMOND DOWEL JOINT - DDJ
SCALE 1:20



TYPICAL JOINT SEALANT TYPE 'E'
SCALE 1:1

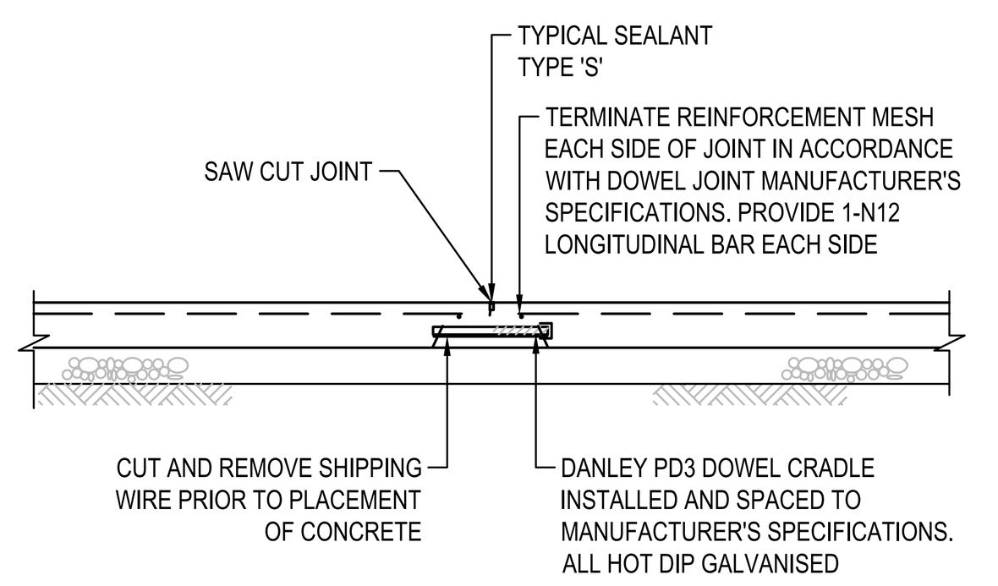


TYPICAL LOADING DOCK RETAINING WALL DETAIL
SCALE 1:20

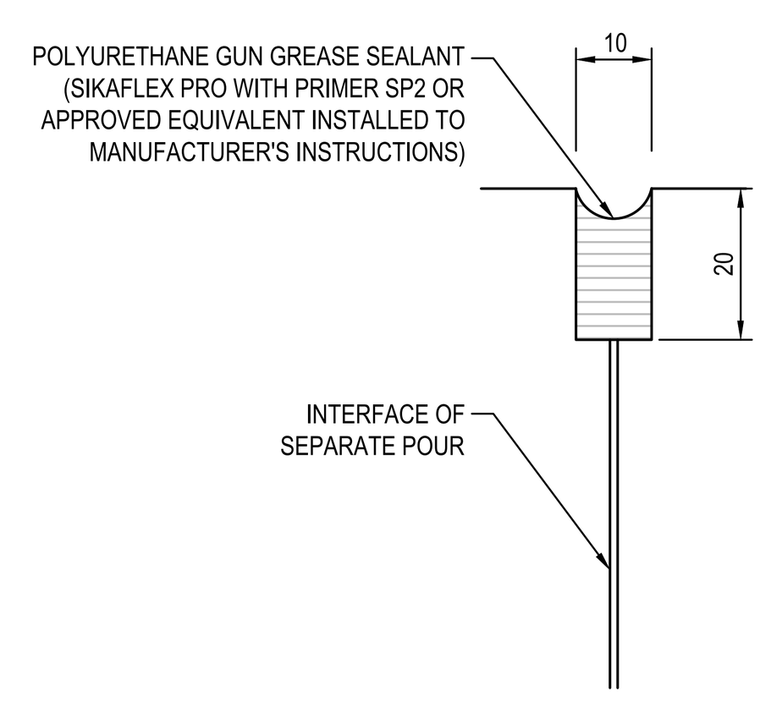
NOTES:
1. RETAINING WALL BASE TO BE FOUNDED ON GROUND WITH ALLOWABLE BEARING CAPACITY OF 150kPa OR BETTER T.B.C BY GEOTECHNICAL ENGINEER.
2. WHERE ALLOWABLE BEARING IS INSUFFICIENT, FOOTINGS SHALL BE EXCAVATED UNTIL THE REQUIRED FOUNDING MATERIAL IS REACHED AND CONFIRMED BY GEOTECHNICAL ENGINEER. OVER-EXCAVATION SHALL BE BACKFILLED WITH N15 CONCRETE.
3. EXCAVATION OF BACKFILL FOR SERVICES INSTALLATION MUST BE REINSTATED TO REQUIREMENTS OF THE BACKFILL SPECIFICATION.
4. ALL EXPOSED FACES OF CONCRETE RETAINING WALLS TO HAVE CLASS 2 SURFACE FINISH IN ACCORDANCE WITH AS 3610 U.N.O.

RETAINING WALL SCHEDULE

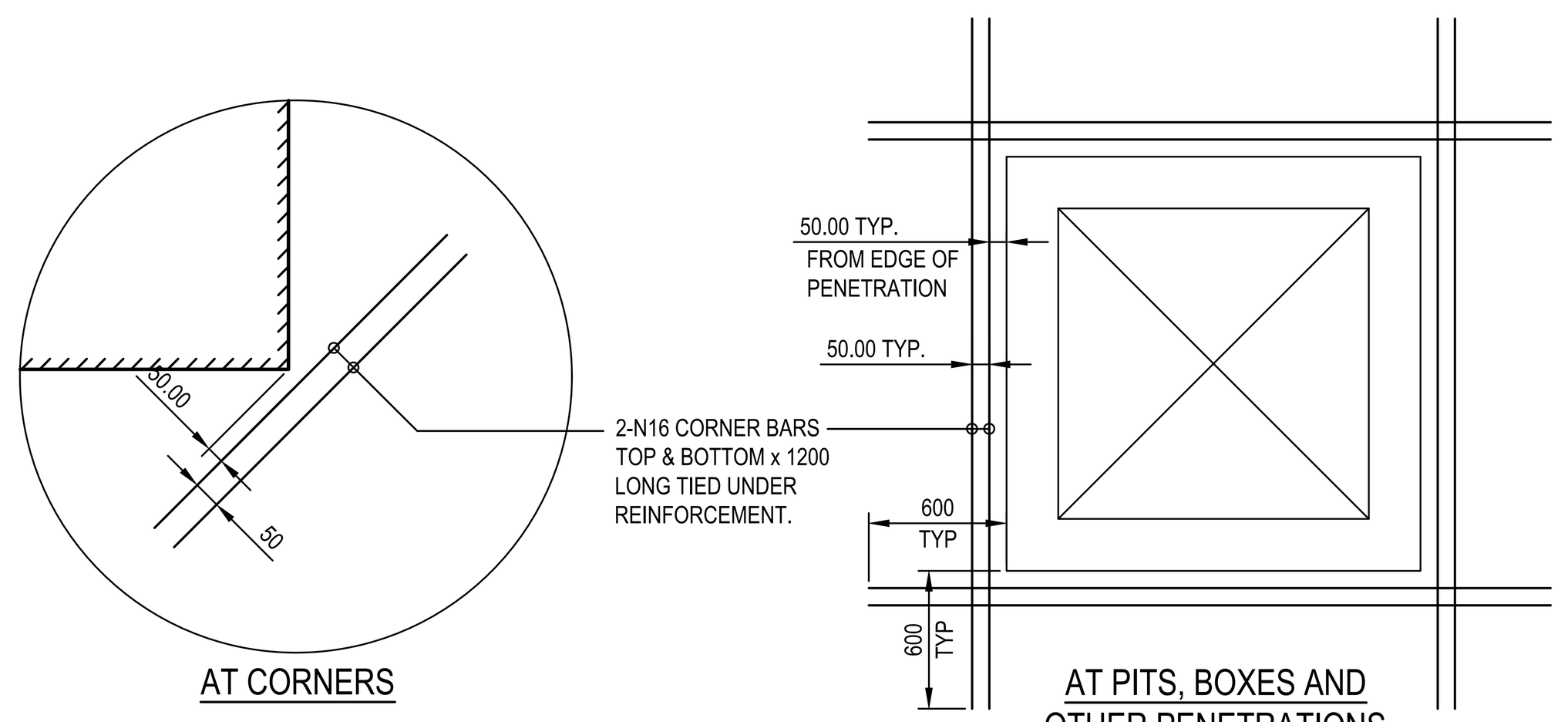
TYPE	WALL HEIGHT	MIN. WALL THICKNESS	BASE WIDTH	MIN. BASE DEPTH	REINFORCEMENT	COMMENT
	'H'	'T'	'L'	'D1'	'V' BARS	
RW1	0 - 1300	300	1500	300	N16-200 EACH FACE	INTERNAL RETAINING WALL - 12kPA SURCHARGE



TYPICAL CONTINUOUS POUR DOWEL JOINT - CDJ
SCALE 1:20



TYPICAL JOINT SEALANT TYPE 'D'
SCALE 1:1

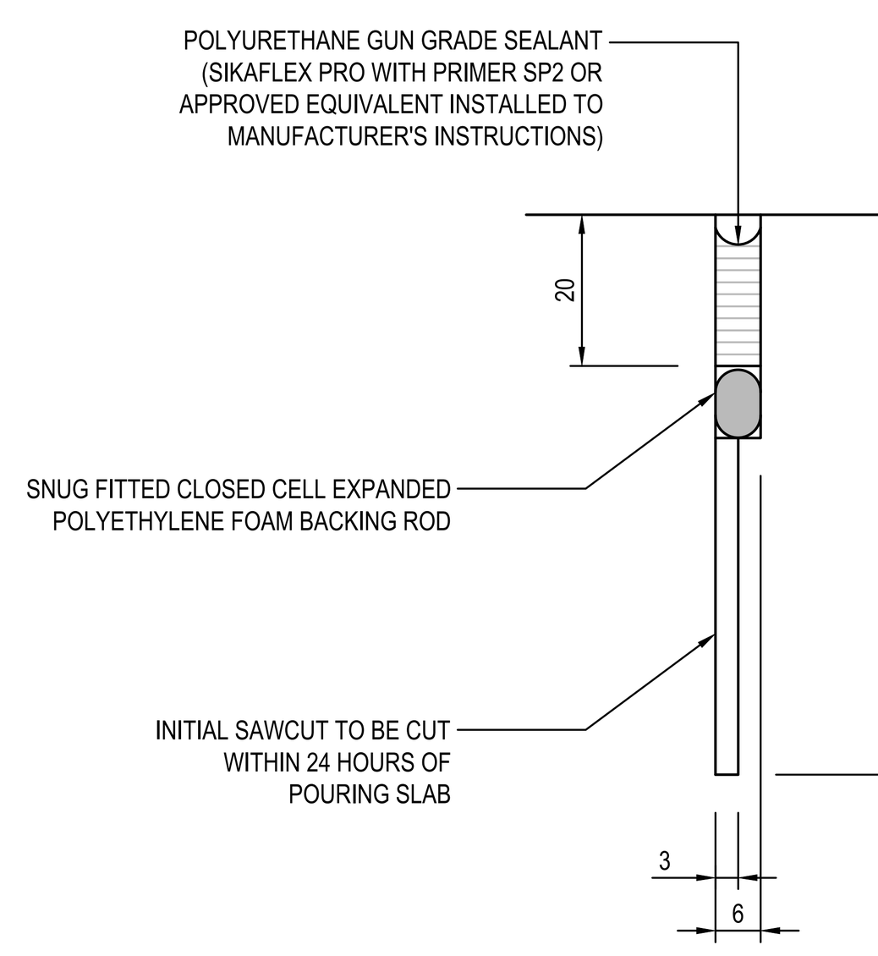


AT CORNERS

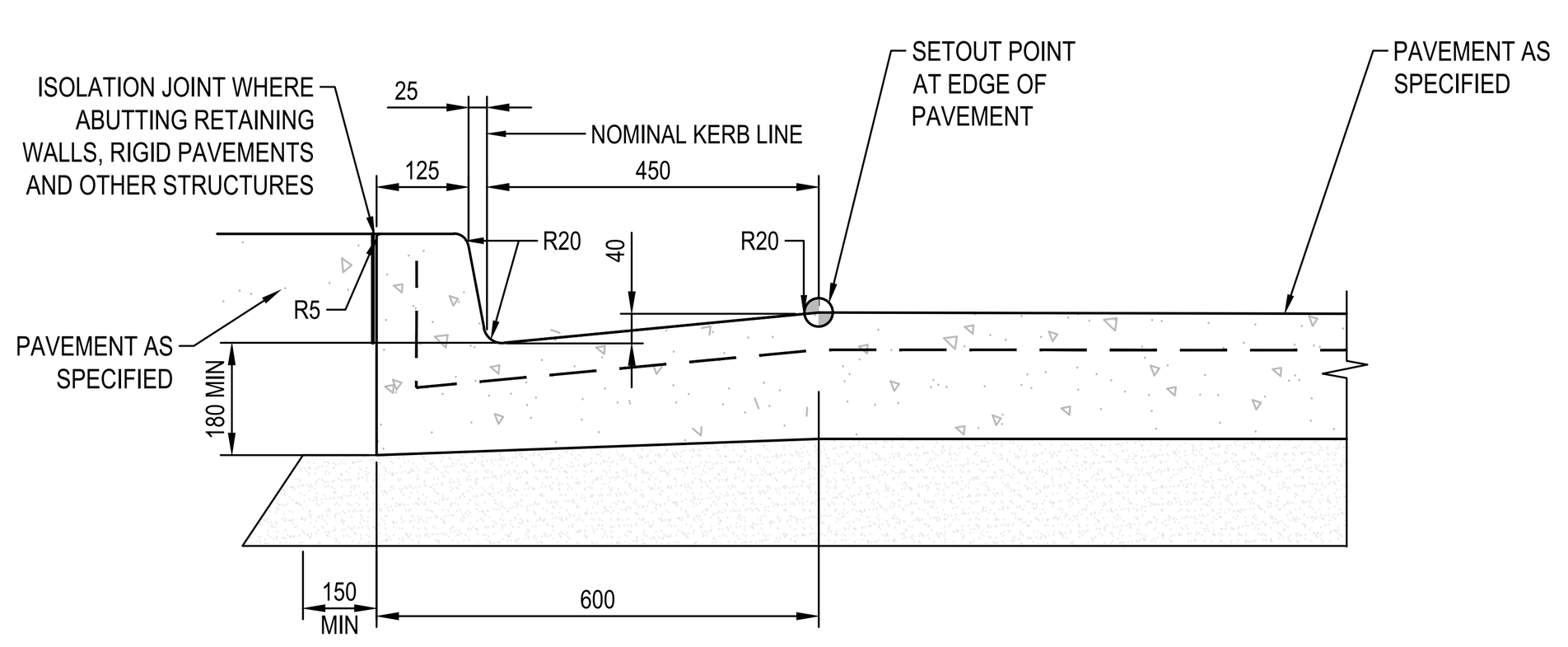
AT PITS, BOXES AND OTHER PENETRATIONS

TYPICAL TRIMMER BAR DETAIL
SCALE 1:20

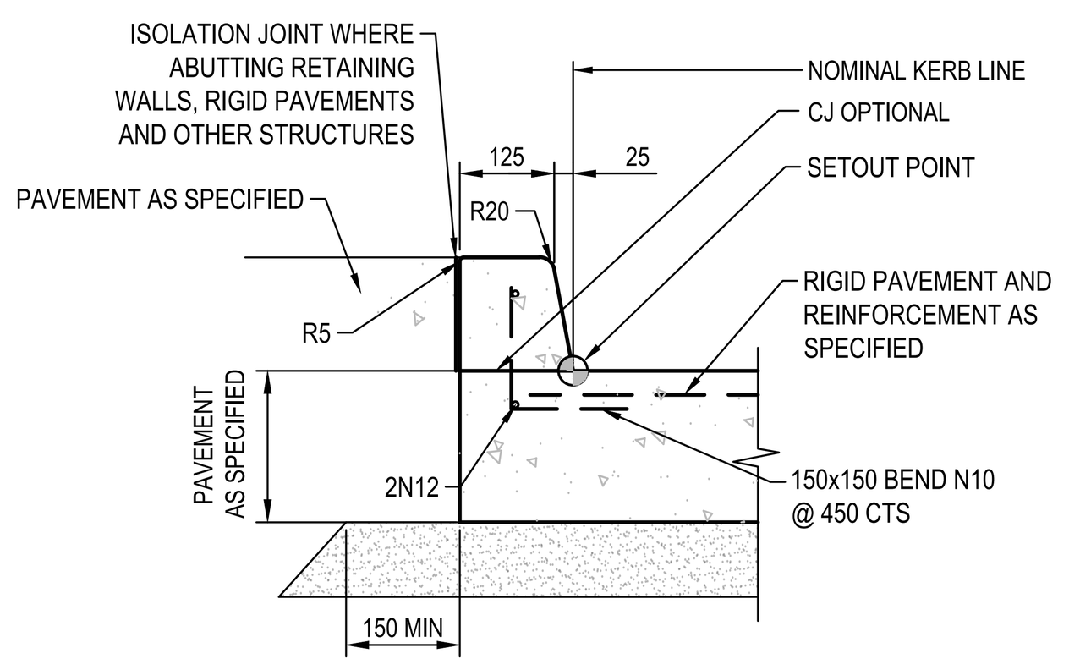
1. TRIMMER BARS:
   1.1. TO BE CONSTRUCTED AT ALL PENETRATIONS IN AIRCRAFT/VEHICLE CONCRETE PAVEMENTS INCLUDING BUT NOT LIMITED TO:
   - ALL SERVICE PITS
   - ALL DRAINAGE STRUCTURES
   - ALL VALVE BOXES
   - ALL IN-GROUND FIRE HYDRANTS
   - ALL PROTRUDING CORNERS OF STRUCTURES OR SLABS
   - ALL COLUMNS PENETRATING CONCRETE PAVEMENT
2. CONSTRUCT 2-N16 TRIMMER BARS (1200LONG, TOP AND BOTTOM) AT ALL MISMATCHED OR DISCONTINUOUS JOINTS. TYPICAL



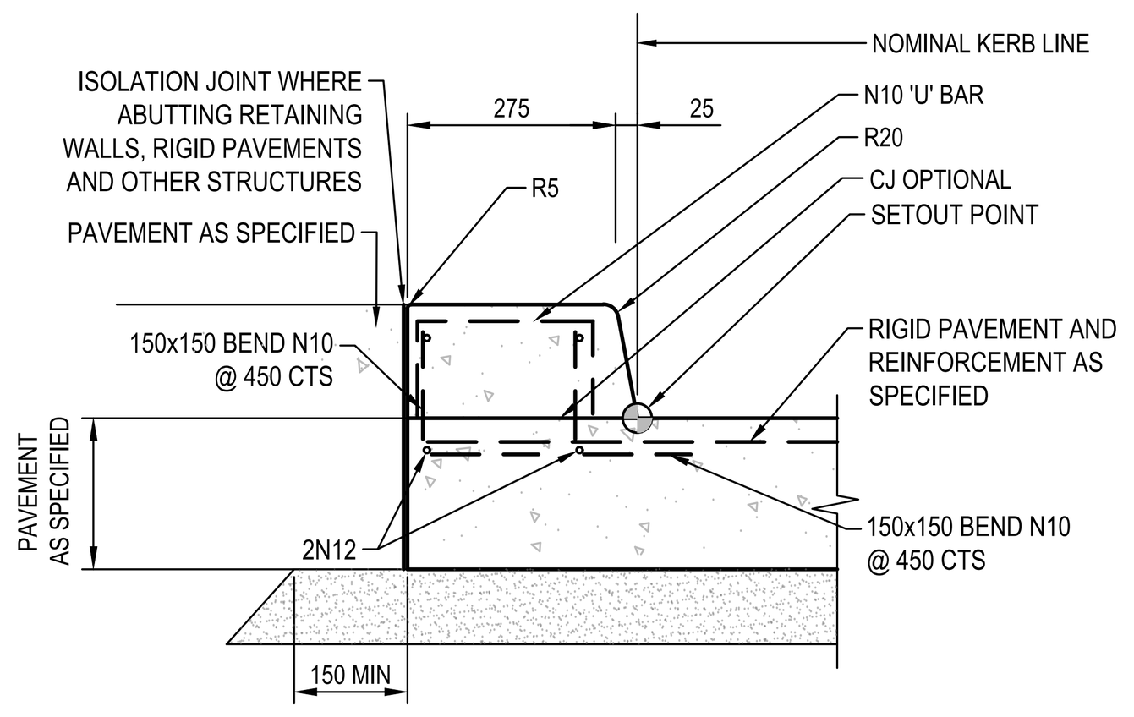
TYPICAL JOINT SEALANT TYPE 'S'
SCALE 1:1



INTEGRAL KERB & GUTTER (K&G)
SCALE 1:10



INTEGRAL KERB (IK)
SCALE 1:10



INTEGRAL WIDE KERB (WK)
SCALE 1:10

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures
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Client
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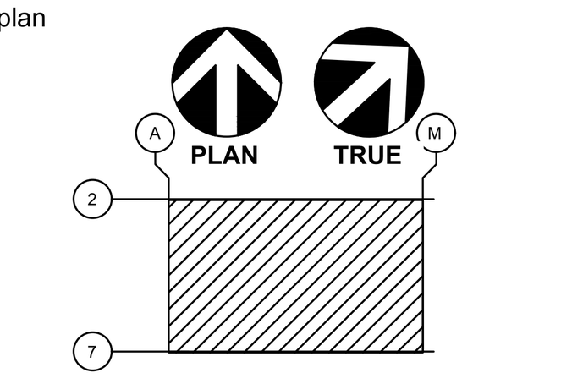
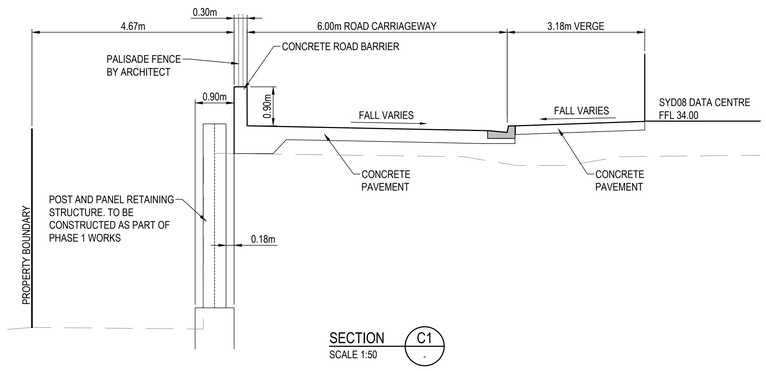
Keyplan



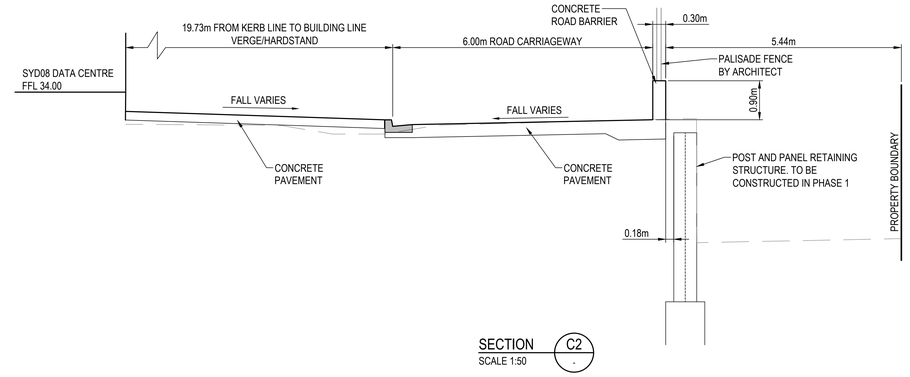
Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
DETAILS
SHEET 1

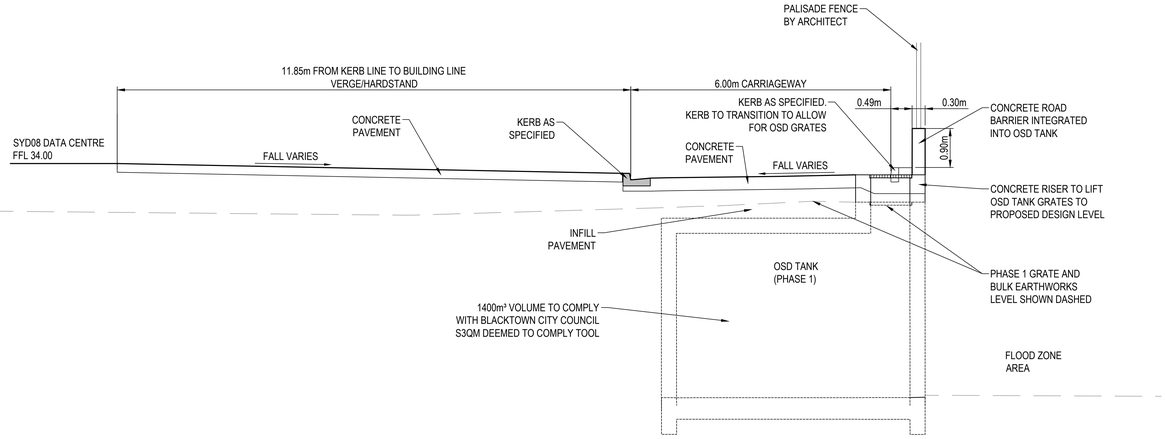
Status: ISSUE FOR SSDA
Scale @ A0: AS SHOWN
Project No.: NSW202013
Drawing No.: NSW202013_C101.05 B



SECTION C1
SCALE 1:50



SECTION C2
SCALE 1:50



SECTION C3
SCALE 1:50

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures

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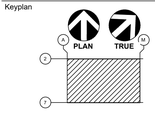
Keyplan



Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
DETAILS
SHEET 2

Status: ISSUE FOR SSDA
Scale @ A0: AS SHOWN
Project No.: NSW202013
Drawing No.: NSW202013_C101.06 B

A0
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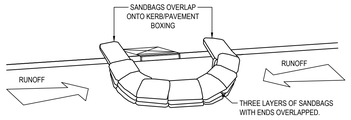
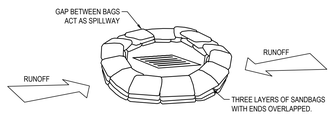


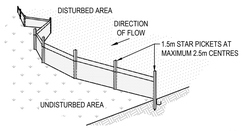
SANDBAG SEDIMENT TRAP - AT KERB SAG PIT

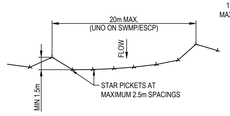


SANDBAG SEDIMENT TRAP - AT OTHER THAN KERB SAG PIT

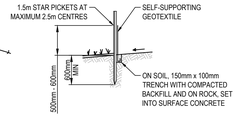
SANDBAG SEDIMENT TRAP DETAILS

NTS





PLAN



SECTION DETAIL

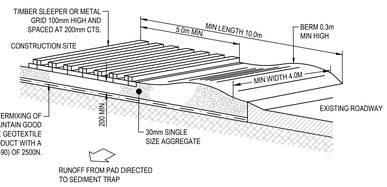
CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 2.5 METRES APART (MAX). ENSURE STAR PICKETS ARE FITTED WITH SAFETY CAPS.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

SEDIMENT CONTROL FENCE

N.T.S.

NOTE
ENSURE THAT ALL UTILITY ASSETS ARE MAINTAINED AND PROTECTED AT ALL TIMES IN THE VICINITY OF THE TEMPORARY CONSTRUCTION EXIT



CONSTRUCTION NOTES

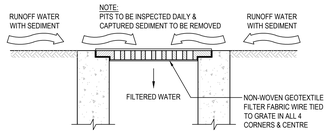
1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE.
3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING 30mm SINGLE SIZE AGGREGATE.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP WHERE THE SEDIMENT IS COLLECTED AND REMOVED.

MAINTENANCE NOTES

THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT OFF THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED OFF THE CONSTRUCTION SITE MUST BE REMOVED IMMEDIATELY.

TEMPORARY STABILISED CONSTRUCTION EXIT

N.T.S.

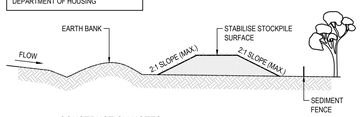


INLET TRAP

N.T.S.

NOTE
TO BE USED IN PAVED AREAS WHERE TRAFFIC ACCESS IS REQUIRED

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION. THIRD EDITION, AUGUST 1998 PRODUCED BY THE DEPARTMENT OF HOUSING

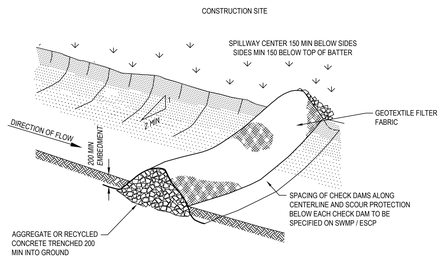


CONSTRUCTION NOTES

1. LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT, ELONGATED MOUND.
3. WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
5. CONSTRUCT EARTH BANK (STANDARD DRAWING 5-2) ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE (STANDARD DRAWING 6-7) 1 TO 2 METRES DOWNSLOPE OF STOCKPILE.

STOCKPILES

N.T.S.



CHECK DAM - ROCK

SCALE 1:20

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

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Keyplan

PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
DETAILS
SHEET 3

Status: ISSUE FOR SSDA
Scale @ A0: AS SHOWN
Project No.: NSW202013
Drawing No.: NSW202013_C101.07 B

A0 150

Plotted: 3/22/2022 12:10 PM

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

SECTION 1
SCALE 1:20

MINIMUM INTERNAL PIT DIMENSIONS		
"D"	"X"	"Y"
D ⩽600	450	450*
D ⩽900	600	600*
D ⩽1200	600	900
D ⩾1200	900	900

NOTE
PITS DENOTED * SHALL BE USED ONLY. WHERE SPECIFIED IN DRAINAGE SCHEDULE OR ON PLAN.

CONFINED SPACE DANGER SIGN

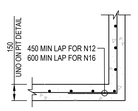
NOTES

1. A CONFINED SPACE SIGN SHALL BE PLACED NEXT TO EACH AND EVERY ACCESS POINT THEY ARE VISIBLE TO PERSON ENTERING ANY BELOW GROUND TANK OR PIT.
2. COLOURS :
   - "DANGER" AND BACKGROUND - WHITE
   - ELLIPTICAL AREA - RED
   - LETTERING AND BORDER - BLACK
3. MINIMUM OF THE SIGN:
   - LARGE ENTRIES - 300mm x 450mm
   - SMALL ENTRIES - 250 mm x 180mm
4. SIGN TO BE MADE FROM COLOUR BONDED ALUMINIMUM OR POLYPROPYLENE
5. SIGN FIXED USING HILTI CHEMSETS OR EPOXY

PLAN

SURFACE INLET/JUNCTION PIT - TYPE A

SCALE 1:20



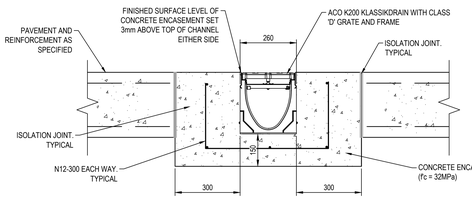
TYPICAL PIT CORNER DETAIL

SCALE 1:20

Span <= 1.5m	Wall Dimensions (mm)				
Depth "h"	Base thickness "d"	Wall thickness "w"	Vertical reinf.	Hor.reinf.	Base Reinf. BW
up to 2m	150.0	150.0	N12@200	N12@200	N12@200
up to 4m	200.0	175.0	N12@200	N12@200	N12@200
up to 6m	200.0	200.0	N12@200	N12@200	N12@200
up to 8m	230.0	230.0	N16@200	N16@200	N16@200
Span 1.5 to 2.5m	Wall Dimensions (mm)				
Depth "h"	Base thickness "d"	Wall thickness "w"	Vertical reinf.	Hor.reinf.	Base Reinf. BW
up to 2m	150.0	200.0	N12@200	N12@200	N12@200
up to 4m	200.0	200.0	N16@200	N16@200	N16@200
up to 6m	230.0	230.0	N16@200	N16@200	N16@200
up to 8m	250.0	250.0	N16@200	N16@200	N16@200

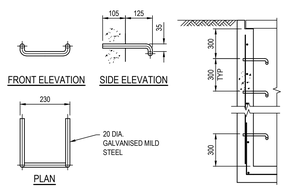
PIT DIMENSION TABLE

NOTE: FOR PIT DIMENSIONS AND REINFORCEMENT REFER TABLE ABOVE



HEAVY DUTY GRATED DRAIN (GD2)

SCALE 1:10



STEP IRON DETAIL

N.T.S.

NOTE: WHERE STEP IRONS WILL BE FULLY SUBMERGED, 306 STAINLESS STEEL STEP IRONS SHALL BE USED OR OTHER APPROVED STEP IRON

COMMERCIAL IN CONFIDENCE

Lead Consultant / MEP / Structures

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Keyplan

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
DETAILS
SHEET 4

Status: ISSUE FOR SSDA

Scale @ A0: AS SHOWN

Project No.: NSW202013

Drawing No.: NSW202013_C101.08 B

File: P:\NSW\NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C101.08.dwg

A0
150

Plotted: 3/22/2022 2:43 PM

PHASING LEGEND

PHASE 1

APPROVED WORKS TO BE CONSTRUCTED AS PART OF THE DEVELOPMENT CONSENT DA-21-01058 ISSUED BY BLACKTOWN CITY COUNCIL

- PHASE 1 — CONSTRUCTED UNDER SYD09 DEVELOPMENT APPLICATION NUMBER DA-21-01058
- PHASE 1 — STORMWATER INFRASTRUCTURE CONSTRUCTED UNDER SYD09 DEVELOPMENT APPLICATION NUMBER DA-21-01058
- PHASE 1 — RETAINING WALL

PHASE 2

- PHASE 2 — ROADWAYS AND GENERAL HARDSTAND
- PHASE 2 — PLANT AND GENERATOR YARD HARDSTAND
- PHASE 2 — DATA CENTRE BUILDING
- PHASE 2 — STORMWATER AND DRAINAGE PITS AND PIPELINES
- PHASE 1 — REDUNDANT STORMWATER INFRASTRUCTURE TO BE DECOMMISSIONED AS PART OF PHASE 2 WORKS

MAIN ENTRANCE DRIVEWAY TO BE CONSTRUCTED AS PART OF PHASE 1 WORKS

STORMWATER INFRASTRUCTURE CONSTRUCTED AS PART OF PHASE 1 WORKS TO BE RETAINED (U.N.O.)

STEEL POST AND PRECAST CONCRETE PANEL RETAINING WALL CONSTRUCTED AS PART OF PHASE 1 WORKS

PLANT AND EQUIPMENT LAYOUT FOR PHASE 2 WORKS SHOWN INDICATIVE ONLY. FINAL LAYOUT TO BE DETERMINED PRIOR TO CONSTRUCTION CERTIFICATE.

COMPENSATORY FLOOD STORAGE ZONE RE-GRADING TO BE CONSTRUCTED AS PART OF PHASE 1 WORKS. NO CHANGES TO SURFACE LEVELS PROPOSED AS PART OF PHASE 2 WORKS

40kL TOTAL CAPACITY RAINWATER TANK CONSTRUCTED AS PART OF PHASE 2 TO SATISFY BCC WATER CONSERVATION REQUIREMENTS

ON-SITE DETENTION TANK SERVICING ENTIRE DEVELOPMENT FOOTPRINT CONSTRUCTED AS PART OF PHASE 1 WORKS

HYDRAULIC PLANT ENCLOSURE ROOF OUTLINE

STEEL ACCESS STAIRS CONSTRUCTED AS PART OF PHASE 1 WORKS

40kL TOTAL CAPACITY RAINWATER TANK CONSTRUCTED AS PART OF PHASE 2 TO SATISFY BCC WATER CONSERVATION REQUIREMENTS

RAINWATER TANK CONSTRUCTED AS PART OF PHASE 1 WORKS

PHASE 1 - SINGLE STOREY DATA CENTRE DEVELOPMENT

SECONDARY EMERGENCY DRIVEWAY TO BE CONSTRUCTED AS PART OF PHASE 1 WORKS

LANDSCAPED BUFFER STRIP BEHIND CARPARKING TO BE CONSTRUCTED AS PART OF PHASE 2 WORKS

STORMWATER DRAINAGE PIPELINES AND PITS CONSTRUCTED AS PART OF PHASE 1 WORKS TO BE MADE REDUNDANT FOR PHASE 2 BUILDING WORKS. DEMOLISH AND REMOVE FROM SITE

STORMWATER HEADWALL OUTLET, DISCHARGE PIPELINE AND GPT TO BE CONSTRUCTED AS PART OF PHASE 1 WORKS

STATION ROAD

MCCOY STREET

SCALE 1:250 @ A0 — 0 2.5 5 10 15 20 25 metres

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures
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Keyplan
PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
GENERAL ARRANGEMENT AND PHASING PLAN

Status: ISSUE FOR SSDA
Scale @ A0: 1:250
Project No.: NSW202013
Drawing No.: NSW202013_C101.10 B

COMMERCIAL IN CONFIDENCE

File: P:\NSW20\NSW202013_SYD08\Drawings\CAD\CIVIDrawings\SSDA\NSW202013_SYD08_C101.10.dwg

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NOTES

1. IN-GROUND PIT AND PIPELINE SYSTEM HAS BEEN DESIGNED TO COLLECT AND CONVEY THE 4% AEP (25-YEAR ARI) STORM EVENT IN ACCORDANCE WITH CLIENT REQUIREMENTS.
2. ROOF DRAINAGE SYSTEM IS SHOWN INDICATIVELY ONLY FOR STORMWATER MANAGEMENT PURPOSES. EXACT ALIGNMENT AND DETAILS TO BE CONFIRMED BY THE HYDRAULIC CONSULTANT DURING CONSTRUCTION CERTIFICATE DOCUMENTATION.

USIL33.20 Ø225RCP'2' 2.53% 23.58 m DSIL32.61

USIL32.48 Ø300RCP'2' 1.00% 14.39 m DSIL32.34

MAKE GOOD WATERTIGHT CONNECTION TO PHASE 1 STORMWATER PIT

CONSTRUCT PAS68 RATED REMOVABLE BOLLARDS (B3) WHERE ELECTRICAL AND OTHER CRITICAL PLANT IS WITHIN 3 METRES OF ROAD CARRIAGEWAY. MAX 1.2m SPACING. TYPICAL

PHASE 1 STORMWATER PITS SHAL BE CONVERTED TO KERB INLET PI TO SUIT PROPOSED KERB LINE AND LEVELS. TYPICAL UNO

PROPOSED DRIVEWAY FOR LOAD BANK ACCESS

POST AND PANEL RETAINING WALL SYSTEM CONSTRUCTED AS PART OF PHASE 1 WORKS UNDER BLACKTOWN CITY COUNCIL DA-21-01058 (TYP UNO)

INTEGRAL CONCRETE ROAD BARRIER AT EDGE OF ROAD CARRIAGEWAY. REFER TO SECTION C1 AND C2 ON DRAWING NSW202013_C1.06

CONSTRUCT PAS68 RATED REMOVABLE BOLLARDS (B3) WHERE ELECTRICAL AND OTHER CRITICAL PLANT IS WITHIN 3 METRES OF ROAD CARRIAGEWAY. MAX 1.2m SPACING, TYPICAL

USIL32.27 Ø450RCP'3' 1.25% 27.87 m DSIL31.92

USIL31.45 Ø525RCP'2' 1.0 % 19.53 m DSIL31.25

USIL31.20 Ø675RCP'2' 1.0 % 20.04 m DSIL31.00

USIL30.95 Ø675RCP'2' 1.0 % 13.50 m DSIL30.81

USIL30.79 Ø675RCP'2' 1.8 % 22.00 m DSIL30.51

USIL30.46 Ø675RCP'2' 1.0 % 11.54 m DSIL30.35

USIL30.30 Ø675RCP'2' 1.0 % 5.96 m DSIL30.24

USIL32.46 Ø375RCP'3' 1.00% 14.52 m DSIL32.32

EXISTING STORMWATER PIT FROM PHASE 1 SHALL BE CONVERTED TO KERB INLET PIT

USIL32.67 Ø375RCP'3' 1.00% 15.51 m DSIL32.51

USIL33.31 Ø300RCP'3' 1.22% 29.89 m DSIL32.94

USIL32.89 Ø300RCP'3' 1.00% 4.11 m DSIL32.85

USIL32.94 Ø225RCP'3' 1.00% 8.56 m DSIL32.85

RAINWATER TANK BELOW CONSTRUCTED AS PART OF PHASE 1 WORKS

USIL33.22 Ø300RCP'2' 2.02% 13.58 m DSIL32.95

2.5m WIDE x 5.4m LONG PARKING BAYS - TYPICAL

USIL32.14 Ø300RCP'2' 1.0 % 8.73 m DSIL32.05

EXISTING STORMWATER PIT FROM PHASE 1 SHALL BE RECONSTRUCTED TO KERB INLET PIT

USIL31.59 Ø300RCP'2' 1.0 % 16.01 m DSIL31.43

USIL33.52 Ø300RCP'3' 2.31% 12.60 m DSIL33.23

USIL33.06 Ø300RCP'2' 3.24% 23.10 m DSIL32.31

Ø150 uPVC SN8 @ 1% FALL TO STORMWATER PIT

RECESSED LOADING DOCK STORMWATER DRAINAGE TO CONNECT TO TRUNK STORMWATER SYSTEM CONSTRUCTED AS PART OF PHASE 1 WORKS. LOADING DOCK GRAVITY DRAINAGE SYSTEM DESIGNED FOR 1% AEP STORM EVENT

INDICATIVE ALIGNMENT FOR ROOF GRAVITY DRAINAGE FROM ADMIN BUILDING. CONNECT TO IN-GROUND STORMWATER SYSTEM WITH MINIMUM 1% FALL

CONSTRUCT DISABLED CAR PARKING AND SHARED ZONE IN ACCORDANCE WITH AS/NZS 2890.6 REQUIREMENTS

2% CROSSFALL IN FOOTPATH TYPICAL

INDICATIVE ALIGNMENT FOR ROOF GRAVITY DRAINAGE FROM ADMIN BUILDING. CONNECT TO IN-GROUND STORMWATER SYSTEM WITH MINIMUM 1% FALL

PROPOSED PARALLEL CAR PARKING. REFER TO ARCHITECTURAL DRAWINGS

FFL 34.00

EXISTING TEMPORARY STORMWATER PITS AND PIPELINES TO BE DEMOLISHED AND REMOVED FROM SITE

MINIMUM 40kL TOTAL CAPACITY (35kL EFFECTIVE CAPACITY) RAINWATER TANK CONNECTED TO ALL TWO-STOREY DATA CENTRE TOILETS AND IRRIGATION. REFER TO DRAWING C103.11 FOR WATER CONSERVATION STRATEGY

SIPHONIC ROOF DRAINAGE DROPPER CONNECTING TO RAINWATER TANK. SIPHON BREAK AND FIRST FLUSH TO FUTURE DETAIL. TYPICAL

Ø300 OVERFLOW FROM RAINWATER TANK TO OSD

MINIMUM 40kL TOTAL CAPACITY (35kL EFFECTIVE CAPACITY) RAINWATER TANK CONNECTED TO ALL TWO-STOREY DATA CENTRE TOILETS AND IRRIGATION. REFER TO DRAWING C103.11 FOR WATER CONSERVATION STRATEGY

Ø300 OVERFLOW FROM RAINWATER TANK TO OSD

USIL31.38 Ø375RCP'3' 0.5 % 29.74 m DSIL31.23

USIL31.18 Ø525RCP'2' 0.5 % 20.0 m DSIL31.08

USIL31.03 Ø525RCP'2' 0.5 % 20.00 m DSIL30.93

USIL30.88 Ø525RCP'2' 1.0 % 19.98 m DSIL30.68

USIL30.63 Ø525RCP'2' 1.05% 18.69 m DSIL30.44

USIL30.39 Ø525RCP'2' 1.12% 7.27 m DSIL30.30

USIL30.25 Ø525RCP'2' 1.26% 13.67 m DSIL30.08

USIL27.70 Ø600RCP'2' 0.50% 10.47 m DSIL27.65

USIL27.82 Ø600RCP'2' 0.97% 6.95 m DSIL27.75

USIL27.65 Ø600RCP'2' 0.50% 9.99 m DSIL27.60

GROSS POLLUTANT TRAP AND STORMWATER OUTLET TO DRAINAGE SWALE CONSTRUCTED AS PART OF PHASE 1 WORKS UNDER BLACKTOWN CITY COUNCIL DA-21-01058

SUSPENDED STEEL ACCESS STAIRS CONSTRUCTED AS PART OF PHASE 1 WORKS. ALLOW NOMINAL 1.5m OPENING IN CONCRETE ROAD BARRIER FOR ACCESS AND OSD EMERGENCY OVERFLOWS

OSD TANK BELOW. CONSTRUCTED AS PART OF PHASE 1 WORKS UNDER BLACKTOWN CITY COUNCIL DA-21-01058

PLANT YARD HARDSTAND TO FALL TOWARDS ROAD CARRIAGEWAY AND DRAINAGE STRUCTURES. DETAILED GRADING AROUND PLINTHS AND STRUCTURES TO BE CONFIRMED DURING CONSTRUCTION CERTIFICATE DESIGN

CONSTRUCT KERB SLOTS AT EACH ON-SITE DETENTION GRATE. ENSURE CONSISTENT FALL IN PAVEMENT SURFACE TO EACH GRATE. TYPICAL

EXISTING DRAINAGE SWALE AND EASEMENT TO BE RETAINED

CONSTRUCT A 1.0m WIDE BY 0.3m HIGH SLOT WITHIN CONCRETE BARRIER ABOVE EACH GRATE FOR OSD OVERFLOWS

FLOOD STORAGE ZONE LEVELS TO REMAIN IN ACCORDANCE WITH THE APPROVED DESIGN UNDER BLACKTOWN CITY COUNCIL DA-21-01058

ABT. 29m TO CENTRE OF BLACKTOWN CREEK

DP 1071476 9 | SP 76250 | SP 74275 | SP 78424 | DP 1067966 3

SCALE 1:200 @ A0 (0 2 4 8 12 16 20 metres)

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures
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Keyplan
PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
CIVIL WORKS PLAN

Status: ISSUE FOR SSDA
Scale @ A0: 1:200
Project No.: NSW202013
Drawing No.: NSW202013_C103.01 B

File: P:\NSW\2NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C103.01.dwg

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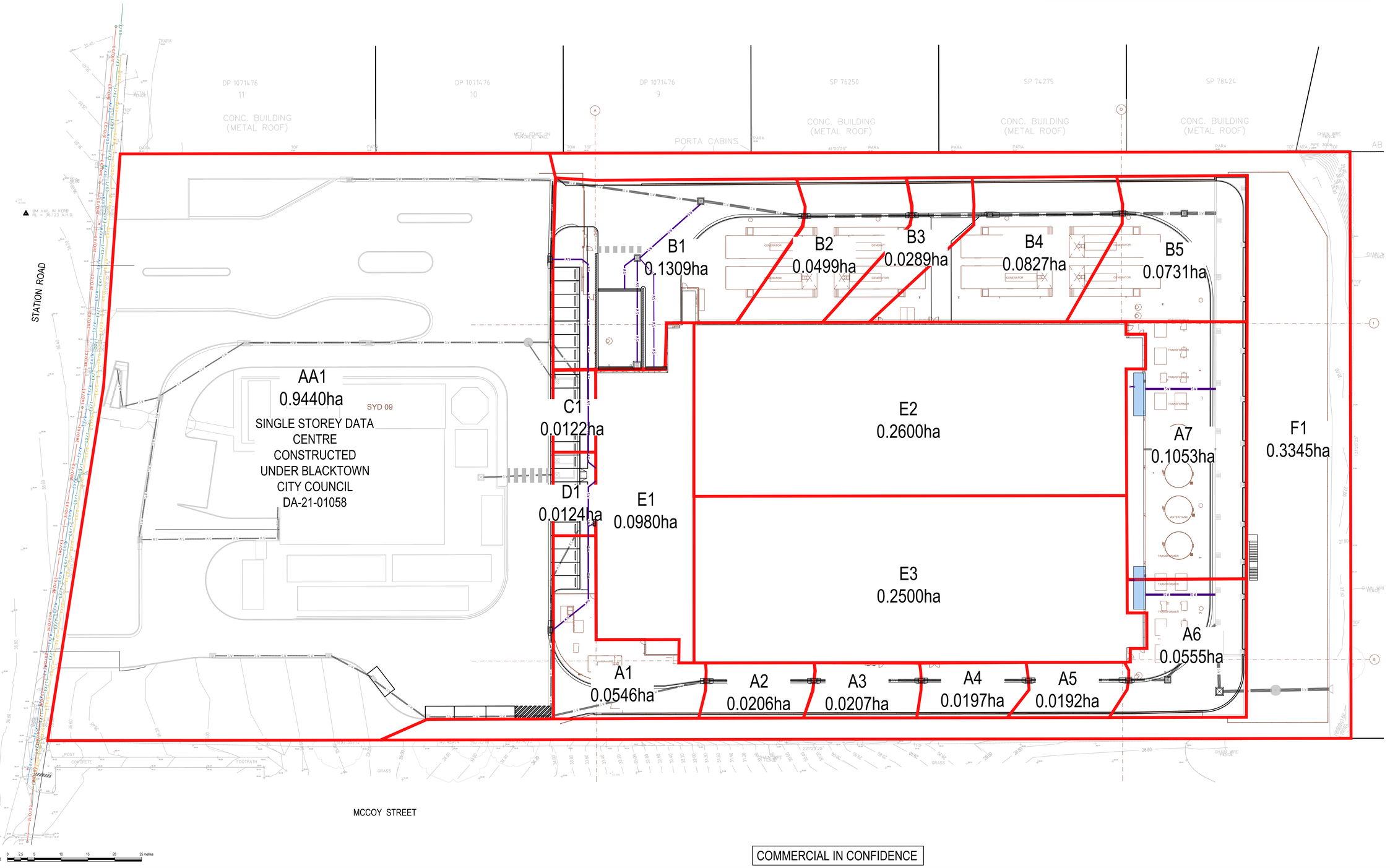
NAME	AREA (Ha)	BYPASS OR OSD	REMARKS
AA1	0.9440	OSD	DATA CENTRE CONSTRUCTED UNDER BLACKTOWN CITY COUNCIL DA-21-01058
A1	0.0531	OSD	
A2	0.0206	OSD	
A3	0.0207	OSD	
A4	0.0197	OSD	
A5	0.0192	OSD	
A6	0.0555	OSD	
A7	0.1053	OSD	
B1	0.1309	OSD	
B2	0.0499	OSD	
B3	0.0289	OSD	
B4	0.0827	OSD	
B5	0.0731	OSD	
C1	0.0122	OSD	
D1	0.0124	OSD	
E1	0.098	OSD	
E2	0.2600	OSD	ROOF TO RAINWATER TANK
E3	0.2500	OSD	ROOF TO RAINWATER TANK
F1	0.3338	BYPASS	
TOTAL TO OSD	2.2362		TOTAL CATCHMENT TO OSD
EXTERNAL	0.3338	BYPASS	EXTERNAL AREA TO RETAINING WALL
TOTAL	2.5700		TOTAL SITE CATCHMENT INCLUDING BYPASS



SCALE 1:250 @ A0 — 0 2.5 5 10 15 20 25 metres

A0 — 150

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
C	ISSUE FOR SSDA	22.03.22	RG	MB
B	ISSUE FOR SSDA	18.03.22	RG	MB
A	ISSUE FOR SSDA	14.03.22	RG	MB

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Keyplan

PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
STORMWATER CATCHMENT PLAN

Status: ISSUE FOR SSDA

Scale @ A0: 1:250

Project No.: NSW202013

Drawing No.: NSW202013_C103.10 C

File: P:\NSW\2NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C103.10.dwg

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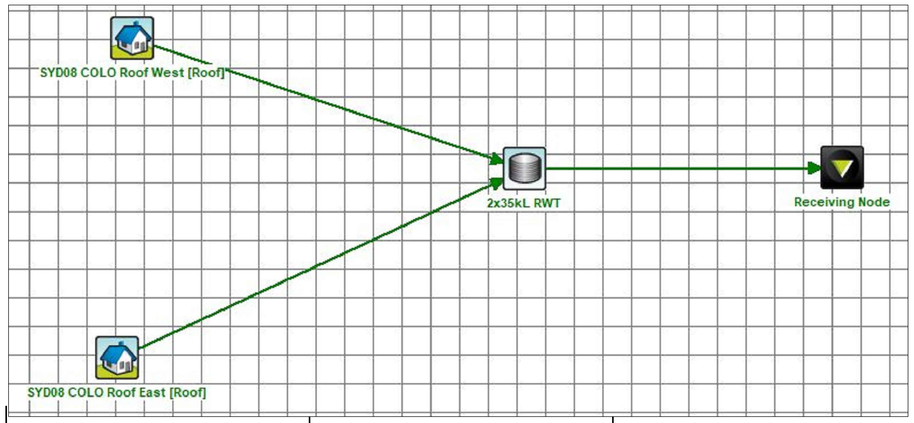
NOTES

1. REFER TO LANDSCAPE ARCHITECTURAL DRAWINGS FOR DETAILS OF PLANTING AREAS AND TYPES
2. GROUND COVER AREAS IDENTIFIED WITHIN THE LANDSCAPE ARCHITECTURAL DRAWINGS AS NOT REQUIRING IRRIGATION HAVE BEEN EXCLUDED FROM THE WATER BALANCE CALCULATIONS
3. IRRIGATION TO THE EXISTING DRAINAGE SWALE GROUND COVER HAS NOT BEEN INCLUDED IN WATER BALANCE CALCULATIONS

Node Water Balance - 2x35kL RWT

	Flow (ML/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	GP (kg/yr)
Flow In	3.73	98.27	0.57	8.20	97.18
ET Loss	0.00	0.00	0.00	0.00	0.00
Infiltration Loss	0.00	0.00	0.00	0.00	0.00
Low Flow Bypass Out	0.00	0.00	0.00	0.00	0.00
High Flow Bypass Out	0.00	0.00	0.00	0.00	0.00
Pipe Out	2.81	64.36	0.42	6.07	0.00
Weir Out	0.00	0.02	0.00	0.00	0.00
Transfer Function Out	0.00	0.00	0.00	0.00	0.00
Reuse Supplied	0.92	13.20	0.12	1.77	0.00
Reuse Requested	1.12	0.00	0.00	0.00	0.00
% Reuse Demand Met	82.05	0.00	0.00	0.00	0.00
% Load Reduction	24.55	34.49	26.90	25.97	100.00

Decimal Places 2



STATION ROAD

MCCOY STREET

SYD 09

CAT R2
A = 0.2600ha

CAT R1
A = 0.2500ha

CAT L2
A = 0.1055ha

CAT L1
A = 0.0250ha

TOTAL LANDSCAPE AREA REQUIRING IRRIGATION = 1,305m2
IRRIGATION RATE = 0.4kL/m2/year
ANNUAL IRRIGATION DEMAND = 522kL

GROUNDCOVER AND GRANULAR ACCESS FOOTWAY NOT REQUIRING IRRIGATION. REFER TO LANDSCAPE ARCHITECTURAL DRAWINGS

DRAINAGE SWALE WITH GROUND COVER EXCLUDED FROM IRRIGATION CALCULATIONS

NORTHERN SETBACK LANDSCAPE ZONE REQUIRING IRRIGATION

1.5m EASTERN LANDSCAPE ZONE REQUIRING IRRIGATION

PORTA CABINS

CONC. BUILDING (METAL ROOF)

DP 1071476 11

DP 1071476 10

DP 1071476 9

SP 76250

SP 74275

SP 78424

SCALE 1:250 @ A0

0 2.5 5 10 15 20 25 metres

COMMERCIAL IN CONFIDENCE

No.	Description	Date	By	Chk
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A	ISSUE FOR SSDA	14.03.22	RG	MB

Lead Consultant / MEP / Structures

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Keyplan

PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
WATER BALANCE CATCMENT PLAN

Status ISSUE FOR SSDA

Scale @ A0 1:250

Project No. NSW202013

Drawing No. NSW202013_C103.11 B

File: P:\NSW\NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C103.11.dwg

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RUSLE SOIL LOSS CALCULATION

IN ACCORDANCE WITH LANDCOM'S MANAGING URBAN STORMWATER VOLUME 1, A RUSLE CALCULATION HAS BEEN COMPLETED FOR THE SITE TO DETERMINE THE NEED FOR A SEDIMENT BASIN. SECTION 6.3.2 STATES A SEDIMENT BASIN IS NOT REQUIRED SHOULD THE AVERAGE ANNUAL SOIL LOSS FROM SITE (A) BE LESS THAN 150m³ / YEAR.

A = R K LS P C
A = 2500 x 0.038 x 0.64 x 1.3 x 1.0
A = 60.8m³ / Ha / YEAR
DISTURBED SITE ARE = 2.18Ha
A = 132.5m³ / YEAR
THEREFORE A SEDIMENT BASIN IS NOT REQUIRED FOR THE SITE

INDICATIVE LOCATION OF STABILISED SITE EXIT. CONTRACTOR TO CONFIRM LOCATION IN CONJUNCTION WITH OPERATIONAL AND SECURITY REQUIREMENTS

TEMPORARY STOCKPILE WITH SEDIMENT FENCE - CONTRACTOR TO CONFIRM LOCATION ON-SITE PRIOR TO WORKS

WRAP ALL GRATES AND PIT OPENINGS IN BIDIM A14 OR APPROVED EQUIVALENT GEOTEXTILE FABRIC UNTIL COMPLETION OF WORKS (TYP) REFER TO NSW202013_C101.07

TEMPORARY STABILISED CONSTRUCTION EXIT. CONTRACTOR TO CONFIRM LOCATION ON-SITE PRIOR TO EARLY WORKS. REFER BTO DRAWING NSW202013_C101.07 FOR DETAIL

CONSTRUCT SEDIMENT CONTROL FENCE. REFER TO DETAIL ON DRAWING NSW202013_C101.07 TYPICAL

STATION ROAD

MCCOY STREET

PORTA CABINS

BRICK BUILDING (METAL ROOF)

BM NAIL IN KERB RL = 36.123 A.H.D.

ABT. 29m TO BLACKTO

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	11.03.22	RG	MB

SCALE 1:250 @ A0
0 2.5 5 10 15 20 25 metres

A0
150

COMMERCIAL IN CONFIDENCE

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Keyplan
PLAN TRUE

Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

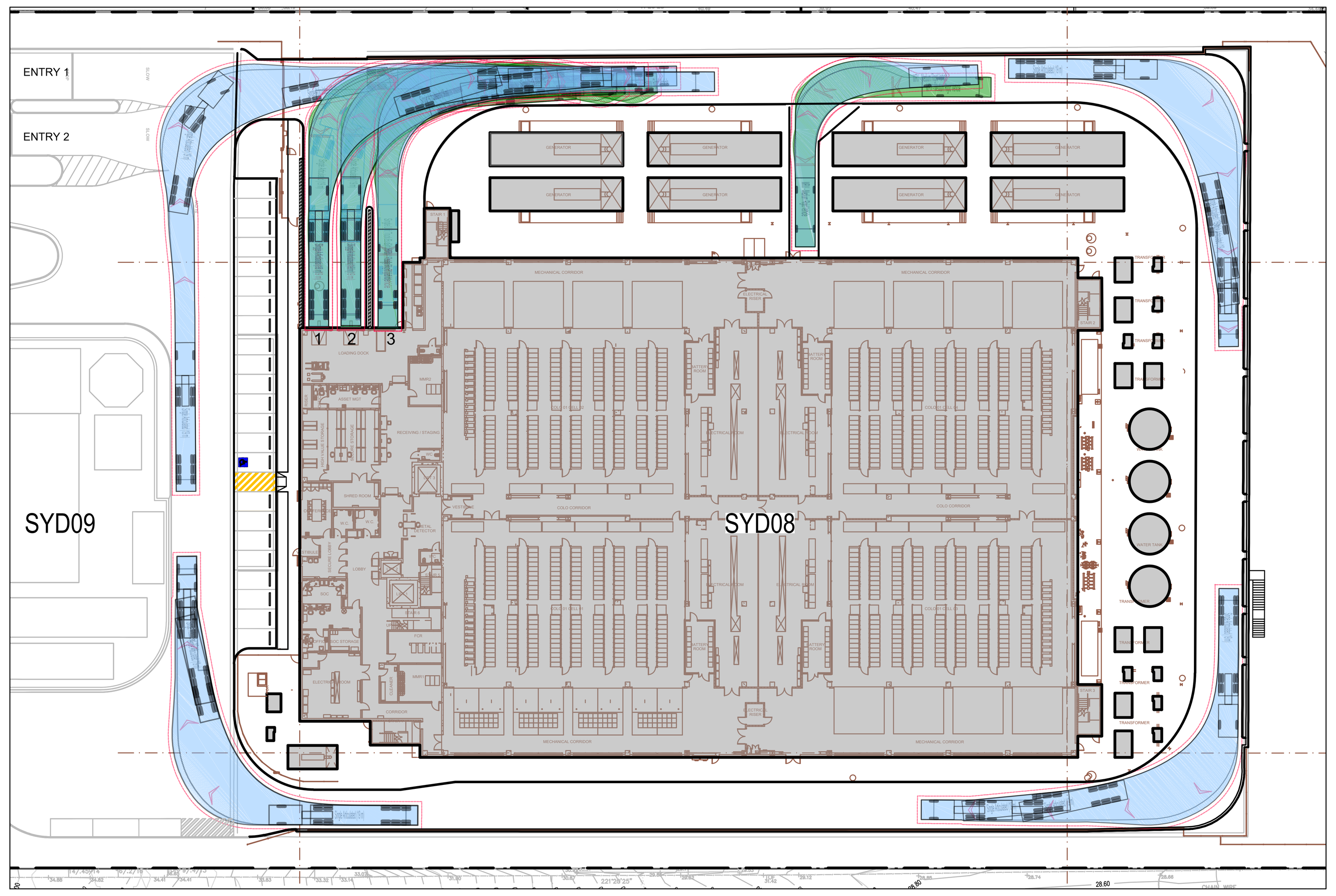
Drawing Title
SOIL AND WATER MANAGEMENT PLAN

Status: ISSUE FOR SSDA
Scale @ A0: 1:250
Project No.: NSW202013
Drawing No.: NSW202013_C105.01 B

File: P:\NSW\NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C105.01.dwg

Appendix C

Swept Path Analysis



TURN PATH PLAN 1
SITE PLAN ALL TURN PATHS
1:500

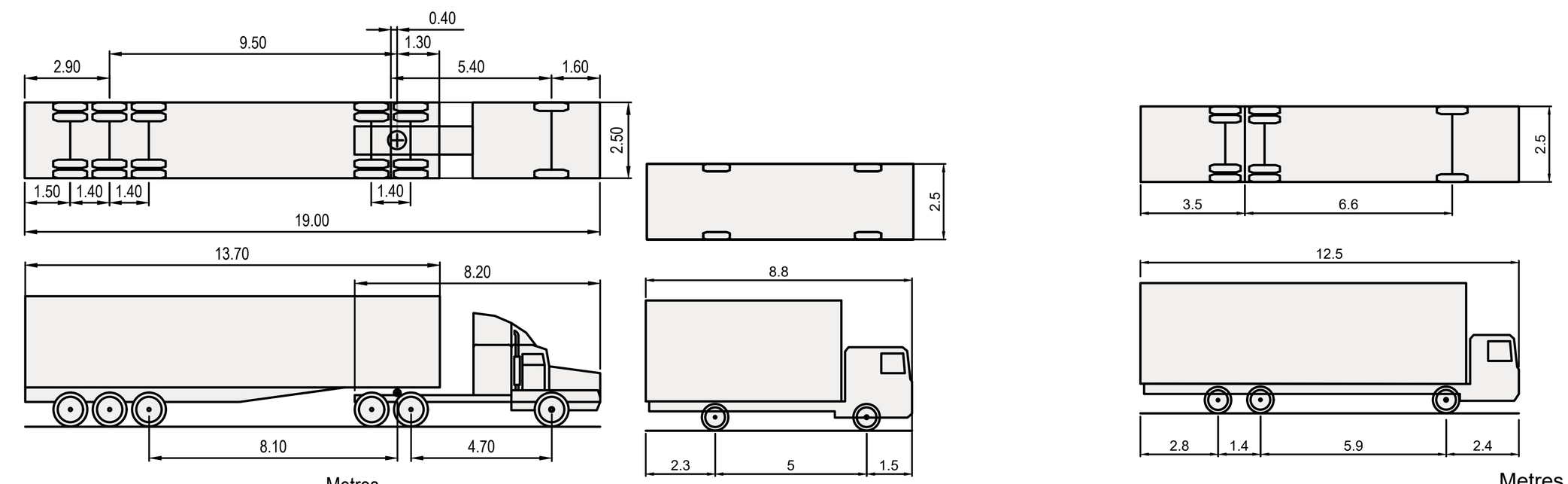
VEHICLE TURN PATH LEGEND

VEHICLE SWEPT PATH ENVELOPE - FORWARD MOVEMENT

0.5m VEHICLE SWEPT PATH CLEARANCE ENVELOPE

VEHICLE SWEPT PATH ENVELOPE - REVERSE MOVEMENT

0.5m VEHICLE SWEPT PATH CLEARANCE ENVELOPE



	Metres
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418
Track Width	2.500m
Lock-to-lock time	6.00s
Kerb to Kerb Turning Radius	12.500m

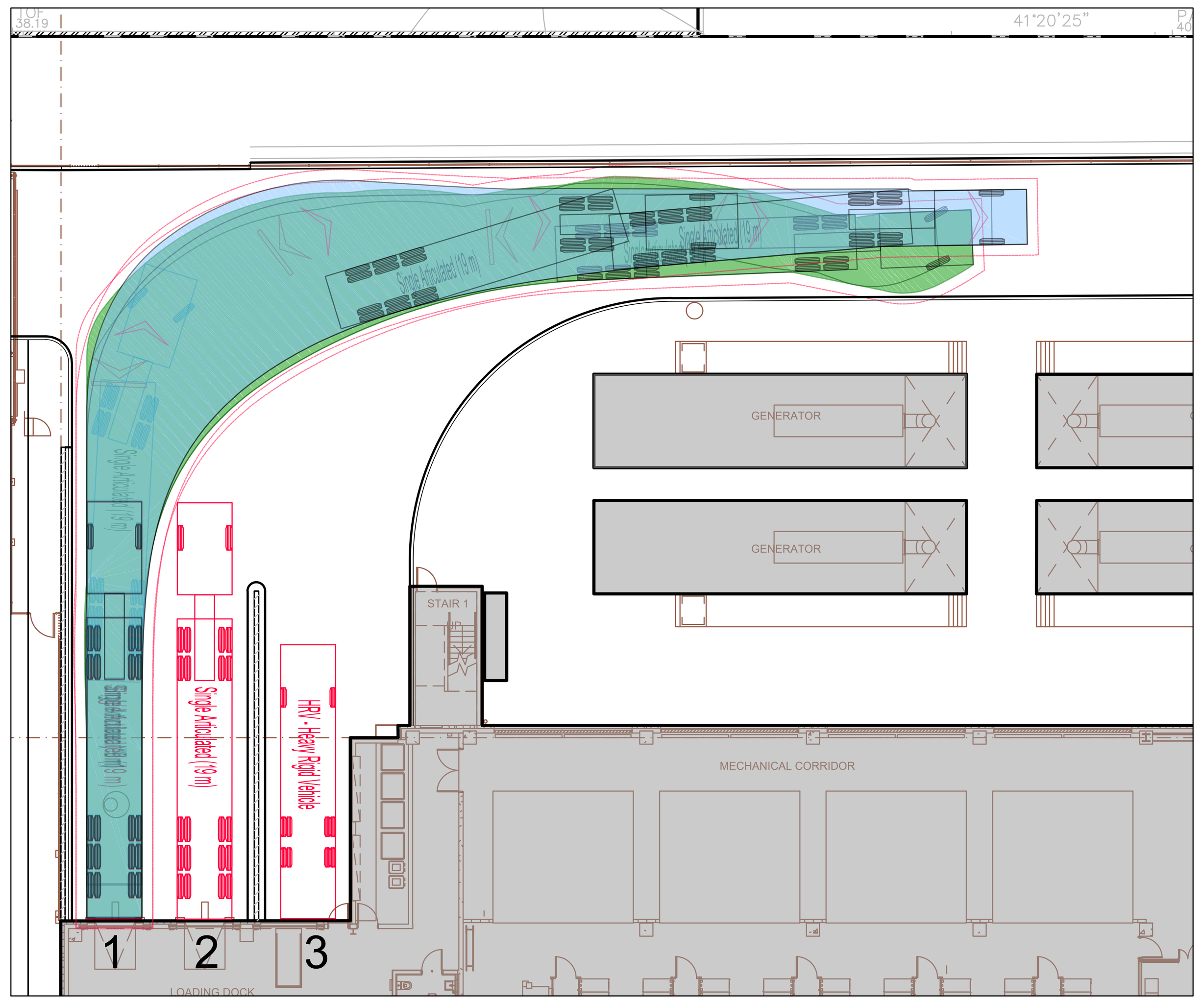
AV - ARTICULATED VEHICLE (AV 19.0m).
NTS

	Metres
Overall Length	8.80m
Overall Width	2.50m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.50m
Lock-to-lock time	4.00s
Kerb to Kerb Turning Radius	10.00m

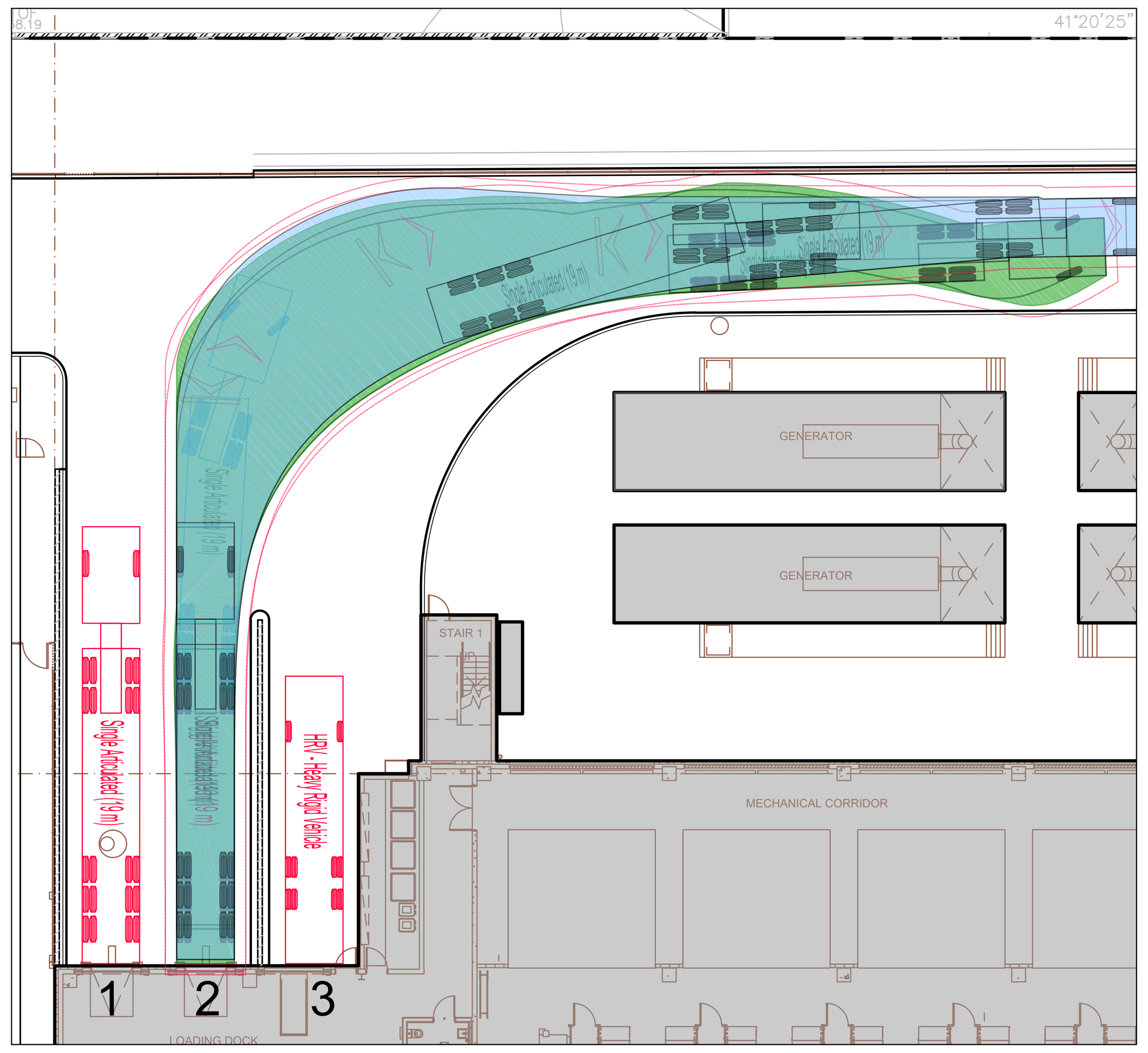
MRV - MEDIUM RIGID VEHICLE (MRV 8.8m) (SERVICE VEHICLE)

	Metres
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	6.00s
Kerb to Kerb Turning Radius	12.500m

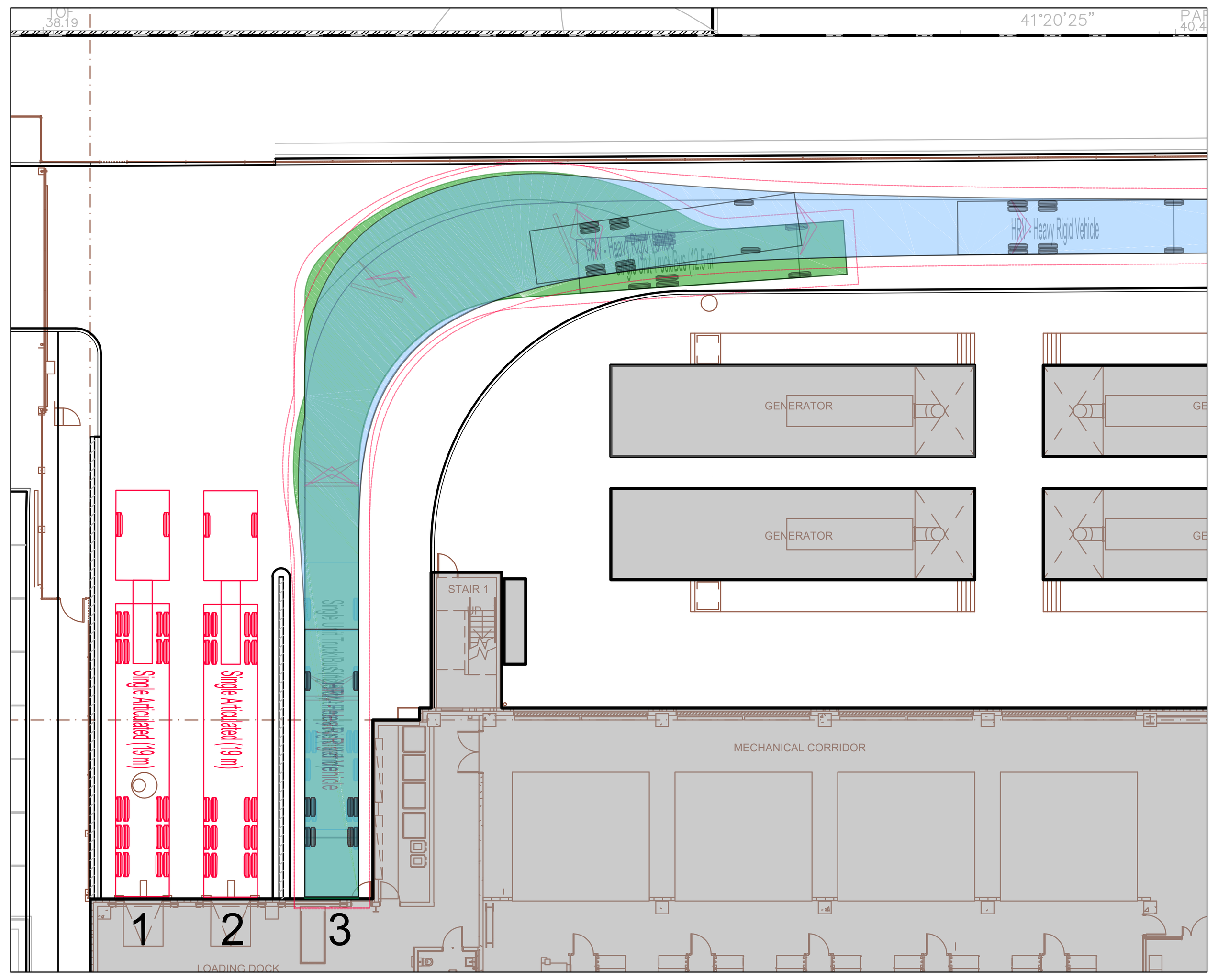
HRV - HEAVY RIGID VEHICLE (HRV 12.5m)
NTS



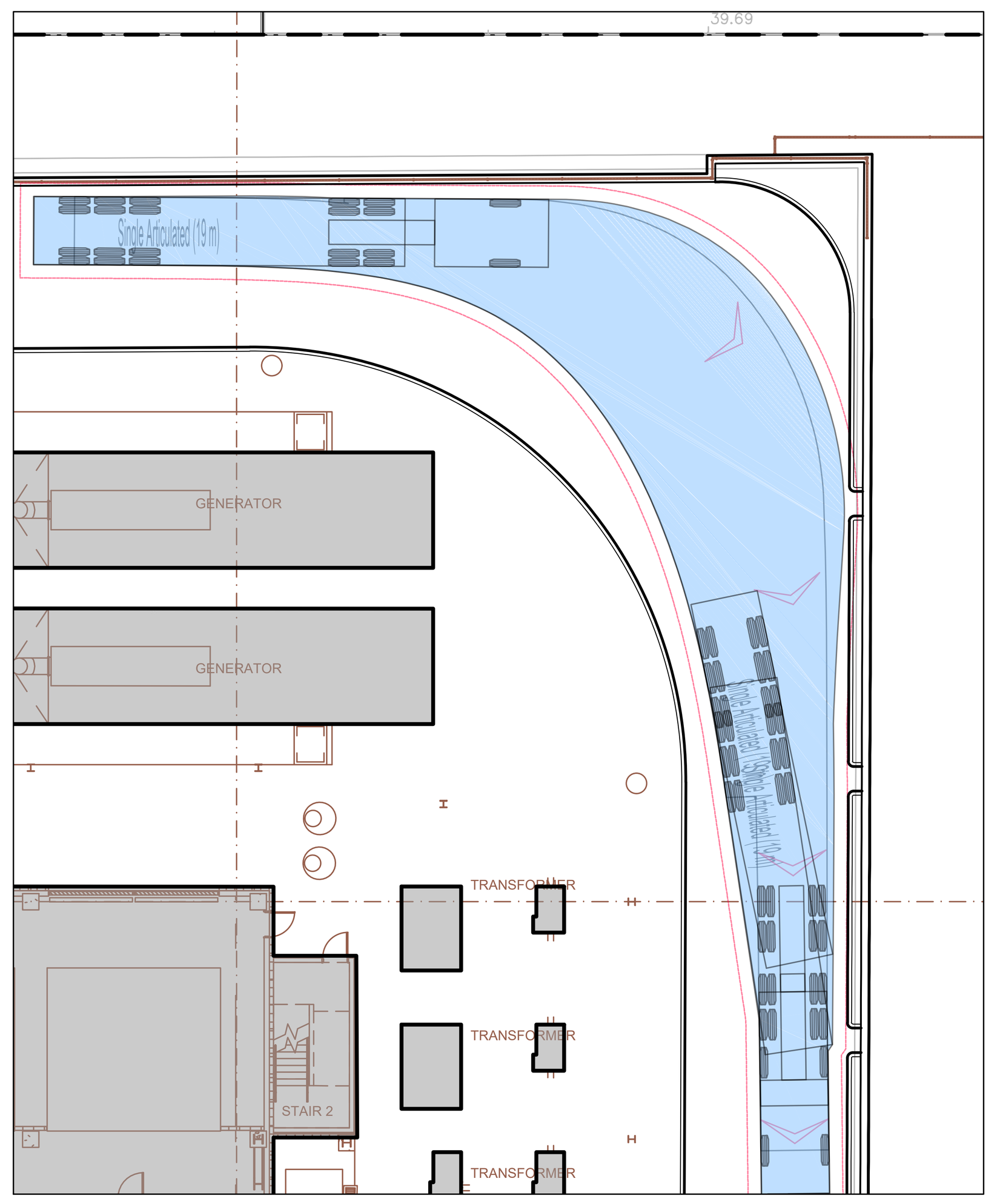
TURN PATH PLAN 2
DOCK No 1 (RECESSED) 19m AV FORWARD AND REVERSE MANOEUVRE



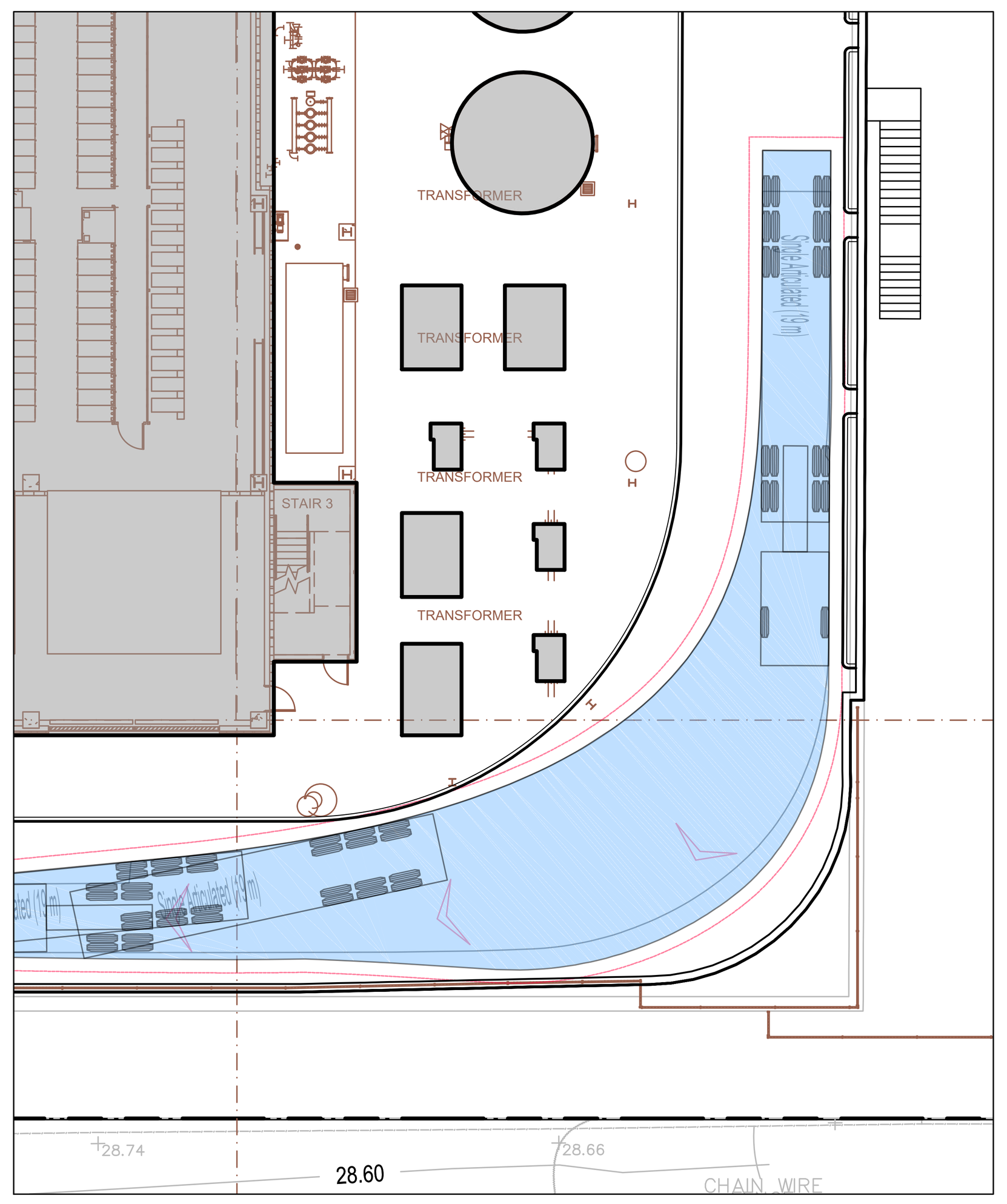
TURN PATH PLAN 3
DOCK No 2 (RECESSED) 19m AV FORWARD AND REVERSE MANOEUVRE



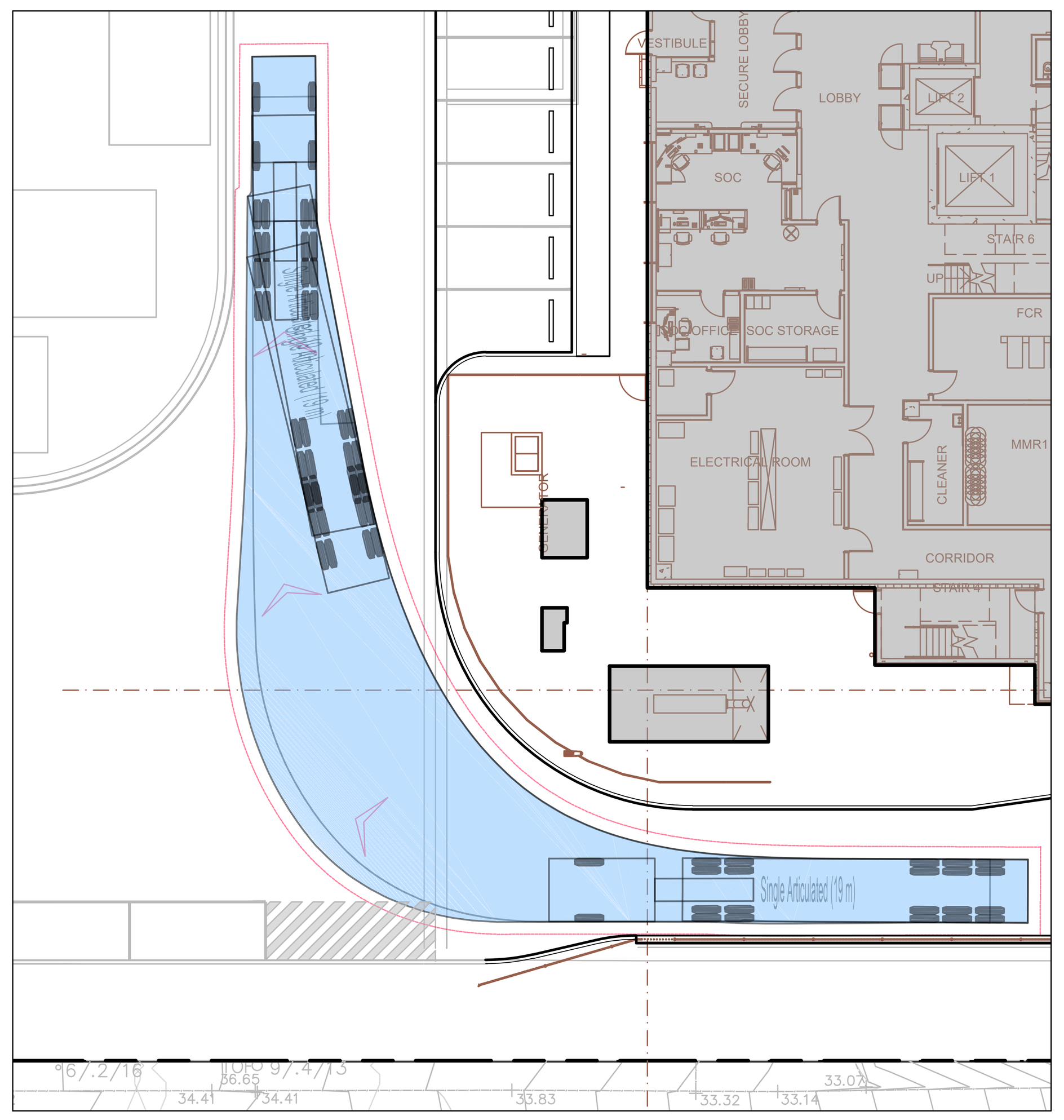
TURN PATH PLAN 4
DOCK No 3 (AT GRADE) 12.5m HRV FORWARD AND REVERSE MANOEUVRE



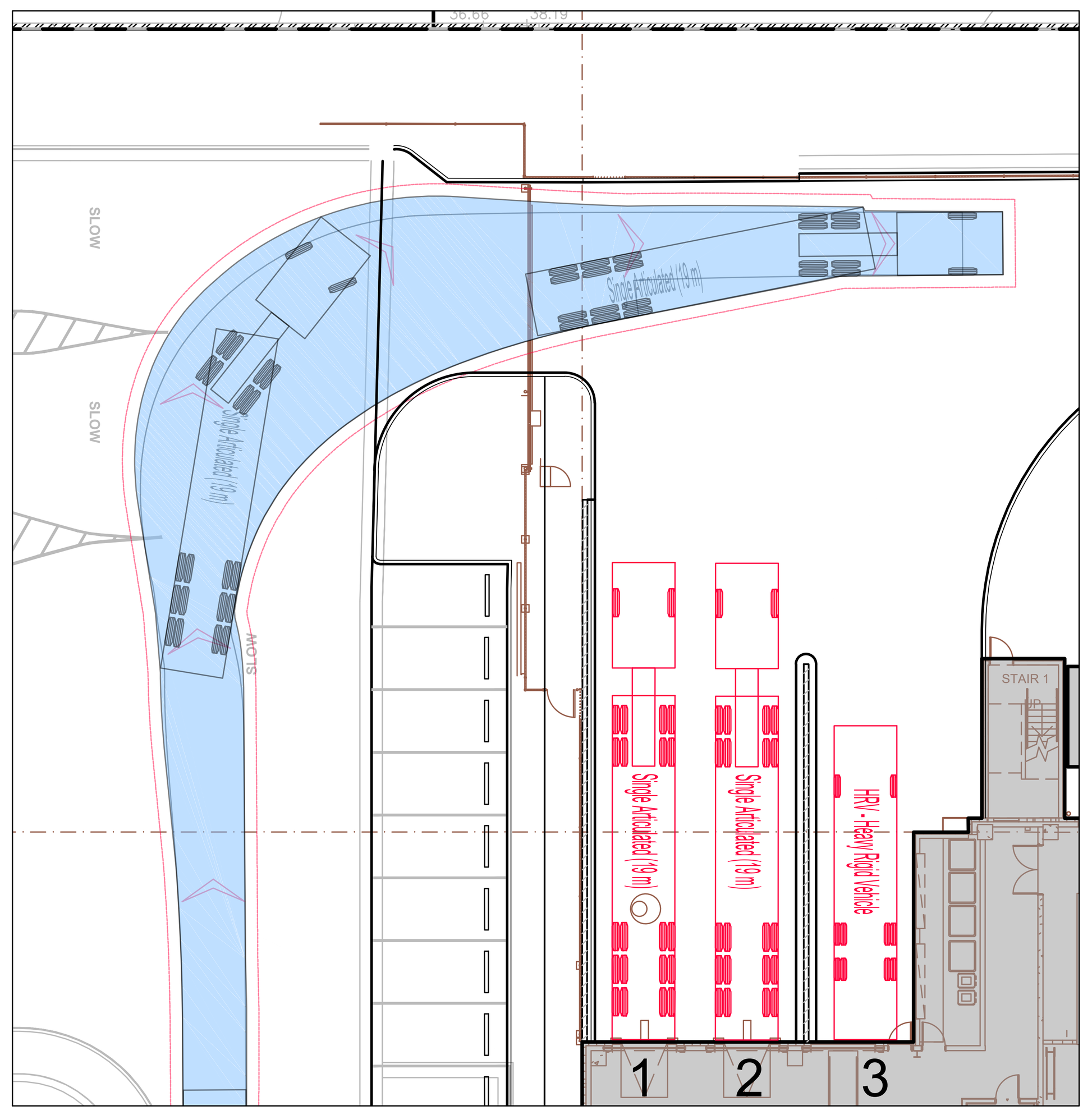
TURN PATH PLAN 5
19m AV FORWARD MANOEUVRE NORTH WEST CORNER



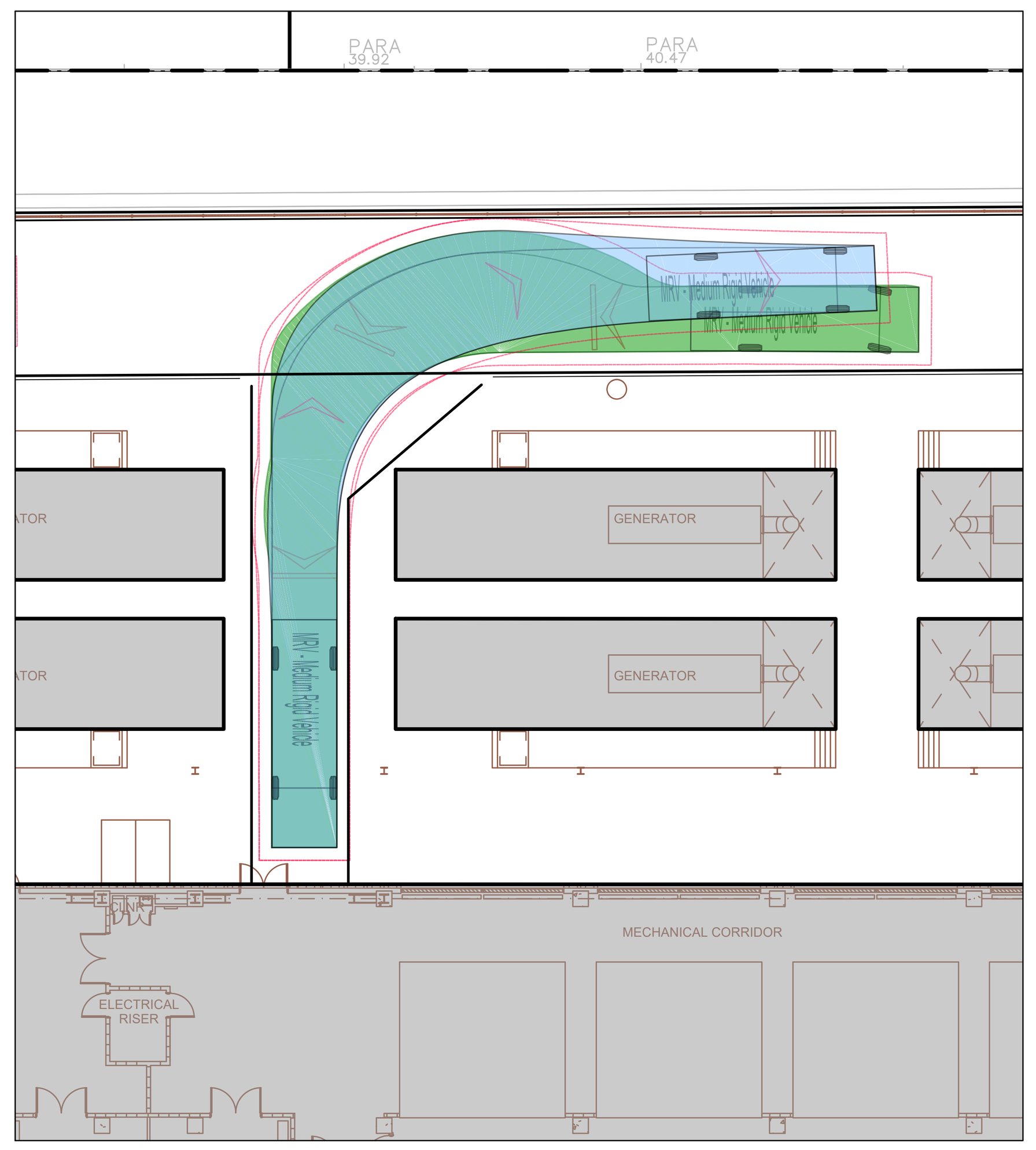
TURN PATH PLAN 6
19m AV FORWARD MANOEUVRE SOUTH EAST CORNER



TURN PATH PLAN 7
19m AV FORWARD MANOEUVRE TO SYD09



TURN PATH PLAN 8
19m AV FORWARD MANOEUVRE TO SYD08 FROM SYD09.



TURN PATH PLAN 8
LOADBANK DRIVEWAY
8.8m MRV FORWARD AND REVERSE MANOEUVRE

SCALE 1:500 @ A0 — 0, 5, 10, 20, 30, 40, 50 metres

SCALE 1:200 @ A0 — 0, 2, 4, 8, 12, 16, 20 metres

A0

COMMERCIAL IN CONFIDENCE

Plotted: 3/22/2022 4:24 PM

File: P:\NSW20\NSW202013_SYD08\Drawings\CAD\CIV\Drawings\SSDA\NSW202013_SYD08_C107.01.dwg

No.	Description	Date	By	Chk
B	ISSUE FOR SSDA	22.03.22	RG	MB
A	ISSUE FOR SSDA	11.03.22	RG	MB

Lead Consultant / MEP / Structures
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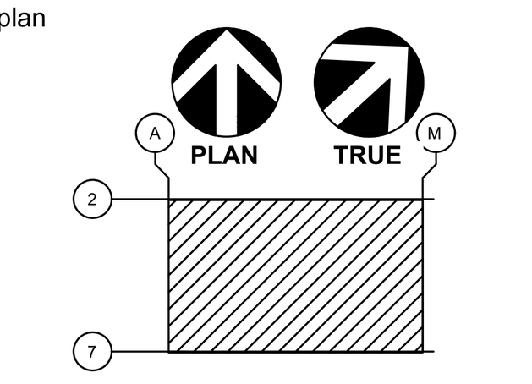
Client
LCI CONSULTANTS (AUSTRALIA) PTY LTD
LEVEL 4, 73 WALKER STREET, NORTH SYDNEY, NSW, 2060
ABN: 92 124 107 973

Keyplan



Project
SYD08 DATA CENTRE
57 STATION ROAD
SEVEN HILLS, NSW 2147

Drawing Title
VEHICLE TURN PATHS PLAN
SHEET 1

Status: ISSUE FOR SSDA

Scale @ A0: 1:200 UNO

Project No.: NSW202013

Drawing No.: NSW202013_C107.01 B

Appendix D

SIDRA Modelling Movements Summary Outputs

MOVEMENT SUMMARY

Site: 101 [EB AM - Station Rd / Tollis Pl (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 7:30-8:30
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	1049	56	1104	5.3	0.730	3.7	LOS A	6.9	50.7	0.27	0.43	0.27	52.9
3	R2	18	1	19	5.6	0.730	7.4	LOS A	6.9	50.7	0.27	0.43	0.27	44.6
3u	U	2	0	2	0.0	0.730	9.3	LOS A	6.9	50.7	0.27	0.43	0.27	33.3
Approach		1069	57	1125	5.3	0.730	3.8	LOS A	6.9	50.7	0.27	0.43	0.27	52.8
North: Tollis Pl														
4	L2	15	4	16	26.7	0.075	11.0	LOS A	0.4	3.4	0.72	0.78	0.72	30.1
6	R2	28	5	29	17.9	0.075	14.7	LOS B	0.4	3.4	0.72	0.78	0.72	44.7
6u	U	1	0	1	0.0	0.075	15.8	LOS B	0.4	3.4	0.72	0.78	0.72	38.5
Approach		44	9	46	20.5	0.075	13.5	LOS A	0.4	3.4	0.72	0.78	0.72	41.3
West: Station Rd														
7	L2	30	8	32	26.7	0.536	4.8	LOS A	2.9	21.0	0.10	0.44	0.10	49.4
8	T1	769	37	809	4.8	0.536	4.6	LOS A	2.9	21.0	0.10	0.44	0.10	50.4
9u	U	10	0	11	0.0	0.536	10.4	LOS A	2.9	21.0	0.10	0.44	0.10	56.1
Approach		809	45	852	5.6	0.536	4.7	LOS A	2.9	21.0	0.10	0.44	0.10	50.5
All Vehicles		1922	111	2023	5.8	0.730	4.4	LOS A	6.9	50.7	0.21	0.44	0.21	51.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EB AM - Station Rd / McCoy St (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 7:30-8:30
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	1065	56	1121	5.3	0.548	0.0	LOS A	0.1	0.4	0.00	0.00	0.01	59.9
3	R2	1	0	1	0.0	0.548	17.1	LOS B	0.1	0.4	0.00	0.00	0.01	55.4
Approach		1066	56	1122	5.3	0.548	0.0	NA	0.1	0.4	0.00	0.00	0.01	59.9
North: McCoy St														
4	L2	1	0	1	0.0	0.023	8.3	LOS A	0.1	0.4	0.91	0.91	0.91	27.8
6	R2	1	0	1	0.0	0.023	65.2	LOS E	0.1	0.4	0.91	0.91	0.91	8.0
Approach		2	0	2	0.0	0.023	36.8	LOS C	0.1	0.4	0.91	0.91	0.91	17.8
West: Station Road														
7	L2	4	1	4	25.0	0.406	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.5
8	T1	786	41	827	5.2	0.406	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		790	42	832	5.3	0.406	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles		1858	98	1956	5.3	0.548	0.1	NA	0.1	0.4	0.00	0.00	0.01	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EB AM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 7:30-8:30
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	644	35	678	5.4	0.738	10.8	LOS A	8.9	64.9	0.90	0.99	1.16	32.1
12	R2	418	12	440	2.9	0.553	12.9	LOS A	4.4	31.6	0.77	0.90	0.86	38.4
12u	U	2	1	2	50.0	0.553	16.8	LOS B	4.4	31.6	0.77	0.90	0.86	35.0
Approach		1064	48	1120	4.5	0.738	11.6	LOS A	8.9	64.9	0.85	0.95	1.04	35.0
East: Fitzwilliam Rd														
1	L2	449	9	473	2.0	0.527	8.0	LOS A	4.2	29.9	0.77	0.84	0.84	41.3
2	T1	420	21	442	5.0	0.536	8.4	LOS A	4.2	31.0	0.77	0.84	0.86	35.1
3u	U	3	0	3	0.0	0.536	14.5	LOS B	4.2	31.0	0.77	0.84	0.86	45.0
Approach		872	30	918	3.4	0.536	8.2	LOS A	4.2	31.0	0.77	0.84	0.85	38.5
West: Station Rd														
8	T1	371	14	391	3.8	0.461	6.3	LOS A	3.1	22.7	0.70	0.75	0.72	42.2
9	R2	460	23	484	5.0	0.533	10.8	LOS A	4.2	30.7	0.74	0.85	0.80	36.0
9u	U	6	0	6	0.0	0.533	12.7	LOS A	4.2	30.7	0.74	0.85	0.80	24.2
Approach		837	37	881	4.4	0.533	8.9	LOS A	4.2	30.7	0.73	0.81	0.77	38.3
All Vehicles		2773	115	2919	4.1	0.738	9.7	LOS A	8.9	64.9	0.79	0.87	0.90	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EB PM - Station Rd / Tollis Pl (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 16:15-17:15
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	884	21	931	2.4	0.658	3.8	LOS A	4.9	35.3	0.30	0.46	0.30	52.8
3	R2	37	3	39	8.1	0.658	7.6	LOS A	4.9	35.3	0.30	0.46	0.30	43.6
3u	U	1	0	1	0.0	0.658	9.4	LOS A	4.9	35.3	0.30	0.46	0.30	32.9
Approach		922	24	971	2.6	0.658	4.0	LOS A	4.9	35.3	0.30	0.46	0.30	52.6
North: Tollis Pl														
4	L2	48	1	51	2.1	0.192	14.9	LOS B	1.3	9.3	0.89	0.90	0.89	26.9
6	R2	39	4	41	10.3	0.192	19.7	LOS B	1.3	9.3	0.89	0.90	0.89	42.2
6u	U	1	0	1	0.0	0.192	20.9	LOS B	1.3	9.3	0.89	0.90	0.89	34.6
Approach		88	5	93	5.7	0.192	17.1	LOS B	1.3	9.3	0.89	0.90	0.89	35.8
West: Station Rd														
7	L2	26	5	27	19.2	0.721	4.8	LOS A	5.8	41.9	0.22	0.44	0.22	49.4
8	T1	1014	26	1067	2.6	0.721	4.8	LOS A	5.8	41.9	0.22	0.44	0.22	49.6
9u	U	31	1	33	3.2	0.721	10.6	LOS A	5.8	41.9	0.22	0.44	0.22	55.4
Approach		1071	32	1127	3.0	0.721	4.9	LOS A	5.8	41.9	0.22	0.44	0.22	49.9
All Vehicles		2081	61	2191	2.9	0.721	5.0	LOS A	5.8	41.9	0.29	0.47	0.29	50.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EB PM - Station Rd / McCoy St (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 16:15-17:15
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	920	24	968	2.6	0.479	0.5	LOS A	0.5	3.4	0.04	0.00	0.06	59.0
3	R2	5	0	5	0.0	0.479	26.1	LOS B	0.5	3.4	0.04	0.00	0.06	54.6
Approach		925	24	974	2.6	0.479	0.6	NA	0.5	3.4	0.04	0.00	0.06	59.0
North: McCoy St														
4	L2	3	0	3	0.0	0.036	13.4	LOS A	0.1	0.6	0.91	0.96	0.91	30.6
6	R2	1	0	1	0.0	0.036	80.0	LOS F	0.1	0.6	0.91	0.96	0.91	8.8
Approach		4	0	4	0.0	0.036	30.1	LOS C	0.1	0.6	0.91	0.96	0.91	25.1
West: Station Road														
7	L2	1	0	1	0.0	0.535	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.6
8	T1	1060	27	1116	2.5	0.535	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		1061	27	1117	2.5	0.535	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		1990	51	2095	2.6	0.535	0.4	NA	0.5	3.4	0.02	0.00	0.03	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EB PM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Exisiting Base)]

2022 Modelling by Sokan 16:15-17:15
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	486	10	512	2.1	0.643	10.1	LOS A	6.3	44.8	0.88	0.97	1.07	33.0
12	R2	486	7	512	1.4	0.617	13.5	LOS A	5.9	41.7	0.87	0.95	1.02	37.8
12u	U	7	0	7	0.0	0.617	15.5	LOS B	5.9	41.7	0.87	0.95	1.02	39.1
Approach		979	17	1031	1.7	0.643	11.8	LOS A	6.3	44.8	0.87	0.96	1.04	35.8
East: Fitzwilliam Rd														
1	L2	451	9	475	2.0	0.716	14.1	LOS A	7.9	56.0	0.98	1.13	1.34	34.5
2	T1	485	14	511	2.9	0.721	13.6	LOS A	8.3	59.6	0.99	1.12	1.35	29.7
3u	U	5	0	5	0.0	0.721	19.7	LOS B	8.3	59.6	0.99	1.12	1.35	38.5
Approach		941	23	991	2.4	0.721	13.8	LOS A	8.3	59.6	0.98	1.13	1.34	32.2
West: Station Rd														
8	T1	456	13	480	2.9	0.633	9.4	LOS A	5.9	42.3	0.86	0.95	1.05	37.8
9	R2	615	15	647	2.4	0.764	15.6	LOS B	9.7	69.4	0.96	1.07	1.30	31.0
9u	U	6	0	6	0.0	0.764	17.5	LOS B	9.7	69.4	0.96	1.07	1.30	20.4
Approach		1077	28	1134	2.6	0.764	13.0	LOS A	9.7	69.4	0.92	1.02	1.19	33.4
All Vehicles		2997	68	3155	2.3	0.764	12.9	LOS A	9.7	69.4	0.92	1.03	1.19	33.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB AM - Station Rd / Tollis Pl (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	1151	61	1212	5.3	0.800	3.8	LOS A	10.0	73.0	0.34	0.42	0.34	52.5
3	R2	18	1	19	5.6	0.800	7.5	LOS A	10.0	73.0	0.34	0.42	0.34	43.9
3u	U	2	0	2	0.0	0.800	9.4	LOS A	10.0	73.0	0.34	0.42	0.34	32.6
Approach		1171	62	1233	5.3	0.800	3.9	LOS A	10.0	73.0	0.34	0.42	0.34	52.4
North: Tollis Pl														
4	L2	15	4	16	26.7	0.090	13.7	LOS A	0.5	4.3	0.80	0.83	0.80	27.8
6	R2	28	5	29	17.9	0.090	17.3	LOS B	0.5	4.3	0.80	0.83	0.80	42.7
6u	U	1	0	1	0.0	0.090	18.2	LOS B	0.5	4.3	0.80	0.83	0.80	35.8
Approach		44	9	46	20.5	0.090	16.1	LOS B	0.5	4.3	0.80	0.83	0.80	39.1
West: Station Rd														
7	L2	30	8	32	26.7	0.634	4.8	LOS A	4.3	31.4	0.13	0.43	0.13	49.3
8	T1	921	44	969	4.8	0.634	4.7	LOS A	4.3	31.4	0.13	0.43	0.13	50.3
9u	U	12	0	13	0.0	0.634	10.4	LOS A	4.3	31.4	0.13	0.43	0.13	56.0
Approach		963	52	1014	5.4	0.634	4.7	LOS A	4.3	31.4	0.13	0.43	0.13	50.3
All Vehicles		2178	123	2293	5.6	0.800	4.5	LOS A	10.0	73.0	0.26	0.44	0.26	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB AM - Station Rd / McCoy St (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	1169	61	1231	5.2	0.602	0.1	LOS A	0.1	0.6	0.01	0.00	0.01	59.9
3	R2	1	0	1	0.0	0.602	25.9	LOS B	0.1	0.6	0.01	0.00	0.01	55.4
Approach		1170	61	1232	5.2	0.602	0.1	NA	0.1	0.6	0.01	0.00	0.01	59.9
North: McCoy St														
4	L2	1	0	1	0.0	0.053	10.7	LOS A	0.1	0.9	0.96	0.98	0.96	17.8
6	R2	1	0	1	0.0	0.053	144.5	LOS F	0.1	0.9	0.96	0.98	0.96	5.1
Approach		2	0	2	0.0	0.053	77.6	LOS F	0.1	0.9	0.96	0.98	0.96	11.5
West: Station Road														
7	L2	4	1	4	25.0	0.485	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.5
8	T1	941	49	991	5.2	0.485	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		945	50	995	5.3	0.485	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles		2117	111	2228	5.2	0.602	0.1	NA	0.1	0.9	0.00	0.00	0.01	59.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB AM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	679	37	715	5.4	0.837	15.2	LOS B	13.1	96.1	1.00	1.17	1.52	27.7
12	R2	441	13	464	2.9	0.629	14.5	LOS B	5.8	41.6	0.86	0.99	1.04	36.7
12u	U	2	1	2	50.0	0.629	18.6	LOS B	5.8	41.6	0.86	0.99	1.04	33.6
Approach		1122	51	1181	4.5	0.837	14.9	LOS B	13.1	96.1	0.94	1.10	1.33	31.6
East: Fitzwilliam Rd														
1	L2	498	10	524	2.0	0.660	11.1	LOS A	6.8	48.4	0.91	1.01	1.15	37.6
2	T1	465	23	489	4.9	0.677	12.0	LOS A	6.9	50.7	0.92	1.05	1.20	31.2
3u	U	3	0	3	0.0	0.677	18.1	LOS B	6.9	50.7	0.92	1.05	1.20	40.4
Approach		966	33	1017	3.4	0.677	11.5	LOS A	6.9	50.7	0.92	1.03	1.17	34.7
West: Station Rd														
8	T1	445	17	468	3.8	0.575	7.8	LOS A	4.9	35.1	0.80	0.86	0.91	40.2
9	R2	551	28	580	5.1	0.661	12.7	LOS A	6.7	49.1	0.85	0.95	1.03	33.7
9u	U	7	0	7	0.0	0.661	14.6	LOS B	6.7	49.1	0.85	0.95	1.03	22.5
Approach		1003	45	1056	4.5	0.661	10.6	LOS A	6.7	49.1	0.83	0.91	0.97	36.1
All Vehicles		3091	129	3254	4.2	0.837	12.4	LOS A	13.1	96.1	0.90	1.02	1.16	33.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB PM - Station Rd / Tollis Pl (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	943	22	993	2.3	0.700	3.9	LOS A	5.8	41.4	0.33	0.46	0.33	52.6
3	R2	37	3	39	8.1	0.700	7.6	LOS A	5.8	41.4	0.33	0.46	0.33	43.3
3u	U	1	0	1	0.0	0.700	9.5	LOS A	5.8	41.4	0.33	0.46	0.33	32.6
Approach		981	25	1033	2.5	0.700	4.0	LOS A	5.8	41.4	0.33	0.46	0.33	52.4
North: Tollis Pl														
4	L2	48	1	51	2.1	0.218	17.1	LOS B	1.5	10.8	0.93	0.94	0.93	25.3
6	R2	39	4	41	10.3	0.218	21.9	LOS B	1.5	10.8	0.93	0.94	0.93	40.7
6u	U	1	0	1	0.0	0.218	23.0	LOS B	1.5	10.8	0.93	0.94	0.93	32.8
Approach		88	5	93	5.7	0.218	19.3	LOS B	1.5	10.8	0.93	0.94	0.93	34.2
West: Station Rd														
7	L2	26	5	27	19.2	0.766	4.9	LOS A	7.4	53.3	0.26	0.44	0.26	49.2
8	T1	1082	28	1139	2.6	0.766	4.8	LOS A	7.4	53.3	0.26	0.44	0.26	49.4
9u	U	33	1	35	3.0	0.766	10.6	LOS A	7.4	53.3	0.26	0.44	0.26	55.2
Approach		1141	34	1201	3.0	0.766	5.0	LOS A	7.4	53.3	0.26	0.44	0.26	49.6
All Vehicles		2210	64	2326	2.9	0.766	5.1	LOS A	7.4	53.3	0.32	0.47	0.32	50.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB PM - Station Rd / McCoy St (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	982	26	1034	2.6	0.514	0.7	LOS A	0.7	4.8	0.05	0.00	0.07	58.7
3	R2	5	0	5	0.0	0.514	33.1	LOS C	0.7	4.8	0.05	0.00	0.07	54.2
Approach		987	26	1039	2.6	0.514	0.8	NA	0.7	4.8	0.05	0.00	0.07	58.6
North: McCoy St														
4	L2	3	0	3	0.0	0.054	15.8	LOS B	0.1	0.9	0.94	0.97	0.94	25.7
6	R2	1	0	1	0.0	0.054	123.2	LOS F	0.1	0.9	0.94	0.97	0.94	7.4
Approach		4	0	4	0.0	0.054	42.7	LOS D	0.1	0.9	0.94	0.97	0.94	21.1
West: Station Road														
7	L2	1	0	1	0.0	0.571	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.6
8	T1	1131	29	1191	2.6	0.571	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		1132	29	1192	2.6	0.571	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles		2123	55	2235	2.6	0.571	0.5	NA	0.7	4.8	0.02	0.00	0.03	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB PM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Future Base 2025)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	521	11	548	2.1	0.739	13.0	LOS A	8.6	61.6	0.97	1.10	1.31	29.7
12	R2	522	8	549	1.5	0.706	15.9	LOS B	8.0	56.4	0.95	1.06	1.23	35.5
12u	U	8	0	8	0.0	0.706	17.8	LOS B	8.0	56.4	0.95	1.06	1.23	36.6
Approach		1051	19	1106	1.8	0.739	14.5	LOS B	8.6	61.6	0.96	1.08	1.27	33.0
East: Fitzwilliam Rd														
1	L2	498	10	524	2.0	0.852	22.5	LOS B	12.8	90.9	1.00	1.31	1.79	28.0
2	T1	535	15	563	2.8	0.854	21.6	LOS B	13.5	96.6	1.00	1.31	1.78	23.7
3u	U	6	0	6	0.0	0.854	27.8	LOS B	13.5	96.6	1.00	1.31	1.78	31.2
Approach		1039	25	1094	2.4	0.854	22.1	LOS B	13.5	96.6	1.00	1.31	1.78	26.0
West: Station Rd														
8	T1	486	14	512	2.9	0.718	11.8	LOS A	7.8	56.1	0.94	1.08	1.26	34.5
9	R2	656	16	691	2.4	0.863	21.2	LOS B	14.6	104.2	1.00	1.25	1.68	26.5
9u	U	6	0	6	0.0	0.863	23.0	LOS B	14.6	104.2	1.00	1.25	1.68	17.3
Approach		1148	30	1208	2.6	0.863	17.2	LOS B	14.6	104.2	0.98	1.18	1.50	29.2
All Vehicles		3238	74	3408	2.3	0.863	17.9	LOS B	14.6	104.2	0.98	1.19	1.52	29.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D AM - Station Rd / Tollis Pl (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	1158	63	1219	5.4	0.805	3.8	LOS A	10.3	75.3	0.35	0.42	0.35	52.4
3	R2	18	1	19	5.6	0.805	7.5	LOS A	10.3	75.3	0.35	0.42	0.35	43.8
3u	U	2	0	2	0.0	0.805	9.4	LOS A	10.3	75.3	0.35	0.42	0.35	32.5
Approach		1178	64	1240	5.4	0.805	3.9	LOS A	10.3	75.3	0.35	0.42	0.35	52.4
North: Tollis Pl														
4	L2	15	4	16	26.7	0.090	13.7	LOS A	0.5	4.3	0.80	0.83	0.80	27.7
6	R2	28	5	29	17.9	0.090	17.4	LOS B	0.5	4.3	0.80	0.83	0.80	42.7
6u	U	1	0	1	0.0	0.090	18.3	LOS B	0.5	4.3	0.80	0.83	0.80	35.8
Approach		44	9	46	20.5	0.090	16.2	LOS B	0.5	4.3	0.80	0.83	0.80	39.1
West: Station Rd														
7	L2	30	8	32	26.7	0.637	4.8	LOS A	4.3	31.9	0.13	0.43	0.13	49.3
8	T1	924	46	973	5.0	0.637	4.7	LOS A	4.3	31.9	0.13	0.43	0.13	50.3
9u	U	12	0	13	0.0	0.637	10.4	LOS A	4.3	31.9	0.13	0.43	0.13	56.0
Approach		966	54	1017	5.6	0.637	4.7	LOS A	4.3	31.9	0.13	0.43	0.13	50.3
All Vehicles		2188	127	2303	5.8	0.805	4.5	LOS A	10.3	75.3	0.26	0.44	0.26	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D AM - Station Rd / Site Access (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
5	T1	1170	61	1232	5.2	0.653	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.2
6	R2	2	1	2	50.0	0.009	19.4	LOS B	0.0	0.3	0.83	0.86	0.83	17.2
Approach		1172	62	1234	5.3	0.653	0.1	NA	0.0	0.3	0.00	0.00	0.00	59.0
North: Site Access														
7	L2	6	1	6	16.7	1.246	622.2	LOS F	5.0	41.9	1.00	1.25	1.98	0.6
9	R2	7	2	7	28.6	1.246	1023.2	LOS F	5.0	41.9	1.00	1.25	1.98	0.5
Approach		13	3	14	23.1	1.246	838.1	LOS F	5.0	41.9	1.00	1.25	1.98	0.5
West: Station Rd														
10	L2	3	2	3	66.7	0.526	4.3	LOS A	0.0	0.0	0.00	0.00	0.00	25.3
11	T1	938	48	987	5.1	0.526	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		941	50	991	5.3	0.526	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.3
All Vehicles		2126	115	2238	5.4	1.246	5.2	NA	5.0	41.9	0.01	0.01	0.01	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D AM - Station Rd / McCoy St (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	1171	62	1233	5.3	0.603	0.1	LOS A	0.1	0.7	0.01	0.00	0.01	59.9
3	R2	1	0	1	0.0	0.603	26.3	LOS B	0.1	0.7	0.01	0.00	0.01	55.3
Approach		1172	62	1234	5.3	0.603	0.1	NA	0.1	0.7	0.01	0.00	0.01	59.9
North: McCoy St														
4	L2	1	0	1	0.0	0.054	10.9	LOS A	0.1	0.9	0.97	0.98	0.97	17.5
6	R2	1	0	1	0.0	0.054	148.6	LOS F	0.1	0.9	0.97	0.98	0.97	5.1
Approach		2	0	2	0.0	0.054	79.7	LOS F	0.1	0.9	0.97	0.98	0.97	11.3
West: Station Road														
7	L2	4	1	4	25.0	0.488	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.5
8	T1	947	50	997	5.3	0.488	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		951	51	1001	5.4	0.488	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles		2125	113	2237	5.3	0.603	0.2	NA	0.1	0.9	0.00	0.00	0.01	59.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D AM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	681	38	717	5.6	0.841	15.4	LOS B	13.3	97.7	1.00	1.17	1.53	27.5
12	R2	441	13	464	2.9	0.630	14.5	LOS B	5.8	41.7	0.86	0.99	1.04	36.7
12u	U	2	1	2	50.0	0.630	18.6	LOS B	5.8	41.7	0.86	0.99	1.04	33.6
Approach		1124	52	1183	4.6	0.841	15.1	LOS B	13.3	97.7	0.94	1.10	1.34	31.5
East: Fitzwilliam Rd														
1	L2	498	10	524	2.0	0.664	11.2	LOS A	6.9	49.1	0.92	1.02	1.16	37.4
2	T1	465	23	489	4.9	0.682	12.1	LOS A	7.0	51.4	0.93	1.06	1.21	31.0
3u	U	3	0	3	0.0	0.682	18.2	LOS B	7.0	51.4	0.93	1.06	1.21	40.2
Approach		966	33	1017	3.4	0.682	11.7	LOS A	7.0	51.4	0.92	1.04	1.19	34.5
West: Station Rd														
8	T1	447	17	471	3.8	0.578	7.8	LOS A	4.9	35.5	0.80	0.86	0.91	40.1
9	R2	555	29	584	5.2	0.667	12.8	LOS A	6.8	50.0	0.86	0.95	1.04	33.6
9u	U	7	0	7	0.0	0.667	14.6	LOS B	6.8	50.0	0.86	0.95	1.04	22.5
Approach		1009	46	1062	4.6	0.667	10.6	LOS A	6.8	50.0	0.83	0.91	0.98	36.0
All Vehicles		3099	131	3262	4.2	0.841	12.6	LOS A	13.3	97.7	0.90	1.02	1.17	33.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D PM - Station Rd / Tollis Pl (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
2	T1	950	24	1000	2.5	0.705	3.9	LOS A	5.9	42.3	0.34	0.46	0.34	52.6
3	R2	37	3	39	8.1	0.705	7.6	LOS A	5.9	42.3	0.34	0.46	0.34	43.3
3u	U	1	0	1	0.0	0.705	9.5	LOS A	5.9	42.3	0.34	0.46	0.34	32.6
Approach		988	27	1040	2.7	0.705	4.0	LOS A	5.9	42.3	0.34	0.46	0.34	52.4
North: Tollis Pl														
4	L2	48	1	51	2.1	0.219	17.2	LOS B	1.5	10.9	0.93	0.94	0.93	25.2
6	R2	39	4	41	10.3	0.219	22.1	LOS B	1.5	10.9	0.93	0.94	0.93	40.6
6u	U	1	0	1	0.0	0.219	23.1	LOS B	1.5	10.9	0.93	0.94	0.93	32.6
Approach		88	5	93	5.7	0.219	19.4	LOS B	1.5	10.9	0.93	0.94	0.93	34.1
West: Station Rd														
7	L2	26	5	27	19.2	0.769	4.9	LOS A	7.5	54.2	0.26	0.44	0.26	49.2
8	T1	1085	30	1142	2.8	0.769	4.8	LOS A	7.5	54.2	0.26	0.44	0.26	49.4
9u	U	33	1	35	3.0	0.769	10.6	LOS A	7.5	54.2	0.26	0.44	0.26	55.2
Approach		1144	36	1204	3.1	0.769	5.0	LOS A	7.5	54.2	0.26	0.44	0.26	49.6
All Vehicles		2220	68	2337	3.1	0.769	5.1	LOS A	7.5	54.2	0.32	0.47	0.32	50.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D PM - Station Rd / Site Access (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Rd														
5	T1	982	26	1034	2.6	0.539	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
6	R2	2	1	2	50.0	0.016	32.6	LOS C	0.0	0.5	0.91	0.96	0.91	12.1
Approach		984	27	1036	2.7	0.539	0.1	NA	0.0	0.5	0.00	0.00	0.00	59.1
North: Site Access														
7	L2	6	1	6	16.7	1.259	625.8	LOS F	5.1	42.8	1.00	1.23	1.97	0.6
9	R2	7	2	7	28.6	1.259	1022.0	LOS F	5.1	42.8	1.00	1.23	1.97	0.4
Approach		13	3	14	23.1	1.259	839.2	LOS F	5.1	42.8	1.00	1.23	1.97	0.5
West: Station Rd														
10	L2	3	2	3	66.7	0.623	4.3	LOS A	0.0	0.0	0.00	0.00	0.00	25.2
11	T1	1130	29	1189	2.6	0.623	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.3
Approach		1133	31	1193	2.7	0.623	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.2
All Vehicles		2130	61	2242	2.9	1.259	5.2	NA	5.1	42.8	0.01	0.01	0.01	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D PM - Station Rd / McCoy St (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Station Road														
2	T1	984	27	1036	2.7	0.516	0.7	LOS A	0.7	5.0	0.05	0.00	0.07	58.6
3	R2	5	0	5	0.0	0.516	33.8	LOS C	0.7	5.0	0.05	0.00	0.07	54.2
Approach		989	27	1041	2.7	0.516	0.9	NA	0.7	5.0	0.05	0.00	0.07	58.6
North: McCoy St														
4	L2	3	0	3	0.0	0.055	16.1	LOS B	0.1	1.0	0.94	0.97	0.94	25.3
6	R2	1	0	1	0.0	0.055	127.5	LOS F	0.1	1.0	0.94	0.97	0.94	7.3
Approach		4	0	4	0.0	0.055	44.0	LOS D	0.1	1.0	0.94	0.97	0.94	20.8
West: Station Road														
7	L2	1	0	1	0.0	0.574	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	13.6
8	T1	1137	30	1197	2.6	0.574	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		1138	30	1198	2.6	0.574	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles		2131	57	2243	2.7	0.574	0.5	NA	0.7	5.0	0.02	0.00	0.03	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FB + D PM - Station Rd / Fitzwilliam Rd / Wentworth Ave (Site Folder: Future Base + Dev Traffic)]

2022 Modelling by Sokan
Site Category: (None)
Roundabout

Vehicle Movement Performance

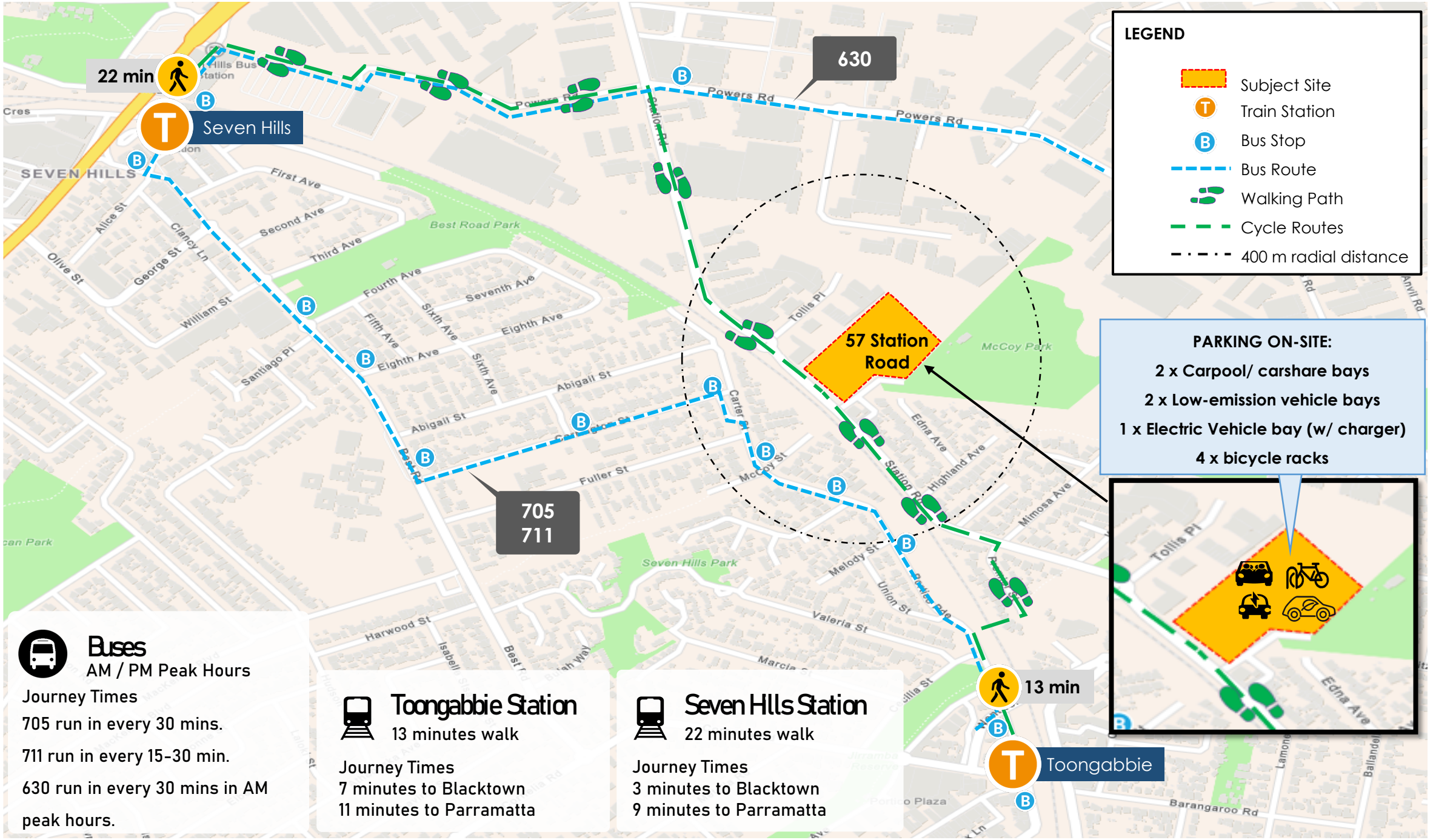
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wentworth Ave														
10	L2	521	11	548	2.1	0.741	13.2	LOS A	8.7	62.1	0.97	1.11	1.32	29.6
12	R2	522	8	549	1.5	0.709	16.0	LOS B	8.0	56.8	0.95	1.06	1.24	35.4
12u	U	8	0	8	0.0	0.709	17.9	LOS B	8.0	56.8	0.95	1.06	1.24	36.6
Approach		1051	19	1106	1.8	0.741	14.6	LOS B	8.7	62.1	0.96	1.08	1.28	32.9
East: Fitzwilliam Rd														
1	L2	498	10	524	2.0	0.858	23.3	LOS B	13.1	93.4	1.00	1.32	1.83	27.5
2	T1	537	16	565	3.0	0.863	22.7	LOS B	14.0	100.8	1.00	1.33	1.84	23.1
3u	U	6	0	6	0.0	0.863	28.9	LOS C	14.0	100.8	1.00	1.33	1.84	30.4
Approach		1041	26	1096	2.5	0.863	23.0	LOS B	14.0	100.8	1.00	1.33	1.83	25.4
West: Station Rd														
8	T1	488	14	514	2.9	0.722	11.9	LOS A	7.9	56.8	0.94	1.08	1.27	34.4
9	R2	660	17	695	2.6	0.869	21.7	LOS B	15.0	107.4	1.00	1.26	1.71	26.1
9u	U	6	0	6	0.0	0.869	23.5	LOS B	15.0	107.4	1.00	1.26	1.71	17.1
Approach		1154	31	1215	2.7	0.869	17.5	LOS B	15.0	107.4	0.98	1.19	1.52	28.9
All Vehicles		3246	76	3417	2.3	0.869	18.3	LOS B	15.0	107.4	0.98	1.20	1.54	28.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix E

Transport Access Guide

TRANSPORT ACCESS GUIDE



Buses
AM / PM Peak Hours

Journey Times

705 run in every 30 mins.

711 run in every 15-30 min.

630 run in every 30 mins in AM peak hours.

Toongabbie Station
13 minutes walk

Journey Times
7 minutes to Blacktown
11 minutes to Parramatta

Seven Hlls Station
22 minutes walk

Journey Times
3 minutes to Blacktown
9 minutes to Parramatta

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