Tweed Valley Hospital Ambulance Station

Traffic Impact Assessment

NSW Health Infrastructure

25 March 2022

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Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to
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1. INTRODUCTION

1.1 Background

Bitzios Consulting (Bitzios) has been engaged by NSW Health Infrastructure (Client) to prepare a Traffic Impact Assessment (TIA) to support a *Part 5 of the Act as a Review of Environmental Factors* (REF) in relation to a proposed new ambulance station located at 711 Cudgen Road, Kingscliff (Lot 11 on DP1269398). The location of the subject site is illustrated in Figure 1.1.

SOURCE: Nearmap

Figure 1.1: Subject Site Location

The subject site is located on land associated with the new Tweed Valley Hospital (TVH) which gained State Significant Development (SSD) Stage 2 approval in June 2020 and is currently under construction with an expected date of completion in early 2023. The TVH Project broadly consists of:

- Delivery of the TVH; a new Level 5 major regional referral hospital to provide the health services required to meet the needs of the growing population of the Tweed - Byron region (in conjunction with hospitals and community health facilities across the region)
- Delivery of the supporting infrastructure required for the TVH, including green space and other amenities, roads and car parking, external road upgrades and connections, utilities connections, and other supporting infrastructure.

As part of the SSD application and approval for the TVH, detailed traffic impact assessments were prepared by Bitzios Consulting, with the Stage 2 Development Approval ultimately granted with conditions by the Department of Planning and Environment (DPE). This traffic assessment therefore considers the outcomes of Traffic Impact Assessment *"P3378.006R Tweed Valley Hospital Project Stage 2 Traffic Impact Assessment"* prepared by Bitzios Consulting on 23/09/2019.

1.2 Proposed Development

The proposed development is for a new stand-alone two-level ambulance station directly adjacent to the TVH as part of the NSW Government's $232 million Rural Ambulance Infrastructure Reconfiguration (RAIR) program. The proposed facility will include the following components related to transport:

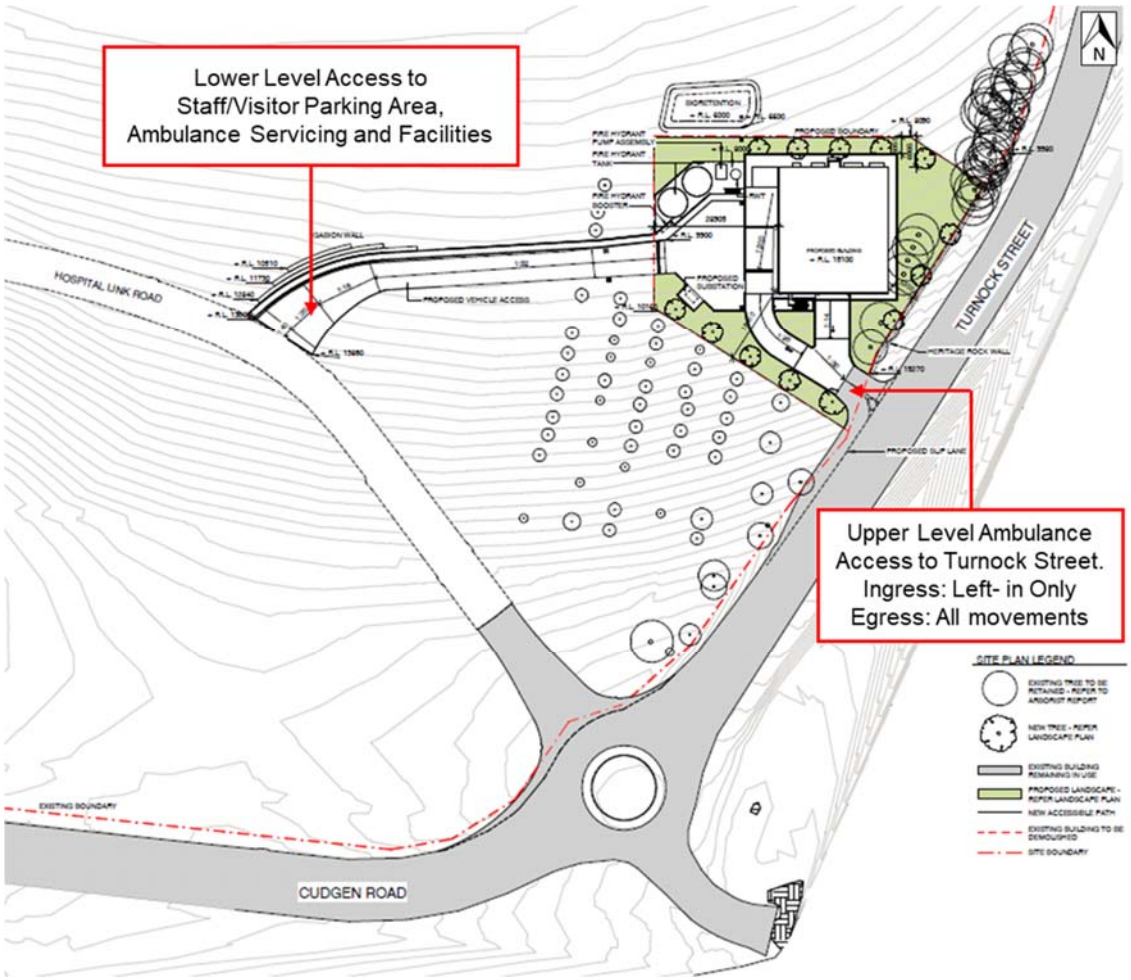
- The basement floor includes:
  - 14 staff car parking spaces (inclusive of one disability parking space)
  - One ambulance parking space for internal servicing
  - Administration facilities
  - Outdoor and indoor dining and kitchen area
  - Male and female bathrooms (inclusive of showers and lockers)
  - Common room and sleeping pods
  - Deliveries room and services room
- The ground floor includes:
  - Eight (8) emergency vehicle parking spaces
  - Administration facilities
  - Medical storage
  - Communications room
  - Gym for internal staff use.

Bicycle storage facilities have not been explicitly provided on the plans. However, site layout provides a secure under croft parking area with capacity to provide storage within the building's curtilage. The facility does include end-of journey such as lockers, shower and changeroom facilities.

The development proposes two (2) vehicular access points including via the Turnock Street frontage as well as via the internal Hospital service ring road. The vehicle access points are designed to incorporate the following conditions:

- Turnock Street access:
  - All movements egress for emergency vehicles (ambulances) only
  - Left-in only ingress via short auxiliary left-turn treatment (AUL(s)) for emergency vehicles only. No right turns are proposed to be permitted form Turnock Street with vehicles to instead U-Turn at the nearby Cudgen Road / Turnock Street roundabout.
- Internal Hospital ring road access:
  - All-movements crossover for all vehicles inclusive of staff, service vehicles and visitors
  - Provides connection to TVH and Turnock Street / Cudgen Road roundabout via the internal ring road.

The proposed development site plan and access points are illustrated in Figure 1.2, with full development plans provide at **Appendix A**.



SOURCE: DJRD Architects

Figure 1.2: Proposed Development Site Plan

1.3 Scope

The scope of this assessment includes:

- Reviewing the existing conditions of the site and its surround relevant to traffic and transport, including the components associated with the Tweed Valley Hospital currently under construction
- Estimation of the proposed facilities traffic generation and assessment of the impacts on the surrounding road network
- Assessing internal road connections to / from the Tweed Valley Hospital including vehicle conflict areas, passing and driveway crossover locations
- Assessment of the specific vehicle access needs for the site and ability to accommodate connections to the surrounding road network
- Assessing driveway crossover, access location, form and sight distances in accordance with Council requirements and AS2890
- Assessing staff parking arrangements and pedestrian pathways within the site and connections to surrounding network
- Review the proposed servicing / refuse collection arrangements, including swept path analysis in accordance with Council's requirements and AS2890.

2. EXISTING CONDITIONS

2.1 Existing Site

The portion of the TVH site is currently vacant and historically utilised for primary production. No current transport generating land use occupies the subject site.

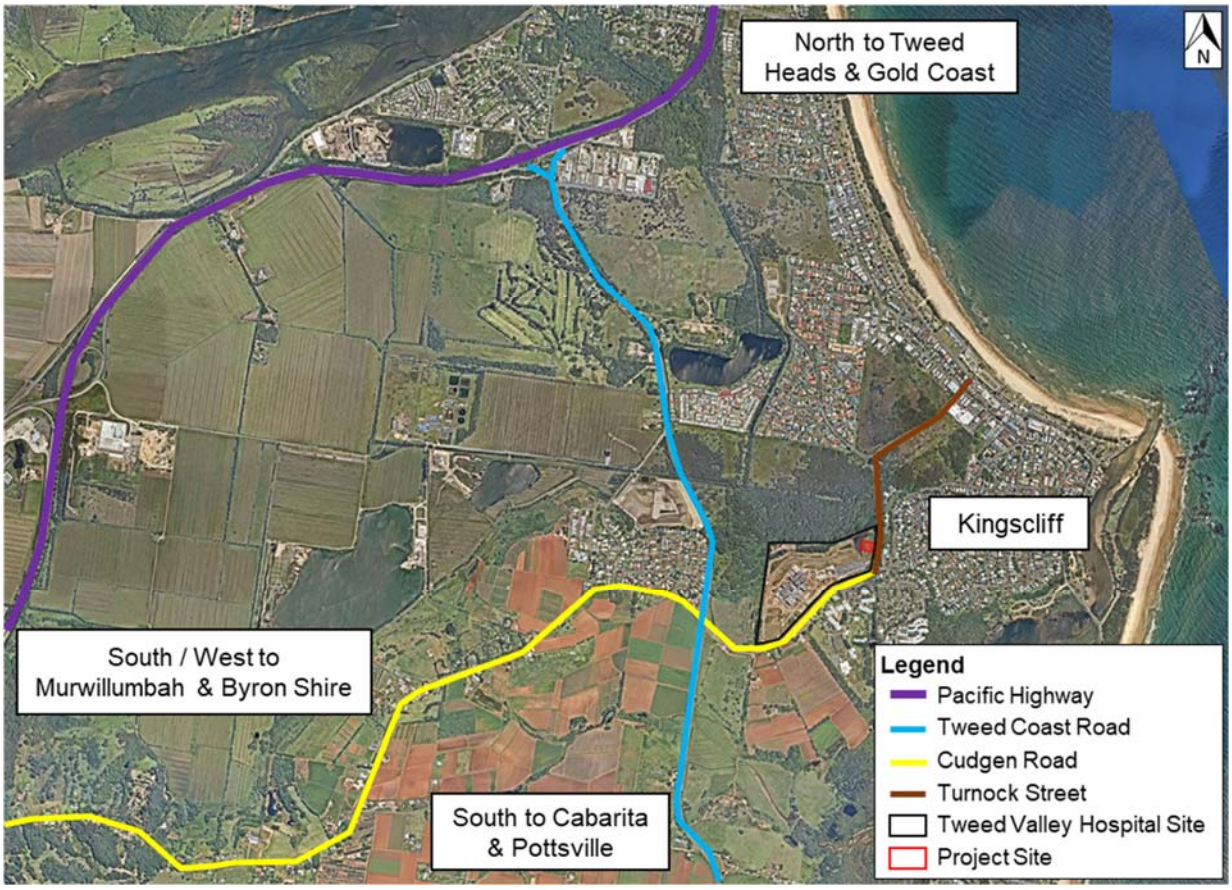
2.2 Surrounding Road Network

Details of the road network surrounding the subject site are outlined in Table 2.1.

Table 2.1: Surrounding Road Network

Road Name	Jurisdiction	No. of Lanes	Hierarchy	Divided	Posted Speed
Turnock Street	Council	2	Collector Road	No	60km/h
Cudgen Road	Council	2	Sub-Arterial	No	60km/h
McPhail Avenue	Council	2	Collector Road	No	50km/h

The surrounding roadwork is shown in Figure 2.1.



Source: Nearmap

Figure 2.1: Surrounding Road Network

2.2.1 Tweed Coast Road

Tweed Coast Road is a north-south rural arterial road connecting coastal towns including Pottsville, Hastings Point, Cabarita, Casuarina, and Kingscliff. The posted speed limit is generally 80 km/h which is reduced to 60 km/h in the vicinity of the Cudgen Road intersection and the Pacific Highway. The typical cross section of Tweed Coast Road is two-lane undivided. Tweed Coast Road is classified as a regional road under the jurisdiction of Tweed Shire Council. Tweed Coast Road carries predominantly commuter traffic, with a tidal flow pattern (northbound in the morning, southbound in the afternoon). It is understood some rural properties have approvals to operate tractors and machinery on Tweed Coast Road. A typical section of Tweed Coast Road is shown in Figure 2.2.

Figure 2.2: Tweed Coast Road Typical Section North of Cudgen Road (Southbound)

2.2.2 Cudgen Road

Cudgen Road is an undivided two-lane rural collector / distributor road connecting Kingscliff to the east with Cudgen and Tweed Valley Way to the west. In the vicinity of the Project Site, the posted speed limit is 60km/h. Cudgen Road fronts the Project Site on its southern side. Cudgen Road is under the jurisdiction of Tweed Shire Council. Dominant traffic flows on Cudgen Road are primarily related to commuter and school traffic movements. It is understood some rural properties have approvals (understood to be issued by NSW Police) to operate tractors and machinery on the western extent of Cudgen Road and Tweed Coast Road. It is also understood that trucks service some non-residential properties and do so via restricted manoeuvring to/from Cudgen Road. A typical section of Cudgen Road is shown in Figure 2.3.

Figure 2.3: Cudgen Road Typical Section East of Tweed Coast Road (Westbound)

2.2.3 Turnock Street

Turnock Street is an undivided two lane rural arterial road connecting Kingscliff to the east with Cudgen Road to the west. In the vicinity of the subject site, the posted speed limit is 60km/h. Turnock Street fronts the subject site on its eastern side. Turnock Street is under the jurisdiction of Tweed Shire Council. A typical section of Turnock Street is shown in Figure 2.4.

Figure 2.4: Turnock Street Typical Section North of Cudgen Road (Southbound)

2.2.4 McPhail Avenue

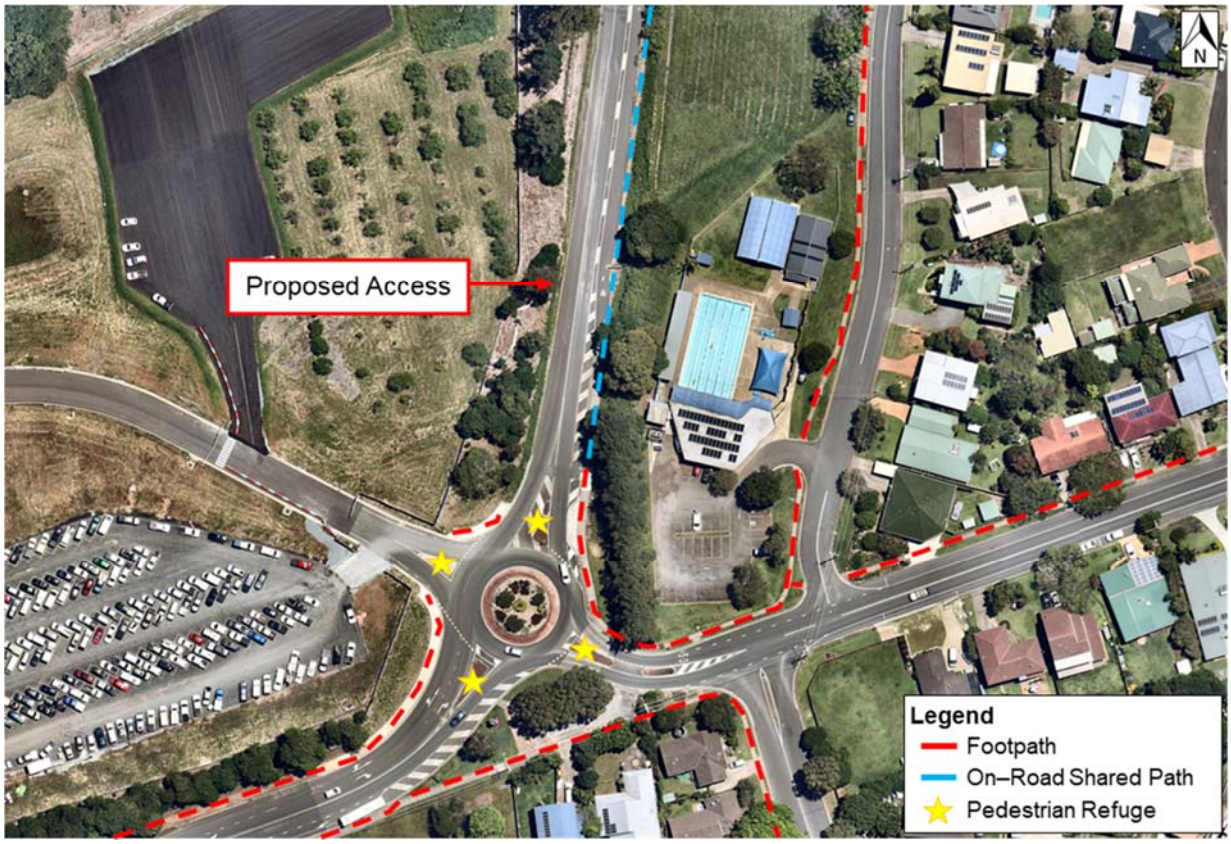
McPhail Avenue provides a residential collector street which services Kingscliff Hill between Cudgen Road and Rob Roy Crescent. McPhail Avenue includes residential driveway access as well as formalise on-street parking on both sides of the road. In addition to serving as a collector road to the surrounding catchment, the route via McPhail Avenue and connecting onto Viking Street serve as the primary connection to the east and south towards Salt Village and Casuarina along Sutherland Street and Cudgen Creek Bridge.

2.2.5 On-street Parking Controls

The road network fronting the subject site consists of collector streets with no on-street parking facilities and controlled by unbroken kerbside line marking and signage.

2.3 Active Transport

Existing pathway and crossing provisions in the vicinity of the proposed access location are illustrated in Figure 2.5.



Source: Nearmap

Figure 2.5: Pedestrian Connectivity

The surrounding area is well-serviced by existing active transport provisions. The shared pedestrian / cycle facility on the eastern side of Turnock Street provides a key active transport connection between Kingscliff (north) and trip attractors including Kingscliff Pool, Kingscliff High School, and TAFE.

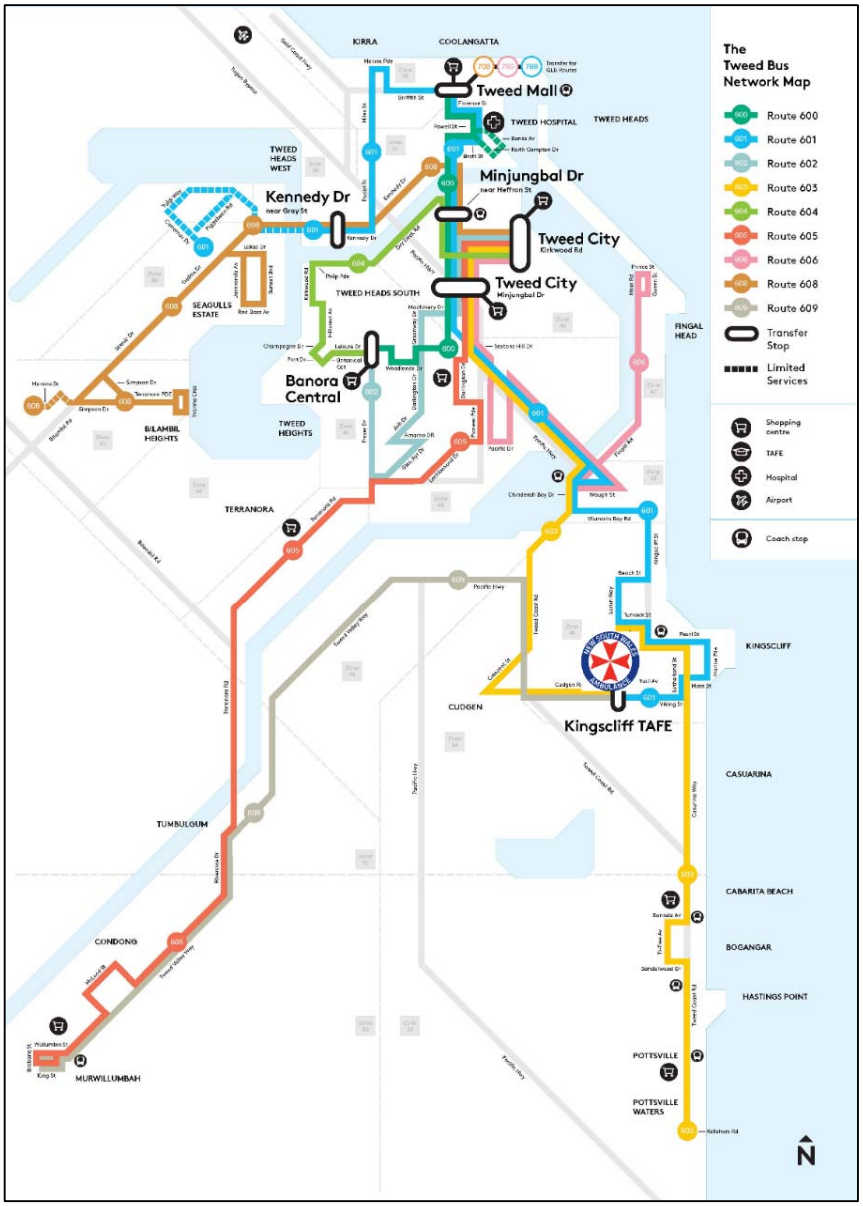
2.4 Public Transport

The proposed facility's location will be serviced by the Tweed Shire's public bus network, which has recently been updated to consider and support the new TVH. Table 2.2 summarises the relevant updated bus services and their frequencies during peak periods.

Table 2.2: Bus Routes

Service	Route	Peak Frequency
601	Tweed Heads West to Kingscliff TAFE	15 minutes
603	Tweed City to Pottsville Waters	15 minutes
609	Kingscliff TAFE to Murwillumbah	Daily

The bus network is illustrated in Figure 2.6.



Source: Surfside Buslines

Figure 2.6: Tweed Shire Public Transport Network

2.5 Future Planning

The surrounding Kingscliff area is subject to substantial future planning with significant development expected to occur over the next 15 years. Coinciding with this development, as per the Kingscliff Locality Plan, a new east-west road link is proposed connecting the Turnock Street / Elrond Drive roundabout (north) to Tweed Coast Road at the Crescent Street intersection. This link is expected to reduce the dependency on the existing Cudgen Road / Turnock Street east-west link, thereby reducing traffic volumes past the subject site.

With respect to the proposal, the future road network will also improve travel times for emergency vehicles associated with the facility via new road links and network improvements.

2.5.1 Kingscliff Locality Plan

The Kingscliff Locality Plan has recently been developed for the area surrounding the Project Site. The purpose of the Kingscliff Locality Plan is to provide a 30-year vision and planning framework to guide the future growth and expansion of the Kingscliff locality. The framework revolves around managing population and employment growth, environmental protection and planning for relevant infrastructure (including roads and the active transport network) to cater for future growth in the area.

2.5.2 Proposed Developments in the Vicinity

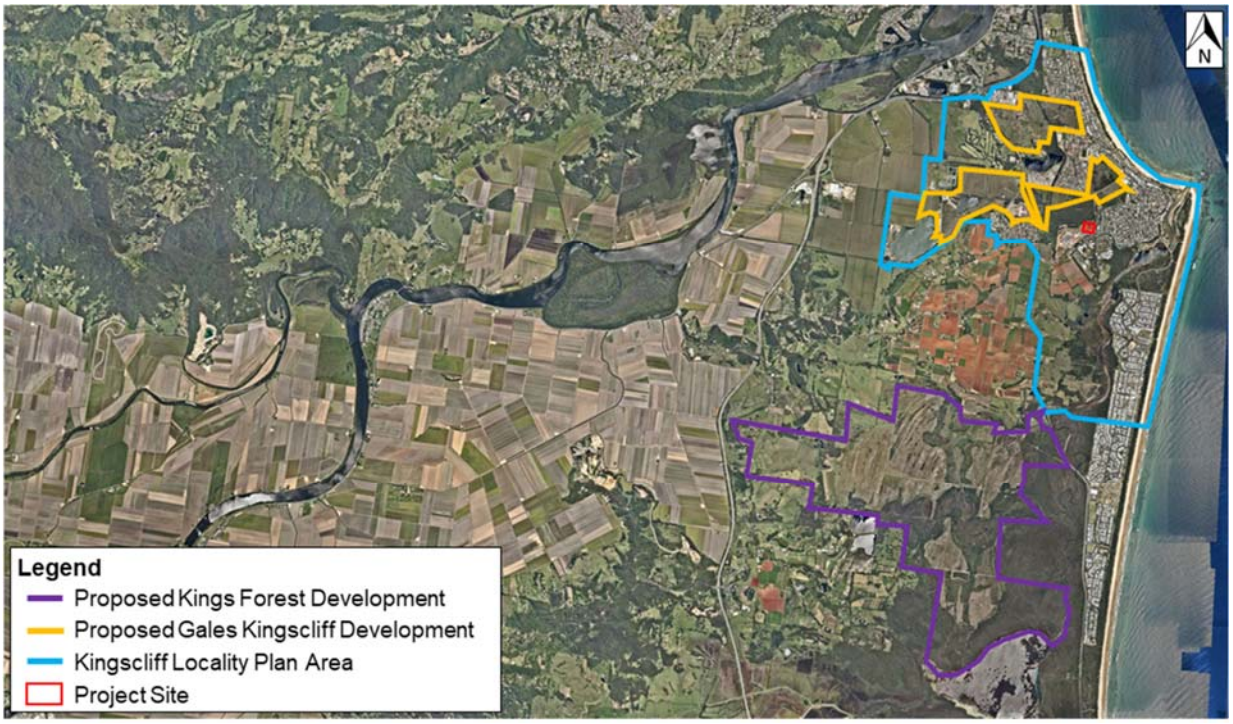
The key developments proposed in the area include the Kings Forest and Gales-Kingscliff developments. The Kings Forest development site is located to the south of the Project Site. Kings Forest is considered to be a State Significant Site and is identified to be one of the largest contributors to new housing and employment in the Tweed Shire over the next 25 years. The site proposes a mixture of land uses including residential, commercial, neighbourhood and community facilities. The site is expected to comprise of:

- 4,500 detached dwellings as well as mix of other residential dwellings (townhouses, terraces etc.) with an estimated residential population in the order of 11,000 residents
- A mixed-use Town Centre and two (2) Neighbourhood Centres
- Community and education facilities over 12.7 hectares
- Employment land covering 3.4 hectares
- Recreational and open space areas

The proposed Kings Forest development will rely significantly on Tweed Coast Road as the main traffic route between Kings Forest and the Pacific Highway.

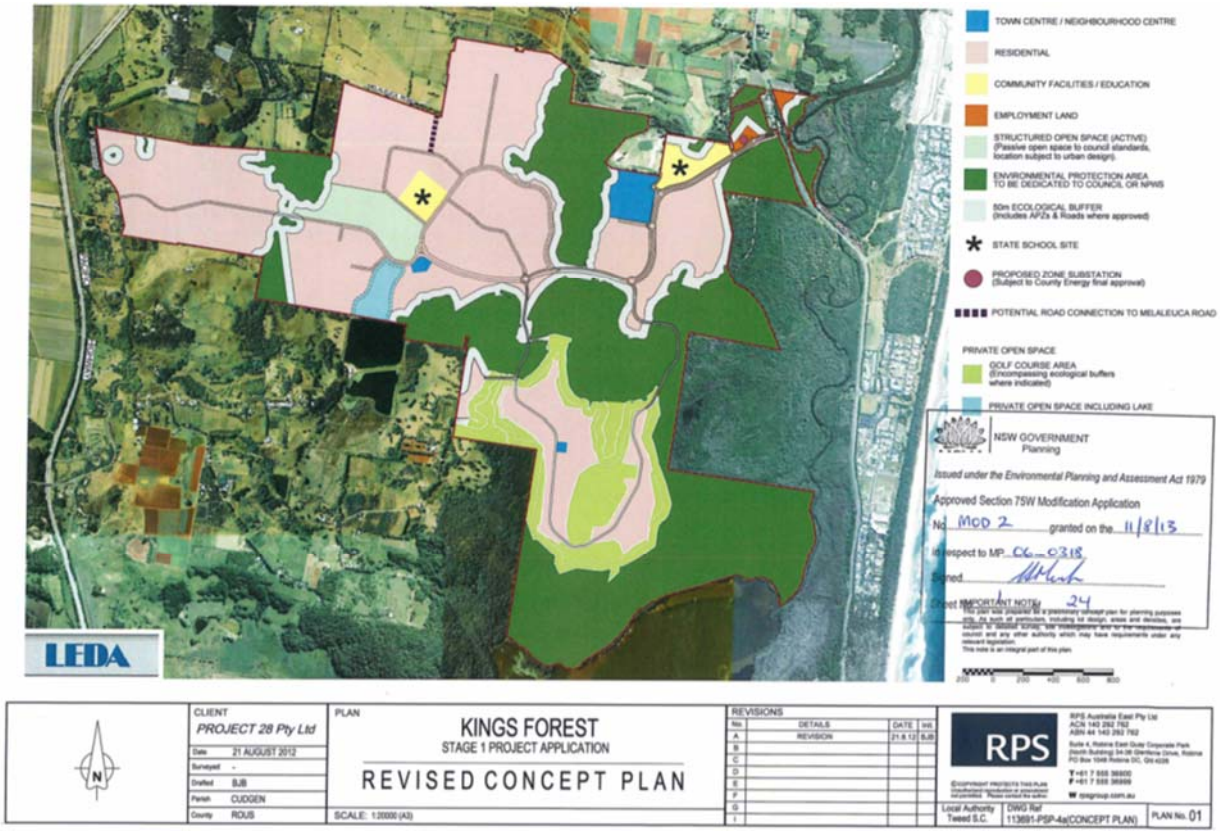
The Gales-Kingscliff Development site is located to the north of the Project Site. It is understood that the proposal is still in planning stages. The site proposes a mixture of land uses including residential, commercial, neighbourhood and community facilities.

The locality of the Kings Forest, Gales-Kingscliff developments, and Kingscliff Locality Plan area with respect to the Project Site is shown in Figure 2.7. Concept plans for the Kings Forest and Gales - Kingscliff Developments are shown in Figure 2.8 and Figure 2.9, respectively.



Source: Nearmap

Figure 2.7: Locality of Proposed Surrounding Development (Indicative)



Source: Tweed Shire Council – Major Developments: Kings Forest

Figure 2.8: Proposed Concept Plan for Kings Forest Development

Source: Gales Kingscliff

Figure 2.9: Proposed Concept Plan for Gales - Kingscliff Development

2.5.3 Tweed Shire Council's Transport Network Planning

Tweed Shire Council's transport network planning for the area has been developed in the form of the draft Kingscliff Locality Plan, Development Control Plan and the TRDS. The purpose of the Kingscliff Locality Plan and the Development Control Plan is to provide a 30-year vision and planning framework to guide the future growth and expansion of the Kingscliff locality.

The TRDS considered:

- The existing road network (in terms of capacity, efficiency, and safety)
- Existing and forecast network capacity constraints
- Growth in the Tweed Shire for a 25 - 30-year planning horizon

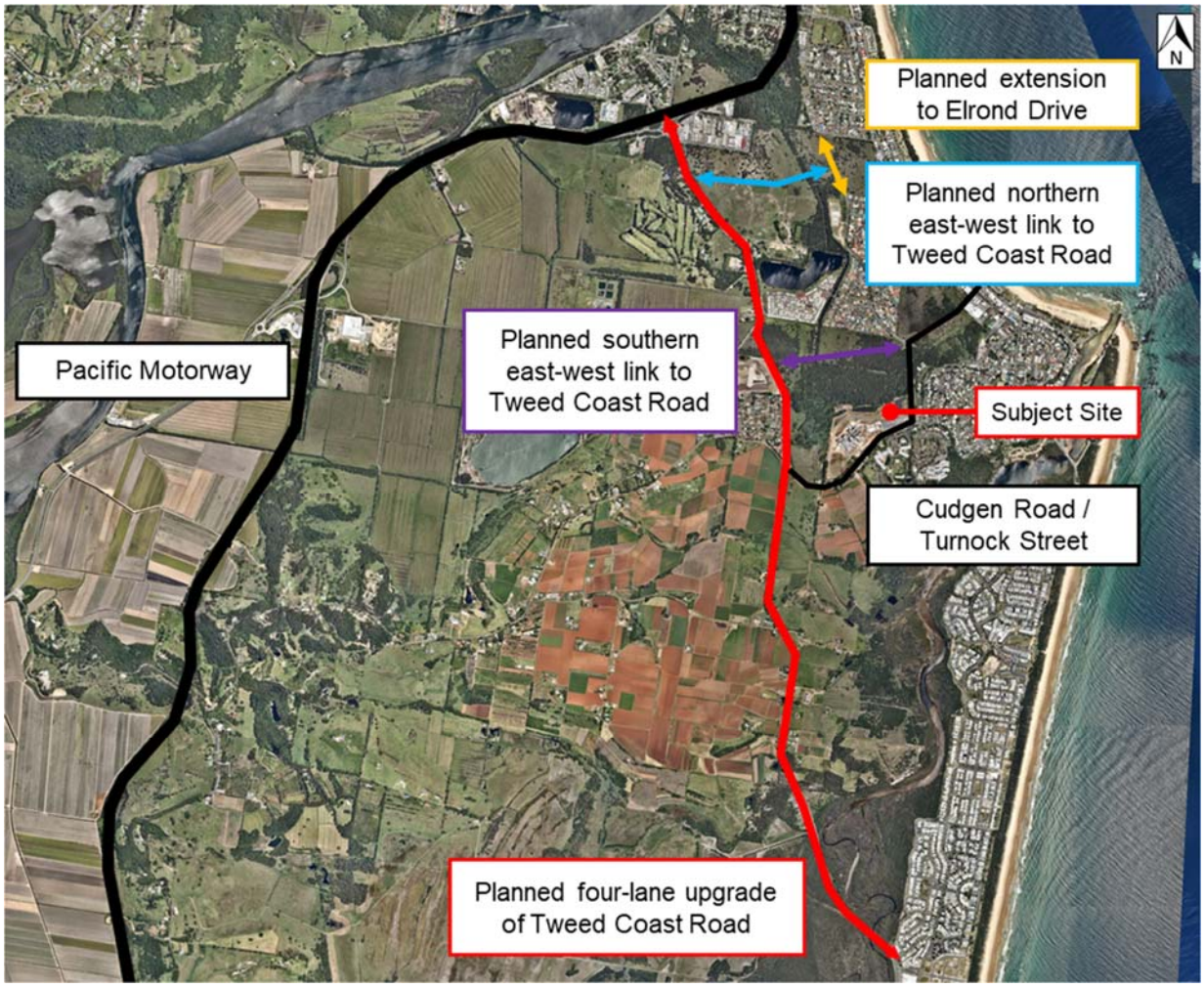
The TRDS identifies several road capacity upgrades for the immediate area surrounding the Project Site including:

- Four-lane upgrade of Tweed Coast Road between the Pacific Highway and Casuarina
- A new east-west connection associated with the northern component of the Gales Kingscliff development linking Tweed Coast Road to Kingscliff Street
- The north-south extension of Elrond Drive associated with the northern component of Gales Kingscliff, allowing for a connection of Beach Street through to Ozone Street

- A new east-west connection associated with the southern component of the Gales Kingscliff development extending Turnock Street to Tweed Coast Road linking Tweed Coast to Kingscliff Street
- Reconfiguration of the Morton Street intersection from Tweed Coast Road and improvements for access for Chinderah Industrial Estate
- Improvements to the Pacific Highway / Tweed Coast interchange in consultation with RMS.

The various road network upgrades are based on the network capacity requirements and projected traffic growth within the area. While timing is not set for commencement of works, funding for road upgrades is provided by Section 94 developer contributions, and funding allocations from state and federal government sources. In this regard it is understood that Tweed Shire Council is in the process of planning the four-lane upgrade of Tweed Coast and is applying for funding grants to assist with the delivery of the works.

Figure 2.10 provides an overview of network planning and capacity upgrades in the locality as identified in the TRDS. It is noted that the specific alignments of road extensions are strategic in nature only and subject to further detailed planning and design.



Source: Nearmap

Figure 2.10: Overview of Network Planning in the Locality

2.5.4 Current and Proposed Bikeways

An existing on-road shared path runs along the subject site frontage. The pathway connects to residential areas west of Tweed Coast Road and to Kingscliff in the east. The existing bicycle network in proximity to the Project Site is shown in Figure 2.11. The existing cycle path infrastructure in proximity to the site are shown in Figure 2.12. It is noted that as part of the TVH project, shared pathways and crossing facilities along Cudgen Road will be upgraded, including a new signalise intersection fronting the TVH main entry.

Source: Tweed Shire Council Cycleways and Footpaths (2017)

Figure 2.11: Surrounding Bicycle Network

Figure 2.12: Existing Separated On-road Bicycle Path on Turnock Street

3. TRAFFIC ASSESSMENT

3.1 Background Traffic

Background traffic volumes were adopted from the Bitzios Consulting traffic assessment of the Tweed Valley Hospital (*P3378.006R Tweed Valley Hospital Project Stage 2 Traffic Impact Assessment).* For the purposes of this assessment background traffic volumes are equal to morning and evening peak hour design traffic volumes from the hospital (described as MVT and EVT in the hospital assessment). These background traffic volumes, incorporating hospital traffic, but excluding proposed ambulance station traffic, are outlined at **Appendix B** (Sheet 1-2) for the forecast year of opening (2023) and 10-year design horizon (2033).

3.2 Facility Traffic Generation

The new facility will replace the existing ambulance station located on Marine Parade, Kingscliff. The facility will incorporate a range of traffic generating operations including ambulance movements exiting the site to emergency calls (via Turnock Street only) as well as daily staff entry and exits and other operational (non-emergency) vehicle movements via the Hospital's internal road network. Below outlines existing and future expected operational information that informed the traffic assessment of the new facility.

- Kingscliff station currently operates as a part of a cluster with neighbouring Tweed Heads and Pottsville stations
- Kingscliff response data shows approximately 2,000 responses per year in Kingscliff and an additional 1,600 responses per year to neighbouring responses areas (Tweed Heads and Pottsville). This equates to on average 70 responses per week and 10 responses per day
- Kingscliff is expected to complete more case cycles (station to station) based on the proximity to the new TVH, but respond to less incidents in Tweed Heads
- Kingscliff is currently a 24-hour station of one crew (one vehicle) per day and one crew (one vehicle) per night (no crossover). There is no on call roster provisioned from the station
- Pottsville and Tweed will likely perform standby duties from Kingscliff station at approximately five times per day
- A Duty Operations Manager will work from Kingscliff five days per week (day shift)
- Waste / oxygen / consumables / medications / mail deliveries will average approximately one service vehicle movement per day. The vehicles will range in size from vans, through to 12.5m Heavy Rigid Vehicles
- Staff private vehicles will be parked on site (four cars per day on average). Access to the staff parking area will be via the internal road connection to TVH's road network and onto Turnock Street / Cudgen Road intersection
- It is envisaged that there will be on average 1-2 ambulance movements per day (1-2 vehicles) attributed to reliving staff from other stations
- During night shifts, traffic movements are minimal and only attributed to emergency responses.
- There will be no routine education or training programs scheduled for the site that would attract large volumes of cars. Periods for when larger volumes of cars would be generated by the facility would be a maximum of five times per year. Any additional traffic and parking would be facilitated by the undercover parking areas and supported by the adjacent TVH parking area.

Based on the above outlined operations, the total overall traffic generated by the site has been conservatively assumed to include 20 emergency vehicle movements per day using the Turnock

Street driveway and an additional 33 vehicle movement using the TVH site access to Turnock Street / Cudgen Road roundabout. For the purpose of conservative peak period traffic analysis, a high proportion of 70% of traffic movements have been assessed as occurring during AM and PM peak periods as outlined in Table 3.1.

Table 3.1: Average Daily Traffic Generation and Conservative Peak Period

Type	Daily Movements	Assumed Peak Trip Rate
Duty/Visiting Ambulance Responding	15	5
Manager Responding	5	1
Duty/Visiting Ambulance Returning/Standby	20	7
Visiting Ambulance Staff Relief	2	1
Staff	10	5
Service Vehicles	1	1
Total	**53**	**19**

3.3 Traffic Distribution

Development traffic to / from each of the proposed access points and subsequent traffic distribution was determined from background 2023 turning volumes by roundabout approach / exit volumes. Traffic distribution and development trip assignment for the proposed development are therefore outlined in **Appendix B** (Sheet 3-6).

3.4 Design Traffic

Forecast design traffic volumes at years 2023 and 2033 is therefore provided at **Appendix B** (Sheet 7-8).

3.5 SIDRA Analysis

3.5.1 Overview

SIDRA intersection 9 was used to assess the operations of the following intersections:

1. Cudgen Road / Turnock Street roundabout
2. Turnock Street driveway access to ambulance station.

The assessment was undertaken for the weekday AM and PM peak hours with and without the proposed development at the forecast year of opening (2023) and 10-year design horizon (2033).

3.5.2 Turnock Street / Cudgen Road

The Cudgen Road / Turnock Street roundabout intersection layout as assessed in SIDRA is shown in Figure 3.1.

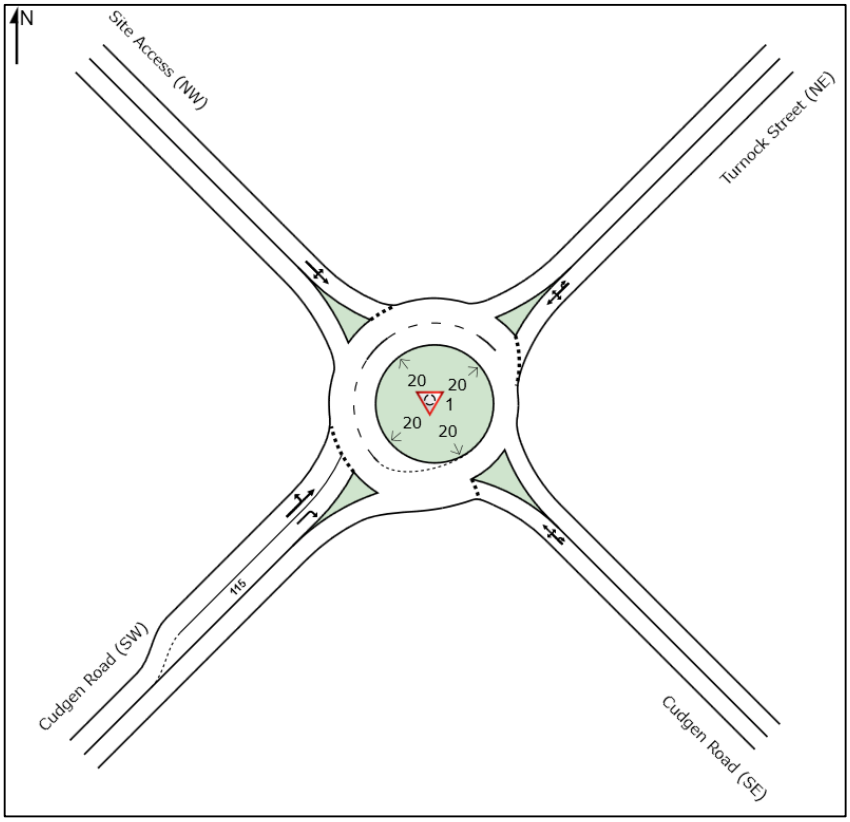


Figure 3.1: Cudgen Road / Turnock Street Roundabout SIDRA Intersection Layout

Table 3.2 summarises 2023 SIDRA results for the Turnock Street / Cudgen Road roundabout, with detailed outputs provided at **Appendix C**.

Table 3.2: 2023 Cudgen Road / Turnock Street SIDRA Results Summary

Approach	2023 Background				2023 Design			
	DOS	Delay (s)	LOS	Queue (m)	DOS	Delay (s)	LOS	Queue (m)
AM Peak								
Cudgen Rd (SE)	0.57	6	A	40	0.58	6	A	41
Turnock St (NE)	0.42	10	A	20	0.43	10	A	21
TVH Access (NW)	0.07	9	A	2	0.08	9	A	3
Cudgen Rd (SW)	0.39	8	A	22	0.40	8	A	22
Total	**0.57**	**7**	**A**	**40**	**0.58**	**8**	**A**	**41**
PM Peak								
Cudgen Rd (SE)	0.60	10	A	45	0.61	10	A	47
Turnock St (NE)	0.45	11	A	22	0.46	11	A	23
TVH Access (NW)	0.37	10	A	13	0.37	10	A	14
Cudgen Rd (SW)	0.31	7	A	16	0.31	7	A	16
Total	**0.60**	**9**	**A**	**45**	**0.61**	**9**	**A**	**47**

Table 3.3 summarises 2033 SIDRA results for the Turnock Street / Cudgen Road roundabout, with detailed outputs provided at **Appendix C**.

Table 3.3: 2033 Cudgen Road / Turnock Street SIDRA Results Summary

Approach	2033 Background				2033 Design			
	DOS	Delay (s)	LOS	Queue (m)	DOS	Delay (s)	LOS	Queue (m)
AM Peak								
Cudgen Rd (SE)	0.71	8	A	69	0.72	9	A	72
Turnock St (NE)	0.56	14	A	34	0.57	14	A	36
TVH Access (NW)	0.10	10	A	3	0.10	10	A	3
Cudgen Rd (SW)	0.48	8	A	30	0.48	8	A	30
Total	**0.71**	**9**	**A**	**69**	**0.72**	**9**	**A**	**72**
PM Peak								
Cudgen Rd (SE)	0.77	17	B	87	0.78	18	B	90
Turnock St (NE)	0.59	16	B	38	0.60	16	B	39
TVH Access (NW)	0.47	12	A	19	0.48	12	A	20
Cudgen Rd (SW)	0.38	7	A	22	0.38	7	A	22
Total	**0.77**	**12**	**A**	**87**	**0.78**	**12**	**A**	**90**

As shown above, the Cudgen Road / Turncok Street roundabout is expected to operate within acceptable performance limits at the year 2023 and 2033 with or without traffic volumes associated with the proposed ambulance station. Furthermore, development traffic is expected to have a negligible impact on intersection performance, increasing average intersection delays by less than one second in the peak periods.

3.5.3 Turnock Street / Ambulance Station Access

The Cudgen Road / Turnock Street roundabout intersection layout as assessed in SIDRA is shown in Figure 3.2.

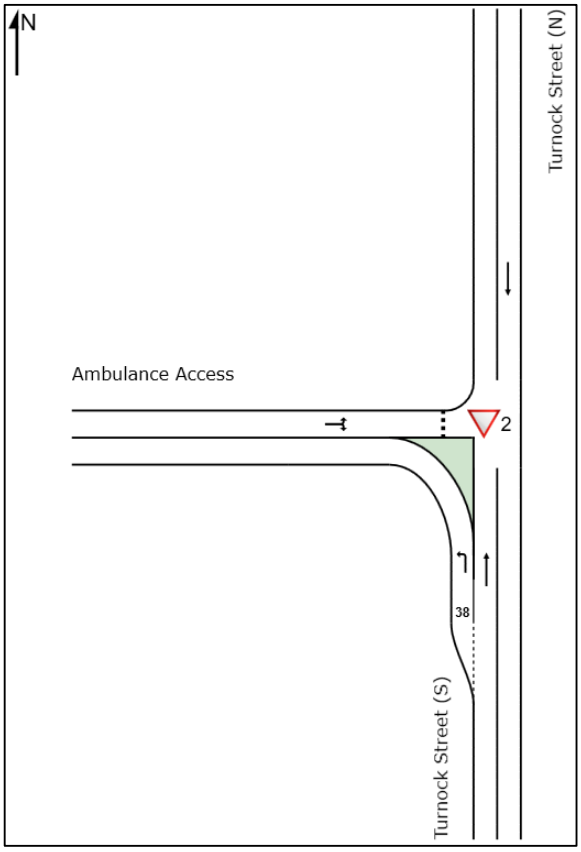


Figure 3.2: Turnock Street Driveway Access SIDRA Intersection Layout

Table 3.4 summarises 2023 and 2033 SIDRA results for the Turnock Street / Ambulance Access, with detailed outputs provided at **Appendix C.**

Table 3.4: Turnock Street / Development Access SIDRA Results Summary

Approach	2023 Design				2033 Design			
	DOS	Delay (s)	LOS	Queue (m)	DOS	Delay (s)	LOS	Queue (m)
AM Peak								
Turnock St (S)	0.19	0	NA	0	0.23	0	NA	0
Turnock St (N)	0.15	0	NA	0	0.18	0	NA	0
Ambulance Access	0.01	3	A	0	0.01	4	A	0
Total	**0.19**	**0**	**NA**	**0**	**0.23**	**0**	**NA**	**0**
PM Peak								
Turnock St (S)	0.23	0	NA	0	0.27	0	NA	0
Turnock St (N)	0.15	0	NA	0	0.18	0	NA	0
Ambulance Access	0.01	3	A	0	0.01	4	A	0
Total	**0.23**	**0**	**NA**	**0**	**0.27**	**0**	**NA**	**0**

As shown, any delays or vehicle queues at the Turnock Street / Ambulance Access would be negligible at the forecast year of opening (2023) or 10-year design horizon (2033).

3.6 Traffic Assessment Summary

The traffic generated by the proposed ambulance station can be catered for by the proposed access arrangements. The surrounding road network and intersections will continue to operate within acceptable limits with the inclusion of the ambulance station and no further mitigation measures are required.

4. ACCESS ASSESSMENT

4.1 Traffic Data

To determine the appropriateness of the proposed access location, automatic tube count data was collected on Turnock Street, at the approximate location of the proposed ambulance access, for a 7-day period from the 13th October to the 19th October 2021. This traffic data was used to evaluate through traffic speeds and volumes along Turnock Street thereby determining sight distance requirements and access design requirements.

Detailed survey outputs are provided at **Attachment D**. Key outputs of daily traffic volume data was recorded as follows:

- Average daily traffic volumes (7-day): 5,506vpd
- Average weekday traffic volumes: 5,874vpd
- Average weekend traffic volumes: 4,587vpd

Existing traffic speed data along Turnock Street passing the site is summarised in Table 4.1.

Table 4.1: Turnock Street Speed Data

Turnock Street	Northbound	Southbound
Average Speed	55.5km/h	52.5km/h
85th Percentile Speed	61.0km/h	58.8km/h

4.2 Ambulance Access Requirements

The proposed access is to be designed to cater for the dispatch of ambulances in an emergency as well as returning vehicles. As such, the proposed access shall facilitate left-out and right-out movements. It is however proposed that right-turn movements be restricted into the site. This is due to the southbound travel lane's proximity to the shared path and the subsequent inability to provide a widened travel lane to accommodate a passing vehicle.

All entering ambulance vehicles will be required to turn left into the site. This is considered acceptable noting the close proximity of the Turnock Street / Cudgen Road roundabout for U-Turn manoeuvres and considering the fact that ambulances are not in an emergency situation when entering the proposed station. A short auxiliary left-turn treatment (AUL(s)) shall be provided for the left-turn into the site. To cater for the larger size of the ambulances in comparison to a passenger car, the proposed access shall be designed to cater for relevant requirements of a small rigid vehicle (SRV).

4.3 Access Design

A concept plan of the recommended access arrangement is provided at **Appendix E**. The access design shall incorporate the following design features outlined in Table 4.2 and in compliance with AS2890 and the Austroads Guide to Road Design (AGRD).

Table 4.2: Access Design Assessment

Design Element	Design Standard	Required	Proposed	Compliant
Driveway Width	AS2890.2	6m	8m	Yes
Crossover Splays & Curve Rail	AS2890.2	As per Figure 3.1 of AS2890.2	As per Figure 3.1 of AS2890.2	Yes
Sight Triangles	AS2890.2	2.5m x 2.0m	2.5m x 2.0m	Yes
Access Driveway Grade	AS2890.2	Max: 1:20 (5%)[1]	Shall be. 1:20(5%)[2]	Yes
AUL(s) Width	AGRD Part 4A	3m	3.3m	Yes
AUL(s) Total Length	AGRD Part 4A	38m (corrected for 8% road grade)	38m	Yes
AUL(s) Taper Length	AGRD Part 4A	18m	18m	Yes

[1] *For a distance extending the property line for at least 6m or the longest wheelbase of the design vehicle*
[2] *For the first 9m from the hold line at vehicle exit*

4.3.1 Signage

Appropriate signage shall be used to distinguish the use of the Turnock Street access for emergency vehicles. The following signage shall be used:

- No right turn sign into the site for southbound traffic along Turnock Street
- Authorised Vehicles Only signs for Turnock Street access entry.

4.4 Sight Lines Requirements

The average 85th percentile speed of 60km/h for northbound and southbound traffic detailed in Table 4.1 has been adopted as the design speed. A sight distance of 83m is required in each direction for a design speed of 60km/h from the proposed access location to comply with the requirements of AS2890. Figure 4.1 demonstrates the existing driver sight lines for the nominated location of the ambulance egress driveway.

Figure 4.1: Existing Sight Lines at Proposed Access Location

As shown, vegetation from existing trees limits the available sight lines in each direction. In addition, civil work will be required along Turnock Street to allow for clear sight lines that will be discussed in Section 4.4.1.

4.4.1 Required Works

As shown, vegetation from existing trees limits the available sight lines in each direction. A raised embankment is also present within the verge to the south of the proposed access blocking sight lines to vehicles coming from the Turnock Street / Cudgen Road roundabout and approaching the site.

In order to a achieve a compliant access to Turnock Street, a series of works is required including:

- Removal and maintenance of vegetation within the road reserve to the north and south of the proposed driveway location
- Civil works between the proposed Turnock Street access and the Turnock Street / Cudgen Road roundabout to remove the embankment obstruction. This is achieved through the installation of a short Auxiliary Left Turn (AUL(s)) treatment
- Civil works to improve the exit driveway grade on approach to Turnock Street.

As part of the construction of the AUL(s) treatment into the proposed Turnock Street access, it is recommended that verge profiling works be undertaken between the access and the Turnock Street / Cudgen Road roundabout. Regrading of a 3.5m verge width and removal of vegetation in this area, as shown on the plan provided at **Appendix E**, allows for clear sight lines from the access to the roundabout. Vegetation clearing is recommended to facilitate sight lines as illustrated in Figure 4.2, with low-lying vegetation to be removed circled in red, subject to environmental considerations under the site's Biodiversity Management Plan.

Figure 4.2: Recommended Vegetation Removal

With the above vegetation trimming and civil works, a sight distance assessment indicates that there is adequate available sight distance in each direction as per the requirements of AS2890. Existing sight lines, required sight distance and available sight distances with above works are all illustrated in **Appendix E**.

4.5 Pedestrian Site Access

4.5.1 Existing Constraints

The site location and connections to the surrounding public pathway network is constrained by the surrounding topography. A connection to the facility directly from the western side of Turnock Street is not feasible, nor recommended given the following constraints:

- Extending a public pathway along the western side of Turnock Street to connect to the facility would create a “dead end” for pedestrians and not be able to be continued down Turnock Street to the north
- An extension of the pathway from the southern (Turnock Street / Cudgen Road roundabout) is not feasible due to vegetation and grades along the western side of Turnock Street
- The ambulance station is not a publicly accessible facility and pedestrian access will be limited to staff movements from the surrounding area.

4.5.2 Proposed Pathway Connection

Considering the above site constraints and operational factors, a footpath connection to service ambulance station is recommended to be provided adjacent to the lower-level access roadway and connect to the TVH service ring road and incorporated into the overall TVH pathway network. Cycle access to the lower level will also be via the TVH service ring road and pathway connections.

Coordination of these new pathway facilities linking the ambulance station to the greater TVH precinct currently under construction is being undertaken to ensure adequate and convenient pathway facilities incorporate the proposed ambulance stations and connect to the greater pathway network surrounding the TVH precinct.

5. PARKING & SERVICING

5.1 Parking Requirements & Provision

Council's Tweed Development Control Plan 2008, specifically Section A2 – Site Access and Parking Code does not specify parking rates for Ambulance Station. Therefore, parking demands and provisions were based on a first principles assessment of site operations as detailed in Section 3.

The facility will incorporate the following parking facilities:

- Upper Level – Ambulance Station: eight ambulance bays
- Lower Level – Staff Parking Area: 15 parking spaces including two bays located outside the security gate and 13 spaces within the secure staff parking area
  - One parking for persons with a disability (PWD) located within the secure parking area
- Service vehicle loading bay and turning facilities on lower level.

Overall based on the site scale and operations, the parking provision adequately caters for the proposed parking demands and will not result in any adverse parking conditions to the surrounding area.

5.2 Parking Geometric Layout Assessment

The internal car parking geometry has been designed to comply with Australian Standards AS2890.1 (Off-street parking) and AS2890.2 (Off-street commercial vehicle facilities). The car parking and internal geometry assessment is documented in Table 5.1.

Table 5.1: Parking Geometric Layout Assessment

Design Element	Requirements	Provided	Compliant
Car Parking Bays (User Class 1A)	2.4m x 5.4m	2.4m x 5.4m	Yes
PWD Parking Bays (User Class 4)	2.4m x 5.4m + adjacent shared area of same dimensions	2.4m x 5.4m + adjacent shared area of same dimensions	Yes
Parking Aisle Width (Two-Way)	5.8m (+0.3m where a vertical obstruction is opposite)	5.75m	No
Column Intrusions	As per Figure 5.2 of AS2890.1	Generally as per Figure 5.2 of AS2890.1	No
Blind Aisle Extension	1.0m	1.0m	Yes
Internal Roadways (One-Way)	Min. 3.6m (light vehicles)	6.3m	Yes
Grades (Entry)	Max 1:20 for first 6m into site (vehicles up to an MRV)	1:30	Yes
Grades (Circulation & Parking Areas)	Max. 1:20	Flat	Yes
Grade Change	Max. 1:8 at summit Max 1:6.7 at sag	Max. 1:8 at summit Max 1:6.7 at sag	Yes
Height Clearance (Car Parking)	2.2m	2.7m	Yes
Height Clearance (Service Vehicles)	4.5m	5m	Yes

As shown above, the proposed parking layout is generally complaint with the relevant requirements of AS2890. Some minor non-compliances are identified as detailed in Table 5.1 which are to be addressed at detailed design stages such that the proposed development is constructed fully in accordance with AS2890.

5.3 Servicing

Based on information provided, the ambulance station will primarily be serviced by small rigid vehicles (SRV) for receiving deliveries of small goods / supplies. While it is not typical for the site to be visited by large service vehicles the lower-level service area provides sufficient area for a Heavy Rigid Vehicle (HRV) to enter, stand within the site and exit in a froward gear. The two-way roadway allows a HRV to stand in proximity to the facility and allow vehicles to pass. Swept path diagrams demonstrating a HRV manoeuvring is provided at **Appendix F**.

5.4 Refuse Collection

Refuse collection is to be undertaken by a front-loading refuse collection vehicle (RCV). The RCV is to be in forward gear when entering and leaving. Refuse collection will occur within the servicing area located on the lower floor and free of overhead obstructions. Swept path diagrams demonstrating refuse collection vehicle (RCV) manoeuvring is provided **Appendix F**.

6. SUMMARY AND CONCLUSIONS

The key findings of the TIA for the proposed ambulance station at 711 Cudgen Road, Kingscliff are as follows:

- The proposal is for a new ambulance station adjacent to the Tweed Valley Hospital and will replace the existing facility located at Marine Parade Kingscliff.
- Vehicular access to the facility is proposed via two accesses including a dedicated access driveway for emergency vehicles only to Turnock Street and a secondary access for all vehicles to connect to the TVH internal service ring road
- Turnock Street access driveway for emergency vehicles incorporates a left-in only via a short auxiliary left-turn treatment (AUL(s) and an all-movements egress
- With the integration to the TVH site, the subject site's location is well services by public transport routes as well as pathway facilities and connections to the surrounding area
- The proposed development is estimated to generate in the order of 53 trips per day and has been assessed under a conservative proportion of trips occurring during peak background periods. The development's traffic impacts have been assessed and will not result in any adverse conditions on surrounding roads or intersections
- An AUL(s) turn treatment and associated civil works along the Turnock Street frontage is proposed to allow for safe driver sight lines and access operations for emergency vehicles entering and exiting the new access driveway
- With the recommended works, the proposed vehicular access locations, configurations and sight distances have been designed to comply with Council's policies and relevant Australian Standards
- A new pathway connection is proposed adjacent to the lower-level driveway connection to the TVH service ring road. This pathway link is to be coordinated and connect to the greater pathway network associated with the TVH precinct currently under construction
- A total of 8 ambulance car parking spaces and 14 staff car parking spaces have been proposed as part of the development catering for the needs of the development
- The parking geometric layout provided is generally in accordance with the relevant requirements of Council's requirements and Australian Standards AS2890 with any non-compliances to be addressed at detailed design stages
- Service vehicles will access the site via the lower-level access driveway, with the road layout designed to accommodate a 12.5m HRV to enter and exit the site in a forward gear. Refuse collection is proposed via a front loading RCV to occur on the lower-level roadway and demonstrated to allow for bins to be serviced free of any vertical obstructions.

Based on the above assessment, it is concluded that there are no significant traffic or transport impacts associated with the proposed development to preclude its approval and relevant conditioning on transport planning grounds.

Appendix A: Development Plans

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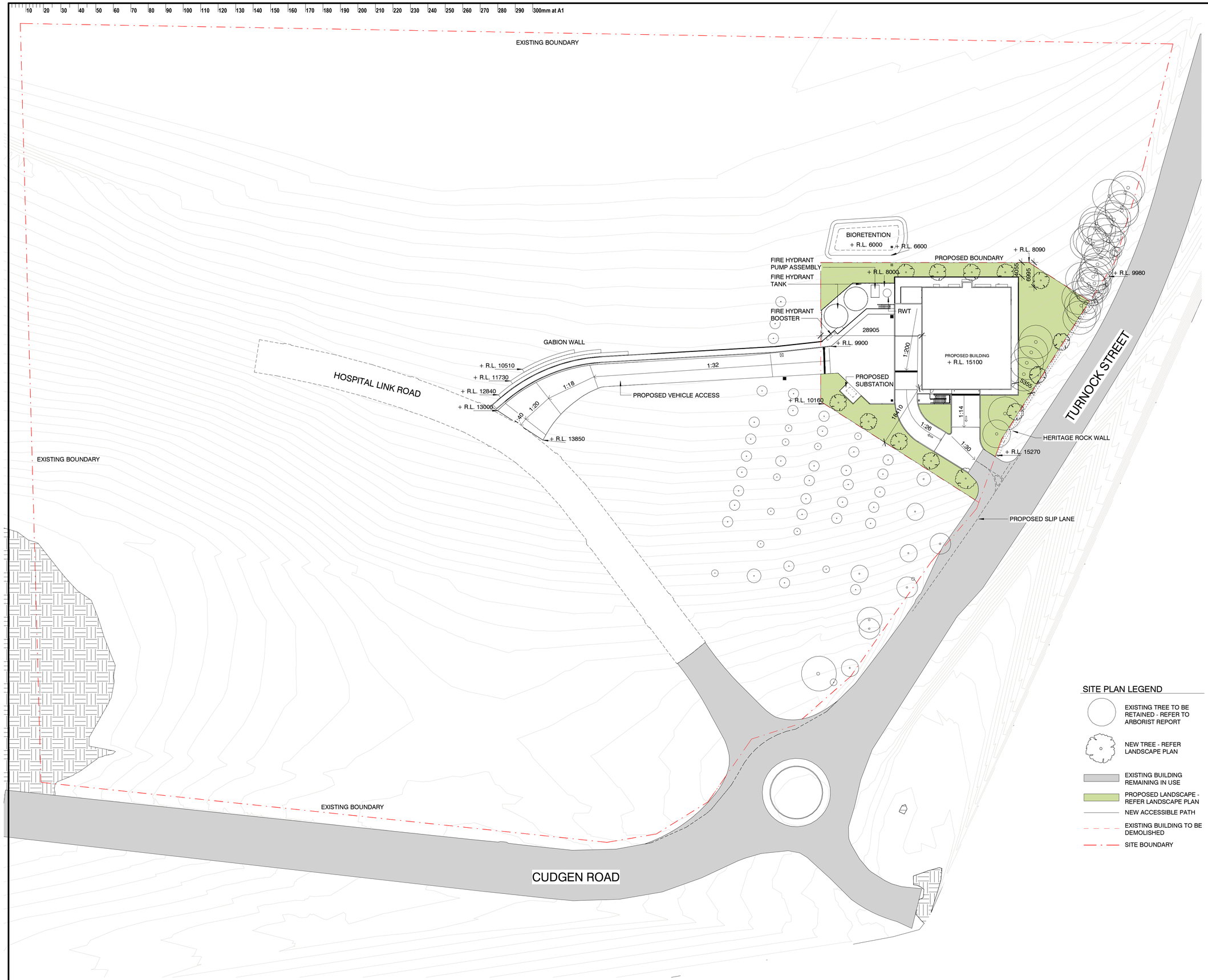

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NOTES

DEVELOPMENT SCHEDULE	
SITE AREA	3526.1m2
LOWER GROUND FLOOR AREA	310m2
GROUND FLOOR AREA	740m2
GROSS FLOOR AREA	1050m2

1:500
0 5 10 15 20 25 50

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C	28.01.22	BASE ARCHITECTURE SET	MR
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A	22.12.21	BASE ARCHITECTURE SET	MR

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SITE PLAN LEGEND

- EXISTING TREE TO BE RETAINED - REFER TO ARBORIST REPORT
- NEW TREE - REFER LANDSCAPE PLAN
- EXISTING BUILDING REMAINING IN USE
- PROPOSED LANDSCAPE - REFER LANDSCAPE PLAN
- NEW ACCESSIBLE PATH
- EXISTING BUILDING TO BE DEMOLISHED
- SITE BOUNDARY

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LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	As indicated	A1	09/26/16

DESCRIPTION

PROPOSED SITE PLAN

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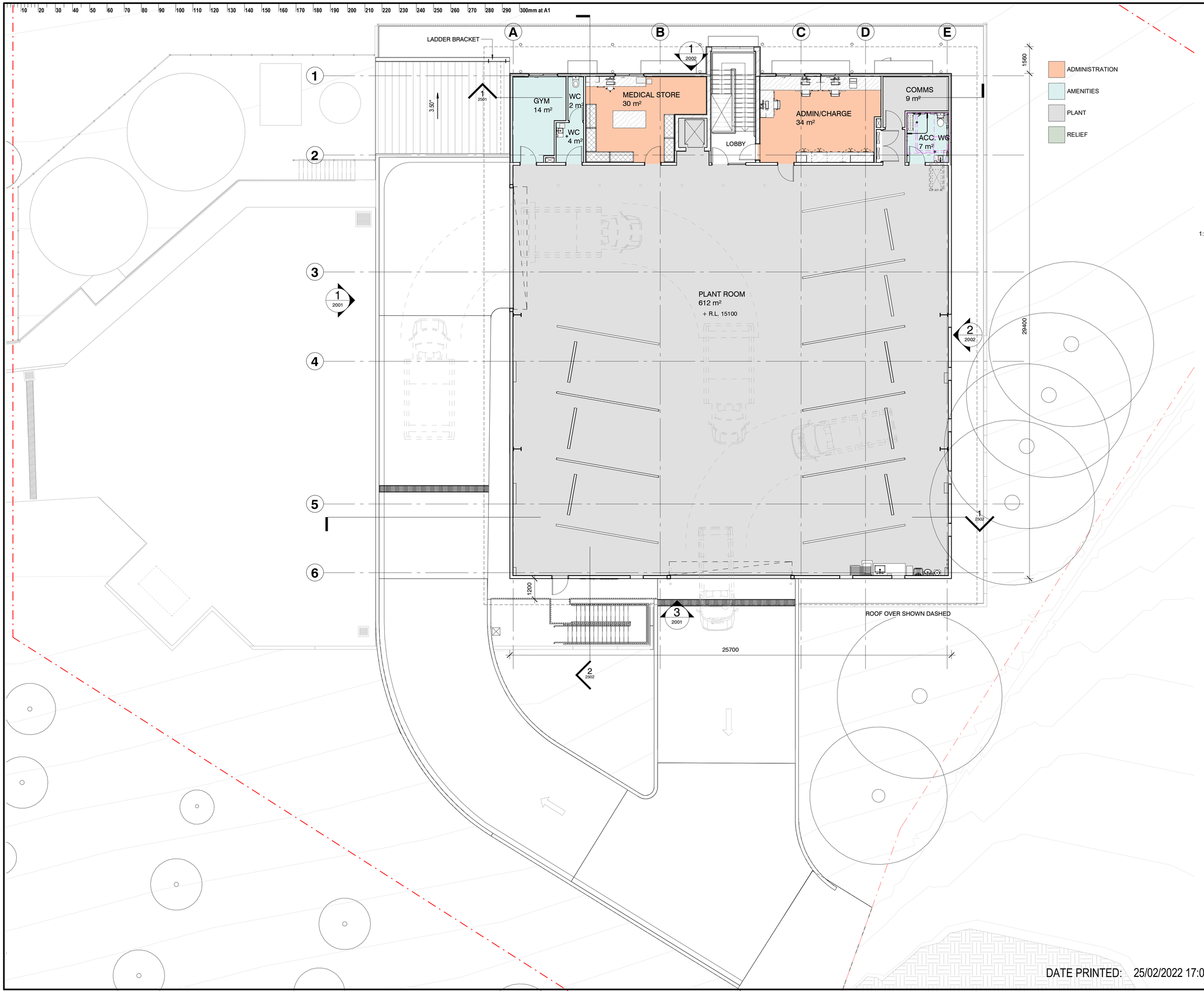

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NOTES

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KINGSCLIFF, NSW, 2487
LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100	A1	09/26/16

DESCRIPTION

GROUND FLOOR GENERAL ARRANGEMENT PLAN

PROJECT No	DRAWING No	REVISION
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DATE PRINTED: 25/02/2022 17:03:20

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31700

A B C D E

1 2501 2 2501 1 2002

1615 2750 1555 1500 1700 1870 17445

1 2 3 4 5 6

ADMINISTRATION
AMENITIES
PLANT
RELIEF

DINING & KITCHEN 31 m²
OFFICE 15 m²
MEETING ROOM 30 m²
LMR
SLEEPING POD 7 m²
SLEEPING POD 7 m²
WC 6 m²
OUTDOOR AREA 37 m²
COMMON ROOM 30 m²
CLNR 4 m²
OFFICE 14 m²
FHR
MALE WC 14 m²
LOCKERS 28 m²
FEMALE WC 14 m²
PALLET DELIVERY/STORE
SERVICES
DELIVERY 15 m²
OIL SEP 2 m²
MSB 5 m²
FIRE HYDRANT TANK
FIRE HYDRANT TANK
FIRE HYDRANT PUMP ASSEMBLY
RWT
+ R.L. 8000
UP
1500
FIRE HYDRANT BOOSTER
SUBSTATION
EMERGENCY GENERATOR LOCATION
WASTE
UP

1 2001 2 2002 3 2001 1 2502 2 2502

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LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100		08/09/21

DESCRIPTION

LOWER GROUND FLOOR GENERAL ARRANGEMENT PLAN

PROJECT No	DRAWING No	REVISION
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KEYNOTE LEGEND	
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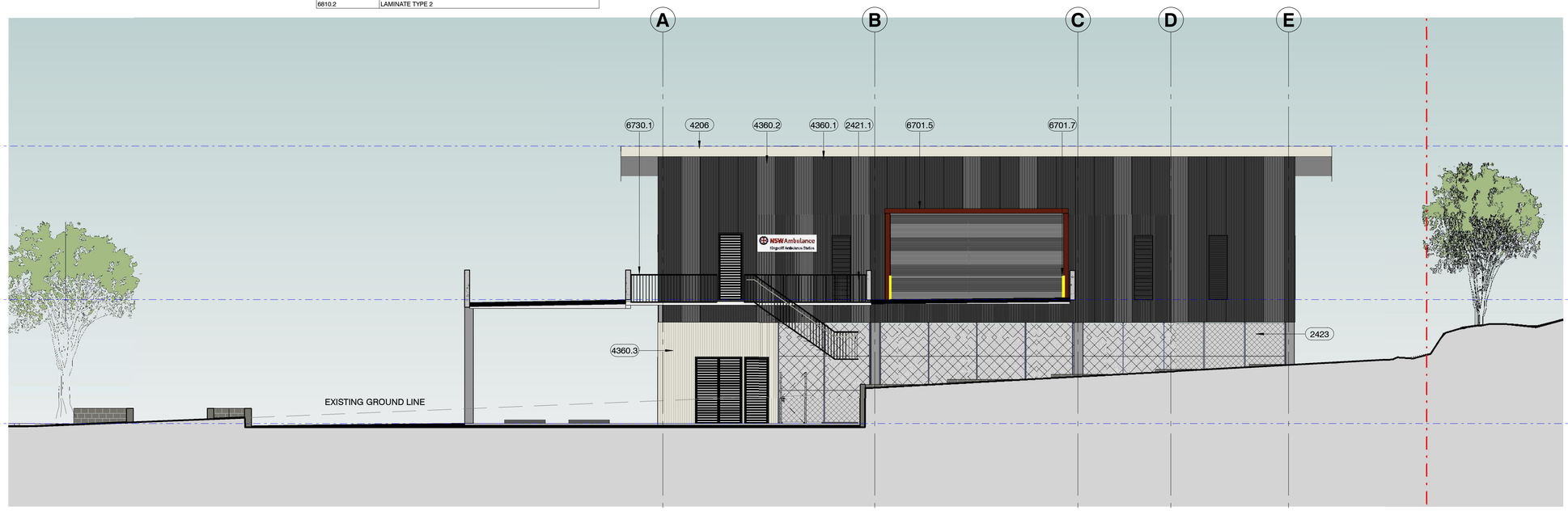
2421.6	FENCE TYPE F
2423	CHAINWIRE MESH - PLASTIC COATED
3105	OFF FORM CONCRETE
3120	CONCRETE REINFORCEMENT
3340.1	CONCRETE BLOCK TYPE 1
4206	COLORBOND FASCIA

KEYNOTE LEGEND	
4213	ROOF BACK FLASHING
4360.1	METAL WALL SHEETING TYPE 1
4360.2	METAL WALL SHEETING TYPE 2
4360.3	METAL WALL SHEETING TYPE 3
6701.5	PAINT TYPE 5
6701.7	PAINT TYPE 7
6730.1	POWDERCOAT TYPE 1
6810.2	LAMINATE TYPE 2



3 / 1101 SOUTH ELEVATION
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1 / 1101 WEST ELEVATION
1 : 100

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LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100	A1	09/26/16

DESCRIPTION
ELEVATIONS

PROJECT No	DRAWING No	REVISION
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KEYNOTE LEGEND

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2423	CHAINWIRE MESH - PLASTIC COATED
3105	OFF FORM CONCRETE
3340.1	CONCRETE BLOCK TYPE 1
4206	COLORBOND FASCIA
4213	ROOF BACK FLASHING
4230.1	ROOF SHEETING TYPE 1
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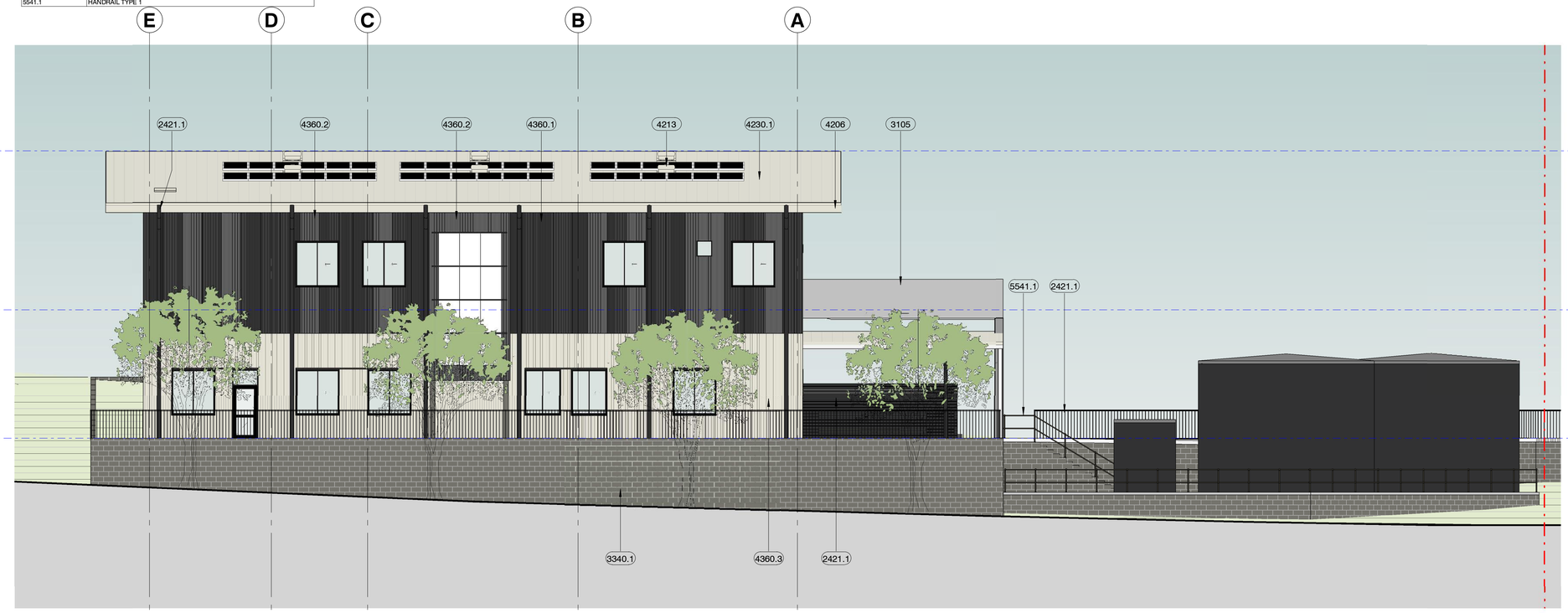

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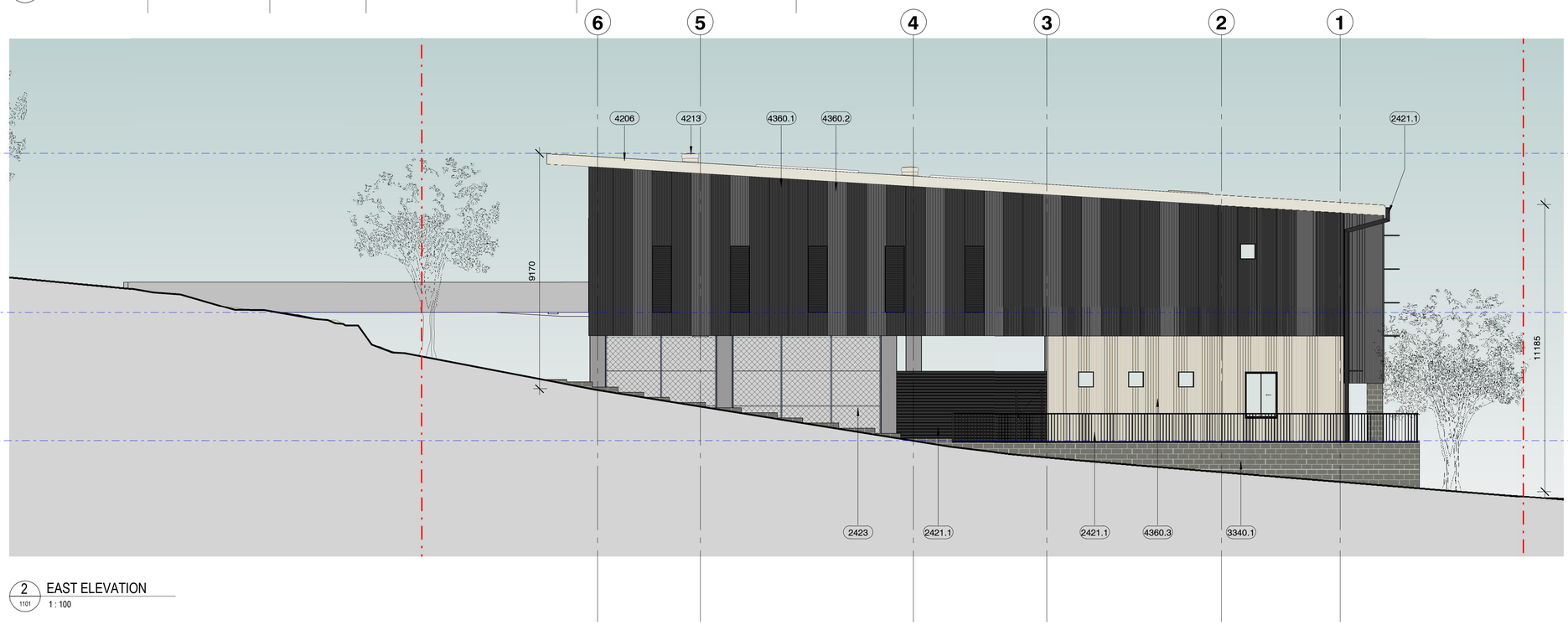

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LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100		12/10/21

DESCRIPTION
ELEVATIONS

PROJECT No	DRAWING No	REVISION
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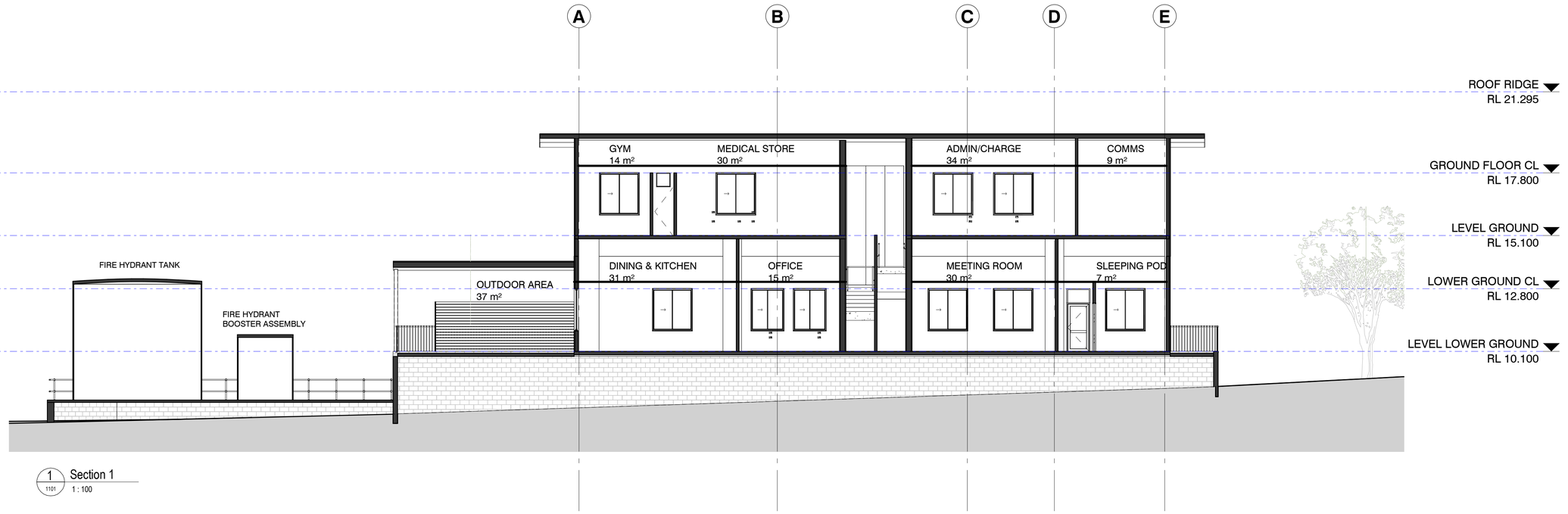

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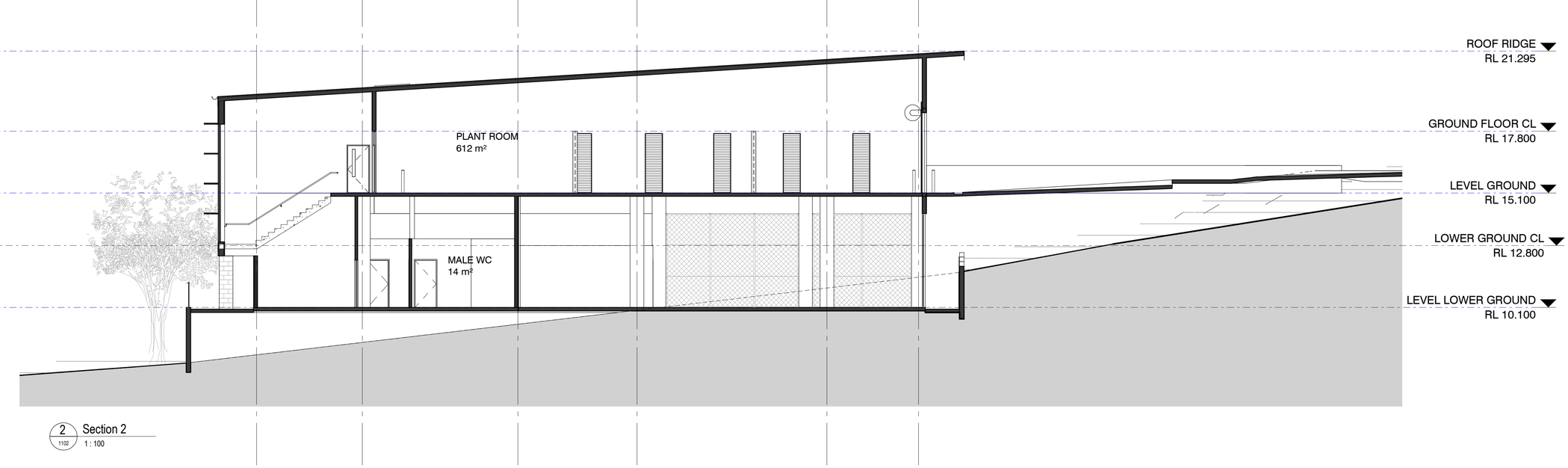

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A	22.12.21	BASE ARCHITECTURE SET	MR

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NSW Ambulance

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PROJECT
RURAL AMBULANCE INFRUSTRUCTURE PROGRAM (RAIR) KINGSCLIFF

KINGSCLIFF, NSW, 2487
LOT11 : DP1269398

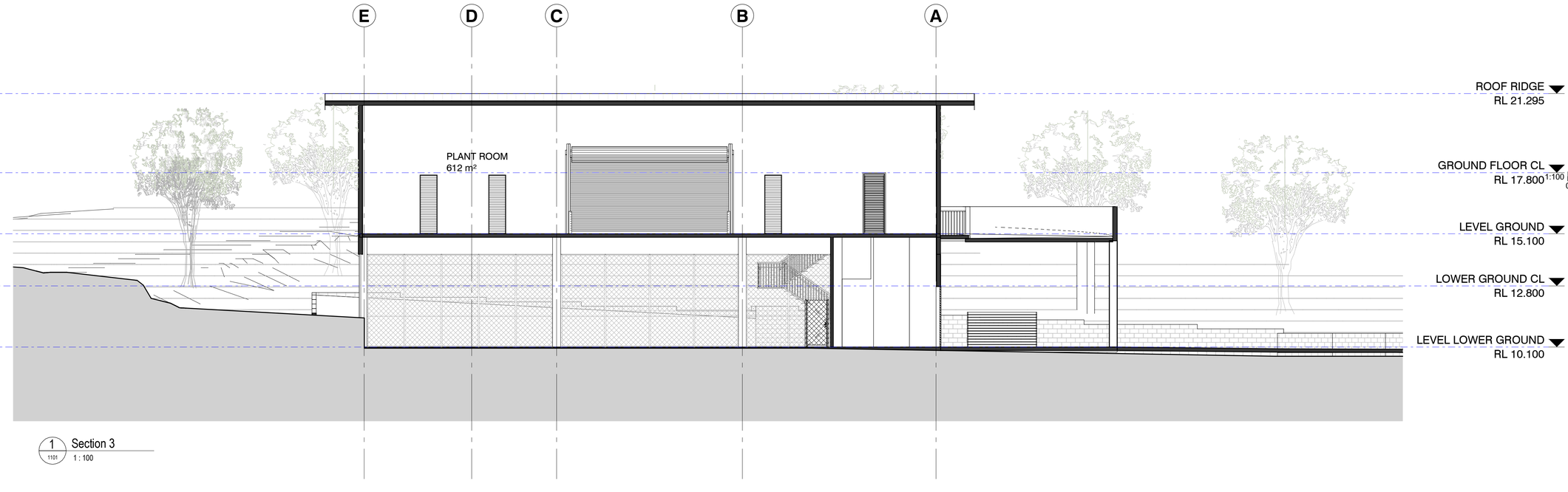
PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100	A1	09/26/16

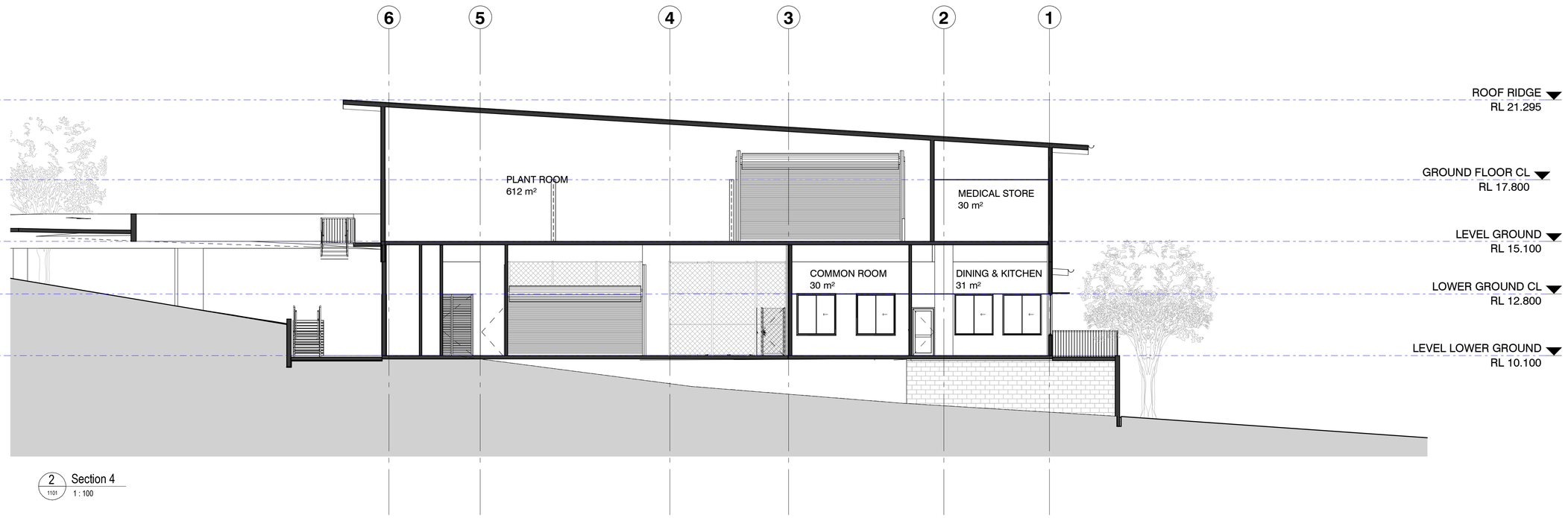
DESCRIPTION
SECTIONS

PROJECT No	DRAWING No	REVISION
21 408	2501	E

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300mm at A1



1 / 1101 Section 3
1 : 100



2 / 1101 Section 4
1 : 100

DATE PRINTED: 25/02/2022 17:04:58

This drawing should be read in conjunction with all relevant contracts, specifications and drawings. Dimensions are in millimetres. Levels are metres. Do not scale off drawings. Use figured dimensions only. Check dimensions on Site. Report discrepancies immediately.

NOTES

1:100 0 1 2 3 4 5 10

AUTHORISED FOR ISSUE

ISSUED BY:

SIGN OFF DATE

E	25.02.22	REF ISSUE	MR
D	11.02.22	FOR COORDINATION	MR
C	28.01.22	BASE ARCHITECTURE SET	MR
B	20.01.22	FOR COORDINATION	MR
A	22.12.21	BASE ARCHITECTURE SET	MR

ISSUE DATE SUBJECT VALID'N.

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PROJECT

RURAL AMBULANCE INFRUSTRUCTURE PROGRAM (RAIR) KINGSCLIFF

KINGSCLIFF, NSW, 2487
LOT11 : DP1269398

PHASE

DRAWN	SCALE	SHEET SIZE	ORIGIN DATE
AF	1 : 100		12/17/21

DESCRIPTION

SECTIONS

PROJECT No	DRAWING No	REVISION
21 408	2502	E

12537 01C - RAIR II R25 KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487

CIVIL WORKS PACKAGE

CIVIL DRAWING REGISTER	
DRAWING NUMBER	DRAWING TITLE
C1001	COVER PAGE AND DRAWING REGISTER
C1002	GENERAL NOTES
C1004	SEDIMENT AND EROSION CONTROL PLAN - LOWER GROUND FLOOR SHEET 1
C1005	SEDIMENT AND EROSION CONTROL PLAN - LOWER GROUND FLOOR SHEET 2
C1006	SEDIMENT AND EROSION CONTROL PLAN - GROUND FLOOR SHEET 3
C1007	SEDIMENT AND EROSION CONTROL DETAILS
C1008	BULK EARTHWORKS DETAIL PLAN - LOWER GROUND FLOOR SHEET 1
C1009	BULK EARTHWORKS DETAIL PLAN - LOWER GROUND FLOOR SHEET 2
C1010	BULK EARTHWORKS DETAIL PLAN - GROUND FLOOR SHEET 3
C1011	BULK EARTHWORKS LONGITUDINAL SECTIONS - SHEET 1
C1012	BULK EARTHWORKS LONGITUDINAL SECTIONS - SHEET 2
C1030	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 1
C1031	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 2
C1032	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 3
C1040	EXISTING BULK CATCHMENT PLAN
C1041	PROPOSED BULK CATCHMENT PLAN - LOWER GROUND FLOOR
C1042	PROPOSED BULK CATCHMENT PLAN - LOWER GROUND FLOOR
C1043	PROPOSED BULK CATCHMENT PLAN - GROUND FLOOR
C1050	STORMWATER DRAINAGE DETAILS
C1052	ON SITE DETENTION DETAILS
C1060	PAVEMENT PLAN - LOWER GROUND FLOOR SHEET 1
C1061	PAVEMENT PLAN - LOWER GROUND FLOOR SHEET 2
C1062	PAVEMENT PLAN - GROUND FLOOR SHEET 3
C1070	SITEWORKS AND PAVEMENT DETAILS

LOCALITY PLAN

NOT TO SCALE

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: COVER PAGE AND DRAWING REGISTER

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	-		
Date	FEB 2022		
Sheet	A1		

Project Ref: 12537 01
Drawing No: R25 C1001
Rev: P1

North

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GENERAL NOTES

G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS OR SKETCHES AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G2 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.

G3 THESE DRAWINGS MUST NOT BE SCALED. ALL DIMENSIONS ARE IN METERS. ALL SET OUT DIMENSIONS AND LEVELS, INCLUDING THOSE SHOWN ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE ARCHITECT'S DRAWINGS AND VERIFIED ON SITE.

G4 ALL SETOUT AND DIMENSIONS OF THE STRUCTURE INCLUDING KERBS AND RETAINING WALLS, AND BULK EARTHWORKS MUST BE TAKEN FROM THE ARCHITECT'S DRAWINGS. SETOUT OF THE STORMWATER PITS BY OTHERS. CONTRACTOR TO CONFIRM SETOUT OF SERVICE TRENCHING INCLUDING SUBSOIL ON SITE.

G5 THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTON OVER THE WORKS.

G6 ALL DIMENSIONS AND REDUCED LEVELS MUST BE VERIFIED ON SITE BEFORE THE COMMENCEMENT OF ANY WORK.

G7 THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IS NOT AN AUTHORISATION OF A COST VARIATION. THE SUPERINTENDENT MUST APPROVE ANY COST VARIATION INVOLVED BEFORE ANY WORK STARTS.

G8 ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM.

G9 SERVICE INFORMATION SHOWN IS APPROXIMATE ONLY. PRIOR TO COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES AND COMPLY WITH ALL REQUIREMENTS OF THOSE AUTHORITIES.

G10 EXISTING SURFACE CONTOURS, WHERE SHOWN, ARE INTERPOLATED AND MAY NOT BE ACCURATE.

G11 UNLESS NOTED OTHERWISE, ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm UNDER ALL PROPOSED PAVEMENT AND BUILDING AREAS.

G12 MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS.

SITEWORKS NOTES

S1 PRIOR TO THE PLACEMENT OF ANY PAVEMENTS, BUILDINGS OR DRAINS THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD COMPACTION IN ACCORDANCE WITH TEST 'E1.1' OF A.S. 1289 FOR THE TOP 300mm. ANY SOFT SPOTS SHALL BE REMOVED AND REPLACED WITH GRANULAR FILL TO THE ENGINEERS APPROVAL AND COMPACTED IN ACCORDANCE WITH THE COMPACTION REQUIREMENTS SET OUT BELOW. ON HIGHLY REACTIVE CLAY AREAS SITE EXCAVATED MATERIAL MAY BE USED WITH THE PRIOR AUTHORISATION OF THE ENGINEER.

S2 ALL FILL AND PAVEMENT MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH GEOTECHNICAL REPORT BY JK GEOTECHNICS PTY LTD DATED 11 OCTOBER 2021 (REF 34044RF). MOISTURE CONTENT TO BE MAINTAINED AT +/- 2% OMC. MINIMUM COMPACTION REQUIREMENTS ARE DETAILED BELOW FOR (ALL REQUIREMENTS ARE TO VERIFIED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER):

- LANDSCAPED AREAS 98% STD.
- FILL UNDER ANY FOOTINGS AND FLOOR SLABS FOR ANY STRUCTURE TO SUBGRADE LEVEL;
  - FINE CRUSHED ROCK 98% STD.
  - SELECTED FILL WITHOUT CONSPICUOUS CLAY CONTENT 98% STD.
- BUILDING BASECOURSE 98% MOD
- FILL UNDER ROAD PAVEMENTS;
  - TO WITHIN 500mm OF FINISHED SUBGRADE LEVEL 98% STD.
  - UP TO FINISHED SUBGRADE LEVEL 98% STD.
- ROAD PAVEMENT MATERIALS;
  - SUB BASE 98% MOD.
  - BASE COURSE 98% MOD.

THE MAXIMUM COMPACTION IS TO BE NO GREAT THAN 4% ON TOP OF THE ABOVE MENTION VALUES.

S3 GRADE EVENLY BETWEEN FINISHED SURFACE SPOT LEVELS. FINISHED SURFACE CONTOURS ARE SHOWN FOR CLARITY. WHERE FINISHED SURFACE LEVELS ARE NOT SHOWN, THE SURFACE SHALL BE GRADED SMOOTHLY SO THAT IT WILL DRAIN AND MATCH ADJACENT SURFACES OR STRUCTURES.

S4 ALL DIMENSIONS GIVEN ARE TO FACE OF KERB, CENTER OF PIPE OR EXTERIOR FACE OF BUILDING UNLESS NOTED OTHERWISE.

S5 ANY STRUCTURES, PAVEMENTS OR SURFACES DAMAGED, DIRTIED OR MADE UNSERVICABLE DUE TO CONSTRUCTION WORK SHALL BE REINSTATED TO THE SATISFACTION OF THE ENGINEER.

S6 ANY FILL REQUIRED SHALL BE APPROVED BY THE ENGINEER / GEOTECHNICAL CONSULTANT

S7 CONTRACTOR IS TO ENSURE THAT ALL EXCAVATIONS ARE MAINTAINED IN A DRY CONDITION WITH NO WATER ALLOWED TO REMAIN IN THE EXCAVATIONS.

S8 ALL FINISHES AND COLOURS TO BE IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS.

S9 REFER TO STRUCTURAL DRAWINGS FOR CONCRETE, REINFORCEMENT AND RETAINING WALL DETAILS.

S10 GENERALLY FOR TRENCHING WORKS THE CONTRACTOR MUST:
A) COMPLY WITH THE GENERAL PROVISIONS OF PART 3.1 "MANAGING RISKS TO HEALTH AND SAFETY" OF NSW WORK AND HEALTH AND SAFETY REGULATION 2011

B) COMPLY PART 6.3 DIVISION 3 "EXCAVATION WORK" OF NSW WORK HEALTH AND SAFETY REGULATION NSW 2011

S11 PRIOR TO THE EXCAVATION OF ANY TRENCH DEEPER THAN 1.5 METRES THE CONTRACTOR MUST:
A) NOTIFY THE OCCUPATIONAL HEALTH AND SAFETY AUTHORITY ON THE APPROPRIATE FORM.

STORMWATER DRAINAGE NOTES

SW1 UNLESS NOTED OTHERWISE, ALL DOWNPIPES & GRATED INLETS SHALL BE CONNECTED TO PITS OR MAIN STORMWATER DRAINS WITH 150 DIA. UPVC PIPES LAID AT A MINIMUM GRADE OF 1 IN 100.

SW2 ALL MAIN STORMWATER DRAINS SHALL BE CONSTRUCTED USING MATERIALS AS SPECIFIED ON THE DRAWINGS IN ACCORDANCE WITH THE APPROPRIATE A.S. IF NOT SPECIFIED THEN CLASS 2 RRJ RCP SHALL BE USED FOR DIAMETERS > 225mm. SEWER CLASS SEH UPVC IN ACCORDANCE WITH AS1260 SHALL BE USED FOR Ø225mm OR SMALLER.

SW3 ALL PIPEWORK TO BE INSTALLED IN ACCORDANCE WITH AS3725 FOR RCP AND AS2032 FOR PVC. ALL BEDDING TO BE TYPE H2 UNLESS NOTED OTHERWISE.

SW4 FOR ALL PITS > 1.2m DEEP, STEP IRONS SHALL BE INSTALLED.

SW5 PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY BONACCI GROUP.

SW6 ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.

SW7 WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.

SW8 GRATES AND COVERS SHALL CONFORM WITH AS 3996 AND AS 1428.1 FOR ACCESS REQUIREMENTS.

SW9 CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES ARE NOT TO BE REDUCED WITHOUT APPROVAL.

SW10 AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

SW11 ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

KERBING NOTES

K1 ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 32 MPa U.N.O.

K2 ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 75mm GRANULAR BASECOURSE COMPACTED TO A MINIMUM 98% MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 5.2.1.

K3 EXPANSION JOINTS (EJ) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLAB.

K4 WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLAB.

K5 BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.

K6 IN THE REPLACEMENT OF KERBS:-
- EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm U.N.O. FROM THE LIP OF GUTTER. UPON COMPLETION OF THE NEW KERB AND GUTTER, NEW BASECOURSE AND SURFACE TO BE LAID 600mm WIDE U.N.O.
- EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

JOINTING NOTES

PEDESTRIAN FOOTPATH JOINTS

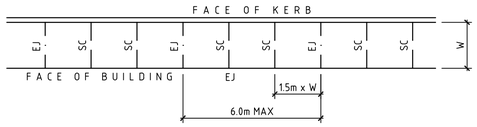
J1 EXPANSION JOINTS (EJ) ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT 6m CENTRES.

J2 SAWCUT JOINTS (SC) ARE TO BE LOCATED AT A MAX 1.5m x WIDTH OF PAVEMENT. THE TIMING OF THE SAWCUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE CONDITIONS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POUR BEFORE THE SAW CUTS ARE COMMENCED.

J3 WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT JOINTS.

J4 PROVIDE 10mm WIDE FULL DEPTH EXPANSION JOINTS (EJ) BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVERS

J5 ALL PEDESTRIAN FOOTPATH JOINTINGS AS FOLLOWS (U.N.O.).



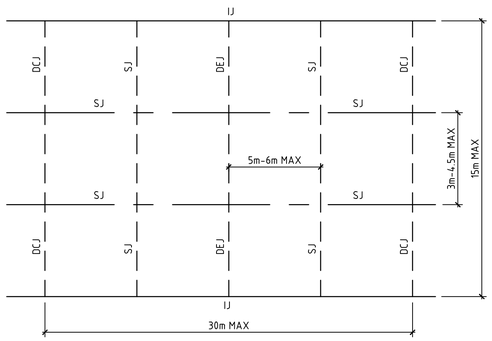
VEHICULAR PAVEMENT JOINTS

J6 ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.

J7 ISOLATION JOINTS WITH SUB-GRADE BEAM (IJ) TO BE PROVIDED AT INTERSECTIONS OR AT THE JUNCTION OF A POUR BREAK.

J8 ALL VEHICULAR PAVEMENTS TO BE JOINTED IN ACCORDANCE WITH AUSTROADS AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2 STRUCTURAL PAVEMENT DESIGN AND SUPPLEMENT AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC

J9 VEHICULAR PAVEMENT JOINTING AS FOLLOWS (U.N.O.)



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WARNING
NO DRAINAGE WORKS SHALL COMMENCE UNTIL THE CONTRACTOR CONFIRMS THE I.L. OF ALL EXISTING DRAINS, AND CONFIRMS IN WRITING WITH THE ENGINEERING SUPERVISOR.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE.
THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: GENERAL NOTES

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	-		
Date	FEB 2022		
Sheet			

North

Project Ref: 12537 01
Drawing No: R25 C1002
Rev: P1

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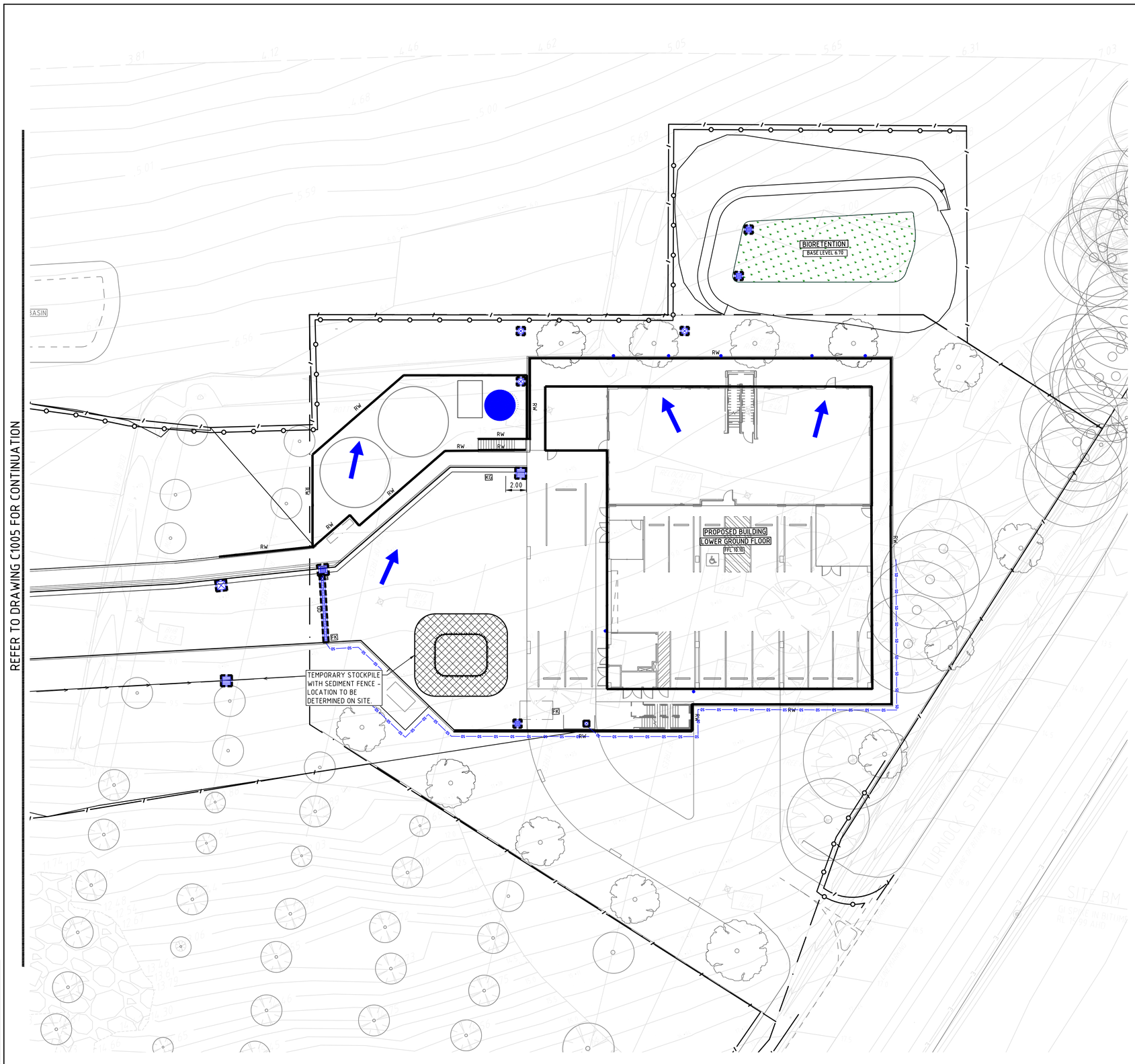
AM By: Lyn Dalgleish



SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SEDIMENT AND EROSION CONTROL LEGEND

- SEDIMENT FENCE
- CD — CATCH DRAIN
- TEMPORARY SHAKER RAMP FOR ENTRY/EXIT
- SEDIMENT BASIN (LOCATION TBC ON-SITE)
- TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
- GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT
- SANDBAGS INSTALLED ON EXISTING PIT
- OVERLAND FLOW

SEDIMENT AND EROSION CONTROL NOTES

1. IT HAS BEEN ASSUMED THAT HOARDINGS/SILT FENCING WILL BE PROVIDED TO THE STAGE BOUNDARY SUFFICIENT TO PREVENT SEDIMENT RUNOFF FROM LEAVING SITE (EXCEPT IN THE CASE OF ENTRY/EXIT LOCATIONS WHERE TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP ARE PROVIDED). IF THIS IS NOT THE CASE, PROVIDE SEDIMENT FENCE TO STANDARD DETAIL BELOW AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING SITE, DIRECT RUNOFF TO SEDIMENT BASIN.
2. ALL SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH LANDCOM MANAGING URBAN STORMWATER "BLUE BOOK".

SEDIMENT CONTROL CONDITIONS

1. SEDIMENT FENCES AND STRAW BALES WILL BE INSTALLED AS SHOWN AND ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER TO CONTAIN COARSER SEDIMENT FRACTIONS INCLUDING AGGREGATED FINES) AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT REMOVED FROM ANY TRAPPING DEVICE WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS & WATERWAYS CANNOT OCCUR.
3. STOCKPILES WILL BE PLACED WHERE SHOWN ON DRAWING OR ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER AND NOT WITHIN 5m OF HAZARD AREAS INCLUDING LIKELY AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS & DRIVEWAYS.
4. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM WITH INLET FILTERS (SEE DETAILS) UNLESS IT IS SEDIMENT FREE.
5. TEMPORARY SEDIMENT TRAPS WILL BE RETAINED UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.

SITE INSPECTION & MAINTENANCE CONDITIONS

THE SITE MANAGER WILL INSPECT THE SITE AT LEAST WEEKLY AND WILL:

1. ENSURE THAT DRAINS OPERATE PROPERLY & TO EFFECT ANY NECESSARY REPAIRS
2. REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5m FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS & PAVED AREAS.
3. REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS WITHIN THE STRUCTURE
4. ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS APPROPRIATE.
5. CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS.
6. MAINTAIN EROSION & SEDIMENT CONTROL MEASURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
7. REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS THE LAST ACTIVITY IN THE REHABILITATION PROGRAM.

AS PART OF THE STATUTORY 'DILIGENCE OF CARE' RESPONSIBILITIES, THE SITE MANAGER WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL.
ENTRIES WILL INCLUDE:

1. THE VOLUME & INTENSITY OF ANY RAINFALL EVENTS
2. THE CONDITION OF ANY SOIL & WATER MANAGEMENT WORKS
3. THE CONDITION OF VEGETATION & ANY NEED TO IRRIGATE
4. THE NEED FOR DUST PREVENTION STRATEGIES
5. ANY REMEDIAL WORKS TO BE UNDERTAKEN

THE BOOK WILL BE KEPT ONSITE & MADE AVAILABLE TO ANY AUTHORISED PERSON ON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF WORKS.

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SCALE 1:200 (0m 2m 4m 8m 12m)

Rev	Description	Date	By	App
P2	ISSUED FOR DA	03.03.22	LD	
P1	ISSUED FOR DA	25.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SEDIMENT AND EROSION CONTROL PLAN - LOWER GROUND FLOOR
SHEET 1

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:200		
Date	FEB 2022		
Sheet	A1		

Project Ref: 12537 01 R25 C1004 P2
Drawing No
Rev

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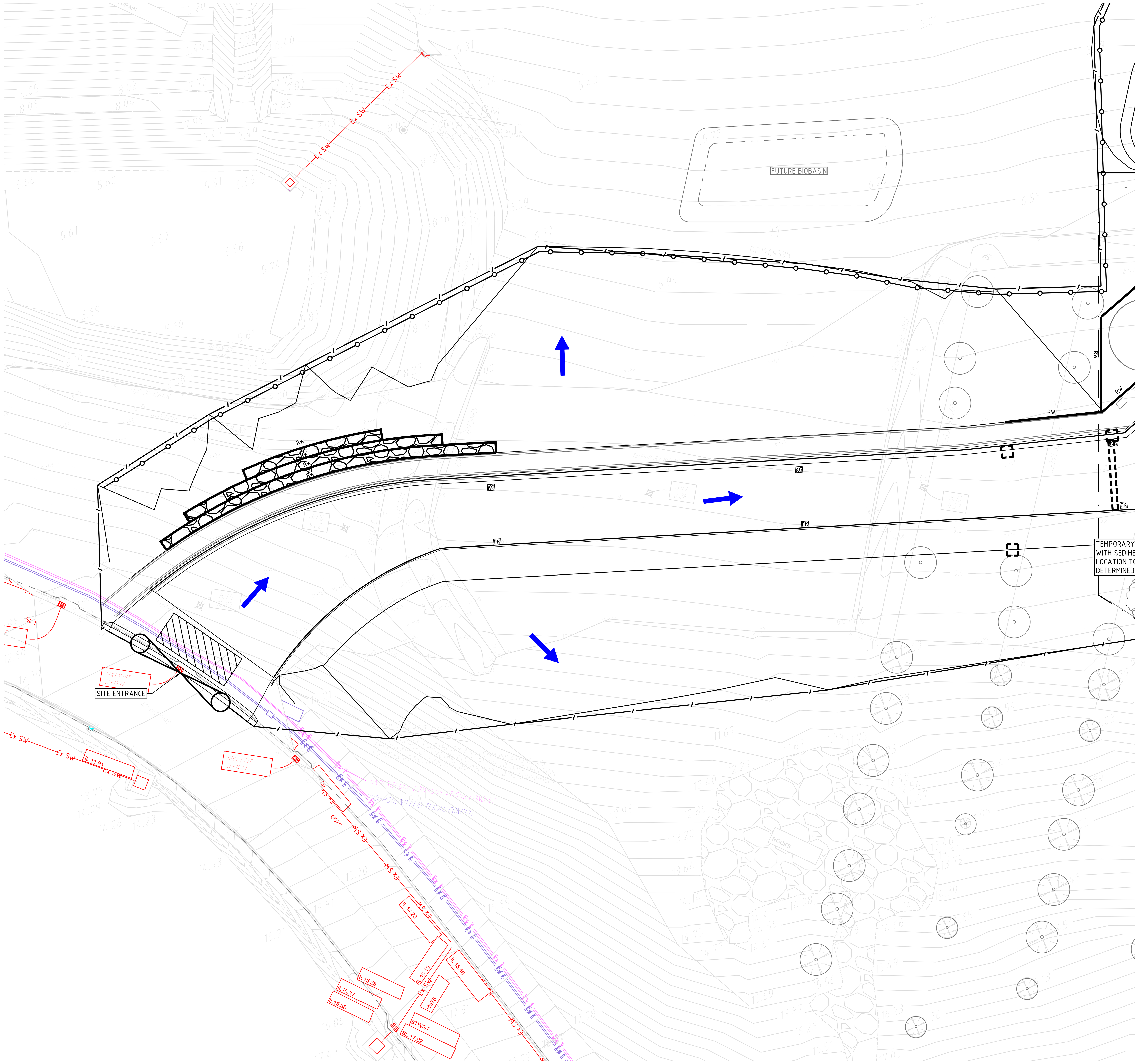
PM By: Lyn Daniela



REFER TO DRAWING C1004 FOR CONTINUATION

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- EXISTING STORMWATER DRAINAGE LINE (Ex SW)
- EXISTING SEWER LINE (Ex S)
- EXISTING WATER MAIN (Ex W)
- EXISTING GAS LINE (Ex G)
- EXISTING TELECOMMUNICATIONS LINE (Ex T)
- EXISTING ELECTRICAL LINE (Ex E)
- EXISTING UNKNOWN SERVICE
- EXISTING SERVICE TO BE MADE REDUNDANT

SEDIMENT AND EROSION CONTROL LEGEND

- SEDIMENT FENCE
- CATCH DRAIN (CD)
- TEMPORARY SHAKER RAMP FOR ENTRY/EXIT
- SEDIMENT BASIN (LOCATION TBC ON-SITE)
- TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
- GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT
- SANDBAGS INSTALLED ON EXISTING PIT
- OVERLAND FLOW

SEDIMENT AND EROSION CONTROL NOTES

1. IT HAS BEEN ASSUMED THAT HOARDINGS/SILT FENCING WILL BE PROVIDED TO THE STAGE BOUNDARY SUFFICIENT TO PREVENT SEDIMENT RUNOFF FROM LEAVING SITE (EXCEPT IN THE CASE OF ENTRY/EXIT LOCATIONS WHERE TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP ARE PROVIDED). IF THIS IS NOT THE CASE, PROVIDE SEDIMENT FENCE TO STANDARD DETAIL BELOW AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING SITE, DIRECT RUNOFF TO SEDIMENT BASIN.
2. ALL SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH LANDCOM MANAGING URBAN STORMWATER "BLUE BOOK".

SEDIMENT CONTROL CONDITIONS

1. SEDIMENT FENCES AND STRAW BALES WILL BE INSTALLED AS SHOWN AND ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER TO CONTAIN COARSER SEDIMENT FRACTIONS INCLUDING AGGREGATED FINES) AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT REMOVED FROM ANY TRAPPING DEVICE WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS & WATERWAYS CANNOT OCCUR.
3. STOCKPILES WILL BE PLACED WHERE SHOWN ON DRAWING OR ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER AND NOT WITHIN 5m OF HAZARD AREAS INCLUDING LIKELY AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS & DRIVEWAYS.
4. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM WITH INLET FILTERS (SEE DETAILS) UNLESS IT IS SEDIMENT FREE.
5. TEMPORARY SEDIMENT TRAPS WILL BE RETAINED UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.

SITE INSPECTION & MAINTENANCE CONDITIONS

THE SITE MANAGER WILL INSPECT THE SITE AT LEAST WEEKLY AND WILL:

1. ENSURE THAT DRAINS OPERATE PROPERLY & TO EFFECT ANY NECESSARY REPAIRS
2. REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5m FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS & PAVED AREAS.
3. REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS WITHIN THE STRUCTURE
4. ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS APPROPRIATE.
5. CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS.
6. MAINTAIN EROSION & SEDIMENT CONTROL MEASURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
7. REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS THE LAST ACTIVITY IN THE REHABILITATION PROGRAM.

AS PART OF THE STATUTORY 'DILIGENCE OF CARE' RESPONSIBILITIES, THE SITE MANAGER WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL.
ENTRIES WILL INCLUDE:

1. THE VOLUME & INTENSITY OF ANY RAINFALL EVENTS
2. THE CONDITION OF ANY SOIL & WATER MANAGEMENT WORKS
3. THE CONDITION OF VEGETATION & ANY NEED TO IRRIGATE
4. THE NEED FOR DUST PREVENTION STRATEGIES
5. ANY REMEDIAL WORKS TO BE UNDERTAKEN

THE BOOK WILL BE KEPT ONSITE & MADE AVAILABLE TO ANY AUTHORISED PERSON ON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF WORKS.

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SCALE 1:200 — 0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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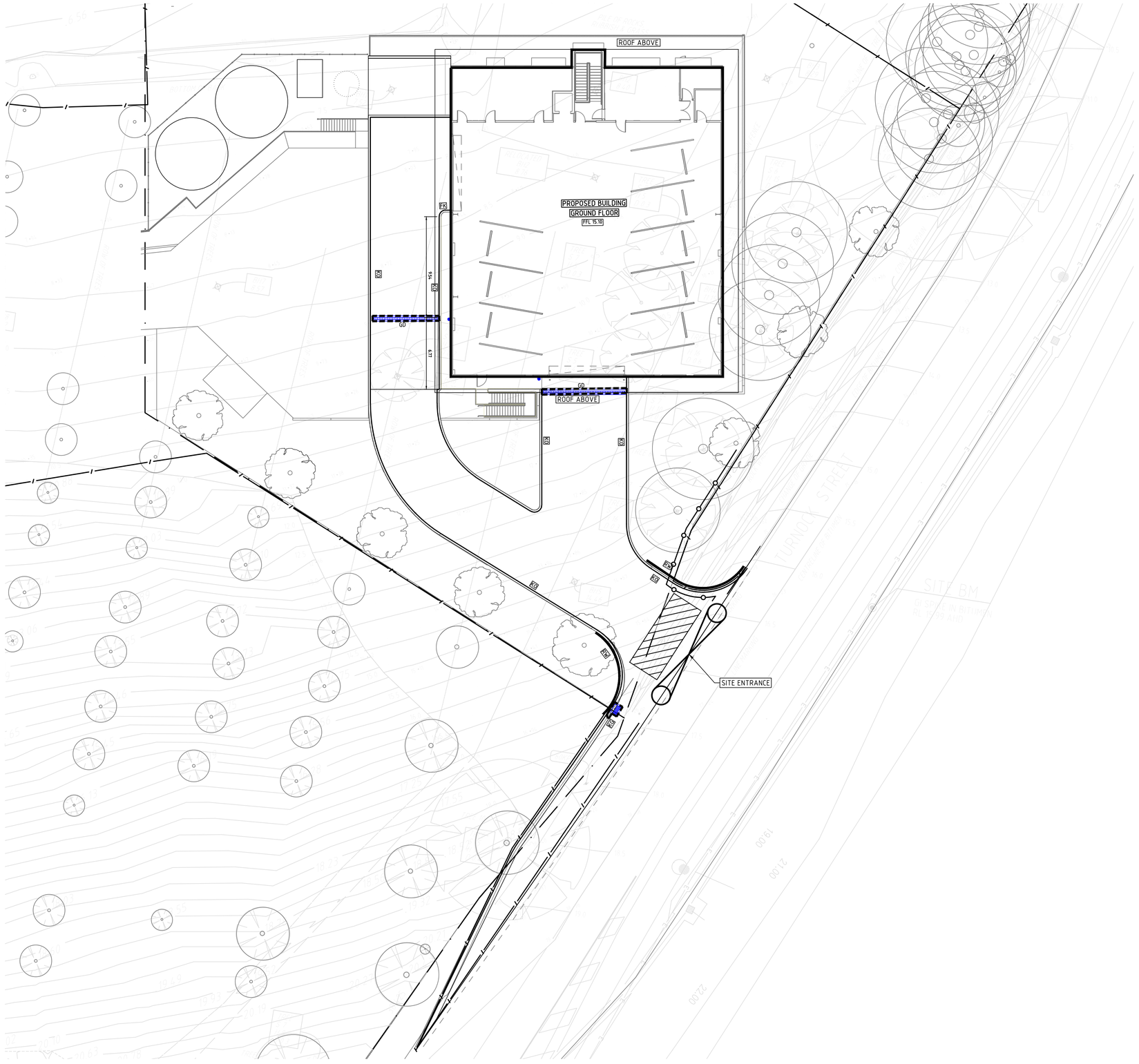
Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SEDIMENT AND EROSION CONTROL PLAN - LOWER GROUND FLOOR SHEET 2

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:200	North	
Date	FEB 2022	Project Ref	12537 01
Sheet	A1	Drawing No	R25 C1005
		Rev	P1



SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
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SCALE 1:200 — 0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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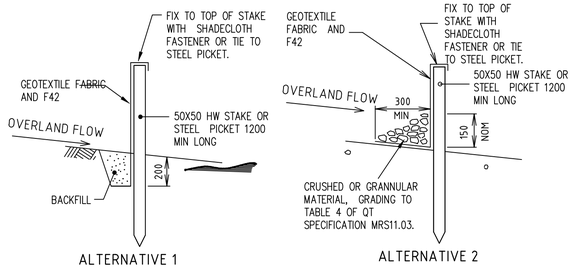
Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

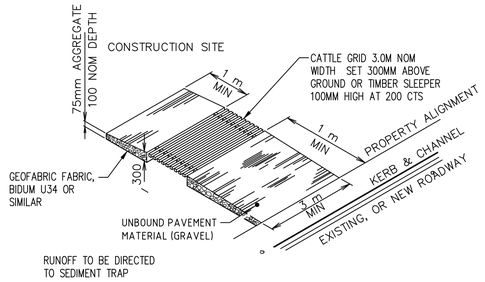
Drawing Title: SEDIMENT AND EROSION CONTROL PLAN - GROUND FLOOR SHEET 3

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:200	North	
Date	FEB 2022	Project Ref	12537 01 R25 C1006 P1
Sheet	A1	Drawing No / Rev	

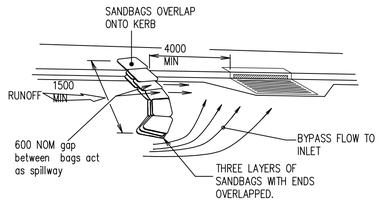
File: \\AU-SYD-FS01\Data\Job\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\12537101C - R25-C1006.dwg Plotted: 26.02.22 at 7:58 AM By: Lyn Demetrius





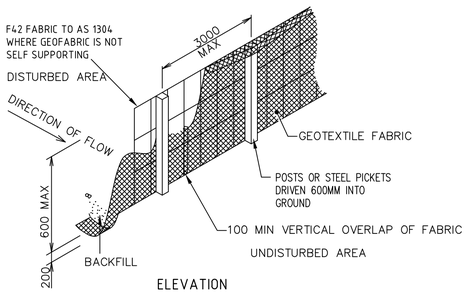
TEMPORARY CONSTRUCTION VEHICLE ENTRY/EXIT SEDIMENT TRAP

NOT TO SCALE



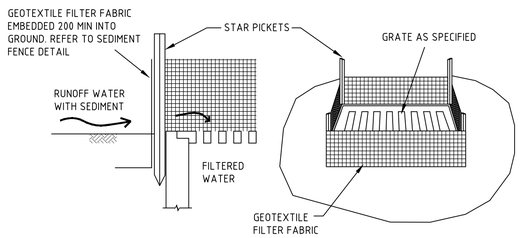
ON GRADE KERB INLET SEDIMENT TRAP

NOT TO SCALE



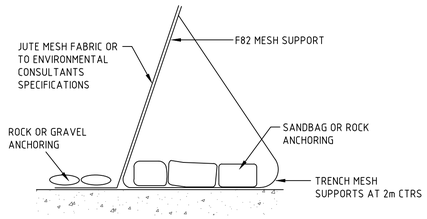
SEDIMENT FENCE

NOT TO SCALE



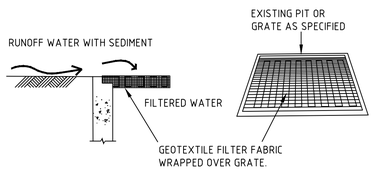
GEOTEXTILE PIT FILTER 1

NOT TO SCALE



ALTERNATIVE SEDIMENT FENCE

NOT TO SCALE



GEOTEXTILE PIT FILTER 2

NOT TO SCALE

ALTERNATIVE SEDIMENT FENCE NOTES

1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.
2. USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE JUTE MESH TO THE WELDED MESH FACING USING UV-RESISTANT CABLE TIES.
3. STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE JUTE MESH. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

Rev	Description	Date	By	App

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SEDIMENT AND EROSION CONTROL DETAILS

DA

Designed	LD	Approved	North
Drawn	DH	GK	
Scale	NTS	Date	FEB 2022
Date	FEB 2022	Project Ref	Drawing No / Rev
Sheet	A1	12537 01	R25 C1005 P1

File: \\AU-SYD-FS01\Data\Job\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\12537101C - R25-C1007.dwg Plotted: 26.02.22 at 4:17 AM By: Lyn Demeyer

REFER TO DRAWING C1009 FOR CONTINUATION

1 IN 4 FILL BATTER TO EXISTING SURFACE

1 IN 4 CUT BATTER TO EXISTING SURFACE

CH 66.799

CH 51.584

CH 49.408

CH 0.000

CH 0.000

CH 0.000

BIORETENTION
BEL 8.20

PROPOSED BUILDING
LOWER GROUND FLOOR
BEL 9.80

MATCH EXISTING GROUND LEVEL ALONG BOUNDARY

MATCH EXISTING GROUND LEVEL ALONG BOUNDARY

SITE BM

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
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- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- 32.00 — FINISHED SURFACE CONTOUR
- BEL 34.00 — BULK EXCAVATION LEVEL
- BEL 34.00 ● — BULK EXCAVATION SPOT LEVEL

EARTHWORKS QUANTITIES

ASSUMED STRIPPED TOPSOIL (150mm) = 1095m³

TOTAL CUT VOLUME = 517m³

TOTAL FILL VOLUME = 4404m³

EXCESS FILL VOLUME = 3887m³

EARTHWORKS DEPTH RANGE				
Lower_value		Upper_value		Colour
-10	to	-1.0	m	
-1.0	to	-0.5	m	
-0.5	to	0	m	
0	to	0.5	m	
0.5	to	1.0	m	
1.0	to	10	m	

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SCALE 1:200 0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P2	ISSUED FOR DA	03.03.22	LD	
P1	ISSUED FOR PRELIMINARY SET	25.02.22	DH	

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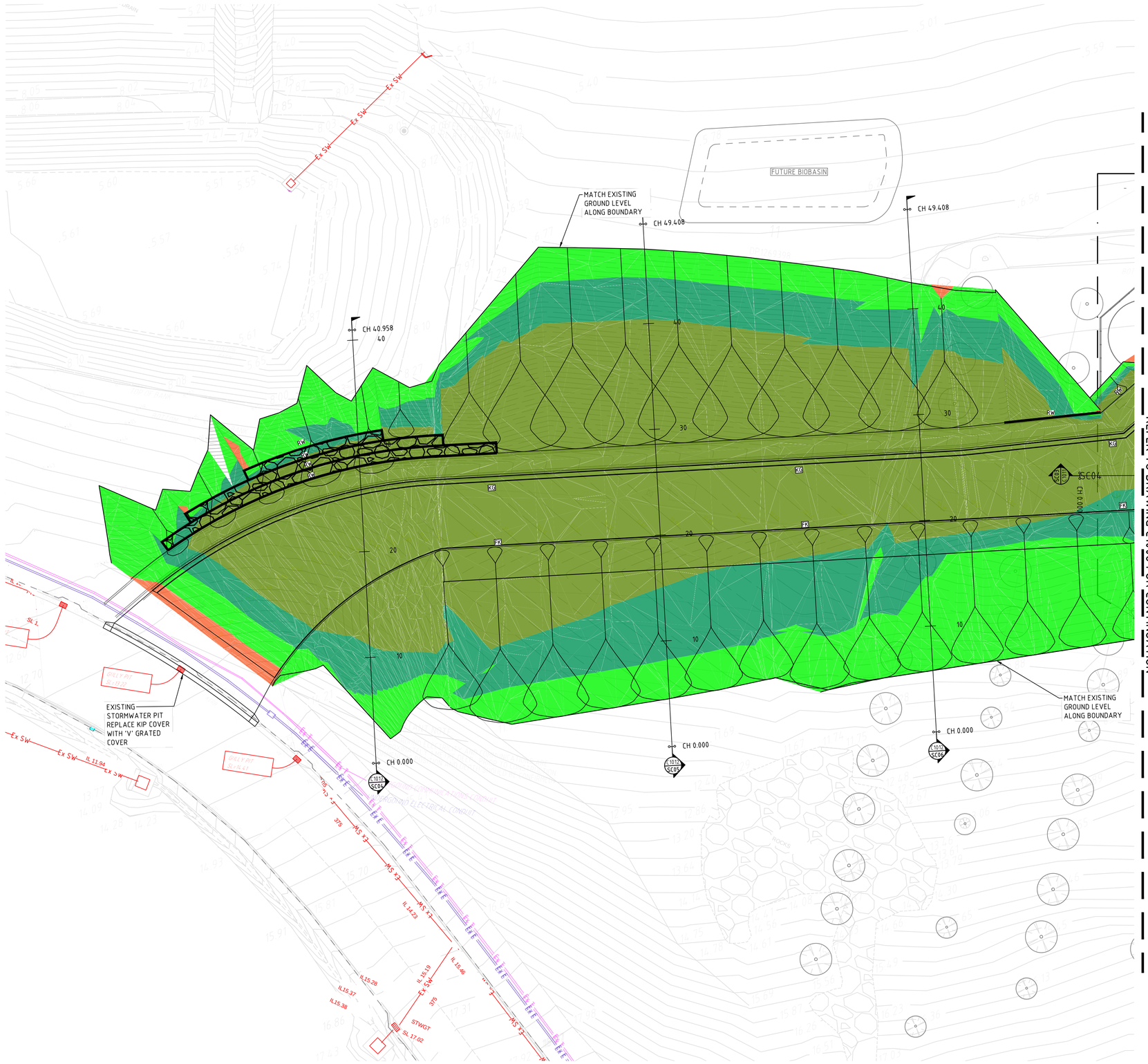
Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: BULK EARTHWORKS PLAN
LOWER GROUND FLOOR
SHEET 1

DA

Designed	LD	Approved	Date
Drawn	DH	GK	FEB 2022
Scale	1:200	Project Ref	Drawing No Rev
Date	FEB 2022	12537 01	R25 C1008 P2
Sheet	A1		

File: \\AU-SYD-FS01\data\Jobs\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\12537101C - R25-C1008.dwg Plotted: 03.03.22 at 2:58 PM By: Lyn Dalgliesh



SURVEY LEGEND

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- EX SURFACE LEVEL
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1.0	to	10	m	

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Rev	Description	Date	By	App
P2	ISSUED FOR DA	03.03.22	LD	
P1	ISSUED FOR DA	25.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: BULK EARTHWORKS PLAN
LOWER GROUND FLOOR
SHEET 2

DA

Designed	LD	Approved	North
Drawn	DH	GK	
Scale	1:200	Date	FEB 2022
Date	FEB 2022	Project Ref	Drawing No Rev
Sheet	A1	12537 01	R25 C1009 P2

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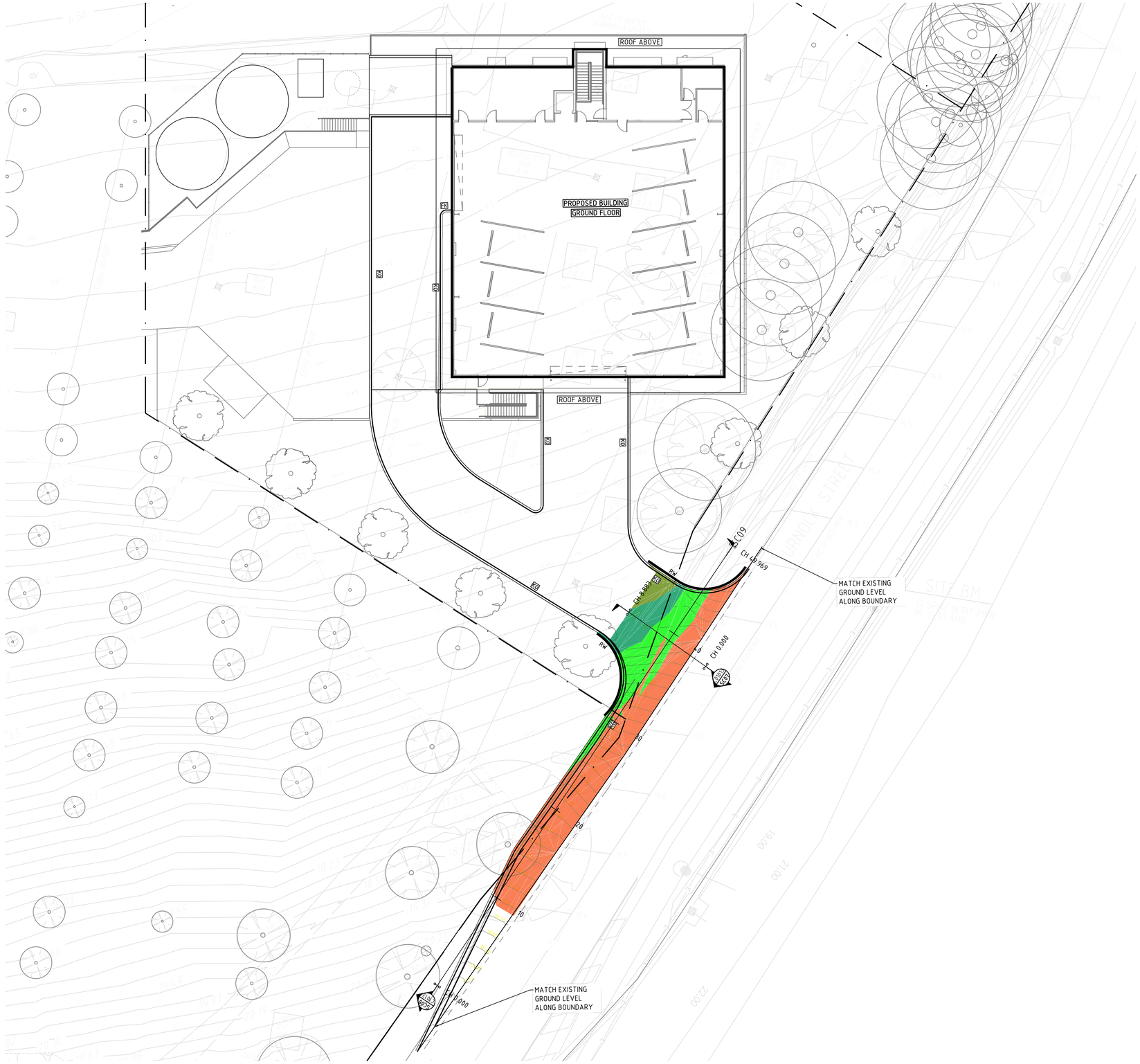

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Lower_value		Upper_value		Colour
-10	to	-1.0	m	
-1.0	to	-0.5	m	
-0.5	to	0	m	
0	to	0.5	m	
0.5	to	1.0	m	
1.0	to	10	m	

WARNING

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WARNING

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THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

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The Essential First Step

SCALE 1:200

0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P2	ISSUED FOR DA	03.03.22	LD	
P1	ISSUED FOR DA	25.02.22	DH	

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www.meinhardt-bonacci.com

Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: BULK EARTHWORKS PLAN
GROUND FLOOR
SHEET 3

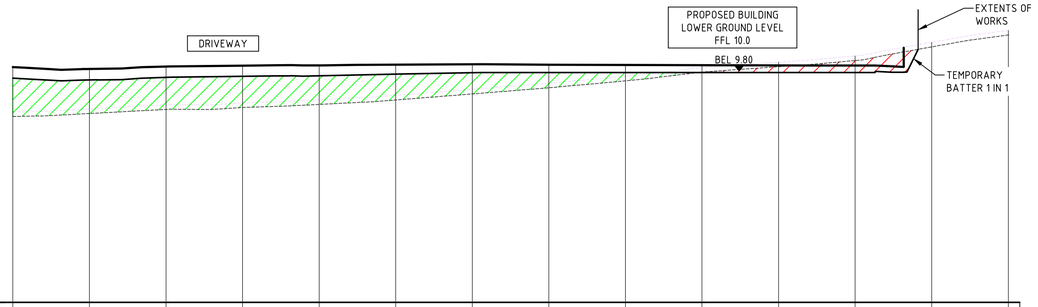
DA

Designed	LD	Approved	
Drawn	DH	Date	FEB 2022
Scale	1:200		
Date	FEB 2022		
Sheet	A1		

North

Project Ref: 12537 01
Drawing No: R25 C1010
Rev: P2

File: \\AU-SYD-FS01\data\Job\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\1253701C - R25-C1010.dwg Plotted: 03.03.22 at 2:55
PM By: Lyn Dempsa

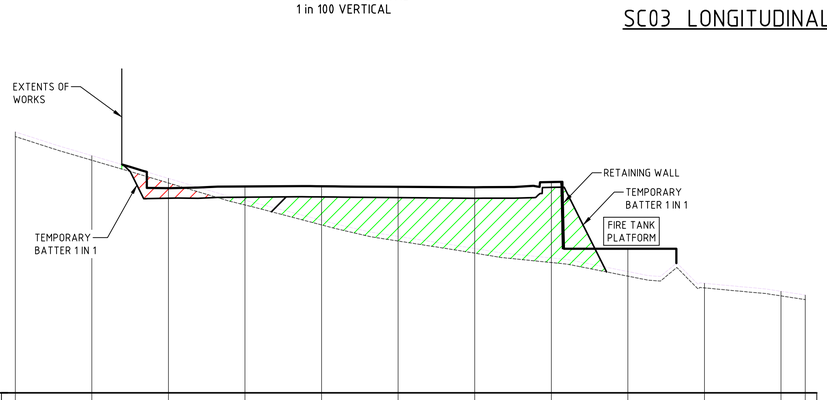


DATUM 2.3

SC03													
DESIGN SURFACE LEVEL	9.979	9.917	9.996	10.025	10.034	10.056	10.069	10.055	10.048	10.041	10.034	10.030	
BULK EARTHWORKS SURFACE LEVEL	9.618	9.558	9.645	9.675	9.695	9.748	9.795	9.800	9.800	9.800	9.800	9.800	
STRIPPED EXISTING SURFACE LEVEL	8.367	8.462	8.596	8.659	8.759	8.904	9.102	9.302	9.530	9.816	9.991	10.191	10.637	11.026
EXISTING SURFACE LEVEL	8.517	8.612	8.746	8.809	8.909	9.054	9.252	9.452	9.680	9.966	10.141	10.341	10.787	11.176
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC03 LONGITUDINAL SECTION



DESIGN GRADELINE

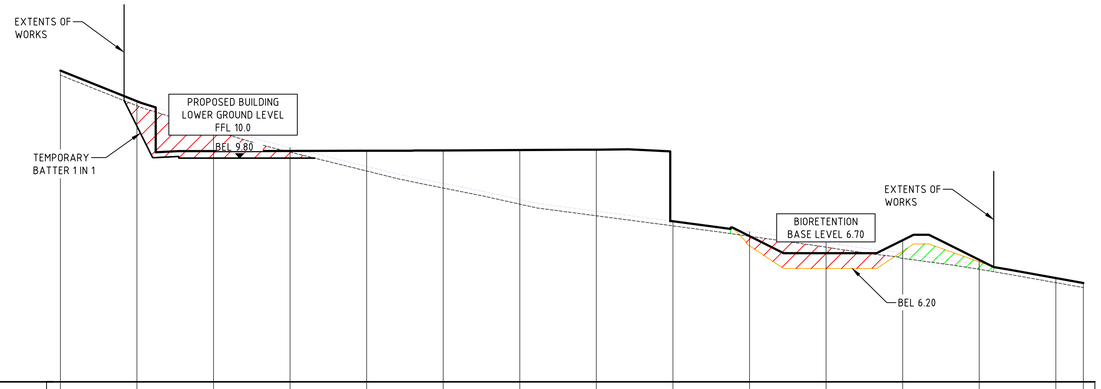
HORIZONTAL GEOMETRY

DATUM 3.3

SC01											
DESIGN SURFACE LEVEL	11.815	11.041	9.981	10.036	10.043	10.023	10.008	10.180	8.000	6.874	6.613	6.492
BULK EARTHWORKS SURFACE LEVEL			9.651	9.686	9.693	9.672	9.648	10.005				
STRIPPED EXISTING SURFACE LEVEL	11.665	10.891	10.149	9.431	8.781	8.254	7.858	7.552	7.107	6.724	6.463	6.342
EXISTING SURFACE LEVEL	11.815	11.041	10.299	9.581	8.931	8.404	8.008	7.702	7.257	6.874	6.613	6.492
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	51.584

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC01 LONGITUDINAL SECTION



DESIGN GRADELINE

HORIZONTAL GEOMETRY

DATUM 2.5

SC02													
DESIGN SURFACE LEVEL	12.660	11.659	10.030	10.036	10.044	10.051	10.064	10.075	7.740	7.256	6.700	7.122	6.480	5.886	5.725
BULK EARTHWORKS SURFACE LEVEL		10.844	9.800	9.800						6.941	6.200	6.762	6.413		
STRIPPED EXISTING SURFACE LEVEL	12.510	11.509	10.711	9.999	9.381	8.825	8.298	7.919	7.590	7.251	6.895	6.529	6.172	5.736	5.575
EXISTING SURFACE LEVEL	12.660	11.659	10.861	10.149	9.531	8.975	8.448	8.069	7.740	7.401	7.045	6.679	6.322	5.886	5.725
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	66.799

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC02 LONGITUDINAL SECTION

Rev	Description	Date	By	App
P2	ISSUED FOR DA	03.03.22	LD	
P1	ISSUED FOR PRELIMINARY SET	25.02.22	DH	

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www.meinhardt-bonacci.com

Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SITE SECTIONS

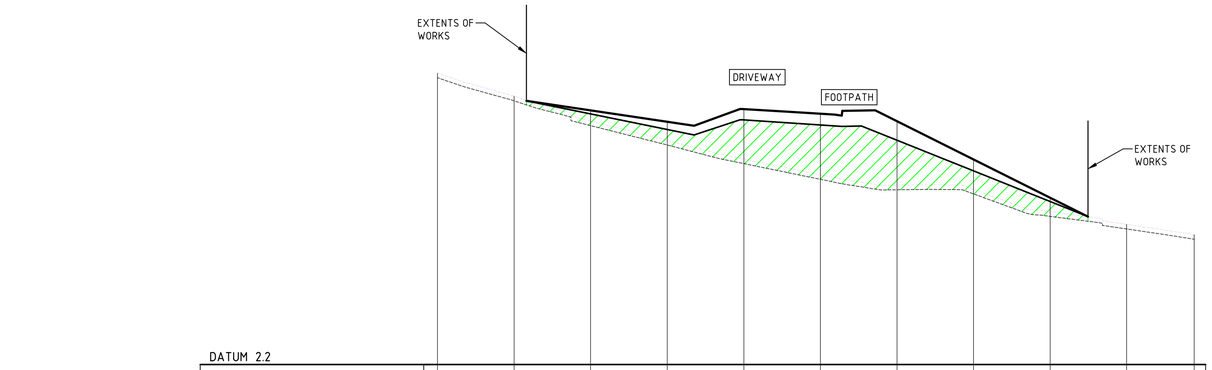
SHEET 1

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	AS SHOWN		
Date	FEB 2022		
Sheet	A1		

North

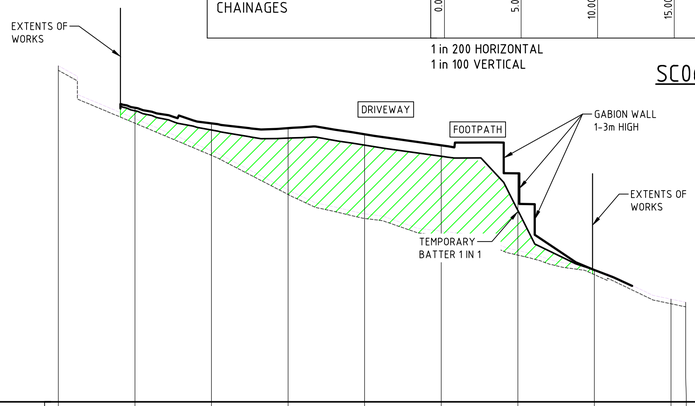
Project Ref: 12537 01
Drawing No: R25 C1011
Rev: P2



DATUM 2.2											
SC07											
DESIGN SURFACE LEVEL			10.495	10.123	10.536	10.386	10.143	8.893	7.643		
BULK EARTHWORKS SURFACE LEVEL			10.380	9.871	10.185	10.019	9.520	8.520	7.520		
STRIPPED EXISTING SURFACE LEVEL	11.559	10.807	9.996	9.364	8.757	8.245	7.903	7.767	7.035	6.623	6.287
EXISTING SURFACE LEVEL	11.709	10.957	10.146	9.514	8.907	8.395	8.053	7.917	7.185	6.773	6.437
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	49.408

1 in 200 HORIZONTAL
1 in 100 VERTICAL

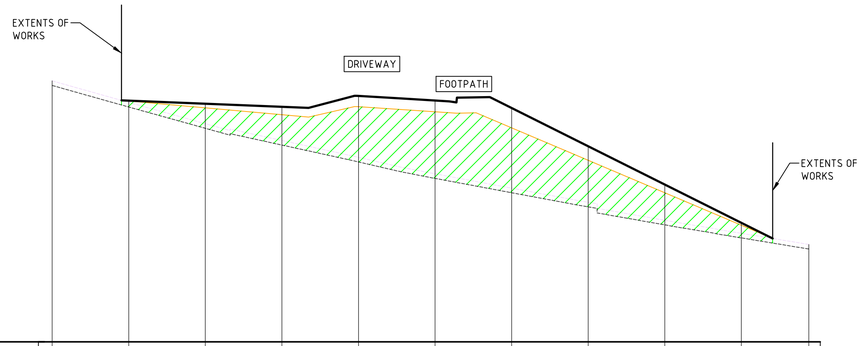
SC06 LONGITUDINAL SECTION



DATUM 3.7											
SC05											
DESIGN SURFACE LEVEL		13.299	12.791	12.633	12.432	12.072	11.157	8.001			
BULK EARTHWORKS SURFACE LEVEL		13.200	12.573	12.308	12.078	11.715	9.952				
STRIPPED EXISTING SURFACE LEVEL	14.519	12.794	11.744	10.468	9.685	9.122	8.488	7.852	6.901	6.800	
EXISTING SURFACE LEVEL	14.669	12.944	11.894	10.618	9.835	9.272	8.638	8.002	7.051	6.950	
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	40.958	

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC04 LONGITUDINAL SECTION



DATUM 3.3										
SC06										
DESIGN SURFACE LEVEL	11.171	11.071	10.971	11.327	11.177	10.934	9.684	8.434	7.184	
BULK EARTHWORKS SURFACE LEVEL	11.160	10.937	10.714	10.977	10.810	10.284	9.225	8.165	7.106	
STRIPPED EXISTING SURFACE LEVEL	11.670	10.964	10.269	9.722	9.170	8.634	8.166	7.705	7.117	6.691	6.328
EXISTING SURFACE LEVEL	11.820	11.114	10.419	9.872	9.320	8.784	8.316	7.855	7.267	6.841	6.478
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	49.408

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC05 LONGITUDINAL SECTION

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

Rev	Description	Date	By	App

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SITE SECTIONS

SHEET 1

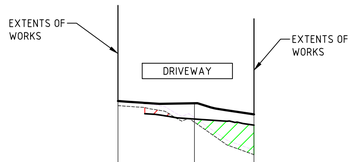
DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	AS SHOWN		
Date	FEB 2022		
Sheet	A1		

North

Project Ref: 12537 01
Drawing No: R25 C1012
Rev: P1

File: \\AU-SYD-FS01\Data\Job\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\12537101C - R25-C1012.dwg Plotted: 26.02.22 at 4:20 AM By: Lyn Demesa



DESIGN GRADELINE

HORIZONTAL GEOMETRY

DATUM 9.1

SC08				
DESIGN SURFACE LEVEL	16.931	16.856	16.495	
BULK EARTHWORKS SURFACE LEVEL		16.342	16.145	
STRIPPED EXISTING SURFACE LEVEL	16.781	16.239	15.179	
EXISTING SURFACE LEVEL	16.931	16.389	15.329	
CHAINAGES	0.000	5.000	8.883	

1 in 200 HORIZONTAL
1 in 100 VERTICAL

SC07 LONGITUDINAL SECTION

DESIGN GRADELINE

HORIZONTAL GEOMETRY

DATUM 9.3

SC09										
DESIGN SURFACE LEVEL		18.933	18.632	18.319	17.974	17.473	17.074	16.817	15.892	15.452
BULK EARTHWORKS SURFACE LEVEL		18.583	18.282	17.969	17.624	17.123	16.748	16.334		
STRIPPED EXISTING SURFACE LEVEL		18.818	18.481	18.085	17.705	17.157	16.750	16.212	15.742	15.302
EXISTING SURFACE LEVEL		18.968	18.631	18.235	17.855	17.307	16.900	16.362	15.892	15.452
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	49.969

1 in 200 HORIZONTAL
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SC08 LONGITUDINAL SECTION

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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www.meinhardt-bonacci.com

Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SITE SECTIONS

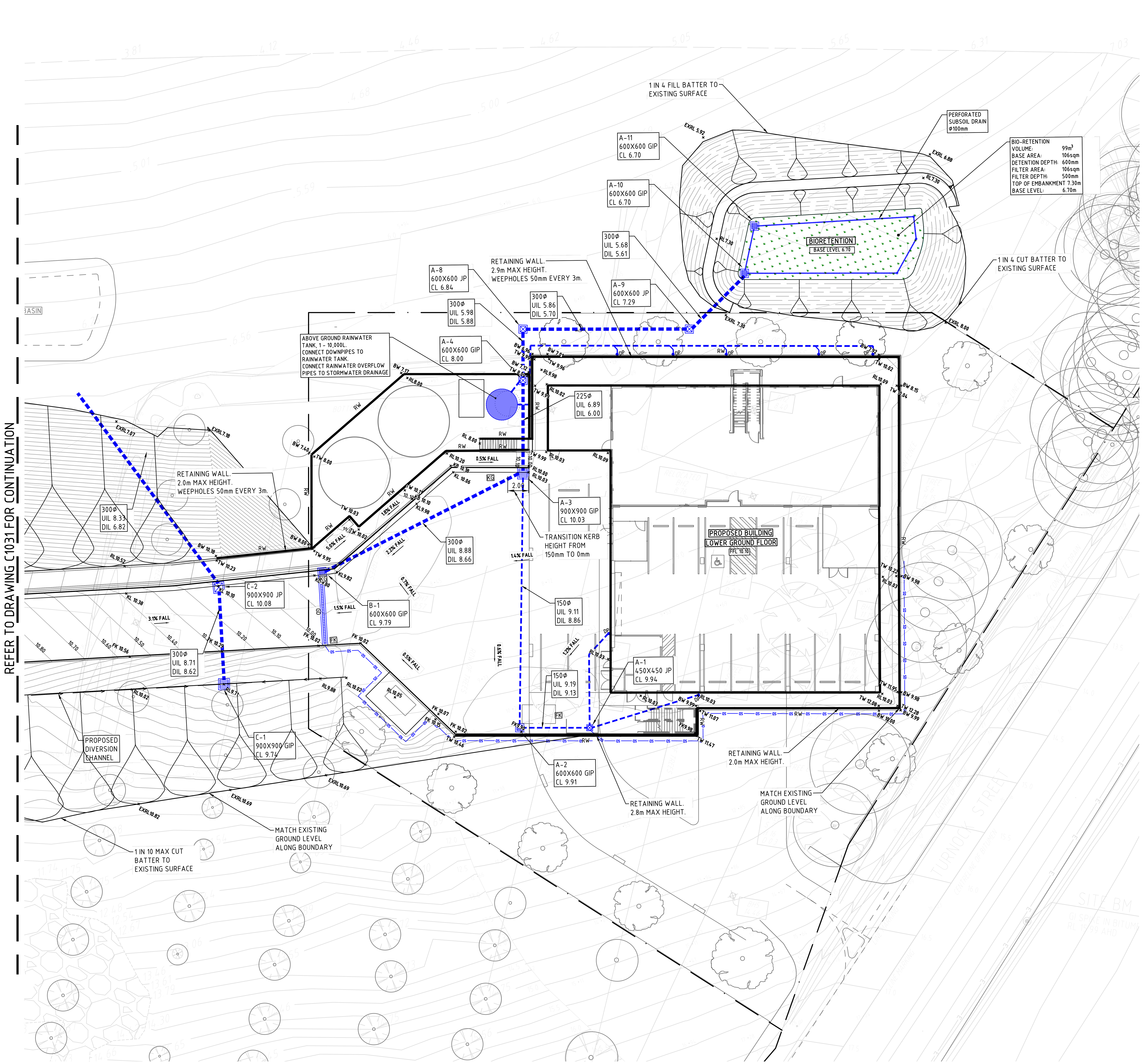
SHEET 1

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	AS SHOWN		
Date	FEB 2022		
Sheet	A1		

North

Project Ref: 12537 01
Drawing No: R25 C1013
Rev: P1



DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- KERB INLET PIT
- STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN
- DP — DOWNPIPE AND CONNECTION LINE (REFER TO HYDRAULIC DRAWINGS FOR DETAILS)
- FOR — SD — FLUSHOUT RISER (max 30m CTRS) WITH SUBSOIL DRAINAGE (100Ø uPVC SLOTTED PIPE UN-SOCKED)
- RO — RAINWATER OULET
- OD — SWALE DRAIN
- Ex SW — EXISTING STORMWATER TO REMAIN
- Ex SW — EXISTING STORMWATER TO BE MADE REDUNDANT
- Ex SW — EXISTING STORMWATER TO REMAIN
- OVERLAND FLOW

SURVEY LEGEND

- SITE BOUNDARY
- × 24.50 — EX SURFACE LEVEL
- 5.00 — EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- 32.00 — FINISHED SURFACE CONTOUR
- RW — PROPOSED RETAINING WALL
- RL 7.25 — FINISHED SURFACE LEVEL
- KL 7.25 — KERB LIP LEVEL
- FK 7.25 — FLUSH KERB LEVEL
- KI 7.25 — KERB INVERT LEVEL
- TW 7.25 — TOP OF WALL LEVEL
- BW 7.25 — BOTTOM OF WALL LEVEL
- EX RL 7.25 — EXISTING SURFACE LEVEL

WARNING
NO DRAINAGE WORKS SHALL COMMENCE UNTIL THE CONTRACTOR CONFIRMS THE I.L. OF ALL EXISTING DRAINS, AND CONFIRMS IN WRITING WITH THE ENGINEERING SUPERVISOR.

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SCALE 1:200 (0m 2m 4m 8m 12m)

Rev	Description	Date	By	App
P3	ISSUED FOR DA	03.03.22	LD	
P2	ISSUED FOR DA	25.02.22	DH	
P1	ISSUED FOR PRELIMINARY SET	15.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SITEWORKS AND STORMWATER DRAINAGE PLAN - LOWER GROUND SHEET 1

DA

Designed	LD	Approved	GK	Date	FEB 2022
Drawn	DH				
Scale	1:200	Project Ref	12537 01	Drawing No	R25 C1030
Date	FEB 2022	Rev	P3		
Sheet	A1				

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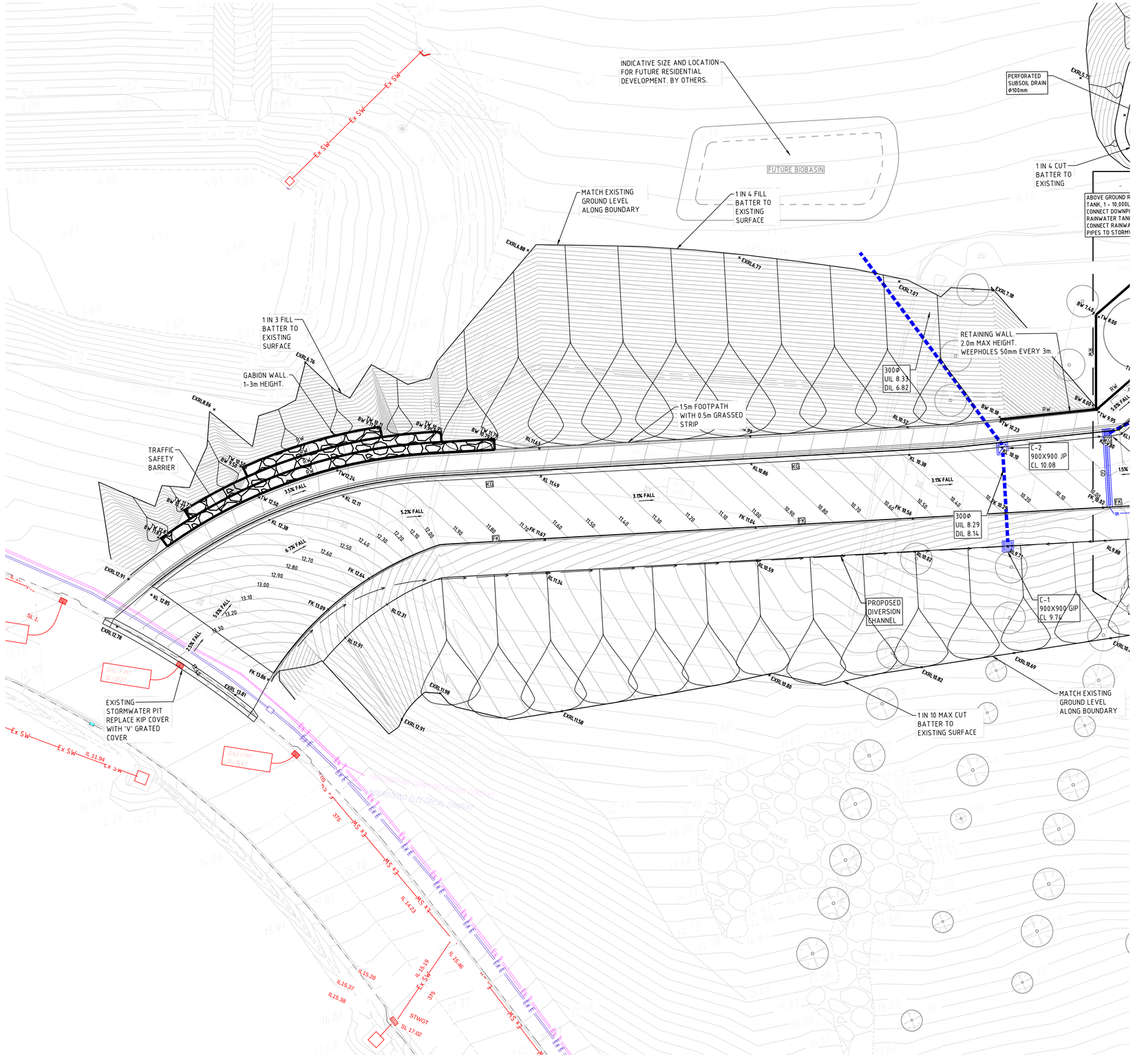
PM By: Lyn Demesa



REFER TO DRAWING C1030 FOR CONTINUATION

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- KERB INLET PIT
- STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN
- DP — DOWNPIPE AND CONNECTION LINE (REFER TO HYDRAULIC DRAWINGS FOR DETAILS)
- FOR — SD — FLUSHOUT RISER (max 30m CTRS) WITH SUBSOIL DRAINAGE (100Φ uPVC SLOTTED PIPE UN-SOCKED)
- RO — RAINWATER OULET
- OD — SWALE DRAIN
- Ex SW — EXISTING STORMWATER TO REMAIN
- Ex SW — EXISTING STORMWATER TO BE MADE REDUNDANT
- Ex SW — EXISTING STORMWATER TO REMAIN
- OVERLAND FLOW

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- 5.00 — EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- 32.00 — FINISHED SURFACE CONTOUR
- RW — PROPOSED RETAINING WALL
- RL 7.25 — FINISHED SURFACE LEVEL
- KL 7.25 — KERB LIP LEVEL
- FK 7.25 — FLUSH KERB LEVEL
- KI 7.25 — KERB INVERT LEVEL
- TW 7.25 — TOP OF WALL LEVEL
- BW 7.25 — BOTTOM OF WALL LEVEL
- EX RL 7.25 — EXISTING SURFACE LEVEL
- GABION WALL 1m HIGH 1m THICK

WARNING
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SCALE 1:200 — 0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P2	ISSUED FOR DA	25.02.22	DH	
P1	ISSUED FOR PRELIMINARY SET	15.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: SITEWORKS AND STORMWATER DRAINAGE PLAN - LOWER GROUND SHEET 2

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:200		
Date	FEB 2022		
Sheet	A1		

Project Ref: 12537 01 R25 C1031 P2
Drawing No
Rev
North

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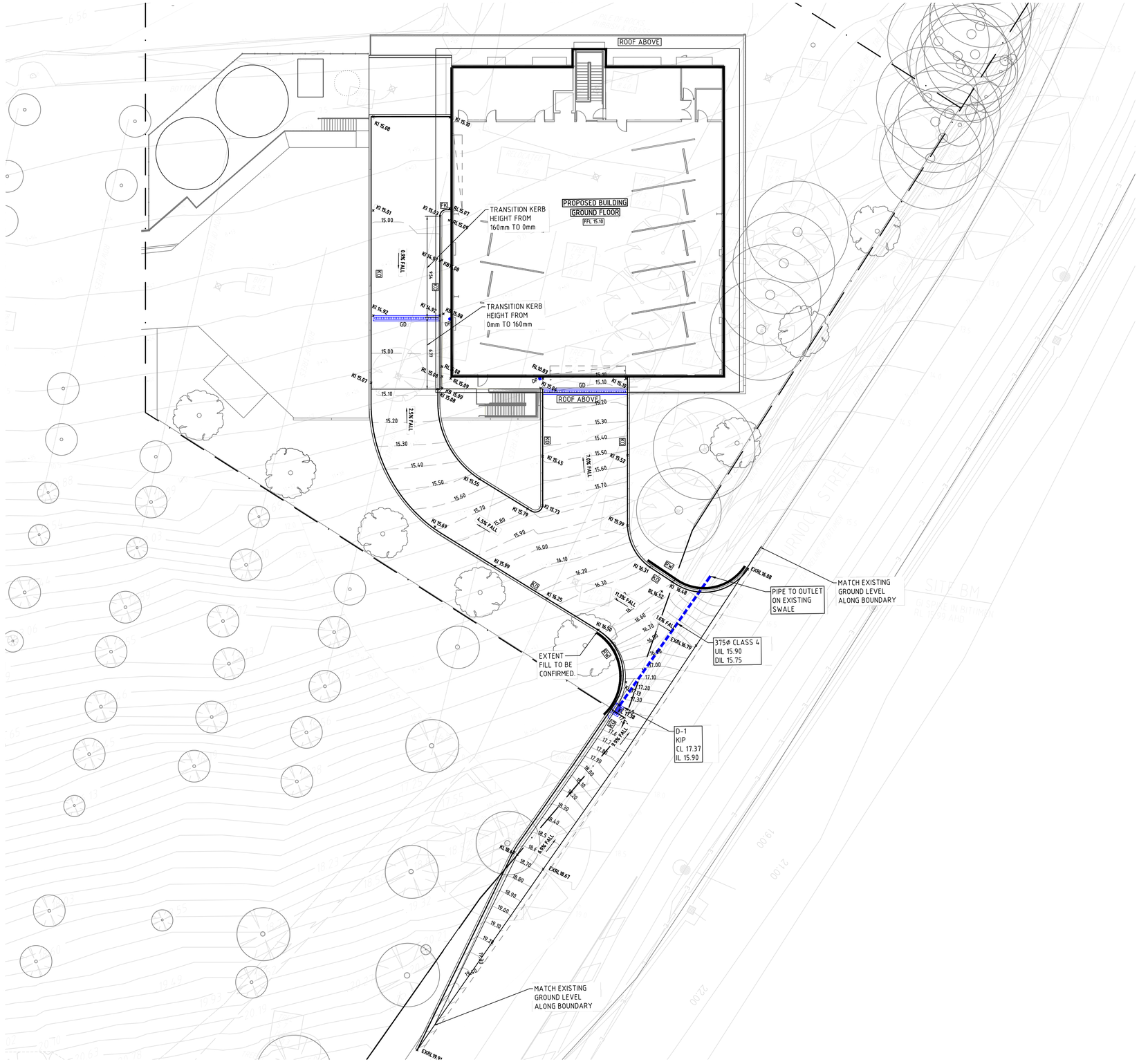

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- KERB INLET PIT
- STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN
- DP — DOWNPIPE AND CONNECTION LINE (REFER TO HYDRAULIC DRAWINGS FOR DETAILS)
- FOR — SD — FLUSHOUT RISER (max 30m CTRS) WITH SUBSOIL DRAINAGE (100Ø uPVC SLOTTED PIPE UN-SOCKED)
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- Ex SW — EXISTING STORMWATER TO REMAIN
- OVERLAND FLOW

SURVEY LEGEND

- SITE BOUNDARY
- 24.99 — EX SURFACE LEVEL
- 5.00 — EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- 32.00 — FINISHED SURFACE CONTOUR
- RW — PROPOSED RETAINING WALL
- RL 7.25 — FINISHED SURFACE LEVEL
- KL 7.25 — KERB LIP LEVEL
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- BW 7.25 — BOTTOM OF WALL LEVEL
- EX RL 7.25 — EXISTING SURFACE LEVEL

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WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE.
THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

SCALE 1:200 — 0m 2m 4m 8m 12m

Rev	Description	Date	By	App
P2	ISSUED FOR DA	25.02.22	DH	
P1	ISSUED FOR PRELIMINARY SET	15.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

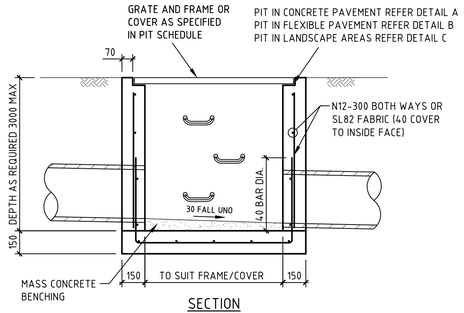
Drawing Title: SITEWORKS AND STORMWATER DRAINAGE PLAN - GROUND FLOOR SHEET 3

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:200		
Date	FEB 2022		
Sheet	A1		

Project Ref: 12537 01 | Drawing No: R25 C1032 | Rev: P2

File: \\AU-SYD-FS01\Data\Job\12537\01\03 WIP\02 Civil\01 CAD\01 Autocad\RAIR 2 - Kingscliff\12537101C - R25-C1032.dwg Plotted: 26.02.22 at 9:19 AM By: Lyn Dennesa



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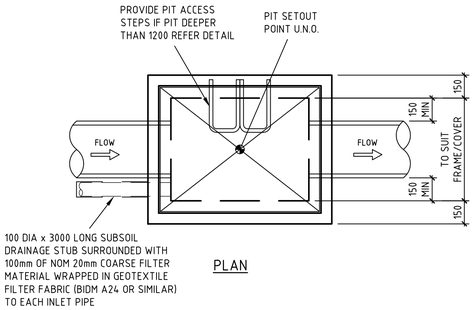
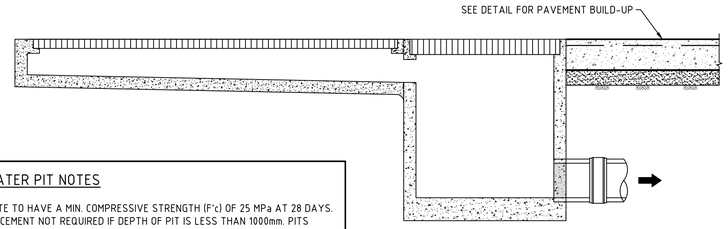


PLAN

SURFACE INLET/JUNCTION PIT DETAIL

SCALE 1:20

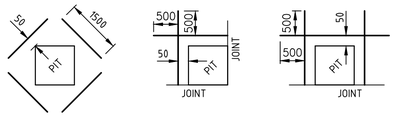


GRATED STRIP DRAIN CONFIGURATION

SCALE 1:20

STORMWATER PIT NOTES

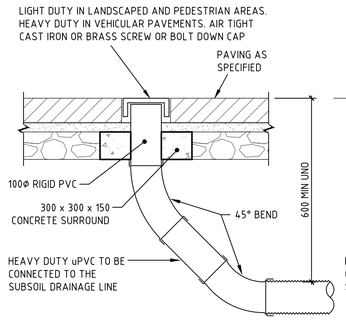
1. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH (F'c) OF 25 MPa AT 28 DAYS.
2. REINFORCEMENT NOT REQUIRED IF DEPTH OF PIT IS LESS THAN 1000mm. PITS GREATER THAN 3000mm DEEP TO HAVE WALL AND BASE 200mm THICK REINFORCED WITH N12-250 EACH WAY EACH FACE WITH CONCRETE STRENGTH F'c = 40 MPa.
3. PROVIDE STEP IRONS AT MAX 350mm CTRS IF DEPTH OF PIT EXCEEDS 1200mm.
4. IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS
5. PRECAST PITS ARE TO GENERALLY COMPLY WITH THESE DETAILS.
6. PRECAST PIT MAY BE USED SUBJECT TO ENGINEERS APPROVAL.
7. ALL PITS TO BE LOCKABLE.
8. FINAL INTERNAL PIT DIMENSIONS ARE TO COMPLY WITH AS 3500.



PIT WITHIN SLAB PIT AT CORNER PIT ON EDGE

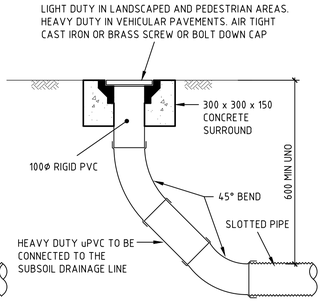
DETAIL OF SLAB REINFORCEMENT AT PITS IN CONCRETE PAVEMENT

N.T.S.



FLUSHOUT RISER (FOR) IN PAVING BRICKS

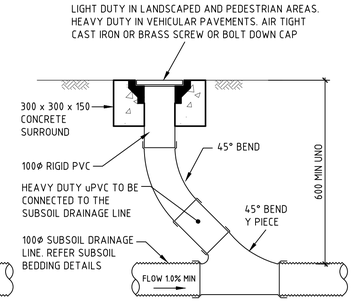
SCALE 1:10



FLUSHOUT RISER (FOR)

SCALE 1:10

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS WITHIN DRAINAGE LAYER ONLY



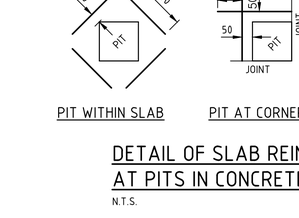
INTERMEDIATE RISER

SCALE 1:10

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED

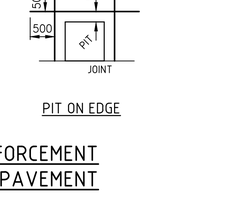
DETAIL A

SCALE 1:10



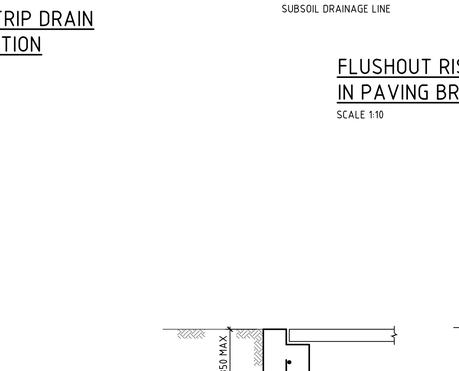
DETAIL B

SCALE 1:10



DETAIL C

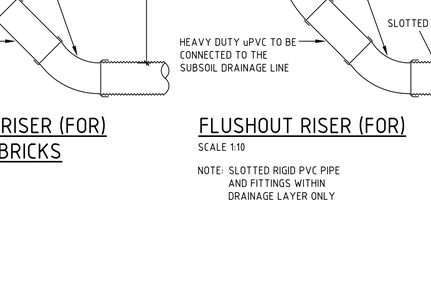
SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL BEHIND KERB

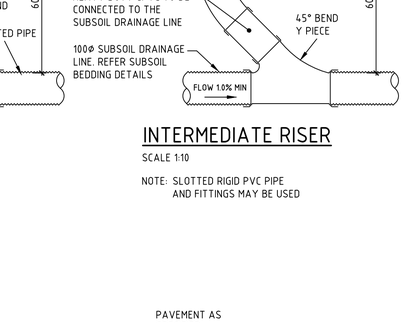
SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL IN LANDSCAPED AREAS

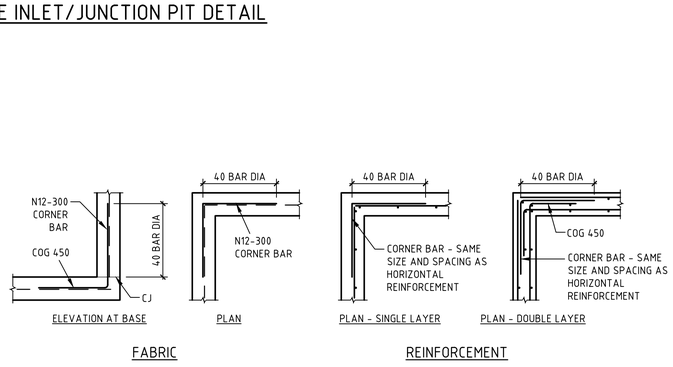
SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL IN PAVED AREAS

SCALE 1:10



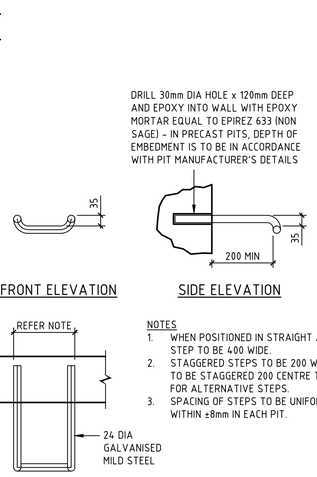
ELEVATION AT BASE PLAN PLAN - SINGLE LAYER PLAN - DOUBLE LAYER

FABRIC REINFORCEMENT

PIT CORNER DETAILS

SCALE 1:20

NOTE: DESIGNER TO VERIFY EXTENT OF DETAILING

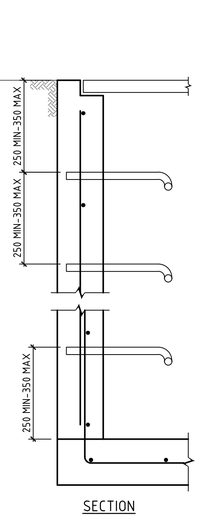


FRONT ELEVATION SIDE ELEVATION PLAN

NOTES
1. WHEN POSITIONED IN STRAIGHT ALIGNMENT, STEP TO BE 400 WIDE.
2. STAGGERED STEPS TO BE 200 WIDE, STEPS TO BE STAGGERED 200 CENTRE TO CENTRE FOR ALTERNATIVE STEPS.
3. SPACING OF STEPS TO BE UNIFORM TO WITHIN ±8mm IN EACH PIT.

PIT ACCESS STEP DETAIL

SCALE 1:10



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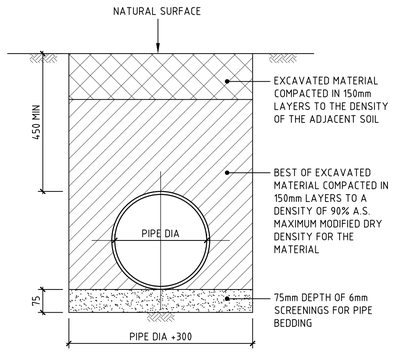
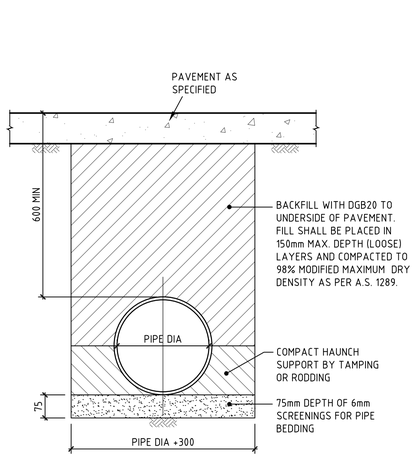


PIPE LAYING DETAIL (ALL PIPES) UNDER LANDSCAPED AREAS

SCALE 1:10



PIPE LAYING DETAILS UNDER ALL PAVEMENTS

SCALE 1:10

NOTE: AVOID RUNNING CONSTRUCTION EQUIPMENT OVER THE PIPES UNTIL BACKFILL MATERIAL IS 300mm MIN. ABOVE CROWN OF PIPE.

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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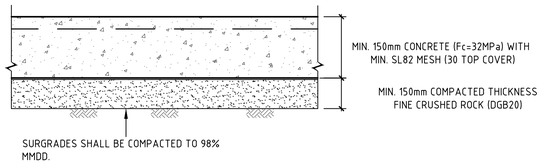
Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

Drawing Title: STORMWATER DRAINAGE DETAILS

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	AS SHOWN	Project Ref	12537 01 R25 C1050
Date	FEB 2022	Drawing No	P1
Sheet	A1	Rev	

North



PAVEMENT TYPE
CONCRETE PAVEMENT

SCALE 1:10

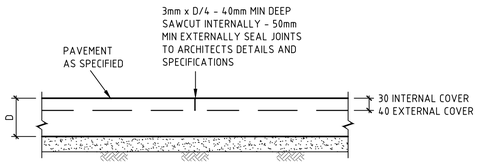
DENOTED ON PLAN

ROAD DESIGN PARAMETERS (RIGID)

BASED ON COUNCIL RECOMMENDED PAVEMENT DESIGN FOR DRIVEWAY CROSSINGS.

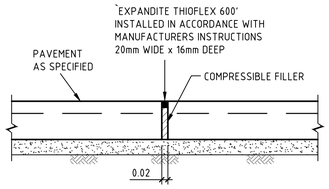
ASSUMPTIONS:

- PREPARE SUBGRADE AND SELECT FILL IN ACCORDANCE WITH JK GEOTECHNICS PTY LTD REPORT ON GEOTECHNICAL INVESTIGATION FOR PROPOSED RURAL AMBULANCE INFRASTRUCTURE AT WOY WOY HOPSITAL, OCEAN BEACH ROAD, WOY WOY, NSW DATED 11 OCTOBER 2021. REF: 34044RF.
- ALL AREAS SHALL BE VERIFIED BY JKGEOTECHNICS PTY LTD. AREAS NOT MEETING THIS DESIGN CRITERIA SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THEIR ADVICE AND RECOMMENDATIONS



SAWCUT JOINT (SJ)

SCALE 1:10



EXPANSION JOINT (EJ)

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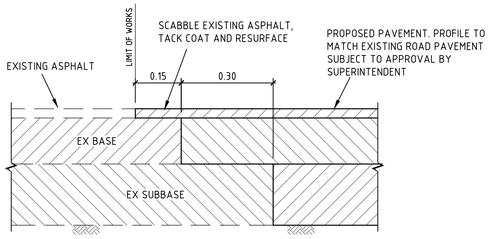
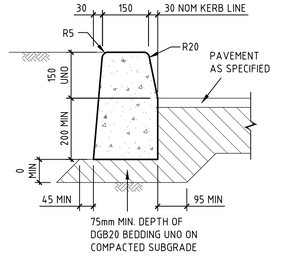


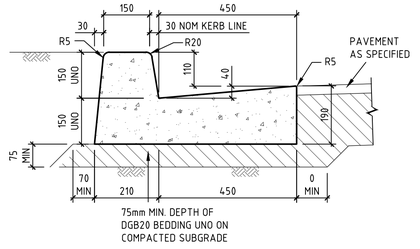
ASPHALT CONNECTION TO EXISTING PAVEMENT

SCALE 1:10



KERB ONLY (KO)

SCALE 1:10



KERB AND GUTTER (K&G)

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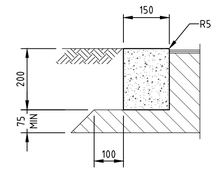
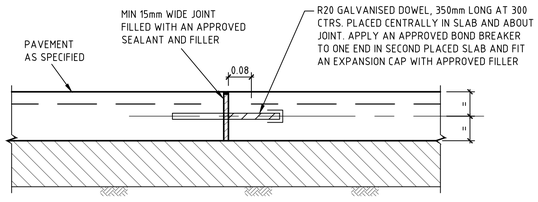


FLUSH KERB (FK)

SCALE 1:10

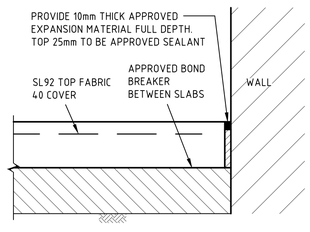
NOTES

1. SLAB MUST BE SAWCUT AS SOON AS PRACTICABLE AFTER FINISHING OF THE SLAB WITHOUT CAUSING DAMAGE TO THE SAWCUT EDGES - USUALLY 12-24 HOURS.
2. SLABS MUST NOT BE POURED IF TEMPERATURE EXCEEDS 32°
3. HOT WEATHER PLACING (25° AND OVER) MAY REQUIRE SLABS TO BE SAWCUT AS SOON AS 5-6 HOURS AFTER POURING.
4. ANY SLAB BAY IN WHICH SHRINKAGE CRACKS OCCUR DUE TO LATE SAWCUTTING MUST BE REMOVED AND REPLACED BY THE BUILDER/CONTRACTOR.



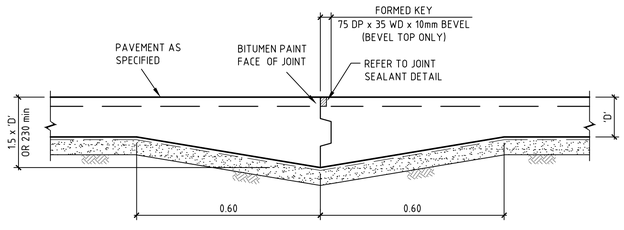
DOWELLED EXPANSION JOINT (DEJ)

SCALE 1:10



ISOLATION JOINT (IJ) WITH SUBGRADE BEAM

SCALE 1:10



KEYED CONSTRUCTION JOINT (KJ)

SCALE 1:10

Rev	Description	Date	By	App
P1	ISSUED FOR DA	25.02.22	DH	

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Project Name: RAIR II: KINGSCLIFF SITE
KINGSCLIFF, NSW, 2487
LOT 11: DP1269398

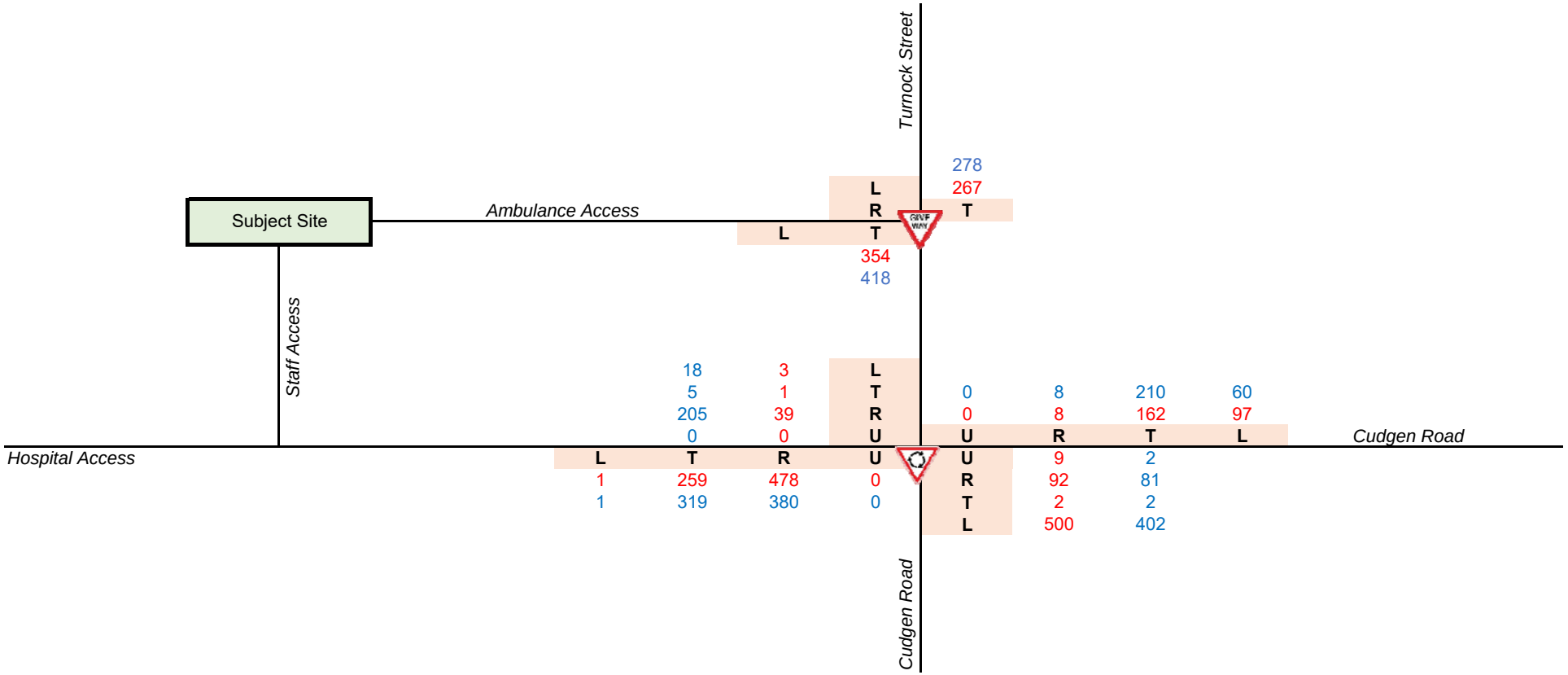
Drawing Title: SITEWORKS AND PAVEMENT DETAILS

DA

Designed	LD	Approved	GK
Drawn	DH	Date	FEB 2022
Scale	1:10	North	
Date	FEB 2022	Project Ref	12537 01 R25 C1070 P1
Sheet	A1	Drawing No	Rev

File: C:\Creo Client A\12537 RAIR II\C Working\01 CAD\RAIR 2 - Kingscliff\1253701C - R25-C1070.dwg Plotted: 25.02.22 at 10:00 PM By: April Dianne

Appendix B: Network Diagrams



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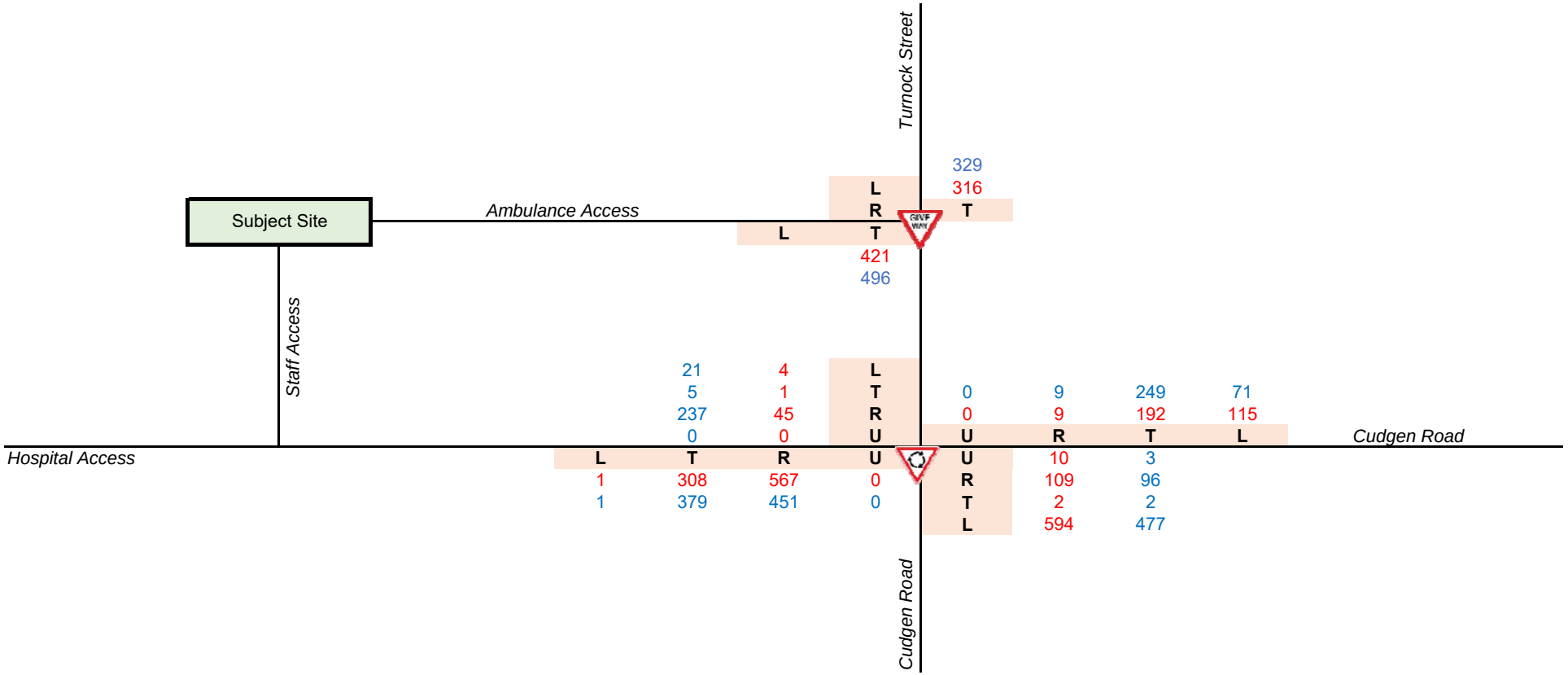
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



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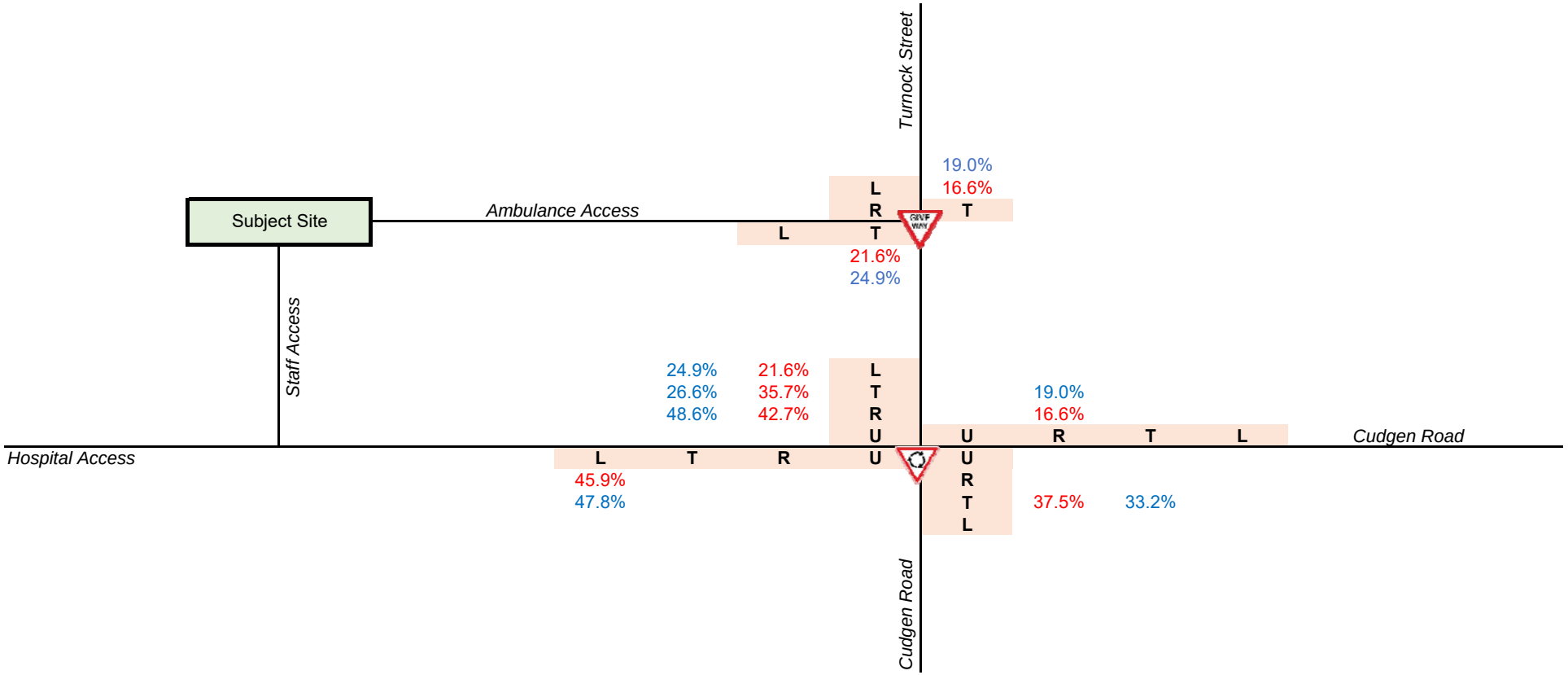
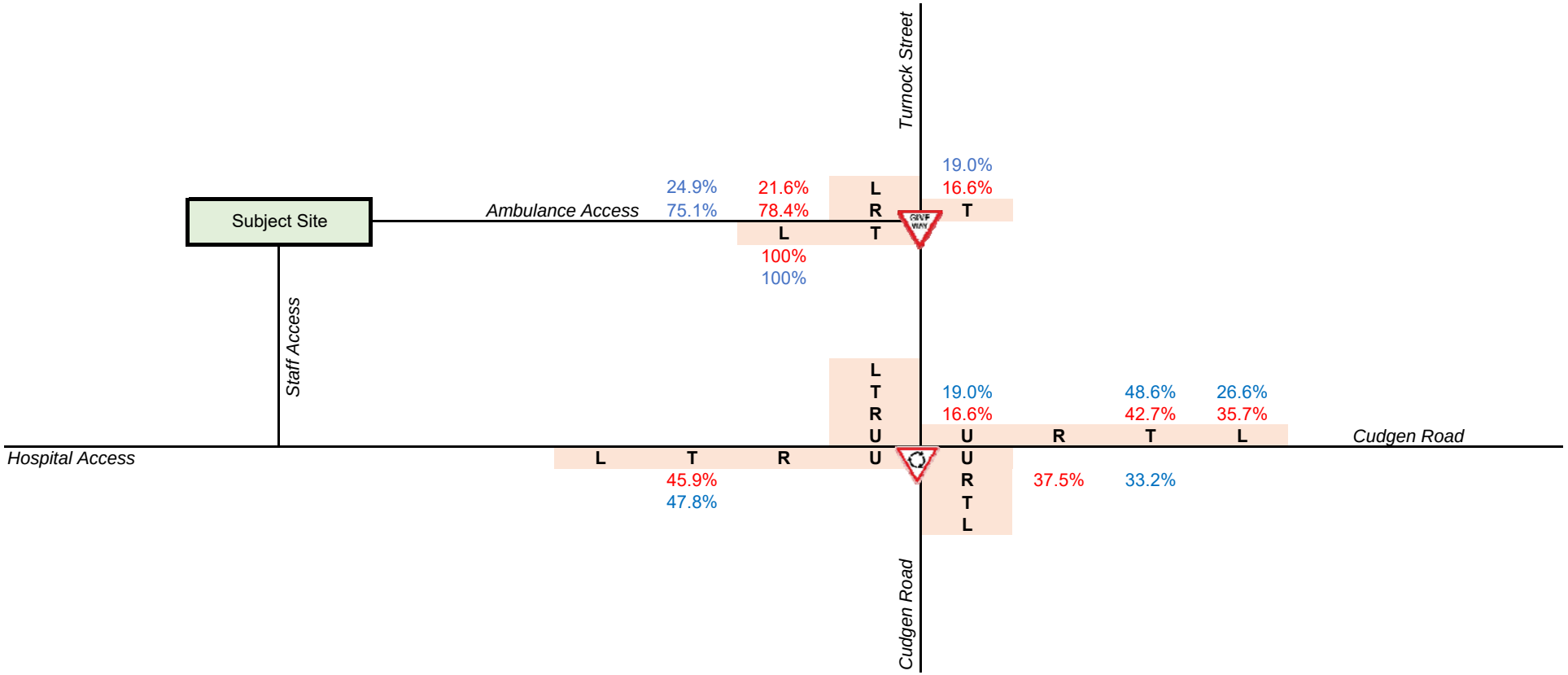
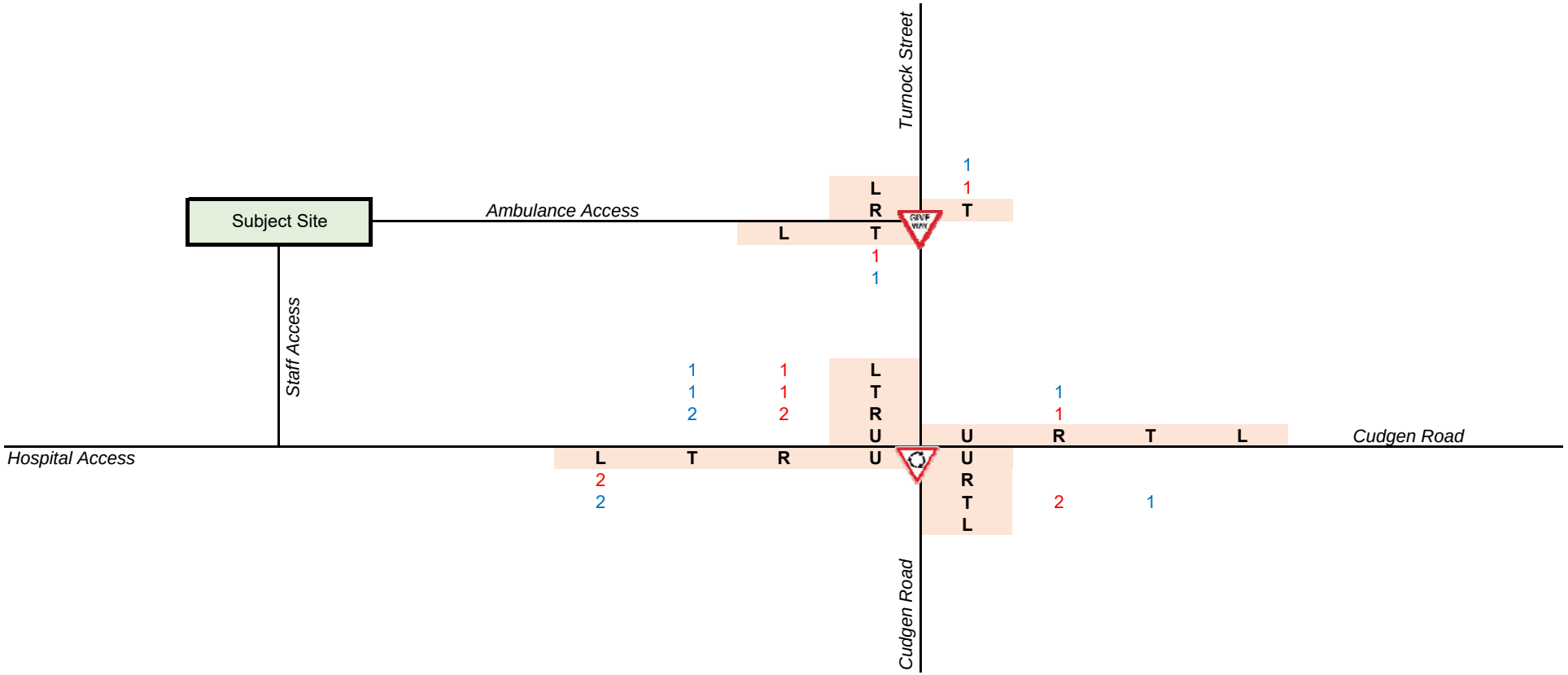
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



BITZIOS consulting	Sheet Name: Development Traffic Distribution (Staff)	Sheet Number 3 of 8
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



BITZIOS consulting	Sheet Name: Development Traffic Distribution (Ambulances)	Sheet Number 4 of 8
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



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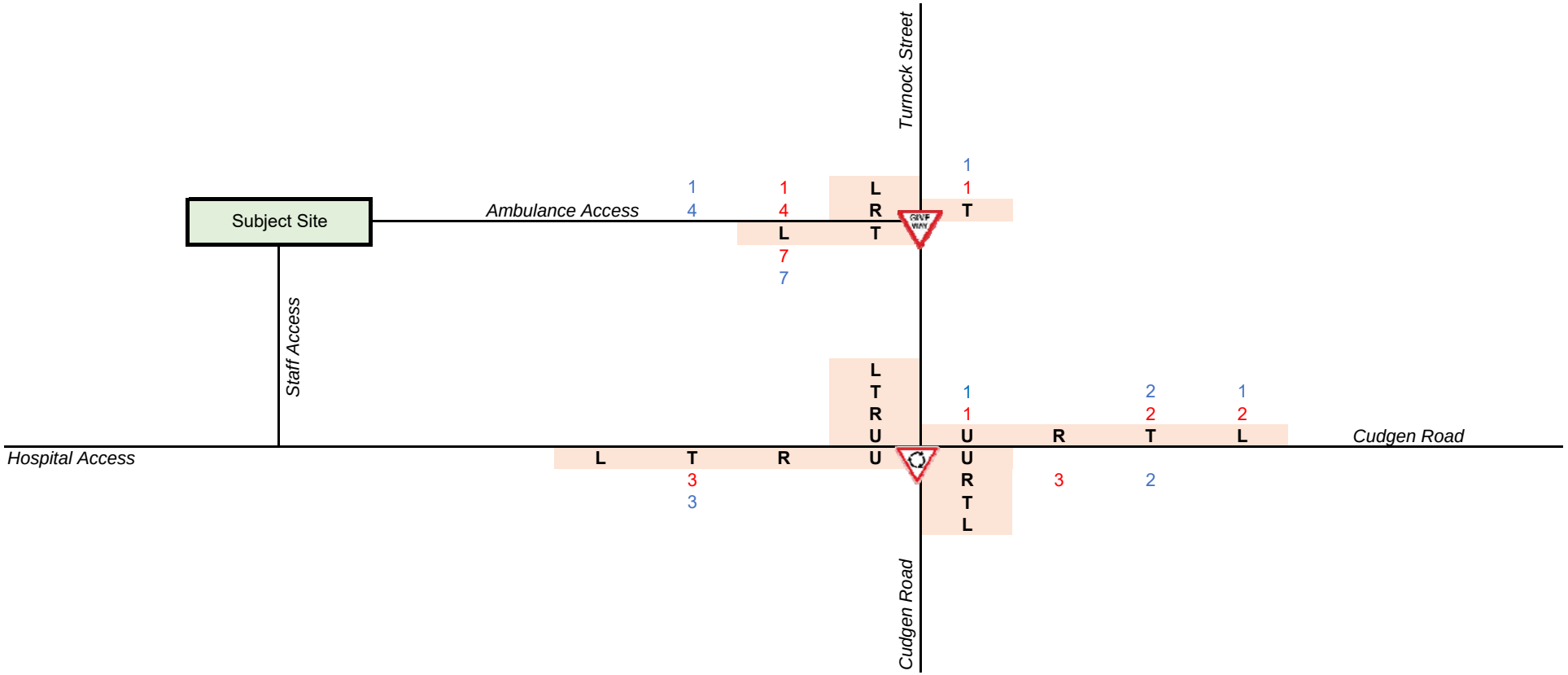

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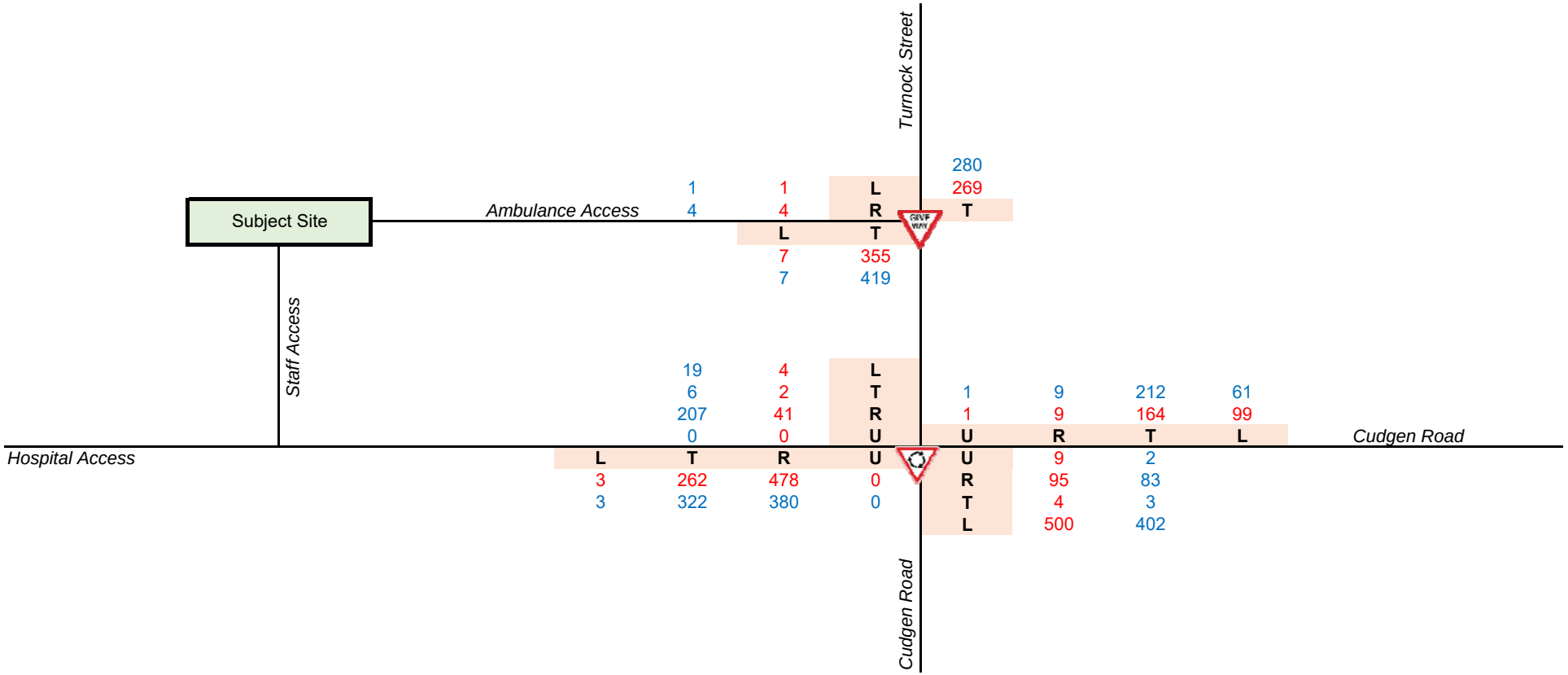
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



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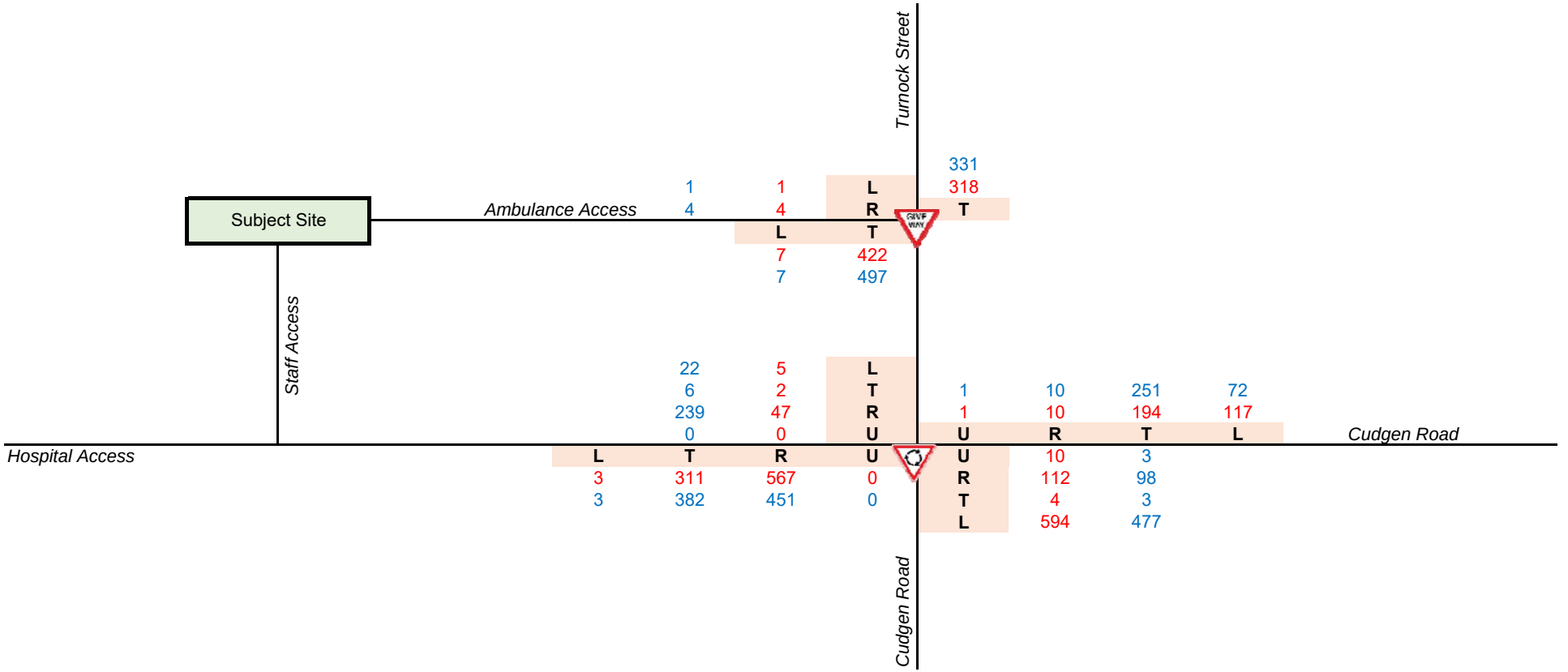
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022



BITZIOS consulting	Sheet Name: 2033 Design Volumes	Sheet Number 8 of 8
	Proejct Name: TVH Ambulance Station	Date: 24/03/2022

Appendix C: SIDRA Outputs

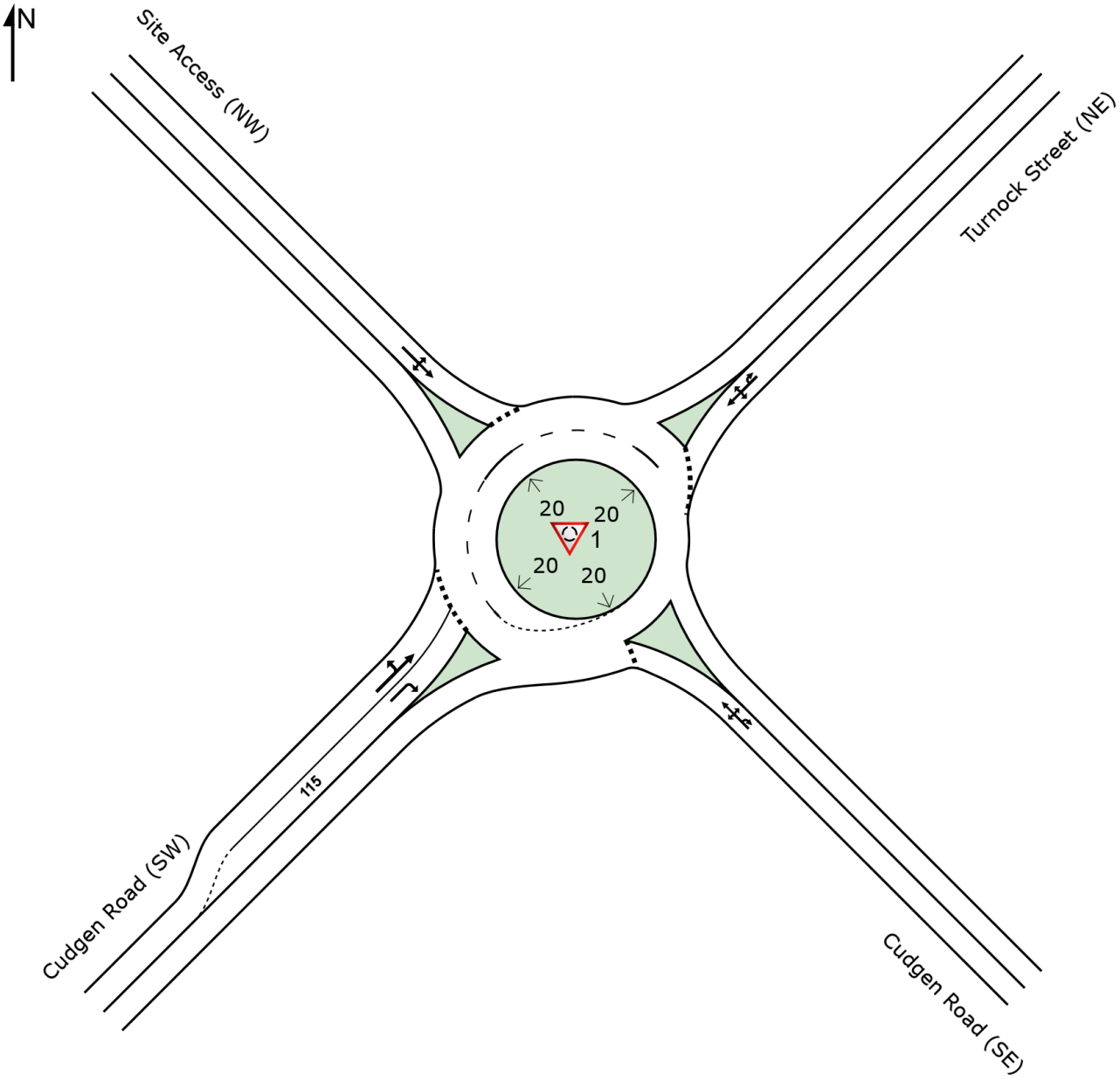
SITE LAYOUT

Site: 1 [2023 Background AM (Site Folder: General)]

Cudgen Road / Turnock Street

Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2023 Background AM (Site Folder: General)]

Cudgen Road / Turnock Street

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	500	2.0	526	2.0	0.570	5.0	LOS A	5.6	40.1	0.73	0.63	0.73	48.6
22	T1	2	2.0	2	2.0	0.570	4.8	LOS A	5.6	40.1	0.73	0.63	0.73	44.0
23	R2	92	2.0	97	2.0	0.570	9.6	LOS A	5.6	40.1	0.73	0.63	0.73	50.0
23u	U	9	0.0	9	0.0	0.570	13.0	LOS A	5.6	40.1	0.73	0.63	0.73	51.0
Approach		603	2.0	635	2.0	0.570	5.8	LOS A	5.6	40.1	0.73	0.63	0.73	48.9
NorthEast: Turnock Street (NE)														
24	L2	97	2.0	102	2.0	0.419	9.2	LOS A	2.8	20.0	0.76	0.84	0.80	47.5
25	T1	162	6.0	171	6.0	0.419	9.5	LOS A	2.8	20.0	0.76	0.84	0.80	51.6
26	R2	8	2.0	8	2.0	0.419	14.0	LOS A	2.8	20.0	0.76	0.84	0.80	46.7
26u	U	1	0.0	1	0.0	0.419	15.9	LOS B	2.8	20.0	0.76	0.84	0.80	52.9
Approach		268	4.4	282	4.4	0.419	9.6	LOS A	2.8	20.0	0.76	0.84	0.80	49.8
NorthWest: Site Access (NW)														
27	L2	3	2.0	3	2.0	0.073	5.7	LOS A	0.3	2.2	0.64	0.78	0.64	42.7
28	T1	1	2.0	1	2.0	0.073	5.4	LOS A	0.3	2.2	0.64	0.78	0.64	40.9
29	R2	39	2.0	41	2.0	0.073	9.4	LOS A	0.3	2.2	0.64	0.78	0.64	43.0
Approach		43	2.0	45	2.0	0.073	9.1	LOS A	0.3	2.2	0.64	0.78	0.64	42.9
SouthWest: Cudgen Road (SW)														
30	L2	1	2.0	1	2.0	0.261	4.8	LOS A	1.6	11.8	0.38	0.47	0.38	46.5
31	T1	259	3.0	273	3.0	0.261	4.9	LOS A	1.6	11.8	0.38	0.47	0.38	54.5
32	R2	478	4.0	503	4.0	0.394	9.4	LOS A	3.0	21.6	0.40	0.62	0.40	48.0
Approach		738	3.6	777	3.6	0.394	7.8	LOS A	3.0	21.6	0.39	0.56	0.39	50.0
All Vehicles		1652	3.1	1739	3.1	0.570	7.4	LOS A	5.6	40.1	0.58	0.64	0.59	49.4

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: 1 [2023 Background PM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	402	4.0	423	4.0	0.598	9.2	LOS A	6.3	45.3	0.87	0.91	1.03	46.1
22	T1	2	2.0	2	2.0	0.598	8.9	LOS A	6.3	45.3	0.87	0.91	1.03	41.4
23	R2	81	3.0	85	3.0	0.598	13.8	LOS A	6.3	45.3	0.87	0.91	1.03	47.5
23u	U	2	0.0	2	0.0	0.598	17.1	LOS B	6.3	45.3	0.87	0.91	1.03	48.5
Approach		487	3.8	513	3.8	0.598	10.0	LOS A	6.3	45.3	0.87	0.91	1.03	46.3
NorthEast: Turnock Street (NE)														
24	L2	60	6.0	63	6.0	0.449	10.8	LOS A	3.1	22.1	0.79	0.90	0.88	46.7
25	T1	210	1.0	221	1.0	0.449	10.6	LOS A	3.1	22.1	0.79	0.90	0.88	50.7
26	R2	8	2.0	8	2.0	0.449	15.3	LOS B	3.1	22.1	0.79	0.90	0.88	45.6
26u	U	1	0.0	1	0.0	0.449	17.3	LOS B	3.1	22.1	0.79	0.90	0.88	51.9
Approach		279	2.1	294	2.1	0.449	10.8	LOS A	3.1	22.1	0.79	0.90	0.88	49.6
NorthWest: Site Access (NW)														
27	L2	18	2.0	19	2.0	0.367	6.5	LOS A	1.9	13.2	0.71	0.89	0.76	42.2
28	T1	5	2.0	5	2.0	0.367	6.2	LOS A	1.9	13.2	0.71	0.89	0.76	40.4
29	R2	205	2.0	216	2.0	0.367	10.3	LOS A	1.9	13.2	0.71	0.89	0.76	42.4
Approach		228	2.0	240	2.0	0.367	9.9	LOS A	1.9	13.2	0.71	0.89	0.76	42.3
SouthWest: Cudgen Road (SW)														
30	L2	1	2.0	1	2.0	0.279	4.5	LOS A	1.9	13.6	0.35	0.45	0.35	46.6
31	T1	319	2.0	336	2.0	0.279	4.6	LOS A	1.9	13.6	0.35	0.45	0.35	54.7
32	R2	380	5.0	400	5.0	0.312	9.2	LOS A	2.2	16.3	0.35	0.61	0.35	48.1
Approach		700	3.6	737	3.6	0.312	7.1	LOS A	2.2	16.3	0.35	0.53	0.35	50.8
All Vehicles		1694	3.2	1783	3.2	0.598	9.0	LOS A	6.3	45.3	0.62	0.75	0.69	48.3

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: 1 [2023 Design AM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	500	2.0	526	2.0	0.578	5.1	LOS A	5.8	40.9	0.74	0.64	0.74	48.6
22	T1	4	2.0	4	2.0	0.578	4.9	LOS A	5.8	40.9	0.74	0.64	0.74	43.9
23	R2	95	2.0	100	2.0	0.578	9.7	LOS A	5.8	40.9	0.74	0.64	0.74	50.0
23u	U	9	0.0	9	0.0	0.578	13.1	LOS A	5.8	40.9	0.74	0.64	0.74	51.0
Approach		608	2.0	640	2.0	0.578	5.9	LOS A	5.8	40.9	0.74	0.64	0.74	48.8
NorthEast: Turnock Street (NE)														
24	L2	99	2.0	104	2.0	0.429	9.4	LOS A	2.9	20.9	0.77	0.86	0.82	47.4
25	T1	164	6.0	173	6.0	0.429	9.7	LOS A	2.9	20.9	0.77	0.86	0.82	51.4
26	R2	9	2.0	9	2.0	0.429	14.1	LOS A	2.9	20.9	0.77	0.86	0.82	46.5
26u	U	1	0.0	1	0.0	0.429	16.1	LOS B	2.9	20.9	0.77	0.86	0.82	52.8
Approach		273	4.4	287	4.4	0.429	9.8	LOS A	2.9	20.9	0.77	0.86	0.82	49.7
NorthWest: Site Access (NW)														
27	L2	4	2.0	4	2.0	0.080	5.7	LOS A	0.3	2.5	0.64	0.78	0.64	42.8
28	T1	2	2.0	2	2.0	0.080	5.4	LOS A	0.3	2.5	0.64	0.78	0.64	40.9
29	R2	41	2.0	43	2.0	0.080	9.5	LOS A	0.3	2.5	0.64	0.78	0.64	43.1
Approach		47	2.0	49	2.0	0.080	9.0	LOS A	0.3	2.5	0.64	0.78	0.64	42.9
SouthWest: Cudgen Road (SW)														
30	L2	3	2.0	3	2.0	0.267	4.8	LOS A	1.7	12.2	0.39	0.47	0.39	46.4
31	T1	262	3.0	276	3.0	0.267	4.9	LOS A	1.7	12.2	0.39	0.47	0.39	54.5
32	R2	478	4.0	503	4.0	0.398	9.5	LOS A	3.0	21.8	0.42	0.62	0.42	48.0
Approach		743	3.6	782	3.6	0.398	7.8	LOS A	3.0	21.8	0.41	0.57	0.41	50.0
All Vehicles		1671	3.1	1759	3.1	0.578	7.5	LOS A	5.8	40.9	0.59	0.65	0.60	49.3

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: 1 [2023 Design PM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	402	4.0	423	4.0	0.605	9.5	LOS A	6.4	46.5	0.88	0.92	1.05	46.0
22	T1	3	2.0	3	2.0	0.605	9.2	LOS A	6.4	46.5	0.88	0.92	1.05	41.2
23	R2	83	3.0	87	3.0	0.605	14.1	LOS A	6.4	46.5	0.88	0.92	1.05	47.3
23u	U	2	0.0	2	0.0	0.605	17.4	LOS B	6.4	46.5	0.88	0.92	1.05	48.3
Approach		490	3.8	516	3.8	0.605	10.3	LOS A	6.4	46.5	0.88	0.92	1.05	46.2
NorthEast: Turnock Street (NE)														
24	L2	61	6.0	64	6.0	0.457	11.0	LOS A	3.2	22.8	0.79	0.91	0.89	46.6
25	T1	212	1.0	223	1.0	0.457	10.8	LOS A	3.2	22.8	0.79	0.91	0.89	50.6
26	R2	9	2.0	9	2.0	0.457	15.5	LOS B	3.2	22.8	0.79	0.91	0.89	45.5
26u	U	1	0.0	1	0.0	0.457	17.4	LOS B	3.2	22.8	0.79	0.91	0.89	51.8
Approach		283	2.1	298	2.1	0.457	11.0	LOS A	3.2	22.8	0.79	0.91	0.89	49.5
NorthWest: Site Access (NW)														
27	L2	19	2.0	20	2.0	0.374	6.6	LOS A	1.9	13.6	0.71	0.89	0.77	42.1
28	T1	5	2.0	5	2.0	0.374	6.3	LOS A	1.9	13.6	0.71	0.89	0.77	40.3
29	R2	207	2.0	218	2.0	0.374	10.4	LOS A	1.9	13.6	0.71	0.89	0.77	42.3
Approach		231	2.0	243	2.0	0.374	10.0	LOS A	1.9	13.6	0.71	0.89	0.77	42.3
SouthWest: Cudgen Road (SW)														
30	L2	3	2.0	3	2.0	0.284	4.5	LOS A	1.9	13.9	0.36	0.45	0.36	46.6
31	T1	322	2.0	339	2.0	0.284	4.7	LOS A	1.9	13.9	0.36	0.45	0.36	54.6
32	R2	380	5.0	400	5.0	0.314	9.3	LOS A	2.2	16.4	0.36	0.61	0.36	48.1
Approach		705	3.6	742	3.6	0.314	7.1	LOS A	2.2	16.4	0.36	0.54	0.36	50.8
All Vehicles		1709	3.2	1799	3.2	0.605	9.1	LOS A	6.4	46.5	0.63	0.75	0.70	48.2

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: 1 [2033 Background AM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	594	2.0	625	2.0	0.709	7.5	LOS A	9.8	69.4	0.90	0.79	1.00	47.3
22	T1	2	2.0	2	2.0	0.709	7.3	LOS A	9.8	69.4	0.90	0.79	1.00	42.6
23	R2	109	2.0	115	2.0	0.709	12.2	LOS A	9.8	69.4	0.90	0.79	1.00	48.7
23u	U	10	0.0	11	0.0	0.709	15.5	LOS B	9.8	69.4	0.90	0.79	1.00	49.7
Approach		715	2.0	753	2.0	0.709	8.3	LOS A	9.8	69.4	0.90	0.79	1.00	47.5
NorthEast: Turnock Street (NE)														
24	L2	115	2.0	121	2.0	0.560	13.2	LOS A	4.7	34.2	0.87	1.02	1.11	45.1
25	T1	192	6.0	202	6.0	0.560	13.5	LOS A	4.7	34.2	0.87	1.02	1.11	48.6
26	R2	9	2.0	9	2.0	0.560	17.9	LOS B	4.7	34.2	0.87	1.02	1.11	43.5
26u	U	1	0.0	1	0.0	0.560	19.8	LOS B	4.7	34.2	0.87	1.02	1.11	49.9
Approach		317	4.4	334	4.4	0.560	13.6	LOS A	4.7	34.2	0.87	1.02	1.11	47.1
NorthWest: Site Access (NW)														
27	L2	4	2.0	4	2.0	0.095	6.4	LOS A	0.4	3.0	0.69	0.83	0.69	42.2
28	T1	1	2.0	1	2.0	0.095	6.1	LOS A	0.4	3.0	0.69	0.83	0.69	40.4
29	R2	45	2.0	47	2.0	0.095	10.2	LOS A	0.4	3.0	0.69	0.83	0.69	42.5
Approach		50	2.0	53	2.0	0.095	9.8	LOS A	0.4	3.0	0.69	0.83	0.69	42.4
SouthWest: Cudgen Road (SW)														
30	L2	1	2.0	1	2.0	0.319	5.0	LOS A	2.2	15.6	0.44	0.50	0.44	46.1
31	T1	308	3.0	324	3.0	0.319	5.1	LOS A	2.2	15.6	0.44	0.50	0.44	54.2
32	R2	567	4.0	597	4.0	0.480	9.6	LOS A	4.1	29.7	0.50	0.63	0.50	47.7
Approach		876	3.6	922	3.6	0.480	8.0	LOS A	4.1	29.7	0.48	0.58	0.48	49.8
All Vehicles		1958	3.1	2061	3.1	0.709	9.1	LOS A	9.8	69.4	0.70	0.74	0.78	48.3

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: 1 [2033 Background PM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	477	4.0	502	4.0	0.770	16.5	LOS B	12.0	86.7	1.00	1.21	1.55	42.0
22	T1	2	2.0	2	2.0	0.770	16.1	LOS B	12.0	86.7	1.00	1.21	1.55	37.1
23	R2	96	3.0	101	3.0	0.770	21.0	LOS B	12.0	86.7	1.00	1.21	1.55	43.3
23u	U	3	0.0	3	0.0	0.770	24.3	LOS B	12.0	86.7	1.00	1.21	1.55	44.3
Approach		578	3.8	608	3.8	0.770	17.3	LOS B	12.0	86.7	1.00	1.21	1.55	42.3
NorthEast: Turnock Street (NE)														
24	L2	71	6.0	75	6.0	0.594	15.9	LOS B	5.3	37.7	0.89	1.07	1.23	43.8
25	T1	249	1.0	262	1.0	0.594	15.6	LOS B	5.3	37.7	0.89	1.07	1.23	47.1
26	R2	9	2.0	9	2.0	0.594	20.4	LOS B	5.3	37.7	0.89	1.07	1.23	41.9
26u	U	1	0.0	1	0.0	0.594	22.3	LOS B	5.3	37.7	0.89	1.07	1.23	48.4
Approach		330	2.1	347	2.1	0.594	15.8	LOS B	5.3	37.7	0.89	1.07	1.23	46.2
NorthWest: Site Access (NW)														
27	L2	21	2.0	22	2.0	0.467	8.3	LOS A	2.7	18.9	0.77	0.97	0.94	41.0
28	T1	5	2.0	5	2.0	0.467	8.0	LOS A	2.7	18.9	0.77	0.97	0.94	39.3
29	R2	237	2.0	249	2.0	0.467	12.1	LOS A	2.7	18.9	0.77	0.97	0.94	41.1
Approach		263	2.0	277	2.0	0.467	11.7	LOS A	2.7	18.9	0.77	0.97	0.94	41.0
SouthWest: Cudgen Road (SW)														
30	L2	1	2.0	1	2.0	0.339	4.7	LOS A	2.5	17.8	0.41	0.47	0.41	46.3
31	T1	379	2.0	399	2.0	0.339	4.8	LOS A	2.5	17.8	0.41	0.47	0.41	54.4
32	R2	451	5.0	475	5.0	0.378	9.4	LOS A	3.0	21.6	0.42	0.61	0.42	47.9
Approach		831	3.6	875	3.6	0.378	7.3	LOS A	3.0	21.6	0.42	0.55	0.42	50.6
All Vehicles		2002	3.2	2107	3.2	0.770	12.2	LOS A	12.0	86.7	0.71	0.88	0.95	46.1

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: 1 [2033 Design AM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	594	2.0	625	2.0	0.719	7.9	LOS A	10.2	72.4	0.91	0.81	1.03	47.1
22	T1	4	2.0	4	2.0	0.719	7.7	LOS A	10.2	72.4	0.91	0.81	1.03	42.3
23	R2	112	2.0	118	2.0	0.719	12.5	LOS A	10.2	72.4	0.91	0.81	1.03	48.4
23u	U	10	0.0	11	0.0	0.719	15.9	LOS B	10.2	72.4	0.91	0.81	1.03	49.4
Approach		720	2.0	758	2.0	0.719	8.7	LOS A	10.2	72.4	0.91	0.81	1.03	47.3
NorthEast: Turnock Street (NE)														
24	L2	117	2.0	123	2.0	0.572	13.5	LOS A	4.9	35.6	0.88	1.03	1.14	44.9
25	T1	194	6.0	204	6.0	0.572	13.9	LOS A	4.9	35.6	0.88	1.03	1.14	48.3
26	R2	10	2.0	11	2.0	0.572	18.3	LOS B	4.9	35.6	0.88	1.03	1.14	43.2
26u	U	1	0.0	1	0.0	0.572	20.2	LOS B	4.9	35.6	0.88	1.03	1.14	49.7
Approach		322	4.4	339	4.4	0.572	13.9	LOS A	4.9	35.6	0.88	1.03	1.14	46.8
NorthWest: Site Access (NW)														
27	L2	5	2.0	5	2.0	0.103	6.5	LOS A	0.5	3.3	0.69	0.84	0.69	42.3
28	T1	2	2.0	2	2.0	0.103	6.2	LOS A	0.5	3.3	0.69	0.84	0.69	40.5
29	R2	47	2.0	49	2.0	0.103	10.2	LOS A	0.5	3.3	0.69	0.84	0.69	42.5
Approach		54	2.0	57	2.0	0.103	9.7	LOS A	0.5	3.3	0.69	0.84	0.69	42.4
SouthWest: Cudgen Road (SW)														
30	L2	3	2.0	3	2.0	0.325	5.0	LOS A	2.2	16.0	0.45	0.50	0.45	46.1
31	T1	311	3.0	327	3.0	0.325	5.2	LOS A	2.2	16.0	0.45	0.50	0.45	54.1
32	R2	567	4.0	597	4.0	0.484	9.7	LOS A	4.2	30.1	0.51	0.63	0.51	47.7
Approach		881	3.6	927	3.6	0.484	8.1	LOS A	4.2	30.1	0.49	0.59	0.49	49.7
All Vehicles		1977	3.1	2081	3.1	0.719	9.3	LOS A	10.2	72.4	0.71	0.75	0.80	48.2

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: 1 [2033 Design PM (Site Folder: General)]

Cudgen Road / Turnock Street
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
SouthEast: Cudgen Road (SE)														
21	L2	477	4.0	502	4.0	0.779	17.1	LOS B	12.4	89.7	1.00	1.23	1.58	41.7
22	T1	3	2.0	3	2.0	0.779	16.7	LOS B	12.4	89.7	1.00	1.23	1.58	36.8
23	R2	98	3.0	103	3.0	0.779	21.7	LOS B	12.4	89.7	1.00	1.23	1.58	43.0
23u	U	3	0.0	3	0.0	0.779	24.9	LOS B	12.4	89.7	1.00	1.23	1.58	44.0
Approach		581	3.8	612	3.8	0.779	17.9	LOS B	12.4	89.7	1.00	1.23	1.58	41.9
NorthEast: Turnock Street (NE)														
24	L2	72	6.0	76	6.0	0.604	16.3	LOS B	5.5	39.0	0.90	1.08	1.25	43.6
25	T1	251	1.0	264	1.0	0.604	16.0	LOS B	5.5	39.0	0.90	1.08	1.25	46.9
26	R2	10	2.0	11	2.0	0.604	20.7	LOS B	5.5	39.0	0.90	1.08	1.25	41.6
26u	U	1	0.0	1	0.0	0.604	22.6	LOS B	5.5	39.0	0.90	1.08	1.25	48.1
Approach		334	2.1	352	2.1	0.604	16.2	LOS B	5.5	39.0	0.90	1.08	1.25	46.0
NorthWest: Site Access (NW)														
27	L2	22	2.0	23	2.0	0.477	8.5	LOS A	2.7	19.5	0.78	0.98	0.95	40.9
28	T1	6	2.0	6	2.0	0.477	8.2	LOS A	2.7	19.5	0.78	0.98	0.95	39.2
29	R2	239	2.0	252	2.0	0.477	12.2	LOS A	2.7	19.5	0.78	0.98	0.95	41.0
Approach		267	2.0	281	2.0	0.477	11.8	LOS A	2.7	19.5	0.78	0.98	0.95	40.9
SouthWest: Cudgen Road (SW)														
30	L2	3	2.0	3	2.0	0.344	4.7	LOS A	2.6	18.2	0.42	0.47	0.42	46.3
31	T1	382	2.0	402	2.0	0.344	4.8	LOS A	2.6	18.2	0.42	0.47	0.42	54.3
32	R2	451	5.0	475	5.0	0.380	9.4	LOS A	3.0	21.7	0.43	0.62	0.43	47.9
Approach		836	3.6	880	3.6	0.380	7.3	LOS A	3.0	21.7	0.42	0.55	0.42	50.6
All Vehicles		2018	3.2	2124	3.2	0.779	12.4	LOS A	12.4	89.7	0.71	0.89	0.96	45.9

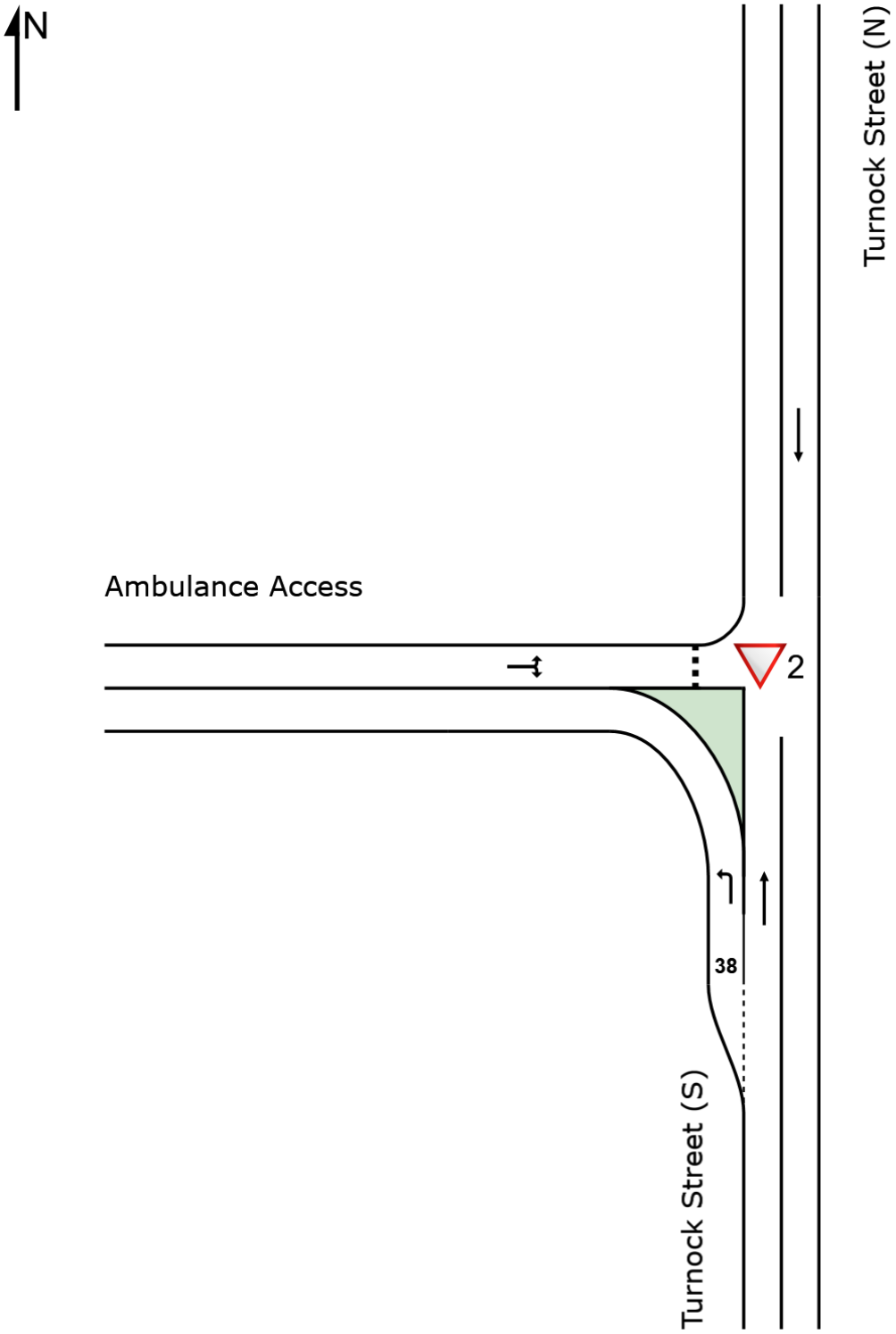
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity 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.

SITE LAYOUT

Site: 2 [2023 DES AM (Site Folder: General)]

Turnock Street / Ambulance Access
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2023 DES AM (Site Folder: General)]

Turnock Street / Ambulance Access
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: Turnock Street (S)														
1	L2	7	0.0	7	0.0	0.004	7.5	LOS A	0.0	0.0	0.00	0.65	0.00	31.5
2	T1	355	2.7	374	2.7	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		362	2.6	381	2.6	0.193	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.6
North: Turnock Street (N)														
8	T1	269	4.4	283	4.4	0.148	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		269	4.4	283	4.4	0.148	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Ambulance Access														
10	L2	1	0.0	1	0.0	0.007	1.2	LOS A	0.0	0.2	0.47	0.34	0.47	44.1
12	R2	4	0.0	4	0.0	0.007	3.1	LOS A	0.0	0.2	0.47	0.34	0.47	25.7
Approach		5	0.0	5	0.0	0.007	2.7	LOS A	0.0	0.2	0.47	0.34	0.47	31.8
All Vehicles		636	3.4	669	3.4	0.193	0.1	NA	0.0	0.2	0.00	0.01	0.00	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 2 [2023 DES PM (Site Folder: General)]

Turnock Street / Ambulance Access
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: Turnock Street (S)														
1	L2	7	0.0	7	0.0	0.004	7.5	LOS A	0.0	0.0	0.00	0.65	0.00	31.5
2	T1	419	2.2	441	2.2	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		426	2.2	448	2.2	0.227	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.6
North: Turnock Street (N)														
8	T1	280	2.1	295	2.1	0.152	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		280	2.1	295	2.1	0.152	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Ambulance Access														
10	L2	1	0.0	1	0.0	0.008	1.5	LOS A	0.0	0.2	0.50	0.38	0.50	43.6
12	R2	4	0.0	4	0.0	0.008	3.7	LOS A	0.0	0.2	0.50	0.38	0.50	25.2
Approach		5	0.0	5	0.0	0.008	3.2	LOS A	0.0	0.2	0.50	0.38	0.50	31.3
All Vehicles		711	2.1	748	2.1	0.227	0.1	NA	0.0	0.2	0.00	0.01	0.00	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 2 [2033 DES AM (Site Folder: General)]

Turnock Street / Ambulance Access
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: Turnock Street (S)														
1	L2	7	0.0	7	0.0	0.004	7.5	LOS A	0.0	0.0	0.00	0.65	0.00	31.5
2	T1	422	2.7	444	2.7	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		429	2.7	452	2.7	0.229	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.6
North: Turnock Street (N)														
8	T1	318	4.4	335	4.4	0.175	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		318	4.4	335	4.4	0.175	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Ambulance Access														
10	L2	1	0.0	1	0.0	0.008	1.5	LOS A	0.0	0.2	0.51	0.40	0.51	43.4
12	R2	4	0.0	4	0.0	0.008	4.0	LOS A	0.0	0.2	0.51	0.40	0.51	24.8
Approach		5	0.0	5	0.0	0.008	3.5	LOS A	0.0	0.2	0.51	0.40	0.51	30.9
All Vehicles		752	3.4	792	3.4	0.229	0.1	NA	0.0	0.2	0.00	0.01	0.00	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 2 [2033 DES PM (Site Folder: General)]

Turnock Street / Ambulance Access
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: Turnock Street (S)														
1	L2	7	0.0	7	0.0	0.004	7.5	LOS A	0.0	0.0	0.00	0.65	0.00	31.5
2	T1	497	2.2	523	2.2	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		504	2.2	531	2.2	0.269	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.6
North: Turnock Street (N)														
8	T1	331	2.1	348	2.1	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		331	2.1	348	2.1	0.179	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Ambulance Access														
10	L2	1	0.0	1	0.0	0.009	2.0	LOS A	0.0	0.2	0.57	0.46	0.57	42.7
12	R2	4	0.0	4	0.0	0.009	4.8	LOS A	0.0	0.2	0.57	0.46	0.57	24.1
Approach		5	0.0	5	0.0	0.009	4.3	LOS A	0.0	0.2	0.57	0.46	0.57	30.1
All Vehicles		840	2.1	884	2.1	0.269	0.1	NA	0.0	0.2	0.00	0.01	0.00	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Appendix D: Tube Count Survey Data

Northbound

Southbound

TDC
Traffic Data & Control

13/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	1	1	0	0	57.6	-
0015	0	0	0	0	-	-
0030	0	0	0	0	-	-
0045	0	0	0	0	-	-
0100	2	2	0	0	53.2	-
0115	0	0	0	0	-	-
0130	1	1	0	0	51.4	-
0145	1	1	0	0	54.2	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	3	3	0	0	48.3	-
0245	2	1	1	0	87.6	-
0300	1	0	1	0	63.5	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	0	0	0	0	-	-
0400	1	1	0	0	58.2	-
0415	0	0	0	0	-	-
0430	2	2	0	0	54.5	-
0445	4	3	0	1	54.3	-
0500	3	3	0	0	56	-
0515	7	5	2	0	54.4	-
0530	5	3	2	0	48.1	-
0545	20	19	1	0	55.7	61.9
0600	13	12	1	0	56.9	63.6
0615	21	19	2	0	59.2	65
0630	22	16	4	2	57.2	64.9
0645	44	39	4	1	57.2	62.8
0700	27	24	2	1	56	63.1
0715	38	33	4	1	57	60.7
0730	41	38	3	0	56.2	61.5
0745	47	46	1	0	56.3	60.8
0800	60	56	4	0	55.2	60.1
0815	75	70	5	0	55	59.5
0830	91	79	11	1	53.4	58.8
0845	86	81	5	0	55	59.9
0900	71	68	3	0	55.7	59.8
0915	59	54	5	0	54.9	58.7
0930	48	47	1	0	57.1	62.3
0945	56	52	4	0	55.4	60.4
1000	56	52	4	0	54.7	59.6
1015	69	65	4	0	55.8	60.8
1030	55	50	5	0	54.9	58.9
1045	52	50	2	0	56	59.8
1100	49	45	3	1	56.2	60
1115	69	62	7	0	55.8	60.7
1130	66	60	6	0	55.3	58.5
1145	67	63	4	0	56.6	60.2
1200	66	59	7	0	54.9	58.7
1215	69	63	5	1	54.5	58.7
1230	55	52	3	0	57.7	63.4
1245	59	57	2	0	55.7	59.9
1300	55	52	3	0	55.9	61.3
1315	45	44	1	0	56.7	62.1
1330	54	50	4	0	54.1	58.8
1345	65	53	12	0	54.5	59.4
1400	47	42	4	1	55.3	62.8
1415	67	62	5	0	54.5	58.3
1430	59	52	6	1	55.1	60.1
1445	61	56	4	1	56.2	61.3
1500	94	91	3	0	54.4	58.9
1515	87	82	5	0	52.9	59.4
1530	80	75	5	0	54.2	58.7
1545	71	69	2	0	54.5	60.3
1600	82	79	3	0	56.8	61.6
1615	76	75	0	1	55.7	60.9
1630	70	66	4	0	56.7	62.5
1645	60	58	2	0	56.1	61.2
1700	65	63	1	1	55	59.8
1715	61	59	2	0	57.2	62
1730	48	46	2	0	58.3	62.5
1745	41	40	1	0	56.6	62.8
1800	33	33	0	0	58.7	63.1
1815	35	33	2	0	59.2	65.3
1830	24	22	2	0	57.3	63.7
1845	33	31	2	0	58.5	62.9
1900	18	17	1	0	56	61.2
1915	19	18	1	0	58.3	65
1930	13	11	2	0	57.7	63
1945	12	10	2	0	57.5	63.8
2000	16	15	1	0	57.1	63.7
2015	13	11	1	1	57	62.6
2030	12	11	1	0	57.8	64.5
2045	8	8	0	0	56.7	-
2100	13	13	0	0	61.4	66.2
2115	5	5	0	0	57.2	-
2130	7	7	0	0	59.7	-
2145	3	2	0	1	52.9	-
2200	4	4	0	0	57.3	-
2215	0	0	0	0	-	-
2230	3	3	0	0	62.2	-
2245	1	1	0	0	61.1	-
2300	1	1	0	0	62.5	-
2315	0	0	0	0	-	-
2330	0	0	0	0	-	-
2345	0	0	0	0	-	-
07-09	**465**	**427**	**35**	**3**	**55.2**	**60.1**
09-16	**1751**	**1627**	**119**	**5**	**55.2**	**59.8**
16-18	**503**	**486**	**15**	**2**	**56.5**	**61.7**
00-00	**3145**	**2927**	**202**	**16**	**55.8**	**60.8**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	0	0	0	0	-	-
0030	2	2	0	0	55.1	-
0045	0	0	0	0	-	-
0100	0	0	0	0	-	-
0115	0	0	0	0	-	-
0130	0	0	0	0	-	-
0145	1	1	0	0	52.3	-
0200	2	2	0	0	50.9	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	1	1	0	0	44.1	-
0330	1	1	0	0	55.4	-
0345	1	1	0	0	64.2	-
0400	3	2	1	0	55.5	-
0415	3	2	1	0	53.6	-
0430	3	2	1	0	54.4	-
0445	7	6	1	0	51.7	-
0500	2	2	0	0	56.6	-
0515	5	5	0	0	47.7	-
0530	12	12	0	0	52.2	60.3
0545	10	9	0	1	49.3	-
0600	16	14	2	0	49.4	62
0615	18	17	1	0	56	62.6
0630	26	20	6	0	55.2	59.7
0645	21	17	4	0	53.3	59.1
0700	24	24	0	0	55	62.3
0715	21	18	2	1	52.5	57.1
0730	52	49	3	0	54.3	60.1
0745	42	36	6	0	52.5	58.8
0800	57	50	6	1	51	57.4
0815	67	60	7	0	47.9	56.5
0830	65	55	10	0	47.8	54.9
0845	67	64	3	0	50.8	57.4
0900	50	43	7	0	50.5	57.8
0915	40	36	3	1	49.4	55.2
0930	38	35	3	0	53.7	60.7
0945	51	44	6	1	51.6	57.7
1000	54	50	4	0	51.9	57.8
1015	52	47	5	0	51	56.6
1030	60	57	3	0	53.2	59.6
1045	52	46	6	0	51.1	57.3
1100	46	43	3	0	53.5	58.8
1115	49	45	4	0	51.9	56.9
1130	36	34	2	0	53.4	57.2
1145	52	49	3	0	53.9	61.2
1200	44	38	6	0	53.8	61.1
1215	60	57	3	0	54.9	61.3
1230	51	49	1	1	54.6	62.6
1245	62	53	9	0	54.3	59.9
1300	40	37	3	0	53.9	60.1
1315	52	48	4	0	51	56.3
1330	38	31	7	0	53.1	59.3
1345	50	49	1	0	49.4	56.5
1400	38	36	2	0	51.7	57
1415	56	50	6	0	51.9	57.2
1430	49	44	5	0	49.4	54.3
1445	56	52	4	0	52.8	59.2
1500	77	66	10	1	49.4	57.3
1515	74	68	6	0	51.6	58.1
1530	62	57	4	1	53.7	58.7
1545	76	71	4	1	52.1	57.1
1600	50	49	1	0	54.4	60.5
1615	57	54	3	0	53.2	57.8
1630	60	59	1	0	52.3	58.3
1645	57	54	3	0	53	58.4
1700	61	56	4	1	51.7	57.5
1715	74	67	7	0	52.9	58.5
1730	42	40	2	0	52	57.6
1745	33	30	2	1	55.5	61.4
1800	32	31	1	0	54.8	58.7
1815	31	27	4	0	54.5	58.6
1830	21	20	1	0	56.4	61.6
1845	31	30	1	0	51.7	57.9
1900	22	19	3	0	55.3	68.4
1915	20	20	0	0	56.2	62.6
1930	17	14	3	0	55.2	62.9
1945	16	15	1	0	50.3	57.6
2000	19	18	1	0	53.1	57.4
2015	8	8	0	0	56.3	-
2030	12	12	0	0	58	67.8
2045	3	2	1	0	52.6	-
2100	11	9	1	1	56.5	65.6
2115	3	2	1	0	56.8	-
2130	9	9	0	0	56.7	-
2145	6	5	1	0	56	-
2200	2	1	1	0	57	-
2215	1	1	0	0	56.9	-
2230	4	2	1	1	48.5	-
2245	1	1	0	0	70.7	-
2300	1	1	0	0	64.3	-
2315	0	0	0	0	-	-
2330	1	1	0	0	57.7	-
2345	1	1	0	0	50.7	-
07-09	**395**	**356**	**37**	**2**	**50.8**	**58**
09-16	**1465**	**1335**	**124**	**6**	**52.2**	**58.1**
16-18	**434**	**409**	**23**	**2**	**53**	**58.5**
00-00	**2700**	**2465**	**222**	**13**	**52.4**	**58.7**

Northbound

Southbound

TDC
Traffic Data & Control

14/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	1	1	0	0	57.6	-
0030	3	2	1	0	50.5	-
0045	1	1	0	0	67.8	-
0100	0	0	0	0	-	-
0115	0	0	0	0	-	-
0130	2	2	0	0	52.6	-
0145	0	0	0	0	-	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	1	1	0	0	51.2	-
0300	0	0	0	0	-	-
0315	1	0	1	0	63.2	-
0330	1	1	0	0	64.9	-
0345	0	0	0	0	-	-
0400	0	0	0	0	-	-
0415	1	1	0	0	70.9	-
0430	2	2	0	0	54.8	-
0445	8	7	1	0	53.5	-
0500	2	2	0	0	60.1	-
0515	9	9	0	0	58.2	-
0530	12	10	2	0	55.1	67.3
0545	20	19	1	0	54.8	63.7
0600	17	16	1	0	57.1	62
0615	23	21	2	0	55	62
0630	20	14	5	1	55.7	61.4
0645	28	23	5	0	53.6	59.5
0700	21	19	2	0	55.9	60.5
0715	31	30	1	0	56.1	63.6
0730	34	31	3	0	56.6	61
0745	65	59	6	0	55.6	60.1
0800	46	43	3	0	54.7	59.9
0815	87	80	6	1	54.9	59.7
0830	96	93	3	0	53.9	59
0845	108	101	7	0	52.3	57.7
0900	69	64	5	0	55.4	60.7
0915	42	40	2	0	56	61.9
0930	67	62	5	0	53.9	59.1
0945	67	62	4	1	54.8	58.1
1000	64	60	4	0	52.1	56.5
1015	57	54	3	0	53.8	59.1
1030	50	49	1	0	54.5	58.6
1045	47	44	3	0	54	59
1100	57	51	6	0	54.6	59.7
1115	52	48	4	0	54.2	57.7
1130	45	40	4	1	54.5	59.4
1145	68	62	6	0	53.8	59.7
1200	53	49	4	0	54	58.6
1215	67	60	7	0	54.4	60.5
1230	55	46	9	0	57.1	62.6
1245	53	48	5	0	56.4	61.6
1300	48	46	2	0	56.4	62.6
1315	44	41	3	0	55.3	60.9
1330	44	40	4	0	56.1	60.8
1345	41	39	2	0	55.4	60.9
1400	49	45	4	0	56.7	61.8
1415	73	69	4	0	54.6	59.9
1430	54	53	1	0	56.3	61.7
1445	61	55	6	0	55.4	60.5
1500	78	75	3	0	54.9	59.2
1515	76	74	2	0	54.5	59.5
1530	60	57	2	1	54.1	60.5
1545	83	80	2	1	56.2	62.6
1600	61	61	0	0	57.1	61.7
1615	53	50	3	0	57.4	61.9
1630	44	43	1	0	56.4	60.6
1645	48	46	2	0	57.1	61
1700	58	56	2	0	56.9	63
1715	62	60	2	0	56	62.1
1730	40	37	3	0	56.4	63.6
1745	44	40	4	0	59.6	65.3
1800	41	40	0	1	57.6	63.2
1815	52	51	1	0	54.1	59.2
1830	34	32	2	0	57.2	64.7
1845	42	41	1	0	55.4	59.9
1900	22	22	0	0	54.7	59.9
1915	26	23	3	0	57.1	63
1930	11	8	3	0	56.9	61.7
1945	13	13	0	0	57.5	64.2
2000	17	16	1	0	57.9	62.9
2015	14	14	0	0	56.5	62.7
2030	8	5	3	0	58.8	-
2045	10	9	1	0	56.6	-
2100	9	9	0	0	56.9	-
2115	15	12	1	2	54.3	61.1
2130	7	6	1	0	56.5	-
2145	6	6	0	0	63.3	-
2200	4	4	0	0	60.6	-
2215	4	4	0	0	54.1	-
2230	5	4	0	1	58	-
2245	4	4	0	0	56.8	-
2300	1	1	0	0	53	-
2315	1	0	0	1	44.3	-
2330	0	0	0	0	-	-
2345	0	0	0	0	-	-
07-09	**488**	**456**	**31**	**1**	**54.4**	**59.6**
09-16	**1624**	**1513**	**107**	**4**	**54.9**	**60.1**
16-18	**410**	**393**	**17**	**0**	**57.1**	**62**
00-00	**3020**	**2818**	**191**	**11**	**55.3**	**60.7**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	1	1	0	0	50.3	-
0030	0	0	0	0	-	-
0045	1	1	0	0	58.5	-
0100	0	0	0	0	-	-
0115	1	1	0	0	52.1	-
0130	0	0	0	0	-	-
0145	0	0	0	0	-	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	1	1	0	0	65	-
0400	3	2	1	0	45.7	-
0415	4	3	1	0	54.7	-
0430	3	3	0	0	53.9	-
0445	5	5	0	0	52.9	-
0500	2	2	0	0	50.8	-
0515	9	8	1	0	51.9	-
0530	5	5	0	0	51.7	-
0545	8	7	1	0	53	-
0600	23	17	6	0	53.3	58.3
0615	26	24	2	0	53.4	58.3
0630	25	19	6	0	52.6	61.4
0645	20	17	3	0	52.2	63.2
0700	28	23	4	1	52.3	57.8
0715	40	37	3	0	52.4	55.6
0730	37	33	4	0	53.4	61.1
0745	49	42	6	1	52.9	59.5
0800	49	48	1	0	53.2	59.7
0815	55	50	5	0	49.5	56.3
0830	67	60	7	0	45.7	53.6
0845	54	46	7	1	51.8	57
0900	31	27	4	0	54	60.5
0915	42	38	4	0	51.9	58.4
0930	45	40	5	0	50	58.4
0945	44	41	3	0	52.6	57.9
1000	53	47	6	0	52.8	58.7
1015	40	34	6	0	52.2	58.8
1030	45	41	4	0	50.9	56.4
1045	56	54	2	0	52	56
1100	55	51	4	0	53	57.3
1115	46	44	2	0	53.2	60.1
1130	57	51	6	0	52.3	58.1
1145	45	42	3	0	52.7	58.6
1200	32	28	3	1	53.2	58.6
1215	51	45	6	0	52.2	58.3
1230	56	49	7	0	52.1	61.4
1245	32	29	3	0	53.5	60.4
1300	54	52	2	0	54.8	60.7
1315	38	34	4	0	54.1	61.3
1330	35	33	2	0	54.6	59.4
1345	45	37	7	1	55	58.6
1400	47	47	0	0	50.8	58.1
1415	48	43	5	0	52.2	58
1430	49	46	2	1	53.9	60.6
1445	54	50	4	0	54.1	60.3
1500	65	56	9	0	51.4	57
1515	70	63	7	0	51	57.6
1530	52	47	4	1	52.7	59.3
1545	58	52	6	0	53.8	59.3
1600	58	55	3	0	53.6	59.8
1615	47	41	5	1	55.3	60.1
1630	49	45	4	0	54.9	59.6
1645	51	44	7	0	53	57.2
1700	43	41	2	0	56.2	62.4
1715	48	47	1	0	54	58.3
1730	53	48	5	0	53.9	60.9
1745	43	40	3	0	55.1	61.3
1800	50	46	4	0	54.6	59.3
1815	34	31	3	0	53.3	61.5
1830	37	35	1	1	52.9	58.2
1845	34	32	2	0	54	59.5
1900	25	25	0	0	53.7	59.3
1915	24	23	1	0	54.3	61.2
1930	15	15	0	0	54.7	63.7
1945	14	12	2	0	50.2	60.5
2000	17	17	0	0	55.2	64.9
2015	5	5	0	0	51.9	-
2030	11	11	0	0	54.2	60
2045	15	13	2	0	51.2	58.1
2100	24	22	2	0	54	62.5
2115	9	8	1	0	51.7	-
2130	2	2	0	0	60.9	-
2145	3	2	1	0	48.1	-
2200	4	4	0	0	55.7	-
2215	4	4	0	0	46.9	-
2230	4	3	1	0	52	-
2245	1	1	0	0	49.8	-
2300	0	0	0	0	-	-
2315	3	3	0	0	50.5	-
2330	3	2	0	1	49.8	-
2345	1	1	0	0	52.4	-
07-09	**379**	**339**	**37**	**3**	**50.9**	**57.1**
09-16	**1345**	**1221**	**120**	**4**	**52.7**	**58.7**
16-18	**392**	**361**	**30**	**1**	**54.4**	**60.1**
00-00	**2592**	**2354**	**228**	**10**	**52.8**	**58.9**

Northbound

Southbound

TDC
Traffic Data & Control

15/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	3	2	1	0	55.9	-
0015	0	0	0	0	-	-
0030	0	0	0	0	-	-
0045	2	2	0	0	65.3	-
0100	0	0	0	0	-	-
0115	3	3	0	0	58.1	-
0130	0	0	0	0	-	-
0145	2	2	0	0	61.2	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	1	1	0	0	55.3	-
0300	0	0	0	0	-	-
0315	1	0	1	0	52.6	-
0330	2	2	0	0	58.7	-
0345	0	0	0	0	-	-
0400	0	0	0	0	-	-
0415	2	1	1	0	66.7	-
0430	3	2	1	0	48.5	-
0445	4	4	0	0	57.3	-
0500	4	3	1	0	54.4	-
0515	7	6	1	0	58.7	-
0530	5	3	2	0	52.4	-
0545	23	22	1	0	54.6	61.8
0600	8	8	0	0	52.3	-
0615	14	12	2	0	59.3	64
0630	17	14	2	1	55.2	58.5
0645	31	29	1	1	54.7	60.7
0700	22	20	2	0	58.3	65.1
0715	20	17	3	0	55.6	60.9
0730	34	28	6	0	53	58.1
0745	45	43	2	0	55.6	60.5
0800	60	54	6	0	54.9	59.2
0815	73	67	6	0	53.9	61.2
0830	115	102	13	0	54.6	59.9
0845	71	69	2	0	56.5	62
0900	89	86	2	1	55.9	61.2
0915	60	58	2	0	56.1	59.8
0930	47	43	3	1	55.7	61.7
0945	72	68	4	0	55.2	61
1000	50	47	3	0	55.2	59.9
1015	47	44	3	0	56.1	62.2
1030	66	62	4	0	54.7	60.1
1045	55	51	4	0	55.9	61.6
1100	47	45	2	0	56.3	62.4
1115	61	54	7	0	56.6	62.8
1130	58	50	8	0	55.1	60.8
1145	59	57	2	0	56.8	62.1
1200	74	71	2	1	55.4	58.9
1215	67	64	3	0	56	61.1
1230	65	63	2	0	55.8	59.8
1245	54	52	2	0	57.2	62.1
1300	53	46	7	0	56.4	63
1315	48	42	6	0	57.7	63.1
1330	63	62	1	0	58.8	64.6
1345	64	63	1	0	55.4	60.3
1400	67	61	6	0	57	61.3
1415	66	62	4	0	56.1	61.4
1430	58	55	2	1	54.6	60.3
1445	52	52	0	0	57	62.7
1500	82	81	1	0	55.8	61.5
1515	100	96	4	0	56	61.6
1530	73	71	2	0	56.6	60.6
1545	77	76	1	0	56.8	62.3
1600	63	62	1	0	57.4	62.5
1615	63	62	1	0	55.1	61.5
1630	62	60	2	0	57.3	61.2
1645	66	61	4	1	56.7	62.1
1700	57	54	3	0	58.3	62.8
1715	48	46	2	0	56.7	62.6
1730	54	49	4	1	56.6	61.4
1745	58	54	4	0	56.2	61.6
1800	39	36	3	0	54.9	59.9
1815	39	38	1	0	57.4	62.5
1830	32	31	1	0	57.1	62.9
1845	21	21	0	0	54.9	61.9
1900	38	36	2	0	57.5	62.9
1915	33	32	1	0	56	60.6
1930	27	24	3	0	57.3	61.7
1945	30	26	4	0	56.4	63.5
2000	23	22	1	0	56.1	60.6
2015	15	15	0	0	54.5	59.8
2030	16	14	2	0	53.4	59.3
2045	18	18	0	0	54.7	62.2
2100	12	12	0	0	55	59.9
2115	6	5	1	0	48.8	-
2130	8	7	1	0	54.2	-
2145	7	7	0	0	53.4	-
2200	6	6	0	0	55.7	-
2215	8	8	0	0	58	-
2230	13	13	0	0	55.4	63.1
2245	5	5	0	0	53.6	-
2300	8	7	0	1	52.4	-
2315	1	1	0	0	56.9	-
2330	2	2	0	0	59.1	-
2345	2	2	0	0	56.6	-
07-09	**440**	**400**	**40**	**0**	**55**	**60.1**
09-16	**1774**	**1682**	**88**	**4**	**56.1**	**61.4**
16-18	**471**	**448**	**21**	**2**	**56.8**	**61.9**
00-00	**3226**	**3034**	**183**	**9**	**56**	**61.4**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	1	1	0	0	56.1	-
0030	1	0	0	1	49.2	-
0045	0	0	0	0	-	-
0100	0	0	0	0	-	-
0115	1	1	0	0	33.7	-
0130	2	1	0	1	50.5	-
0145	0	0	0	0	-	-
0200	2	1	1	0	56.5	-
0215	0	0	0	0	-	-
0230	1	1	0	0	57.3	-
0245	1	1	0	0	52.5	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	3	3	0	0	54.9	-
0400	1	1	0	0	54.8	-
0415	2	1	1	0	60.3	-
0430	6	4	2	0	53.8	-
0445	6	5	1	0	51.6	-
0500	2	2	0	0	60.4	-
0515	3	2	1	0	52.2	-
0530	12	11	1	0	52.7	59.7
0545	8	8	0	0	55.5	-
0600	10	5	5	0	51.7	-
0615	33	30	3	0	53.2	59.4
0630	21	20	1	0	55.1	61.8
0645	19	15	4	0	54.8	61.2
0700	24	22	2	0	54.1	59.3
0715	21	15	5	1	54	58.1
0730	37	33	4	0	53.5	58.8
0745	33	33	0	0	51.6	57
0800	43	41	2	0	51.6	56.4
0815	59	48	11	0	49.1	57.8
0830	76	70	6	0	45.5	56.5
0845	57	50	7	0	52.9	57.6
0900	53	44	9	0	52.6	57.9
0915	32	30	2	0	52.8	59.3
0930	44	39	4	1	52.3	56.6
0945	59	51	7	1	49.9	55.8
1000	39	32	7	0	51.2	57.2
1015	49	45	4	0	52.9	60.3
1030	44	42	2	0	52	57.6
1045	47	47	0	0	53.9	58.8
1100	54	48	6	0	51.4	56.7
1115	44	40	4	0	50.4	56.9
1130	43	40	3	0	54.3	59.5
1145	50	43	7	0	50.9	57.8
1200	33	33	0	0	53.6	58.4
1215	60	55	5	0	53.6	60.1
1230	44	38	6	0	53.7	60.6
1245	53	49	2	2	51.2	58.9
1300	43	40	3	0	54.9	61.1
1315	46	37	8	1	53.1	58.8
1330	55	49	6	0	53.9	60.6
1345	57	52	4	1	53	59.7
1400	34	33	1	0	53.4	57.8
1415	47	45	2	0	52.9	58.8
1430	68	61	6	1	53.9	58.7
1445	52	45	7	0	52.7	60
1500	72	66	6	0	51.2	60.3
1515	65	58	6	1	50.2	58.4
1530	61	55	6	0	53.3	59.7
1545	62	55	7	0	53.5	59.2
1600	62	58	3	1	51.9	59.3
1615	72	69	2	1	49.2	59
1630	51	50	1	0	54.6	60.2
1645	45	41	4	0	54.7	58.6
1700	72	68	4	0	52.8	60.8
1715	55	50	4	1	54.1	60.8
1730	47	44	3	0	54	60
1745	56	55	1	0	52.6	57.9
1800	48	46	2	0	55.1	63.2
1815	33	32	1	0	53	60.1
1830	34	31	3	0	55.3	60.1
1845	28	26	2	0	52	57.6
1900	37	36	1	0	54.7	60.1
1915	28	27	1	0	54.5	61.1
1930	21	19	2	0	50.4	56.8
1945	17	16	1	0	53.4	63.3
2000	21	18	3	0	50	56.2
2015	19	18	1	0	50.6	54.4
2030	18	18	0	0	52.3	56.2
2045	18	17	1	0	54.2	63.1
2100	19	16	3	0	49.7	57.1
2115	19	18	1	0	51	57.8
2130	10	10	0	0	51	-
2145	8	6	2	0	51.7	-
2200	10	10	0	0	52.3	-
2215	4	3	1	0	48.8	-
2230	5	5	0	0	59.4	-
2245	6	6	0	0	48.2	-
2300	0	0	0	0	-	-
2315	3	3	0	0	45.9	-
2330	0	0	0	0	-	-
2345	4	3	0	1	49.7	-
07-09	**350**	**312**	**37**	**1**	**50.6**	**57.6**
09-16	**1410**	**1272**	**130**	**8**	**52.5**	**58.9**
16-18	**460**	**435**	**22**	**3**	**52.7**	**59.4**
00-00	**2765**	**2516**	**234**	**15**	**52.4**	**58.9**

Northbound

Southbound

TDC
Traffic Data & Control

16/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	1	1	0	0	59.4	-
0015	0	0	0	0	-	-
0030	0	0	0	0	-	-
0045	1	1	0	0	65	-
0100	0	0	0	0	-	-
0115	3	3	0	0	61.6	-
0130	1	1	0	0	48.7	-
0145	1	1	0	0	58.4	-
0200	1	1	0	0	72.3	-
0215	0	0	0	0	-	-
0230	1	1	0	0	49.6	-
0245	0	0	0	0	-	-
0300	1	1	0	0	37	-
0315	1	0	1	0	55.5	-
0330	0	0	0	0	-	-
0345	0	0	0	0	-	-
0400	0	0	0	0	-	-
0415	1	1	0	0	59.1	-
0430	3	2	1	0	59.6	-
0445	2	2	0	0	58.1	-
0500	0	0	0	0	-	-
0515	1	1	0	0	54.5	-
0530	6	5	1	0	50.2	-
0545	13	13	0	0	60.4	65.1
0600	14	13	1	0	60.6	68.3
0615	13	13	0	0	60.2	70.6
0630	17	15	2	0	58.2	62.4
0645	37	32	3	2	54.6	62.7
0700	28	27	1	0	55.2	59.6
0715	20	19	1	0	57	63.6
0730	18	17	1	0	58.3	66.1
0745	43	41	2	0	55.7	62.5
0800	31	28	3	0	55.3	59.6
0815	40	37	3	0	55.8	63
0830	59	55	4	0	55	59.4
0845	54	52	2	0	56.6	62.2
0900	50	47	2	1	56.5	62.2
0915	43	41	2	0	57.6	63.1
0930	54	48	3	3	55.8	60.6
0945	65	62	3	0	55.2	60.8
1000	67	63	4	0	54.7	60.9
1015	66	60	6	0	56.1	60.8
1030	61	58	3	0	57	62.2
1045	61	59	2	0	55.5	60.6
1100	70	67	3	0	55.9	61
1115	57	54	3	0	57.4	61.8
1130	73	69	3	1	55.4	61.5
1145	58	56	2	0	54.6	59.6
1200	67	60	7	0	55.5	60.2
1215	57	57	0	0	56.4	60.9
1230	63	60	3	0	56.2	60.8
1245	76	71	5	0	55.1	58.7
1300	54	52	2	0	56.2	63
1315	48	48	0	0	57.7	63.2
1330	48	43	5	0	55.8	59.3
1345	59	54	5	0	55.1	61.4
1400	44	43	1	0	56	61.9
1415	58	54	4	0	56.6	60.7
1430	48	45	3	0	56.8	61.6
1445	38	35	3	0	58.7	64.3
1500	43	40	3	0	55.4	60
1515	57	55	2	0	56.4	62.6
1530	37	34	3	0	57.1	63.1
1545	45	44	1	0	57.3	61.6
1600	42	40	2	0	56.7	62.4
1615	43	42	1	0	57.5	64.2
1630	49	47	2	0	56.2	61.1
1645	44	43	0	1	56.2	59.1
1700	32	31	1	0	58.6	62.2
1715	45	42	3	0	56.3	62
1730	38	36	2	0	58.3	62.7
1745	22	21	1	0	59.1	63.9
1800	35	32	2	1	57.7	61.1
1815	32	31	1	0	54.8	60
1830	29	27	2	0	57.9	63.9
1845	27	27	0	0	58.5	63
1900	37	33	4	0	57.5	62.2
1915	33	33	0	0	53.9	60.8
1930	33	32	1	0	55.6	63.6
1945	26	25	1	0	55.5	59.6
2000	20	18	2	0	57.1	63.2
2015	23	22	1	0	53.9	60.4
2030	7	5	2	0	54.8	-
2045	13	11	2	0	59.3	70
2100	8	8	0	0	57.1	-
2115	8	8	0	0	59.3	-
2130	9	9	0	0	55.7	-
2145	8	8	0	0	53.7	-
2200	6	6	0	0	57.7	-
2215	8	8	0	0	53.5	-
2230	5	5	0	0	57.7	-
2245	5	5	0	0	51.9	-
2300	9	7	2	0	65.5	-
2315	3	3	0	0	53.3	-
2330	6	6	0	0	60.6	-
2345	3	3	0	0	60.6	-
07-09	**293**	**276**	**17**	**0**	**55.9**	**61.5**
09-16	**1567**	**1479**	**83**	**5**	**56.1**	**61.2**
16-18	**315**	**302**	**12**	**1**	**57.2**	**61.7**
00-00	**2686**	**2536**	**141**	**9**	**56.3**	**61.6**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	2	2	0	0	54.5	-
0015	1	1	0	0	56.9	-
0030	2	2	0	0	54.7	-
0045	0	0	0	0	-	-
0100	1	1	0	0	54	-
0115	1	1	0	0	52.6	-
0130	3	3	0	0	67	-
0145	1	1	0	0	58.7	-
0200	1	1	0	0	66.1	-
0215	0	0	0	0	-	-
0230	2	2	0	0	48.8	-
0245	1	1	0	0	57.1	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	0	0	0	0	-	-
0400	3	2	1	0	51.7	-
0415	2	1	1	0	49.9	-
0430	0	0	0	0	-	-
0445	1	1	0	0	67.7	-
0500	1	1	0	0	61.9	-
0515	5	4	1	0	44.1	-
0530	4	3	1	0	50.6	-
0545	6	5	1	0	58.8	-
0600	7	6	1	0	52.7	-
0615	4	3	1	0	47.8	-
0630	13	12	1	0	56.2	61.7
0645	11	9	2	0	54.2	59.3
0700	20	18	1	1	53.7	60
0715	24	23	1	0	53.7	59
0730	22	19	3	0	55.8	66.1
0745	25	24	1	0	53.8	62.4
0800	22	20	2	0	51.9	58.1
0815	28	27	1	0	54.6	60.7
0830	30	27	3	0	53.2	58.9
0845	44	37	7	0	53	59.9
0900	36	34	2	0	53.3	60
0915	52	48	4	0	53.8	59.3
0930	48	42	6	0	51.1	57.4
0945	66	59	6	1	51.4	58.3
1000	46	41	5	0	52.1	59
1015	66	62	4	0	53.7	59.7
1030	63	58	5	0	53.4	59.6
1045	51	47	4	0	54.2	60.3
1100	49	46	3	0	52.6	58.1
1115	55	50	5	0	53.4	59.9
1130	51	48	3	0	52.2	58.6
1145	62	54	8	0	51.9	58
1200	44	41	3	0	54.2	60
1215	59	51	7	1	52.4	57.8
1230	41	39	2	0	54.8	60.6
1245	55	51	2	2	53.3	59.7
1300	40	34	5	1	54.1	60.1
1315	46	44	2	0	54.9	61.2
1330	43	38	5	0	53.9	61
1345	39	35	4	0	56.3	62.6
1400	38	34	4	0	54.4	59.8
1415	48	45	3	0	57.3	63
1430	44	39	5	0	54.6	59.2
1445	53	51	2	0	52.3	60.9
1500	35	32	3	0	53.3	60.3
1515	43	39	4	0	55.7	62.9
1530	33	29	4	0	55	61.5
1545	41	37	4	0	54.5	60.5
1600	33	32	1	0	52.9	57.6
1615	32	30	2	0	53.9	59.6
1630	36	34	2	0	54.1	60
1645	36	35	1	0	52.7	56.9
1700	39	37	2	0	53.7	59.2
1715	33	31	1	1	52.4	57.1
1730	28	27	1	0	53.7	59.6
1745	37	36	1	0	53.9	58.4
1800	25	24	1	0	54.6	62
1815	23	21	2	0	55.2	60.3
1830	25	23	2	0	55.5	63.9
1845	28	25	2	1	54.7	63.3
1900	31	30	1	0	52.7	57.8
1915	36	35	1	0	52	56.6
1930	28	25	3	0	52	56.4
1945	30	27	3	0	49.2	54.6
2000	14	14	0	0	54	60.3
2015	16	16	0	0	53.8	60.6
2030	17	15	2	0	53.1	60.5
2045	15	13	2	0	49.4	52.3
2100	13	12	1	0	54	66.5
2115	11	10	1	0	53.8	62.8
2130	9	9	0	0	54.1	-
2145	6	5	1	0	48.6	-
2200	6	6	0	0	48.3	-
2215	5	5	0	0	52.1	-
2230	2	2	0	0	53.3	-
2245	5	5	0	0	52.8	-
2300	8	7	0	1	49.5	-
2315	2	2	0	0	58.2	-
2330	3	3	0	0	45.7	-
2345	2	2	0	0	58.6	-
07-09	**215**	**195**	**19**	**1**	**53.6**	**59.9**
09-16	**1347**	**1228**	**114**	**5**	**53.6**	**59.9**
16-18	**274**	**262**	**11**	**1**	**53.4**	**58**
00-00	**2268**	**2083**	**176**	**9**	**53.5**	**59.8**

Northbound

Southbound

TDC
Traffic Data & Control

17/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	3	3	0	0	58.9	-
0015	3	2	1	0	59.7	-
0030	3	2	1	0	63	-
0045	0	0	0	0	-	-
0100	0	0	0	0	-	-
0115	2	2	0	0	55.9	-
0130	1	1	0	0	57.9	-
0145	0	0	0	0	-	-
0200	4	4	0	0	59.8	-
0215	1	1	0	0	67.2	-
0230	1	1	0	0	42.3	-
0245	4	3	1	0	55.1	-
0300	0	0	0	0	-	-
0315	2	2	0	0	54.7	-
0330	3	3	0	0	56.9	-
0345	0	0	0	0	-	-
0400	0	0	0	0	-	-
0415	1	1	0	0	53.1	-
0430	2	0	2	0	56.6	-
0445	3	3	0	0	54.7	-
0500	3	3	0	0	59.1	-
0515	5	4	1	0	60.2	-
0530	5	5	0	0	51.3	-
0545	7	7	0	0	57.2	-
0600	10	9	1	0	59.2	-
0615	7	7	0	0	58.3	-
0630	5	4	1	0	60.9	-
0645	11	8	3	0	57.1	63.1
0700	12	10	2	0	58.1	66.4
0715	33	32	1	0	54.8	59.9
0730	20	17	3	0	56.5	61.6
0745	32	32	0	0	56.1	63.9
0800	18	17	1	0	55.3	59.1
0815	31	28	3	0	55.1	62.3
0830	53	51	2	0	54.9	60.8
0845	49	47	1	1	54.2	59.5
0900	30	29	1	0	57.8	62.3
0915	38	38	0	0	57.8	62.8
0930	46	42	4	0	56.3	63.5
0945	52	52	0	0	55.9	61.6
1000	36	34	2	0	56.6	59.8
1015	49	45	4	0	55.1	60.6
1030	43	42	1	0	54.6	61.3
1045	55	52	3	0	55.8	60.8
1100	45	44	1	0	56.2	59.8
1115	57	56	1	0	56	61.7
1130	51	46	4	1	55.8	61.6
1145	55	53	2	0	56.2	61.8
1200	58	56	2	0	55.3	61
1215	58	55	3	0	57	61.3
1230	52	50	2	0	55.6	60.1
1245	51	51	0	0	56.2	61.4
1300	51	48	3	0	55.7	61.1
1315	50	49	1	0	55.9	61.9
1330	49	45	4	0	57.8	64.9
1345	43	40	2	1	57.6	63.3
1400	45	43	2	0	58.1	64.8
1415	44	42	0	2	56.2	61.4
1430	50	48	2	0	54.8	59.8
1445	50	48	2	0	56.8	61.7
1500	49	47	2	0	56.9	61.8
1515	44	43	1	0	57.1	63.5
1530	48	45	3	0	56.3	61.7
1545	55	51	4	0	57.5	63.2
1600	40	39	1	0	56.9	60.8
1615	51	48	3	0	55.9	60.4
1630	38	37	1	0	56.7	63.6
1645	38	38	0	0	56.7	62.3
1700	41	40	1	0	56.2	61.5
1715	56	55	1	0	54.3	60.4
1730	41	39	2	0	55.8	62.6
1745	27	26	1	0	55.2	59
1800	32	31	1	0	57.6	64.6
1815	18	17	1	0	55.1	62.3
1830	20	19	1	0	55.5	61.1
1845	14	13	1	0	57.2	63.3
1900	21	20	1	0	55.5	60.5
1915	21	20	1	0	53.9	59.9
1930	13	13	0	0	58	63.7
1945	9	9	0	0	54.9	-
2000	19	17	2	0	57	61.9
2015	14	13	1	0	53.9	57.9
2030	12	10	2	0	55.4	62.1
2045	12	12	0	0	57.4	66.8
2100	3	3	0	0	56.7	-
2115	10	8	1	1	52.3	-
2130	8	7	1	0	55.7	-
2145	3	3	0	0	44.8	-
2200	6	6	0	0	55.3	-
2215	4	4	0	0	52.1	-
2230	4	4	0	0	49.8	-
2245	1	1	0	0	55.3	-
2300	7	7	0	0	63.5	-
2315	0	0	0	0	-	-
2330	1	1	0	0	58.1	-
2345	0	0	0	0	-	-
07-09	**248**	**234**	**13**	**1**	**55.2**	**60.8**
09-16	**1354**	**1294**	**56**	**4**	**56.3**	**61.6**
16-18	**332**	**322**	**10**	**0**	**55.9**	**60.8**
00-00	**2272**	**2163**	**103**	**6**	**56.2**	**61.6**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	2	2	0	0	52.6	-
0015	3	3	0	0	53.4	-
0030	1	1	0	0	57.8	-
0045	1	1	0	0	54.3	-
0100	3	3	0	0	51.7	-
0115	1	1	0	0	51.2	-
0130	3	3	0	0	53.4	-
0145	1	1	0	0	57	-
0200	3	3	0	0	54.7	-
0215	1	1	0	0	53.7	-
0230	0	0	0	0	-	-
0245	1	1	0	0	62.6	-
0300	0	0	0	0	-	-
0315	1	1	0	0	63.2	-
0330	1	1	0	0	46.3	-
0345	2	2	0	0	52.4	-
0400	1	1	0	0	51.7	-
0415	2	1	1	0	52.6	-
0430	1	1	0	0	50	-
0445	5	4	1	0	46.8	-
0500	5	4	1	0	48.2	-
0515	2	2	0	0	66.6	-
0530	4	3	1	0	52.9	-
0545	1	0	1	0	57	-
0600	9	8	1	0	52.8	-
0615	5	5	0	0	55.2	-
0630	4	4	0	0	53.1	-
0645	13	12	1	0	52.6	57.7
0700	14	12	2	0	53.8	65
0715	11	10	1	0	53.3	59.6
0730	11	9	2	0	56.1	63.5
0745	24	24	0	0	52.9	56.9
0800	21	18	3	0	52.5	58.1
0815	30	28	2	0	53.3	59.2
0830	19	17	2	0	51.3	56
0845	44	40	4	0	51.9	58.5
0900	41	38	3	0	53.7	60.5
0915	42	39	3	0	53.6	58.7
0930	30	30	0	0	51.5	58
0945	38	37	1	0	53.9	59.4
1000	36	32	4	0	53.2	58.7
1015	38	35	3	0	52.1	57.8
1030	44	41	3	0	54.8	58.8
1045	58	54	4	0	52.3	59.1
1100	42	40	2	0	52.3	60.8
1115	53	50	3	0	52.1	56.5
1130	53	50	3	0	52.2	57
1145	47	43	4	0	53.3	59.6
1200	54	47	7	0	52.5	57.7
1215	47	44	3	0	52.5	58.2
1230	45	44	1	0	53.6	60.2
1245	49	46	3	0	51.9	59
1300	41	38	3	0	54.9	61.1
1315	38	35	3	0	53.4	57.7
1330	41	38	3	0	53.1	59.2
1345	33	32	1	0	55.3	61.3
1400	41	38	3	0	53	58
1415	35	32	3	0	54.3	61.1
1430	38	36	2	0	53.2	58.2
1445	29	25	3	1	54.8	62.2
1500	39	35	4	0	54.3	59.2
1515	30	29	1	0	54.9	60.8
1530	49	44	5	0	53	57.7
1545	43	39	4	0	56.9	64.5
1600	28	25	3	0	54.6	58.9
1615	34	33	1	0	54.6	59.6
1630	38	34	4	0	56.3	62
1645	29	26	3	0	55.6	60.3
1700	37	33	4	0	51.8	57.9
1715	25	25	0	0	55	61.3
1730	39	38	1	0	54.7	61.2
1745	35	33	2	0	51.4	58.3
1800	26	24	2	0	54.6	60.5
1815	32	29	3	0	54	59.1
1830	28	23	5	0	56.6	63.2
1845	23	22	1	0	55.3	62.4
1900	24	21	3	0	53.3	63.3
1915	20	19	1	0	51.7	57.1
1930	15	14	1	0	52.5	61.2
1945	16	15	1	0	51.7	56.2
2000	8	8	0	0	54.1	-
2015	13	11	2	0	55.3	62.4
2030	9	8	1	0	54.9	-
2045	8	8	0	0	48.2	-
2100	3	3	0	0	61.6	-
2115	9	9	0	0	48.2	-
2130	10	10	0	0	53.7	-
2145	2	2	0	0	47.2	-
2200	3	3	0	0	51.9	-
2215	2	2	0	0	58.6	-
2230	1	1	0	0	31.6	-
2245	0	0	0	0	-	-
2300	5	4	1	0	54.7	-
2315	1	1	0	0	53.2	-
2330	0	0	0	0	-	-
2345	0	0	0	0	-	-
07-09	**174**	**158**	**16**	**0**	**52.8**	**58.5**
09-16	**1174**	**1091**	**82**	**1**	**53.4**	**59**
16-18	**265**	**247**	**18**	**0**	**54.2**	**59.8**
00-00	**1947**	**1802**	**144**	**1**	**53.4**	**59.2**

Northbound

Southbound

TDC
Traffic Data & Control

18/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	0	0	0	0	-	-
0030	0	0	0	0	-	-
0045	0	0	0	0	-	-
0100	0	0	0	0	-	-
0115	0	0	0	0	-	-
0130	0	0	0	0	-	-
0145	0	0	0	0	-	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	2	2	0	0	56.5	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	1	1	0	0	63.1	-
0330	1	0	1	0	56.2	-
0345	0	0	0	0	-	-
0400	1	1	0	0	55.2	-
0415	3	2	1	0	63.2	-
0430	4	3	1	0	51.2	-
0445	6	6	0	0	59.4	-
0500	5	4	1	0	53.4	-
0515	6	6	0	0	56.6	-
0530	10	8	2	0	56.2	-
0545	24	22	2	0	55.5	64.9
0600	14	14	0	0	58.8	65.1
0615	20	17	3	0	58.9	63.5
0630	31	26	4	1	56.7	61.2
0645	39	36	3	0	56.6	61.9
0700	28	24	4	0	57.4	64.4
0715	32	30	1	1	54.6	59.9
0730	37	32	5	0	56.1	62.5
0745	51	44	7	0	55.4	61.1
0800	46	46	0	0	57.1	63.1
0815	69	65	3	1	53.9	58.1
0830	110	100	10	0	55	59.8
0845	106	101	5	0	54.3	59.9
0900	54	53	1	0	54.1	60.8
0915	70	66	4	0	55	60.5
0930	58	53	5	0	54.7	58.9
0945	55	54	1	0	55.6	59.8
1000	69	68	1	0	56.1	60.2
1015	59	54	5	0	57.8	62.8
1030	42	38	4	0	54.3	60.2
1045	68	64	4	0	52.9	58.4
1100	50	48	2	0	55	60.6
1115	57	54	3	0	54.8	59.6
1130	53	49	4	0	54.2	59
1145	55	52	3	0	55.8	59.3
1200	70	65	4	1	55.2	59.4
1215	73	67	6	0	55.1	60.8
1230	45	43	2	0	54.7	58.8
1245	48	46	2	0	54	60.7
1300	49	49	0	0	53.2	60.2
1315	60	58	2	0	55.3	58.9
1330	57	56	1	0	54.5	58.8
1345	52	48	4	0	54.2	59.9
1400	50	48	2	0	55.8	61.6
1415	65	59	6	0	55.3	60.8
1430	59	56	2	1	56.3	63.5
1445	69	66	3	0	53	58.2
1500	99	92	7	0	54.1	59.2
1515	86	80	6	0	54.9	60.1
1530	86	77	8	1	55.6	60.5
1545	90	84	6	0	55.7	60.1
1600	92	90	2	0	55	60.3
1615	81	76	5	0	56.5	60.2
1630	64	57	7	0	54.5	59.8
1645	83	79	4	0	56.9	61.3
1700	56	54	2	0	56.8	62.4
1715	37	34	3	0	57.7	62.6
1730	32	27	4	1	55.7	59.8
1745	29	29	0	0	56.8	62.8
1800	31	30	1	0	55.5	63.5
1815	29	26	3	0	56.3	61.5
1830	23	20	3	0	54.1	59.1
1845	11	10	0	1	53.7	58.9
1900	19	19	0	0	58	63.5
1915	13	11	2	0	51.5	64
1930	12	10	2	0	55.8	62.6
1945	9	9	0	0	55.8	-
2000	8	7	1	0	54.4	-
2015	4	2	2	0	53	-
2030	11	9	2	0	53.2	62.6
2045	6	5	1	0	53.3	-
2100	3	2	1	0	49.7	-
2115	5	3	1	1	56.4	-
2130	4	4	0	0	58	-
2145	9	9	0	0	57.7	-
2200	1	1	0	0	45.3	-
2215	0	0	0	0	-	-
2230	1	1	0	0	51.8	-
2245	5	5	0	0	59.6	-
2300	0	0	0	0	-	-
2315	1	1	0	0	70.7	-
2330	0	0	0	0	-	-
2345	1	1	0	0	64.7	-
07-09	**479**	**442**	**35**	**2**	**55.1**	**60.3**
09-16	**1748**	**1647**	**98**	**3**	**54.9**	**59.9**
16-18	**474**	**446**	**27**	**1**	**56.1**	**61.2**
00-00	**3074**	**2868**	**197**	**9**	**55.3**	**60.3**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	2	2	0	0	62.6	-
0030	0	0	0	0	-	-
0045	0	0	0	0	-	-
0100	2	2	0	0	56.7	-
0115	0	0	0	0	-	-
0130	0	0	0	0	-	-
0145	1	1	0	0	50	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	0	0	0	0	-	-
0400	2	2	0	0	54.1	-
0415	3	3	0	0	46.7	-
0430	8	5	3	0	48	-
0445	7	5	2	0	53.6	-
0500	2	2	0	0	55.7	-
0515	8	8	0	0	54.9	-
0530	9	9	0	0	59.3	-
0545	19	15	4	0	55	61.7
0600	20	18	2	0	53.4	59.9
0615	26	24	2	0	55.8	62.2
0630	34	28	4	2	53.4	59.2
0645	23	18	5	0	52.9	57.9
0700	30	27	3	0	50.8	55.5
0715	37	34	3	0	52.8	57.8
0730	49	49	0	0	54.2	60.4
0745	46	43	3	0	51.5	57.7
0800	59	55	4	0	52.7	57.2
0815	46	40	6	0	51.6	57.2
0830	56	52	4	0	51.3	57.8
0845	55	49	6	0	50.2	58.2
0900	55	48	7	0	48.7	55.3
0915	41	38	3	0	51.2	57.4
0930	40	36	4	0	51.8	58.2
0945	42	37	5	0	50.9	57.5
1000	43	37	6	0	52.3	57.6
1015	43	39	4	0	51.8	58.3
1030	44	39	5	0	51.7	58.5
1045	65	60	5	0	51.8	60.4
1100	43	41	2	0	51	55.7
1115	49	44	5	0	50.8	57
1130	50	46	4	0	54	59.2
1145	47	45	2	0	53	58.1
1200	43	43	0	0	51.7	57.1
1215	72	70	2	0	51.8	57.2
1230	63	54	8	1	53.2	60.6
1245	56	53	3	0	52.8	59.6
1300	46	42	4	0	50.4	56.9
1315	43	39	4	0	53.7	59.8
1330	50	49	1	0	52.3	57.1
1345	42	40	2	0	53.7	59
1400	46	43	3	0	51.3	57.4
1415	61	54	7	0	51.3	57.8
1430	70	65	4	1	50.4	55.9
1445	61	56	5	0	48.8	56.9
1500	68	62	6	0	47.4	55.4
1515	62	57	5	0	54.2	58.3
1530	49	43	5	1	51.9	59.6
1545	82	75	6	1	52.2	57.7
1600	61	58	2	1	50.6	58.4
1615	73	66	7	0	51	55.2
1630	64	60	4	0	53.6	60.8
1645	58	52	6	0	54.9	59.8
1700	68	63	4	1	51.5	58
1715	31	27	4	0	52.7	57.7
1730	36	33	3	0	52.2	57.1
1745	35	33	2	0	52.4	57.9
1800	25	25	0	0	52.7	57.5
1815	22	20	2	0	53	58.9
1830	20	19	1	0	54.1	59.8
1845	20	15	4	1	53.8	60.8
1900	17	16	1	0	56.5	61.9
1915	11	10	1	0	46.6	54.7
1930	14	13	1	0	52.5	60.2
1945	10	8	1	1	52.9	-
2000	14	14	0	0	52.2	57.2
2015	6	6	0	0	49.8	-
2030	9	8	1	0	53.1	-
2045	8	7	1	0	51.9	-
2100	7	6	1	0	54.2	-
2115	4	4	0	0	55.1	-
2130	4	3	1	0	48.8	-
2145	4	4	0	0	57.5	-
2200	2	1	0	1	58	-
2215	2	2	0	0	49.9	-
2230	3	3	0	0	56.6	-
2245	1	1	0	0	49.6	-
2300	3	3	0	0	64.2	-
2315	2	2	0	0	57.7	-
2330	0	0	0	0	-	-
2345	0	0	0	0	-	-
07-09	**378**	**349**	**29**	**0**	**51.9**	**57.4**
09-16	**1476**	**1355**	**117**	**4**	**51.6**	**57.8**
16-18	**426**	**392**	**32**	**2**	**52.3**	**58.1**
00-00	**2654**	**2428**	**215**	**11**	**52**	**58**

Northbound

Southbound

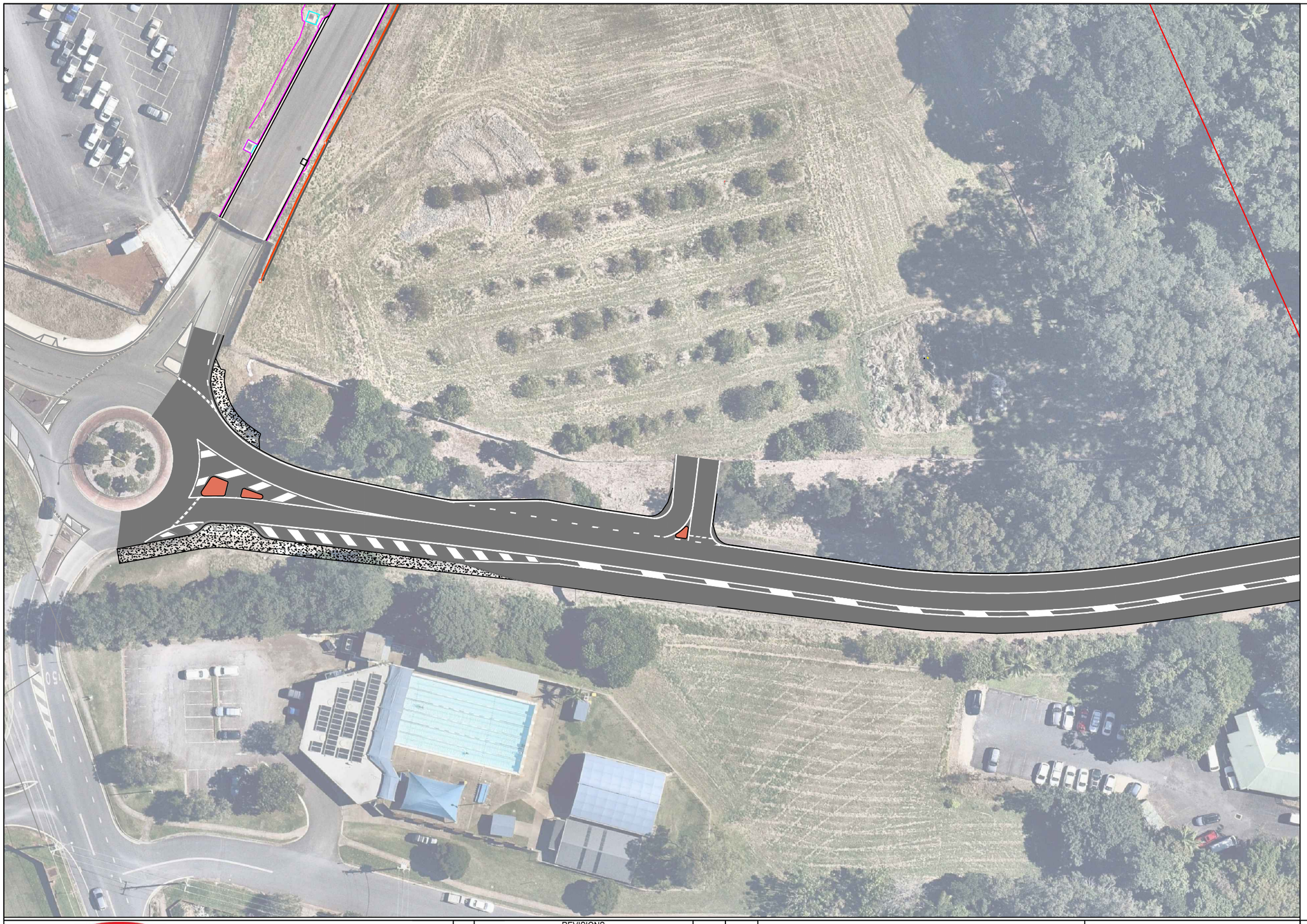
TDC
Traffic Data & Control

19/10/2021

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	0	0	0	0	-	-
0015	0	0	0	0	-	-
0030	1	1	0	0	54	-
0045	1	1	0	0	52.3	-
0100	0	0	0	0	-	-
0115	0	0	0	0	-	-
0130	0	0	0	0	-	-
0145	3	3	0	0	54	-
0200	0	0	0	0	-	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	2	1	1	0	57.9	-
0345	1	1	0	0	59.5	-
0400	3	2	0	1	53.9	-
0415	0	0	0	0	-	-
0430	4	3	1	0	54.6	-
0445	6	6	0	0	56.4	-
0500	4	3	1	0	57.8	-
0515	11	10	1	0	58	65
0530	13	11	2	0	55.5	64.4
0545	16	12	4	0	57	63.4
0600	16	14	2	0	56.4	62.6
0615	27	27	0	0	57.5	62.2
0630	16	14	2	0	58.9	64.3
0645	32	30	2	0	57.3	62.9
0700	35	35	0	0	57.1	64
0715	38	35	2	1	57.1	63
0730	31	28	3	0	56	61.2
0745	52	51	1	0	57.2	63.2
0800	71	70	1	0	55.8	60.7
0815	86	81	5	0	54.1	58.5
0830	91	85	6	0	53.5	58.3
0845	104	100	4	0	56	60.5
0900	65	62	2	1	55.9	61
0915	64	61	3	0	55.2	60.4
0930	56	53	3	0	55.5	60.7
0945	74	71	3	0	55.9	60.1
1000	72	67	5	0	56.3	61.9
1015	52	46	6	0	55.4	60.9
1030	65	58	7	0	54.6	58.9
1045	85	78	7	0	56.8	62.8
1100	69	63	6	0	55.1	59.8
1115	78	74	4	0	54.1	59.3
1130	57	54	2	1	56.2	62.8
1145	58	54	4	0	56.5	63.3
1200	60	54	5	1	55.9	61
1215	56	56	0	0	55.6	61.8
1230	60	57	3	0	55.7	61.1
1245	68	65	3	0	55.7	60.3
1300	46	45	1	0	54.6	58.3
1315	62	60	2	0	49.8	58.6
1330	62	58	4	0	28.9	38.8
1345	58	53	5	0	27.6	36.8
1400	57	51	6	0	33.3	39.5
1415	73	67	6	0	32.9	40.1
1430	58	55	3	0	30.9	40.7
1445	64	61	2	1	47.6	52.9
1500	86	83	3	0	53.7	58.9
1515	76	73	2	1	56.4	61
1530	81	75	6	0	56.9	61.9
1545	69	65	4	0	56.8	61.6
1600	95	91	3	1	56.6	61
1615	68	64	3	1	55.8	60.8
1630	70	64	6	0	56.3	61.4
1645	71	69	2	0	57.6	63
1700	67	66	1	0	59.4	64.8
1715	54	53	1	0	56.7	60.7
1730	52	49	3	0	56.2	62.5
1745	60	54	6	0	56.8	60.2
1800	59	56	3	0	55.1	59.6
1815	48	44	3	1	56.4	61.1
1830	49	45	4	0	55.9	60.1
1845	24	24	0	0	57	65.4
1900	35	33	2	0	55.8	60.7
1915	28	28	0	0	55.1	58.9
1930	17	16	1	0	54.8	63.6
1945	15	15	0	0	54.5	64.2
2000	16	15	1	0	57.4	64
2015	16	13	2	1	54.4	59.1
2030	13	11	2	0	55.4	62.5
2045	10	9	0	1	54	-
2100	5	5	0	0	55.3	-
2115	4	4	0	0	53.9	-
2130	6	6	0	0	55.1	-
2145	5	5	0	0	60.4	-
2200	2	2	0	0	58.2	-
2215	2	2	0	0	59.7	-
2230	2	2	0	0	58.1	-
2245	1	1	0	0	50.6	-
2300	4	4	0	0	62.7	-
2315	1	1	0	0	50.2	-
2330	0	0	0	0	-	-
2345	3	3	0	0	46.8	-
07-09	**508**	**485**	**22**	**1**	**55.5**	**60.5**
09-16	**1831**	**1719**	**107**	**5**	**51**	**60.1**
16-18	**537**	**510**	**25**	**2**	**56.9**	**61.7**
00-00	**3397**	**3197**	**188**	**12**	**53.4**	**60.7**

Time	Total	Cars	Light Trucks	Heavy Trucks	Average Speed	85th %ile
0000	1	1	0	0	57	-
0015	0	0	0	0	-	-
0030	1	1	0	0	51.2	-
0045	0	0	0	0	-	-
0100	2	1	1	0	56.2	-
0115	0	0	0	0	-	-
0130	0	0	0	0	-	-
0145	0	0	0	0	-	-
0200	2	1	1	0	57.3	-
0215	0	0	0	0	-	-
0230	0	0	0	0	-	-
0245	0	0	0	0	-	-
0300	0	0	0	0	-	-
0315	0	0	0	0	-	-
0330	0	0	0	0	-	-
0345	2	2	0	0	53.2	-
0400	4	4	0	0	54.7	-
0415	5	3	2	0	49.2	-
0430	5	5	0	0	54.1	-
0445	6	6	0	0	55.4	-
0500	4	3	0	1	53.9	-
0515	3	3	0	0	45.4	-
0530	7	5	2	0	54.7	-
0545	14	13	1	0	57.8	66.2
0600	13	11	2	0	52.1	61.8
0615	30	28	2	0	54.1	62.8
0630	21	19	2	0	53.6	63.3
0645	22	21	1	0	54.3	58.1
0700	25	23	2	0	52.6	59.4
0715	45	43	2	0	53.6	60
0730	48	47	1	0	54.3	59.4
0745	43	41	2	0	52.3	57.2
0800	37	34	3	0	52.2	57.7
0815	58	55	3	0	52.3	58
0830	78	69	9	0	46.2	54.3
0845	62	55	7	0	51.8	57.5
0900	40	37	3	0	53.1	58.9
0915	39	38	1	0	52.3	58.3
0930	54	49	5	0	52.3	58.7
0945	47	42	5	0	49.5	56.7
1000	46	44	2	0	52.5	56.3
1015	67	64	3	0	50.5	56.4
1030	61	52	9	0	51.2	58.3
1045	55	48	7	0	50.9	60.2
1100	60	51	9	0	52.1	56.2
1115	53	51	2	0	52.9	57.5
1130	49	46	2	1	51.7	60.2
1145	61	55	6	0	52.7	59.5
1200	47	46	1	0	51.8	56.8
1215	49	46	2	1	53.9	61.8
1230	51	49	2	0	52.3	58.4
1245	45	41	4	0	52.7	60
1300	49	48	1	0	52.8	57.9
1315	39	37	2	0	46.8	53.3
1330	44	42	2	0	36.9	44.3
1345	49	47	2	0	39.5	44
1400	48	45	3	0	41.6	46.7
1415	56	49	7	0	39.8	47.3
1430	51	46	5	0	42	48.6
1445	55	51	4	0	47.9	56.5
1500	73	63	10	0	46.1	54.5
1515	65	60	5	0	51.5	57.3
1530	62	57	4	1	52.2	57.2
1545	35	30	4	1	52.1	60
1600	70	66	4	0	52.5	58.3
1615	76	69	7	0	52.6	60.2
1630	61	59	2	0	51.9	57.2
1645	64	57	7	0	54.5	60.9
1700	74	68	5	1	53.5	58.1
1715	51	47	4	0	52.4	59.2
1730	59	57	1	1	53	58.3
1745	35	32	3	0	53.2	57.8
1800	36	36	0	0	55.4	62.4
1815	38	37	1	0	54.8	60.7
1830	34	34	0	0	55	62.6
1845	35	33	2	0	53.4	59.1
1900	29	27	2	0	52.3	59.3
1915	23	20	2	1	49.9	56.5
1930	20	18	2	0	47.4	58
1945	17	16	1	0	53.7	61
2000	11	11	0	0	54.1	61.9
2015	7	6	1	0	57.2	-
2030	14	13	1	0	46.1	59.9
2045	10	9	1	0	50.7	-
2100	10	7	3	0	53.1	-
2115	5	4	0	1	57.6	-
2130	6	6	0	0	57.2	-
2145	2	1	1	0	44.2	-
2200	6	5	0	1	51.6	-
2215	2	2	0	0	46.2	-
2230	2	2	0	0	52.9	-
2245	1	1	0	0	54.3	-
2300	3	3	0	0	63.5	-
2315	5	5	0	0	57.5	-
2330	1	1	0	0	53.4	-
2345	1	1	0	0	59.2	-
07-09	**396**	**367**	**29**	**0**	**51.4**	**57.9**
09-16	**1450**	**1334**	**112**	**4**	**49.4**	**56.9**
16-18	**490**	**455**	**33**	**2**	**53**	**58.3**
00-00	**2796**	**2581**	**205**	**10**	**50.9**	**58**

Attachment E: Development Access Plans



NORTH

WARNING!

BEWARE OF AERIAL SERVICES

Overhead powerlines and communication cables within work area. Contact service provider for advice prior to commencement of work.

WARNING!

BEWARE OF UNDERGROUND SERVICES

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Turnock Street Ambulance Station Access	A.P	22/03/2022

Scale @ A3 0 5 10 15 20 25 30 35 1:750

Project: Tweed Valley Hospital Ambulance Station TIA

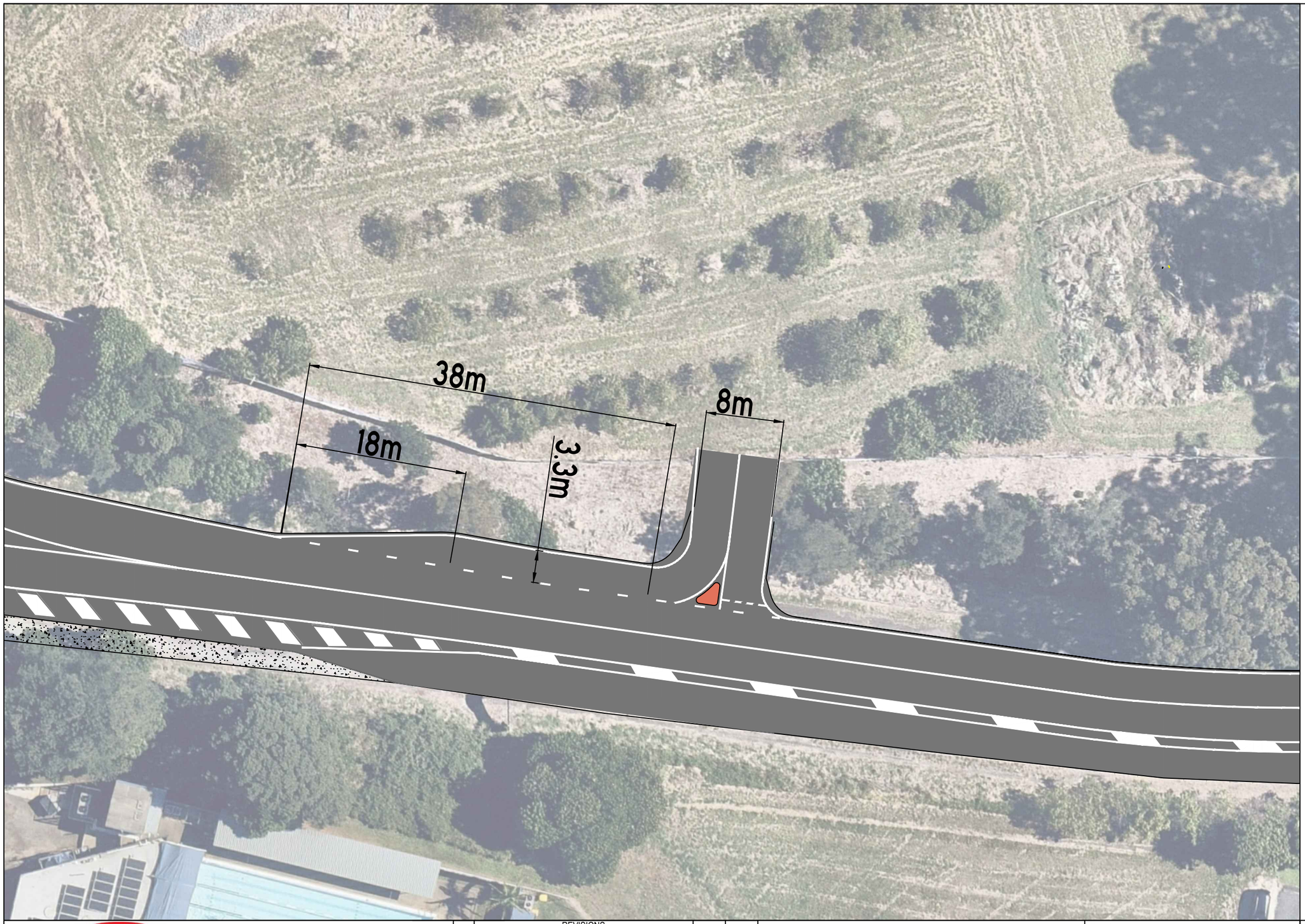
Title: Turnock Street Access Concept Plan Overview

Design	Drawn	Checked
A.P	A.P	A.E

CONCEPT ONLY

Date: 22/03/2022

Project Number	Sheet Number	Issue
P5387	1	001



NORTH

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Turnock Street Ambulance Station Access	A.P	22/03/2022

Scale @ A3 0 4 8 12 16 20 1:400

Project: Tweed Valley Hospital Ambulance Station TIA

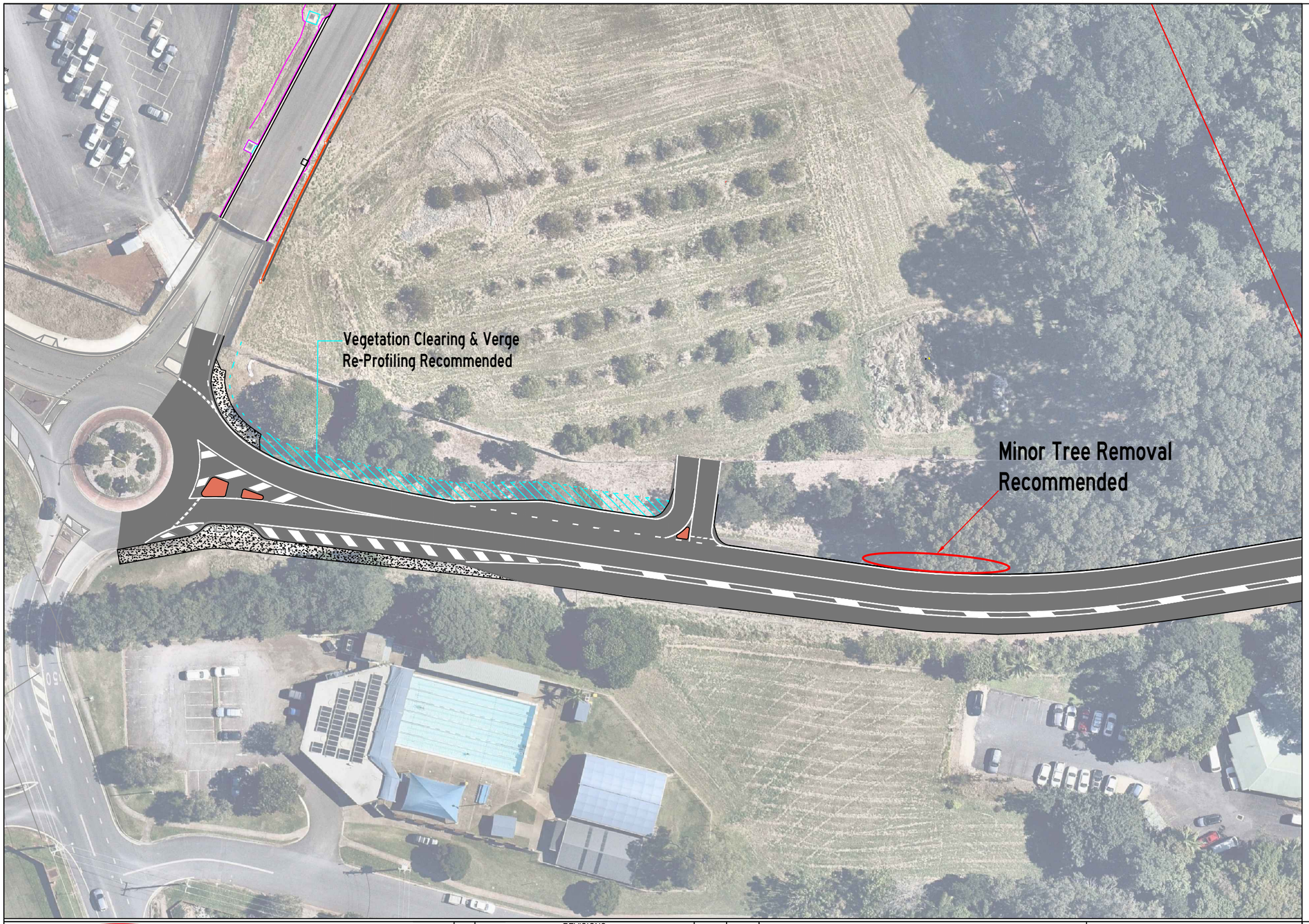
Title: Turnock Street Access Concept Plan Access Dimensions

Design	Drawn	Checked
A.P	A.P	A.E

CONCEPT ONLY

Date: 22/03/2022

Project Number	Sheet Number	Issue
P5387	2	001



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REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	Turnock Street Ambulance Station Access	A.P	22/03/2022

Scale @ A3 — 0 5 10 15 20 25 30 35 — 1:750

Project: Tweed Valley Hospital Ambulance Station TIA

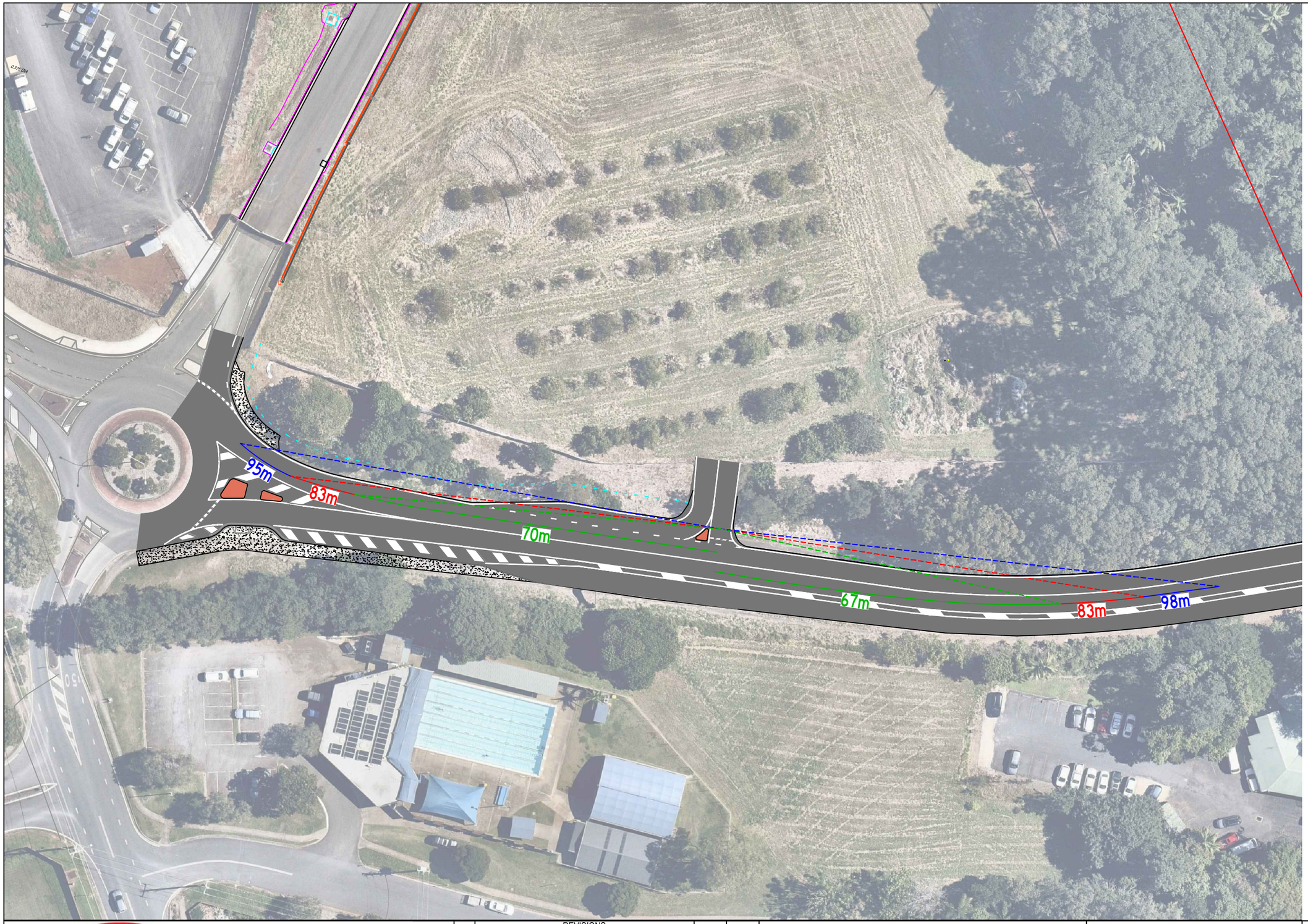
Title: Turnock Street Access
Concept Plan
Recommended Turnock Street Works

Design	Drawn	Checked
A.P	A.P	A.E

CONCEPT ONLY

Date: 22/03/2022

Project Number	Sheet Number	Issue
P5387	3	001



NORTH

LEGEND

- Current Available Sight Distance
- Required Sight Distance
- Approx. Achievable Sight Distance

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REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
001	Turnock Street Ambulance Station Access	A.P	22/03/2022

Scale @ A3 0 5 10 15 20 25 30 35 1:750

Project: Tweed Valley Hospital Ambulance Station TIA

Title: Turnock Street Access Concept Plan Sight Distance Assessment

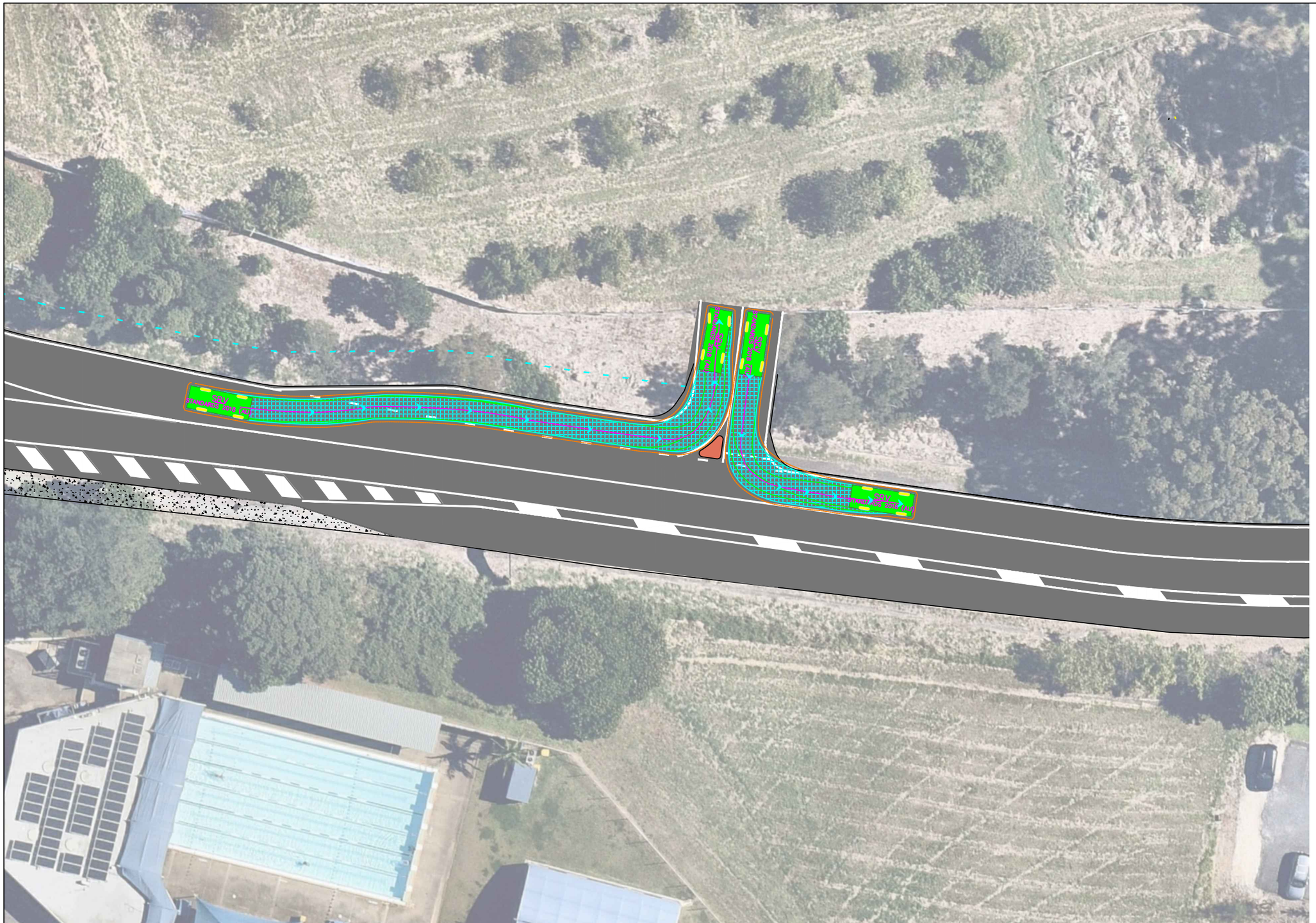
Design	Drawn	Checked
A.P	A.P	A.E

CONCEPT ONLY

Date: 22/03/2022

Project Number	Sheet Number	Issue
P5387	4	001

Attachment F: Swept Path Assessment



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 4 8 12 16 20 1:400

Project: Tweed Valley Hospital Ambulance Station TIA

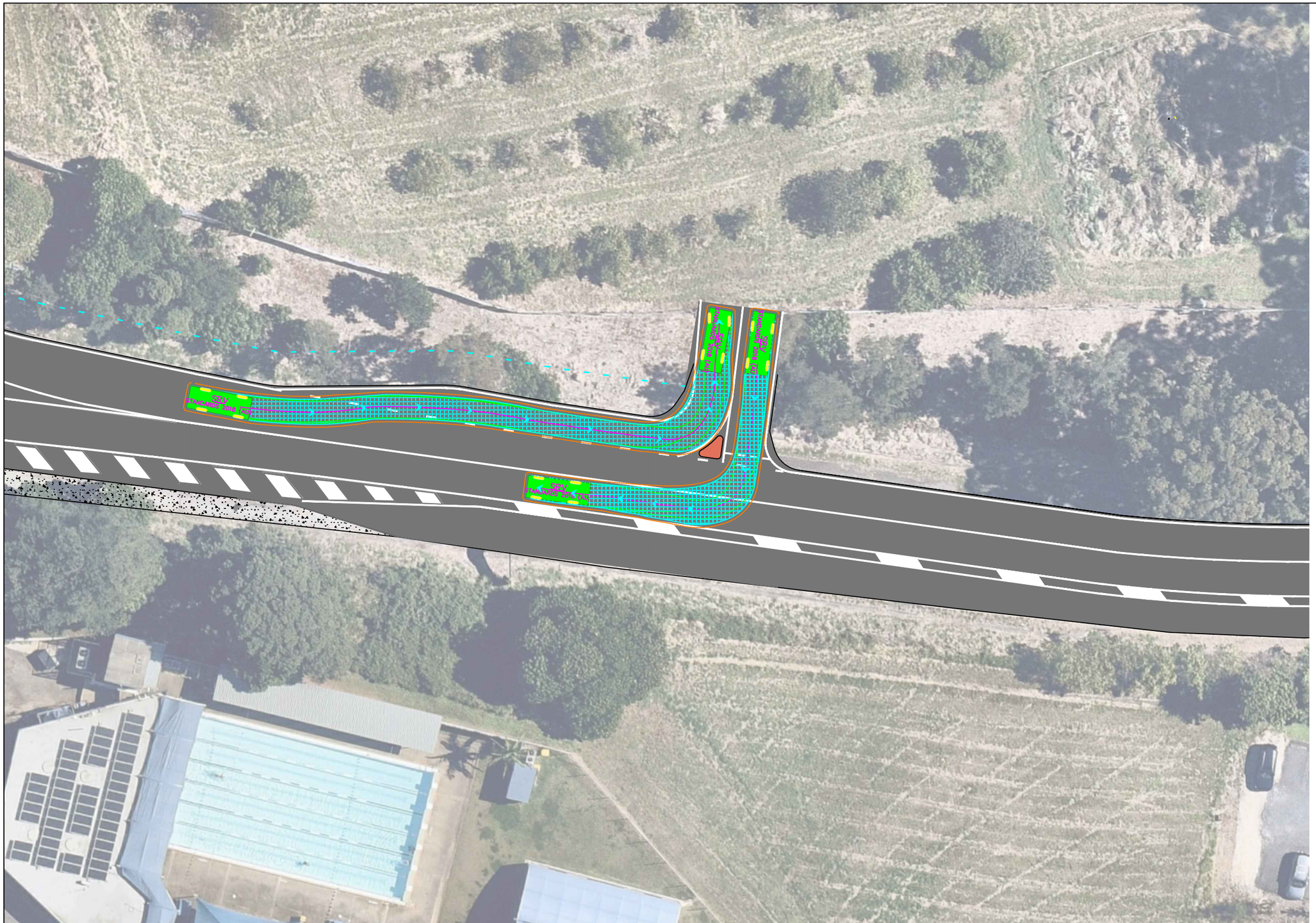
Title: Turnock Street Access
Concept Plan
Swept Paths

Design	Drawn	Checked
R.TU	R.TU	A.E

CONCEPT ONLY

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	1	001



NORTH

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WARNING!

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 4 8 12 16 20 1:400

Project: Tweed Valley Hospital Ambulance Station TIA

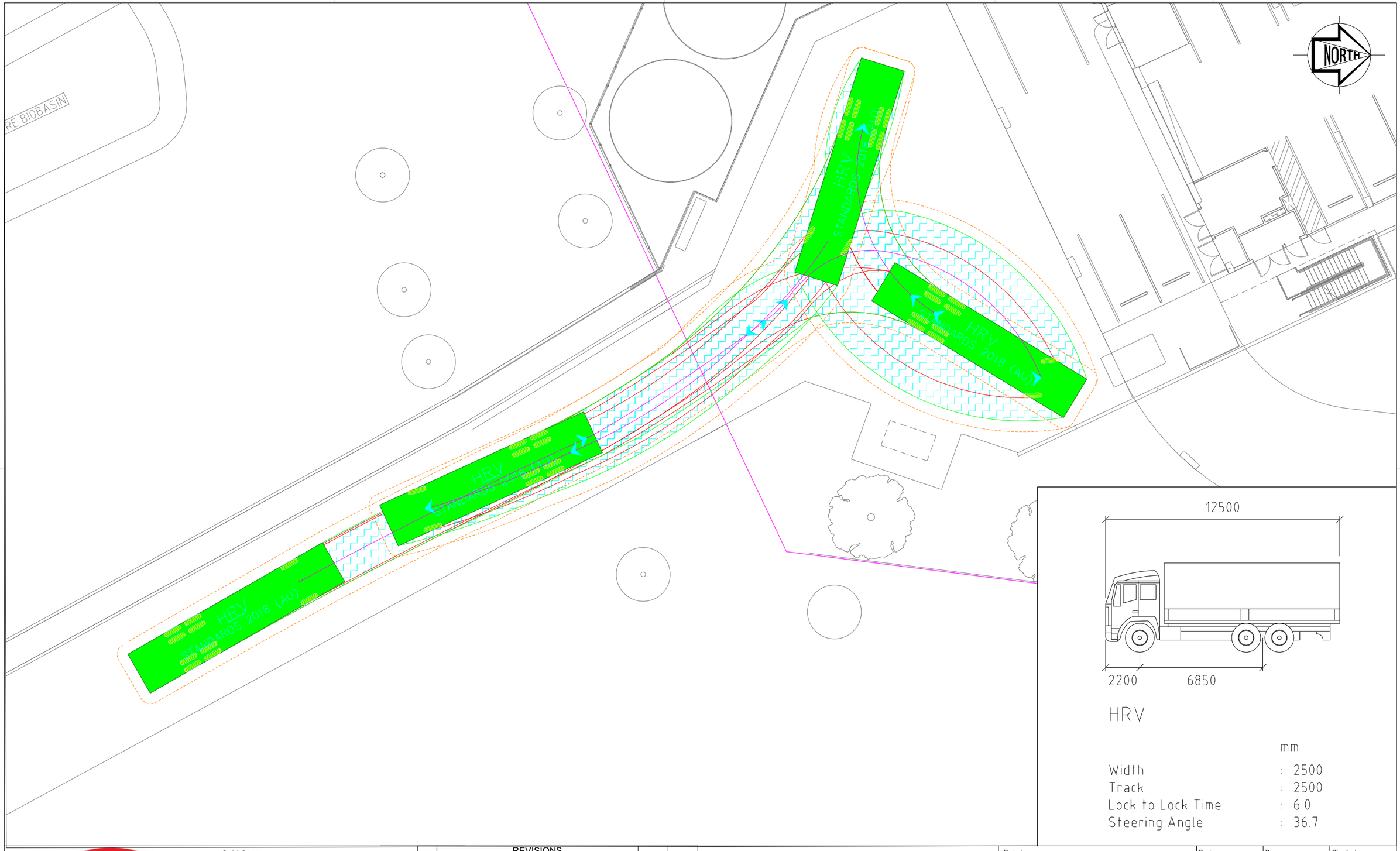
Title: Turnock Street Access Concept Plan Swept Paths

Design	Drawn	Checked
R.TU	R.TU	A.E

CONCEPT ONLY

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	2	001



HRV

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA

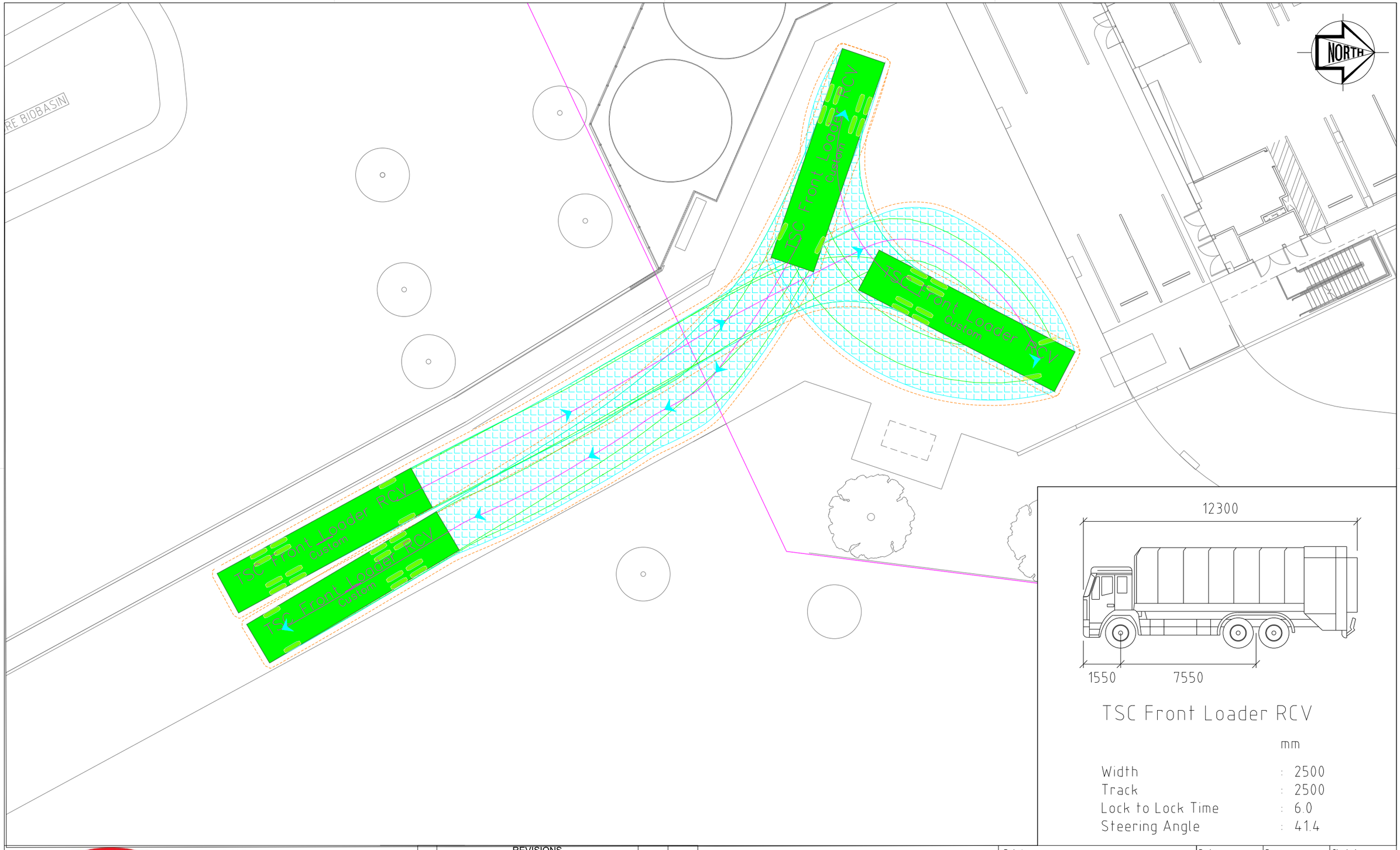
Title: HRV Servicing Swept Paths

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	3	001



TSC Front Loader RCV

mm

Width	:	2500
Track	:	2500
Lock to Lock Time	:	6.0
Steering Angle	:	41.4

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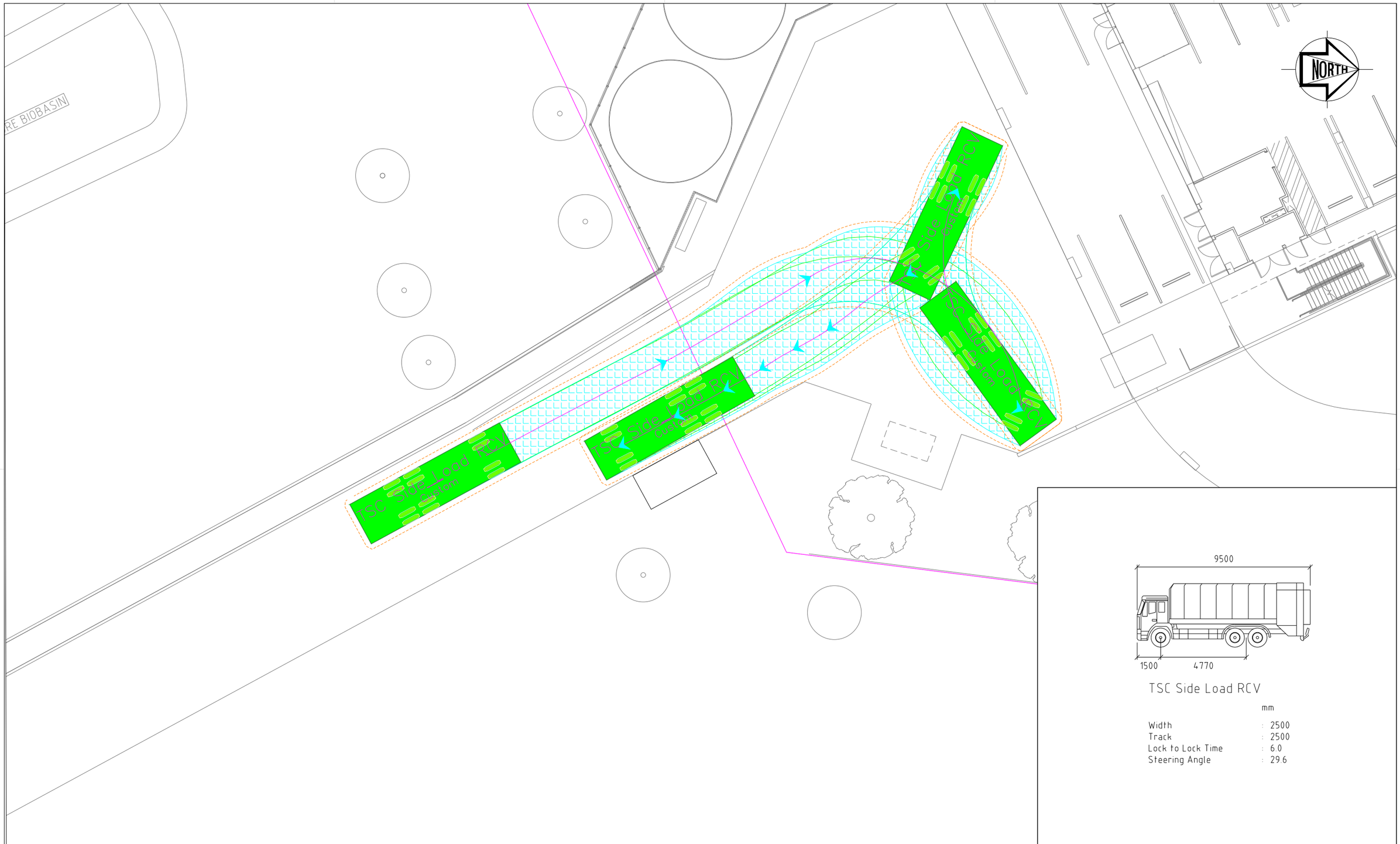
Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA	Design: R.TU	Drawn: R.TU	Checked: AE
Title: RCV Front Loader Swept Paths	NOT FOR CONSTRUCTION		Date: 24/03/2022
	Project Number: P5387	Sheet Number: 4	Issue: 001



TSC Side Load RCV

mm

Width	:	2500
Track	:	2500
Lock to Lock Time	:	6.0
Steering Angle	:	29.6

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REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA

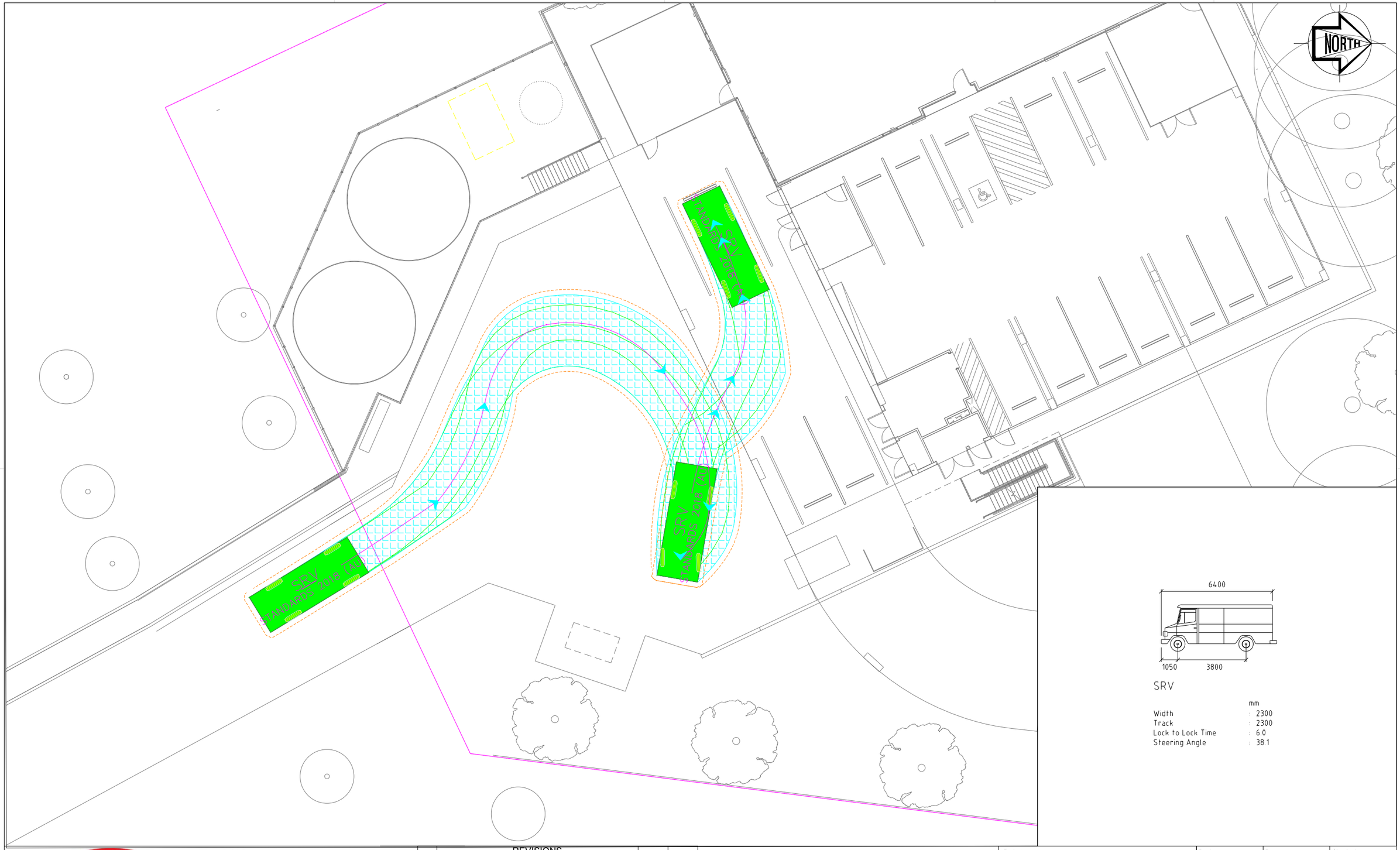
Title: RCV Side Loader Swept Paths

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	5	001



SRV

	mm
Width	2300
Track	2300
Lock to Lock Time	6.0
Steering Angle	38.1

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project	Tweed Valley Hospital Ambulance Station TIA
Title	SRV Parking Bay Swept Paths

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date	Project Number	Sheet Number	Issue
24/03/2022	P5387	6	001

SRV

	mm
Width	2300
Track	2300
Lock to Lock Time	6.0
Steering Angle	38.1

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA

Title: SRV Entering & Exiting Swept Path

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	7	001

SRV

	mm
Width	2300
Track	2300
Lock to Lock Time	6.0
Steering Angle	38.1

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA

Title: SRV Entering & Exiting from Carparking Swept Path

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	8	001

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REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tweed Valley Hospital Ambulance Station TIA

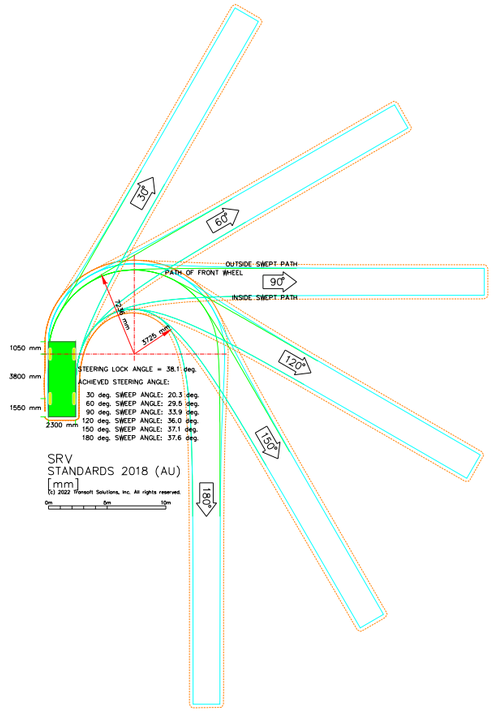
Title: SRV Carparking Swept Path

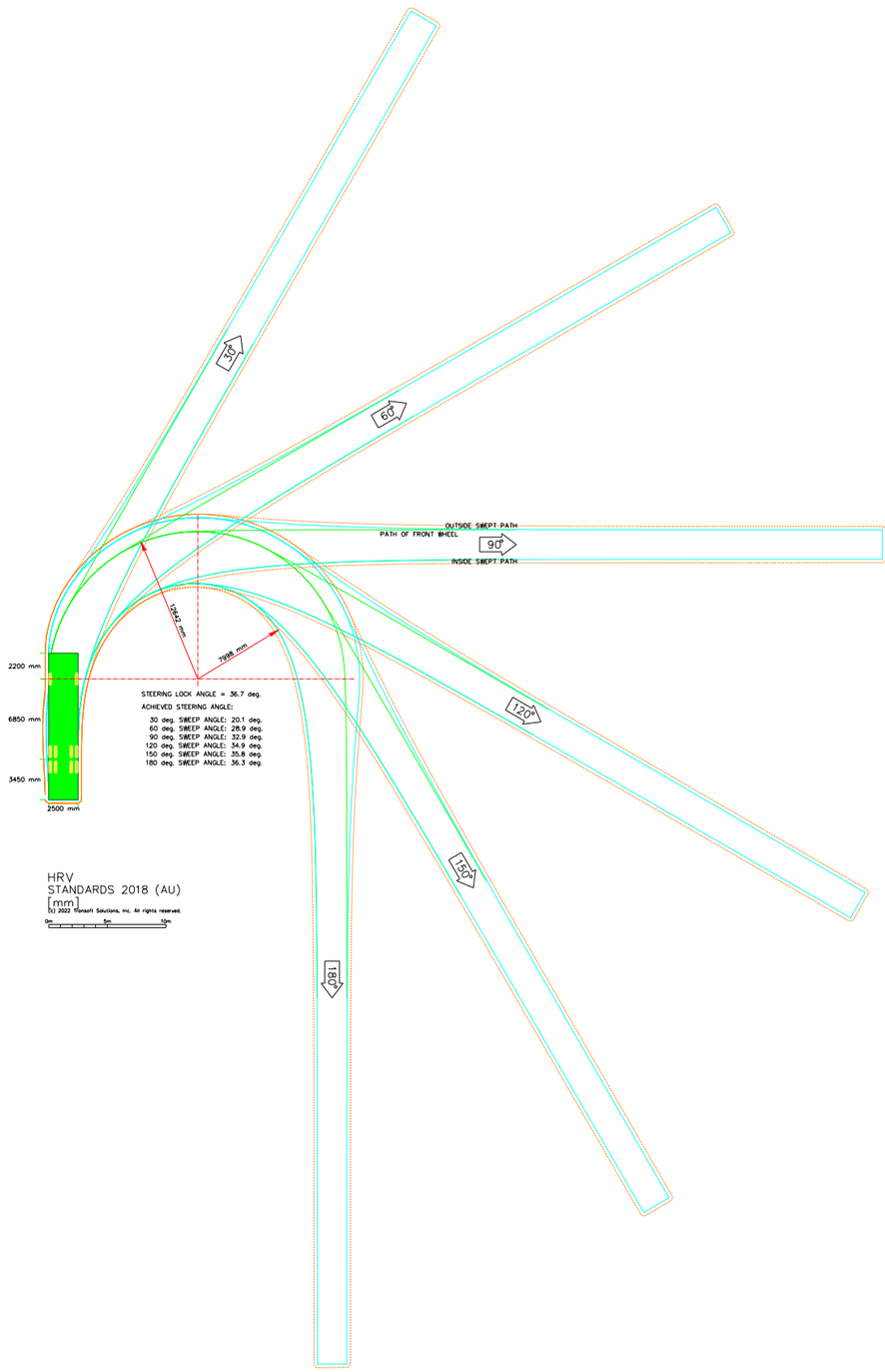
Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	9	001





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REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 5 10 15 20 25 1:500

Project: Tweed Valley Hospital Ambulance Station TIA

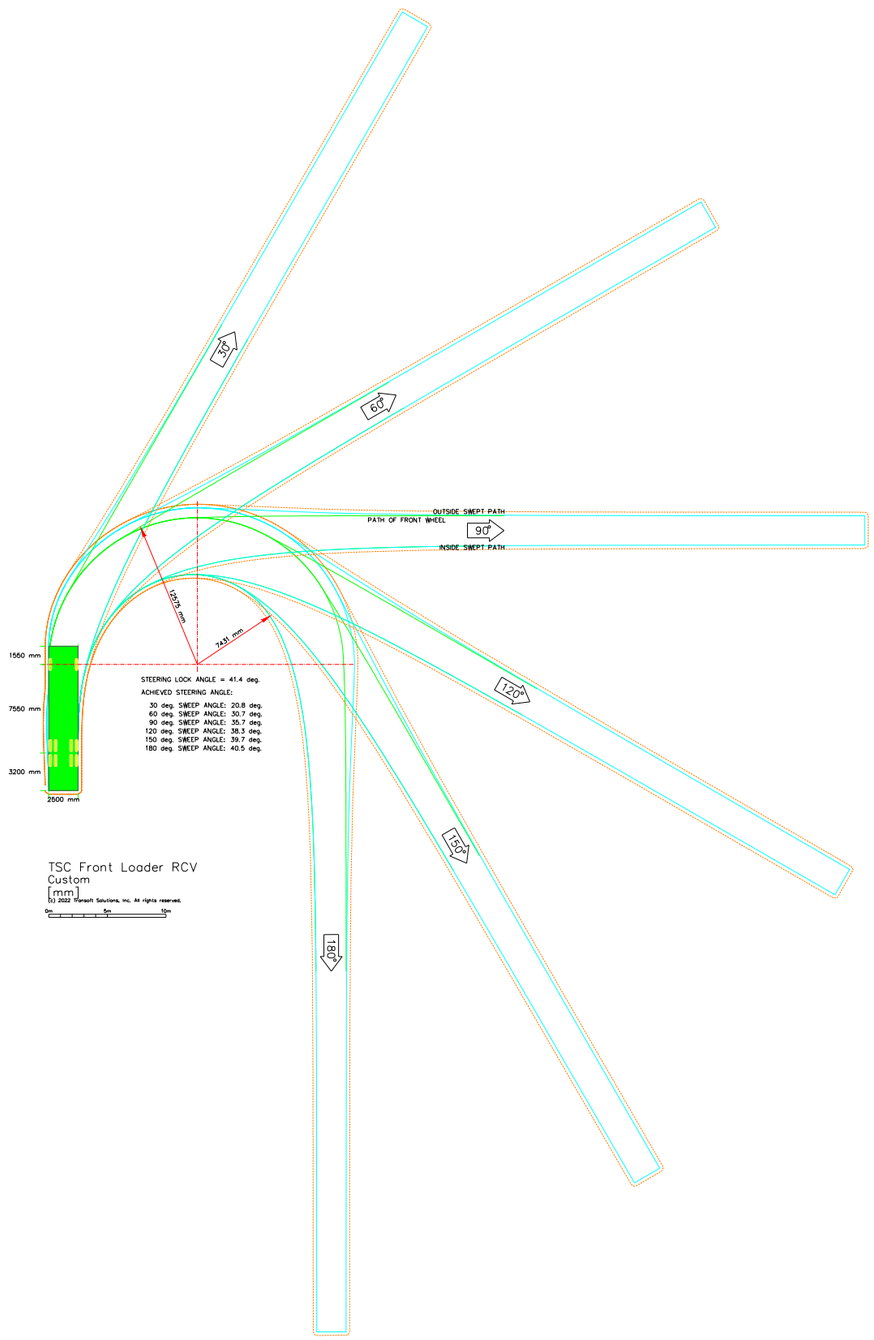
Title: Vehicle Turning Templates

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

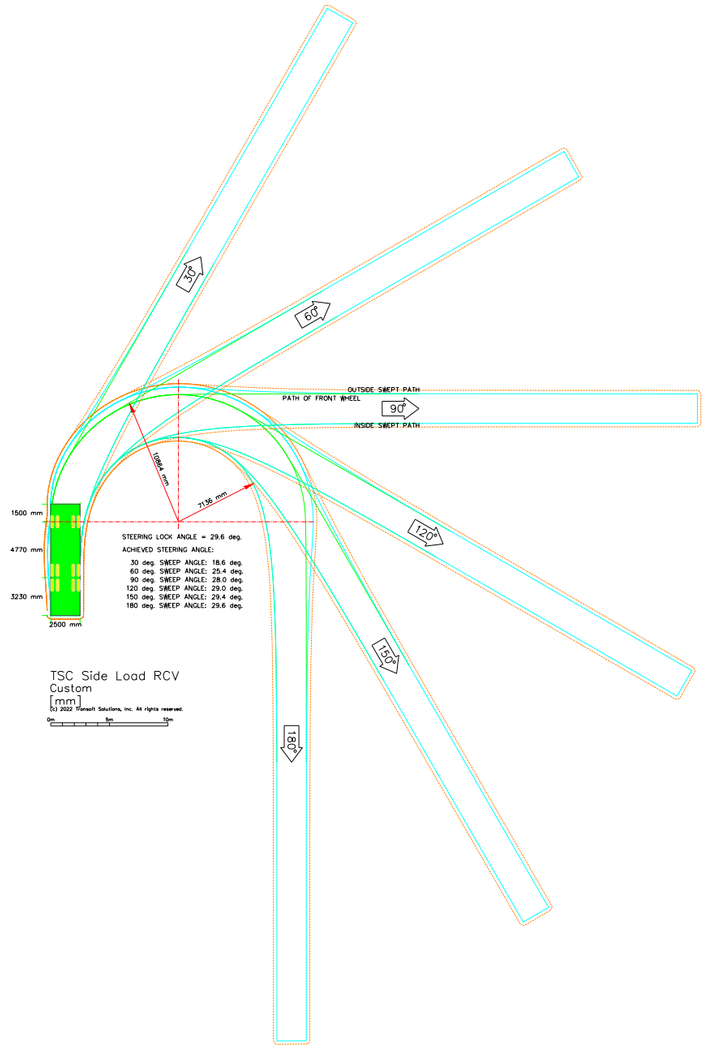
Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	10	001



TSC Front Loader RCV
Custom
[mm]

0m 5m 10m



TSC Side Load RCV
Custom
[mm]

0m 5m 10m

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	R.TU	24/03/2022

Scale @ A3 0 5 10 15 20 25 1:500

Project: Tweed Valley Hospital Ambulance Station TIA

Title: Vehicle Turning Templates

Design	Drawn	Checked
R.TU	R.TU	AE

NOT FOR CONSTRUCTION

Date: 24/03/2022

Project Number	Sheet Number	Issue
P5387	11	001