pitt&sherry

CopperString Hughenden Camp Hub

Traffic Impact Assessment

Client reference:

CU2-HU00-REP-PAS-100-0001

Prepared for

CPB Contractors Pty Ltd

Client representative

Nick Poon

Date

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Prepared by — S. Diaz	S Diaz	**Date —** 1 May 2024
Reviewed by — R. Ramm	R Ramm	**Date —** 1 May 2024
Authorised by — S. Masters	S Masters	**Date —** 1 May 2024

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04	Traffic Impact Assessment – updated to satisfy TMR Information Request – Transport Infrastructure – minor amendments	SD	RR	SM	01/05/2024

1. Introduction

1.1 Background

The CopperString 2032 Project will connect the North West Minerals Province (NWMP) of Queensland to the National Electricity Market (NEM) to reduce the cost of power supply and facilitate the large-scale development of the Hughenden wind resource and solar resources within the North Queensland Clean Energy Hub (NQCEH).

CPB Contractors and UGL Limited have entered an early contractor involvement (ECI) as a Joint Venture (JV) arrangement to facilitate the delivery of the Project.

The project includes the development of the transmission line, substations, laydown areas, construction camps, communication huts, access tracks and equipment storage locations.

The transmission line alignment is generally remote from existing major and local roads which are a necessary means of access to the transmission line easement for construction equipment, materials and personnel.

Materials and equipment required for construction will generally be transported from Townsville (except for local sourced materials and equipment) to the construction sites via State Controlled Roads, Local Government Roads and within easement via the access tracks constructed by the JV.

The JV has engaged pitt&sherry for development application level engineering services associated with the construction accommodation camps to support the project construction activities.

Duration of construction operations is currently estimated to be two to three years, and possibly up to 5 years when considering early works and closeout works.

1.2 Traffic Impact Assessment scope

The JV have engaged pitt&sherry to prepare a Traffic Impact Assessment (TIA) for the construction camp to be constructed in Hughenden.

This report has been prepared by or under the direct supervision of a Registered Professional Engineer in Queensland (RPEQ) in accordance with the Department of Transport and Main Roads *Guide to Traffic Impact Assessments 2018* and the *Shire of Flinders Planning Scheme 2017* (the Planning Scheme).

This TIA report assesses the direct impact of the Hughenden Camp on the local road network as required by the Guide to Traffic Impact Assessments and includes:

- Suitability of the site access point and any necessary upgrades at the site access point only (other traffic assessments and road upgrades are covered in the associated TMR/ Local Council TIAs and Road Upgrades technical reports respectively)
- Assessment of traffic operation including existing and expected operation of intersections and the capacity of the midblocks in the vicinity of the camp
- Assessment of sight distance at the access point and intersections in the vicinity of the camp
- Layout of the Hughenden camp hub including manoeuvring, queueing and parking; and
- Assessment of pavements in the vicinity of the camp as a result of traffic generated by the Hughenden camp hub only.

There are several other Traffic Impact Assessment Reports being prepared for the CopperString 2032 project as a whole. Relevant reports in the vicinity of Hughenden camp are:

- CopperString 2032 Traffic Impact Assessment Report – TMR; and
- CopperString 2032 Traffic Impact Assessment Report – Shire of Flinders.

These reports consider additional assessments for the entire road network impacted by the CopperString 2032 project including:

- Suitability of the width of public roads for expected CopperString 2032 construction traffic
- Road condition
- Consideration of heavy vehicle movements, particularly B-double trucks
- Road safety risk assessment
- Assessment of impact at rail line crossings such as the assessment of queuing at a rail line
- Consideration for items of interest including bridges, culverts, cattle grids, floodways, school zones etc
- Road upgrades including turn lanes and widening; and
- Pavement impact assessment.

2. Existing conditions

2.1 Site location

The site is located at lot 129 SP119557 in Hughenden, approximately 1.6km from the Hughenden township and adjacent to the Flinders Highway. The site and the surrounding land predominantly comprise of nature conservation, grazing nature vegetation, services, residential, manufacturing, and industrial and other minimal use. The Hughenden camp is located approximately 4km north of the CopperString 2032 corridor.

Figure 1 shows the site in a local context.

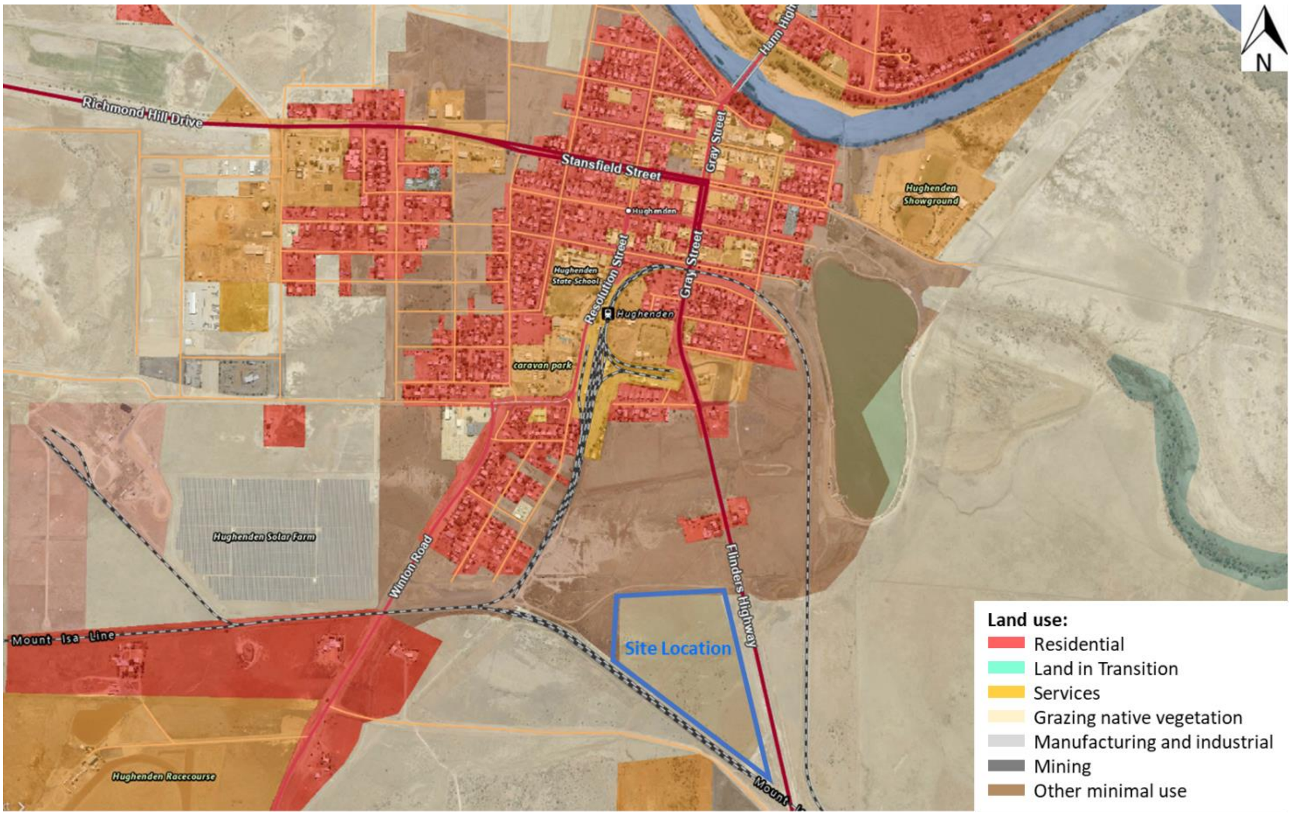

Figure 1: Site location (basemap source: Queensland Globe, 2023)

2.2 Site access

The site is currently accessed via a gravel driveway from the Public Access Road. The access is located at the northern boundary of the site.

2.3 Surrounding road network

2.3.1 Flinders Highway

The Flinders Highway is a Department of Transport and Main Roads (TMR) classified State Controlled Road with a Highway Class. The Flinders highway spans 775km from Townsville to Cloncurry and connects regional towns along its length. The highway travels predominantly in an east-west direction, however on approach to Townsville, operates in a north-south direction. It is configured with a single lane in each direction although often provides turning lanes at intersections. A posted speed limit of 80km/h applies along the highway in the vicinity of the site.

Figure 2: Flinders Highway - facing north in the vicinity of the site (image source: pitt&sherry, 2023)

Figure 3: Flinders Highway - facing south in the vicinity of the site (image source: pitt&sherry, 2023)

2.3.2 Public Access Road

The site access is planned to be located on a Public Access Road to the north of the site that intersects with the Flinders Highway to the east. This is a one-lane Council owned gravel road that spans in an east-west direction. The Private Access Road is not signposted and is therefore subject to the Queensland default rural speed limit of 100km/h.

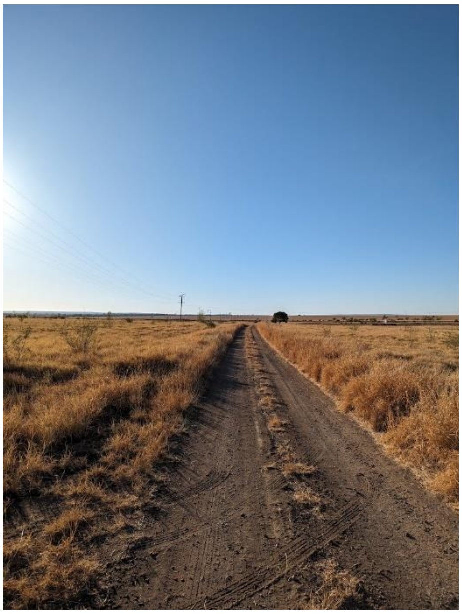

Figure 4: Public Access Road - Facing east in the vicinity of the site (image source: pitt&sherry, 2023)

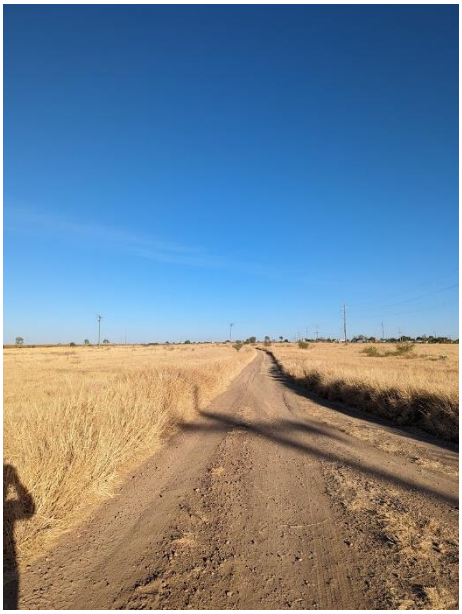

Figure 5: Public Access Road - Facing west in the vicinity of the site (image source: pitt&sherry, 2023)

2.4 Road widths

The road width along the Public Access Road was measured during a site visit completed by pitt&sherry staff in June 2023. The road width of the Flinders Highway in the vicinity of the site was measured from Queensland Globe. All the relevant road widths are outlined below in Table 1.

Table 1: Measured Road Widths (data source: pitt&sherry, 2023)

Road Name	Minimum Measured Road Width	Shoulder Width
Public Access Road	3.0m	N/A
Flinders Highway	7.0m	1.1m

2.5 Surrounding intersections

The following key intersections are in the vicinity of the site:

- Flinders Highway/ Stansfield Street/ Gray Street give-way controlled 4-leg intersection
- Flinders Highway/ Public Access Road give-way controlled T-intersection; and
- New Access Road/ Site Access give-way controlled T-intersection.

2.6 Nearby Rail

A rail line runs along the southern boundary of the Hughenden camp hub site with a crossing of the Flinders Highway immediately to the east. All required signage and linemarking is provided and there is sufficient sight distance. This is assessed in more detail in the CopperString 2032 Traffic Impact Assessment Report – Shire of Flinders (JV document reference: CU2-FL00-REP-PAS-100-0003).

2.7 Pavement condition

The surrounding roads are considered to be at an acceptable condition for current traffic volumes and vehicle types, however the Public Access Road is only 3m in width and would need to be widened to 8m. This is assessed in more detail in the CopperString 2032 Traffic Impact Assessment Report – Shire of Flinders (JV document reference: CU2-FL00-REP-PAS-100-0003).

2.8 Road safety

2.8.1 Crash data

The Queensland Governments Queensland Globe records all crash information in QLD on an interactive map. The crash data for the most recent 5-year period, as of June 2023, along the surrounding road network in the vicinity of the site has been obtained from the map. The crash history is summarised in Table 2.

Table 2: Crash history summary (data source: Queensland Globe, 2023)

Location	Description	Severity	Year
Flinders Highway	Off path-Straight: Out of Control on Carriageway	Hospitalisation	2019

Based on the crash history there does not appear to be any crash patterns in the vicinity of the site and the one crash is considered to be an isolated incident.

2.8.2 Sight distance

During the site visit, the sight distances at intersections that would be used to access the site were measured. The Safe Intersection Sight Distance (SISD) has been assessed for vehicles at the following intersections:

- Flinders Highway/Stansfield Street/ Gray Street intersection – sight distances to vehicles on Stansfield Street; and
- Flinders Highway/ Public Access Road intersection – sight distances to vehicles on Flinders Highway.

The SISD has been assessed against the Austroads Guide Part 4A. The SISD has been measured from a point 5m back from the edge of the major road at each intersection, in accordance with Figure 3.2 of the guide (shown below in Figure 6).

Figure 3.2: Safe intersection sight distance (SISD)

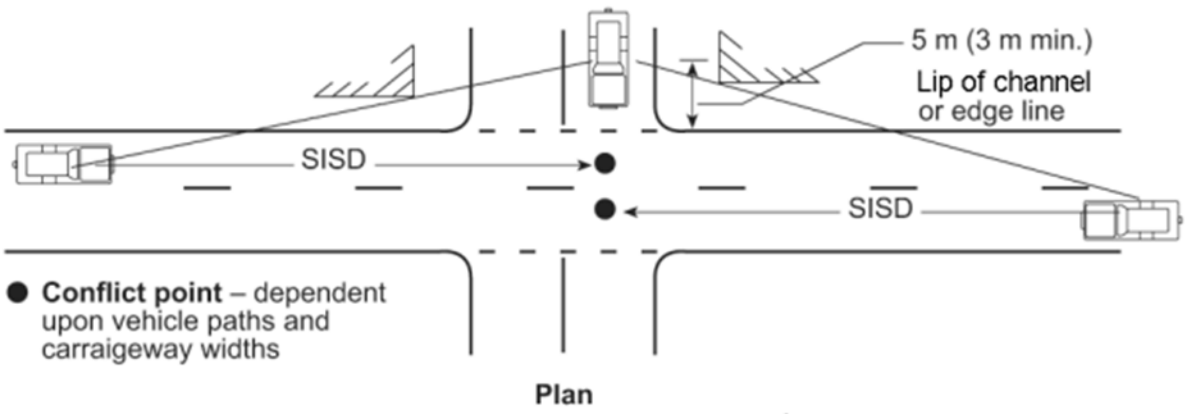

Figure 6: Figure 3.2 of Austroads Guide Part 4A (image source: Austroads, 2017)

The SISD requirements and the observed sight distance at the intersections are shown below in Table 3.

Table 3: Sight Distance assessment (data source: pitt&sherry, 2023)

Intersection	Direction of vehicle travel	Vehicle speed	Sight Distance Requirement (desired reaction time of 2.5s)	Available Sight Distance	Meets Requirements
Flinders Highway/ Stansfield Street/ Gray Street	Eastbound	50km/h	97m	>200m	Yes
	Westbound			>200m	Yes
Flinders Highway/ Public Access Road	Northbound	80km/h	214m	>350m	Yes
	Westbound			>400m	Yes

Based on the above, the sight distances at the at the assessed intersections exceed the requirements of the Austroads Guide Part 4A.

Driveways

The sight distances from the proposed site to vehicles travelling along the Public Access Road was also measured during the site visit, in accordance with AS 2890.2:2023 Figure 3.3, which provides sight distance requirements for commercial vehicle traffic entering a public road from an access driveway.

The SISD requirements and the observed sight distance at the sight access are shown below in Table 4.

Table 4: Sight distance assessment – Public Access Road/ site access intersection (data source: pitt&sherry, 2023)

Intersection	Direction of Travel	Vehicle Speed	Sight Distance Requirement (5 second gap)	Available Sight Distance	Meets Requirements
New Access Road/ Site Access	Northbound	100km/h	139m	>150m	Yes
	Southbound			>150m	Yes

Based on the above, the sight distances at the Public Access Road/ Site Access intersection to vehicles travelling both northbound and southbound meet the requirements of AS 2890.2:2018 Figure 3.3.

2.8.3 Intersection operation

Signage and linemarking at the key intersections along the route network are considered to be at an acceptable condition for current traffic volumes and vehicle types.

2.9 Traffic volumes

Traffic data was collected over a 15-minute interval by pitt&sherry staff on 21 June 2023. The collected traffic data was subsequently scaled by a factor of 4 to extrapolate the hourly traffic volume.

To establish the relationship between peak hour and the observed hour, data from the nearest traffic counter on TMR roads was extracted. This information was applied to calculate a peak-to-hour ratio.

Multiplying the recorded traffic volumes by this ratio allowed for the estimation of the peak hour traffic volume at the specific location.

The estimated peak hour traffic volume is shown below in Figure 7.

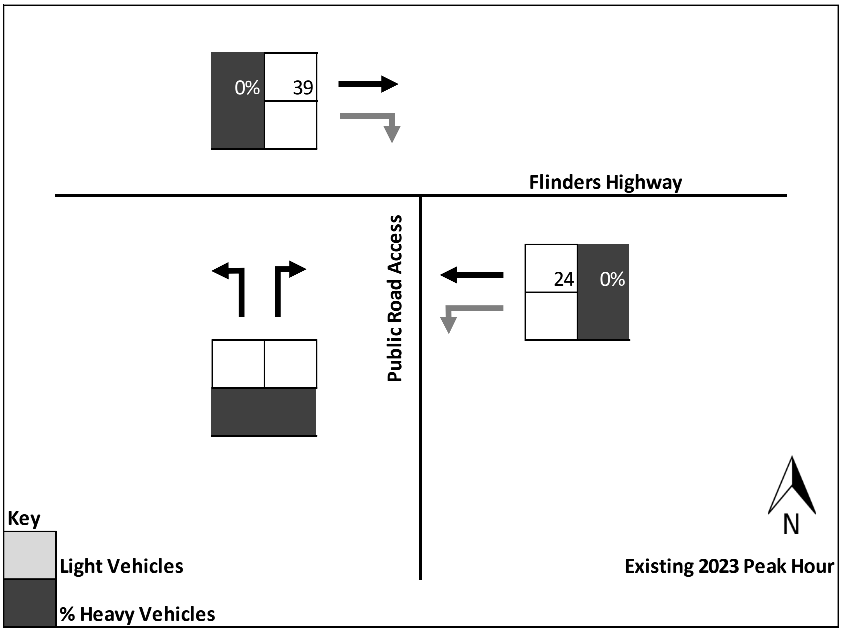

Figure 7: Existing peak hour traffic volumes (data source: pitt&sherry, 2023)

2.10 Existing performance

2.10.1 Traffic modelling software

The operation of the counted intersections has been modelled using SIDRA Intersection 9.0 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). Table 5 shows the criteria that SIDRA Intersection adopts in assessing the LOS. It is generally accepted that LOS D or better is an acceptable level of operation.

Table 5: SIDRA intersection level of service (data source: SIDRA, 2022)

LOS	Delay per Vehicle (secs)		
	Signals	**Roundabout**	**Sign Control**
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

2.10.2 Intersection layout

The geometry of all of the intersections for the SIDRA traffic model was developed with reference to aerial photography obtained from Google Maps and from measurements taken during the site visit. The aerial photography and site visit informed the number, width and length of trafficable lanes and speed limits.

2.10.3 Vehicle mix

The vehicle mix in the SIDRA model uses the total number of vehicles recorded and the proportion of heavy vehicles (Austroads Vehicle Class 3 and above). Buses were considered as heavy vehicles and included in the heavy vehicle proportion.

2.10.4 Model calibration

During the site visits, the queue lengths and delays were measured at each intersection approach.

The SIDRA model was calibrated such that the modelled queue lengths and delays were generally measuring close to the queue lengths and delays recorded on site.

2.10.5 Traffic modelling results

The modelling results for the counted intersections are summarised in Table 6**.** Detailed results are presented in Appendix B.

Table 6: Modelling results – existing (data source: pitt&sherry, 2023)

Intersection	Leg	Degree of Saturation	Average delay (secs)	95% Back of Queue (m)	Level of Service
Flinders Highway/ Public Access Road	South: Public Access Road	0.00	6	0	A
	East: Flinders Highway	0.01	0	0	A
	West: Flinders Highway	0.02	0	0	A
	All Vehicles	**0.02**	**0**	**0**	**A**

Based on the results presented above, the modelled intersections currently operate well with minimal queues and delays experienced on all approaches.

The modelling results align with observations made on site with regard to the operation of the intersections.

2.11 Alternative transport modes

2.11.1 Public transport

Available buses provide the main form of public transport to and from Hughenden. Bus services run between Townsville and Mount Isa stopping at Hughenden at the following times:

- Townsville – Mount Isa: Monday 10:30AM, Wednesday 11:15PM and Saturday 12:15PM; and
- Mount Isa – Townsville: Tuesday 6:05PM, Thursday 1:55AM and Sunday 1:55PM.

2.11.2 Active Transport

There are no dedicated footpaths or cycling paths in the vicinity of the site.

3. Development Proposal

3.1 Overview

Due to the small accommodation capacity of many of the local towns along the CopperString 2032 Project route, provision of temporary camp hubs at certain townships is required. The infrastructure for the camp hubs will generally be demountable and will remain in place for the duration of the project with varying levels of occupation as they are utilised for differing work disciplines.

It is understood that each camp hub will generally include:

- Working office, meeting rooms for site meetings project reviews, etc and a first aid room
- Individual accommodation units
- Ancillary facilities including gym
- Self-serve laundry
- Serviced kitchens
- On-site parking incorporating 130 spaces for car parking and 15 spaces for minibus parking
- Construction laydown yard; and
- Concrete batch plant (if required - to be located in an alternative location in Hughenden).

An overview of the proposed camp hub in Hughenden is shown below in Figure 8 with detailed site plans included in Appendix A.

For more information on the camp hub including the design and operation, refer to the report prepared by pitt&sherry titled Hughenden Camp Hub Planning Design Support (JV document reference: CU2-HU00-REP-PAS-100-0002).

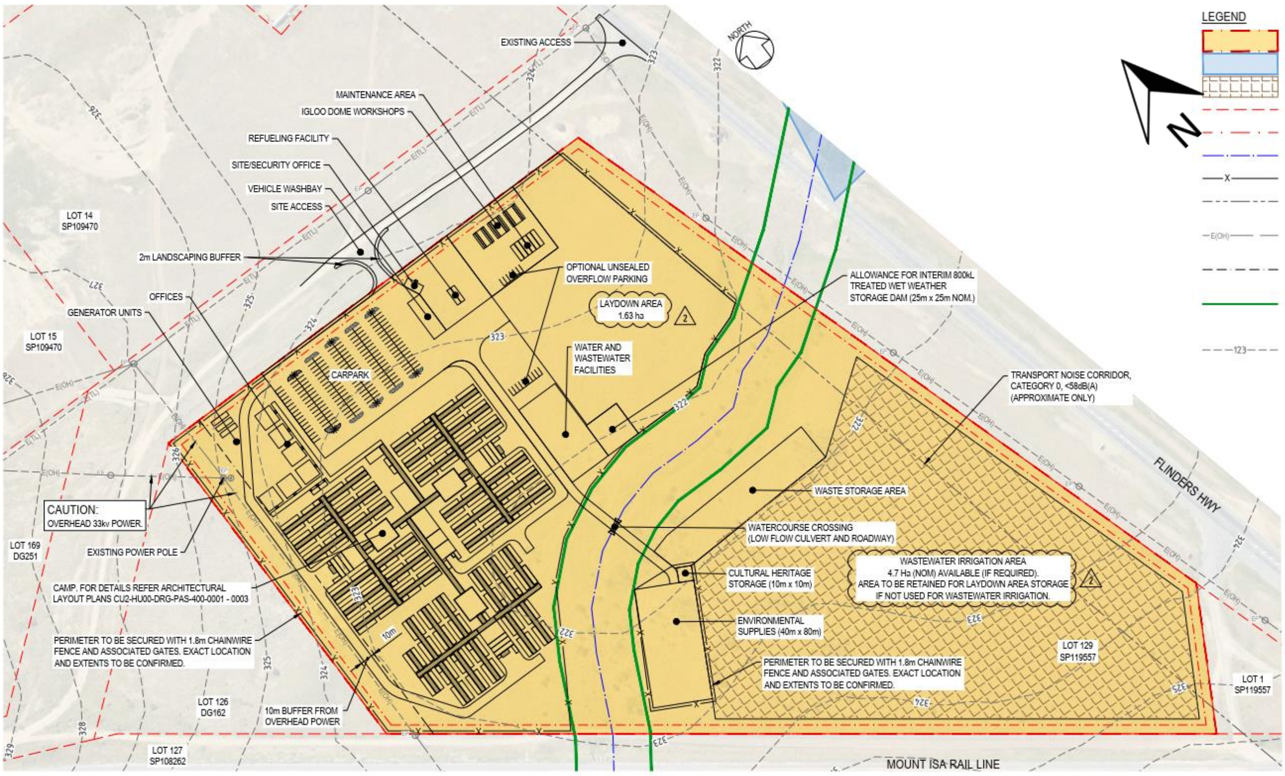

Figure 8: Proposed camp hub layout (image source: pitt&sherry, 2024)

3.2 Operational Period

Hughenden camp will be under construction/ operation/ de-mobilisation between mid 2024 and mid 2026 (subject to regulatory approval timeframes for commencement).

The camp is not open to the public and will only be used as accommodation for the staff and workers of the CopperString 2032 Project.

3.3 Staff

3.3.1 Numbers

While the level of occupation within the camp hub will vary over the project lifespan, during the busiest stage approximately 410 workers are expected to be located at the Hughenden camp.

3.3.2 Rostering

Crews will work in rostered shifts. Accommodation at the camp will be scheduled and managed to ensure that there is no overlap between successive shifts and the relevant parts of the camp are fully vacated before the next contingent arrive. This ensures the maximum number at the camp does not exceed 410 workers and vehicle movements on changeover days do not exceed the estimated numbers assessed.

3.3.3 Travel to/from site for roster

Workers who ordinarily reside in the region are likely to arrive to Hughenden camp in private vehicles or public buses. Fly-in, fly-out (FIFO) workers are expected to fly in to Townsville airport and arrive to camp by buses and coaches from Townsville. Buses will utilise existing transport hubs in the regional towns for pick-ups/ drop-offs i.e. Townsville Airport, Charters Towers Bus Depot etc.

3.3.4 Recreation and Active Transport

The Hughenden camp will include gym facilities on site, as well as a perimeter walking track around the camp. Recreational activities can also be undertaken at existing facilities and natural attractions in the local community, including the Hughenden Recreational Lake.

The Flinders Highway, and the other roads in the industrial area surrounding site have no pedestrian facilities and are not suitable for walking due to safety. This will be noted in the safety management plan. A shuttle bus will provide transport from camp to Hughenden services and attractions. Many typical locations such as the Hughenden Recreational Lake and Hughenden Showgrounds have off-street car parks, or Brodie Street precinct has on-street parking, with suitable pick up/ drop off areas. For other required destinations, the shuttle bus will utilise suitable kerbside parking nearby (not along the Flinders Highway).

4. Access routes

All staff and workers will travel between the CopperString 2032 Project site and the camp hub using the existing road network.

When departing the camp hub, vehicles will generally turn right onto the Public Access Road and travel west for approximately 200m until they reach the Flinders Highway/ Public Access Road intersection. At this intersection, they may turn left and right, depending on the location of the project site they are working at.

When returning to the camp hub, vehicles will retrace the same route in reverse.

The proposed route between the camp hub and the Flinders Highway is shown below in Figure 9.

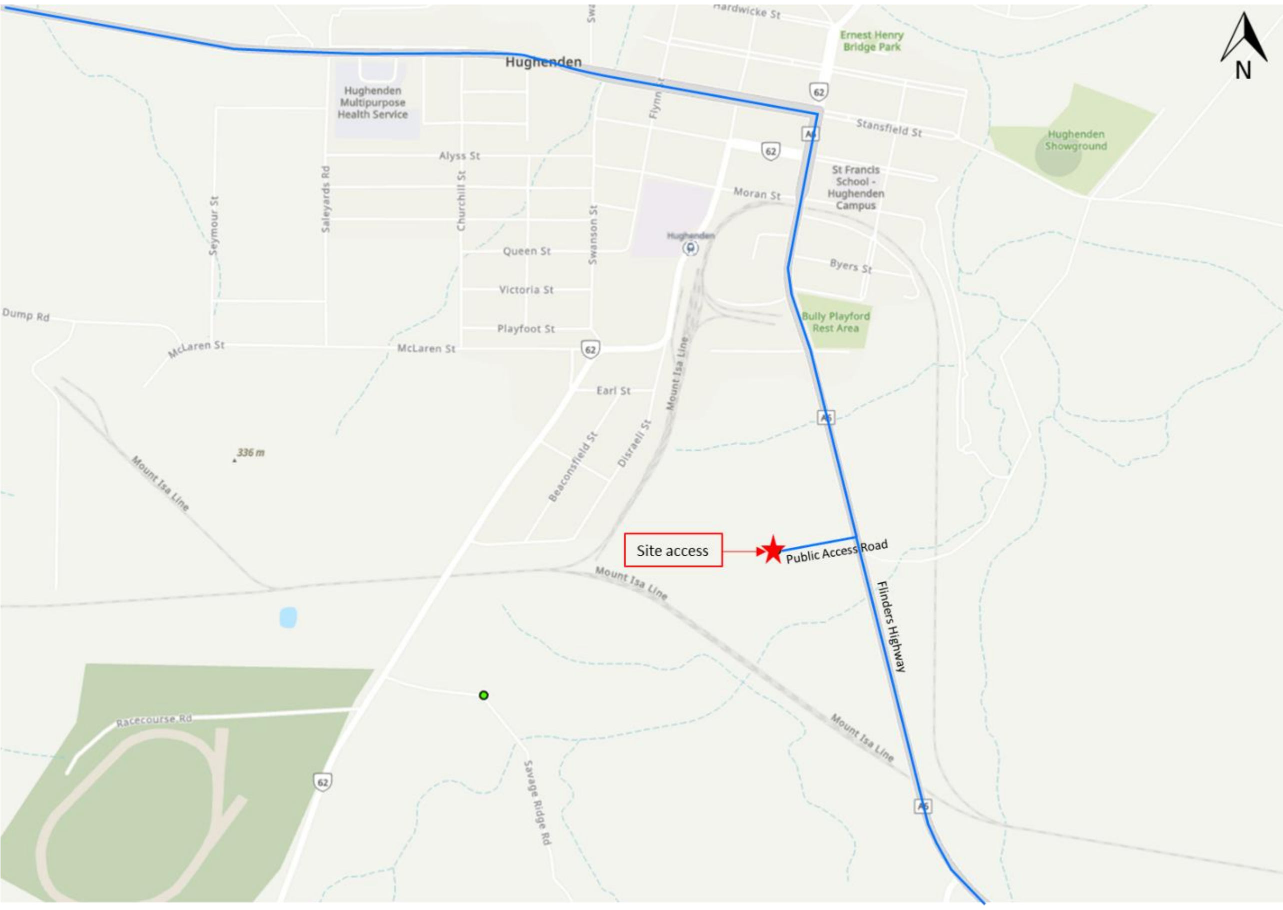

Figure 9: Proposed route between camp hub and Flinders Highway (basemap source: ArcGIS)

5. Site operation

5.1 Access point and vehicle circulation

5.1.1 Site access

As discussed, the site is currently accessed via a gravel driveway from the Public Access Road. The access is located along the northern boundary of the site and has an approximate width of 8m widening to an apron of 30m and is sized to suit access turning lanes.

5.1.2 Circulation Road

Within the site, circulation roads connect the various vehicle access areas (i.e., parking, refuelling facility and vehicle wash bay) with the site access.

While circulation roads are yet to be delineated, it is understood that all circulation roads will have a minimum width of 5.8m with additional widening provided around bends as required.

5.1.3 Parking

Staff Parking

A total of 171 car parking spaces and 20 mini-van parking spaces are provided within the camp hub car park.

There is sufficient space for 50 seater coaches to circulate within the car park to drop off and pick up workers for airport transfers.

Further opportunities for car parking spaces have also been identified at various locations within the site. These may be formalised if required.

Heavy Vehicles

Opportunities for heavy vehicle parking has been identified at various locations within the. These may be formalised if required.

The suitability of the parking provision has been assessed in Section 7.3 of this report.

5.1.4 Refuelling facility

While the refuelling facility is available to all vehicles accommodated on site, it is estimated that 30% of the light vehicles on site will refuel using this facility each day. The facility will generally be used outside of the AM and PM peak hour.

The queuing at the refuelling facility on site has been assessed in Section 7.1.4 of this report.

5.1.5 Vehicle Wash Bay

It is understood that the wash bay will be used as follows:

- For automatic under wash – light vehicles only; and
- For adjacent pad with gurneys – light vehicles and vehicles up to medium rigid vehicles.

The wash bay is expected to be used by 30% of the vehicles entering the site, with 28% of vehicles using the automatic wash only and 2% of vehicles using the adjacent pad with gurneys. It is estimated that it takes 3-5 minutes to wash vehicles on the wash bay and 30 minutes for vehicles using the adjacent pad and gurneys. Vehicles will generally use the wash bay outside of the AM and PM peak hours.

The wash bay will not be used by trucks larger than medium rigid trucks as these will be directed to existing regional truck washes.

The queuing at the wash bay on site has been assessed in Section 7.1.4 of this report. It is noted that the queuing at the regional truck washes have not been assessed as these are expected to have sufficient queuing capacity based on their existing operation.

5.2 Camp operation traffic

5.2.1 Vehicle types

The following vehicle types would be generated by the camps:

- Light crew vehicles
- 12-seater minibuses (to take larger crews)
- Rigid crew trucks with equipment
- Rigid delivery trucks to take materials in and out of the camps
- Truck and dog vehicles to take materials in and out of the camps
- Semi-trailers to take materials in and out of the camps
- B-double trucks to take materials in and out of the camps; and
- Occasional low loader truck for very large plant and equipment.

Traffic movements generated from the camp are expected to be predominantly light vehicles and MRVs.

5.2.2 Traffic volumes

Staff Vehicles

Staff will travel from the camp to the CopperString 2032 work fronts each day. They will use a mix of light vehicles (generally utility vehicles), small rigid crew trucks and 12 seater minibuses. All staff are expected to depart the camp between 6:30am and 7:30am and arrive back to the camp between 5:30pm and 6:30pm.

Each minibus will have a capacity of 12 people, but for this assessment have been estimated to generally carry about 10 people. Each light vehicle and small rigid truck will carry between 1 and 3 people.

Vehicle use will depend on the CopperString 2032 construction activity being worked on and the crew size.

Traffic volumes during day-to-day operation travelling between the camp and the work fronts will reflect the highest traffic generation and have been used in assessments. Traffic generation for workers travelling at the start and end of shifts would be significantly lower.

Deliveries

The site will have goods delivered and removed on a day-to-day basis as required. This includes items such as cable drums and ancillary construction materials, water and food, other consumables and any other items that contribute to the running of the camp. It is noted that reo cages and tower steel will be delivered directly to the tower pad locations on site.

A backloading strategy will be developed and implemented to minimise separate traffic movements between camp locations and other staging areas.

Delivery trucks are expected to enter the site in a forward direction, travel to their designated delivery location, turn around within the site and egress the site in a forward direction. Deliveries are expected to be no larger than a 26m B-double truck.

On the odd occasion, it may be necessary to utilise a low loader truck. This will be to transport very large plant and equipment and would not be treated as day-to-day operational vehicles. Should the low loader be required it will operate under escort and will be subject to a specific traffic management plan.

Volumes

Table 7 shows the expected traffic volumes to be generated by the Hughenden Camp Hub on the expected typical busiest day and Table 8 shows the expected traffic volumes to be generated by the Hughenden Camp Hub during the peak hour of the expected typical busiest day.

It is noted that all traffic volumes stated in the traffic generation of the works are movements, i.e. if a vehicle travels in and out of the site that would generate two movements

Table 7: Hughenden Camp Hub traffic generation – typical busiest day

General workforce traffic generation			Deliveries/ Removing Goods Traffic Generation		
Light vehicles	**Minibuses**	**Rigid trucks**	**Rigid trucks**	**Semi trailers/ truck and dog**	**B-doubles**
310	40	32	40	4	4

Table 8: Hughenden Camp Hub traffic generation – peak hour of typical busiest day

General workforce traffic generation			Deliveries/ Removing Goods Traffic Generation		
Light vehicles	**Minibuses**	**Rigid trucks**	**Rigid trucks**	**Semi trailers/ truck and dog**	**B-doubles**
155	20	16	4	-	-

5.2.3 Rubbish collection

Rubbish collection is anticipated once per day (2 vehicle movements).

Rubbish trucks would be expected to enter the site in a forward direction, travel to the waste disposal area, turn around within the site, and egress the site in a forward direction. Rubbish trucks are expected to be no larger than an MRV.

5.3 Pedestrian paths

It is understood that the JV intend to include footpaths and pedestrian crossing points throughout the camp. These will be detailed in future versions of relevant Project Management Plans.

6. Traffic generation and impact

6.1.1 Traffic generation

Due to the unique nature of the facility, there is no traffic generation rate specified in either the NSW Roads and Maritime Services *RMS Guide to Traffic Generating Developments* (RMS Guide) or the *ITE Trip Generation Manual* (ITE Guide) for the proposed development, which are industry recognised references for traffic generation rates. As such, the traffic generation has been calculated based on the expected operation of the camp hub.

Staff traffic movements

Using the operational information discussed in Section 3 of this report, the traffic generation of the camp at the busiest operational stage has been determined as follows:

- All 410 people leaving the site during the AM peak hour and arriving back at the site in the PM peak hour
- The 410 people travel to their respective work fronts in 191 vehicles. This includes 155 light vehicles, 20 minibuses and 16 small rigid crew trucks; and
- Staff movements outside the AM and PM peak hours are expected to be minimal.

Deliveries and waste removal

The following traffic movements have been estimated per day for deliveries, construction material movement and waste:

- 40 rigid truck movements
- 4 semi-trailer movements; and
- 4 B-double movements.

It is estimated that 4 delivery and site operation movements occur in each peak hour.

Note that a vehicle movement refers to a single journey, i.e. one delivery vehicle generates 2 vehicle movements (one vehicle movement in and one vehicle movement out).

6.1.2 Traffic distribution

The directional split that has been adopted for the camp hub is 100% out/ 0% in during the AM peak hour and 0% out/ 100% in during the PM peak hour.

6.1.3 Peak operational traffic volumes

The impact of the camp hub on the surrounding road network has been estimated for the peak operational phase/ months of the camp. Traffic volumes for the weekday AM and PM peak hours during the peak phase are shown in Figure 10 and Figure 11.

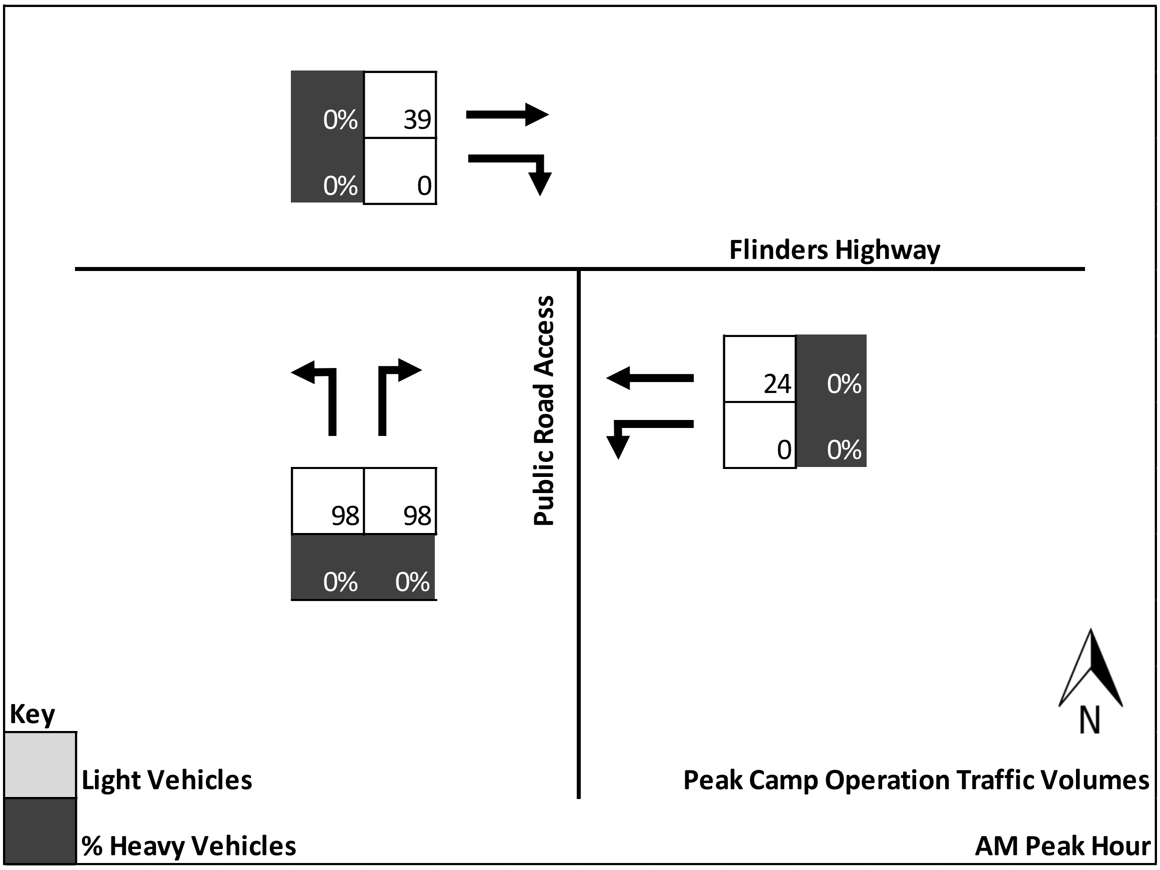

Figure 10: Traffic volumes – peak camp operation AM peak hour (data source: pitt&sherry, 2023)

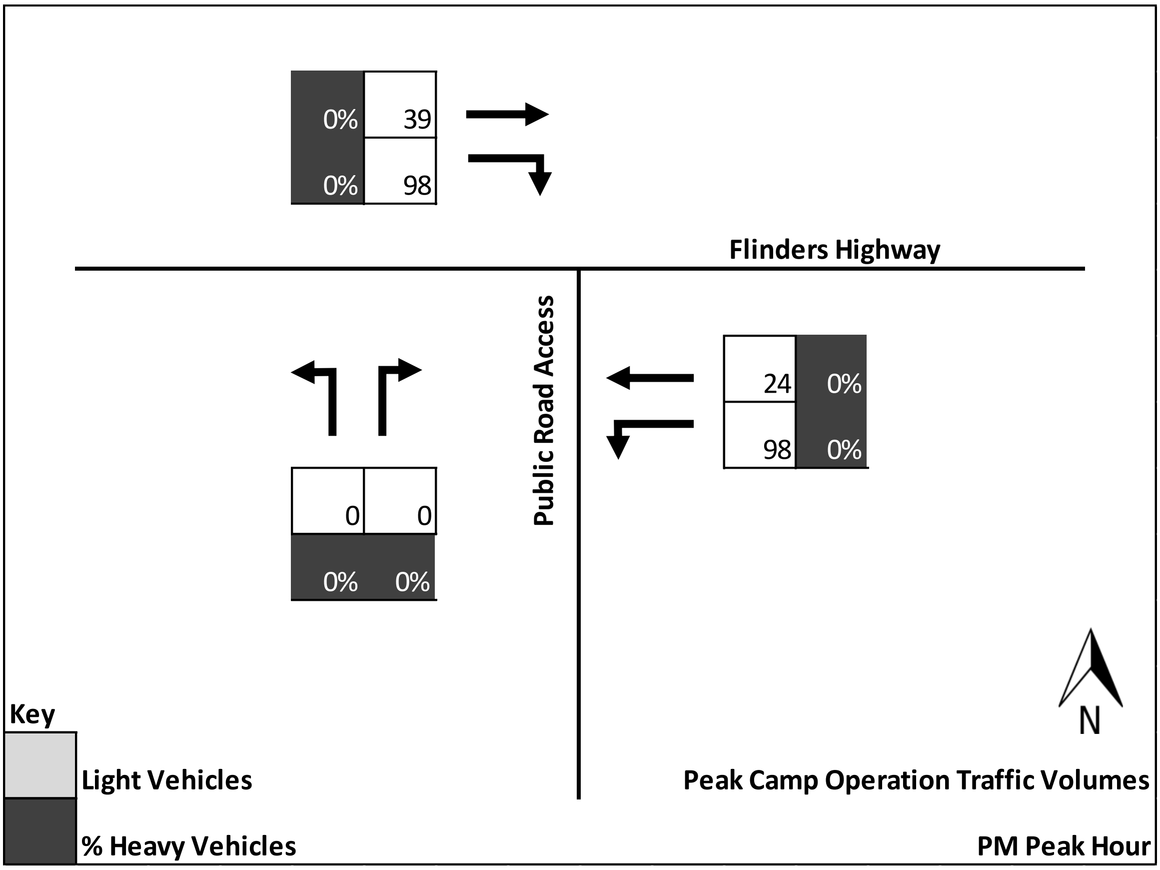

Figure 11: Traffic volumes – peak camp operation PM peak hour (data source: pitt&sherry, 2023)

6.1.4 Traffic impact

The modelling results for the peak operational phase of the camp is summarised in Table 9. Detailed results are presented in Appendix C.

Table 9: Modelling results – peak operation (data source: pitt&sherry, 2023)

Intersection	Peak	Leg	Degree of Saturation	Average delay (secs)	95% Back of Queue (m)	Level of Service
Flinders Highway/ Public Access Road	AM	South: Public Access Road	0.15	6	4	A
		East: Flinders Highway	0.01	0	0	A
		West: Flinders Highway	0.02	0	0	A
		All Vehicles	**0.15**	**4**	**4**	**A**
Flinders Highway/ Public Access Road	PM	South: Public Access Road	0.00	6	0	A
		East: Flinders Highway	0.07	5	0	A
		West: Flinders Highway	0.09	4	3	A
		All Vehicles	**0.09**	**4**	**3**	**A**

Based on the results presented above, the modelled intersections are expected to continue to operate well in the peak operational phase of the camp with minimal queues and delays experienced on all approaches.

There is no change to the existing LOS anticipated as a result of the operation of the camp.

6.1.5 Mid-block impact

Although the capacity of urban roads are generally determined by the capacity of downstream and upstream intersections, the RMS Guide does provide guidance metrics on LOS for mid-block locations on urban roads with interrupted flow conditions. Table 10 shows the criteria that the RMS Guide adopts in assessing the LOS. It is generally accepted that LOS C or better is an acceptable level of mid-block operation.

Table 10: Mid-block LOS (data source: RMS Guide, 2002)

Level of Service		Peak hour traffic flow (vehicle per hour per lane)	
		From	**To**
A	Free flow – drivers are virtually unaffected by other drivers in the traffic stream	0	200
B	Reasonably unimpeded flow – drivers have reasonable freedom to manoeuvre and select their desired speed	200	380
C	Stable flow – drivers are restricted to some extent in their freedom to manoeuvre and select their desired speed	380	600
D	Approaching unstable flow – drivers are severely restricted in their freedom to manoeuvre and select their desired speed	600	900
E	Unstable flow – traffic volumes at or close to capacity, drivers have virtually no freedom to manoeuvre or select their desired speed	900	1,400
F	Forced flow – traffic volumes over capacity with flow breakdown, queuing and delays	Greater than 1,400	

Based on the above capacity ranges, the LOS for the Public Access Road is expected to remain at free flow conditions (i.e. LOS A) during the peak operational phase.

7. Site layout assessment

7.1 Site Access

7.1.1 Access layout assessment

The site access has been assessed against the requirements set out in Clause 5.1 of AS2890.2 which states that "*Swept paths shall be used to check that the paths of vehicles travelling in the forward direction when negotiating access driveways and circulations roadways, can be accommodated within the proposed roadway. Swept paths shall also be used to check the movement in and out of a loading dock to establish that a sufficient apron width is provided for the vehicle swept path and manoeuvring clearances*".

A swept path assessment of design vehicles to the site has been completed and is included in Appendix D. It shows the following:

- 19m prime movers with semi trailers, 14.5m long rigid buses and 12.5m rigid trucks can pass each other entering and exiting the site; and
- A 26m B-double track (largest typical truck to the camp) can access and exit the site utilising the entire driveway width. As B-double movements will be in the order of 2 trucks a day at peak camp operation and would be expected in the middle of the day, when there are limited traffic movements, this arrangement is considered suitable. Notification can be given of arrival to ensure the access is kept clear.

7.1.2 Sight distance assessment

As discussed in Section 2.8.2 of this report, the sight distances at the existing site accesses to vehicles travelling both northbound and southbound meet the requirements of AS 2890.2 Figure 3.3.

No changes are proposed to the existing accesses as part of the camp hub.

7.1.3 Turn Lane Requirements

The *Queensland Government Road Planning and Design Manual Edition 2: Volume 3 Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (Qld V3 Supplement) specifies warrants for providing left and right turn treatments at unsignalised intersections where the cost of the intersection upgrade is considered impractical. These warrants apply to two-lane two-way roads (2L2W). Figure 12 below shows the volumes of traffic at intersections subject to a speed limit between 70km/h and 100km/h which would warrant turn treatments.

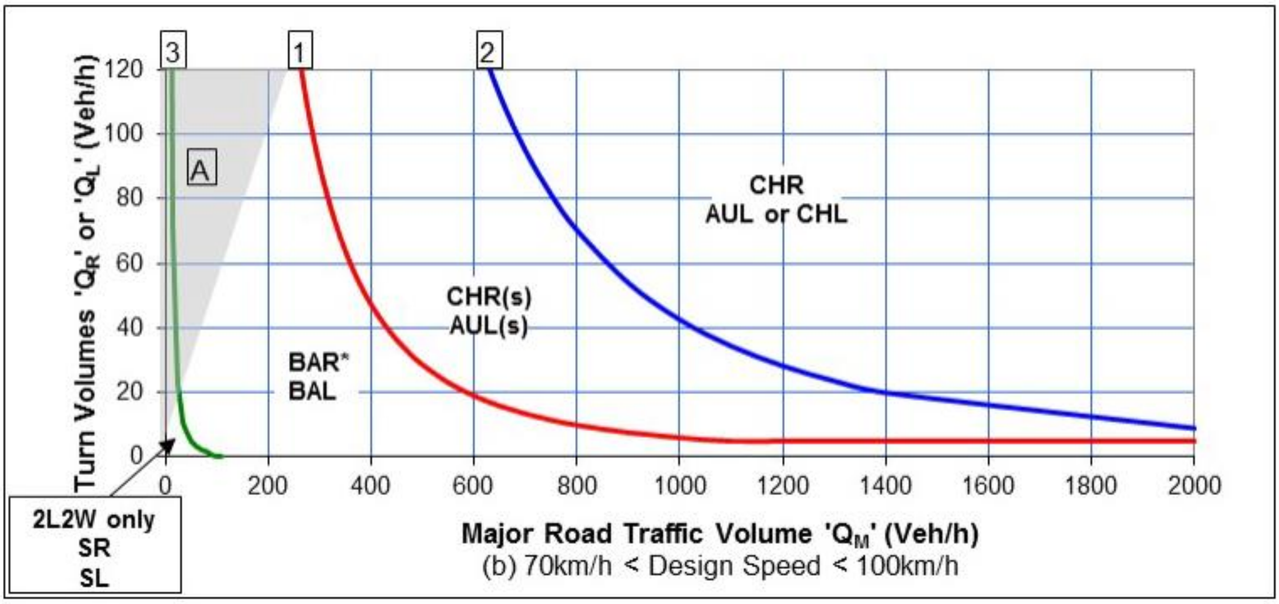

Figure 12: Warrants for turn treatments (data source: Queensland Government Road Planning and Design Manual Edition 2, 2021)

The expected opposing movements to the right and left turners into the camp hub is shown in Table 11.

Table 11: Opposing movements to turning vehicles (data source: pitt&sherry, 2023)

Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
	QM Right	QM Left		
AM	63	24	0	0
PM	161	24	98	98

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided.

As a BAR and BAL turn lane is proposed to be installed along the Public Access Road at the site access, it complies with the Qld V3 Supplement requirements.

7.1.4 Queuing at site

As discussed, there will be a vehicle wash bay and refuelling area at the camp.

It is estimated that 30% of vehicles returning from work fronts to the camp hub will be required to be washed each day. Up to 30% of vehicles may also need to refuel each day due to the large distances being travelled.

Due to the number of vehicles returning to the site within the same period at the end of day, a queuing assessment has been undertaken for the wash bays and refuelling facility. While these queues would generally be accommodated within the site access, the wash bay queue may at times spill out to the BAR and BAL.

In order to determine the queuing area requirements for the BAR and BAL lanes, the storage queue length that will not be exceeded 95% of the time has been calculated using queuing theory which states:

$$N = -\frac{\log(0.05)}{\log(\rho) - 1}$$

Where

$N = Storage\ queue\ length\ required\ (NO.of\ vehicle)$

$\rho = utilization\ factor = \frac{r}{s}$

$r = \ average\ arrival\ rate\ (vehicles\ per\ hour, vph)$

$s = service\ rate\ (vehicles\ per\ hour)$

Wash Bay

The following assumptions are made to calculate the required storage length at the wash bay:

- It is estimated that it takes 3-5 minutes (average 4 minutes) to serve each vehicle at the automatic under wash and 15-30 minutes at the adjacent pad and gurneys, the service rate is calculated to be 15 vehicles per hour and 2 vehicles per hour respectively
- It is assumed that up to 28% of vehicles will use the of the automatic under wash only and 2% of vehicles will use the adjacent pad and gurneys
- Conservatively assuming that all vehicles wash within one hour; and
- Conservatively assuming that a typical staff vehicle is 7m in length (i.e. 5.5m for vehicle length and 1.5m stopping distance between cars).

Based on the above, it is calculated that the storage queue length required is 6 vehicles (42m) at the automatic wash and 1 vehicle (7m) at the adjacent pad and gurneys.

As there is 45m of storage in the site for the vehicle wash bay, there is sufficient storage space to accommodate the queuing of both light vehicles and heavy vehicles at the wash bay.

Refuelling Facility

The following assumptions are made to calculate the required storage length at the refuelling facility:

- It is estimated that it takes 5 minutes to serve each vehicle refuelling, the service rate is calculated to be 12 vehicles per hour
- It is assumed that up to 30% of vehicles will use the refuelling facility and conservatively assuming that all vehicles refuel within one hour; and
- Conservatively assuming that a typical staff vehicle is 7m in length. (i.e. 5.5m for vehicle length and 1.5m stopping distance between cars).

Based on the above, it is calculated that the storage queue length required is 10 vehicles (77m).

As there is 80m of storage in the site for the refuelling facility, there is sufficient storage space to accommodate the queuing of both light vehicles and heavy vehicles at the refuelling facility.

It is noted that although there is sufficient storage capacity space to accommodate queuing of both light vehicles and heavy vehicles at both the wash bay and refuelling facility, in the unlikely event the queue exceeds the storage capacity space, protocols will be in place as part of the vehicle management plan to ensure the queue does not go beyond the site boundary and spill onto the surrounding road network.

7.2 Access from Flinders Highway

7.2.1 Sight distance assessment

As discussed in Section 2.8.2 of this report, the sight distances at the existing site accesses to vehicles travelling both northbound and southbound meet the requirements of AS 2890.2 Figure 3.3.

No changes are proposed to the existing accesses as part of the camp hub.

7.2.2 Turn lane requirement

Minimum requirement

The *Queensland Government Road Planning and Design Manual Edition 2: Volume 3 Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (Qld V3 Supplement) specifies warrants for providing left and right turn treatments at unsignalised intersections where the cost of the intersection upgrade is considered impractical. These warrants apply to two-lane two-way roads (2L2W). Figure 13 below shows the volumes of traffic at intersections subject to a speed limit between 70km/h and 100km/h which would warrant turn treatments.

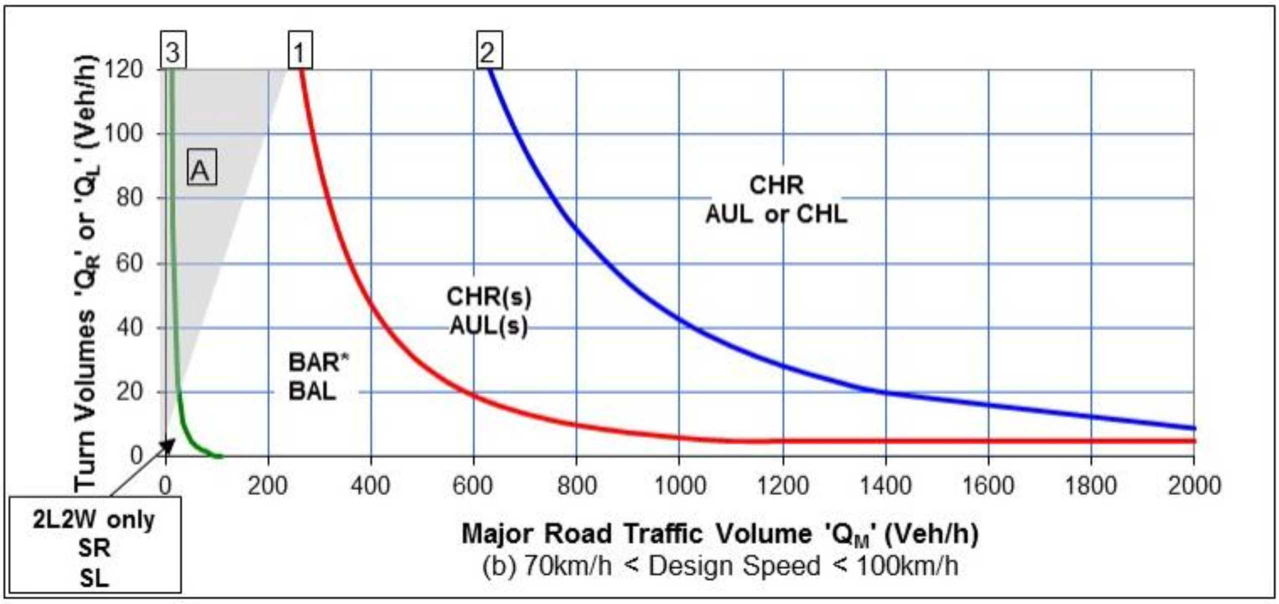

Figure 13: Warrants for turn treatments (data source: Queensland Government Road Planning and Design Manual Edition 2, 2021)

The expected opposing movements to the right and left turners into the camp hub is shown in Table 12.

Table 12: Opposing movements to turning vehicles (data source: pitt&sherry, 2023)

Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
	QM Right	QM Left		
AM	63	24	0	0
PM	161	24	98	98

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided.

Addition of Channelisation

It can be beneficial on large highways, such as the Flinders Highway to provide channelised right turn (CHR) treatments.

CHR treatments provide a protected right turn movement outside the vehicle travel lane, unlike BAR treatments which require the through vehicle to divert to the left if a vehicle is turning right. The safety risks of a BAR and CHR have been assessed in Section 7.3.

7.2.3 Intersection layout assessment

Designs have been completed for the minimum turn lane requirements (BAL/BAR) and addition of channelised turns (CHR/AUL) and are shown in Appendix E.

The designs show that vehicles up to a B-double truck can turn right and left independently and safely in the design. The can also turn simultaneously with an 8.8m service vehicle which would be the worst-case scenario under typical operation.

7.3 Road safety assessment

7.3.1 Assessment method

Risk ratings

The risk ratings in the *Austroads Guide to Road Safety Part 6A: Implementing Road Safety Audits* were used to assess the potential for hazards associated with additional traffic accessing Hughenden Camp from the Flinders Highway.

Potential issues identified have been rated based on the likelihood of an operational hazard occurring and the potential consequence of that hazard.

Likelihood

The likelihood of a hazard and a consequential crash occurring is shown in Table 13.

Table 13: Likelihood of a hazard/crash occurring (Austroads 2019)

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five to ten years
Improbable	Less often than once every ten years

Consequence

The consequence of a crash occurring is shown in Table 14.

Table 14: Consequence of a safety hazard on crash severity (Austroads 2019)

Severity	Description	Examples
Catastrophic	Likely multiple deaths.	• High-speed, multi-vehicle crash on a freeway • Car runs into crowded bus stop • Bus and petrol tanker collide; and • Collapse of a bridge or tunnel.
Serious	Likely death or serious injury.	• High or medium speed single vehicle collision • High or medium speed with a fixed roadside object; and • Pedestrian or cyclists struck by a car.
Minor	Likely minor injury.	• Some low-speed vehicle collisions • Cyclist falls from bicycle at low speed; and • Left turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only.	• Some low-speed vehicle collisions • Pedestrian walks into object (no head injury); and • Car reverses into post.

Resulting level of risk and treatment

The level of risk is dependent on the likelihood and consequence of the hazard and is shown in Table 15. The treatment approach that should be applied is shown in Table 16.

Table 15: Resulting level of risk (Austroads 2019)

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

Table 16: Treatment approach (Austroads 2019)

Risk	Suggested treatment approach
Intolerable	Must be corrected
High	Should be corrected or the risk significantly reduced, even if the treatment cost is high
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate but not high
Low	Should be corrected or the risk reduced if the treatment cost is low

7.3.2 Safety assessment

A road safety assessment has been prepared for the following intersections:

- Flinders Highway and the Unnamed Road to Hughenden Camp; and
- Unnamed Road to Hughenden Camp and Hughenden Camp access point.

A risk assessment showing mitigations is shown in Table 17.

Table 17: Road Safety Risk Assessment

<table>
<tr><th rowspan="2">Location</th><th rowspan="2">Issue</th><th colspan="3">Pre Mitigated Risk</th><th rowspan="2">Additional management measures</th><th colspan="3">Residual Risk</th></tr>
<tr><th>Likelihood</th><th>Consequence</th><th>Level of risk</th><th>Likelihood</th><th>Consequence</th><th>Level of risk</th></tr>
<tr><td rowspan="2">Flinders Highway/ Unnamed Road to Hughenden Camp</td><td rowspan="2">Hughenden Camp will generate additional right turning vehicles from the Flinders Highway into the Unnamed Road to Hughenden Camp. This results in an additional risk of a right rear collision.
This risk is further exacerbated by the following items:
• High percentage of heavy vehicles on the Flinders Highway as well as being an approved route for road trains
• High speed environment
• Flinders Highway is utilised by unfamiliar users (i.e. tourists) at times
• Drivers returning to site may be fatigued; and
• Drivers on the Flinders Highway may have travelled long distances and may be fatigued.</td><td rowspan="2">Probable</td><td rowspan="2">Serious</td><td rowspan="2">Intolerable</td><td>BAR (and BAL) Treatment
Install a BAR as required by the Qld V3 Supplement.</td><td>Occasional</td><td>Serious</td><td>High</td></tr>
<tr><td>CHR (and AUL) treatment
Install a CHR to provide additional safety beyond the requirements of the Qld V3 Supplement.</td><td>Improbable</td><td>Serious</td><td>Medium</td></tr>
<tr><td>Unnamed Road to Hughenden Camp/ Hughenden Camp Access Point</td><td>Measured sight distance to west: 150m
Required sight distance: 222m
Insufficient sight distance to west, limited by vegetation.
This has the potential to result in a high-speed collision causing death or serious injury.</td><td>Occasional</td><td>Minor</td><td>Medium</td><td>• Remove the vegetation, if practical and feasible, otherwise trim the vegetation that is within the sight distance
• Inspect the condition of the road network being used for the construction works prior to construction and periodically during construction to identify any sight distance obstructions that can be rectified. This may commonly relate to overgrown trees/ shrubs/ grasses
• Encourage drivers associated with the project to report any sight distance concerns that may impact the safety of drivers. This information will supplement/ inform any periodic inspections. Consideration may be given to more advanced reporting system such as electronic reporting systems using phones and GPS; and
• Where specific reports and/ or periodic road condition inspections determine that vegetation maintenance is required, perform vegetation maintenance. This may include mowing grass, removing tree branches and/or clearing re-sprouting vegetation, in consultation with the relevant road authority.</td><td>Improbable</td><td>Minor</td><td>Low</td></tr>
</table>

Commentary

At the Flinders Highway/ Unnamed Road to Hughenden Camp intersection, there is considered to be an intolerable level of risk should no turn lanes be provided. With the inclusion of a BAL/BAR there is a high resulting level of risk, with an occurrence of occasional - once every five to ten years. As Hughenden Camp would only operate for two years, a BAL/BAR arrangement could be considered acceptable as the speed limit on the Flinders Highway in this location is 80km/h and sight distances are excellent. The CHR/AUL arrangement provides an additional level of safety and should be considered if the risk is to be minimised.

At the Unnamed Road to Hughenden Camp/ Hughenden Camp Access Point, the sight distance to the west is limited by vegetation. If the vegetation can be trimmed or removed then the sight distance would be excellent. Removal of the vegetation would result in a low risk and effective removal of the risk as a result of insufficient sight distance.

7.4 Car parking assessment

7.4.1 Car parking requirement

Clause A011.5 of the Planning Scheme specifies car parking requirements for the camp hub at a rate as follows:

- 1 car parking space per 2 employees plus 1 car park per 30m^2 GFA of office or part there of.

Based on the above, the Hughenden camp hub is required to provide 140 car parking spaces.

7.4.2 Car parking provision

As discussed, a total of 171 car parking spaces and 20 mini-van parking spaces are provided within the camp hub car park. There are also further opportunities for car parking spaces and heavy vehicle parking spaces identified at various locations within the site.

The car parking provision exceeds the car parking requirements specified within the town plan as calculated above and detailed in the report prepared by pitt&sherry titled CopperString 2032 Early Works Package – Camps Hubs MID Submission Support.

It is noted that based on the expected travel to and from the site, the parking provision is anticipated to more than sufficiently accommodate the parking demand generated by the site.

7.4.3 Car parking layout

The car parking layout is presented on Drawing CU2-HU00-DRG-PAS-100-0020 of the detailed site plans included in Appendix A.

The car parking layout has been reviewed against the *Australian Standard AS/NZS2890.1:2004 Parking facilities: Off-Street car parking* (AS 2890.1) requirements.

In order to determine the class of parking, Table 1.1 of AS2890.1 has been reviewed. An excerpt of Table 1.1 of AS2890.1 is shown below in Figure 14.

TABLE 1.1

CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

Figure 14: Table 1.1 of Australian Standard AS/NZS 2890.1:2004 (data source: Australian Standard AS2890.1, 2023)

As the camp hub will only be used as accommodation for the staff and workers of the CopperString 2032 Project, the car park was assessed against the User Class 1A requirements of AS 2890.1. The assessment is shown below in Table 18.

Table 18: Car parking dimensions (data source: pitt&sherry, 2023)

Car Park	Feature	Required	Proposed
User Class 1A – staff parking	Parking Space Width	2.4m	2.7m
	Parking Space Length	5.4m	5.4m
	Parking Aisle Width	5.8m	5.8m

Based on the above, the proposed car parking dimensions meet the requirements of AS 2890.1.

7.4.4 Accessible parking

As per the National Construction Code (NCC), accessible parking is not applicable for the camp hub as the use of the camp hub is to provide accommodation for workers who will undertake works which is physically demanding in nature.

It is noted that the parking for the camp hub should be monitored and upgraded to suit any changes in operation.

7.5 Pavement assessment

A Pavement Impact Assessment has been completed and presented within the Traffic Impact Assessment Reports being prepared for the CopperString 2032 project.

7.6 Pedestrian connectivity assessment

To ensure pedestrian accessibility and safety throughout the camp hub, pedestrian connections in the form of footpaths and designated pedestrian crossings will be provided within the camp hub as part of the vehicle and pedestrian management plan.

8. Conclusion

The CopperString 2032 Project (the Project) is an extra high voltage transmission system from Townsville to Mt Isa. Due to the small accommodation capacity of many of the local towns along the CopperString 2032 Project route, provision of temporary camp hubs at certain townships is required. CPB have engaged pitt&sherry to prepare a Traffic Impact Assessment (TIA) for the construction camps to be constructed in Hughenden.

8.1 Summary of Findings

The findings presented in this TIA may be summarised as follows:

- The Public Access Road to the camp will need to be widened to a width of 8m as discussed in CopperString 2032 Traffic Impact Assessment Report – FSC
- The modelled intersections are expected to continue to operate well in the peak operational phase of the camp with minimal queues and delays experienced on all approaches
- The LOS for the Public Access Road to the camp is expected to remain at free flow conditions (i.e. LOS A) during the peak operational phase
- The increased pedestrian and vehicular traffic movements generated by the proposed camp hub is not expected to increase the frequency or severity of crashes in the vicinity of the camp hub
- A swept path assessment shows that the site accesses can accommodate the vehicles required to access the site
- The sight distances at the camp hub access to vehicles travelling in both directions the requirements of the Australian Standard
- As a BAR and BAL turn lane is proposed to be installed along Public Access Road at the camp hub access, the site access will comply with relevant guidelines
- There is a requirement to provide turning lanes at the Flinders Highway/ Unnamed Road to Hughenden Camp intersection. A BAR/BAL is the minimum requirement or a CHR/AUL can provide additional safety
- There is sufficient storage capacity space to accommodate queuing of both light vehicles and heavy vehicles at both the wash bay and refuelling facility; and
- The car parking provision exceeds the car parking requirements specified within the *Shire of Flinders Planning Scheme 2017* and is anticipated to be sufficient to more than sufficiently accommodate parking demand generated by the site.

8.2 Summary of Upgrades Required

The following upgrades are required on the adjacent road network to ensure safe and efficient operation of the camp hub:

- Widen the Public Access Road to the camp hub to as discussed in the CopperString 2032 Traffic Impact Assessment Report – FSC
- Provide a BAR and BAL turn lane along the Public Access Road at the site access; and
- Provide a BAR/BAL as minimum or a CHR/AUL for additional safety at the Flinders Highway/ Unnamed Road to Hughenden Camp intersection.

9. Certification

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the Professional Engineers Act 2002 as competent in my areas of nominated expertise, I understand and recognise:

- The significant role of engineering as a profession
- The community has a legitimate expectation that my certification affixed to this engineering work can be trusted; and
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

- I am satisfied that all submitted components comprising this Traffic Impact Assessment, listed in the following table, have been completed in accordance with the *Guide to Traffic Impact Assessment* published by the Queensland Department of Transport and Main Roads and using sound engineering principles
- where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment
- the outcomes of this Traffic Impact Assessment are a true reflection of results of assessment; and
- I believe the strategies recommended for mitigating impacts by this Traffic Impact Assessment embrace contemporary practice initiatives and will deliver the desired outcomes.

Name:	Rebekah Ramm	Registration Number	29697
RPEQ Competency:	Civil		
Signature:	RRamm	Date:	30/04/2024
Postal Address:	199 Macquarie Street, HOBART TAS 7000	Email:	rramm@pittsh.com.au

Important information about your report

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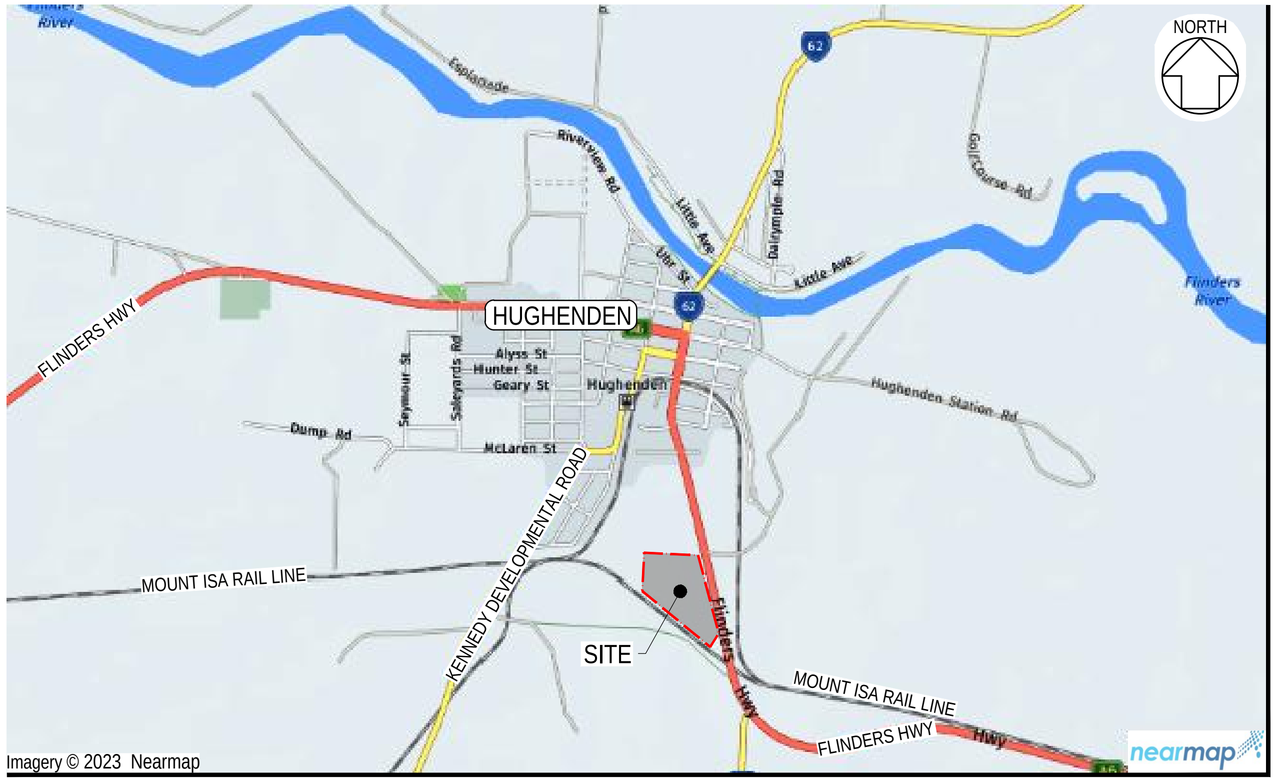
Hughenden Camp Plans

Appendix A

pitt&sherry

UGL / CPB JV
COPPERSTRING 2032 - CAMPS
CONSTRUCTION FACILITIES
HUGHENDEN - CAMP & LAYDOWN



LOCALITY
N.T.S.

DRAWING INDEX

DRAWING NUMBER:	TITLE:	REVISION:
CU2-HU00-DRG-PAS-100-0001	HUGHENDEN - CAMP & LAYDOWN - LOCALITY AND DRAWING INDEX	2
CU2-HU00-DRG-PAS-100-0002	HUGHENDEN - CAMP & LAYDOWN - GENERAL ARRANGEMENT PLAN	2
CU2-HU00-DRG-PAS-100-0003	PLAN REMOVED FROM SET	2
CU2-HU00-DRG-PAS-100-0004	HUGHENDEN - CAMP & LAYDOWN - UTILITIES CONNECTION PLAN	1
CU2-HU00-DRG-PAS-100-0005	HUGHENDEN - CAMP & LAYDOWN - CIVIL PLAN	0
CU2-HU00-DRG-PAS-100-0006	HUGHENDEN - CAMP & LAYDOWN - EROSION AND SEDIMENT CONTROL PLAN	0
CU2-HU00-DRG-PAS-100-0007	HUGHENDEN - CAMP & LAYDOWN - ELECTRICAL AND LIGHTING PLAN	1
CU2-HU00-DRG-PAS-100-0008	HUGHENDEN - CAMP & LAYDOWN - WATER AND WASTEWATER PLAN	1
CU2-HU00-DRG-PAS-100-0020	HUGHENDEN - CAMP & LAYDOWN - CARPARK LAYOUT PLAN	0
CU2-HU00-DRG-PAS-100-0021	HUGHENDEN - CAMP & LAYDOWN - STORMWATER LAYOUT PLAN	0

2

2

CLIENT REFERENCE: CU2-HU00-DRG-PAS-100-0900

REFERENCE FILES ATTACHED:

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
2	REVISION UPDATE - ISSUE FOR APPROVAL	D.McKenzie	-	A.Bool	08/02/2024
1	REVISION UPDATE - ISSUE FOR APPROVAL	C.Vanderreyden	-	A.Bool	22/12/2023
0	ISSUE FOR APPROVAL	D.McKenzie	-	A.Bool	08/09/2023

APPROVED
ORIGINAL COPY ON FILE
"e" SIGNED BY
Arthur Bool RPEQ 10564
SIGNED
DATE 08/09/2023

SCALE (PLOTTED FULL SIZE) -

SHEET SIZE A3

pitt&sherry

pittsh.com.au Phone 1300 748 874 ABN 67 140 184 309

CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN LOCALITY AND DRAWING INDEX

DATUMS: GDA20 Z55

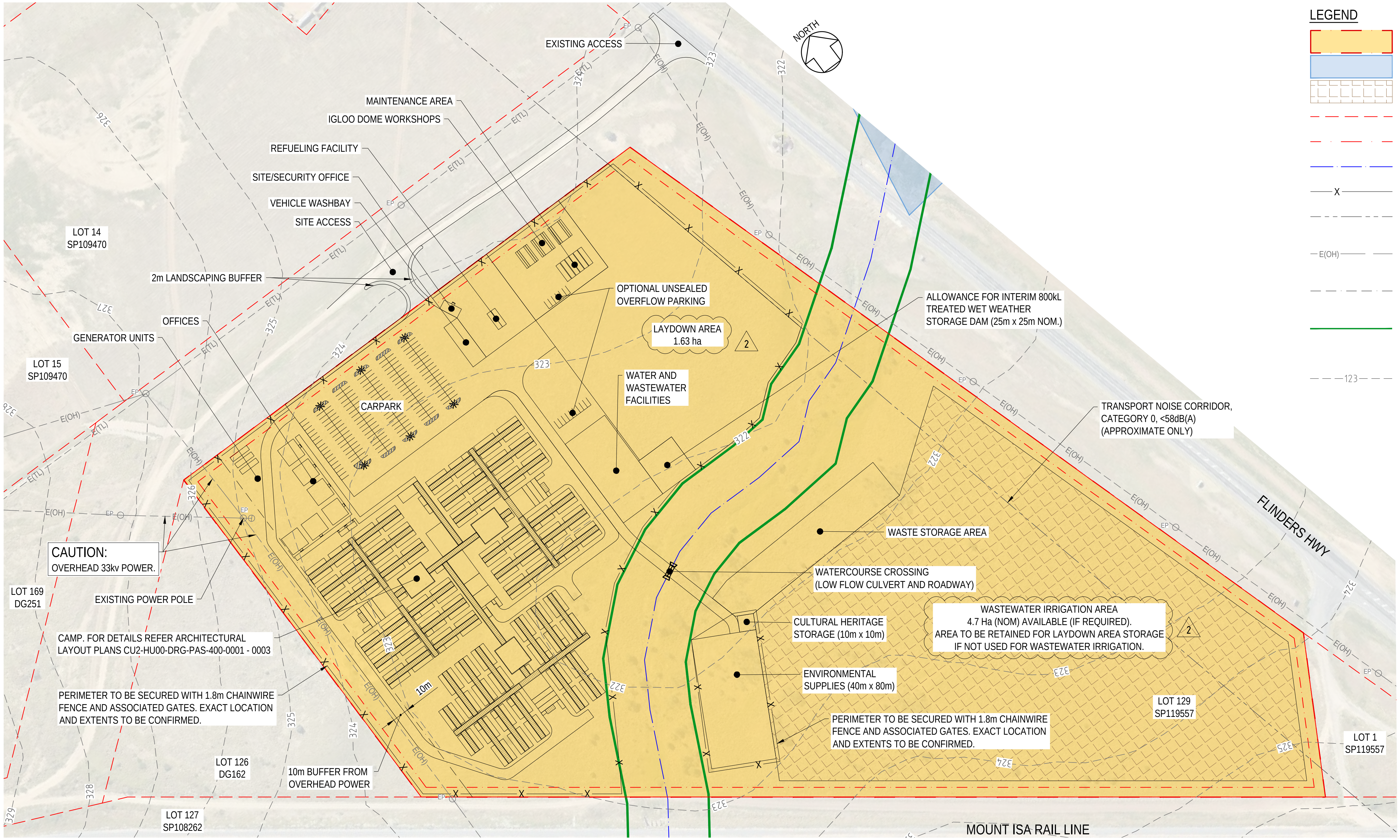
CLIENT No CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0001

REVISION 2

PRINT IN COLOUR

Feb. 9, 24 - 11:22:20 Name: CU2-HU00-DRG-PAS-100-0001.dwg Updated By: David McKenzie



LEGEND

- LAND ACQUISITION AREA
- FLOODPLAIN EXTENT - AEP UNKNOWN
- WASTEWATER IRRIGATION AREA (IF REQUIRED)
- DCDB CADASTRE
- BOUNDARY SETBACKS
- WATERCOURSE - DIGITISED
- PERIMETER FENCE
- TRANSPORT NOISE CORRIDOR (APPROXIMATE)
- E(OH) OVERHEAD HV TRANSMISSION LINE (APPROXIMATE ONLY)
- OVERHEAD HV TRANSMISSION LINE - 10 m SETBACK
- MSES - REGULATED VEGETATION (INTERSECTING A WATERCOURSE) SETBACK 25m EITHER SIDE
- 123 EXISTING CONTOURS - 1m INTERVAL (Geoscience Australia - 1 second SRTM Derived Smoothed)

NOTES:

THE LAYOUT OF FACILITIES AND CAMP ACCOMMODATION AS SHOWN IS PRELIMINARY AND REPRESENTATIVE OF THE INTENT. THE LAYOUT IS SUBJECT TO CHANGE PENDING REVIEW OF DETAILED GROUND SURVEY, FLOOD STUDY DATA, GEOTECHNICAL INVESTIGATION DATA, LOCAL OR STATE PLANNING PERMIT CONDITIONS AND BUSHFIRE THREAT ASSESSMENTS. OF SPECIFIC NOTE IS THE BUSHFIRE THREAT ASSESSMENT INCLUDED AS APPENDIX I TO THE DESIGN REPORT (UGL CPB REFERENCE NUMBER CU2-PW00-REP-PAS-100-0001). THIS ASSESSMENT WAS COMPLETED BY A SPECIALIST CONSULTANT AFTER THE CAMP DESIGN WAS INITIALLY COMPLETED (REVISION 0) AND HAS BEEN INCLUDED IN REVISION 04 OF THE DESIGN REPORT. IT RECOMMENDS MINOR ADJUSTMENTS TO THE POSITIONING OF SOME ACCOMMODATION MODULES AT SOME CAMP HUBS.

TO PROTECT THE ENVIRONMENT, CLEARING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND CONFINED TO THAT REQUIRED FOR EARTHWORKS, DRAINAGE AND FENCING. EXISTING TREES, SHRUBS AND GRASSES NOT AFFECTED BY THE ABOVE WORKS SHALL BE RETAINED AND DISTURBED AS LITTLE AS POSSIBLE.

-WARNING-

BEWARE OF UNDERGROUND SERVICES

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REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1120 EX; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1115; CU2-HU00-XRF-PAS-100-1190; CU2-HU00-XRF-PAS-100-1130; CU2-HU00-XRF-PAS-100-1160

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
2	REVISION UPDATE - ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/02/2024
1	NOTE ADDED - ISSUE FOR APPROVAL	C.Vanderreyden	D.McKenzie	A.Bool	22/12/2023
0	ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/09/2023

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Arthur Bool RPEQ 10564
SIGNED
DATE 08/09/2023

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SCALE IN METRES - 1:2500

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CLIENT: UGL / CPB JV
PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES
STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN GENERAL ARRANGEMENT PLAN
DATUMS: GDA20 Z55
CLIENT No: CU2
DRAWING No. CU2-HU00-DRG-PAS-100-0002
REVISION 2
PRINT IN COLOUR

Feb. 8, 24 - 16:19:56 Name: CU2-HU00-DRG-PAS-100-0002-0003.dwg Updated By: David McKenzie

REMOVED FROM SET

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1120 EX; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1115; CU2-HU00-XRF-PAS-100-1190; CU2-HU00-XRF-PAS-100-1130; CU2-HU00-XRF-PAS-100-1160

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
2	REVISION UPDATE - ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/02/2024
1	NOTE ADDED - ISSUE FOR APPROVAL	C.Vanderreyden	D.McKenzie	A.Bool	22/12/2023
0	ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/09/2023

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: PLAN REMOVED FROM SET

DATUMS: GDA20 Z55

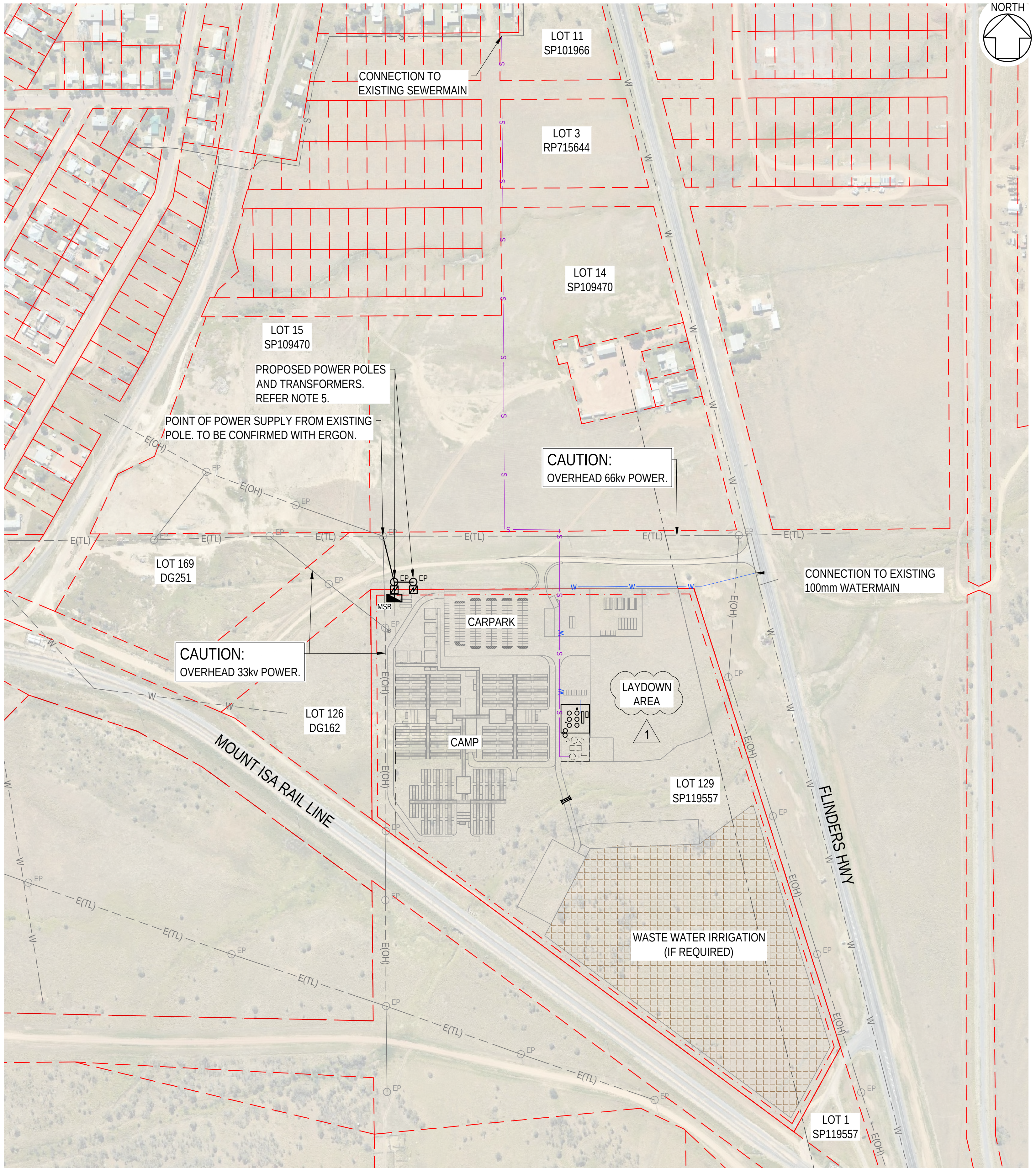
CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0003

REVISION 2

PRINT IN COLOUR

Feb. 8, 24 - 14:31:26 Name: CU2-HU00-DRG-PAS-100-0002-0003.dwg Updated By: David McKenzie



LEGEND

WATER AND WASTE WATER

- POTABLE WATERMAIN
- GRAVITY SEWER LINE
- EXISTING WATERMAIN
- EXISTING SEWER LINE

ELECTRICAL

- E(OH) ELECTRICAL OVERHEAD - DESIGN
- E(U) ELECTRICAL UNDERGROUND - DESIGN
- EP POLE - DESIGN
- TRANSFORMER - DESIGN
- MSB MAIN SWITCHBOARD (MSB)
- E(TL) EXISTING ELECTRICAL OVERHEAD - 66kv
- E(OH) EXISTING ELECTRICAL OVERHEAD - 33kv
- EP POLE - EXISTING

GENERAL

- LAND ACQUISITION AREA
- WASTEWATER IRRIGATION AREA (IF REQUIRED)
- DCDB CADASTRE
- BOUNDARY SETBACKS

1

UTILITIES NOTES:

WATER AND WASTE WATER

1. THE PREFERENCE OF THE PROJECT AND OF FLINDERS SHIRE COUNCIL IS TO CONNECT WASTEWATER TO THE MUNICIPAL SEWERAGE SYSTEM TO THE NORTH AS SHOWN. THE APPROXIMATE AREA OF LAND THAT MAY BE REQUIRED IF THIS SITE WAS TO BE APPROVED FOR TREATED ON-SITE WASTEWATER IRRIGATION IS ALSO SHOWN. HOWEVER, FLINDERS SHIRE COUNCIL HAS ADVISED IT WOULD BE UNLIKELY TO SUPPORT ON-SITE IRRIGATION AS THERE ARE MUNICIPAL WASTEWATER CONNECTIONS AVAILABLE WHICH SUIT THE TOWN PLANNING SCHEME. VIABILITY OF THE MUNICIPAL CONNECTIONS ARE TO BE CONFIRMED DURING DETAILED DESIGN.
2. WATER SUPPLY FOR POTABLE USES IS TO BE BY WAY OF THE EXISTING MAIN ALONG THE FLINDERS HIGHWAY. NON- POTABLE WATER CAN BE OBTAINED FROM BORE WATER SOURCES.

ELECTRICAL

3. WHERE PRACTICAL UGL/CPB JV'S PREFERENCE IS TO CONNECT TO AN ERGON ENERGY SUPPLY RATHER THAN OPERATE THE CAMP FROM GENERATORS.
4. ERGON TO PROVIDE NEW POINT OF SUPPLY AND CONNECTION FROM EXISTING 33kV OVERHEAD LINE ALONG THE WESTERN BOUNDARY OF THE SITE WHERE IT MEETS THE NORTHERN ACCESS ROAD.
5. EARLY ENGAGEMENT WITH ERGON ENERGY IS UNDERWAY AND ERGON HAVE ADVISED THAT FEEDER CAPACITY IS AVAILABLE TO MEET EXPECTED 1000kVA.
6. ERGON ADVISED THAT DUE TO DISTRIBUTION VOLTAGE OF 33kV, THAT 2 x 500kVA POLE MOUNTED TRANSFORMERS WILL NEED TO BE PROVIDED, WITH DETAILS TO BE CONFIRMED DURING DETAILED DESIGN.

TO PROTECT THE ENVIRONMENT, CLEARING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND CONFINED TO THAT REQUIRED FOR EARTHWORKS, DRAINAGE AND FENCING. EXISTING TREES, SHRUBS AND GRASSES NOT AFFECTED BY THE ABOVE WORKS SHALL BE RETAINED AND DISTURBED AS LITTLE AS POSSIBLE.

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P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
1	REVISION UPDATE - ISSUE FOR APPROVAL	D.McKenzie	C.Squires	A.Bool	08/02/2024
0	ISSUE FOR APPROVAL	D.McKenzie	C.Squires	A.Bool	08/09/2023

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Arthur Bool RPEQ 10564
Chris Squires RPEQ 22749
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SCALE IN METRES - 1:5000

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN UTILITIES CONNECTION PLAN

DATUMS: GDA20 Z55

CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0004

REVISION 1

PRINT IN COLOUR

Feb. 8, 24 - 15:36:05 Name: CU2-HU00-DRG-PAS-100-0004.dwg Updated By: David McKenzie

LEGEND

DESIGN

FILL AREA

CUT AREA

189 MAJOR CONTOUR - 1m INTERVAL

MINOR CONTOUR - 0.2m INTERVAL

PAVEMENT DESIGN

UNSEALED HARDSTAND
150mm THICK ROAD BASE GRAVEL
(CBR45 NOM)

UNSEALED HARDSTAND LAYDOWN
250mm THICK ROAD BASE GRAVEL
(CBR 45 NOM)

PARKING AREA AND INTERNAL SEALED ROADS:
2 COAT SPRAY SEAL
200mm THICK ROAD BASE GRAVEL
(CBR60-80 NOM)

ACCESS ROAD:
2 COAT SPRAY SEAL
480mm THICK ROAD BASE GRAVEL
(CBR 60-80 NOM)

GENERAL

LAND ACQUISITION AREA

FLOODPLAIN EXTENT - AEP UNKNOWN

WASTEWATER IRRIGATION AREA (IF REQUIRED)

DCDB CADASTRE

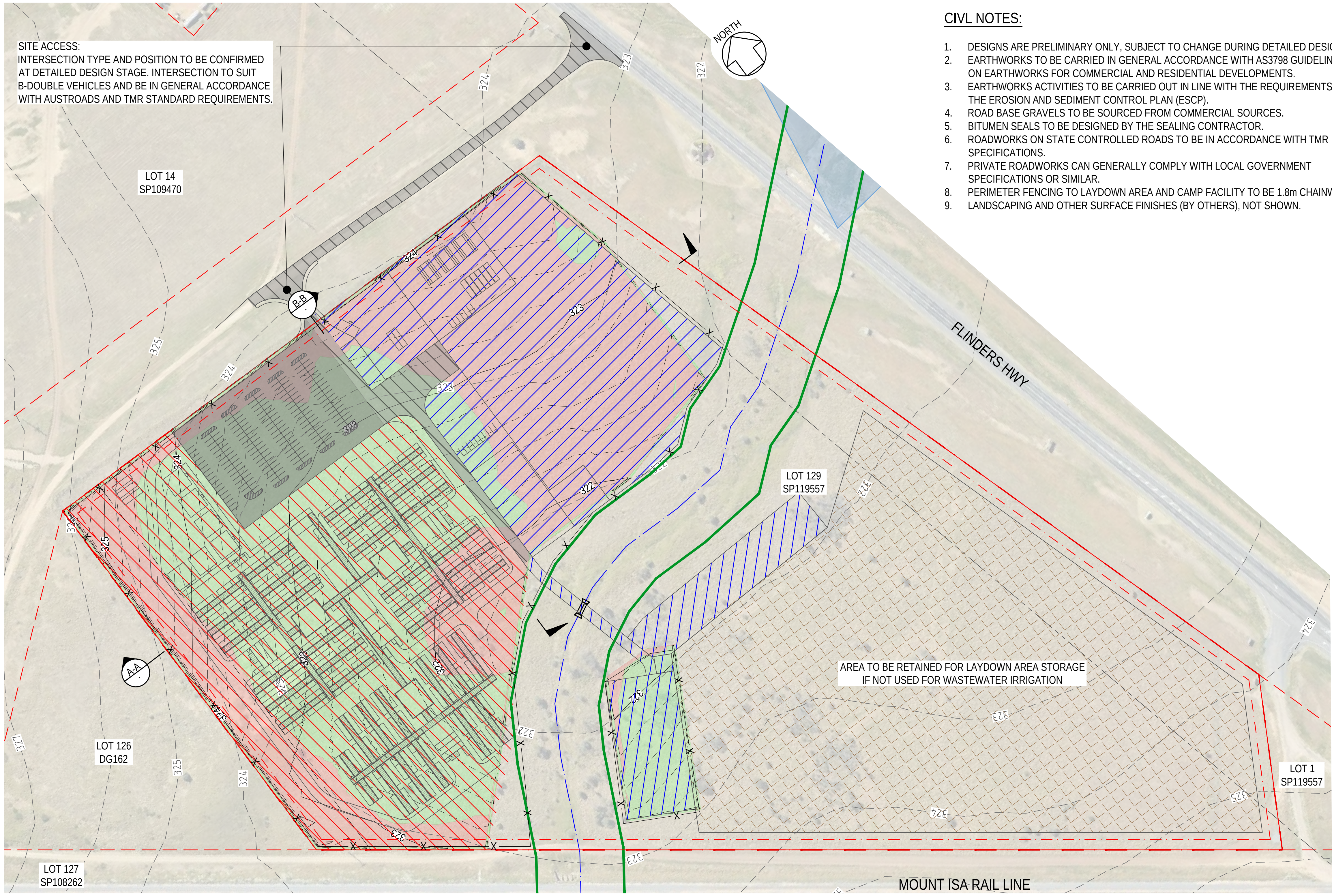
BOUNDARY SETBACKS

X PERIMETER FENCE

WATERCOURSE - DIGITISED

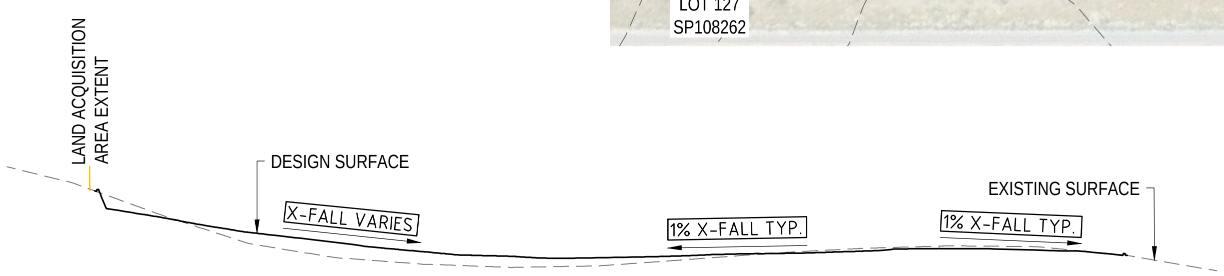
MSES - REGULATED VEGETATION
(INTERSECTING A WATERCOURSE)
SETBACK 25m EITHER SIDE

123 EXISTING CONTOURS - 1m INTERVAL
(Geoscience Australia - 1 second SRTM Derived Smoothed)

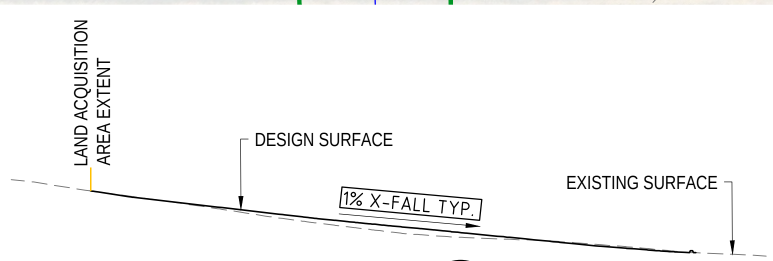


CIVL NOTES:

1. DESIGNS ARE PRELIMINARY ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. EARTHWORKS TO BE CARRIED IN GENERAL ACCORDANCE WITH AS3798 GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
3. EARTHWORKS ACTIVITIES TO BE CARRIED OUT IN LINE WITH THE REQUIREMENTS OF THE EROSION AND SEDIMENT CONTROL PLAN (ESCP).
4. ROAD BASE GRAVELS TO BE SOURCED FROM COMMERCIAL SOURCES.
5. BITUMEN SEALS TO BE DESIGNED BY THE SEALING CONTRACTOR.
6. ROADWORKS ON STATE CONTROLLED ROADS TO BE IN ACCORDANCE WITH TMR SPECIFICATIONS.
7. PRIVATE ROADWORKS CAN GENERALLY COMPLY WITH LOCAL GOVERNMENT SPECIFICATIONS OR SIMILAR.
8. PERIMETER FENCING TO LAYDOWN AREA AND CAMP FACILITY TO BE 1.8m CHAINWIRE.
9. LANDSCAPING AND OTHER SURFACE FINISHES (BY OTHERS), NOT SHOWN.



DETAIL A-A
SCALE H 1:2500
V 1:250



DETAIL B-B
SCALE H 1:2500
V 1:250

TO PROTECT THE ENVIRONMENT, CLEARING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND CONFINED TO THAT REQUIRED FOR EARTHWORKS, DRAINAGE AND FENCING. EXISTING TREES, SHRUBS AND GRASSES NOT AFFECTED BY THE ABOVE WORKS SHALL BE RETAINED AND DISTURBED AS LITTLE AS POSSIBLE.

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P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
0	ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/09/2023

APPROVED
ORIGINAL COPY ON FILE "e" SIGNED BY
Arthur Bool RPEQ 10564
SIGNED
DATE 08/09/2023

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SHEET SIZE: A3

25 0 25 50 75 100
SCALE IN METRES - 1:2500

2.5 0 2.5 5 7.5 10
SCALE IN METRES - 1:250

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN CIVIL PLAN

DATUMS: GDA20 Z55

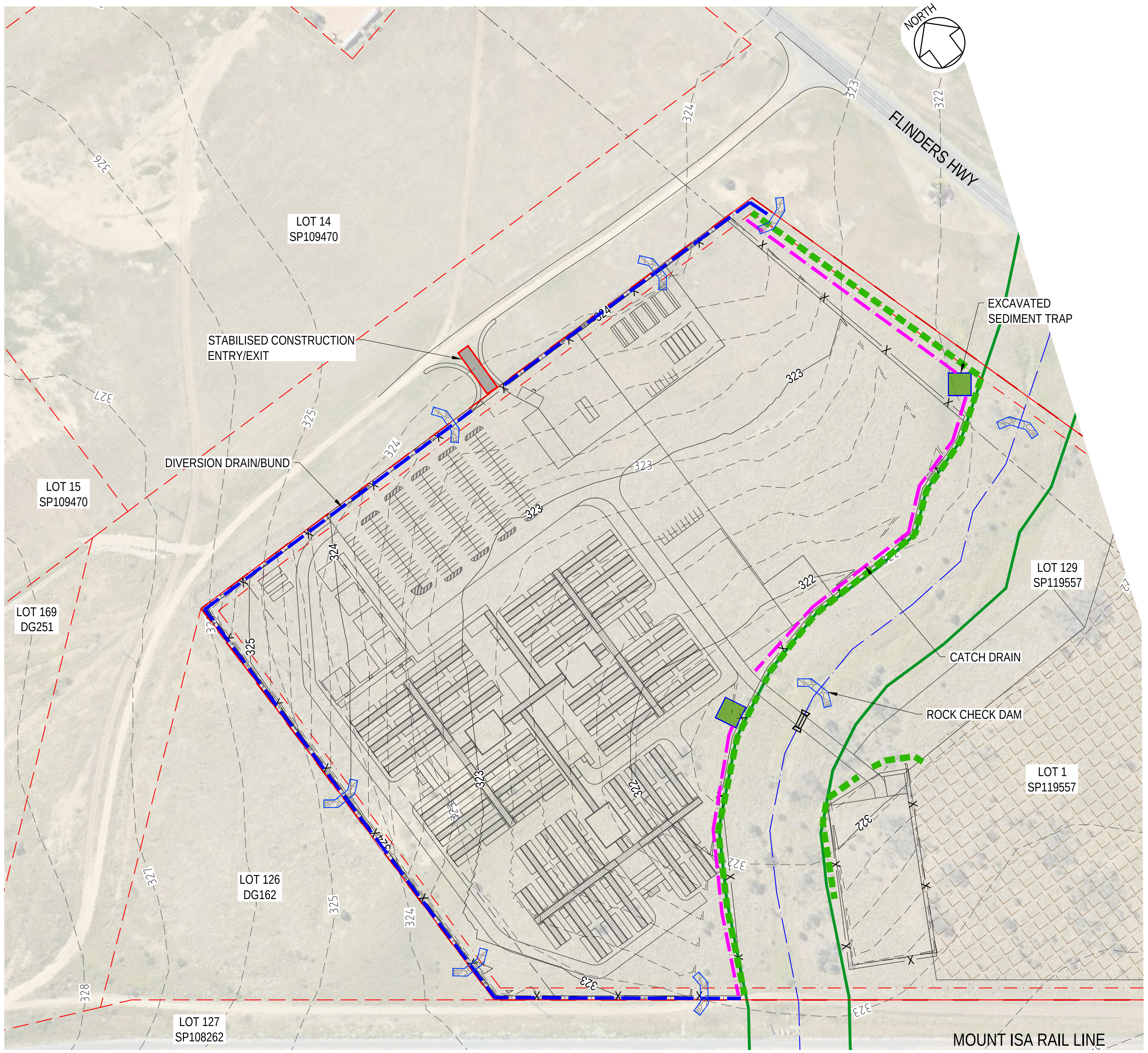
CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0005

REVISION: 0

PRINT IN COLOUR

Feb. 8, 24 - 14:33:54 Name: CU2-HU00-DRG-PAS-100-0005.dwg Updated By: David McKenzie



LEGEND

DESIGN

- EXCAVATED SEDIMENT TRAP
- SEDIMENT FENCE OR MULCH BERM
- DIVERSION DRAIN/BUND
- CATCH DRAIN
- STABILISED CONSTRUCTION ENTRY/EXIT
- ROCK CHECK DAMS

GENERAL

- LAND ACQUISITION AREA
- WASTEWATER IRRIGATION AREA (IF REQUIRED)
- DCDB CADASTRE
- BOUNDARY SETBACKS
- X — PERIMETER FENCE
- WATERCOURSE - DIGITISED
- TRANSPORT NOISE CORRIDOR (APPROXIMATE)
- MSES - REGULATED VEGETATION (INTERSECTING A WATERCOURSE) SETBACK 25m EITHER SIDE
- E(OH) — OVERHEAD HV TRANSMISSION LINE (APPROXIMATE ONLY)
- OVERHEAD HV TRANSMISSION LINE - 10 m SETBACK
- 123 — MAJOR CONTOUR - 1m INTERVAL
- MINOR CONTOUR - 0.2m INTERVAL
- 123 — EXISTING CONTOURS - 1m INTERVAL (Geoscience Australia - 1 second SRTM Derived Smoothed)

CONSTRUCTION PHASE NOTES:

1. CONSTRUCTION PHASE EROSION AND SEDIMENT CONTROLS (ESC) ARE TO BE IN GENERAL ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION BEST PRACTICE GUIDELINES (IECA). STANDARD ESC MEASURES CAN BE ADOPTED FROM THE FOLLOWING IECA STANDARD DRAWINGS:
   - SEDIMENT FENCE: SF-01 AND SF-02
   - CONSTRUCTION EXIT: EXIT 01 AND EXIT 02.
   - ROCK CHECK DAM: RCD-01
   - FIBRE ROLL/COIR LOG: FR-01
   - FILTER FENCE: FF-01
   - EXCAVATED SEDIMENT TRAP: EST-01
   - ROCK FILTER DAM: RFD-01
2. THE SITE DESIGN AND CONSTRUCTION PHILOSOPHY IS TO MINIMISE THE AMOUNT OF DISTURBANCE AS MUCH AS POSSIBLE AND TO MAINTAIN GROUND COVERS. OTHER PRACTICES MAY INCLUDE:
   - LIMIT THE INTRODUCTION OF ENGINEERED CHANNELISATION OF WATER TO LIMIT EROSION AND MINIMISE CHANGING THE EXISTING DRAINAGE REGIME.
   - ENSURE CONSTRUCTION VEHICLE ACCESS IS RESTRICTED TO WORK ZONES ONLY.
   - REMOVE TOPSOIIL ONLY FROM DISTURBED AREAS AND STOCKPILE FOR LATER REUSE.
   - DIVERT UPSTREAM FLOWS AROUND THE WORKSITE.
   - ENSURE EARTHWORK FILLS AND PAVEMENTS ARE ADEQUATELY COMPACTED AND PROTECTED FROM EXCESS FLOWS.
   - PROTECT STOCKPILES FROM EROSION AND RUNOFF.
   - PLACE STOCKPILES AWAY FROM VEGETATION 2-5m MIN.
   - LIMIT STOCKPILES TO 3m MAXIMUM HEIGHT.
   - APPLY TOPSOIL BUNDS ON THE SITE INTERMITTENTLY WHERE VIABLE TO MANAGE OVERLAND FLOWS
   - APPLY SUITABLE GROUND COVER PROTECTIONS (POLYMERS, ROCK MULCH, GEOTEXTILES, VEGETATION) TO EXPOSED SURFACES AND MAINTAIN.
   - INSTALL DOWNSTREAM SEDIMENT FENCES AND OR MULCH BERMS.
   - WHERE CHANNELS ARE TO BE CONSTRUCTED, AVOID V-SHAPED BASES, INSTEAD ADOPT FLAT BASED DRAINS TO MINIMISE SCOUR.
   - ENSURE BANKS AND BATTERS ARE ADEQUATELY PROTECTED, STABILISED AND COVERED.
   - MONITOR MAINTAIN AND UPGRADE THE EROSION AND SEDIMENT CONTROLS AS REQUIRED.
3. BULK EARTHWORKS OPERATIONS SHOULD PREFERABLY BE PERFORMED IN THE DRIER SEASONS WHICH TENDS TO BE THE WINTER MONTHS.
4. THE CONSTRUCTION MANAGEMENT TEAM SHALL MONITOR RAINFALL FORECASTS AND ENSURE ESC DEVICES ARE IN PLACE.
5. ESC DEVISES SHALL BE INSPECTED AND MAINTAINED IMMEDIATELY BEFORE AND AFTER RAINFALL EVENTS AS A MINIMUM.
6. A LOGBOOK OF ESC INSPECTIONS, INCIDENTS AND RECTIFICATIONS SHALL BE MAINTAINED ON SITE.
7. ESC DEVICES ARE TO BE INSTALLED IN ALIGNMENT WITH THE CONSTRUCTIONS SCHEDULE. ADDITIONAL ESC MEASURES MAY BE INCORPORATED BY THE SITE TEAM AS REQUIRED.

OPERATION PHASE NOTES:

8. REFER TO THE RELEVANT STORMWATER MANAGEMENT PLAN FOR OPERATIONAL PHASE MANAGEMENT. FOR OTHER CONSIDERATIONS REFER TO THE NOTES BELOW.
9. THE KEY COMPONENT OF OPERATIONAL PHASE ESC IS TO MINIMISE DISTURBANCE AND CARRY OUT INSPECTIONS AND MAINTENANCE OF EARTHWORKS, DRAINAGE AND ROADWAYS AS WELL AS GROUND COVERS.
10. SITE SHALL BE MANAGED TO LIMIT THE USE OF VEHICLE USE OVER UNDISTURBED AREAS.
11. ELEMENTS OF THE TEMPORARY ESC MEASURES MAY BE INCORPORATED INTO THE LONGER TERM OPERATIONAL PHASE (SAY 2-5 YEARS) IF VIABLE AND IF INSPECTIONS, MAINTENANCE AND UPGRADES ARE ROUTINELY CARRIED OUT.

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P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
0	ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/09/2023

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Arthur Bool RPEQ 10564

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DATE 08/09/2023

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SCALE IN METRES - 1:2500

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN EROSION AND SEDIMENT CONTROL PLAN

DATUMS: GDA20 Z55

CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0006

REVISION 0

PRINT IN COLOUR

Feb. 8, 24 - 14:33:44 Name: CU2-HU00-DRG-PAS-100-0006.dwg Updated By: David McKenzie

LEGEND

ELECTRICAL AND LIGHTING

E(OH)	ELECTRICAL OVERHEAD - DESIGN
E(U)	ELECTRICAL UNDERGROUND - DESIGN
EP	POLE - DESIGN
	TRANSFORMER - DESIGN
	LIGHT POLE - DESIGN
MSB	MAIN SWITCHBOARD (MSB)
E(TL)	EXISTING ELECTRICAL OVERHEAD - 66kv
E(OH)	EXISTING ELECTRICAL OVERHEAD - 33kv
EP	POLE - EXISTING

GENERAL

	LAND ACQUISITION AREA
	WASTEWATER IRRIGATION AREA (IF REQUIRED)
	DCDB CADASTRE
	BOUNDARY SETBACKS
X	PERIMETER FENCE
	WATERCOURSE - DIGITISED

ELECTRICAL AND LIGHTING NOTES:

1. WHERE PRACTICAL UGL/CPB JV'S PREFERENCE IS TO CONNECT TO AN ERGON ENERGY SUPPLY RATHER THAN OPERATE THE CAMP FROM GENERATORS.
2. ERGON ENERGY TO PROVIDE NEW POINT OF SUPPLY BY CONNECTING TO EXISTING 33kV OVERHEAD LINE ALONG THE WESTERN BOUNDARY OF THE SITE WHERE IT MEETS THE NORTHERN ACCESS ROAD. EARLY ENGAGEMENT WITH ERGON ENERGY IS UNDERWAY TO CONFIRM SUITABILITY OF THE PROPOSED CONNECTION POINT.
3. EARLY ADVICE FROM ERGON INDICATES THAT 2 x POLE MOUNTED TRANSFORMERS WILL BE NEEDED TO MEET EXPECTED 1000kVA DEMAND.
4. PROPOSED GENERATOR LOCATION - GENERATORS ARE EXPECTED AS A BACK-UP SUPPLY (OR AS THE MAINS SUPPLY - REFER NOTE.2).
5. CAR PARK LIGHTING TO BE PROVIDED IN ACCORDANCE WITH AS/NZS 1158.3.1 SUB-CATEGORY PC3. FOR THIS AREA LIGHTING IS EXPECTED TO CONSIST OF APROXIMATELY EIGHT (8) X 6m POLES AT 35m SPACING AND LIGHTING ARRANGEMENT TO BE CONFIRMED.
6. LIGHTING TO COMPLY WITH AS4282 CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING, ZONE A2 LOW DISTRICT BRIGHTNESS.
7. GENERAL AREA LIGHTING WITHIN THE CONSTRUCTION CAMP TO BE PROVIDED FROM LIGHTING MOUNTED TO EACH PORTABLE BUILDING AND SUPPLEMENTED WHERE REQUIRED FOR WALKWAYS AND COMMON SPACES.

TO PROTECT THE ENVIRONMENT, CLEARING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND CONFINED TO THAT REQUIRED FOR EARTHWORKS, DRAINAGE AND FENCING. EXISTING TREES, SHRUBS AND GRASSES NOT AFFECTED BY THE ABOVE WORKS SHALL BE RETAINED AND DISTURBED AS LITTLE AS POSSIBLE.

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APPROVED

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Chris Squires RPEQ 22749

SIGNED

DATE 08/09/2023

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SCALE IN METRES - 1:2500

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN ELECTRICAL AND LIGHTING PLAN

DATUMS: GDA20 Z55

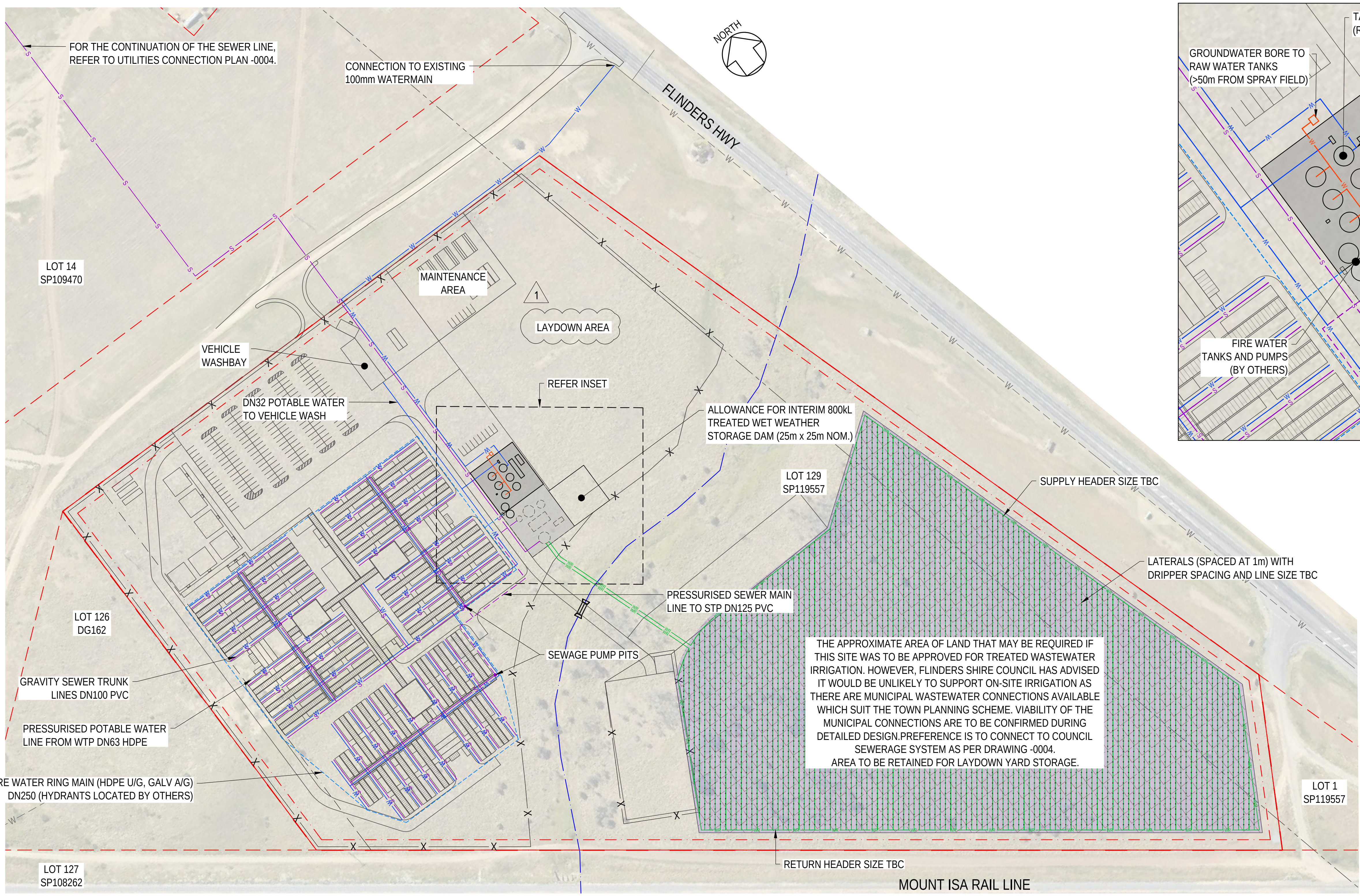
CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0007

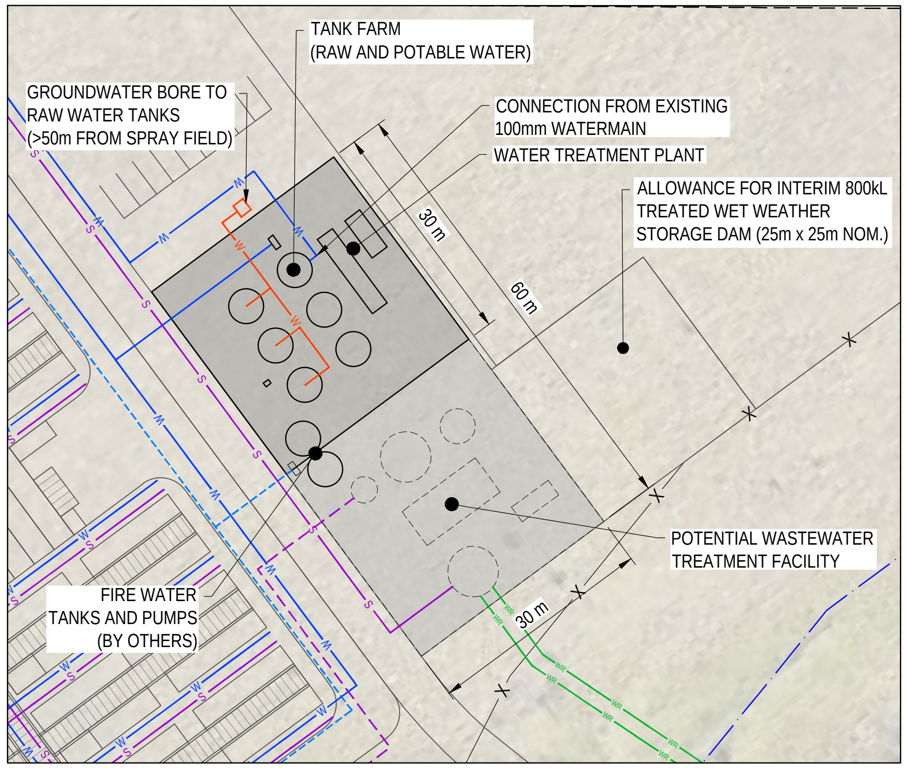
REVISION 1

PRINT IN COLOUR

Feb. 8, 24 - 15:33:01 Name: CU2-HU00-DRG-PAS-100-0007.dwg Updated By: David McKenzie



LAYOUT PLAN
SCALE 1:2500 (m)



INSET
SCALE 1:1000 (m)

LEGEND

SERVICES

- POTABLE WATERMAIN
- FIRE SERVICES WATERMAIN
- GROUND WATER BORE AND WATER MAIN
- WASTE WATER IRRIGATION LINE
- GRAVITY SEWER LINE
- PRESSURISED SEWER LINE
- EXISTING WATERMAIN

GENERAL

- LAND ACQUISITION AREA
- WASTE WATER IRRIGATION AREA (IF REQUIRED)
- DCDB CADASTRE
- BOUNDARY SETBACKS - 6m
- PERIMETER FENCE
- WATERCOURSE - DIGITISED

NOTES:

1. THE DESIGN SHOWN IS PRELIMINARY ONLY AND SUBJECT TO CHANGE AT DETAILED DESIGN.
2. WATER AND WASTEWATER INFRASTRUCTURE IS TO BE DESIGNED AND INSTALLED IN GENERAL ACCORDANCE WITH THE QLD PLUMBING AND WASTEWATER CODE AND AS3500 (PLUMBING AND DRAINAGE).

TO PROTECT THE ENVIRONMENT, CLEARING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND CONFINED TO THAT REQUIRED FOR EARTHWORKS, DRAINAGE AND FENCING. EXISTING TREES, SHRUBS AND GRASSES NOT AFFECTED BY THE ABOVE WORKS SHALL BE RETAINED AND DISTURBED AS LITTLE AS POSSIBLE.

-WARNING-

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1160; CU2-HU00-XRF-PAS-100-1115; CU2-HU00-XRF-PAS-100-1110

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
1	REVISION UPDATE - ISSUE FOR APPROVAL	D.McKenzie	C.Squires	A.Bool	08/02/2024
0	ISSUE FOR APPROVAL	D.McKenzie	S.Edwards	A.Bool	08/09/2023

APPROVED
ORIGINAL COPY ON FILE "e" SIGNED BY
Arthur Bool RPEQ 10564
SIGNED
DATE 08/09/2023

SCALE (PLOTTED FULL SIZE) AS SHOWN
SHEET SIZE A3
25 0 25 50 75 100
SCALE IN METRES - 1:2500
10 0 10 20 30 40
SCALE IN METRES - 1:1000

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CLIENT: UGL / CPB JV
PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES
STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN WATER AND WASTEWATER PLAN
DATUMS: GDA20 Z55
CLIENT No: CU2
DRAWING No. CU2-HU00-DRG-PAS-100-0008
REVISION 1
PRINT IN COLOUR
Feb. 8, 24 - 14:30:56 Name: CU2-HU00-DRG-PAS-100-0008.dwg Updated By: David McKenzie

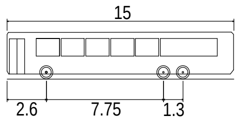
LEGEND
DESIGN

PASSENGER PARKING

BUS PARKING

PAINTED ISLAND

PARKING TABLE	
TYPE	NUMBER
PASSENGER	171
12 SEAT MINIBUS	20



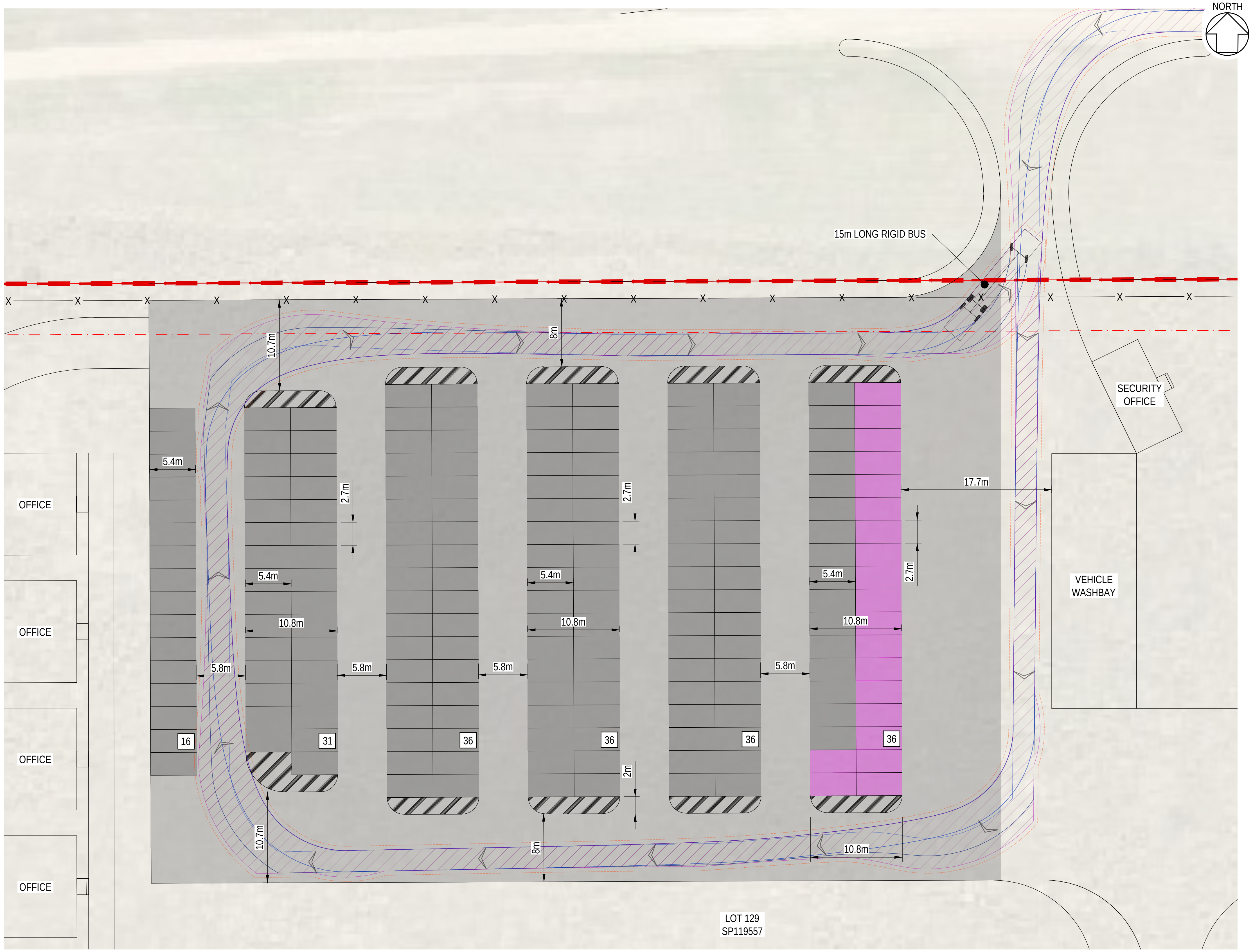
Long Rigid Bus (15 m)

Overall Length	15.000m
Overall Width	2.500m
Overall Body Height	3.102m
Min Body Ground Clearance	0.337m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

MINIBUS IS A 5.2m NOMINAL LENGTH 12 SEATER (TOYOTA HIACE OR SIMILAR)

NOTES:

1. THE DESIGN SHOWN IS PRELIMINARY ONLY AND SUBJECT TO CHANGE AT DETAILED DESIGN.
2. CAR PARKS TO BE IN ACCORDANCE WITH ASAS2890.1 PARKING FACILITIES - OFF-STREET CAR PARKING.
3. SUFFICIENT CIRCULATION WIDTH TO BE PROVIDED TO ENABLE A 15m BUS TO MANOUVRE AROUND THE PARKING PERIMETER.
4. THE MAIN CAR PARK AND ACCESS ROAD IS TO BE A 2 COAT SPRAY SEALED FLEXIBLE PAVEMENT.
5. PARKING BAYS TO BE DEMARCATED WITH SUITABLE LINE MARKING AND SIGNAGE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) TO CONSIDER VEHICLES AND PEDESTRIANS.



REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1115; CU2-HU00-XRF-PAS-100-1130; CU2-HU00-XRF-PAS-100-1125

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
0	ISSUE FOR APPROVAL	D.McKenzie	D.McKenzie	A.Bool	08/09/2023

APPROVED
ORIGINAL COPY ON FILE "e" SIGNED BY
Arthur Bool RPEQ 10564
SIGNED
DATE 08/09/2023

SCALE (PLOTTED FULL SIZE) 1:500
SHEET SIZE A3
5 0 5 10 15 20
SCALE IN METRES - 1:500

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CLIENT: UGL / CPB JV
PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES
STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN CARPARK LAYOUT PLAN
DATUMS: GDA20 Z55
CLIENT No: CU2
DRAWING No. CU2-HU00-DRG-PAS-100-0020
REVISION 0
PRINT IN COLOUR
Feb. 8, 24 - 14:33:36 Name: CU2-HU00-DRG-PAS-100-0020.dwg Updated By: David McKenzie

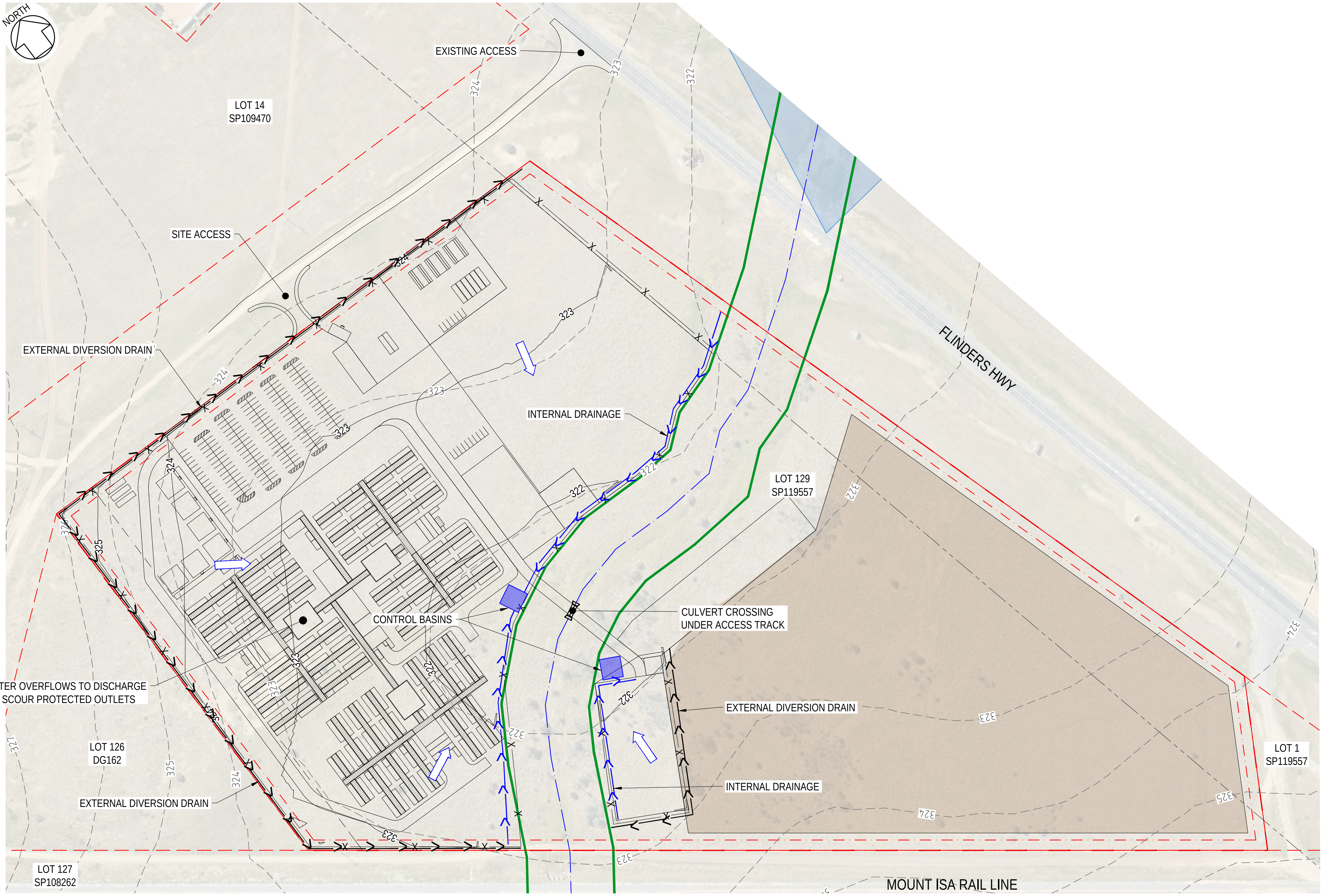
LEGEND

STORMWATER MANAGEMENT

- EARTHEN BERM
- INTERNAL DRAINAGE
- EXTERNAL DIVERSION DRAIN
- CONTROL BASINS
- FLOW DIRECTION ARROWS
- CULVERT
- 189 DESIGN MAJOR CONTOUR - 1m INTERVAL

GENERAL

- LAND ACQUISITION AREA
- FLOODPLAIN EXTENT - 1% AEP
- WASTE WATER IRRIGATION AREA (IF REQUIRED)
- DCDB CADASTRE
- BOUNDARY SETBACKS
- WATERCOURSE - DIGITISED
- MSES - REGULATED VEGETATION (INTERSECTING A WATERCOURSE) SETBACK 25m EITHER SIDE
- 123 EXISTING CONTOURS - 1m INTERVAL (Geoscience Australia - 1 second SRTM Derived Smoothed)



STORMWATER NOTES:

1. DESIGNS ARE PRELIMINARY ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. STORMWATER DRAINAGE DESIGN IS TO BE CARRIED IN GENERAL ACCORDANCE WITH THE QUEENSLAND URBAN DRAINAGE MANUAL (QUDM), AS3500.3 AND THE AUSTRALIAN RAINFALL AND RUNOFF (AR&R) GUIDANCE.
3. STORMWATER DRAINAGE ON STATE CONTROLLED ROADS SHALL COMPLY WITH AUSTROADS AND TMR DRAINAGE SPECIFICATIONS.
4. SWALE DRAINS TO BE SURFACED WITH DURABLE ROCK SCOUR PROTECTION OR OTHER NON-VEGETATIVE SURFACING UNLESS SPECIFIED OTHERWISE, DUE TO CLIMATE.
5. STORMWATER DESIGN AND INSTALLATION TO BE CARRIED OUT IN GENERAL ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SMP) AS WELL AS THE EROSION AND SEDIMENT CONTROL PLAN (ESCP).

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1120 EX; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1115; CU2-HU00-XRF-PAS-100-1120

P&S FORM DRG-A3 REV - 8

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
0	ISSUE FOR APPROVAL	D.McKenzie	M.Jacobs	A.Bool	08/09/2023

APPROVED

ORIGINAL COPY ON FILE "e" SIGNED BY

Arthur Bool RPEQ 10564

SIGNED

DATE 08/09/2023

SCALE (PLOTTED FULL SIZE) 1:2500

SHEET SIZE A3

25 0 25 50 75 100

SCALE IN METRES - 1:2500

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CLIENT: UGL / CPB JV

PROJECT: COPPERSTRING 2032 - CAMPS CONSTRUCTION FACILITIES

STATUS: FOR APPROVAL

DRAWING TITLE: HUGHENDEN - CAMP & LAYDOWN STORMWATER LAYOUT PLAN

DATUMS: GDA20 Z55

CLIENT No: CU2

DRAWING No. CU2-HU00-DRG-PAS-100-0021

REVISION 0

PRINT IN COLOUR

Feb. 8, 24 - 14:33:24 Name: CU2-HU00-DRG-PAS-100-0021.dwg Updated By: David McKenzie

SIDRA Modelling Results - Existing

Appendix B

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MOVEMENT SUMMARY

Site: 101 [Flinders Highway/ Public Access Road - Existing Peak (Site Folder: General)]

New Site
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: Public Access Road														
1	L2	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.09	0.56	0.09	53.4
3	R2	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.09	0.56	0.09	52.9
Approach		2	0.0	2	0.0	0.002	5.6	LOS A	0.0	0.0	0.09	0.56	0.09	53.1
East: Flinders Highway														
4	L2	1	0.0	1	0.0	0.014	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
5	T1	24	0.0	25	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		25	0.0	26	0.0	0.014	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
West: Flidners Highway														
11	T1	39	0.0	41	0.0	0.022	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	59.8
12	R2	1	0.0	1	0.0	0.022	5.5	LOS A	0.0	0.0	0.01	0.02	0.01	57.6
Approach		40	0.0	42	0.0	0.022	0.1	NA	0.0	0.0	0.01	0.02	0.01	59.8
All Vehicles		67	0.0	71	0.0	0.022	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.5

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.

SIDRA Modelling Results – Peak Operation

Appendix C

MOVEMENT SUMMARY

Site: 101 [Flinders Highway/ Public Access Road - Peak Operation AM (Site Folder: General)]

New Site
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: Public Access Road														
1	L2	98	0.0	103	0.0	0.149	5.6	LOS A	0.6	4.1	0.10	0.56	0.10	53.4
3	R2	98	0.0	103	0.0	0.149	5.7	LOS A	0.6	4.1	0.10	0.56	0.10	52.8
Approach		196	0.0	206	0.0	0.149	5.7	LOS A	0.6	4.1	0.10	0.56	0.10	53.1
East: Flinders Highway														
4	L2	1	0.0	1	0.0	0.014	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
5	T1	24	0.0	25	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		25	0.0	26	0.0	0.014	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
West: Flidners Highway														
11	T1	39	0.0	41	0.0	0.022	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	59.8
12	R2	1	0.0	1	0.0	0.022	5.5	LOS A	0.0	0.0	0.01	0.02	0.01	57.6
Approach		40	0.0	42	0.0	0.022	0.1	NA	0.0	0.0	0.01	0.02	0.01	59.8
All Vehicles		261	0.0	275	0.0	0.149	4.3	NA	0.6	4.1	0.08	0.43	0.08	54.6

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: 101 [Flinders Highway/ Public Access Road - Peak Operation PM (Site Folder: General)]

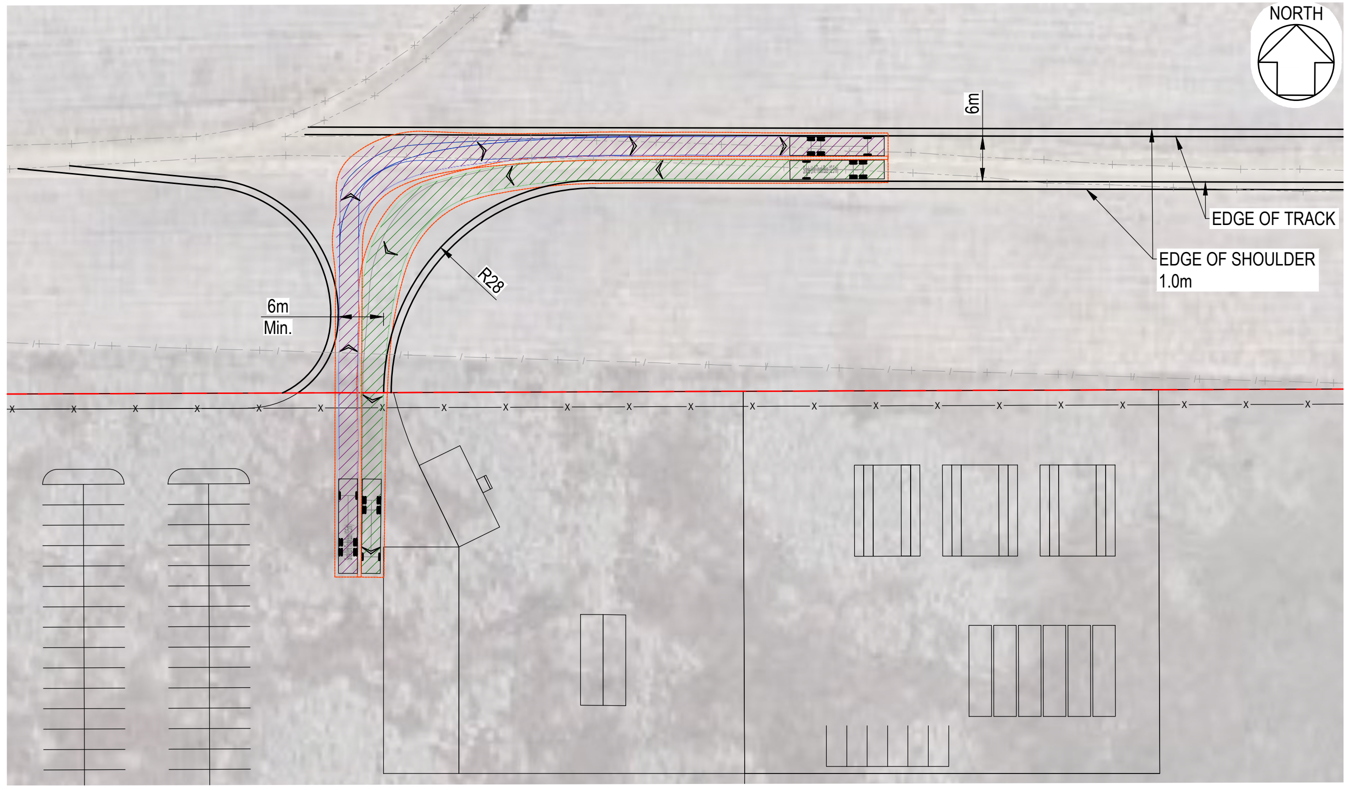
New Site
Site Category: (None)
Give-Way (Two-Way)

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: Public Access Road															
1	L2	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.08	0.57	0.08	53.3
3	R2	1	0.0	1	0.0	0.002	6.2	LOS A	0.0	0.0	0.08	0.57	0.08	52.8
Approach		2	0.0	2	0.0	0.002	5.9	LOS A	0.0	0.0	0.08	0.57	0.08	53.1
East: Flinders Highway															
4	L2	98	0.0	103	0.0	0.069	5.6	LOS A	0.0	0.0	0.00	0.47	0.00	54.5
5	T1	24	0.0	25	0.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.47	0.00	55.9
Approach		122	0.0	128	0.0	0.069	4.5	NA	0.0	0.0	0.00	0.47	0.00	54.7
West: Flidners Highway															
11	T1	39	0.0	41	0.0	0.086	0.4	LOS A	0.4	2.9	0.24	0.41	0.24	55.6
12	R2	98	0.0	103	0.0	0.086	5.8	LOS A	0.4	2.9	0.24	0.41	0.24	53.6
Approach		137	0.0	144	0.0	0.086	4.3	NA	0.4	2.9	0.24	0.41	0.24	54.2
All Vehicles		261	0.0	275	0.0	0.086	4.4	NA	0.4	2.9	0.13	0.44	0.13	54.4

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.

Swept Paths at Site Access

Appendix D

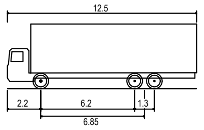


INSET A

SINGLE UNIT TRUCK / BUS 12.5m - VEHICLE SWEPT PATH

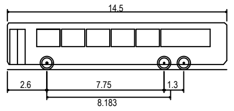
SCALE 1:500 (m)

VEHICLES LEGEND:



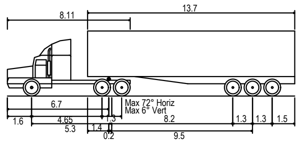
Single Unit Truck/Bus (12.5 m)

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



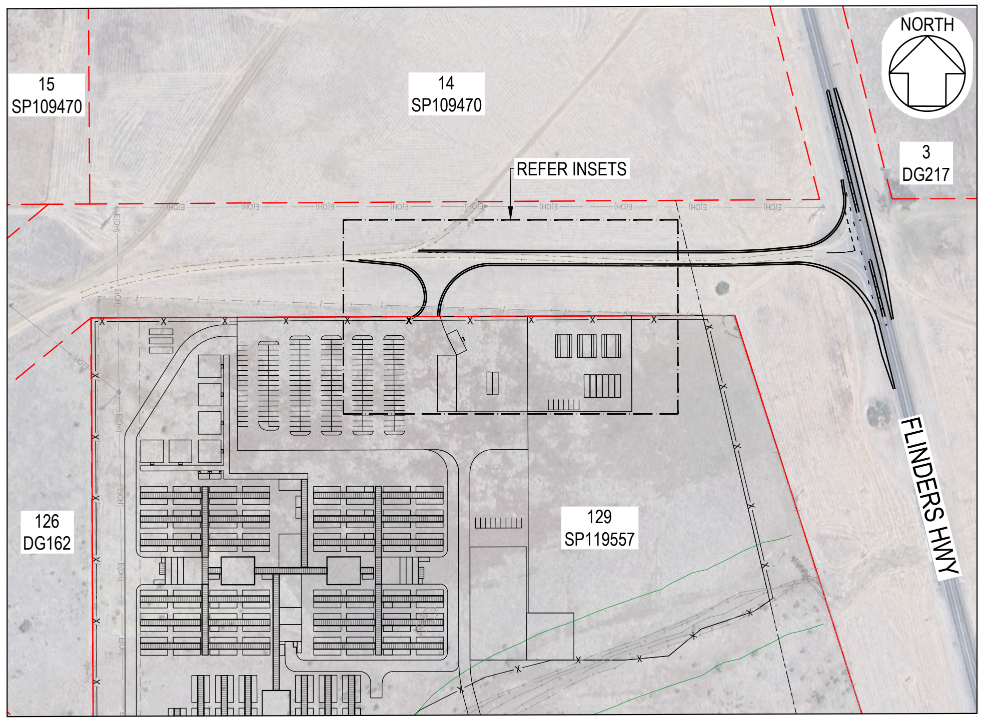
Long Rigid Bus (14.5 m)

Overall Length	14.500m
Overall Width	2.500m
Overall Body Height	3.102m
Min Body Ground Clearance	0.337m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m



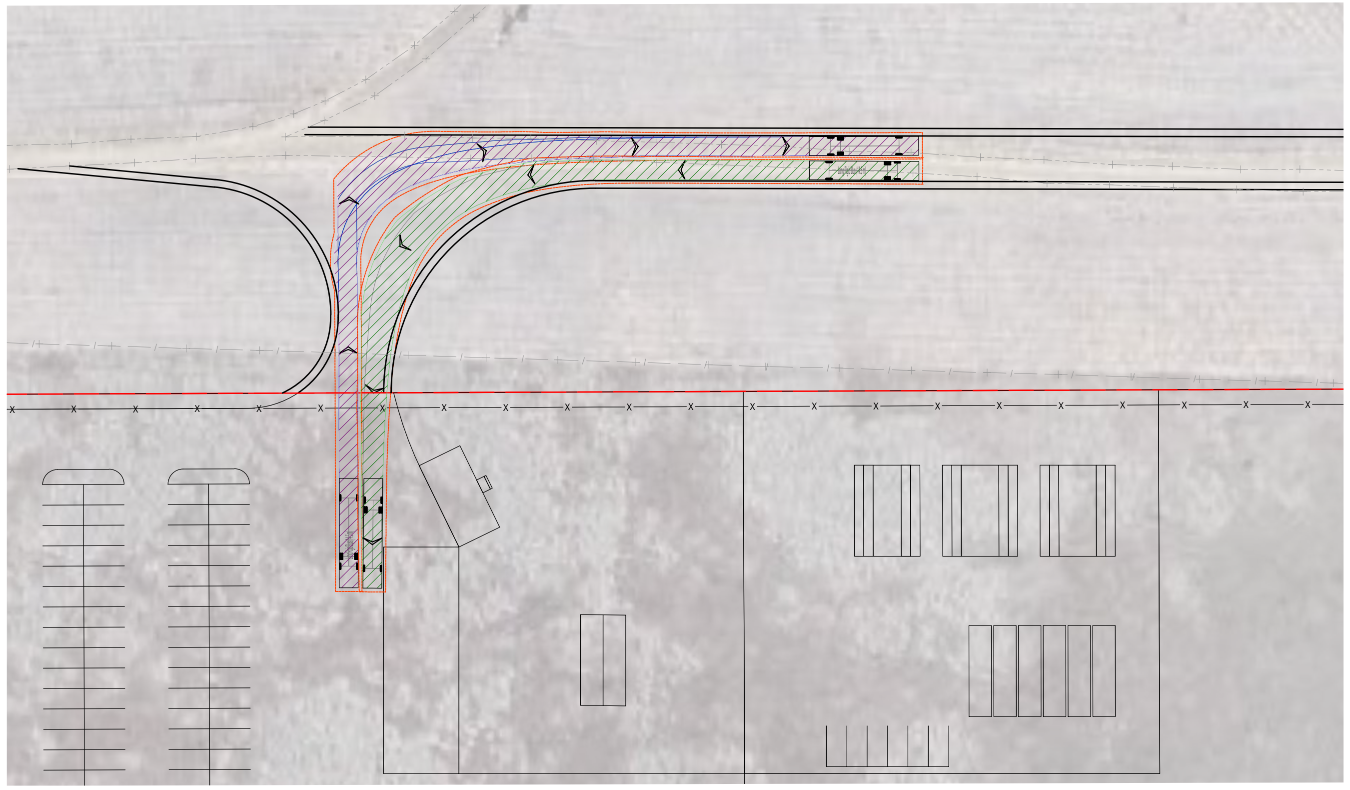
Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



LOCALITY

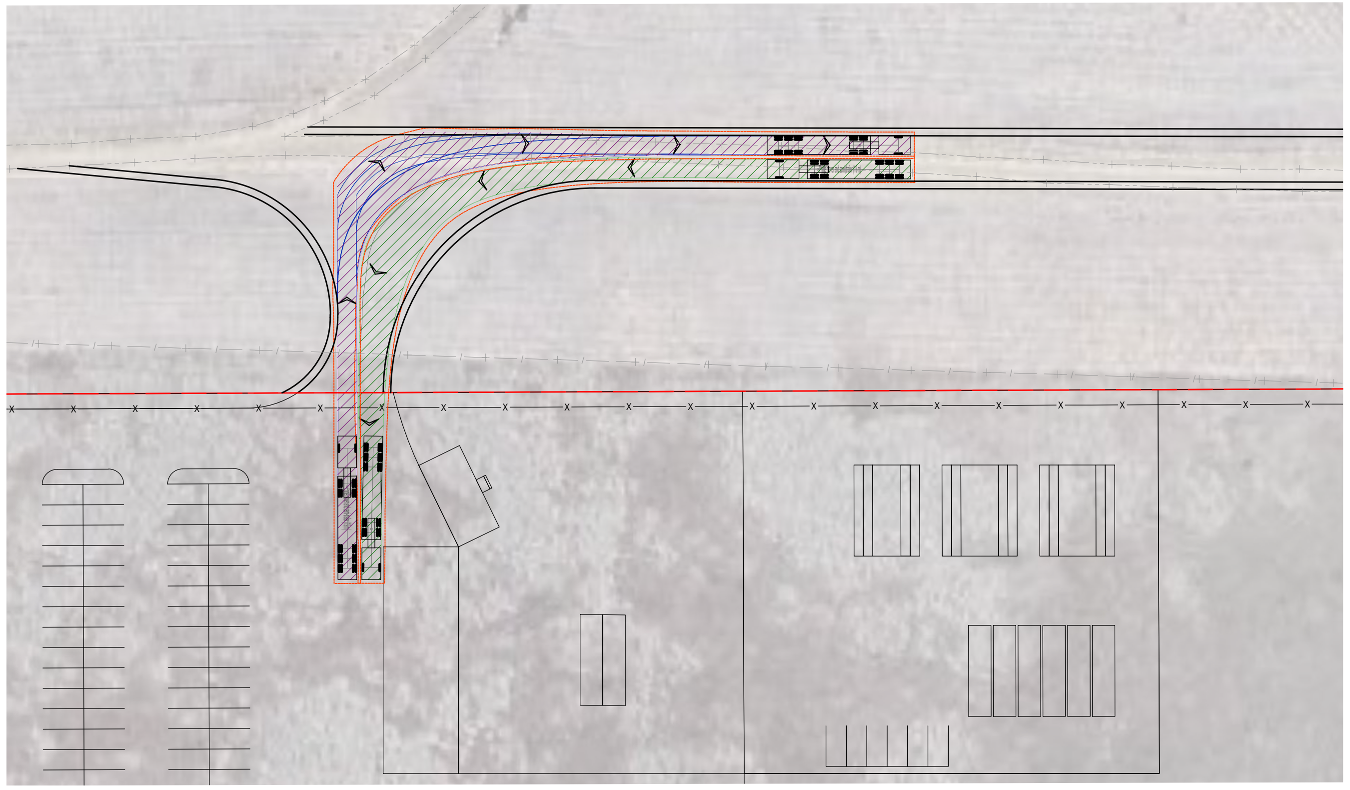
SCALE 1:2000 (m)



INSET B

LONG RIGID BUS 14.5m - VEHICLE SWEPT PATH

SCALE 1:500 (m)



INSET C

PRIME MOVER AND SEMI-TRAILER 19m - VEHICLE SWEPT PATH

SCALE 1:500 (m)

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1115

P&S FORM DRG-A1 REV 29

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE	APPROVED
						ORIGINAL COPY ON FILE "e" SIGNED BY
						SIGNED
			DPM		30/04/2024	DATE

SCALE (PLOTTED FULL SIZE) 1:500

SHEET SIZE A1

10 0 10 20 30 40

SCALE IN METRES - 1:500

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CLIENT: UGL / CPB JV

CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - CONCEPT

STATUS: INFORMATION ONLY

DRAWING TITLE: CAMP ENTRY / EGRESS SWEPT PATHS - SHEET 1 OF 2

DATUMS: GDA20-MGA55

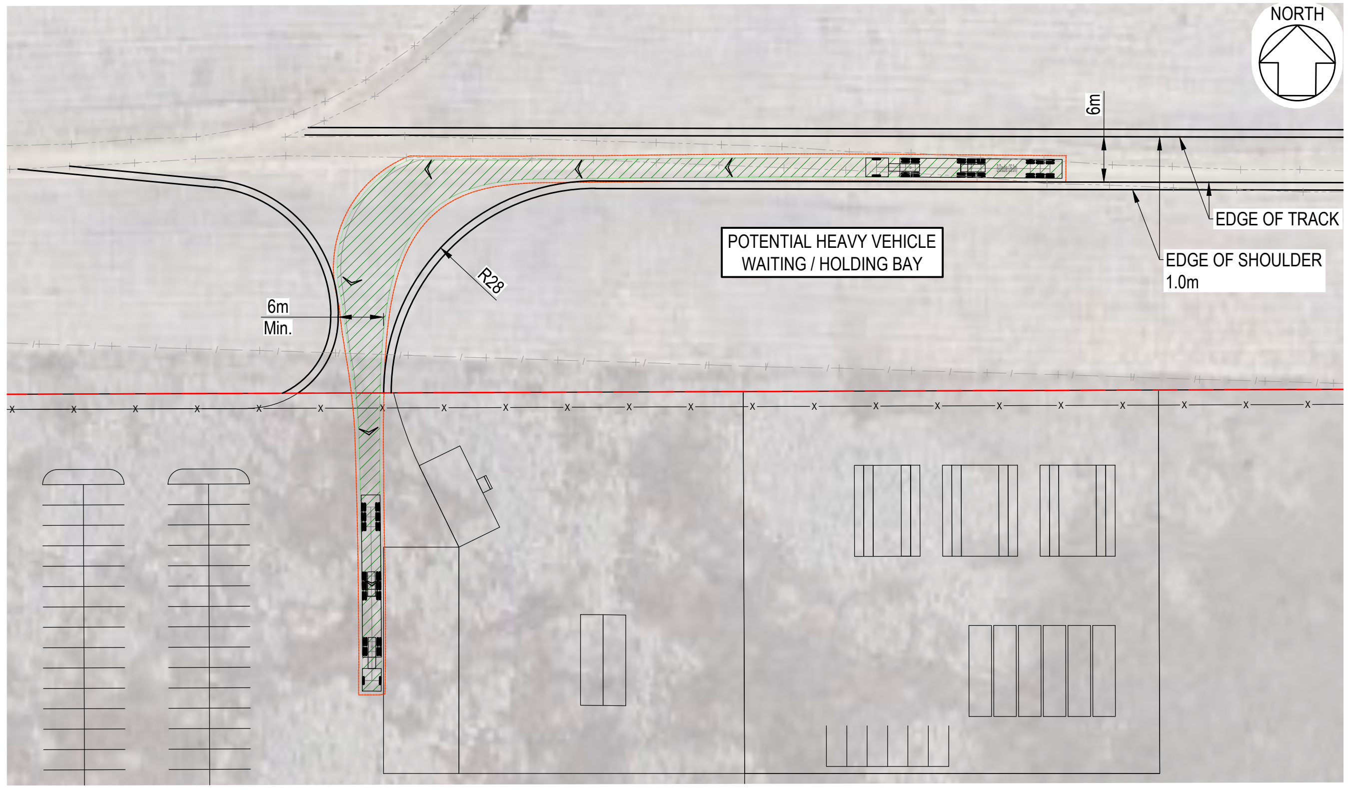
CLIENT No. CU2-HU00

DRAWING No. CU2-HU00-SKT-PAS-100-0104

REVISION -

PRINT IN COLOUR

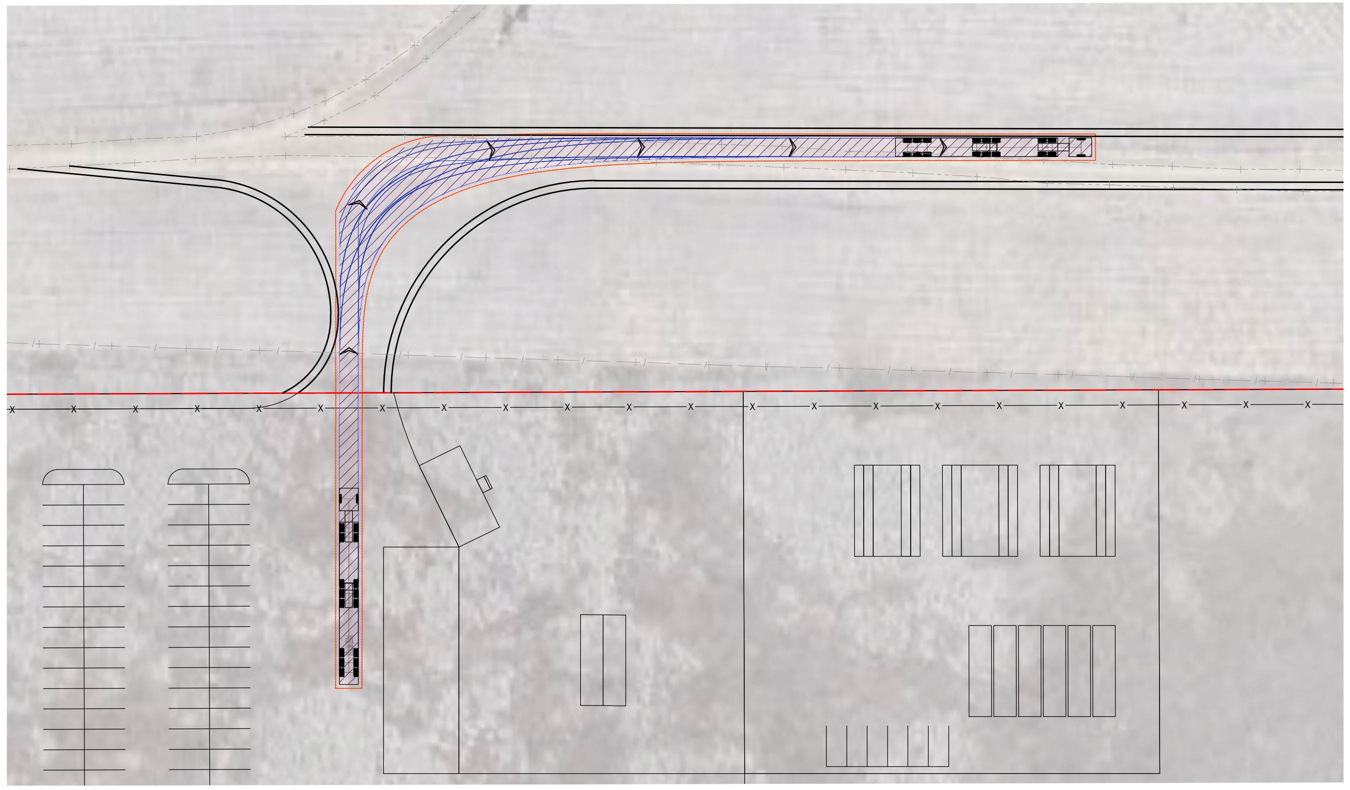
Apr. 30, 24 - 15:12:51 Name: CU2-HU00-SKT-PAS-100-0104-0105.dwg Updated By: David McKenzie



INSET D

B-DOUBLE 26m - VEHICLE SWEPT PATH (ENTRY)

SCALE 1:500 (m)

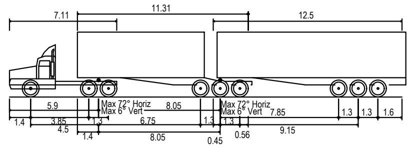


INSET E

B-DOUBLE 26m - VEHICLE SWEPT PATH (EGRESS)

SCALE 1:500 (m)

VEHICLES LEGEND:



B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1850; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1115

P&S FORM DRG-A1 REV 29

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE	APPROVED
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						SIGNED
			DPM		30/04/2024	DATE

SCALE (PLOTTED FULL SIZE): 1:500

SHEET SIZE: A1

10 0 10 20 30 40

SCALE IN METRES - 1:500

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CLIENT: UGL / CPB JV

CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - CONCEPT

STATUS: INFORMATION ONLY

DRAWING TITLE: CAMP ENTRY / EGRESS SWEPT PATHS - SHEET 2 OF 2

DATUMS: GDA20-MGA55

CLIENT No. CU2-HU00

DRAWING No. CU2-HU00-SKT-PAS-100-0105

REVISION -

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Apr. 30, 24 - 15:12:55 Name: CU2-HU00-SKT-PAS-100-0104-0105.dwg Updated By: David McKenzie

Design and Swept Paths at Flinders Highway

Appendix E

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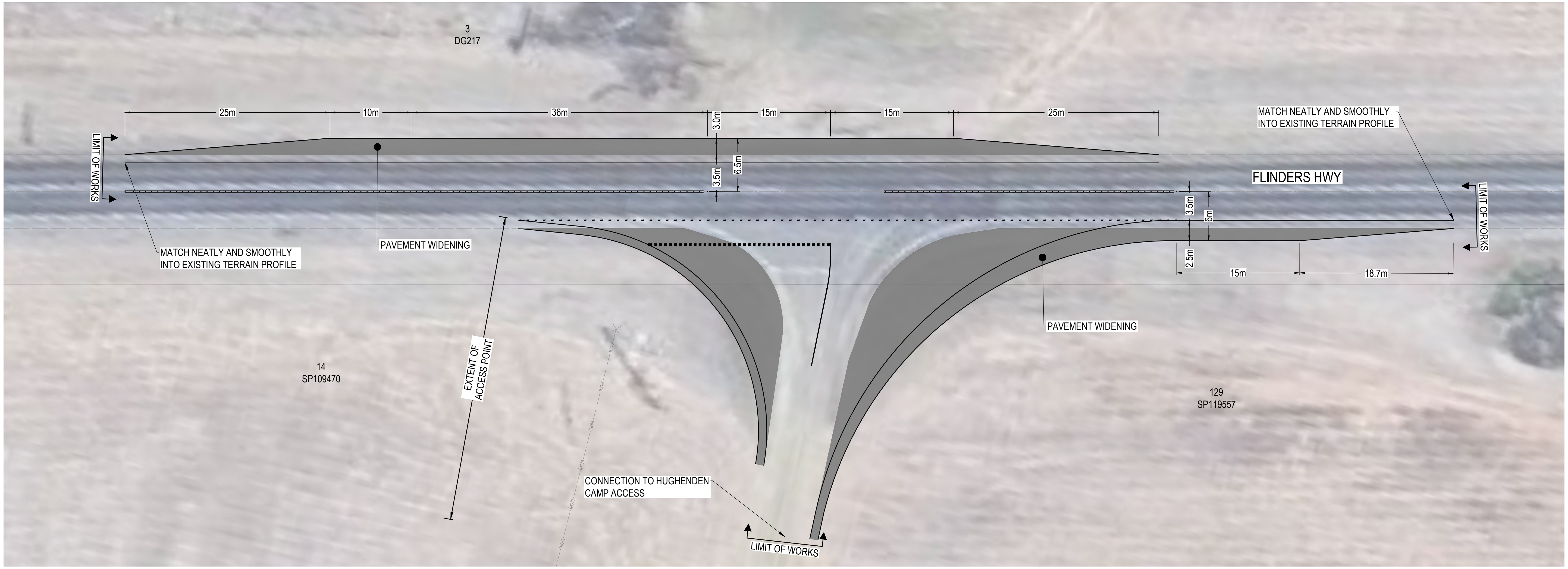

SITE LAYOUT

SCALE 1:250 (m)

LEGEND

- EXISTING ROAD CENTERLINE
- EXISTING EDGE OF LANE
- EXISTING EDGE OF SHOULDER
- EDGE OF LANE
- EDGE OF SHOULDER
- BARRIER LINE
- CONTINUOUS LINE
- EDGE CONTINUITY LINE
- CONTINUITY LINE
- GIVE WAY LINE

NOTES

- FOR ACCESS TYPICAL SIGNAGE AND DETAILS REFER TYPICAL DRAWINGS CU2-PW00-DRG-PAS-200-0001 TO CU2-PW00-DRG-PAS-200-0057.
- AERIAL IMAGE: GOOGLE.

DESIGN CRITERIA

FLINDERS HIGHWAY - UNNAMED ROAD TO HUGHENDEN CAMP

CONSIDERATION:	RESPONSES:
APPROACH ROAD DESIGN SPEED (km/h):	90
MINIMUM LANE WIDTH (m):	3.5
MINIMUM SHOULDER WIDTH (m):	MATCH EXISTING
RURAL BASIC LEFT TURN TREATMENT (BAL)	
FULL WIDTH (C)	6
SHOULDER WIDENING (F)	1.5
PARALLEL SHOULDER WIDENING	15
TAPER LENGHT (m):	18.75
RURAL BASIC RIGHT TURN TREATMENT (BAR)	
FULL WIDTH (C)	6.5
SHOULDER WIDENING (F)	2
STORAGE LENGTH	36
TAPER LENGHT (m):	25

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1120 EX

P&S FORM DRG-A1 REV 29

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SCALE (PLOTTED FULL SIZE)
SHEET SIZE A1

5 0 5 10 15 20
SCALE IN METRES - 1:250

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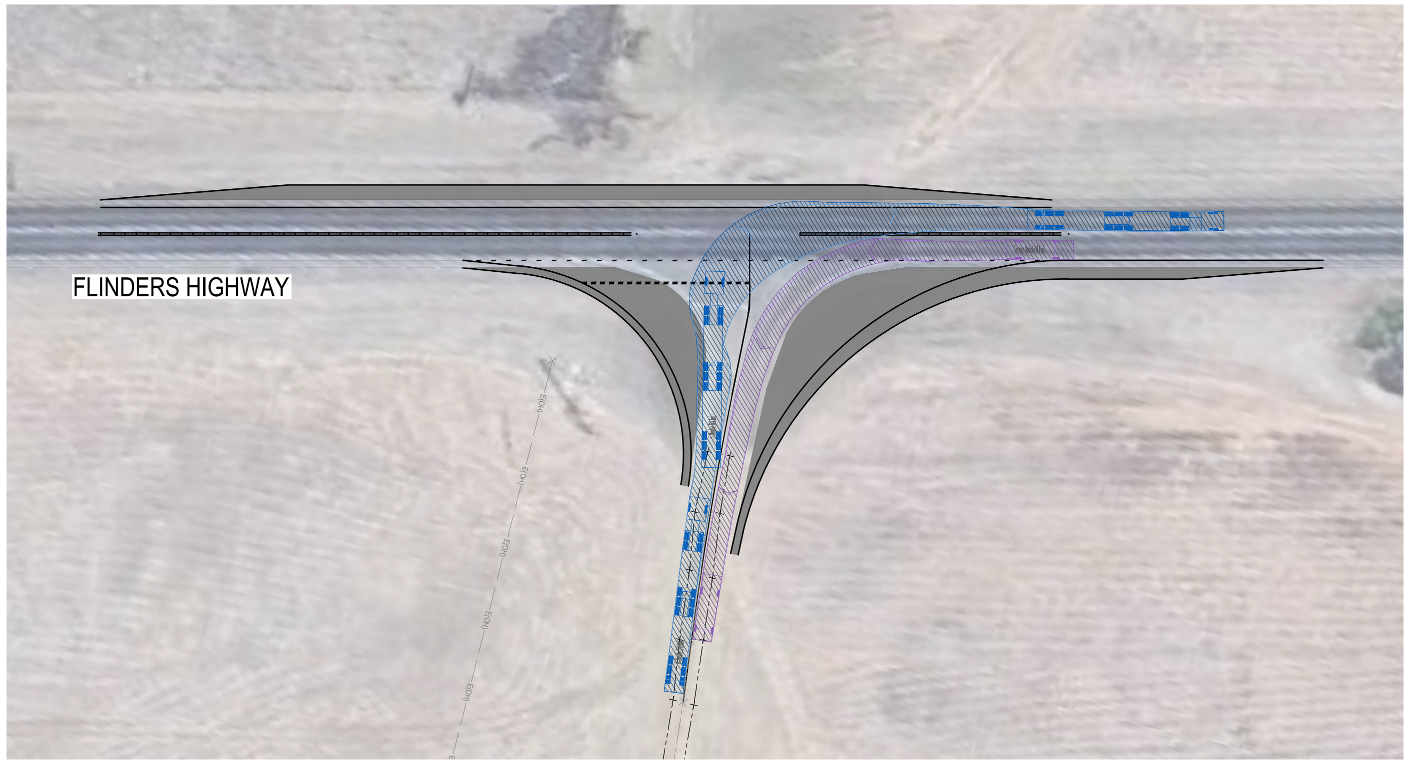
CLIENT: UGL / CPB JV
CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - INTERSECTION CONCEPT
STATUS: INFORMATION ONLY

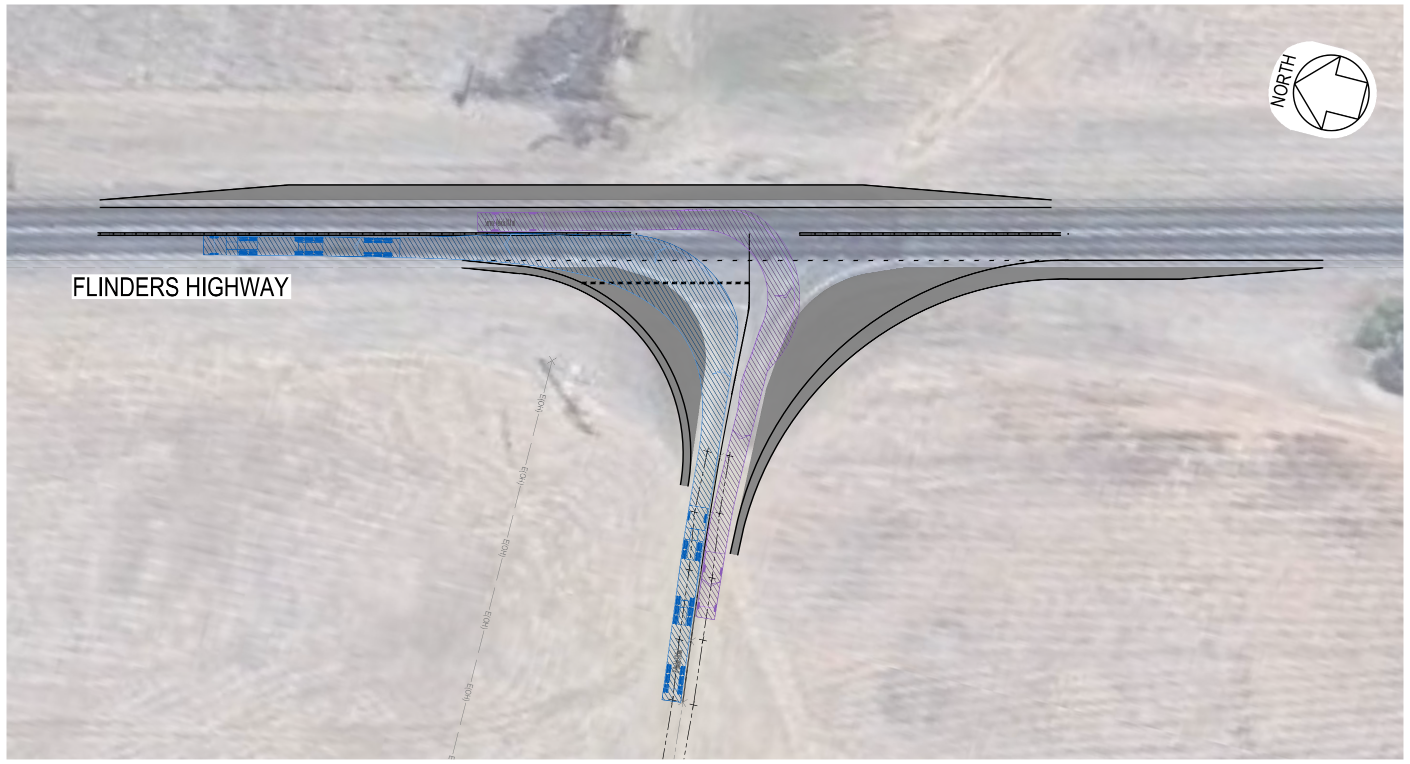
DRAWING TITLE: BASIC RIGHT (BAR) / BASIC LEFT (BAL)
DATUMS: GDA20-MGA55
CLIENT No. CU2-HU00
DRAWING No. CU2-HU00-SKT-PAS-100-0100
REVISION -
PRINT IN COLOUR

Apr. 30, 24 - 11:22:53 Name: CU2-HU00-SKT-PAS-100-0100-0101.dwg Updated By: Shirley Gago Ojumo



26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 2

SCALE 1:500 (m)



26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 4

SCALE 1:500 (m)

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 1

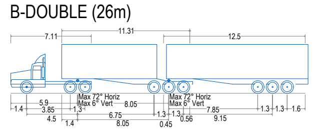
SCALE 1:500 (m)

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 3

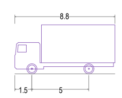
SCALE 1:500 (m)

VEHICLES LEGEND:

B-DOUBLE (26m)



SERVICE VEHICLE (8.8m)



P&S FORM DRG-A1 REV 29

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1120 EX

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SCALE (PLOTTED FULL SIZE)

SHEET SIZE A1

10 0 10 20 30 40

SCALE IN METRES - 1:500

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CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - INTERSECTION CONCEPT

STATUS: INFORMATION ONLY

DRAWING TITLE: BASIC RIGHT (BAR) / BASIC LEFT (BAL) SWEPT PATHS

DATUMS: GDA20-MGA55

CLIENT No. CU2-HU00

DRAWING No. CU2-HU00-SKT-PAS-100-0101

REVISION -

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Apr. 30, 24 - 11:24:11 Name: CU2-HU00-SKT-PAS-100-0100-0101.dwg Updated By: Shirley Gago Cjumo

SITE LAYOUT

SCALE 1:1000 (m)

LEGEND

- EXISTING ROAD CENTERLINE
- EXISTING EDGE OF LANE
- EXISTING EDGE OF SHOULDER
- EDGE OF LANE
- EDGE OF SHOULDER
- BARRIER LINE
- CONTINUOUS LINE
- EDGE CONTINUITY LINE
- CONTINUITY LINE
- GIVE WAY LINE

NOTES

- FOR ACCESS TYPICAL SIGNAGE AND DETAILS REFER TYPICAL DRAWINGS CU2-PW00-DRG-PAS-200-0001 TO CU2-PW00-DRG-PAS-200-0057.
- AERIAL IMAGE: GOOGLE.

DESIGN CRITERIA

FLINDERS HIGHWAY - UNNAMED ROAD TO HUGHENDEN CAMP

CONSIDERATION:	RESPONSES:
APPROACH ROAD DESIGN SPEED (km/h):	90
MINIMUM LANE WIDTH (m):	3.5
MINIMUM SHOULDER WIDTH (m):	MATCH EXISTING
CHANNELISED RIGHT TURN (CHR)	
STORAGE LENGTH (m):	36
DECELERATION LENGTH INCLUDING TAPER (m):	125
TAPER LENGHT (m):	30
LATERAL MOVEMENT LENGTH (m):	90
AUXILIARY LEFT TURN LANE TREATMENT (AUL)	
DECELERATION LENGTH INCLUDING TAPER (m):	125
TAPER LENGHT (m):	30

REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1120 EX; CU2-PW00-XRF-PAS-090-1850-GDA20_Z55

P&S FORM DRG-A1 REV 29

DRAWING REVISION HISTORY

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SCALE (PLOTTED FULL SIZE) — SHEET SIZE A1

20 0 20 40 60 80
SCALE IN METRES - 1:1000

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CLIENT: UGL / CPB JV

CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - INTERSECTION CONCEPT

STATUS: INFORMATION ONLY

DRAWING TITLE: CHANNELISED RIGHT TURN (CHR) / AUXILLARY LEFT LANE (AUL)

DATUMS: GDA20-MGA55

CLIENT No: CU2-HU00

DRAWING No.: CU2-HU00-SKT-PAS-100-0102

REVISION: -

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Apr. 30, 24 - 11:22:00 Name: CU2-HU00-SKT-PAS-100-0102-0103.dwg Updated By: Shirley Gago Cjumo

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 2

SCALE 1:500 (m)

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 4

SCALE 1:500 (m)

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 1

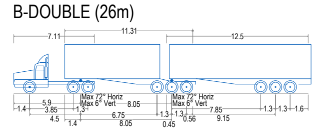
SCALE 1:500 (m)

26m B-DOUBLE & 8.8m SERVICE VEHICLE SWEPT PATH - INSET 3

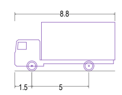
SCALE 1:500 (m)

VEHICLES LEGEND:

B-DOUBLE (26m)



SERVICE VEHICLE (8.8m)



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REFERENCE FILES ATTACHED: CU2-HU00-XRF-PAS-100-1155; CU2-HU00-XRF-PAS-100-1950; CU2-HU00-XRF-PAS-100-1500; CU2-HU00-XRF-PAS-100-1120 EX; CU2-PW00-XRF-PAS-090-1850-GDA20_Z55

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						SIGNED
			KSG			DATE

SCALE (PLOTTED FULL SIZE)

10 0 10 20 30 40

SCALE IN METRES - 1:500

SHEET SIZE A1

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CONTRACT TITLE: COPPERSTRING 2032 HUGHENDEN CAMP - INTERSECTION CONCEPT

STATUS: INFORMATION ONLY

DRAWING TITLE: CHANNELISED RIGHT TURN (CHR) / AUXILLARY LEFT LANE (AUL) - SWEPT PATHS

DATUMS: GDA20-MGA55

CLIENT No. CU2-HU00

DRAWING No. CU2-HU00-SKT-PAS-100-0103

REVISION -

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Apr. 30, 24 - 11:22:32 Name: CU2-HU00-SKT-PAS-100-0102-0103.dwg Updated By: Shirley Gago Cjumo

CopperString 2032 Hughenden Camp Hub

Traffic Impact Assessment

Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

Phone 1300 748 874
info@pittsh.com.au
pittsh.com.au

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