



Appendix J

Transport Route Study

TRANSPORT ROUTE STUDY

Chalumbin Wind Farm

Prepared for

Attexó



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Job Number	20-315
Date	08/12/2021
Document Name	Transport Route Study – Chalumbin Wind Farm
Version	1.1

Document Revision History

Version	Version Date	Revision History
DRAFT	11/06/2021	Issued to client
1.0	16/07/2021	Issued to client
1.1	08/12/2021	Minor updates to project description which did not change the overall findings of the report

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STATEMENT OF LIMITATION

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1 Introduction

icubed consulting was engaged by Attexo Group to undertake a Transport Route Study of Chalumbin Wind Farm (the Project) which is to be included with an application for a development approval under the provisions of the Queensland State Code 23 Wind Farm Development. The wind farm is located some 20 km south of Ravenshoe, QLD and (at time of writing) will consist of up to 94 Wind Turbine Generators (WTGs). The wind farm is to be developed by Epuron Projects Pty Ltd.

This report details the results of the assessment, including an evaluation of:

- Existing conditions of the proposed transport route from the Port of Cairns to the site;
- Identifying the key intersections and turning movements the oversized vehicles will undertake;
- Investigating the most appropriate turning path for the truck to undertake at the key locations;
- Vehicle Swept path analysis of intersections along the proposed transport route;
- Identification of any road or intersection upgrades required to enable transportation of vehicles to site.

Preliminary investigations were conducted from a desktop study using aerial imagery and a site visit was conducted to observe the routes and perform physical measurements of key overpasses.

Overall, although a number of conflicts exist, it is considered that a viable route to the Project site is available, subject to resolving the potential conflicts with the relevant stakeholders.

Of the multiple elements of wind farm infrastructure to be transported, turbine blades present the largest challenge logistically as they can (for this wind farm Project) be up to 85 m long and must be transported as a single piece. Further challenges are presented by other key components including the base tower sections – the diameter of which governs the allowable vertical height clearance along a route – and the Project's substation(s) transformer(s) – which will be the heaviest vehicles of the Over Size Over Mass (OSOM) fleet.

A site inspection of the route was undertaken on 26th May 2021 which was utilised to ground truth several elements of the assessment within this report.

Once a contractor has been selected, this report will need to be revised to reflect the specifics of the detailed design and contractor's equipment and delivery method.

1.1 Limits of Report

The above tasks have been carried out based on information supplied by other members of the Project team, a desktop review and information from relevant authorities. These are detailed in the report.

While icubed has taken care in the preparation of this report, it neither accepts liability nor responsibility whatsoever in respect of;

- Any use of this report by any third party; and
- Any third party whose interests may be affected by any decision made regarding the contents of this report.

2 Existing Conditions

This report assesses a route starting from wharf 4 – 6 of Port of Cairns heading directly to the site. It also assesses an alternate route travelling from the port to a nearby laydown area on Tingira Street, and consequently from the laydown area to the site. This report has also assessed a potential detour route to avoid a bridge which may not have adequate vertical clearance for some Over Size Over Mass (OSOM) vehicles.

At time of writing, the Department of Transport and Main Roads (TMR) are upgrading a section of Bruce Highway between the towns of Edmonton and Gordonvale, just south of Cairns. The upgrade is referred to as 'E2G' by TMR and within this report. The upgrade includes a road realignment of the Bruce Highway in some sections, upgrades to council roads adjacent to the Bruce Highway and also a new overpass over the Bruce Highway. The entirety of the upgrade is expected to be completed mid-2023, roughly prior to any OSOM vehicles utilising the Bruce Highway from Cairns, and so the transport routes in this report have been assessed under the assumption that the upgrade will be completed when the OSOM vehicles use the route. Where appropriate, the assessment will ignore the existing conditions of current roads and analyse the suitability of the planned upgrades instead.

Further information on the upgrade can be found in the link below. To find a detailed upgrade plan, refer to 'E2G Project Map' PDF map in the Downloads heading.

<https://www.tmr.qld.gov.au/projects/bruce-highway-cairns-southern-access-corridor-stage-3-edmonton-to-gordonvale>

2.1 Site Location

The subject site is located some 20 km south of Ravenshoe and 70 km south-west of Innisfail. As shown in Figure 1, the wind farm Project is planned to be constructed over the following lots: Lot 31 SP288862 and Lot 1 CWL3298.

The proposed preliminary site layout is attached in Appendix A.

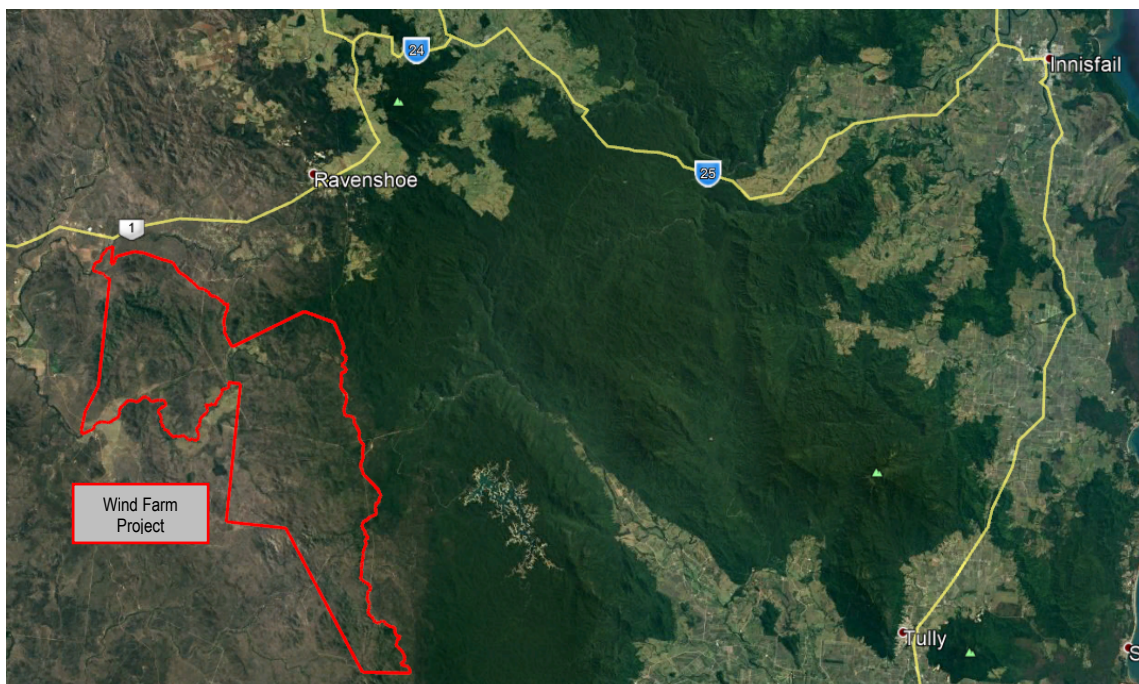


Figure 1 – Current site Project boundary

3 Proposed Development Details

The proposed development will comprise of a wind farm which has been assumed, for the purpose of this assessment, to be built in a single stage, with the Project execution to be over approximately 2 - 3 years. It is anticipated that the wind farm will comprise up to 94 wind turbine generators (WTG's) spread across the subject site. At this time, the final WTG configuration is still to be finalised, but the WTG blade configuration may be up to 85 m in length, and the tower base up to 5.5 m in diameter.

4 Oversize Transport Route

4.1 Proposed Oversize Transportation Route

Two transport 'Options' were evaluated during this assessment depending on the Project's need to utilise a turbine component laydown area before travelling to site. In total, three (3) possible routes within the Cairns limits were assessed as described below:

- Option 1 – travelling directly from the wharf to the Project site:
 - **Route 1:** from the wharf directly to Project site

- Option 2 – travelling from the wharf to a laydown area on Tingira Street, and then from the laydown area to the Project site.
 - **Route 2:** from the wharf to a laydown area on Tingira Street
 - **Route 3:** from laydown area on Tingira Street to the Project site.

It should also be noted that from Ray Jones Drive onwards to the Project site, the route is the same for both Options, but the roads utilised before that point vary.

Below, a map of the routes are shown in Figure 2 – Figure 6, while Table 1 lists the roads utilised by each route.

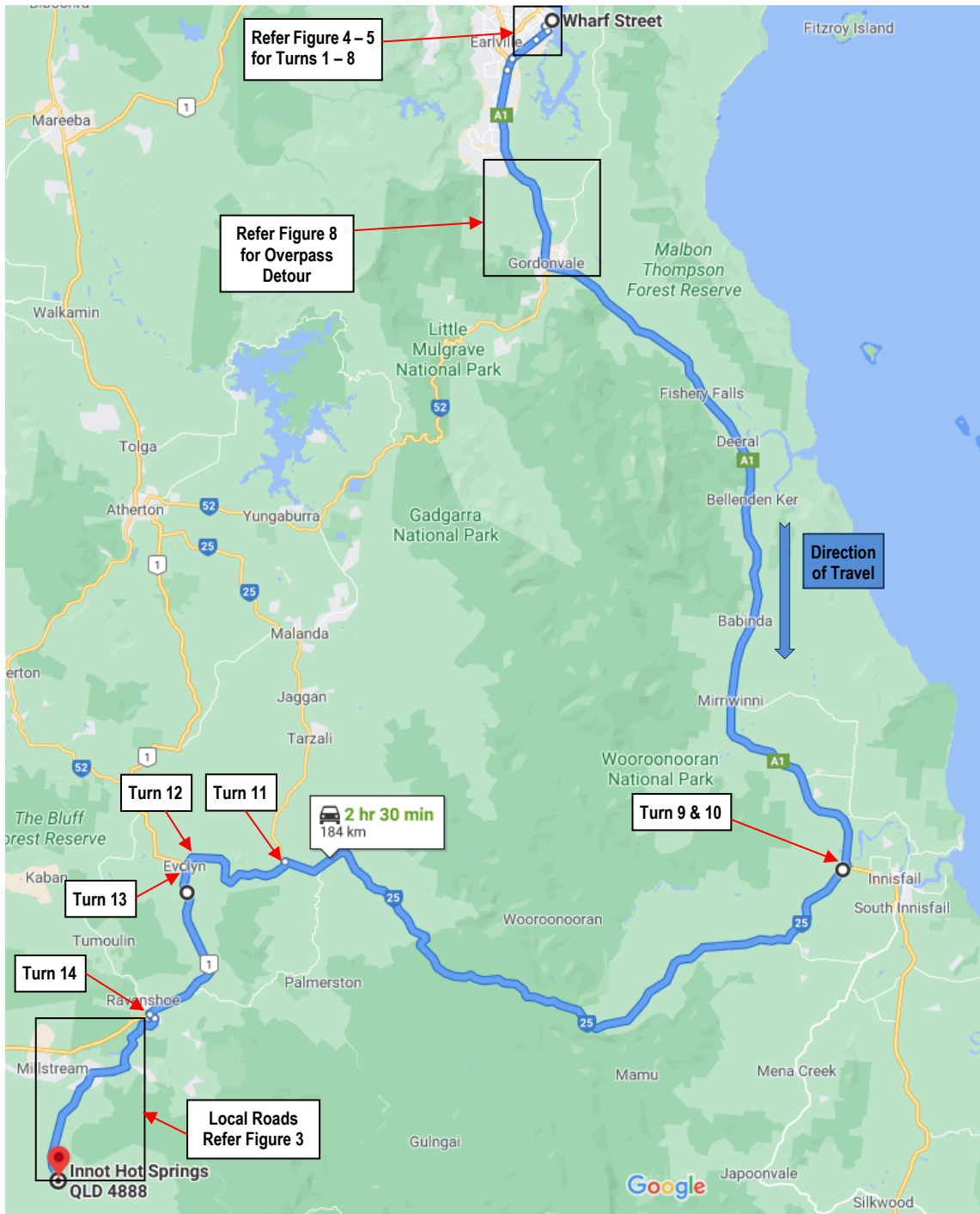


Figure 2 – Proposed transport route (whole route from Port of Cairns wharf to site)



Figure 3: CHLWF External Route Assessment

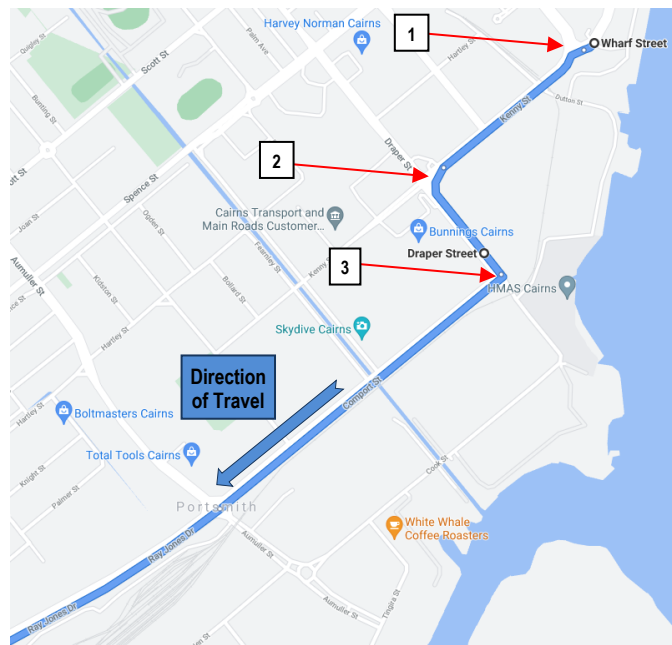


Figure 4 – Proposed Transport Route 1 (from wharf to Ray Jones Drive)



Figure 5 – Proposed Transport Route 2 (from wharf to Tingira Street laydown area)



Figure 6 – Proposed Transport Route 3 - from Tingira Street laydown to Ray Jones Dr

Table 1 below lists the constituting roads within each of the routes. A fourth route was also assessed as a potential detour to an overpass if needed. The vertical clearance detour (Transport Route 4) is discussed briefly in Section 4.5 and then in detail in Section 4.5.1.

Table 1: Transportation Route Description – OSOM Vehicles

Transport Route Description	Constituting Roads
From the wharf directly to the Project site (Option 1, Route 1)	Wharf Street Kenny Street Draper Street Comport Street Ray Jones Drive Bruce Highway Palmerston Highway East Evelyn Road Kennedy Highway Tully Falls Road Wooroora Road (Project site)
From the wharf to the Tingira Street laydown area (Option 2, Route 2)	Wharf Street Kenny Street Draper Street Cook Street Aumuller Street Tingira Street
From Tingira Street laydown area to Project site (Option 2, Route 3)	Tingira Street Aumuller Street Ray Jones Drive Bruce Highway Palmerston Highway East Evelyn Road Kennedy Highway Tully Falls Road Wooroora Road (Project site)
Vertical clearance detour for vehicles taller than 6 m: Exit Bruce Hwy at Edmonton and re-join Bruce Hwy at Gordonvale (Transport Route 4)	Thomson Road Page Road Hill Road Harris Road Warner-Harris Connector Road ¹ Warner Road Crossland Road Highleigh Road Cairns Road Draper Road

¹ – New road to be accessible before OSOM vehicle delivery date

The Port of Cairns wharf chosen for the assessment is wharf 4 – 6. The final berth to be used should be confirmed and this report revised. The assessment undertaken considers a one-way (south-bound) trip only.

4.2 Design Vehicles

The delivery vehicle providing the worst-case horizontal alignment during the construction of the wind farm will be a WTG blade transport. The vehicle arrangement used in the assessment is shown in Figure 7 below. The assumed Project blade length is 85m, however, as the specific dimensions and vehicle configuration is yet to be confirmed, a 90 m blade length has been adopted. This conservative approach was taken to provide additional surety. Given the large size of the blade trailer, this vehicle is deemed the governing vehicle that dictates the required intersection works. The oversize vehicles will be escorted to site.

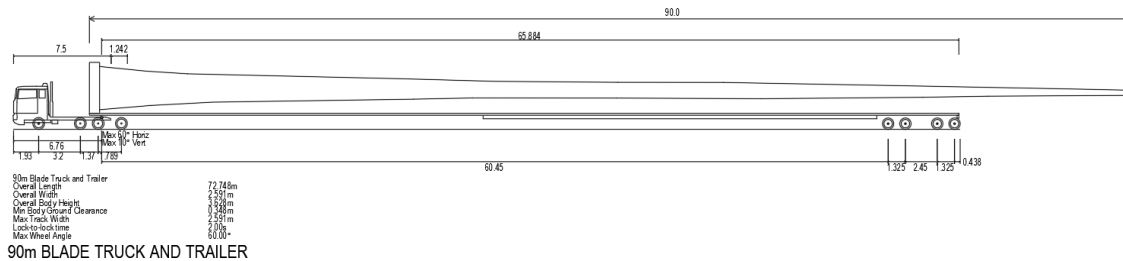


Figure 7 – Dimensions of Oversized Vehicle for Wind Turbine Generator (WTG) Blade Transportation

The vehicle providing the worst-case vertical clearance requirement is the transport delivering the turbine tower base. At this time the turbine base diameter has been provided as 5.5 m, however this is not final and should be confirmed by the Project Developer. The overhead obstruction clearances have been investigated in Section 4.5.

Another notable OSOM vehicle is the transformer transport, which can vary in size depending on the electrical design of the Project. Transformers are typically delivered on large, multi-row floats to effectively distribute the substantial weight. As a general rule, transformer delivery vehicles do not pose more geometrical issues than the blade transport in urban areas and on highways. Transformer transports, however, do tend to govern the track width requirement of the internal tracks more than the other OSOM vehicles.

Other large vehicles that are likely during construction, such as oversize vehicles for deliveries of power poles or B-Double vehicles for other material deliveries, are much smaller in size than the blade trailer vehicle.

4.3 Transport Permits

The use of oversize vehicles in transportation of Wind Turbine Generator components and wind transmission line components will require the Contractor’s appointed transportation company to apply for permits to the National Heavy Vehicle Regulator (NHVR). As part of obtaining the oversize permits, the proposed transport route will be assessed by NHVR and other referred assessors such as the Department of Transport and Main Roads.

4.4 Oversize Length Assessment

A desktop assessment was conducted to determine the viability of key intersections and road curves along the anticipated transport route. A swept path has been completed using AutoCAD Vehicle Tracking software to identify where temporary upgrades are required to intersections to enable the oversize vehicles to travel to site.

It’s worth noting that there are two other wind farm projects just north of Ravenshoe which are likely to utilise a significant proportion of the route proposed in this report. At time of writing, the Kaban Green Power Hub (wind farm) is under construction and located approximately 8 km north-west of Ravenshoe; and the proposed High Road Wind Farm is located approximately 13 km north of Ravenshoe. The upgrades needed to accommodate these two projects will likely mean that some of the conflicts identified in this report are not present at the time of OSOM transportation for the Chalumbin Wind Farm.

As mentioned in section 4.2 the swept path assessment was carried out using a 90 m long blade transport, which is a slightly more conservative length of the current WTG model being considered for the wind farm.

Table 2 summarises the road intersections and curves that were reviewed as potential areas of concern along the transport route for the blade trailer vehicle, with drawings showing the manoeuvres and required upgrades in Appendix C.

Table 2: Review of Intersections and Road Curves along Oversize Transportation Route

No.	Location Description	Map Reference Coordinates	Loaded Vehicle Manoeuvre	Modifications Required
1	Laydown area road, Wharf St & Kenny St intersection	-16.928961, 145.778399	2x left turn	Yes
2	Kenny St & Draper St intersection	-16.932609, 145.773947	Left turn	Yes
3	Draper St & Comport St intersection	-16.935214, 145.775864	Right turn	Yes
4	Draper St & Cook St intersection	-16.937455, 145.777640	Right turn	Yes
5a	Cook St & Aumuller St roundabout intersection	-16.943290, 145.770404	Left turn	Yes
5b	Aumuller Street roundabout	-16.943290, 145.770404	Straight through	Yes
6a & 6b	Aumuller St & Tingira St intersection	-16.944722, 145.772526	Right turn	Yes
7a & 7b	Tingira St bend	-16.949110, 145.770356	Left turn	No
8	Aumuller St & Ray Jones Dr	-16.949110, 145.770356	Right turn	Yes
9	Bruce Highway & Palmerston Highway intersection	-16.941723, 145.767780	Left turn	Yes
10	Palmerston Highway bend (300 m from Bruce Highway intersection)	-17.514317, 145.993736	Right turn	Yes
11	Millaa Millaa – Malanda Road & East Evelyn Road intersection	-17.510827, 145.585535	Left turn	Yes
12	East Evelyn Road bend (1 km from Kennedy Highway)	-17.508146, 145.517596	Left turn	No
13	East Evelyn Road & Kennedy Highway intersection	-17.514086, 145.512097	Left turn	Yes
14	Kennedy Highway & Tully Falls Road intersection	-17.615999, 145.487155	Left turn	Yes
Local Roads	Tully Falls Road & Wooroora Rd	Starting from: -17.615999, 145.487155	Assorted manoeuvres	Yes

4.5 Overhead Obstruction Assessment

To check the vertical clearance along the transport route, a review has been carried out on each of the overpasses along the route to ensure adequate clearance is available. All overhead obstructions along the anticipated transport route have been identified, with heights given where available. None of the overpass heights along the route were signed, but they were physically measured during the site investigation and the results summarised in Table 3 below.



The E2G upgrade includes realignment of the Bruce Highway underneath Overpass 3 and also the construction of Overpass 4, hence TMR were contacted to determine:

- a) the vertical clearance of Overpass 3 after the upgrade is complete; and
- b) the vertical clearance of Overpass 4 after it is constructed.

The heights provided by TMR are also provided in Table 3.

It is icubed consulting's experience that TMR tend to be conservative with their provided overpass height values, which is consistent with the height discrepancy seen between TMR's height and the measured height shown in Table 3. TMR also stated that the existing height of Overpass 3 (pre-upgrade) was to be maintained, implying it is likely the measured height of 6 m will be maintained after the upgrade. The height of Overpass 3 and 4 should be confirmed after the upgrade and before the OSOM vehicles travel the route.

Table 3: Review of Overhead Obstructions Along Transport Route

Location No.	Location Description	Map Reference Coordinates	TMR Provided Height (m)	Measured Height (m)
1	Caleb Shang Bridge	-16.967704, 145.746651	-	7.79
2	Murgatroyd Road	-16.977082, 145.743903	-	6.90
3 *	Cane train bridge, near Maitland Road	-17.060718, 145.769687	5.50	6.00
4 **	Pine-Creek Yarrabah Road, approx 400m south of Maitland Rd	-17.063817, 145.770342	6.50	-

* Bruce Highway road-alignment under overpass is due to be altered. Height should be confirmed after the upgrade is complete.

** Overpass currently under construction. Height should be confirmed after the upgrade is complete.

As stated in Section 4.2, the assumed WTG tower section diameter used for this assessment is 5.5 m. Taking into account the additional height from the vehicle to transport the tower, it is possible the total height of the vehicle carrying the tower will exceed the allowable vertical clearance of Overpass 3. It is noted however that 'Bookend' transports are a common transport method for WTG towers as they allow for the lowest possible load height. With a bookend trailer, it is expected the total transport height could be in the approximate vicinity of 5.75 m. The appropriateness of this would need to be assessed when a turbine has been selected by the proponent and further information in relation to logistics is at hand.

A potential detour has been discussed in Section 4.5.1 below.

4.5.1 Overhead Obstruction Detour Analysis

The vertical clearance detour (TR4) described in Table 1 is shown below in Figure 8. If the detour needs to be used (which is not confirmed at this stage), it will likely only be used by OSOM vehicles transporting a tower section. It must be noted that the detour includes a road that does not appear on any Google mapping imagery at this time, but is a part of the E2G upgrade works. The road is located between Harris Road and Warner Road and is currently labelled as 'Warner-Harris Connector Road' in the TMR E2G Project Map plan. The road is scheduled to be operational by the Chalumbin Wind Farm commencement date, and at time of the site inspection, the road has been constructed but is presently blocked off to public access (see Figure 9 below). The detour will not be needed for any un-loaded vehicles returning to Cairns; hence TR4 is a one-way route.



Figure 8 – Vertical clearance detour (Transport Route 4)



Figure 9 – Recently constructed Warner-Harris Connector Road (photo taken 26th May 2021 on Harris Road)

It is likely the detour will need some minor-moderate upgrades to accommodate the OSOM tower trailer vehicle. Upgrades in the form of shoulder gravel-widening are expected at the following locations:

- 1) corner of Page Road and Hill Road;
- 2) corner of Hill Road and Harris Road (this bend is to be upgraded as part of the E2G works);
- 3) corner of Harris Road and the new Warner-Harris Connector Road;
- 4) corner of the new Warner-Harris Connector Road and Warner Road; and
- 5) corner of Warner Road and Crossland Road.

The above numbered items also correspond to numbered locations shown in Figure 8 above.

In addition to the expected widening works above, the temporary removal of road furniture (including but not limited to signs, light poles, traffic lights, barriers, etc.) is expected at the following locations:

- the detour start point at Bruce Highway turning onto Thomson Road, Edmonton;
- the turn at the railway crossing on the corner of Highleigh Road and Cairns Road at Gordonvale; and
- the detour end point at Draper Road, Gordonvale turning back onto Bruce Highway.

Finally, there is culvert bridge crossing on Page Road that should be assessed before the OSOM tower vehicle traverses it. The structural capacity of the bridge will need to be confirmed and an image of the crossing is shown below in Figure 10.



Figure 10 – Culvert Bridge on Page Road (photo taken 26th May 2021)

As an alternate detour route, the E2G upgrade also includes a new road connection between Maher Road and Cairns Road which may be preferable. Instead of turning off Highleigh Road onto Cairns Road, the alternate route would turn onto Maher Road and then utilise the new road to turn left onto Cairns Road and then turn right back onto Draper Road. The alternate detour route is shown in red in Figure 11 below, with the original route shown in orange.



Figure 11 – Alternate vertical clearance detour route, utilising Maher Road upgrade

It should also be noted that the existing intersection between Bruce Highway and Warner Road is due to be removed as part of the E2G upgrade, meaning any detour plans utilising this existing intersection are likely not feasible.

4.6 Local Roadway Assessment

Given the change in characteristics of the lower order roads (Tully Falls and Wooroora Road) a more detailed assessment of these road has been carried out with a focus on those elements which are not present on the higher order and state-controlled roads.

Tully Falls Road (0.6 km) and Wooroora Road (19.3 km) are both contained wholly within the jurisdiction of Tablelands Regional Council. The arrows shown in Figure 3 indicate the direction that chainage (CH) was assigned for the report and supplementary drawings. Supplementary drawings can be found in Appendix C. The drawings utilise AutoCAD’s Vehicle Tracking software, to draw swept paths of the OSOM vehicles over road alignments. In conjunction with AutoCAD Map’s in-built aerial imagery the swept paths can be used to assess the existing horizontal road alignment for areas where upgrades may be required.

A site visit was undertaken by icubed personnel on 16 February 2021, videos and photos were taken on this visit. Findings from this visit as well as photo images are used to help identify and inform constraints and areas where further study may be required. It should be noted that checking of insufficient areas cannot be undertaken without detailed topographical survey. As such confirmation of road grading is outside the scope of this report and will require assessment at a future stage.

The issues identified with in the section are based on the existing roadway, it is however recommended that the roadway be reconstructed within the road reserve to current design standards and as such mitigate the issues.

4.6.1 Existing Road Environment

This section will describe the existing road conditions of the local roads Tully Falls Road and Wooroora Road. It is best read in conjunction with drawing CHLWF-TRS-WOOR 1 (in Appendix C) which shows the location of the different ‘Sections’ described in this section of the report.



Section 1: Tully Falls Road is generally in good condition, with little to no upgrade works being required. A structural assessment will likely be required to confirm South Cedar Creek Bridge can sustain the loads imposed by OSOM vehicles and construction traffic. Minor intersection works will be required at both the Kennedy Highway / Tully Falls Road Intersection and Tully Falls Road / Wooroora Road intersection. Upgrades are likely to involve temporary relocation of services, temporary removal of traffic islands, vegetation removal and minor pavement widening, if any widening is needed at all.

Section 2: Wooroora Road will require little to no work in this section along the straights. At bends there will be some localised requirement for vegetation removal and pavement widening, and encroachment into private properties will need to be confirmed. Existing causeways will need to be confirmed for vertical clearance.

Section 3: This section of Wooroora Road is constrained horizontally and vertically, there will need to be pavement widening and vegetation removal to facilitate OSOM delivery. Vertically, the causeway of Stoney Creek will likely require removal and reinstatement. Due to the proximity of upstream houses (approximately 120 m), the upgrade will need to ensure that water level increases in flooding events are minimised.

Section 4: Limited upgrades are anticipated in this section, there may be localised widening and vegetation removal and some tighter bends. Several vertical curves will require confirmation of adequacy.

Section 5: The horizontal geometry of the approach into Vine Creek Bridge is tight (an approximate R30 curve). Vine Creek Bridge itself is narrow; approximately 4.0 m wide. The modelled OSOM vehicle manoeuvres suggest that a bridge replacement is likely to be required. There is an opportunity to improve the approach geometry to avoid bridge removal; however, this is expected to require considerable encroachment into adjoining private properties. Further studies would be required to confirm if it is feasible to maintain the bridge.

Section 6: Horizontally this section of road is straight with large radius bends, the width of road should be able to facilitate OSOM delivery. There are several vertical curves which require checks to confirm adequacy. Break-O-Day Creek causeway will likely require removal and reinstatement due to the tightness of the vertical sag.

Section 7: It is likely that the entire section of road will have to be upgraded to facilitate OSOM delivery. It is expected all causeways will require removal and reinstatement.

Section 8: The entirety of this road section will require a rebuild. Oaky Creek Causeway will need to be investigated further as this has a large upstream catchment and will require removal and reinstatement.

Unsealed sections of Wooroora Road will require more significant upgrades to facilitate OSOM delivery. The unsealed section of road has reduced road standards; tighter horizontal bends, tighter vertical curves (particularly at causeways), reduced road widths, reduced clearance zones (vegetation is closer to the roadside). There will be more upgrades required here as a result of the currently lower road standard.

4.6.2 *Waterway Crossings*

The waterway crossings on the existing roadway consist of a mix of bridges, culverts and causeway of various standards and have been itemised in Table 4. Should the existing roadway be utilised to access the site each of the crossings will need to be assessed from a vertical curve and mass limit perspective.

Table 4: External Route Major Waterway Crossing Summary

Road	Chainage	Structure	Stream Name
Tully Falls Road	0.30 km	Bridge	South Cedar Creek
Wooroora Road	1.05 km	Culvert	Unnamed tributary – Spanswick Creek
Wooroora Road	3.00 km	Causeway	Spanswick Creek
Wooroora Road	5.40 km	Causeway	Stoney Batter Creek
Wooroora Road	5.60 km	Causeway	Unnamed tributary – Stoney Batter Creek
Wooroora Road	7.25 km	Culvert	Unnamed tributary – The Millstream
Wooroora Road	9.90 km	Bridge	Vine Creek
Wooroora Road	11.00 km	Causeway	Break-O-Day Creek
Wooroora Road	12.40 km	Causeway	Unnamed tributary – Oaky Creek
Wooroora Road	13.40 km	Causeway	Unnamed tributary – Oaky Creek
Wooroora Road	13.60 km	Causeway	Unnamed tributary – Oaky Creek
Wooroora Road	14.70 km	Causeway	Unnamed tributary – Oaky Creek
Wooroora Road	14.90 km	Causeway (no concrete)	Unnamed tributary – Oaky Creek
Wooroora Road	15.80 km	Causeway	Unnamed tributary – Oaky Creek
Wooroora Road	16.75 km	Causeway	Oaky Creek
Wooroora Road	18.20 km	Unknown	Unnamed tributary – Oaky Creek
Wooroora Road	18.80 km	Unknown	Unnamed tributary – Blunder Creek

4.6.3 Overhead Lines

There are several overhead lines within the local roadway section which will need to be assessed in consultation with the power authority to ascertain whether they can be propped during the transportation of the vehicles. Table 5, shows the locations where overhead lines are present along the roadway. Figure 12 shows an overhead line crossing the road.

Table 5: Overhead lines

Road	Chainage (km) ¹
Tully Falls Road	0.0 – 0.6
Wooroora Road	0.0 – 0.3
Wooroora Road	1.9
Wooroora Road	2.8
Wooroora Road	3.6
Wooroora Road	4.4 – 4.9
Wooroora Road	5.6
Wooroora Road	7.2 – 10.4
Wooroora Road	11.1 – 11.6
Wooroora Road	11.9

1. Where a chainage range is given e.g., 7.2 – 10.4 there are multiple overhead line crossings, these areas are typically rural residential zones.



Figure 12: Overhead Lines

4.6.4 Roadside Vegetation

Roadside vegetation is present for most of the local roadway section, along straights where OSOM vehicles remain within the road pavement there is little to no impact on vegetation. Around curves vegetation presents a larger the blade trailer requires larger clearances and is more likely to impact vegetation, in these locations clearing may be required.



Figure 13: Typical roadside vegetation

4.6.5 Cattle Grids

Cattle grids are existing road features that prevent stock from leaving the property they are on via the road, as shown in Figure 14. Cattle grids will require a structural assessment to ensure they can carry OSOM and heavy vehicular loads. Refer to Table 6 for cattle grid locations.



Figure 14: Typical Cattle Grid

Table 6: Cattle Grid Locations

Road	Chainage
Woorora Road	12.2
Woorora Road	17.7

4.6.6 Road Reserve Boundaries

As noted above the local roadway section has not been constructed within the road reserve for much of its length, additionally there are areas where although the roadway is within the road reserve the OSOM swept path will encroach on private property. Each of these issues is discussed separately in the following sections.

1. The existing road sits outside the designated road reserve boundary.
2. OSOM swept manoeuvres encroach into private property.

Existing road reserve and property boundaries are taken from high level spatial information. Historically this information has a high degree of variability and accuracy can vary widely. Outputs of this report are based on provided input data. At the time of detailed design, a cadastral survey may be required to confirm accuracy of boundaries.

4.6.7 Existing Road Outside Road Reserve Boundaries

On lower order rural roads it is not uncommon for the road to be built partially or fully outside the designated road reserve. When undertaking upgrade road works the overseeing authority may require the proponent to reinstate correct road reserve boundaries. Prior to discussions being held with the authority no comment can be made on whether this is required.

Table 7 shows the chainages along Woorora Road where the existing carriageway is outside the current road reserve boundaries. The extent is nominated as either being partially or fully outside the road reserve, information is based off aerial mapping and does not account for table drains or batters extending outside of the road reserve.

Table 7: Road Reserve Boundary Deviations

Chainage (km)	Extent
2.50 – 2.70	Partial
4.95 – 5.00	Partial
12.40 – 12.50	Partial
12.80 – 12.85	Partial
13.40 – 13.60	Partial
13.95 – 14.30	Full
14.75 – 14.95	Full
15.05 – 15.70	Full
15.80 – 16.40	Full
16.65 – 16.95	Full
17.45 – 18.95	Full

It is recommended that the proponent engages with Tablelands Regional Council to discuss the likely implications of the existing carriageway deviating from the road reserve boundaries, in the context of future upgrade works for Wooroora Road associated with the Project.

4.6.8 Swept Path OSOM Encroachment

In constrained locations, particularly, tight horizontal curves OSOM vehicles may encroach into private property. In these situations, landowner permission would need to be sought to confirm that encroachment into private property is acceptable, if permission is not granted road realignment would likely be required to facilitate OSOM delivery. Table 8, shows lots where encroachment into private properties occurs on Wooroora Road based off swept path manoeuvres.

Table 8: OSOM swept path lot encroachment.

Chainage (km)	Affected Lots
2.75 – 2.80 ¹	71 SP 202131, 6 SP 106013
4.90 – 5.00	6 RP 748424
5.10 – 5.50 ¹	6 RP 748424, 7 RP 743381, 8 RP 743381
9.80 – 9.85	437 RP 889658

¹ – Multiple encroachments incur in this location.

4.7 Mass Limit Assessment

The Transport Route from the Port of Cairns to the Cairns laydown area and to the development site was assessed using the National Heavy Vehicle Regulator’s (NHVR) Portal. From this assessment it was determined that the roads assessed within the Swept Path analysis were generally approved Higher Mass Limit roads. The mass limit assessment on these roads is listed in Table 9. None of the roads in the detour route (TR4) are HML approved.

Table 9: NHVR HML Approved Roads

Relevant Transport Route	Road Section	HML Approved Route
1, 2	Wharf Street	No
1, 2	Kenny Street	Partially – first 150 m from Wharf Street isn’t approved
1	Draper Street	Yes
2	Draper Street	Partially – Draper Street east of intersection with Comport Street is not HML approved
2	Cook Street	No
2	Aumuller Street and roundabout	No
3	Aumuller Street and roundabout	Partially – Aumuller west of roundabout is approved, Aumuller east of roundabout is not approved, and the roundabout itself is not approved.
2, 3	Tingira Street	No
1	Comport Street	Yes
1	Ray Jones Drive	Yes
1	Bruce Highway	Yes
1	Palmerston Highway	Partially – only first 6 km from Bruce Highway is approved
1	Kennedy Highway	No
1	Tully Falls Road	No
1	Wooroora Road	No

There are a number of roads along the routes that either have conditions imposed on the heavy vehicle usage or are not currently approved as a higher mass limit route. Upon confirmation of the final vehicle configurations, an assessment will be needed to determine whether the heavy vehicles transporting turbine components are within the requirements for the heavy vehicle road conditions or are suitable to be on the approved heavy vehicle registry. If required, an application can be arranged to have the relevant roads placed on the register. Table 10 summarises the mass limits used in the NHVR assessment.

Table 10: Heavy Vehicle Mass Limits (NHVR, 2014)

Type of Axle Group	Maximum mass (tonnes) permitted under GML ¹	Maximum mass (tonnes) permitted under HML
Tandem axle group	16.5t	17.0t
Tri-axle group	20.0t	22.5t
Single drive axles on buses	9.0t	10.0t
Six tyred tandem axle groups	13.0t	14.0t

1 – General Mass Limits (GML)

5 Road and Intersection Upgrades

From review of the oversize Transportation Route (refer to Table 2 above), the following upgrade works or temporary works listed in Table 11 were identified as being required to enable oversize vehicles to negotiate the roads. Refer to Appendix C, which shows the associated swept path drawings.

The required modifications will need to be confirmed prior to transportation to ensure that no further amendments to the intersections are needed.

Table 11: Review of Intersections and Road Curves along Oversize Transportation Routes

No.	Location Description	Modifications Required
1	Laydown area road, Wharf St & Kenny St intersection	<ul style="list-style-type: none"> • Temporary lane closure • Vegetation and obstruction clearing • 5x signs to temporarily remove • 1x light pole to remove
2	Kenny St & Draper St intersection	<ul style="list-style-type: none"> • 5x traffic lights to remove • Temporary lane closure
3	Draper St & Comport St intersection	<ul style="list-style-type: none"> • Temporary lane closure • 1x traffic light to remove • 2x light poles to remove
4	Draper St & Cook St intersection	<ul style="list-style-type: none"> • Temporary lane closure • 2x light poles to remove
5a	Cook St & Aumuller St roundabout intersection	<ul style="list-style-type: none"> • 4x signs to temporarily remove • Temporary lane closure • 1x light pole to remove • 1x power pole to remove • Minor vegetation clearing
5b	Aumuller Street roundabout	<ul style="list-style-type: none"> • Temporary lane closure • 2x sign to remove
6a & 6b	Aumuller St & Tingira St intersection	<ul style="list-style-type: none"> • Temporary lane closure • 4x signs to be removed • 1x light pole to be removed • Vegetation clearing
7a & 7b	Tingira St bend	<ul style="list-style-type: none"> • Temporary lane closure
8	Aumuller St & Ray Jones Dr	<ul style="list-style-type: none"> • Temporary lane closure • 1x traffic light to be removed
9	Bruce Highway & Palmerston Highway intersection	<ul style="list-style-type: none"> • Temporary lane closure • 3x light poles to be temporarily removed • 2x signs to be temporarily removed
10	Palmerston Highway bend (300 m from Bruce Highway intersection)	<ul style="list-style-type: none"> • Pavement widening • 1x power poles to remove
11	Millaa Millaa – Malanda Road & East Evelyn Road intersection	<ul style="list-style-type: none"> • Temporary lane closure • 4x light poles to temporarily remove • 1x sign to temporarily remove • 1x power pole to remove • Possible vegetation clearing
12	East Evelyn Road bend (1 km from Kennedy Highway)	<ul style="list-style-type: none"> • Vegetation clearing • Unlikely pavement widening (TBC with survey)



No.	Location Description	Modifications Required
13	East Evelyn Road & Kennedy Highway intersection	<ul style="list-style-type: none"> • Temporary lane closure • 9x sign to temporarily remove • Pavement widening
14	Kennedy Highway & Tully Falls Road intersection	<ul style="list-style-type: none"> • Temporary lane closure • 5x light poles to remove • 2x signs to remove
Local Roads	Wooroora Rd & Tully Falls Road	<ul style="list-style-type: none"> • Multiple instances of vegetation clearing • Road to be realigned into road corridor • Localised pavement widening • Likely re-sheet of pavement required over unsealed sections of Wooroora Road

5.1 Traffic Control Measures

Traffic Control Measures will be implemented to enable road upgrade works to commence. These measures will be determined at a later date by the appointed Civil Contractors Traffic Management subcontractor.

6 Conclusion and Recommendations

This report presents an assessment of proposed OSOM transport routes from the Port of Cairns to the Chalumbin Wind Farm site located some 20 km south of Ravenshoe, QLD. For the purpose of this assessment the Wind Farm is intended to be built in a single stage, with the Project execution to be over approximately 2.5 years, starting from approximately mid-2022. This report also incorporated TMR's planned Bruce Highway upgrades (known as E2G) between the towns of Edmonton and Gordonvale, due to be completed mid-2023.

The transport routes presented include a route direct from the Port of Cairns to the Project site and also routes aiming to utilise a laydown area in proximity to the port before heading to the Project site. This report has shown 15 locations along the approximate 185 km transportation route from the Port of Cairns to the site that have potential to be unsuitable in their existing arrangement for the OSOM vehicles to traverse and/or result in clashes between a 90 m long blade trailer vehicle and existing infrastructure. The 15 identified locations were assessed using AutoCAD's Vehicle Tracking software and it was found that 13 required some level of upgrade or minor temporary works. The anticipated upgrades are listed in Table 11, and typically involve minor works such as temporary removal/upgrade of road furniture (such as signs, barriers and poles, etc), trimming/temporary removal of vegetation or gravel pavement widening. By carrying out these road upgrades, the oversize WTG blade transportation vehicles are expected to negotiate the transportation route successfully. The oversize blade and trailer configuration used in this assessment was 90 m in length, which is more conservative than the current proposed blade length for the Project.

Through a desktop analysis and physical overpass measurements along the transport route, it was also determined that the tallest vehicle able to easily travel to site will likely have a maximum height of 6.0 m. This height will need to be confirmed after the completion of the relevant works in TMR's unfolding E2G Bruce Highway upgrade, which includes a road realignment under the overpass governing maximum vehicle height (the cane rail bridge next to Maitland Road, Overpass No. 3 in this report). E2G works also include a new overpass along the transport route but this is not expected to govern maximum vehicle height. A detour route was also identified and assessed for WTG tower section vehicles that will exceed the assumed 6.0 m allowable height clearance, which is discussed in detail in Section 4.5.1. The upgrades within the E2G works are expected to be available at the time of OSOM delivery.

Note that signboards and power lines clearances have not been assessed in this report, however many overhead lines have been identified along the route.

The transport routes assessed on the NHVR's portal shows that the route is mostly an approved Higher Mass Limit (HML) path, with some roads needing to be added to the register with an application, if required.

We do note that some further actions will be needed to allow vehicles to utilise the designated transportation route. These actions include:

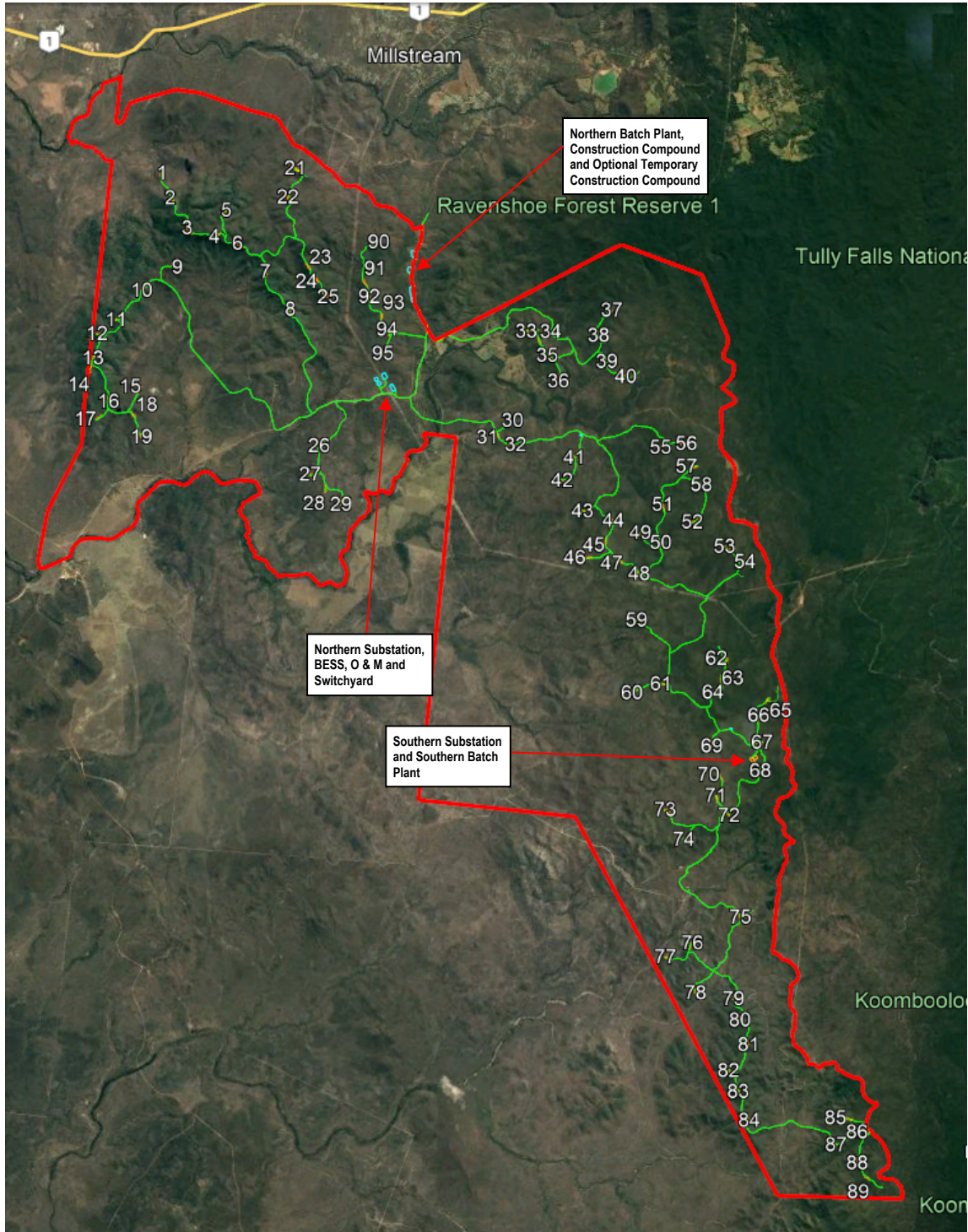
- Prior to delivery to site, the transport contractor will need to conduct a survey of vertical height clearances at confined locations such as bridges, overhead electrical or telecommunication wires or infrastructure or other infrastructure and adequate clearances be checked to be suitable.
- National Heavy Vehicle Regulator permits shall be applied for and obtained by the appointed transportation contractor prior to deliveries to site.
- The load capacities of sections identified along the transportation route (such as but not limited to culverts, bridges, unsealed or sealed pavements in poor condition) shall be checked and approved for use by the relevant authority.
- It is recommended that the proponent engages with Tablelands Regional Council to discuss the likely implications of the existing carriageway deviating from the road reserve boundaries, in the context of future upgrade works for Wooroora Road associated with the Project.

Note that the assessment has been carried out based on a standardised vehicle and blade measurement. Actual vehicle and blade characteristics may differ.

Based on the preliminary assessment undertaken it is considered that a feasible transport route from the Port of Cairns to the Project site is available, subject to resolving the potential conflicts with the relevant stakeholders, and conducting the identified works and implementing appropriate mitigation measures where required.

In light of the above, the Project achieves compliance with Performance Outcome 6 of State Code 23: Wind farm development, to the extent that it relates to identification and assessment of a feasible transport route to the Project site.

Appendix A – Preliminary Wind Farm Layout





Appendix B – Overhead Obstruction Locations

Table B1 – Overhead lines observed from Cairns to Palmerston Highway / Bruce Highway intersection

No.	OHL Coordinate	No.	OHL Coordinate	No.	OHL Coordinate
1	-16.94256, 145.76899	46	-17.06259, 145.79569	91	-17.44506, 145.95335
2	-16.94318, 145.76988	47	-17.05997, 145.79543	92	-17.44497, 145.95301
3	-16.94345, 145.77045	48	-17.05811, 145.79524	93	-17.43934, 145.94125
4	-16.94325, 145.77062	49	-17.05537, 145.79497	94	-17.43546, 145.93904
5	-16.94308, 145.7707	50	-17.0546, 145.79489	95	-17.43262, 145.93012
6	-16.94259, 145.77117	51	-17.05351, 145.79479	96	-17.43161, 145.92421
7	-16.94221, 145.77154	52	-17.05351, 145.79479	97	-17.42797, 145.91992
8	-16.94203, 145.77174	53	-17.05217, 145.79465	98	-17.42549, 145.91354
9	-16.94187, 145.77193	54	-17.0514, 145.79458	99	-17.41706, 145.90889
10	-16.94442, 145.77267	55	-17.05152, 145.79428	100	-17.41552, 145.90905
11	-16.93984, 145.77476	56	-17.05194, 145.79344	101	-17.41475, 145.90913
12	-16.9354, 145.77615	57	-17.05237, 145.78258	102	-17.41321, 145.9093
13	-16.9353, 145.7761	58	-17.05184, 145.77714	103	-17.40977, 145.90966
14	-16.9342, 145.77523	59	-17.05138, 145.7724	104	-17.40821, 145.90983
15	-16.93378, 145.77487	60	-17.05112, 145.76968	105	-17.40543, 145.90992
16	-16.93156, 145.77514	61	-17.05101, 145.76882	106	-17.40242, 145.90911
17	-16.93127, 145.77551	62	-17.05073, 145.76846	107	-17.40175, 145.90905
18	-16.93107, 145.77577	63	-17.04054, 145.76415	108	-17.40127, 145.90902
19	-16.93091, 145.77597	64	-17.04001, 145.76419	109	-17.40052, 145.90906
20	-16.93074, 145.77618	65	-17.03412, 145.76921	110	-17.40038, 145.90908
21	-16.9304, 145.77663	66	-17.0323, 145.77068	111	-17.39983, 145.90914
22	-16.93012, 145.77698	67	-17.02347, 145.77086	112	-17.39955, 145.90917
23	-16.92994, 145.77723	68	-17.02065, 145.76974	113	-17.39901, 145.90922
24	-17.08644, 145.78033	69	-17.01664, 145.76991	114	-17.39874, 145.90925
25	-17.08756, 145.78352	70	-17.01557, 145.76007	115	-17.39846, 145.90928
26	-17.08827, 145.78568	71	-17.01529, 145.75621	116	-17.39791, 145.90934
27	-17.08831, 145.78582	72	-17.0152, 145.75508	117	-17.39777, 145.90935
28	-17.0884, 145.78677	73	-17.01745, 145.75213	118	-17.3972, 145.90941
29	-17.08811, 145.7868	74	-17.01778, 145.75173	119	-17.39501, 145.90965
30	-17.08713, 145.78664	75	-17.01897, 145.74959	120	-17.38527, 145.91073
31	-17.08651, 145.78641	76	-17.0189, 145.74891	121	-17.38073, 145.9115
32	-17.08622, 145.78629	77	-17.01879, 145.74776	122	-17.3729, 145.91288
33	-17.08518, 145.78605	78	-17.01876, 145.74745	123	-17.36754, 145.91466
34	-17.08352, 145.78602	79	-17.01865, 145.74634	124	-17.34525, 145.9248
35	-17.08248, 145.78673	80	-17.51219, 145.99243	125	-17.3362, 145.92759
36	-17.08228, 145.78689	81	-17.51063, 145.99229	126	-17.33316, 145.92788
37	-17.0804, 145.78832	82	-17.50364, 145.99299	127	-17.3262, 145.92871
38	-17.0761, 145.79171	83	-17.50304, 145.99305	128	-17.32557, 145.92869
39	-17.07415, 145.79298	84	-17.48086, 145.99	129	-17.32128, 145.92799
40	-17.07141, 145.79382	85	-17.48057, 145.98969	130	-17.31779, 145.9277
41	-17.07069, 145.79432	86	-17.47662, 145.97865	131	-17.31431, 145.92634
42	-17.06847, 145.79597	87	-17.47199, 145.96809	132	-17.3102, 145.92543
43	-17.06669, 145.79684	88	-17.45753, 145.9621	133	-17.30939, 145.92564
44	-17.0664, 145.79683	89	-17.45571, 145.96154	134	-17.30866, 145.92595
45	-17.06542, 145.79643	90	-17.4459, 145.95564	135	-17.30715, 145.92683



136	-17.29948, 145.92799	185	-17.16351, 145.87708	194	-17.15364, 145.86249
137	-17.29925, 145.92801	186	-17.16278, 145.87631	195	-17.15208, 145.85977
138	-17.29758, 145.92816	187	-17.16112, 145.87431	196	-17.14951, 145.85608
139	-17.29712, 145.92818	188	-17.16042, 145.87346	197	-17.14785, 145.85369
140	-17.29667, 145.92819	189	-17.1588, 145.87149	198	-17.14694, 145.85237
141	-17.29473, 145.92783	190	-17.1575, 145.86952	199	-17.1464, 145.85159
142	-17.28696, 145.92257	191	-17.15659, 145.86689	200	-17.12669, 145.82272
143	-17.28511, 145.92166	192	-17.15454, 145.86361	201	-17.11661, 145.8136
144	-17.28405, 145.92137	193	-17.15422, 145.86325	202	-17.11478, 145.81227
145	-17.2795, 145.92144	194	-17.15364, 145.86249	203	-17.1056, 145.79866
146	-17.27862, 145.92152	195	-17.15208, 145.85977	204	-17.10353, 145.79557
147	-17.27564, 145.92117	196	-17.14951, 145.85608	205	-17.09935, 145.77985
148	-17.27357, 145.92039	197	-17.14785, 145.85369	206	-17.08088, 145.77539
149	-17.27261, 145.92015	198	-17.14694, 145.85237	207	-17.08008, 145.77542
150	-17.27214, 145.92007	199	-17.1464, 145.85159	208	-17.07664, 145.77558
151	-17.27165, 145.91999	200	-17.12669, 145.82272	209	-17.07596, 145.77558
152	-17.27093, 145.91987	201	-17.11661, 145.8136	210	-17.06947, 145.77255
153	-17.25189, 145.92304	202	-17.11478, 145.81227	211	-17.0663, 145.77166
154	-17.25092, 145.92311	203	-17.1056, 145.79866	212	-17.0646, 145.77123
155	-17.24293, 145.9229	204	-17.10353, 145.79557	213	-17.06367, 145.77096
156	-17.24002, 145.92301	205	-17.09935, 145.77985	214	-17.06277, 145.7706
157	-17.2369, 145.92245	206	-17.08088, 145.77539	215	-17.05885, 145.76934
158	-17.23307, 145.92153	207	-17.08008, 145.77542	216	-17.05065, 145.76839
159	-17.2244, 145.91713	208	-17.07664, 145.77558	217	-17.04689, 145.76791
160	-17.22236, 145.9158	209	-17.07596, 145.77558	218	-17.04229, 145.76587
161	-17.22225, 145.91572	210	-17.06947, 145.77255	219	-17.04182, 145.7655
162	-17.22133, 145.91508	211	-17.0663, 145.77166	220	-17.04141, 145.76507
163	-17.22067, 145.91463	212	-17.0646, 145.77123	221	-17.04063, 145.76391
164	-17.2197, 145.91395	213	-17.06367, 145.77096	222	-17.03333, 145.75232
165	-17.21872, 145.91327	214	-17.06277, 145.7706	223	-17.03129, 145.75047
166	-17.21737, 145.91232	215	-17.05885, 145.76934	224	-17.01835, 145.74483
167	-17.2164, 145.91164	216	-17.05065, 145.76839	225	-17.01579, 145.74442
168	-17.20842, 145.90775	217	-17.04689, 145.76791	226	-17.01287, 145.74437
169	-17.20581, 145.90583	218	-17.04229, 145.76587	227	-17.01202, 145.74437
170	-17.20462, 145.9048	219	-17.04182, 145.7655	228	-17.00482, 145.74448
171	-17.20379, 145.90405	220	-17.04141, 145.76507	229	-16.97664, 145.74399
172	-17.19798, 145.89885	221	-17.04063, 145.76391	230	-16.96745, 145.74681
173	-17.19326, 145.89365	222	-17.03333, 145.75232	231	-16.96672, 145.74699
174	-17.19297, 145.89332	223	-17.03129, 145.75047	232	-16.95632, 145.74919
175	-17.18697, 145.88878	224	-17.01835, 145.74483	233	-16.95177, 145.75235
176	-17.18585, 145.88823	185	-17.16351, 145.87708	234	-16.93542, 145.77567
177	-17.18515, 145.88784	186	-17.16278, 145.87631	235	-16.93473, 145.7757
178	-17.18263, 145.88643	187	-17.16112, 145.87431	194	-17.15364, 145.86249
179	-17.17685, 145.8832	188	-17.16042, 145.87346	195	-17.15208, 145.85977
180	-17.17592, 145.88237	189	-17.1588, 145.87149	196	-17.14951, 145.85608
181	-17.17347, 145.87972	190	-17.1575, 145.86952	197	-17.14785, 145.85369
182	-17.16752, 145.87847	191	-17.15659, 145.86689	198	-17.14694, 145.85237
183	-17.16641, 145.87842	192	-17.15454, 145.86361	199	-17.1464, 145.85159
184	-17.16418, 145.8776	193	-17.15422, 145.86325	200	-17.12669, 145.82272



201	-17.11661, 145.8136	213	-17.06367, 145.77096	225	-17.01579, 145.74442
202	-17.11478, 145.81227	214	-17.06277, 145.7706	226	-17.01287, 145.74437
203	-17.1056, 145.79866	215	-17.05885, 145.76934	227	-17.01202, 145.74437
204	-17.10353, 145.79557	216	-17.05065, 145.76839	228	-17.00482, 145.74448
205	-17.09935, 145.77985	217	-17.04689, 145.76791	229	-16.97664, 145.74399
206	-17.08088, 145.77539	218	-17.04229, 145.76587	230	-16.96745, 145.74681
207	-17.08008, 145.77542	219	-17.04182, 145.7655	231	-16.96672, 145.74699
208	-17.07664, 145.77558	220	-17.04141, 145.76507	232	-16.95632, 145.74919
209	-17.07596, 145.77558	221	-17.04063, 145.76391	233	-16.95177, 145.75235
210	-17.06947, 145.77255	222	-17.03333, 145.75232	234	-16.93542, 145.77567
211	-17.0663, 145.77166	223	-17.03129, 145.75047	235	-16.93473, 145.7757
212	-17.0646, 145.77123	224	-17.01835, 145.74483		



Table B2 – Overhead Obstructions Observed between Bruce Highway and Tully Falls Road (chainage measured from Bruce Highway intersection with Palmerston Highway).

No.	Obstruction Description	Chainage	Comment	No.	Obstruction Description	Chainage	Comment
1	OHL	0.15		44	OHL	8.25	2 crossings
2	OHL	0.3		45	OHL	8.4	
3	OHL	0.3		46	OHL	9.0	
4	OHL	0.4		47	OHL	9.9	
5	OHL	0.8		48	OHL	10.0 – 10.2	4 crossings
6	OHL	0.9		49	OHL	10.8	
7	OHL	1.0		50	OHL	11.2	
8	OHL	1.1		51	OHL	11.8	
9	OHL	1.5		52	OHL	11.9	
10	OHL	1.6		53	OHL	12.0	
11	OHL	1.7		54	OHL	12.1	
12	OHL	1.9		55	OHL	12.2	
13	OHL	2.0		56	OHL	12.6	
14	OHL	2.5		57	OHL	12.7	
15	OHL	2.6		58	OHL	13.1	
16	OHL	2.65		59	Pruning	14.0	
17	OHL	3.1	Ample clearance	60	OHL	14.1	
18	OHL	3.2		61	OHL	15.3	2 crossings
19	OHL	3.4	2 crossings	62	OHL	18.0	
20	OHL	3.5		63	OHL	18.1	2 crossings
21	OHL	3.5		64	OHL	18.2	2 crossings
22	OHL	4.1		65	OHL	18.3	
23	OHL	4.7		66	Pruning & OHL	20.4	
24	OHL	4.8		67	OHL	20.7	
25	OHL	4.85		68	OHL	20.75	
26	OHL	4.9		69	OHL	20.8	3 crossings
27	OHL	4.95		70	OHL	21.0	
28	OHL	5.1		71	OHL	21.4	
29	OHL	5.3		72	OHL	22.7	
30	OHL	5.5	2 crossings	73	OHL	23.2	
31	OHL	5.6		74	OHL	23.6	
32	OHL	5.9		75	OHL	25.1	
33	OHL	6.0		76	OHL	27.3	
34	OHL	6.3		77	Various pruning	27.8 – 43.8	
35	OHL	6.4		78	3 Fauna crossings	38.8 – 39	See Figure B2
36	OHL	6.45	2 crossings	79	Overhead electric sign	44.5	See Figure B3
37	OHL	6.7		80	OHL	44.8	
38	OHL	6.75		81	OHL	45.2	
39	OHL	6.8		82	OHL	46.9	
40	OHL	6.9		83	OHL	47.2	
41	OHL	7.4		84	OHL	47.6	
42	OHL	7.8		85	OHL	48.2 – 48.3	3 crossings
43	OHL	7.9		86	OHL	48.8	2 crossings



87	Possible Pruning	48.9 – 49.2		124	OHL	67.7 – 67.8	3 crossings
88	OHL	49.0		125	OHL	68.1	
89	OHL	49.1		126	OHL	68.2	
90	OHL	49.3		127	OHL	68.3	2 crossings
91	OHL	50.9		128	OHL	68.7	
92	OHL	53.0		129	OHL	69.4	
93	OHL	53.5	3 crossings	130	Various pruning	69.4 – 71.2	
94	OHL	53.6		131	OHL	71.2	
95	OHL	53.7		132	OHL	71.3	
96	OHL	54.1		133	OHL	71.4	
97	OHL	54.2		134	OHL	71.9	2 crossings
98	OHL	54.6 – 55.0	8 crossings	135	OHL	72.1	
99	OHL	55.3		136	OHL	72.3	
100	OHL	55.4	2 crossings	137	OHL	72.9	
101	OHL	55.5		138	OHL	73.0	
102	OHL	56.1		139	OHL	73.7	
103	OHL	56.7		140	OHL	73.9	
104	OHL	56.9		141	OHL	75.3	
105	OHL	57.7		142	OHL	75.7	
106	OHL	58.2		143	OHL	76.6	
107	OHL	58.7	2 crossings	144	OHL	76.8	
108	OHL	59.8		145	OHL	77.4	
109	OHL	60.0		146	OHL	78.1	2 crossings
110	OHL	61.0		147	OHL	78.5	2 crossings
111	OHL	61.3		148	OHL	78.8	
112	OHL	61.6		149	OHL	79.1	2 crossings
113	OHL	62.0		150	OHL	79.6	
114	OHL	62.1		151	OHL	79.7	
115	OHL	63.7		152	OHL	80.0	
116	OHL	64.2		153	OHL	80.1	
117	OHL	64.3		154	OHL	80.7	
118	OHL	65.7		155	OHL	80.9	
119	OHL	66.5		156	OHL	81.4	
120	OHL	67.0		157	OHL	81.5	
121	OHL	67.2		158	OHL	81.7	
122	OHL	67.5		159	OHL	82.7	
123	OHL	67.6		160	OHL	83.0	



Figure B1 – Example of required pruning from overhanging tree branches, located on Palmerston Highway, 13.7 km from Bruce Highway

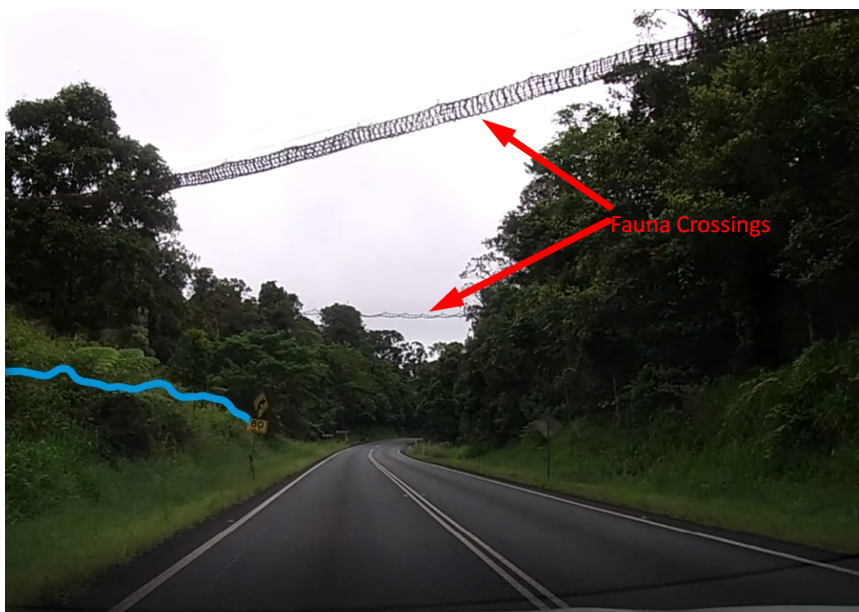


Figure B2 – Overhead Fauna Crossings on Palmerston Highway, 38.8 km from Bruce Highway

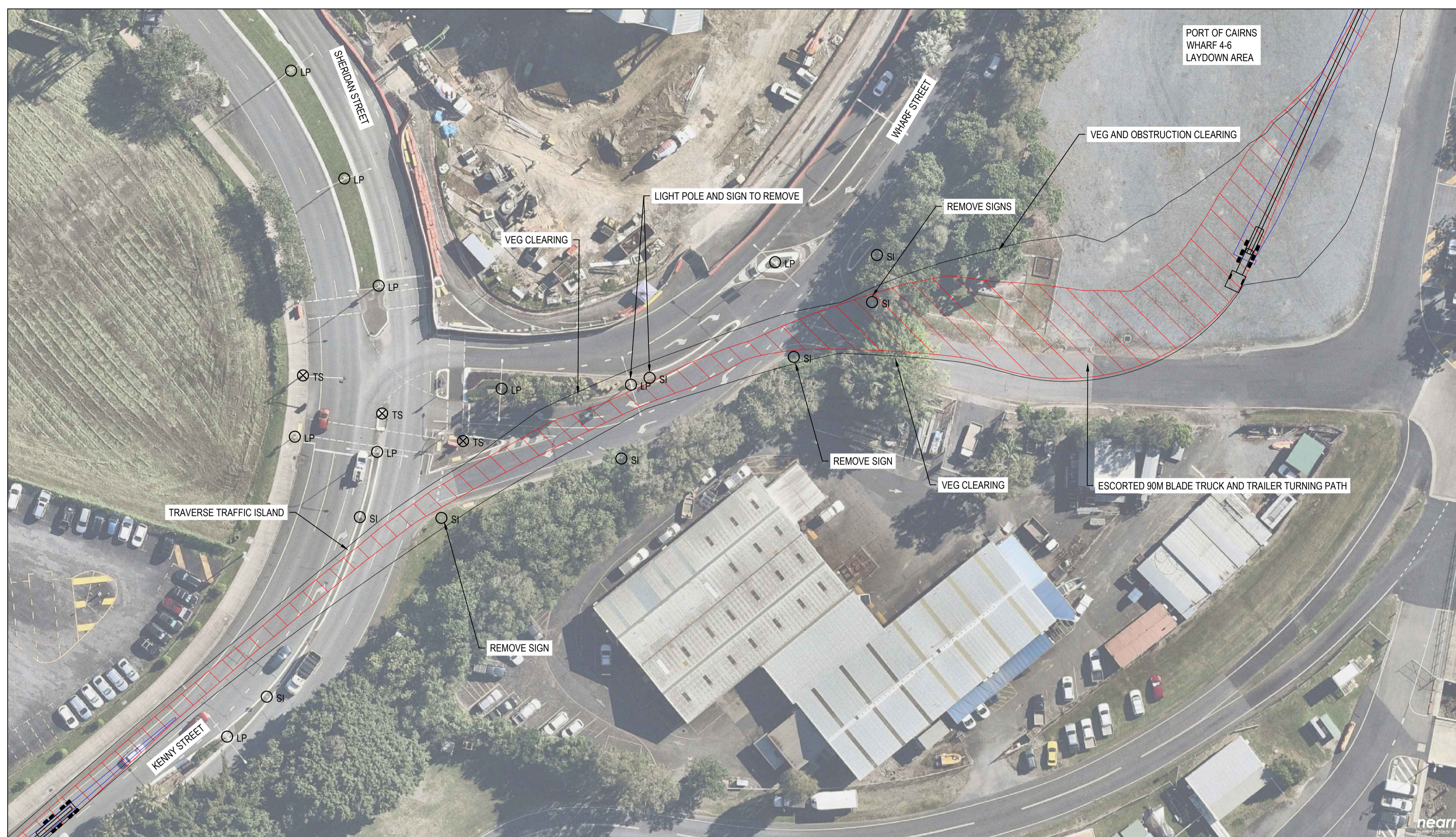
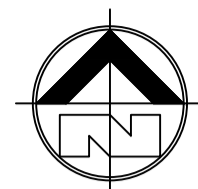


Figure B3 – Overhead Electrical Road Sign



Appendix C – Swept Path Drawings

Plans shown overleaf



LEGEND

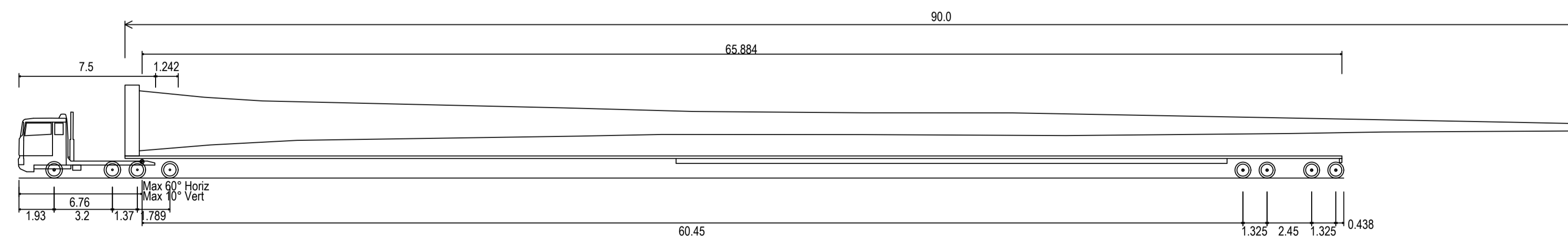
- LP EXISTING LIGHT POLE
- SI EXISTING SIGN
- ⊗ PP EXISTING POWER POLE
- ⊗ TS EXISTING TRAFFIC SIGNAL
- EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
- TRUCK OVER DIMENSIONAL WHEEL PATH
- ▨ OVER DIMENSIONAL TURNING AREA
- ▤ PROPOSED GRAVEL WIDENING

NOTES

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INTERSECTION WHARF STREET / KENNY STREET - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer
 Overall Length 72.749m
 Overall Width 2.591m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.951m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR

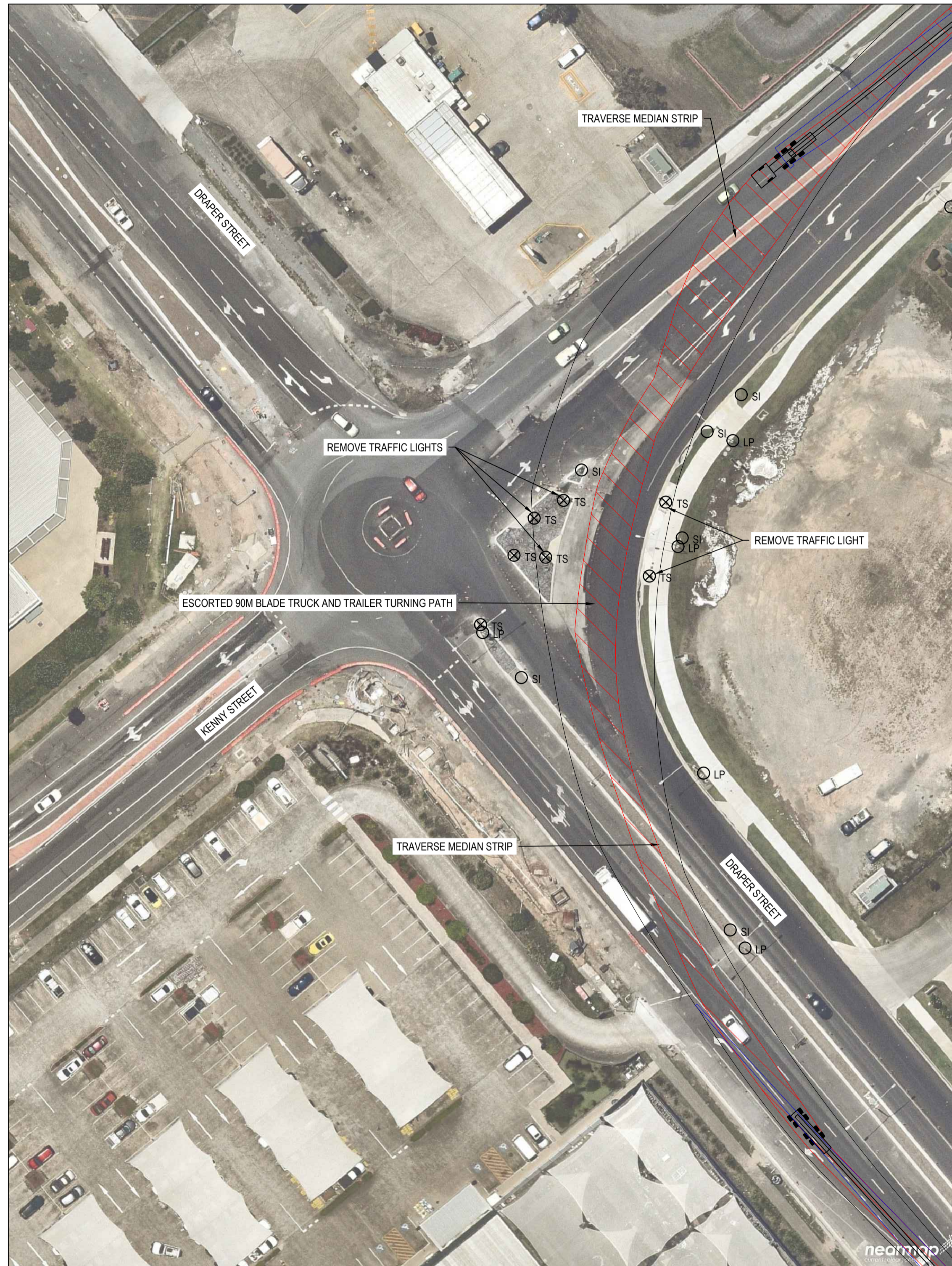
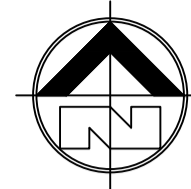


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REV	DETAIL	DRN	CHK	APP	DATE
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A	PRELIMINARY	DK	BP	TJS	11/06/2021

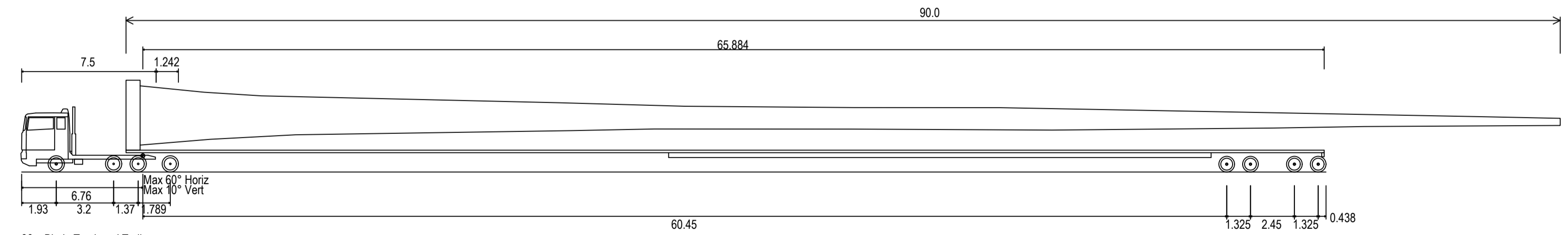


PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	PRELIMINARY	
TITLE	TRANSPORT ROUTE STUDY		PROJECT NO.	20-315	SCALE
ROUTE 1			AS SHOWN		AS SHOWN
TURN 1			DRAWING NO.	CHLWF-TRS-TURN 1	SIZE
			REV	A1	B



- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▩ PROPOSED GRAVEL WIDENING

- NOTES**
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90m Blade Truck and Trailer
 Overall Length 72.749m
 Overall Width 2.531m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.931m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER
 SCALE NTS

INTERSECTION KENNY STREET / DRAPER STREET - 90m BLADE TRUCK AND TRAILER

SCALE 1:500

TO BE PRINTED
IN COLOUR

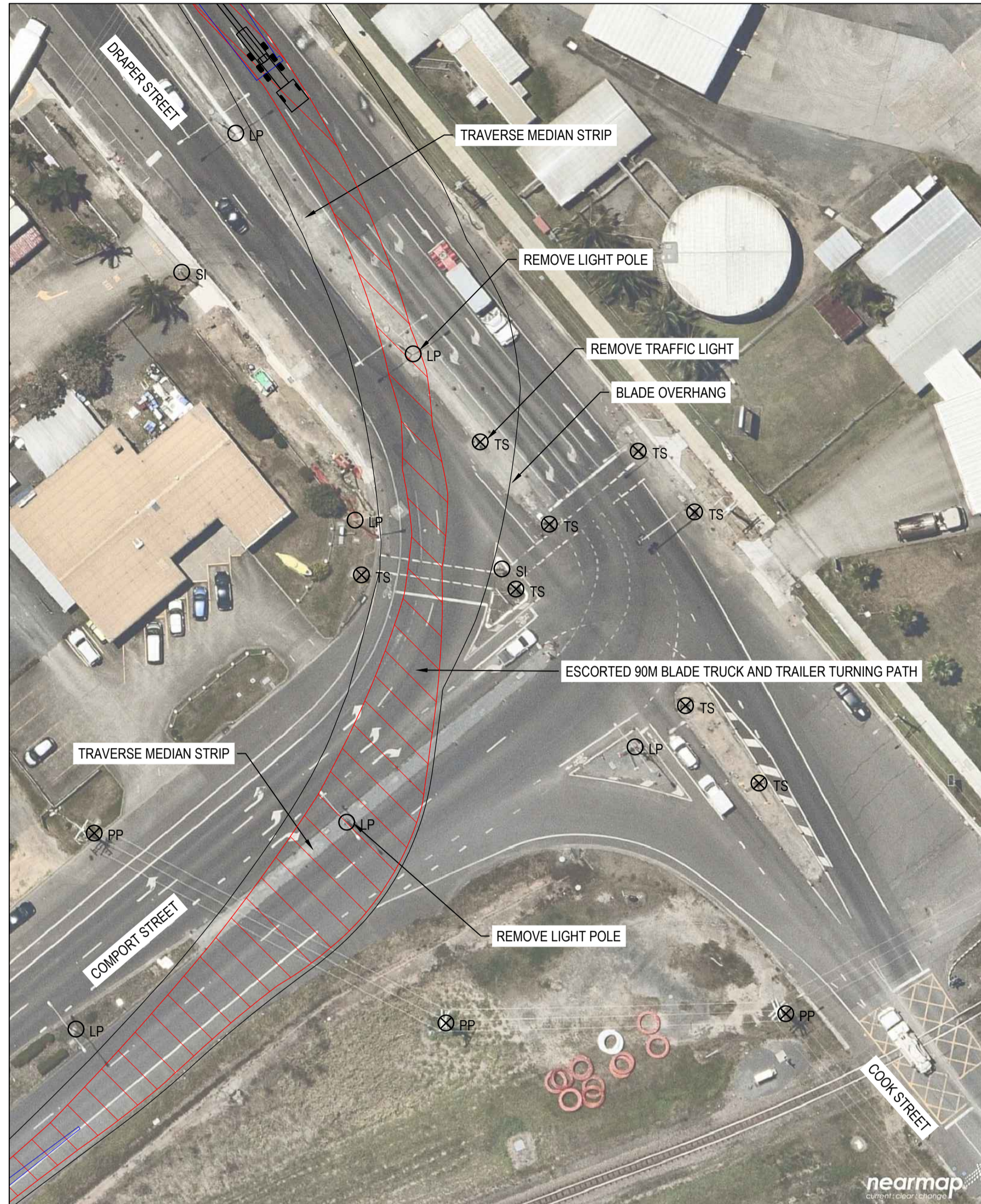


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B	PRELIMINARY	DK	BP	TJS	16/07/2021
A	PRELIMINARY	DK	BP	TJS	11/06/2021



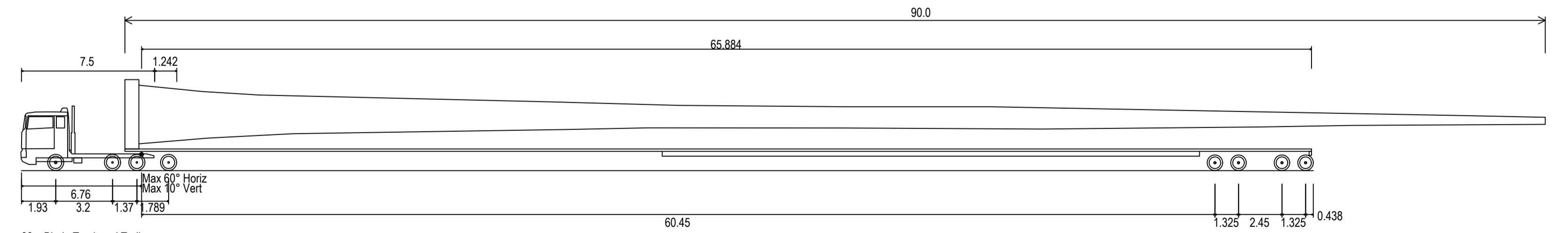
PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	SCALE	AS SHOWN
PROJECT NO.	20-315	DATE	16/07/2021
DRAWING NO.	CHLWF-TRS-TURN 2	SIZE	A1
		REV	B



- ### LEGEND
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▩ PROPOSED GRAVEL WIDENING

- ### NOTES
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INTERSECTION DRAPER STREET / COMPORT STREET - 90m BLADE TRUCK AND TRAILER
SCALE 1:500



90m Blade Truck and Trailer	72.749m
Overall Length	2.531m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.931m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER
SCALE NTS

TO BE PRINTED IN COLOUR



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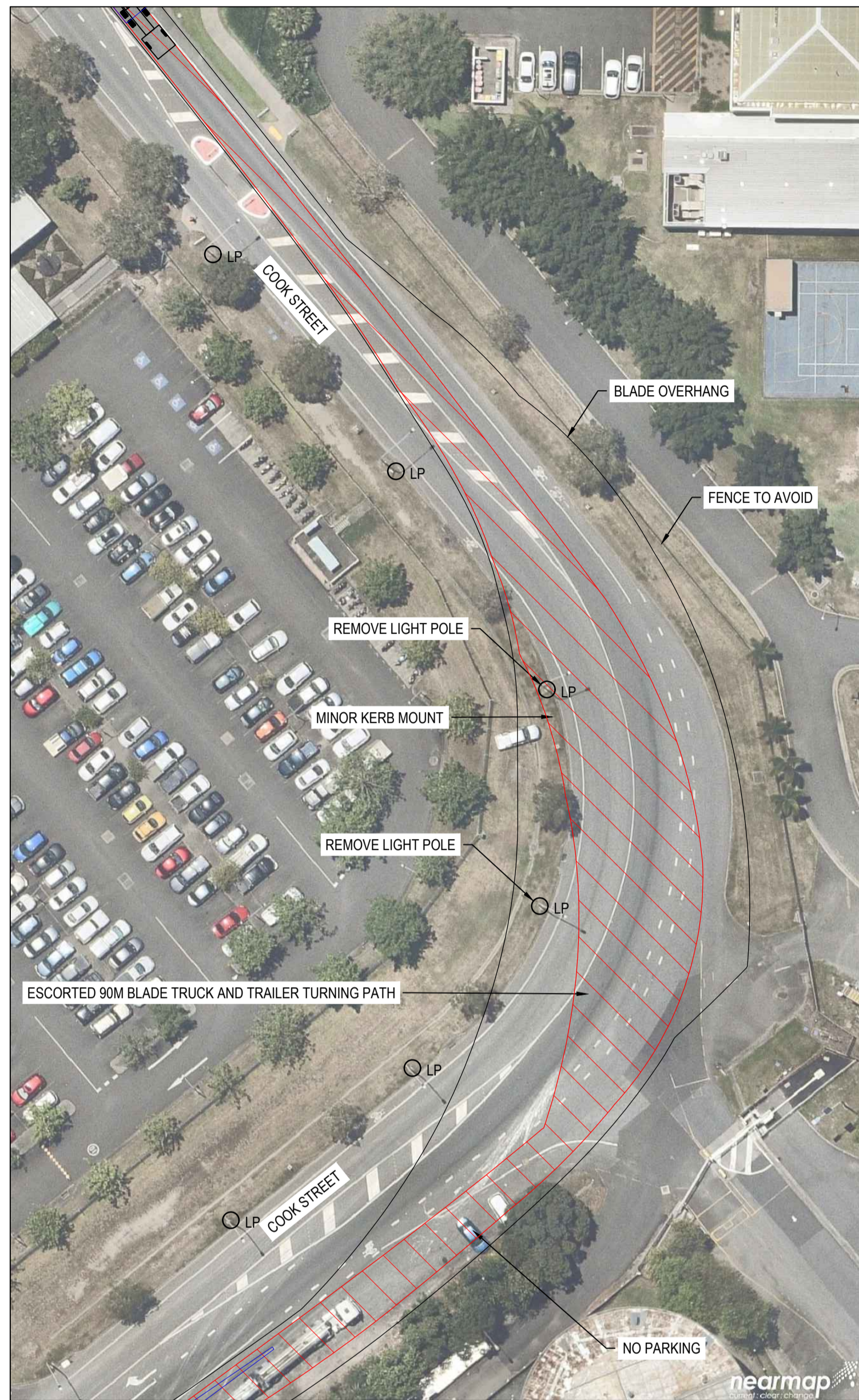
REV	DETAIL	DRN	CHK	APP	DATE
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A	PRELIMINARY	DK	BP	TJS	11/06/2021

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AHLN 18 075 198 ACN 108 075 198
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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT NO.	20-315
ROUTE 1		SCALE	AS SHOWN
TURN 3		DRAWING NO.	CHLWF-TRS-TURN 3
		SIZE	A1
		REV	B



COOK STREET BEND - 90m BLADE TRUCK AND TRAILER

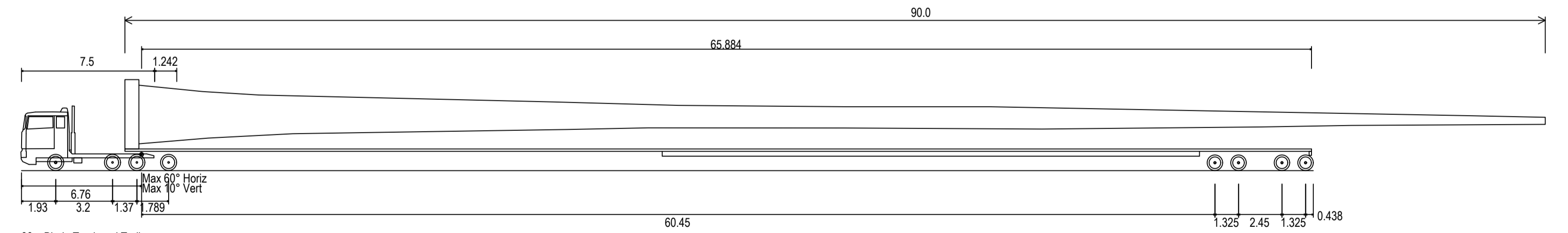
SCALE 1:500

LEGEND

- LP EXISTING LIGHT POLE
- SI EXISTING SIGN
- ⊗ PP EXISTING POWER POLE
- ⊗ TS EXISTING TRAFFIC SIGNAL
- EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
- TRUCK OVER DIMENSIONAL WHEEL PATH
- ▨ OVER DIMENSIONAL TURNING AREA
- ▩ PROPOSED GRAVEL WIDENING

NOTES

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90m Blade Truck and Trailer	72.749m
Overall Length	2.531m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.931m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR



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PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	PRELIMINARY	
TITLE	TRANSPORT ROUTE STUDY		PROJECT NO.	20-315	SCALE
ROUTE 2			AS SHOWN	AS SHOWN	AS SHOWN
TURN 4			DRAWING NO.	CHLWF-TRS-TURN 4	SIZE
			REV	AS SHOWN	A1
					B

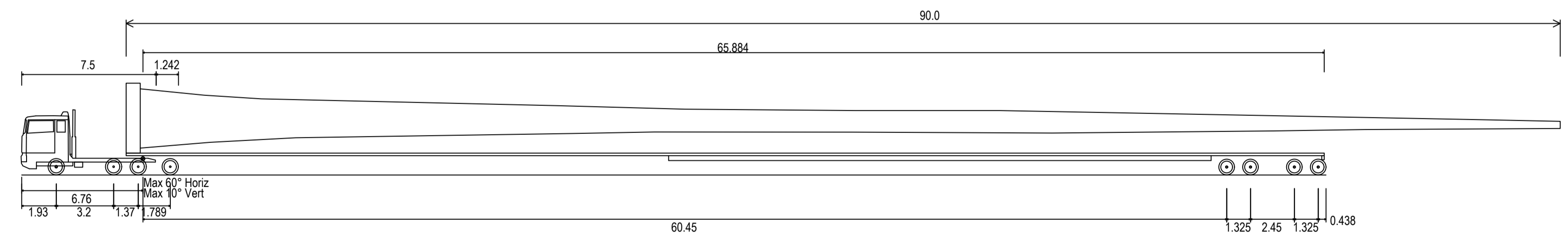


- LEGEND**
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 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
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INTERSECTION COOK STREET / AUMULLER STREET ROUNDABOUT - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer
 Overall Length 72.748m
 Overall Width 2.591m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.349m
 Max Track Width 2.591m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER
 SCALE NTS

TO BE PRINTED IN COLOUR



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A	PRELIMINARY	DK	BP	TJS	11/06/2021

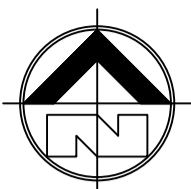
REVISIONS AND APPROVALS

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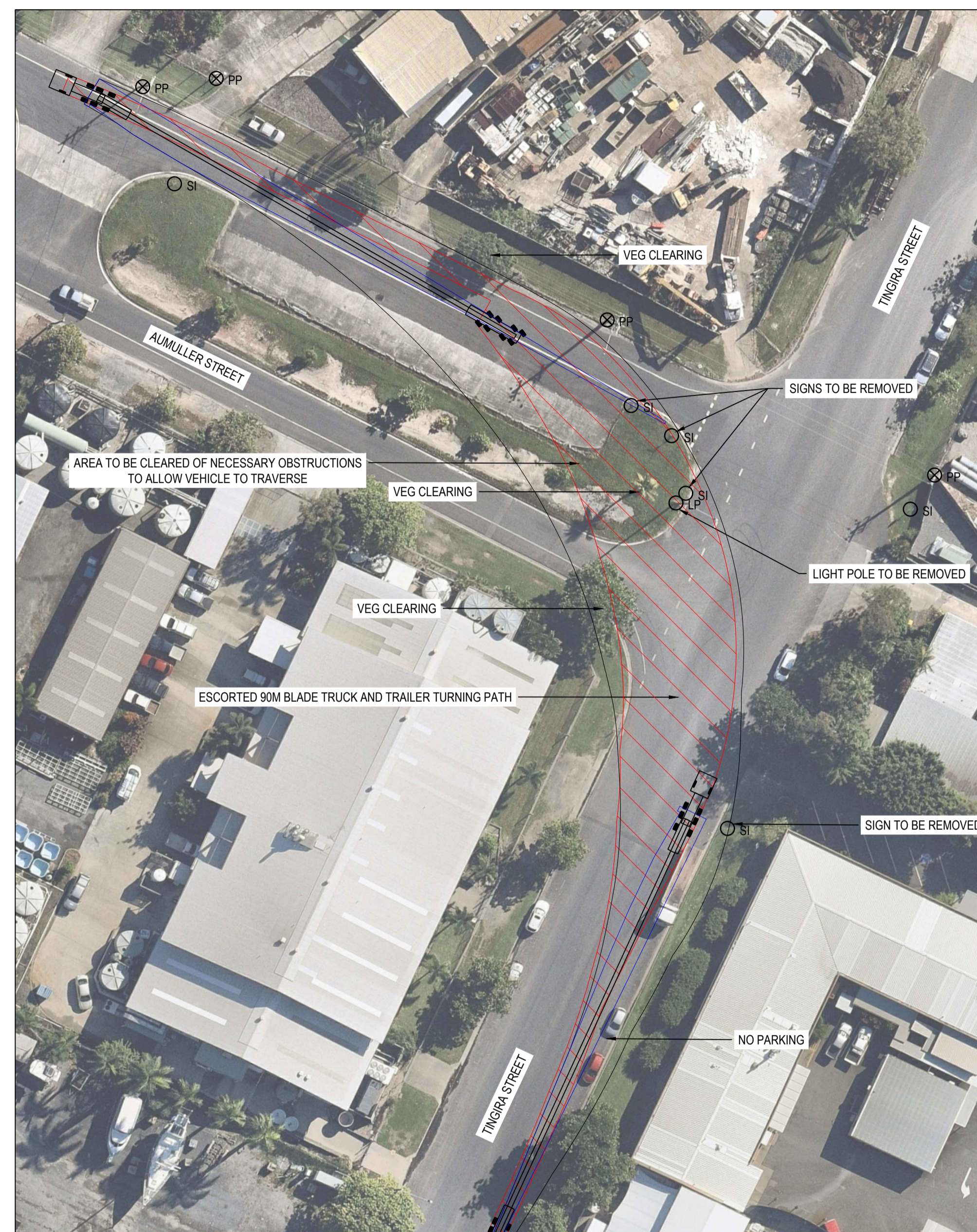


PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	PRELIMINARY	
TITLE	TRANSPORT ROUTE STUDY		PROJECT NO.	20-315	SCALE
	ROUTE 2 & 3		DRAWING NO.	CHLWF-TRS-TURN 5	AS SHOWN
	TURN 5 (5A & 5B)		SIZE	A1	REV
					B



AUMULLER STREET / TINGIRA STREET INTERSECTION - 90m BLADE TRUCK AND TRAILER (TRAVELLING TO LAYDOWN)

SCALE 1:500



AUMULLER STREET / TINGIRA STREET INTERSECTION - 90m BLADE TRUCK AND TRAILER (TRAVELLING TO SITE)

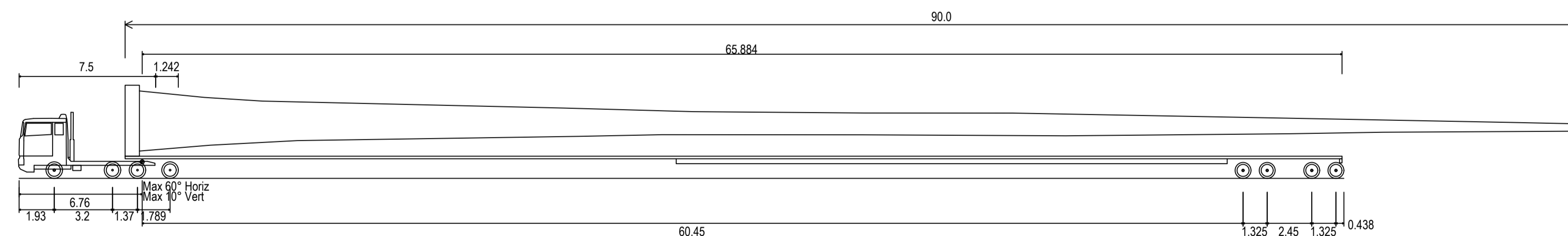
SCALE 1:500

LEGEND

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- ⊗ PP EXISTING POWER POLE
- ⊗ TS EXISTING TRAFFIC SIGNAL
- EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
- TRUCK OVER DIMENSIONAL WHEEL PATH
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90m Blade Truck and Trailer
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 Overall Width 2.531m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.931m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR



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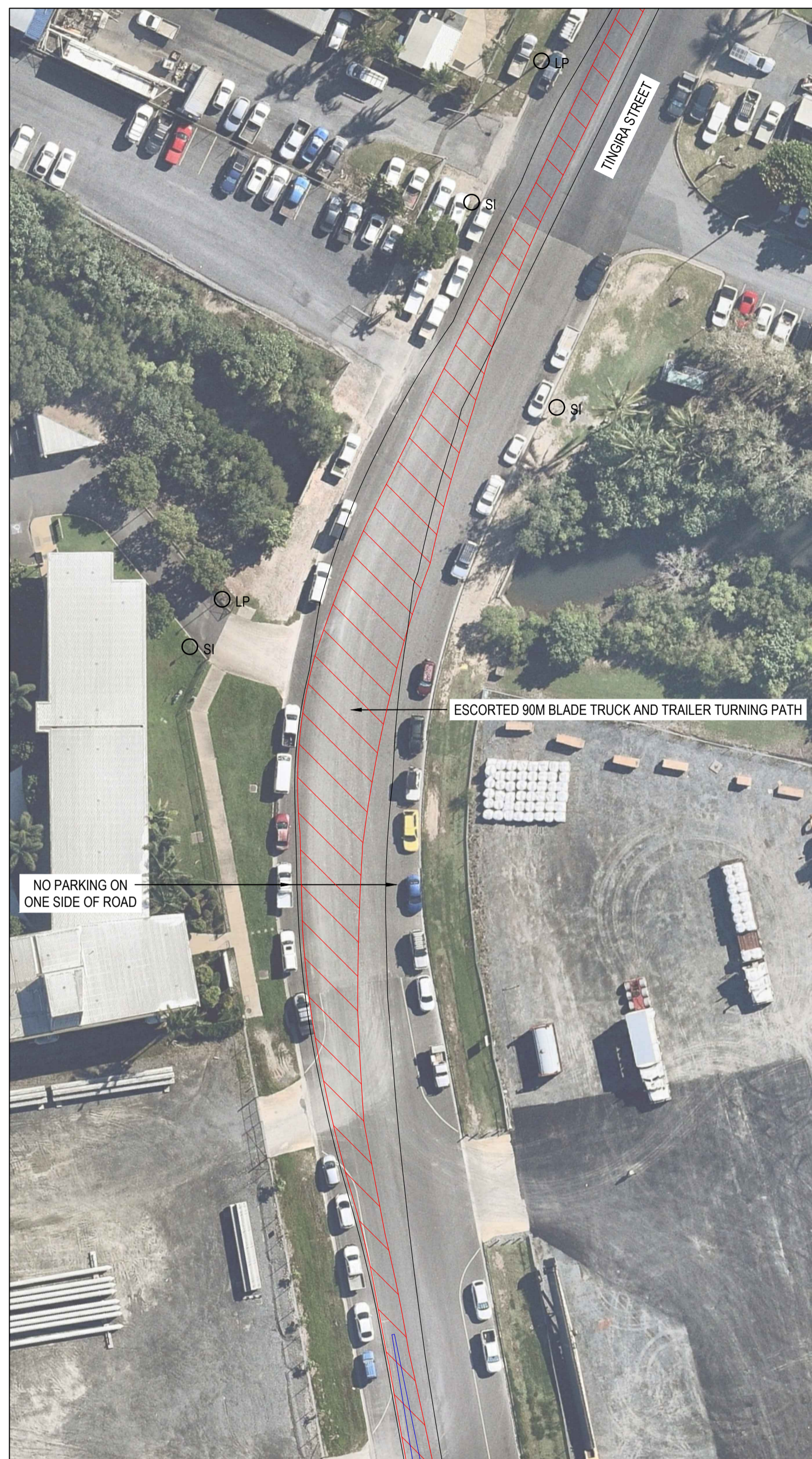
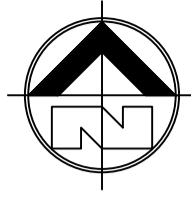
REV	DETAIL	DRN	CHK	APP	DATE
B	PRELIMINARY	DK	BP	TJS	16/07/2021
A	PRELIMINARY	DK	BP	TJS	11/06/2021



PROJECT: CHALUMBIN WIND FARM
 TITLE: TRANSPORT ROUTE STUDY
 ROUTE 2 & 3
 TURN 6 (6A & 6B)

DRAWING NO.	SCALE	DATE	REV	BY
20-315	AS SHOWN			

PROJECT: CHALUMBIN WIND FARM
 DRAWING STATUS: PRELIMINARY
 PROJECT NO: 20-315
 DRAWING NO: CHLWF-TRS-TURN 6
 SCALE: AS SHOWN
 DATE: [blank]
 REV: [blank]
 BY: [blank]



TINGIRA STREET BEND - 90m BLADE TRUCK AND TRAILER (TRAVELLING TO LAYDOWN)

SCALE 1:500



TINGIRA STREET BEND - 90m BLADE TRUCK AND TRAILER (TRAVELLING TO SITE)

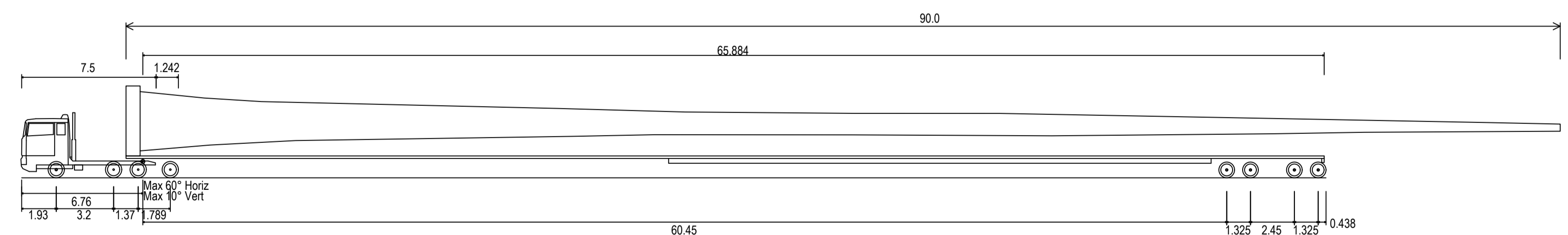
SCALE 1:500

LEGEND

- LP EXISTING LIGHT POLE
- SI EXISTING SIGN
- ⊗ PP EXISTING POWER POLE
- ⊗ TS EXISTING TRAFFIC SIGNAL
- EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
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90m Blade Truck and Trailer
 Overall Length 72.748m
 Overall Width 2.551m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.551m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER

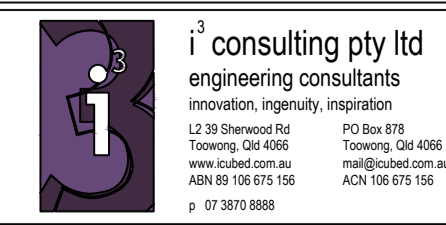
SCALE NTS

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B	PRELIMINARY	DK	BP	TJS	16/07/2021
A	PRELIMINARY	DK	BP	TJS	11/06/2021



PROJECT		DRAWING STATUS		SCALE		SIZE	
CHALUMBIN WIND FARM		PRELIMINARY		AS SHOWN		A1	
TITLE		PROJECT NO.		SCALE		SIZE	
TRANSPORT ROUTE STUDY		20-315		AS SHOWN		A1	
ROUTE 2 & 3		DRAWING NO.		SCALE		SIZE	
TURN 7 (7A & 7B)		CHLWF-TRS-TURN 7		AS SHOWN		A1	

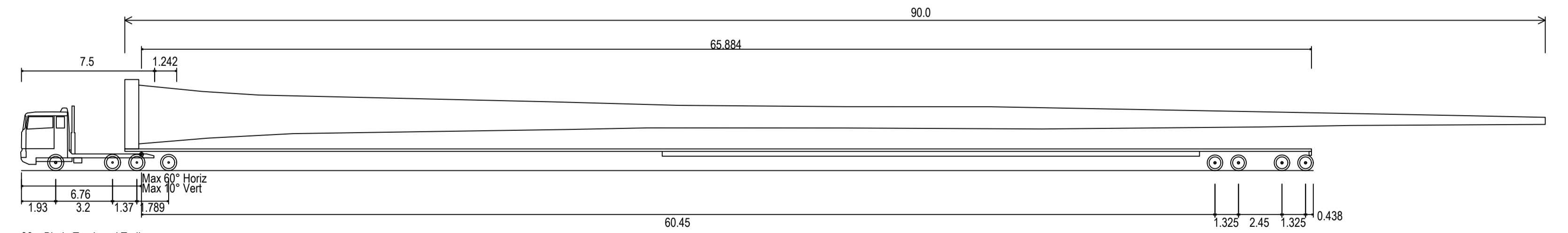


- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▩ PROPOSED GRAVEL WIDENING

- NOTES**
1. ALL GUIDEPOSTS WITHIN OVER-DIMENSIONAL WHEEL PATH TO BE REMOVED PRIOR TO TRANSPORTATION OF WIND TURBINE BLADES
 2. CLEARING OF VEGETATION SHALL ONLY BE PERFORMED AFTER RELEVANT AUTHORITY APPROVALS ARE OBTAINED, IF REQUIRED FOR ROAD UPGRADE
 3. SURVEY OF HEIGHT CLEARANCES ALONG TRANSPORTATION ROUTE SHALL BE COMPLETED BY THE APPOINTED TRANSPORTATION CONTRACTOR
 4. POTENTIAL CLASHES OF BLADE TRANSPORT VEHICLE WITH GUARDRAILS, TRAFFIC SIGNALS AND STREET LIGHTING TO BE CONFIRMED BY THE APPOINTED TRANSPORTATION CONTRACTOR
 5. THE REMOVAL OF ANY STRUCTURES (SUCH AS TRAFFIC LIGHTS, POLES AND SIGNS) OR VEGETATION IS CONSIDERED TO BE A TEMPORARY REQUIREMENT TO ALLOW VEHICLE ACCESS. DETAILS ARE TO BE CONFIRMED WITH THE RELEVANT AUTHORITIES.

INTERSECTION AUMULLER STREET / RAY JONES DRIVE - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer
 Overall Length 72.749m
 Overall Width 2.531m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.931m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR



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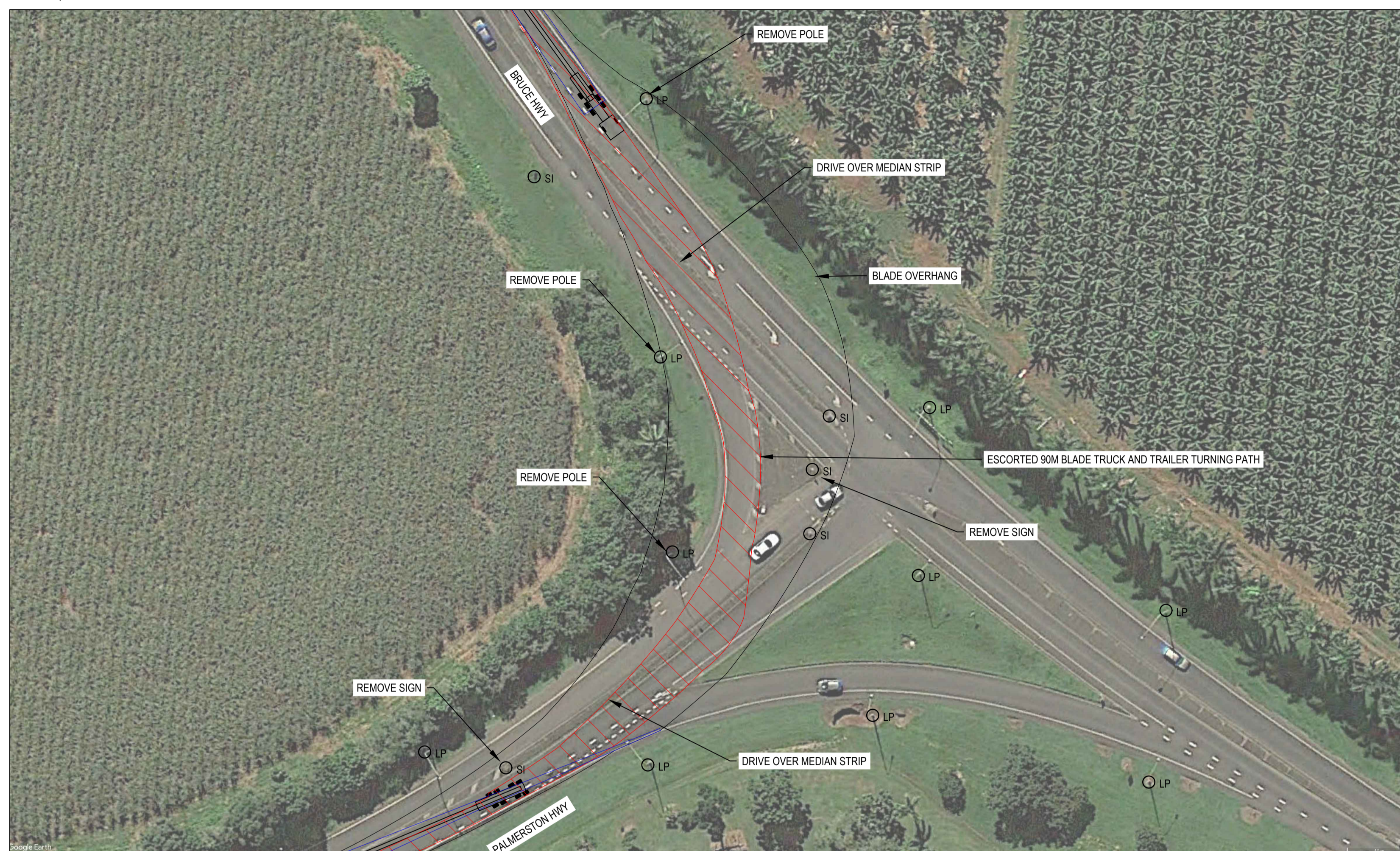
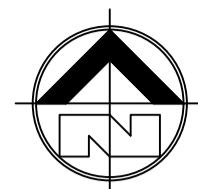
REV	DETAIL	DRN	CHK	APP	DATE
B	PRELIMINARY	DK	BP	TJS	16/07/2021
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PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	PRELIMINARY	
TITLE	TRANSPORT ROUTE STUDY		PROJECT NO.	20-315	SCALE
ROUTE 3			AS SHOWN		AS SHOWN
TURN 8			DRAWING NO.	CHLWF-TRS-TURN 8	SIZE
					A1
					REV
					B



LEGEND

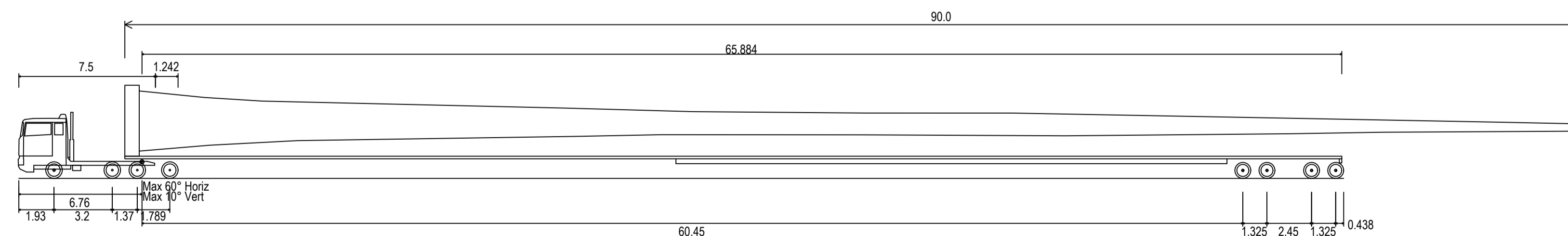
- LP EXISTING LIGHT POLE
- SI EXISTING SIGN
- ⊗ PP EXISTING POWER POLE
- ⊗ TS EXISTING TRAFFIC SIGNAL
- EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
- TRUCK OVER DIMENSIONAL WHEEL PATH
- ▨ OVER DIMENSIONAL TURNING AREA
- ▨ PROPOSED GRAVEL WIDENING

NOTES

1. ALL GUIDEPOSTS WITHIN OVER-DIMENSIONAL WHEEL PATH TO BE REMOVED PRIOR TO TRANSPORTATION OF WIND TURBINE BLADES
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INTERSECTION BRUCE HWY / PALMERSTON HWY - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer
 Overall Length 72.748m
 Overall Width 2.591m
 Overall Body Height 3.628m
 Min Body Ground Clearance 0.348m
 Max Track Width 2.591m
 Lock-to-lock time 2.00s
 Max Wheel Angle 60.00°

72.748m
 2.591m
 3.628m
 0.348m
 2.591m
 2.00s
 60.00°

90m BLADE TRUCK AND TRAILER

SCALE NTS

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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT No.	20-315
ROUTE 1	TURN 9	SCALE	AS SHOWN
		DRAWING No.	CHLWF-TRS-TURN 9
		SIZE	A1
		REV	B

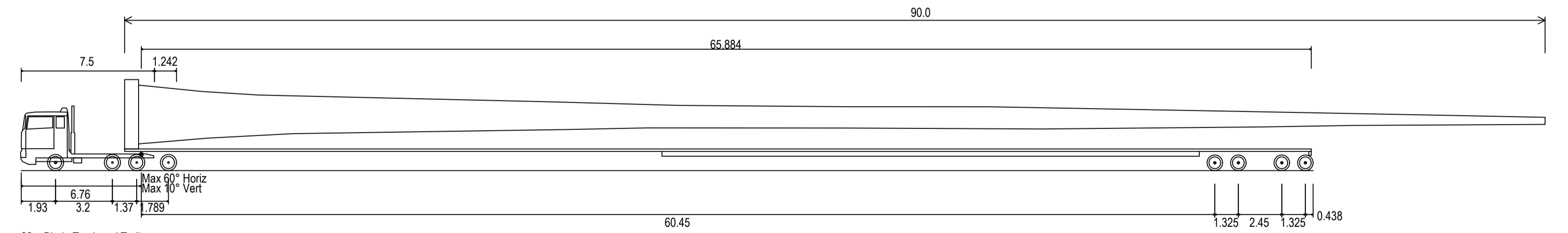


- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▩ PROPOSED GRAVEL WIDENING

- NOTES**
1. ALL GUIDEPOSTS WITHIN OVER-DIMENSIONAL WHEEL PATH TO BE REMOVED PRIOR TO TRANSPORTATION OF WIND TURBINE BLADES
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PALMERSTON HWY - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer	72.749m
Overall Length	2.591m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.951m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER
SCALE NTS



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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT No.	20-315
ROUTE 1	TURN 10	SCALE	AS SHOWN
		DRAWING No.	CHLWF-TRS-TURN 10
		SIZE	A1
		REV	B

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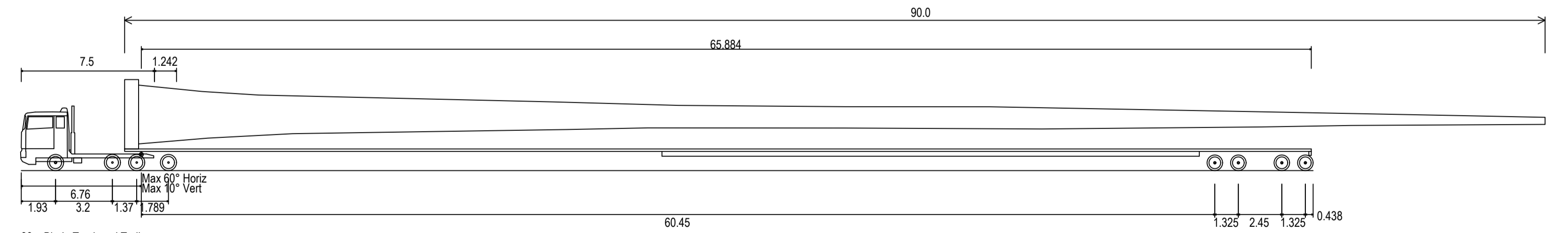


- ### LEGEND
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▨ PROPOSED GRAVEL WIDENING

- ### NOTES
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INTERSECTION MILLAA MILLAA MALANDA HWY / EAST EVELYN ROAD - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer	72.748m
Overall Length	2.581m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.951m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER
SCALE NTS



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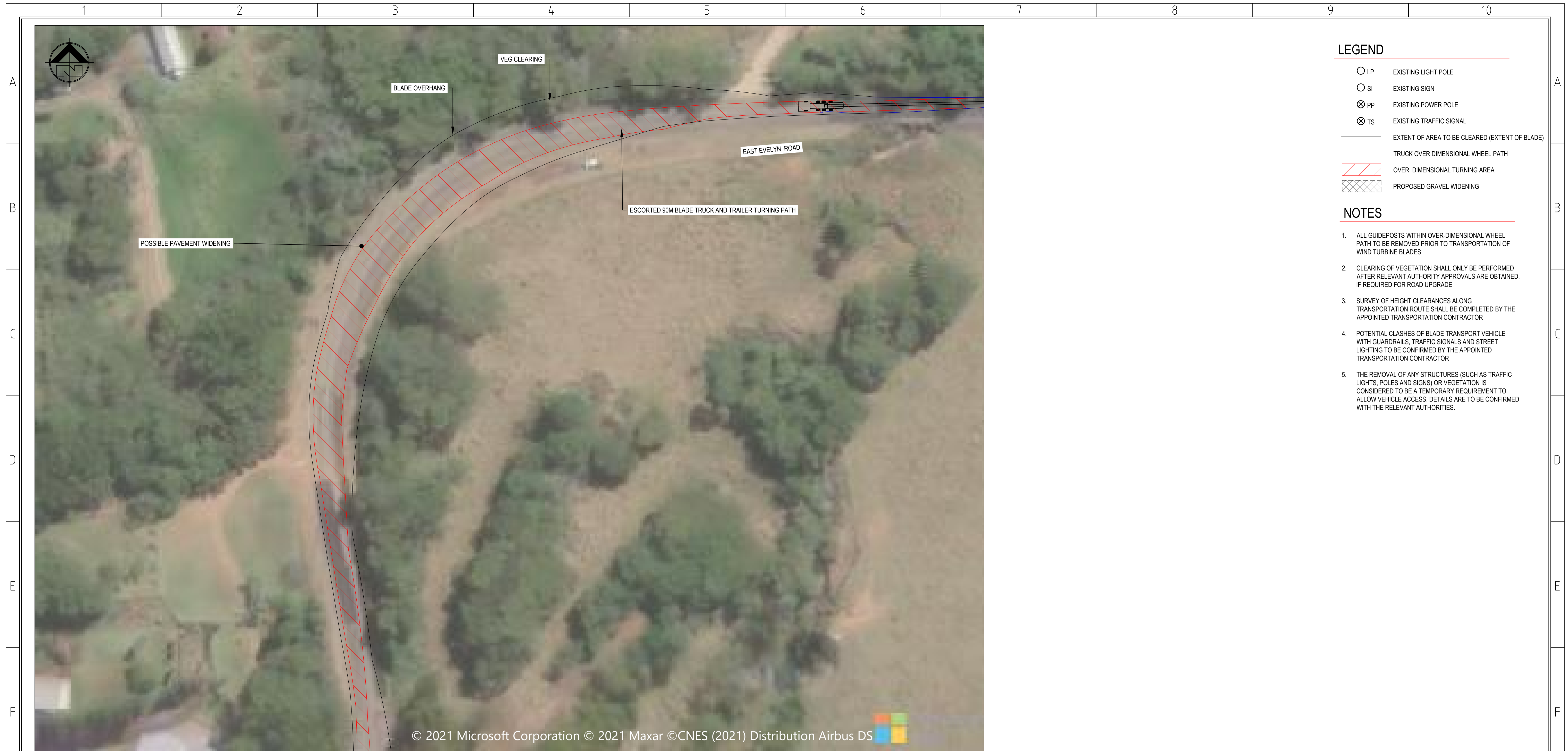
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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT No.	20-315
ROUTE 1		SCALE	AS SHOWN
TURN 11		DRAWING No.	CHLWF-TRS-TURN 11
		SIZE	A1
		REV	B

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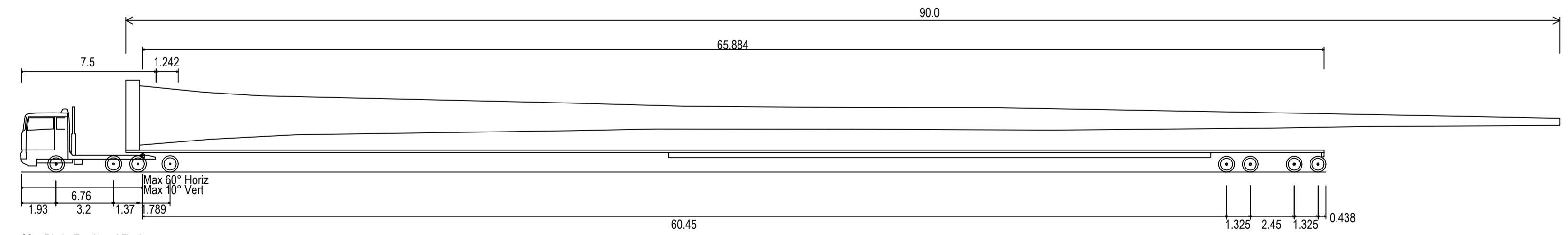


- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
 - TRUCK OVER DIMENSIONAL WHEEL PATH
 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▤ PROPOSED GRAVEL WIDENING

- NOTES**
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EAST EVELYN ROAD - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer	72.748m
Overall Length	2.581m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.551m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR



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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT NO.	20-315
ROUTE 1		SCALE	AS SHOWN
TURN 12		DRAWING NO.	CHLWF-TRS-TURN 12
		SIZE	A1
		REV	B

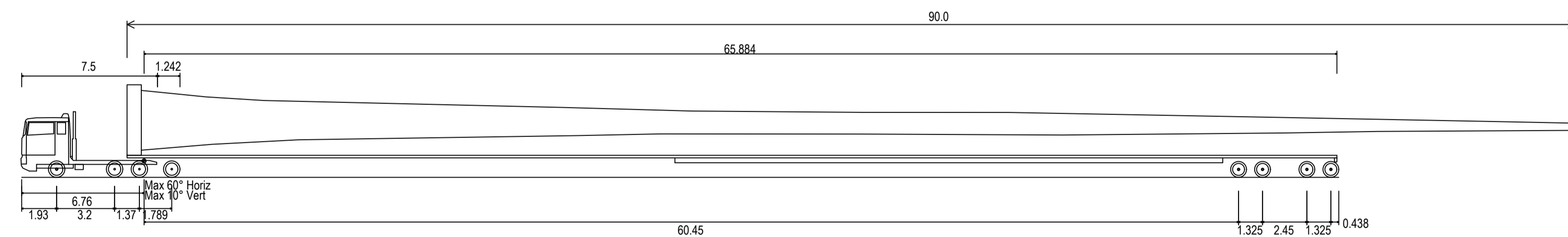


- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
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 - ▨ OVER DIMENSIONAL TURNING AREA
 - ▤ PROPOSED GRAVEL WIDENING

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INTERSECTION EAST EVELYN ROAD / KENNEDY HWY - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer	72.749m
Overall Length	2.591m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.951m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER

SCALE NTS

TO BE PRINTED IN COLOUR



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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT NO.	20-315
ROUTE 1		SCALE	AS SHOWN
TURN 13		DRAWING NO.	CHLWF-TRS-TURN 13
		SIZE	A1
		REV	B

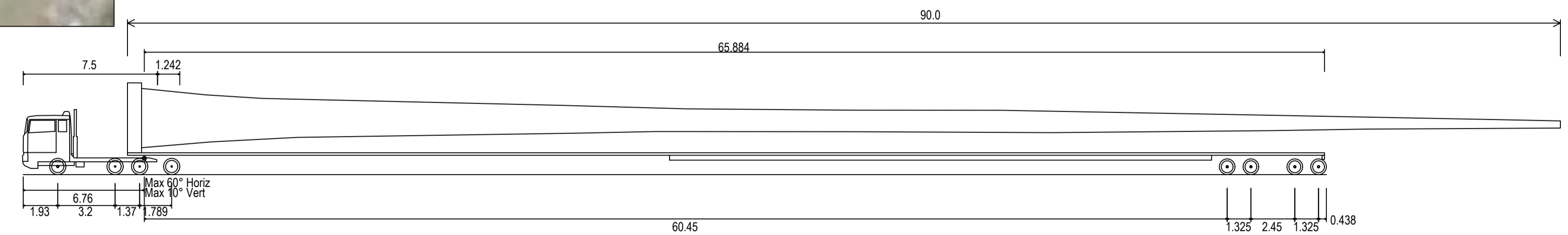


- LEGEND**
- LP EXISTING LIGHT POLE
 - SI EXISTING SIGN
 - ⊗ PP EXISTING POWER POLE
 - ⊗ TS EXISTING TRAFFIC SIGNAL
 - EXTENT OF AREA TO BE CLEARED (EXTENT OF BLADE)
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 - ▨ PROPOSED GRAVEL WIDENING

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INTERSECTION KENNEDY HWY / TULLY FALLS ROAD - 90m BLADE TRUCK AND TRAILER

SCALE 1:500



90m Blade Truck and Trailer	72.748m
Overall Length	2.591m
Overall Width	3.628m
Overall Body Height	0.348m
Min Body Ground Clearance	2.591m
Max Track Width	2.00s
Lock-to-lock time	60.00°
Max Wheel Angle	

90m BLADE TRUCK AND TRAILER

SCALE NTS

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PROJECT	CHALUMBIN WIND FARM	DRAWING STATUS	PRELIMINARY
TITLE	TRANSPORT ROUTE STUDY	PROJECT No.	20-315
ROUTE 1		SCALE	AS SHOWN
TURN 14		DRAWING No.	CHLWF-TRS-TURN 14
		SIZE	A1
		REV	B

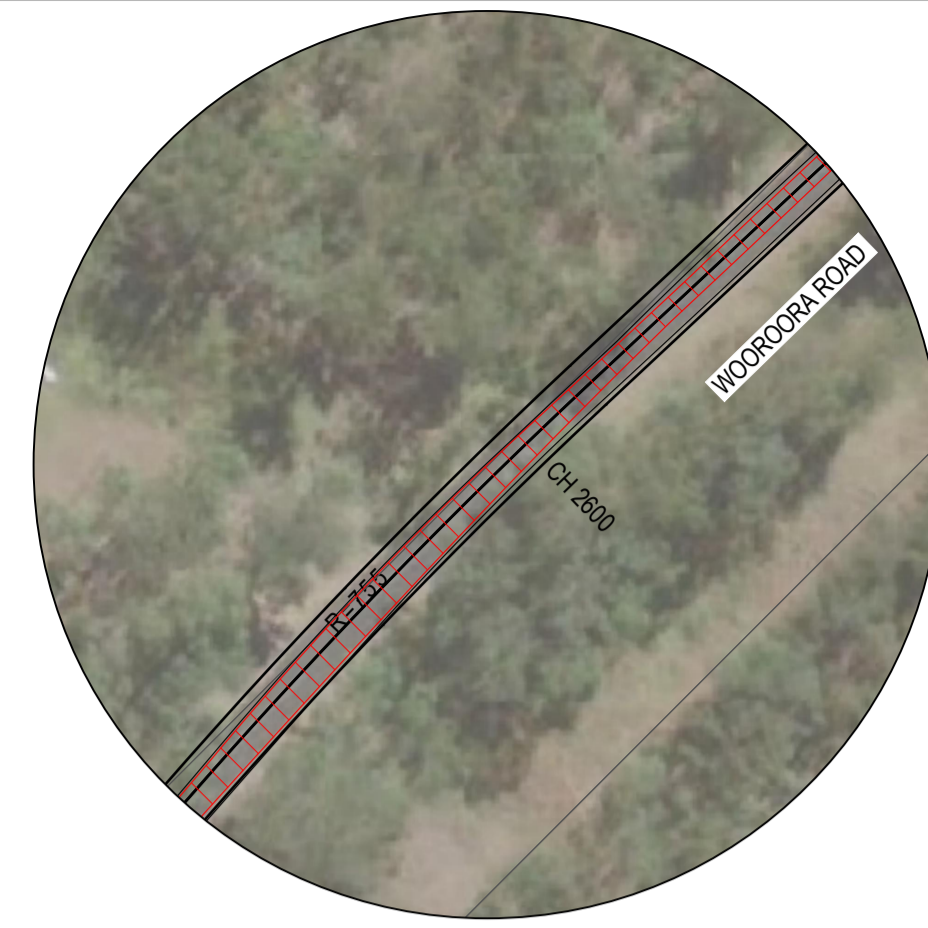
LEGEND

- STREAM ORDER - LOW IMPACT
- STREAM ORDER - MODERATE IMPACT
- STREAM ORDER - HIGH IMPACT
- STREAM ORDER - MAJOR IMPACT
- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- BLADE IMPACT OUTSIDE OF ROAD RESERVE
- EXISTING ROAD OUTSIDE OF ROAD RESERVE
- CULTURAL HERITAGE HIGH CONSTRAINTS
- ECOLOGICAL SENSITIVITY HIGH CONSTRAINTS

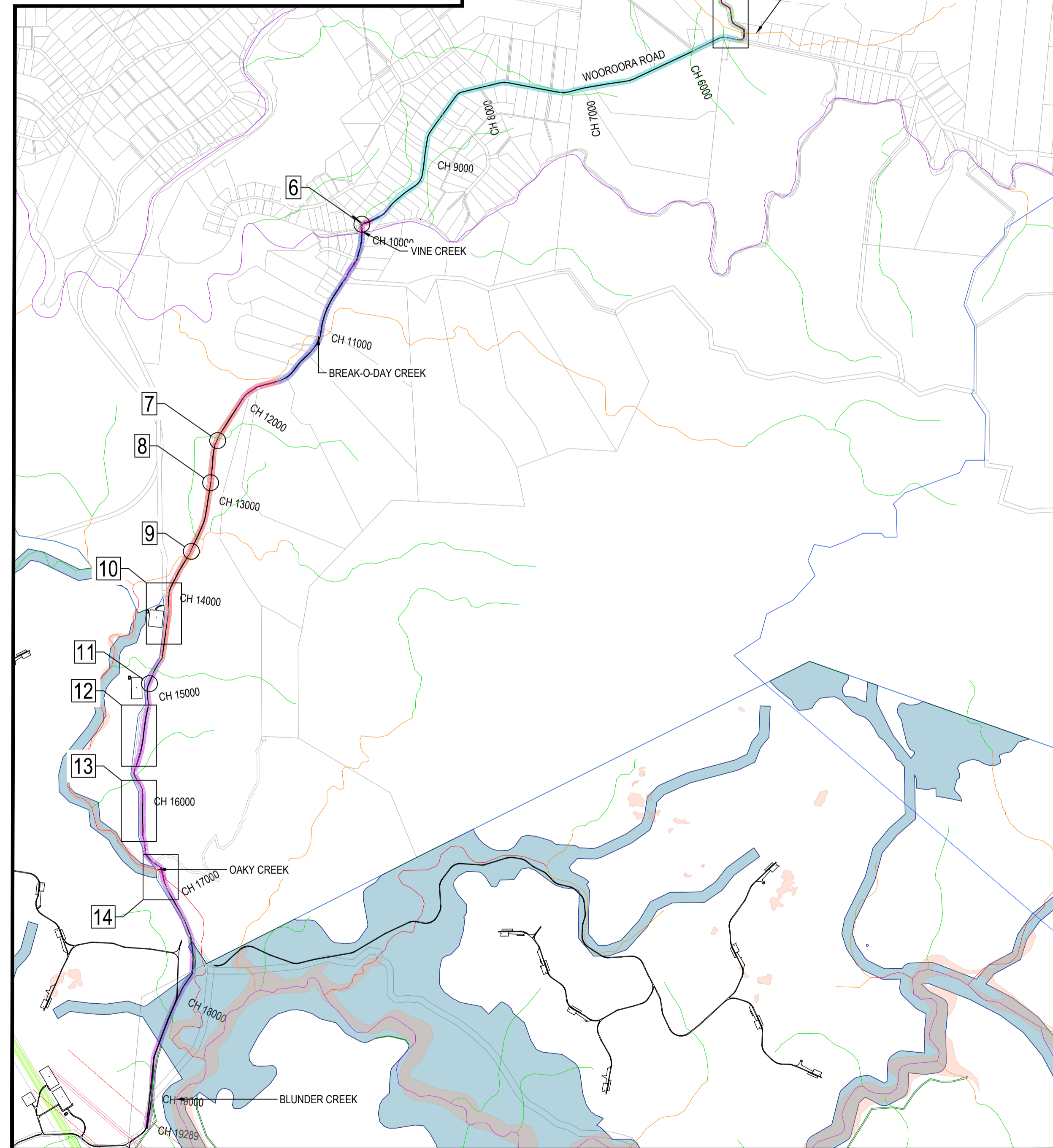
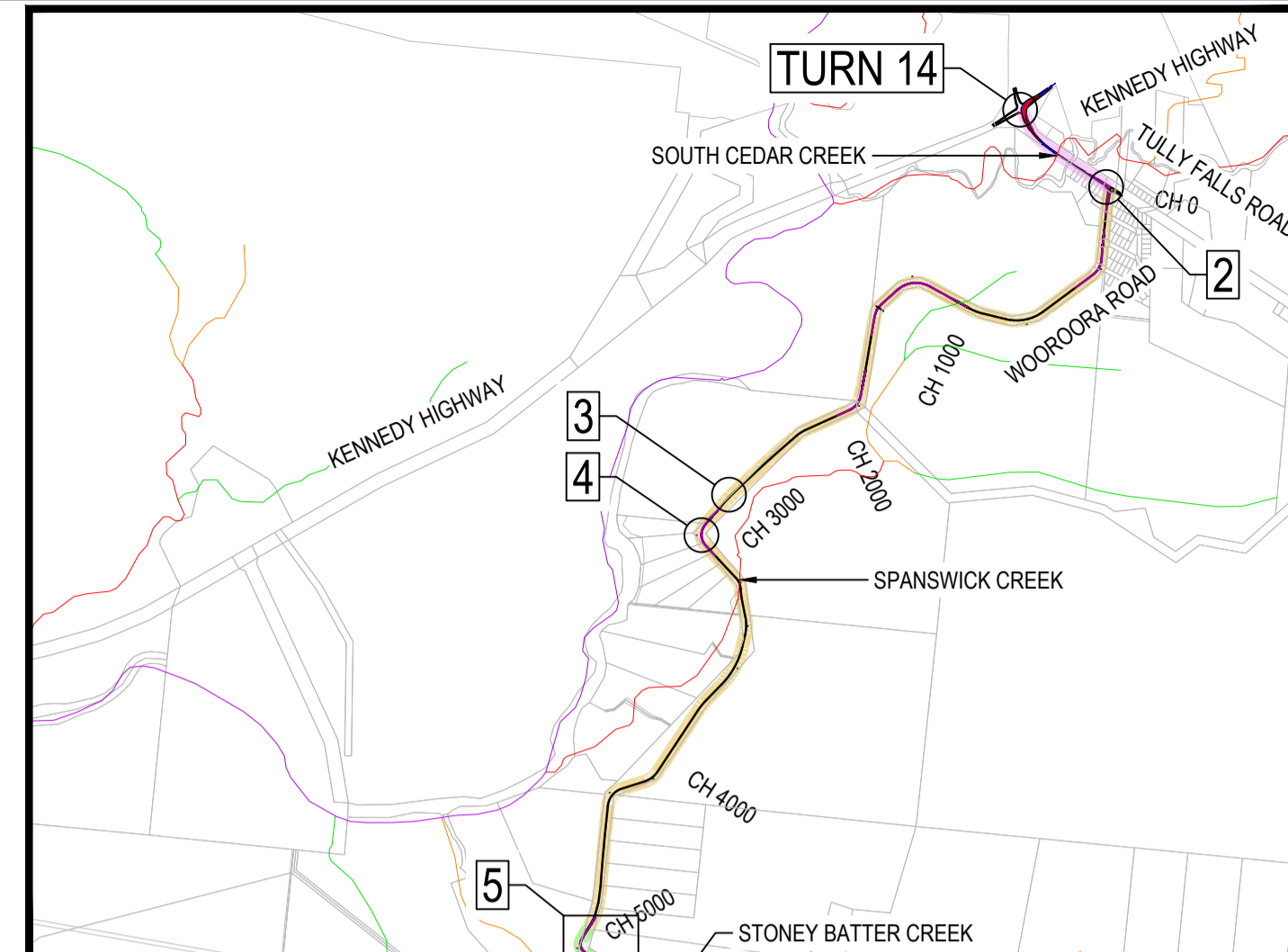
- ROAD SECTION - 1
- ROAD SECTION - 2
- ROAD SECTION - 3
- ROAD SECTION - 4
- ROAD SECTION - 5
- ROAD SECTION - 6
- ROAD SECTION - 7
- ROAD SECTION - 8



[2] TULLY FALLS/WOOROORA RD
SCALE 1:1,000



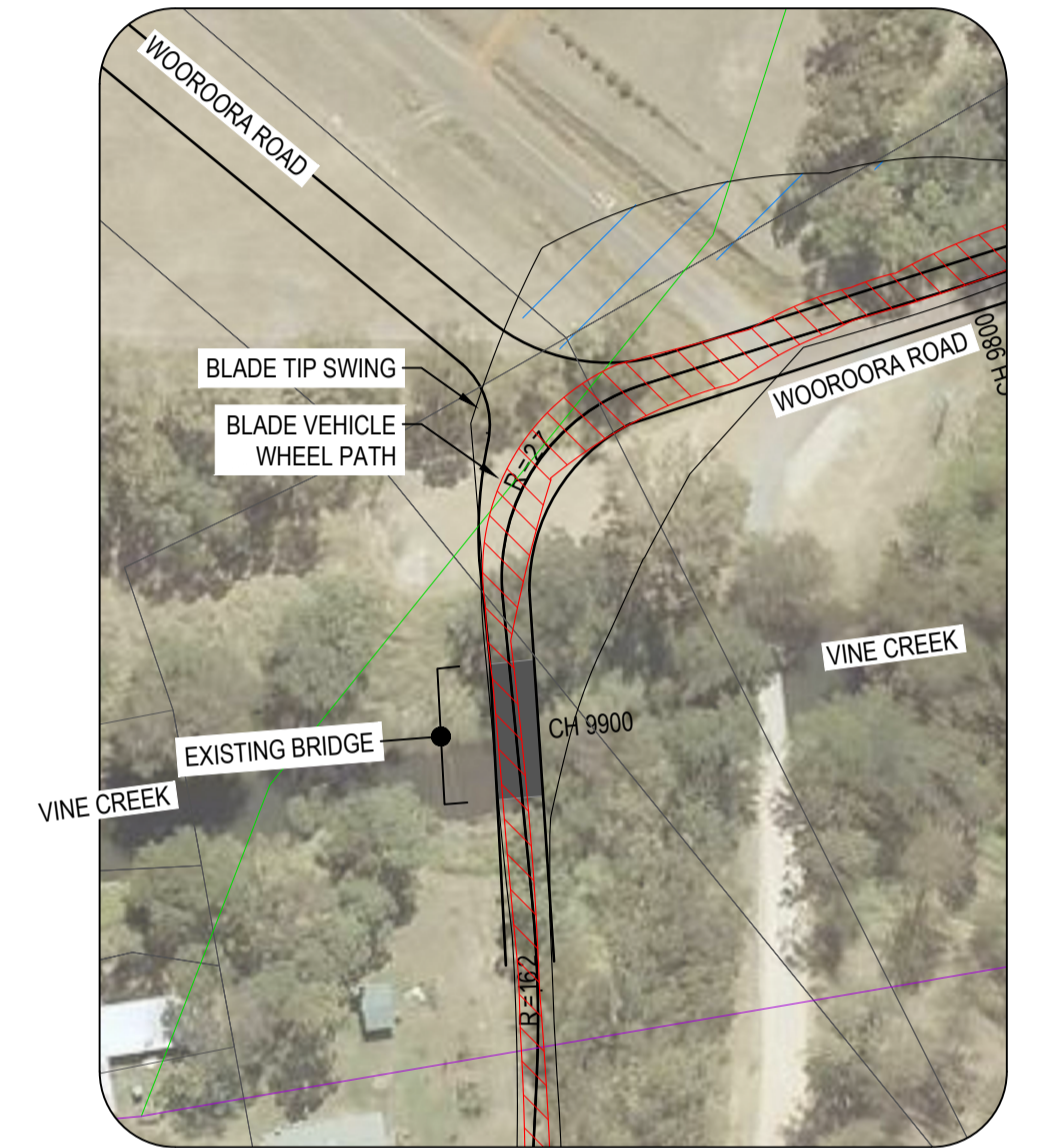
[3] WOOROORA RD - CH 2,600
SCALE 1:1,000



EXTERNAL DELIVERY ROUTE
SCALE 1:30,000



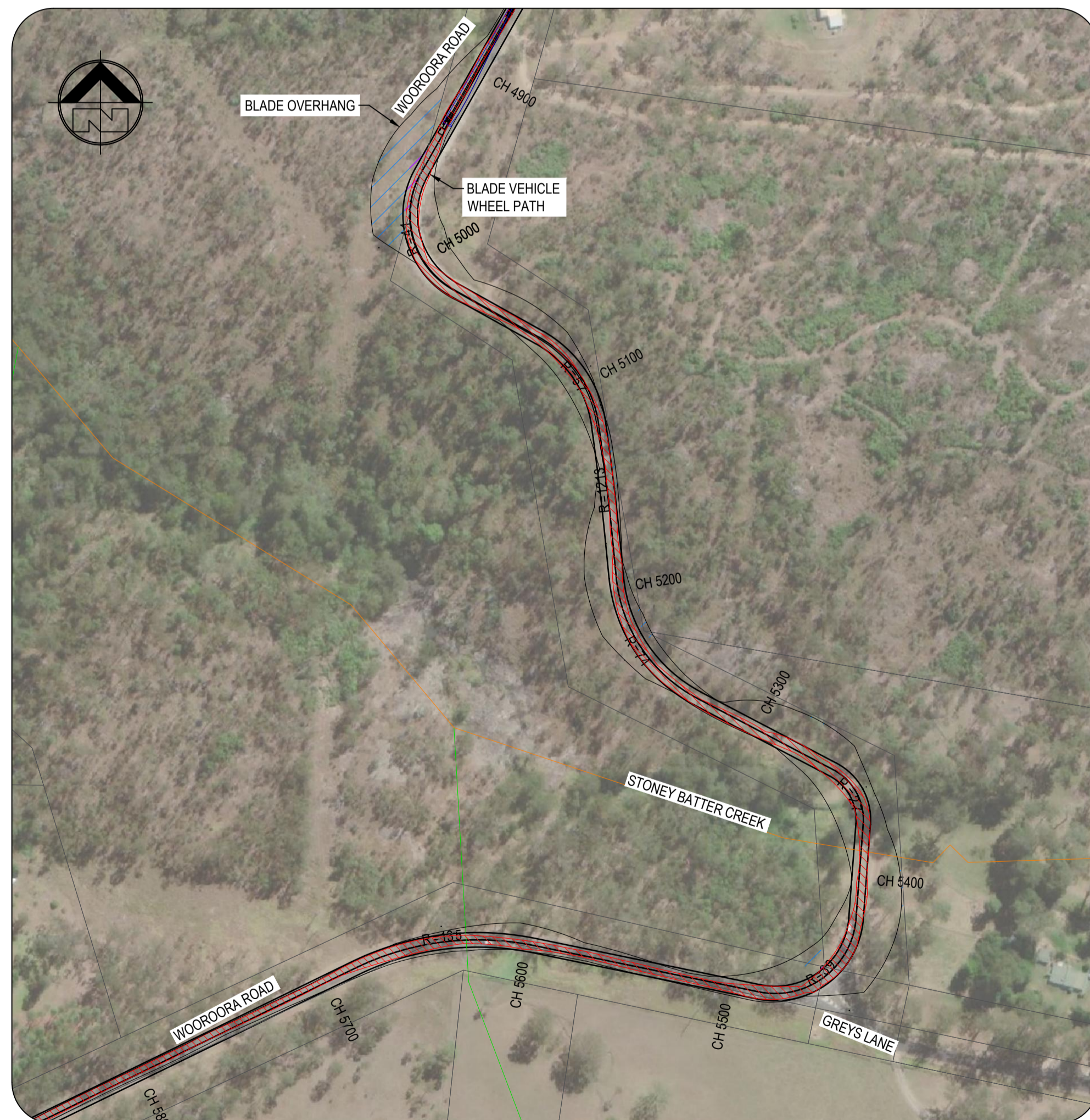
[4] WOOROORA RD - CH 2,800
SCALE 1:1,000



[6] WOOROORA RD - CH 9,850
SCALE 1:1,000



[7] WOOROORA RD - CH 12,450
SCALE 1:1,000



[5] WOOROORA RD - CH 4,900 - 5,500
SCALE 1:2,000



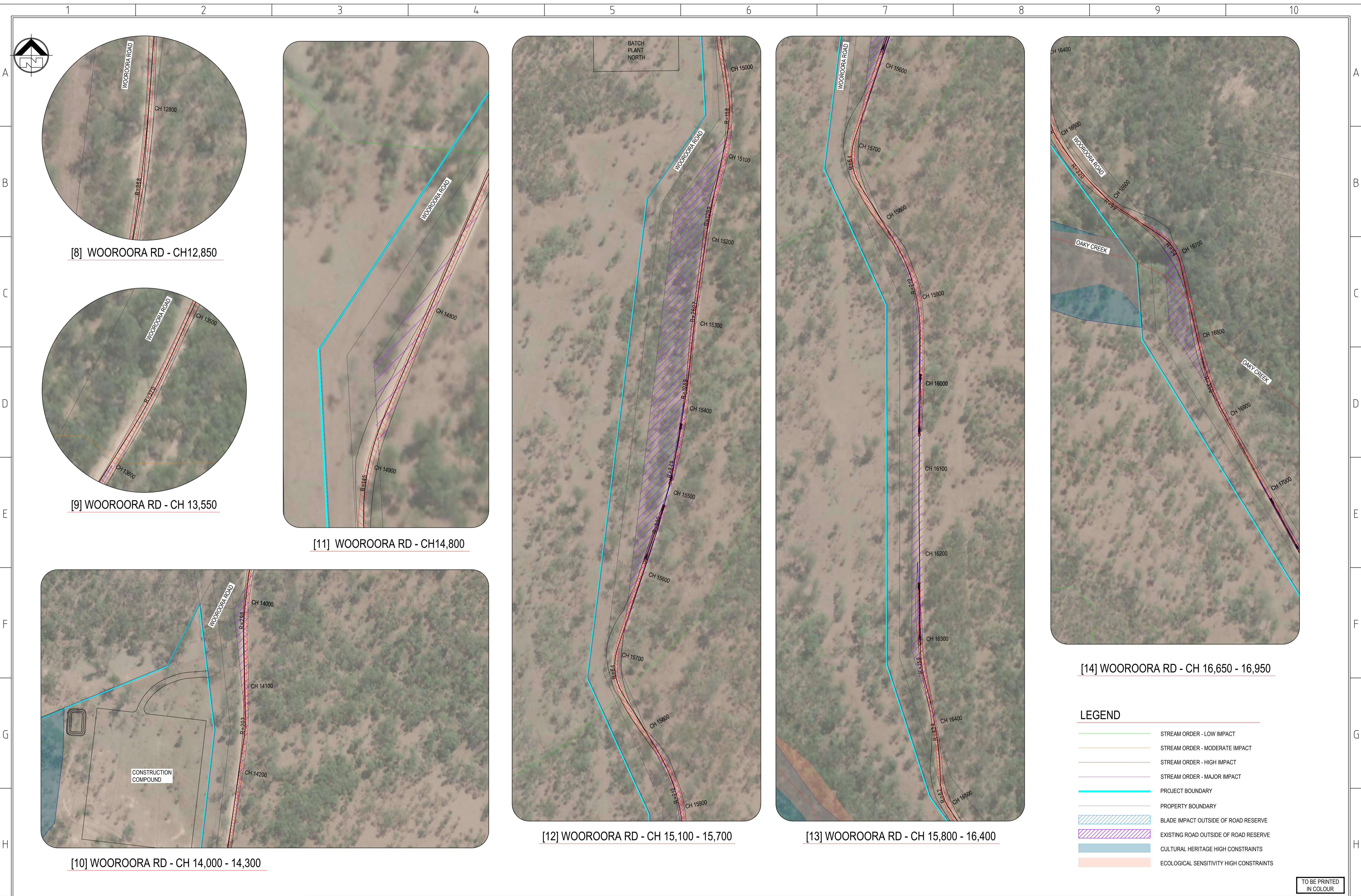
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REV	DETAIL	DRN	CHK	APP	DATE



PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	PRELIMINARY	
TITLE	TRANSPORT ROUTE STUDY		PROJECT NO.	20-315	SCALE
ROUTE 1	RAVENSHOE TO SITE - SHEET 1		DRAWING NO.	CHLWF-TRS-WOOR 1	AS SHOWN
					SIZE
					A1
					REV
					B

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[8] WOOROORA RD - CH12,850

[9] WOOROORA RD - CH 13,550

[11] WOOROORA RD - CH14,800

[12] WOOROORA RD - CH 15,100 - 15,700

[13] WOOROORA RD - CH 15,800 - 16,400

[14] WOOROORA RD - CH 16,650 - 16,950

[10] WOOROORA RD - CH 14,000 - 14,300

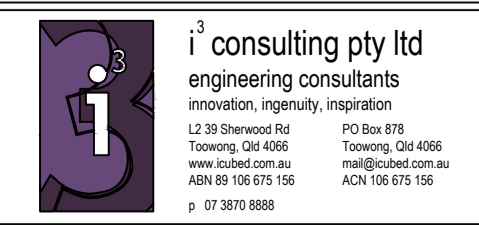
- LEGEND**
- STREAM ORDER - LOW IMPACT
 - STREAM ORDER - MODERATE IMPACT
 - STREAM ORDER - HIGH IMPACT
 - STREAM ORDER - MAJOR IMPACT
 - PROJECT BOUNDARY
 - PROPERTY BOUNDARY
 - BLADE IMPACT OUTSIDE OF ROAD RESERVE
 - EXISTING ROAD OUTSIDE OF ROAD RESERVE
 - CULTURAL HERITAGE HIGH CONSTRAINTS
 - ECOLOGICAL SENSITIVITY HIGH CONSTRAINTS

TO BE PRINTED IN COLOUR



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B PRELIMINARY	DK BP TJS 16/06/2021		
A PRELIMINARY	DK BP TJS 11/06/2021		
REV DETAIL	DRN CHK APP DATE		
REVISIONS AND APPROVALS			



PROJECT: CHALUMBIN WIND FARM		DRAWING STATUS: PRELIMINARY	
TITLE: TRANSPORT ROUTE STUDY		PROJECT NO: 20-315	SCALE: AS SHOWN
ROUTE 1		DRAWING NO: CHLWF-TRS-WOOR 2	SIZE: A1
RAVENSHOE TO SITE - SHEET 2			REV: B