

Appendix B

**Revised Traffic and Transport
Impact Assessment**

Part 2 (Revised TTIA, Appendix A)





Appendix A – Preliminary Transport Route Assessment



ROUTE STUDY

CLIENT: SPARK RENEWABLES

PROJECT: MALLEE WINDFARM

EX PORT OF PORTLAND

BLADE SIZE: 91 METRE

10/03/2025 REV 00

Rev	Date	Change	Responsible	Checked
00	10/03/25	Route Assessed	W Andrews	✓
00	12/03/25	Report Compiled	E Novak	✓

Index:

1.0	INTRODUCTION	3
2.0	PROJECT DATA.....	4
3.0	EVALUATION	5
4.0	MALLEE WINDFARM SITE LOCATION	6
5.0	PORT OF IMPORT.....	8
6.0	TRANSPORT SUMMARY.....	9
7.0	ROUTE 1 STUDY: BLADES AND COMPONENTS UNDER 5.3 M	10
8.0	ROUTE 1 CONCLUSION	41
9.0	ROUTE 2 STUDY: HIGH LOAD ROUTE (6.4M MAX LOADED HEIGHT)	43
10.0	ROUTE 2 CONCLUSION	83
11.0	REFERENCES	84
12.0	APPENDIX 1 - TRANSPORT COMBINATIONS (EXAMPLES).....	85
13.0	APPENDIX 2 - TRANSPORT DRAWINGS (EXAMPLES).....	89

1.0 Introduction

Spark Renewables are investigating a potential windfarm as part of the Mallee Energy Hub in the Southwest Renewable Energy Zone in Southwestern NSW.

The study has been undertaken to understand the transport route constraints for the components listed in this report and assist in planning of the windfarm layout.

The report describes observations and previous experience on the proposed routes and explains the transport of wind turbine equipment from the Port of Portland to Mallee Windfarm by Rex J Andrews Engineered Transport.

The study is based on a proposed 91 Metre blade with a hub height of up to 170 metres.

The route study was undertaken on 10/03/2025.

2.0 Project Data

Date of latest Route Assessment: 10/03/2025

Survey undertaken by: (Rex J Andrews P/L)

Project Name: Mallee Windfarm

Location: Portland Port (VIC) to Arumpo (NSW)

Turbine types:

Up to 150 wind turbine generators with blades up to 91 metres in length and a hub height of 170 metres.

3.0 Evaluation

Assessment of the proposed routes was conducted by Rex J Andrews Engineered Transportation based on onsite route surveys as well as previous experience on sections of the identified routes and transporting turbine equipment similar to the proposed turbine on various other projects. The assessment was conducted utilising the knowledge, experience and intellectual property of Rex J Andrews Engineered Transportation on purpose-built equipment and is not intended for use by other parties.

The assessment considered the key constraints encountered on the routes and an estimation of the amount of work required to make the route viable based on previous experience. Table 1 shows the evaluation of each route and provides an overall ranking to give guidance on the most suitable route for the development from a transport perspective. The assessment was based on operational factors and equipment capability and does not consider external factors such as regulatory, landholder, environmental, cultural or any other external factors beyond the knowledge or control of Rex J Andrews Engineered Transportation.

		Harbour	Road Modification	Road Furnishings	Vegetation	Site Entrance	Bridge Calculations	Overhead Utilities	Overall Work Required
1	No Cost								
2	Some Work								
3	Moderate Amount of Work								
4	Extreme Amount of Work								
Route 1	Blades & Loads under 5.3m High	3	4	4	3	4	3	2	3.5
Route 2	Towers & Loads up to 6.4m high	1	3	3	3	4	3	4	3.5

Table 1 - Route Evaluation

4.0 Mallee Windfarm Site Location

The proposed Mallee Windfarm is located approximately 16 kilometres Northeast of Buronga, in southwest New South Wales. Access is via Arumpo Road. The Project Area is within the Southwest renewable energy zone in the Murray Region of New South Wales.

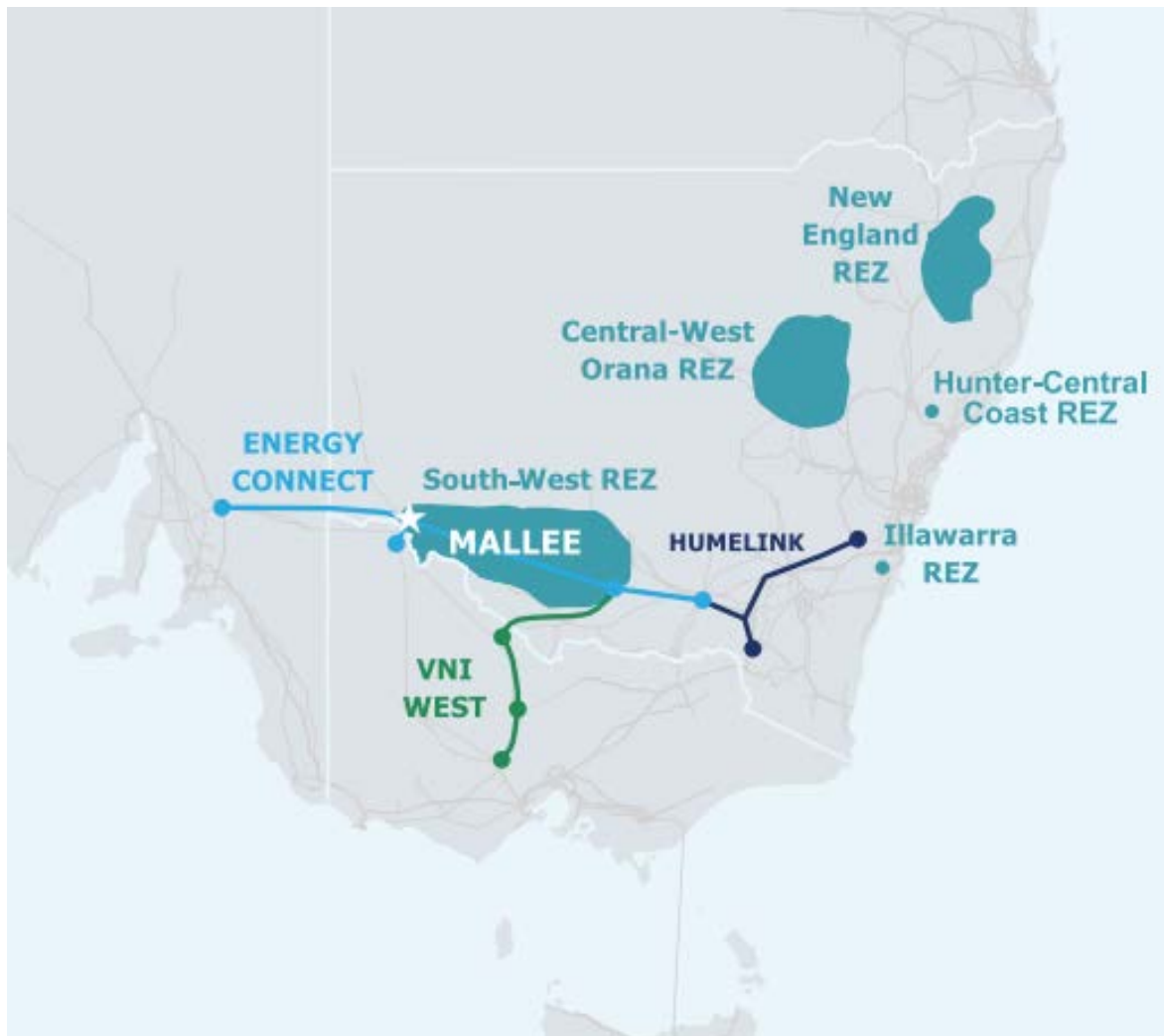


Figure 1 - Mallee Windfarm Location

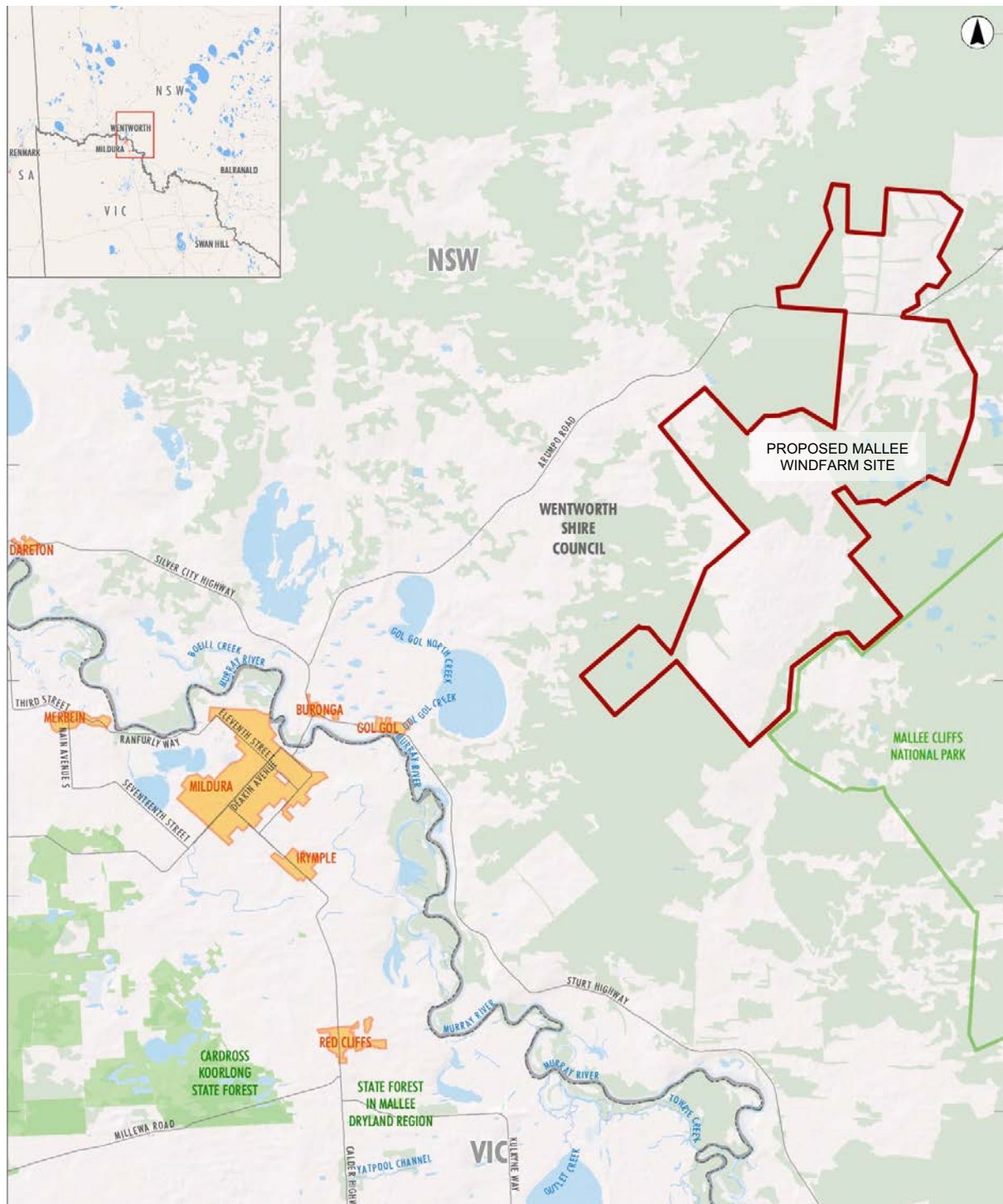


Figure 2 - Mallee Windfarm Site Layout

5.0 Port of Import

The ideal berth for discharge would be the No.5 Berth. This berth is situated in Portland harbour and has road access via Madeira Packet Road Portland.

The berth has handled various wind farm projects in South-West Victoria and has accommodated blades of up to 80 metres in length in the past.

Storage at the port may be available for short-term lease of up to 10,000 S/Q metres; alternatively, Rex J Andrews Pty Ltd currently has 60,000 s/q metres of Hardstand and Keppel Prince has 40,000 s/q metres of hardstand.



Figure 3 – Port of Portland

6.0 Transport Summary

The study is based on the turbine components and imported towers entering Australia via Portland Port. The study details the likely routes for these components, and the constraints that they may encounter on the proposed routes.

ROUTE 1: Blades and Components Under 5.3m Loaded Height

DISTANCE: 723 kilometres

GPS LINK: <https://maps.app.goo.gl/nKzQL6oKZmyjwYCJA>

ROUTE: Madeira Packet Way, Henty Highway, Princess Highway, Portland-Casterton Road, Glenelg Highway, Coleraine-Edenhope Road, Nhil-Harrow Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Silver City Hwy, Arumpo Road.

ROUTE 2: High Load Route - Maximum Loaded Height 6.4m

DISTANCE: 700 kilometres

GPS LINK: <https://maps.app.goo.gl/SVebXRxHqzmMGApn6>

ROUTE: Quay Road, Madeira Packet Way, Cape Nelson Road, Mailings Road, Thorns Road, Bridgewater Road, Henty Highway, Glenelg Highway, Henty Highway, Rifle Butts Road, Lower Norton-Nurrabiel Road, Horsham-Noradjuha Road, Wimmera Highway, Curran Road, Obrees Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Highway, Sturt Hwy, Silver City Hwy, Arumpo Road.

7.0 Route 1 Study: Blades And Components Under 5.3 m

DISTANCE: 723 kilometres

GPS LINK: <https://maps.app.goo.gl/nKzQL6oKZmyjwYCJA>

ROUTE: Madeira Packet Way, Henty Highway, Princess Highway, Portland-Casterton Road, Glenelg Highway, Coleraine-Edenhope Road, Nhil-Harrow Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Silver City Hwy, Arumpo Road.

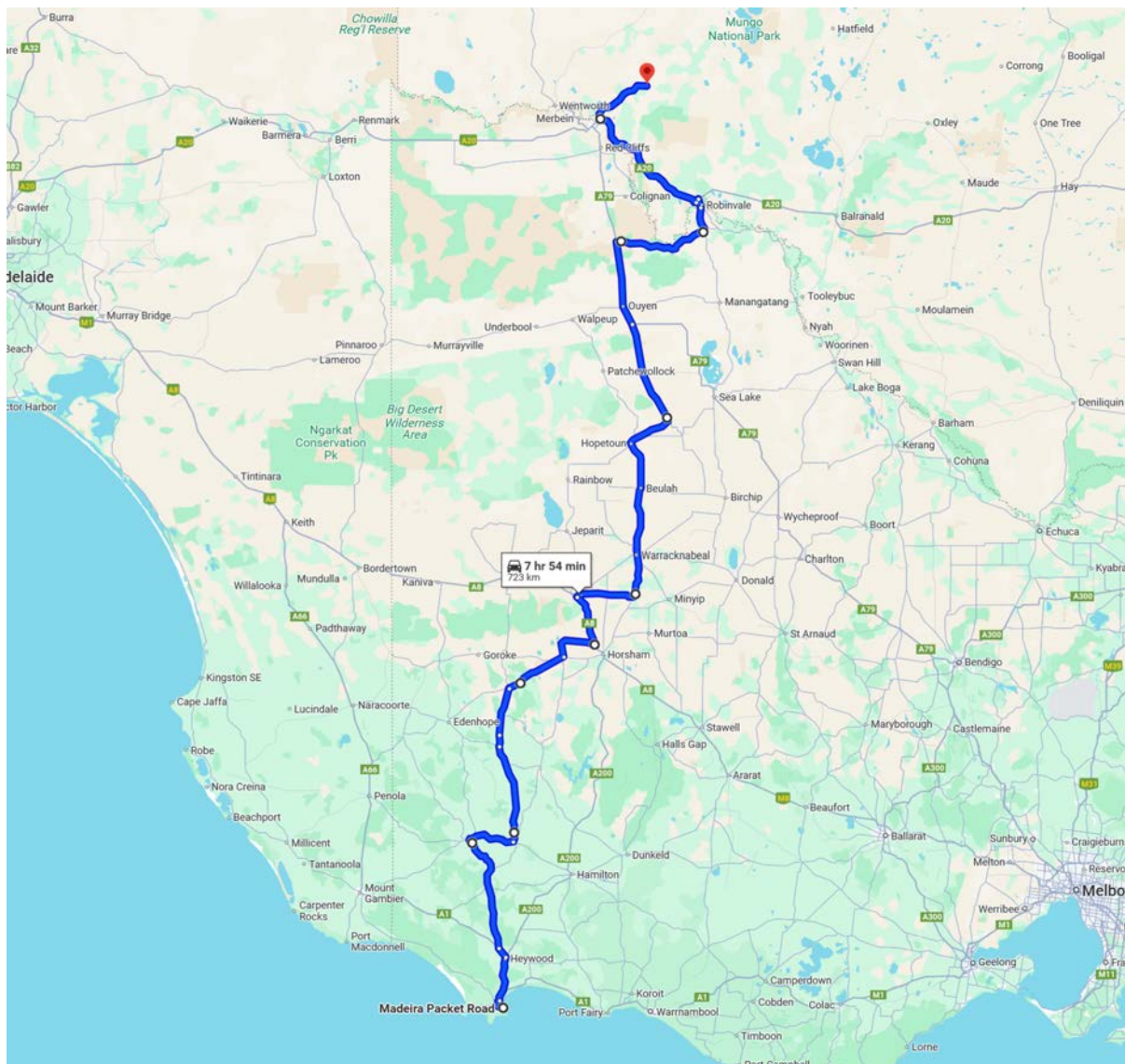


Figure 4 - Route 1

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Portland	No.2 Quay Road onto madeira Packet Road GPS Link: https://maps.app.goo.gl/15XGtR3C7	Length: 75.0 M Width: 9.0 M	Right hand turn	Port and port access roads to be confirmed as suitable. Obstacles surrounding gate to be relocated out of swept path and height of gate to be confirmed to provide oversail clearance. Rail manager approvals required.
0.5	Portland	Madiera Packet Road becomes Henty Hwy GPS Link: https://maps.app.goo.gl/wAbhKBq53nF2VDs67	Width: 4.5 M	Travel directly ahead	No Problems with this section of road.
6.6	Portland	Corner on Henty Highway at New St GPS Link: https://maps.app.goo.gl/D357B9Co1YU3336ene7	Length: 50.0 M Width: 6.0 M	Left hand turn	Light pole, and several signs to be relocated out of swept path. Vegetation to be trimmed for blade oversail clearance.
19.6	Heathmere	Henty Highway GPS Link: https://goo.gl/maps/frhxovwmcpp	Width: 8.0 M	Travel over rail crossing	Rail manager approvals required.
31.2	Heywood	Henty Highway onto Princess Hwy GPS Link: https://maps.app.goo.gl/1nGP52nPAwv41D9	Length: 80.0 M Width: 5.0 M	Left hand turn	Hardstand shoulder to be installed on inside of bend.
37.5	Drumborg	Princess Hwy onto Portland-Casterton Rd GPS Link: https://maps.app.goo.gl/55B2v2v4vST2w0t4d	Length: 80.0 M Width: 8.0 M	Right hand turn	Culvert to be extended and hardstand installed on inside of corner. Island to be made trafficable and sign relocated.
103.0	Casterton	Portland-Casterton Rd onto Glenelg Hwy GPS Link: https://maps.app.goo.gl/TA7WUdHjvT2K63b0d	Length: 60.0 M Width: 9.0 M	Right hand turn	Light poles to be relocated out of swept path. Signs to be relocated or made removable. Grass island to be made trafficable with kerbs modified and hardstand installed.
129.0	Coleraine	Glenelg Hwy onto Coleraine-Edenhope Rd GPS Link: https://maps.app.goo.gl/5M5Ch6F1AUQodU5	Length: 55.0 M Width: 9.5 M	Left hand turn	Pole to be relocated out of swept path. Hardstand to be installed on inside of corner and signs relocated.
183.0	Harrow	Coleraine-Edenhope Rd onto Nhill-Harrow Rd GPS Link: https://maps.app.goo.gl/5vq5K3M84uGv0d7	Length: 45.0 M Width: 6.5 M	Right hand turn	Hardstand to be installed on inside and outside of corner. Vegetation to be cleared for blade oversail clearance.
215.0	Miga Lake	Nhill-Harrow Rd onto Wimmera Hwy GPS Link: https://maps.app.goo.gl/473hF32ba27h0ad0	Length: 40.0m Width: 6.0 m	Right hand turn	Signs to be relocated or made removable. Vegetation trimmed and hardstand installed inside and outside of corner.
248.0	Natimuk	Wimmera Hwy onto Polkemmet Rd GPS Link: https://maps.app.goo.gl/5H5uF6v0dU54v0bC6	Length: 40.0m Width: 6.0 m	Left hand turn	Stay pole to be relocated out of swept path and hardstand installed on inside and outside of corner.
274.0	Vectis	Polkemmet Rd onto Western Hwy GPS Link: https://maps.app.goo.gl/2hVnu27h0d0ad04	Length: 30.0m Width: 6.0 m	Left hand turn	Sign to be relocated out of swept path and hardstand installed on inside and outside of corner.

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KM index	Location	Section of road	Current clearance	Procedure	Comments
303.0	Dimboola	Western Hwy onto Borung Hwy GPS Link: https://maps.app.goo.gl/TPv2Cnw4P1Jk-c3M5	Length: 35.0m Width: 5.5 m	Right hand turn	Signs to be relocated or made removable. Vegetation trimmed or removed. Island made trafficable, and hardstand installed on outside of corner.
305.0	Dimboola	Borong Highway onto Dimboola-Minyip Road GPS Link: https://maps.app.goo.gl/3aG3Rar5u7Ayo4Z	Length: 73.0 M Width: 9.0 M	Right hand turn	Hardstand to be installed on inside of corner. Signs to be relocated or made removable. Vegetation to be trimmed or removed for blade oversail clearance.
334.0	Kewell	Dimboola-Minyip Road onto Henty Hwy GPS Link: https://maps.app.goo.gl/3hG3h3b3G7J3b4c3u2Q	Length: 40.0 M Width: 6.0 M	Left hand turn	Island on entry to be made trafficable. Hardstand to be installed on inside of corner. Signs to be relocated or made removable. Vegetation to be trimmed or removed for blade oversail clearance.
356.7	Warracknabeal	Rail Crossing 1 on Henty Hwy GPS Link: https://maps.app.goo.gl/XJp6s2bGdeG4hiqT9	Width: 9.0 M	Travel directly ahead	Rail manager approvals required.
359.0	Warracknabeal	Rail Crossing 2 on Henty Hwy GPS Link: https://maps.app.goo.gl/ev1SoPrQNH9cs3PD6	Width: 9.0 M	Travel directly ahead	Rail manager approvals required.
414.7	Hopetoun Railway	Rail Crossing on Henty Hwy GPS Link: https://maps.app.goo.gl/3LHsmzZW4XvINsaA	Width: 9.0 M	Travel directly ahead	Rail manager approvals required.
418.0	Hopetoun	Roundabout on Henty Hwy at Austin St GPS Link: https://maps.app.goo.gl/4X1CG87D5u3675u9	Length: 40.0 M Width: 6.0 M	Travel directly ahead	Island on entry and roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.
442.0	Lascelles	Henty Hwy becomes Sunraysia Hwy GPS Link: https://maps.app.goo.gl/3N8Vm5RuyXFuHJNL9	Width: 9.0 M	Travel directly ahead	No problems with this section of road
443.1	Lascelles	Rail Crossing on Henty Hwy GPS Link: https://maps.app.goo.gl/cioAM93QST11M9	Width: 9.0 M	Travel directly ahead	Rail manager approvals required.
497.0	Ouyen	Sunraysia Hwy onto Calder Hwy GPS Link: https://maps.app.goo.gl/3p2M3u3t61voo314u719	Width: 6.0 M	Left hand turn	Blade to oversail sign or sign to be relocated.
542.0	Hattah	Calder Hwy onto Hattah-Robinvale Rd GPS Link: https://maps.app.goo.gl/8P9Hu3UR3u4M2K2d3A	Length: 40.0 M Width: 6.0 M	Right hand turn	Light poles to be relocated out of swept path. Islands on entry and exit to be made trafficable. Signs to be relocated or made removable. Vegetation to be trimmed or removed on outside and inside of corner for blade clearance.
594.0	Bannerton	Hattah-Robinvale Rd onto Robinvale-Sea Lake Rd GPS Link: https://maps.app.goo.gl/4Pv3d41h1Qv48TX19	Length: 50.0 M Width: 5.0 M	Left Hand Turn	Hardstand to be installed on island and kerbs made trafficable. Signs to be relocated or made removable. Vegetation to be trimmed for blade oversail clearance.
607.0	Robinvale	Robinvale-Sea Lake Rd turns into Murray Valley Hwy GPS Link: https://goo.gl/maps/55pknuwKNHsoA1vdA	N/A	Travel directly ahead	No problems with this section of road

REX J ANDREWS
ENGINEERED TRANSPORTATION

13

0.0 Km's: No.2 Quay Road onto Madeira Packet Road

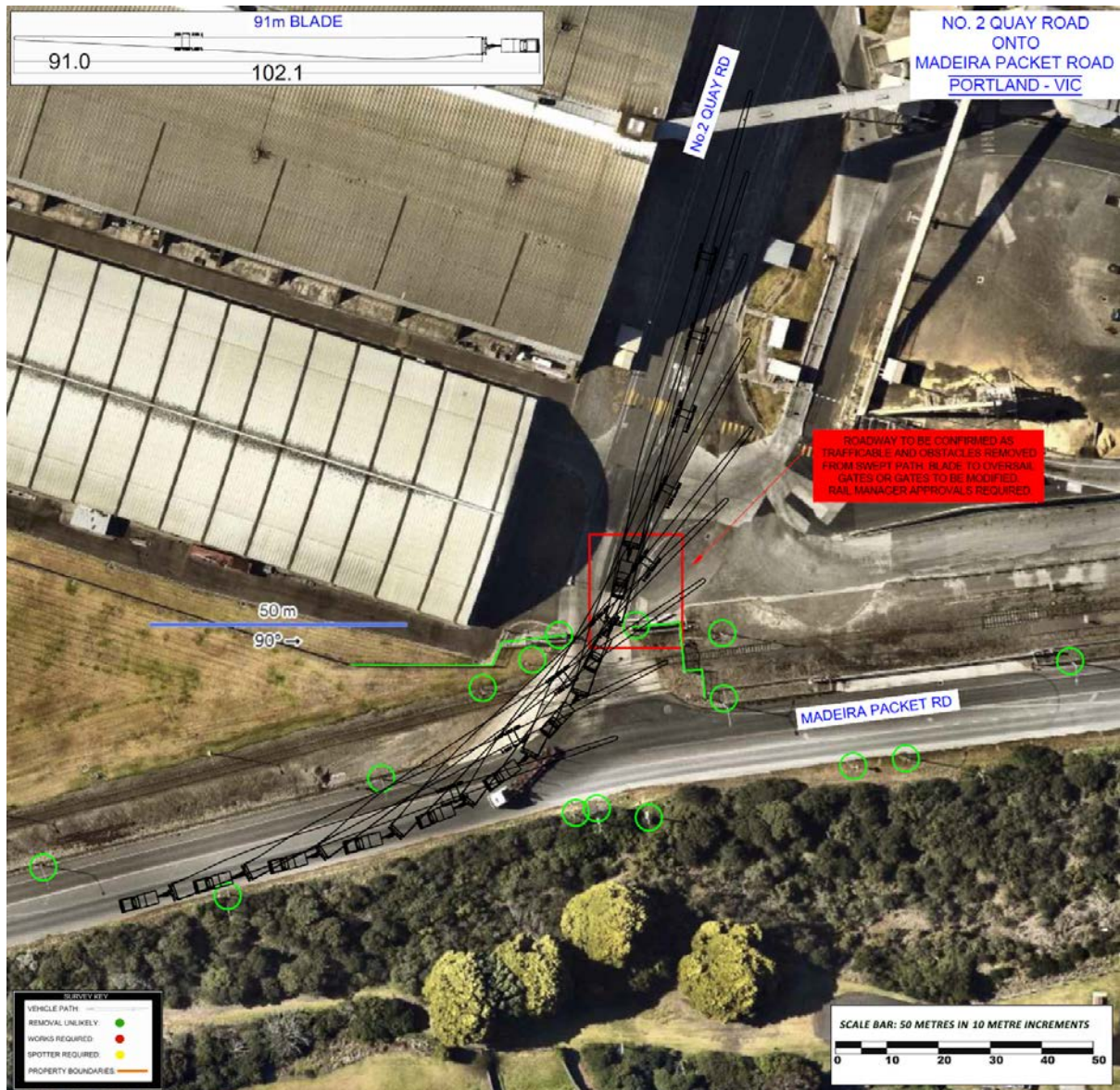


Figure 5 - No.2 Quay Road onto Madeira Packet Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Dmb15XGtrSK2>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Port and port access roads to be confirmed as suitable. Obstacles surrounding gate to be relocated out of swept path and height of gate to be confirmed to provide oversail clearance. Rail manager approvals required.

6.6 Km's: Corner on Henty Highway at New Street

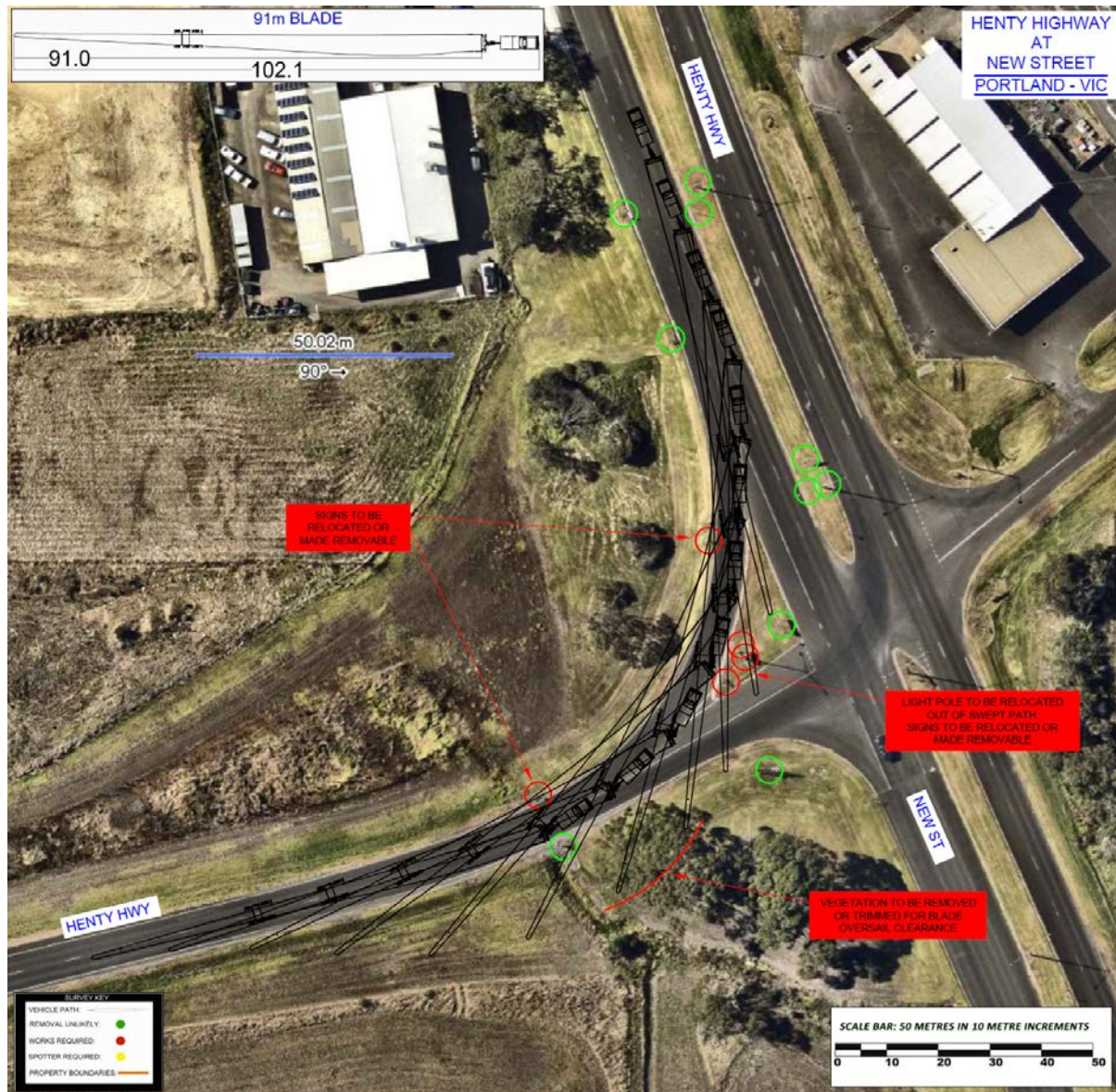


Figure 6 - Corner on Henty Highway at New St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/DS7S9Cn1YU33Xwme7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Light pole, and several signs to be relocated out of swept path. Vegetation to be trimmed for blade oversail clearance.

31.2 Km's: Henty Highway onto Princess Highway

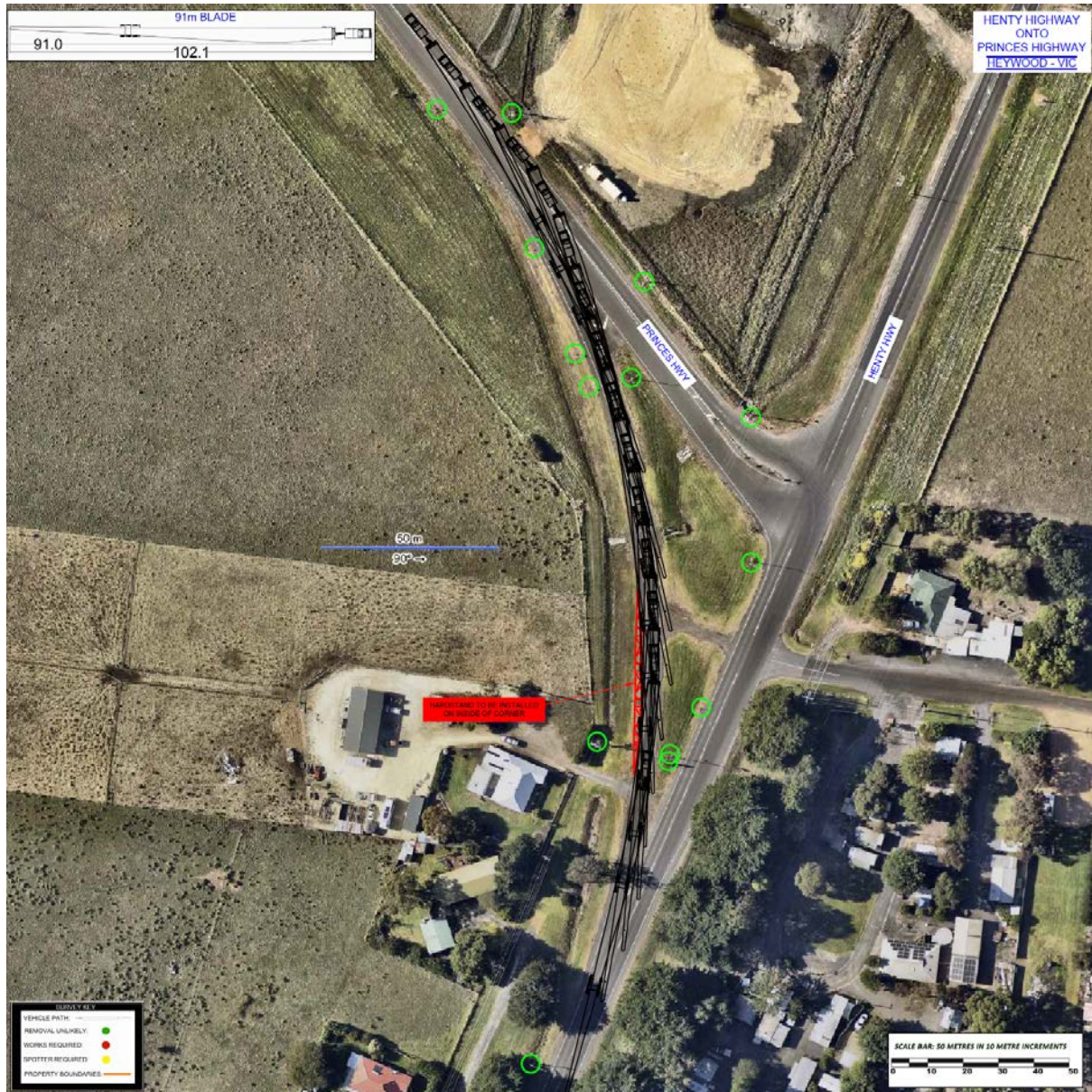


Figure 7 - Henty Highway onto Princess Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/1rqPSzkcFArykrU79>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Hardstand shoulder to be installed on inside of bend.

37.5 Km's: Princess Highway onto Portland-Casterton Road

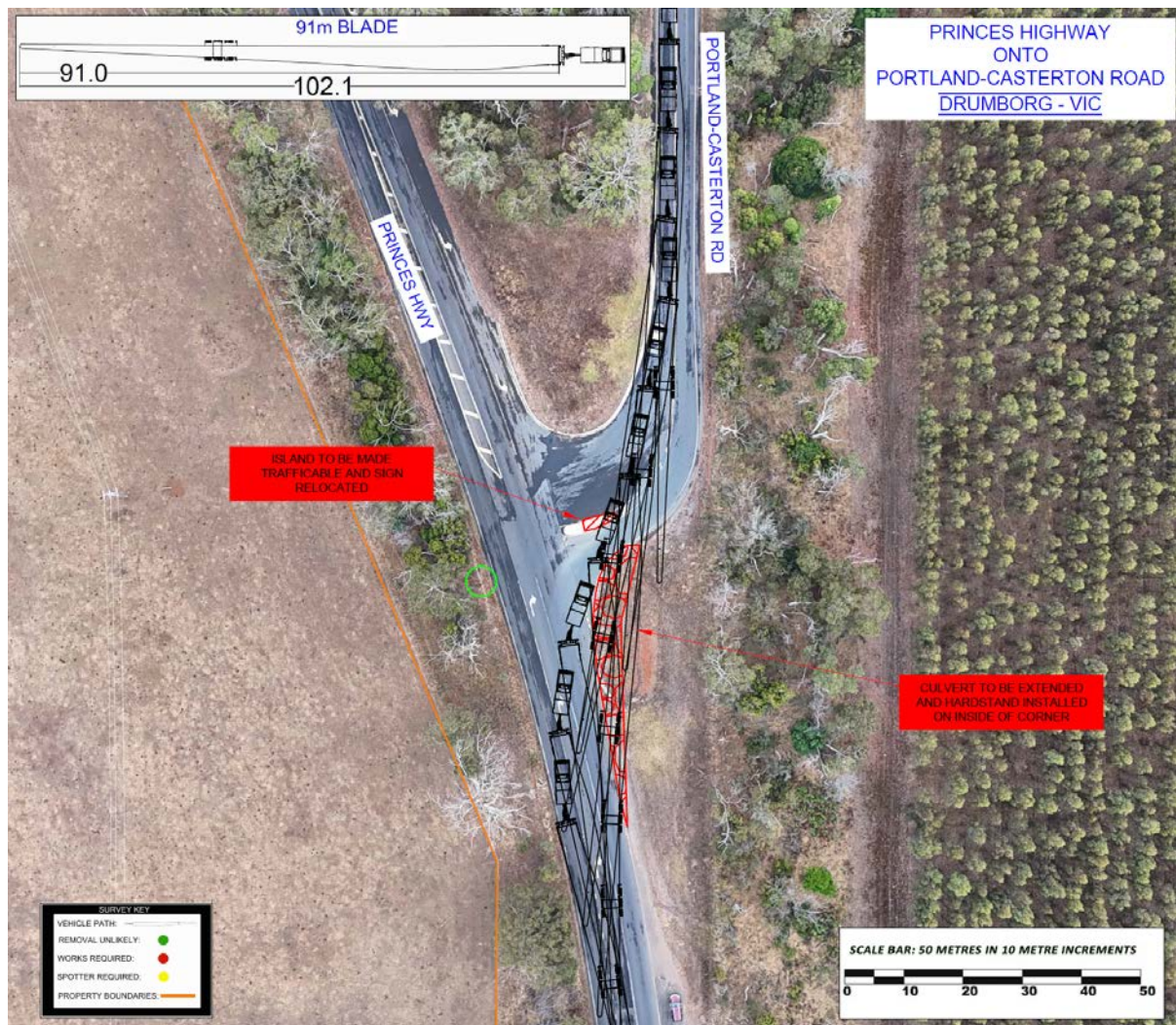


Figure 8 - Princess Hwy onto Portland-Casterton Rd

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/y9jRaYAvG7QVrtbv9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Culvert to be extended and hardstand installed on inside of corner. Island to be made trafficable and sign relocated.

103.0 Km's: Portland-Casterton Road onto Glenelg Highway

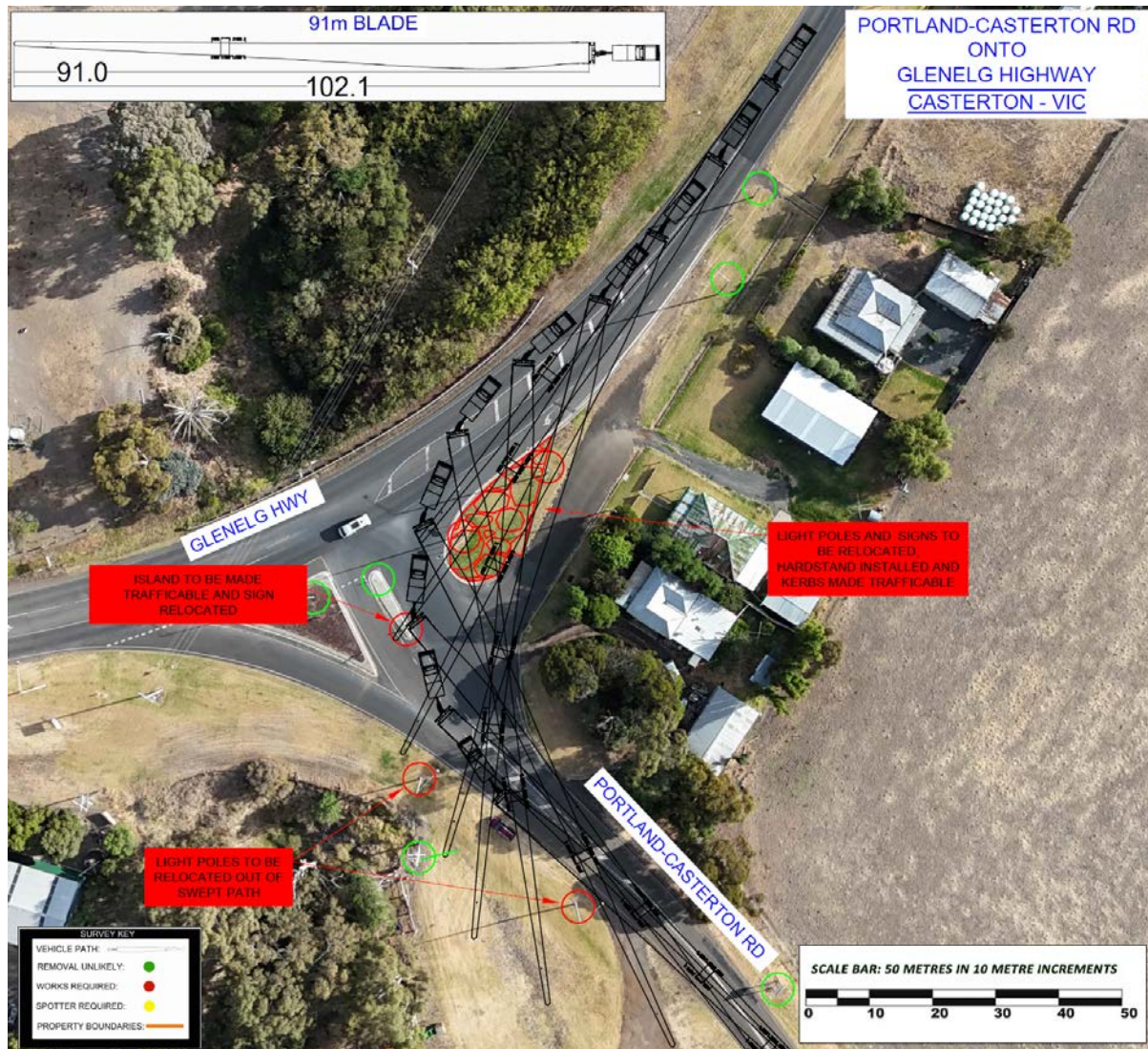


Figure 9 - Portland-Casterton Rd onto Glenelg Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/EAWGUhisYfXWAJNm8>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Light poles to be relocated out of swept path. Signs to be relocated or made removable. Grass island to be made trafficable with kerbs modified and hardstand installed.

129.0 Km's: Glenelg Highway onto Coleraine-Edenhope Road

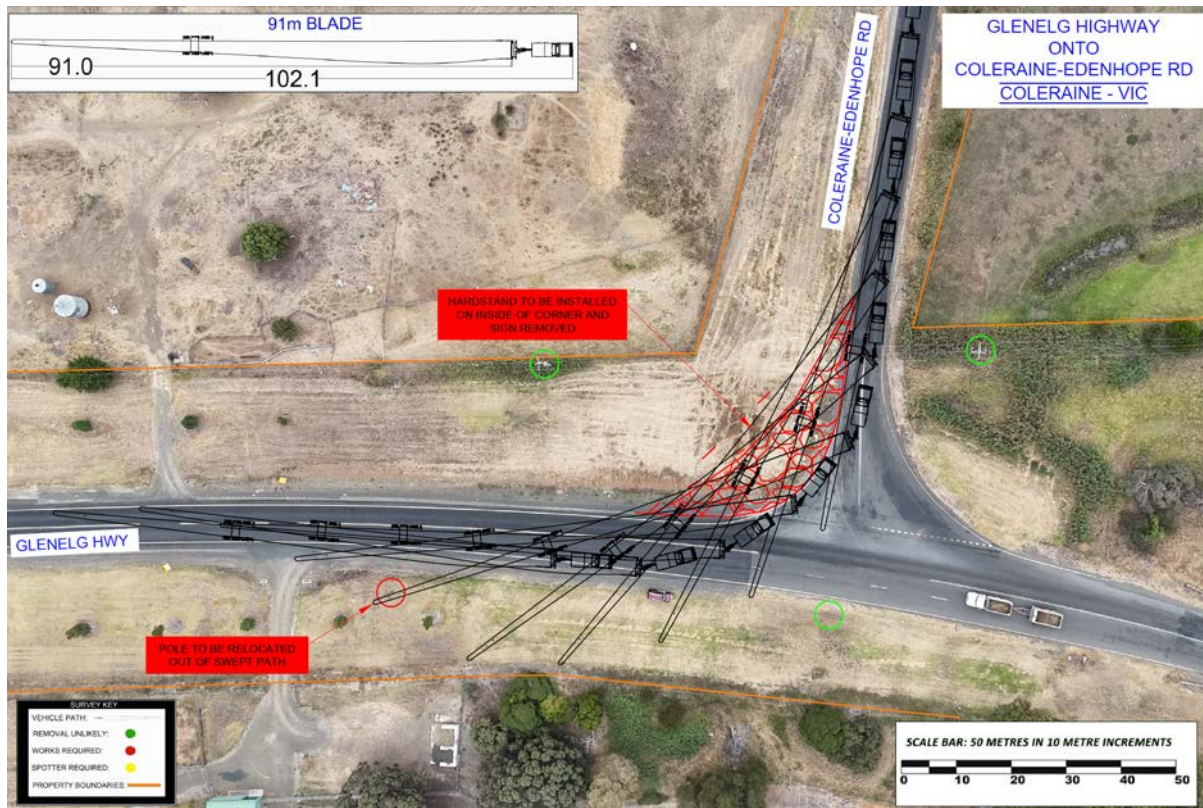


Figure 10 - Glenelg Hwy onto Coleraine-Edenhope Rd

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/nBM9PhSrFVANQcxU6>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Pole to be relocated out of swept path. Hardstand to be installed on inside of corner and signs relocated.

183.0 Km's: Coleraine-Edenhope Rd onto Nhill-Harrow Rd

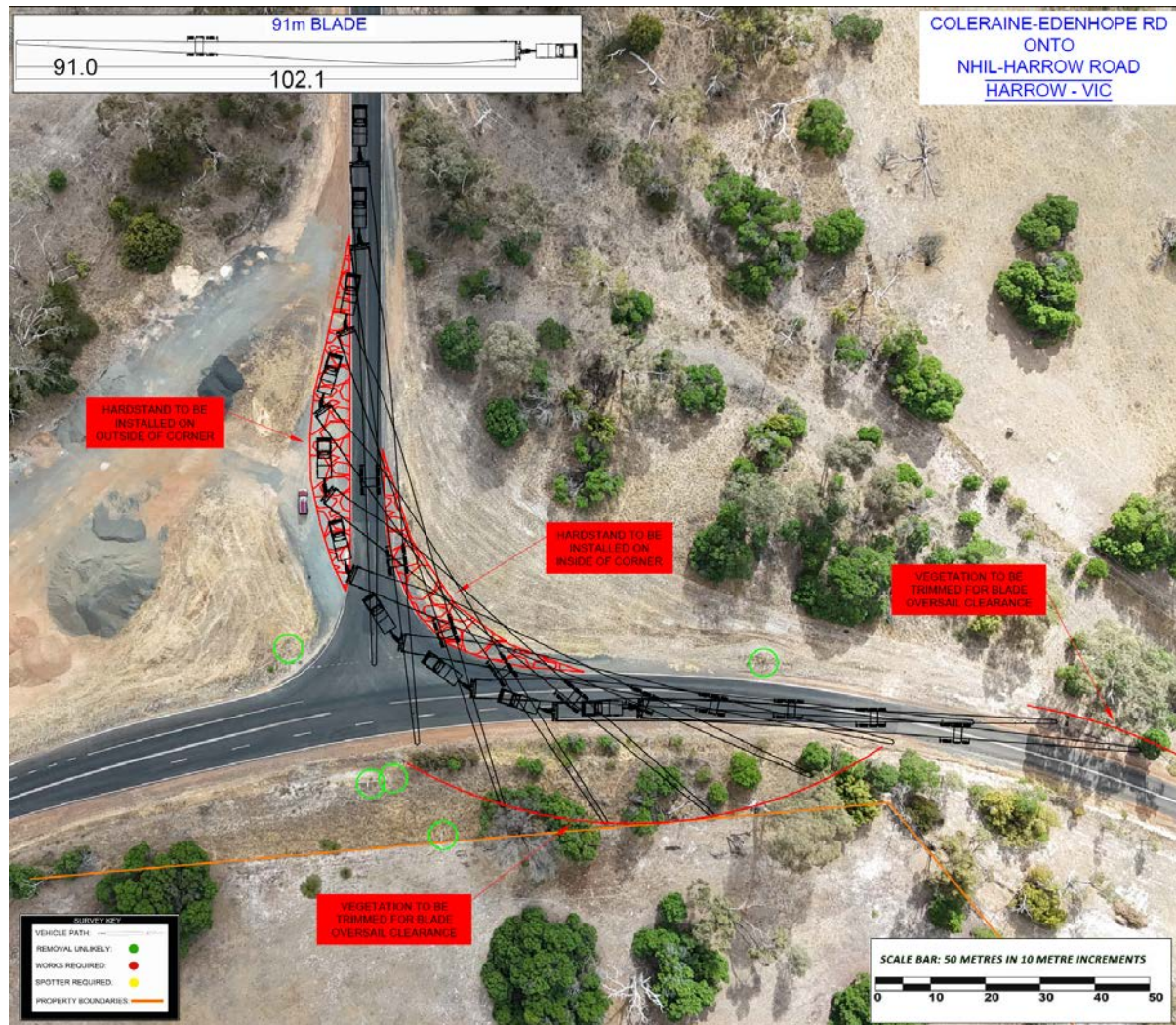


Figure 11 - Coleraine-Edenhope Rd onto Nhill-Harrow Rd

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/xoojJYXMfkKuCozh7>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Vegetation to be cleared for blade oversail clearance.

215.0 Km's: Nhil-Harrow Road onto Wimmera Highway

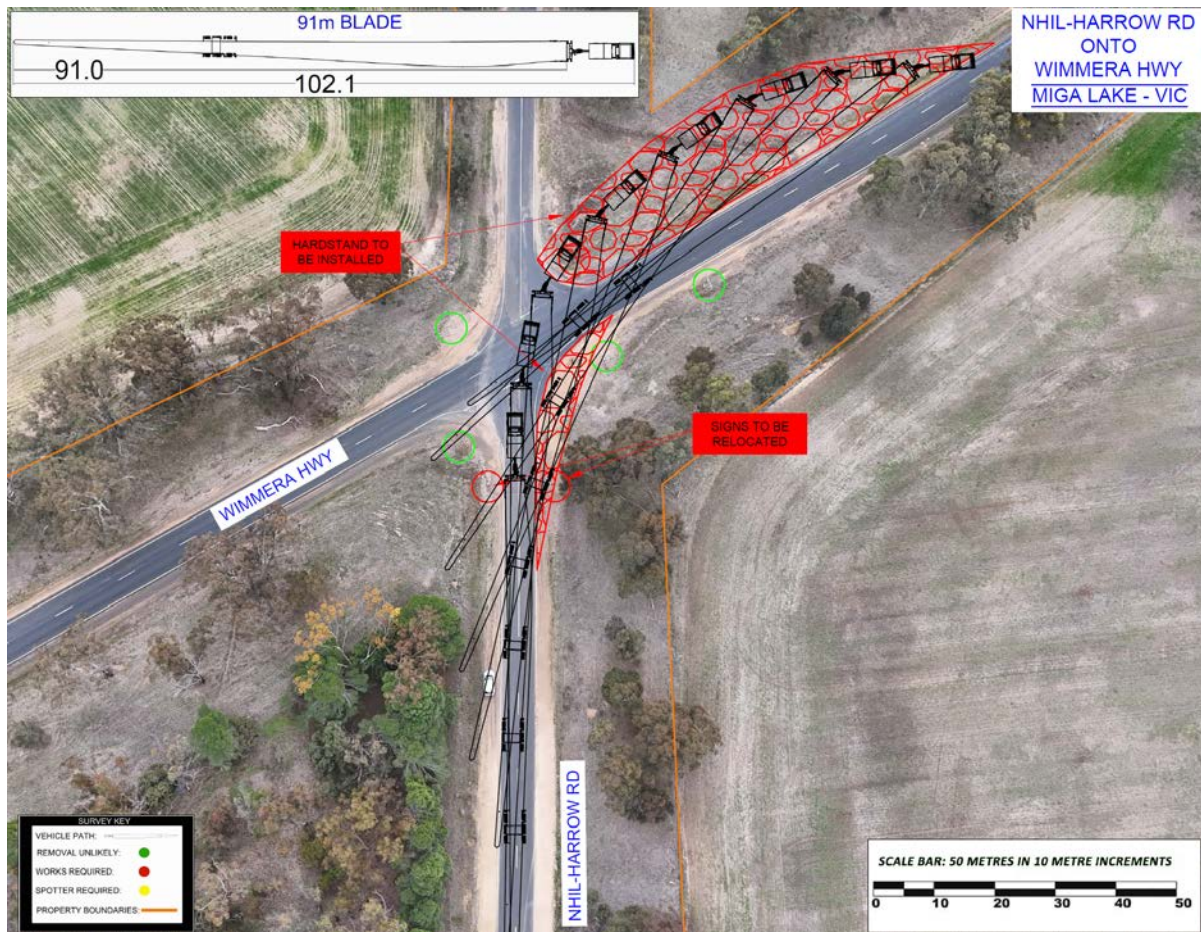


Figure 12 - Nhil-Harrow Road onto Wimmera Highway

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/nHStNQXoazKfkzgg9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Signs to be relocated or made removable. Vegetation trimmed and hardstand installed inside and outside of corner.

248.0 Km's: Wimmera Highway onto Polkemmet Road

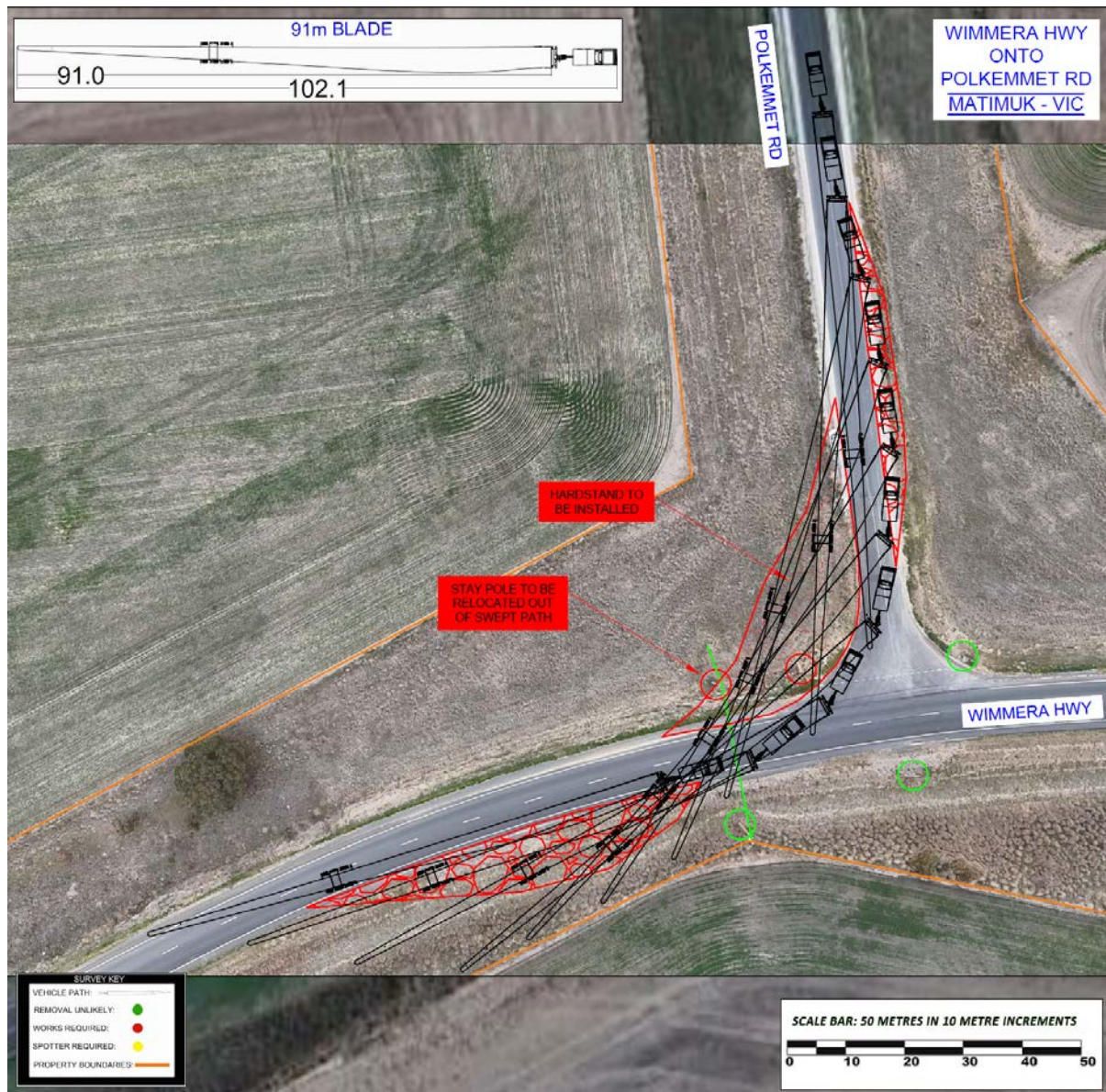


Figure 13 - Wimmera Highway onto Polkemmet Road

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/BRuPxfvdsUwJhhhC6>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Stay pole to be relocated out of swept path and hardstand installed on inside and outside of corner.

274.0 Km's: Polkemmet Road onto Western Highway

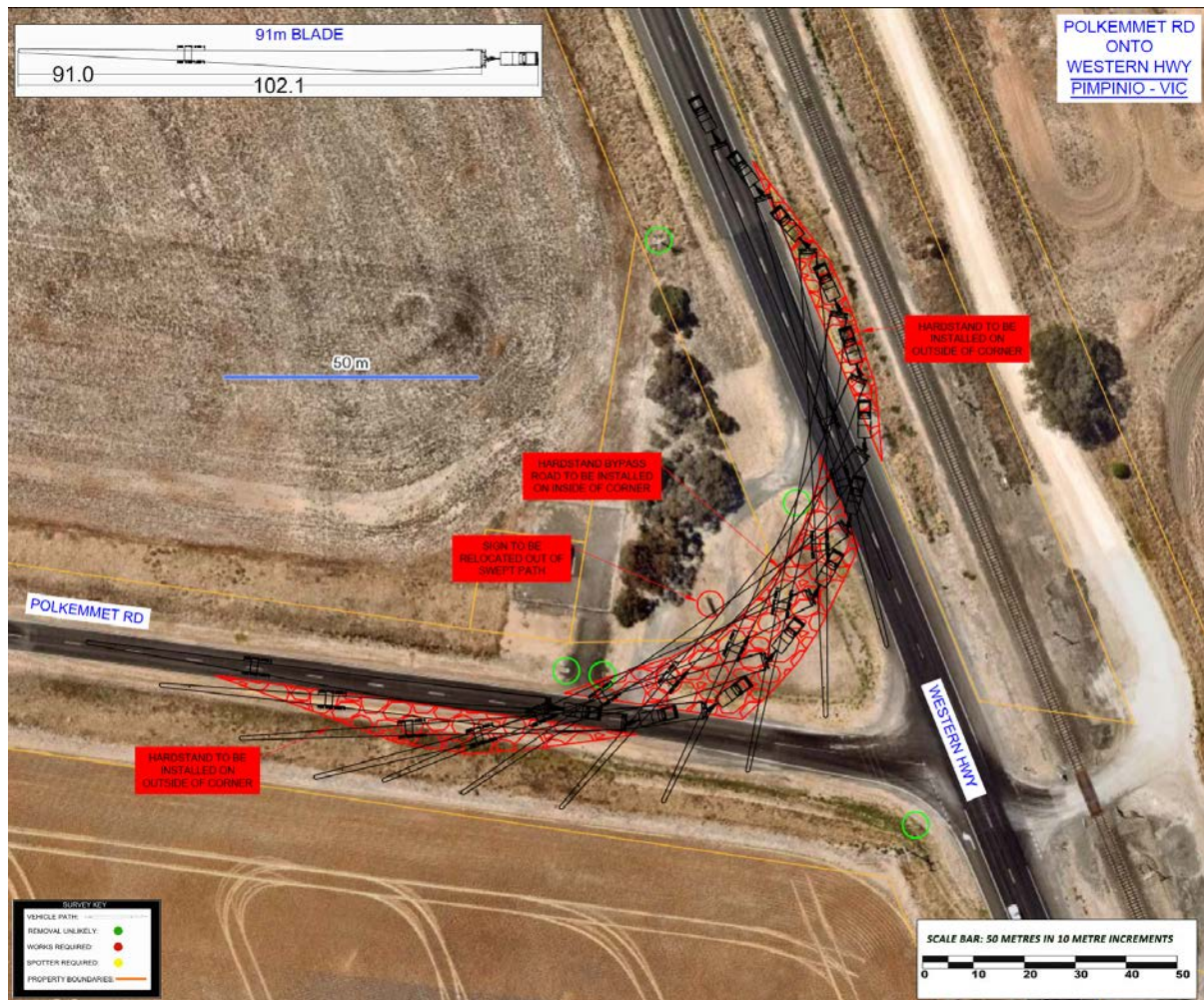


Figure 14 - Polkemmet Road onto Western Highway

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/GkYdszZWct6kcp4LA>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Sign to be relocated out of swept path and hardstand installed on inside and outside of corner.

303.0 Km's: Western Highway onto Borung Highway

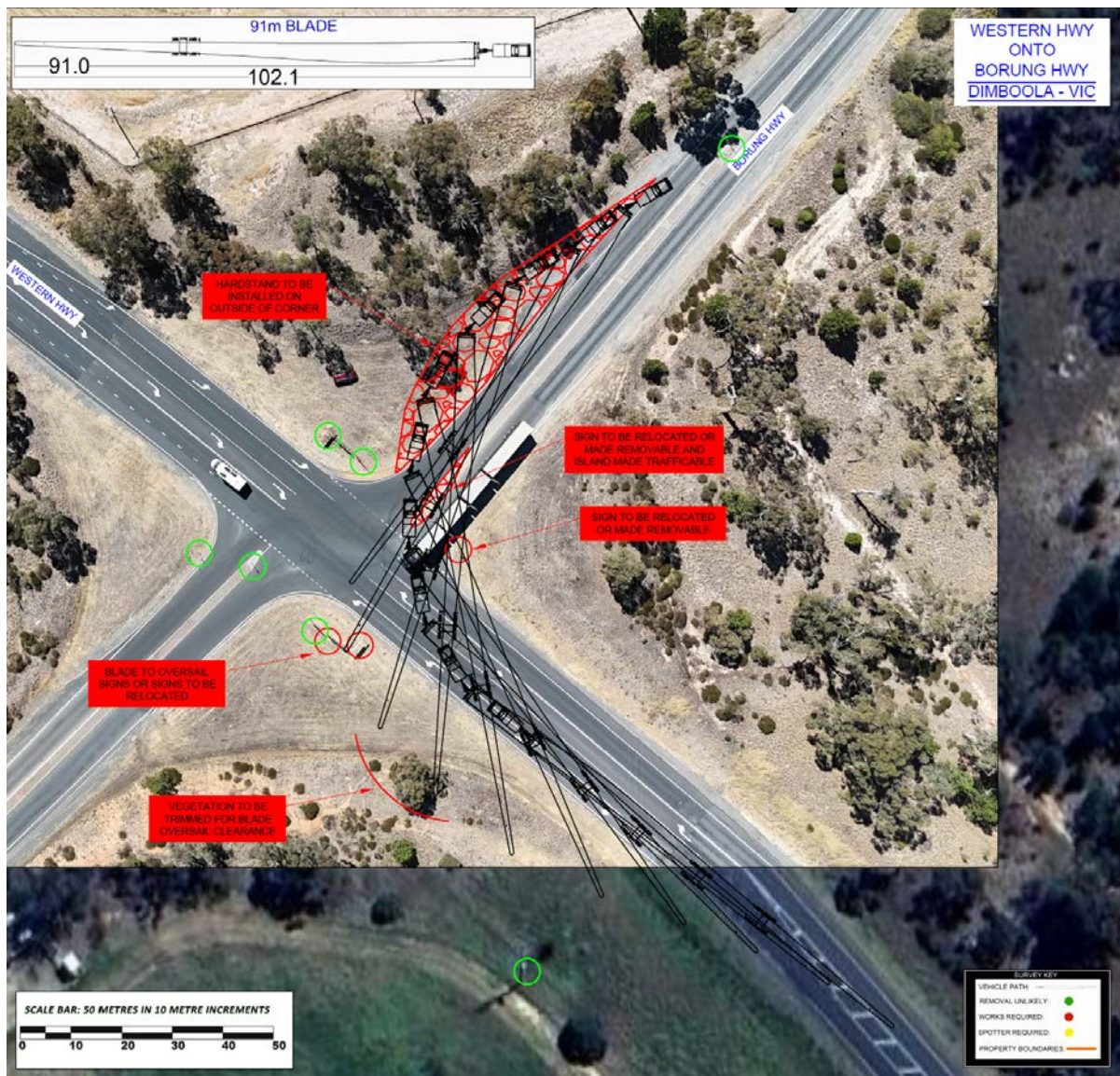


Figure 15 - Western Highway onto Borung Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/iXKWYrr5QDduuSou6>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Signs to be relocated or made removable. Vegetation trimmed or removed. Island made trafficable, and hardstand installed on outside of corner.

305.0 Km's: Borung Highway onto Dimboola-Minyip Road

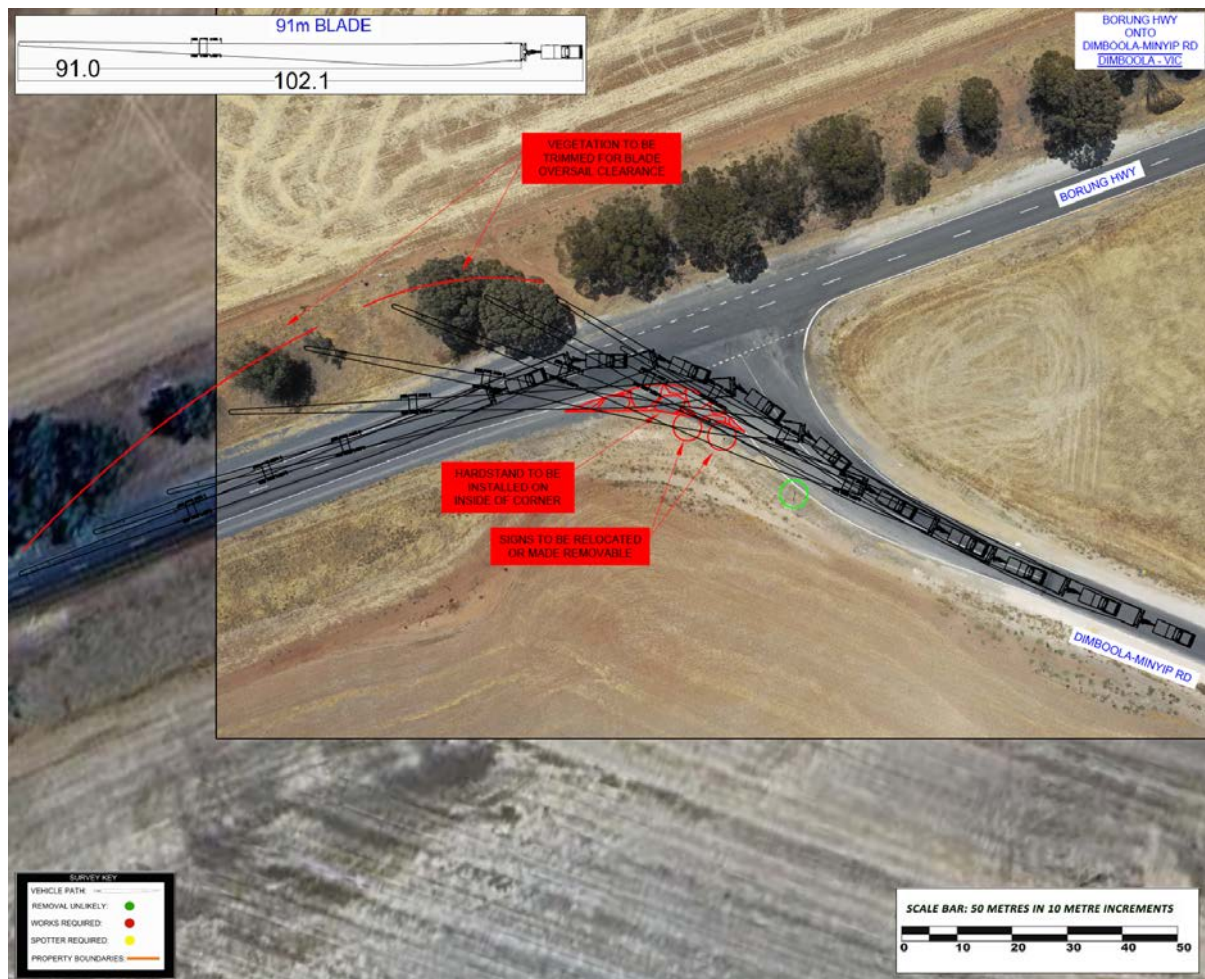


Figure 16 - Borung Highway onto Dimboola-Minyip Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/7Eafj3RgrKcT2ynV9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Hardstand to be installed on inside of corner. Signs to be relocated or made removable. Vegetation to be trimmed or removed for blade oversail clearance.

334.0 Km's: Dimboola-Minyip Road onto Henty Highway

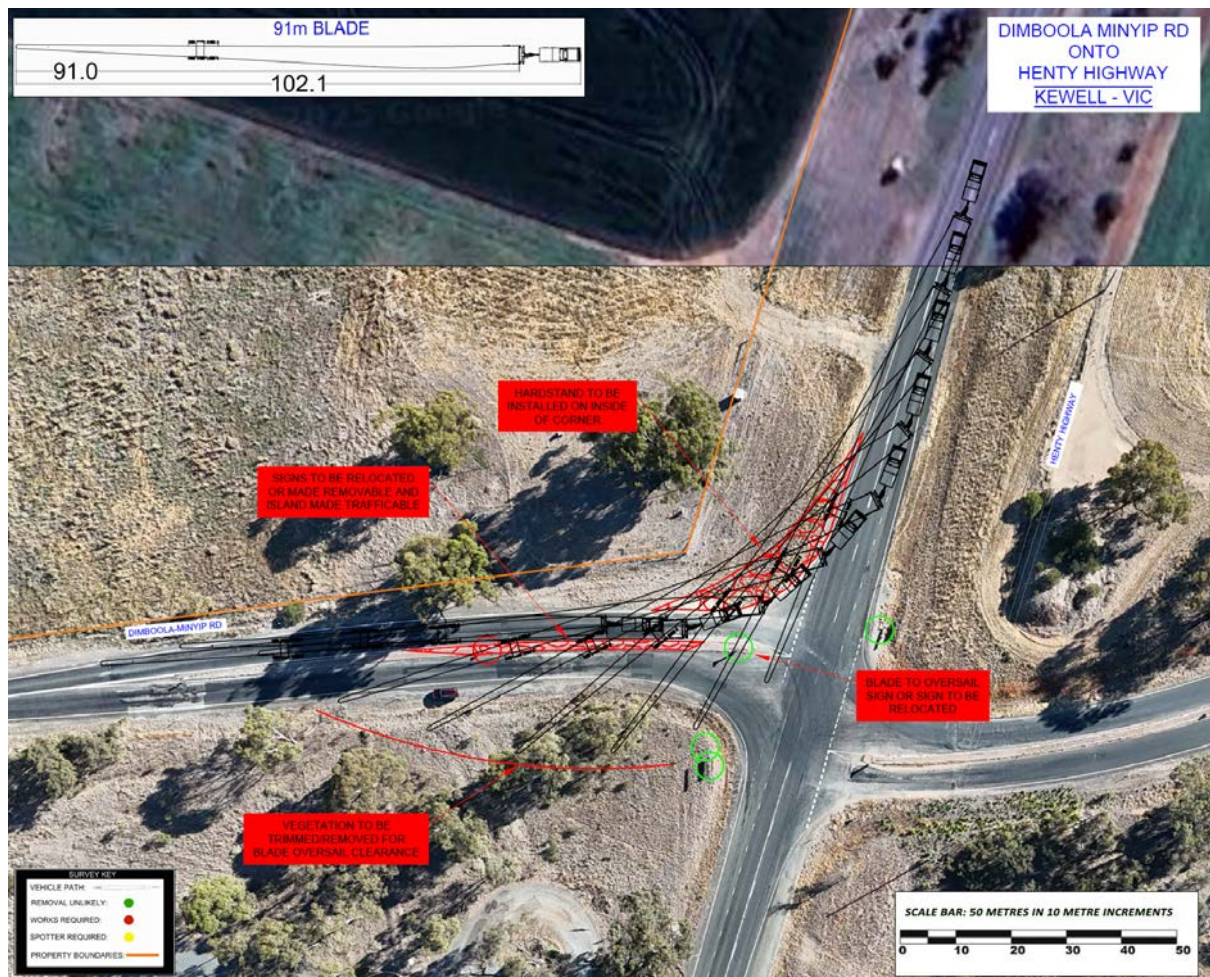


Figure 17 - Dimboola-Minyip Road onto Henty Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/gCNcBoAWU9bUrCvX8>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Island on entry to be made trafficable. Hardstand to be installed on inside of corner. Signs to be relocated or made removable. Vegetation to be trimmed or removed for blade oversail clearance.

418.0 Km's: Roundabout on Henty Highway at Austin Street

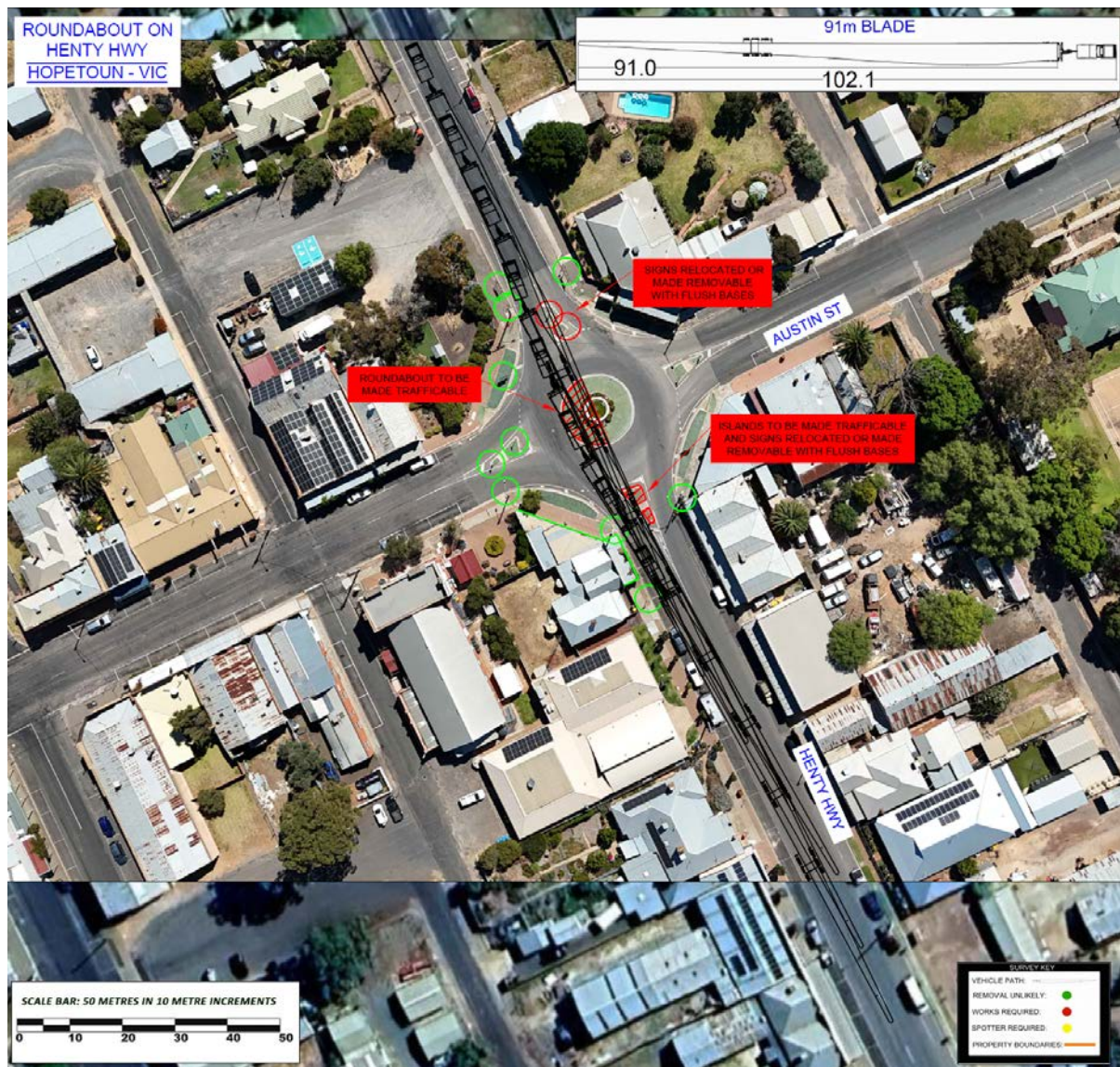


Figure 18 - Roundabout on Henty Hwy at Austin St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/vNZ1GB7XPoZ675ur9>

PROCEDURE: Travel directly ahead

ROAD MODIFICATIONS: Island on entry and roundabout to be made trafficable.
Signs to be relocated or made removable with flush bases.

497.0 Km's: Sunraysia Highway onto Calder Highway



Figure 19 - Sunraysia Hwy onto Calder Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/aRMoAKAYWrjXHw2T8>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Blade to oversail sign or sign to be relocated.

[illegible]

ROAD MODIFICATIONS: Light poles to be relocated out of swept path. Islands on entry and exit to be made trafficable. Signs to be relocated or made removable. Vegetation to be trimmed or removed on outside and inside of corner for blade clearance.

594.0 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road

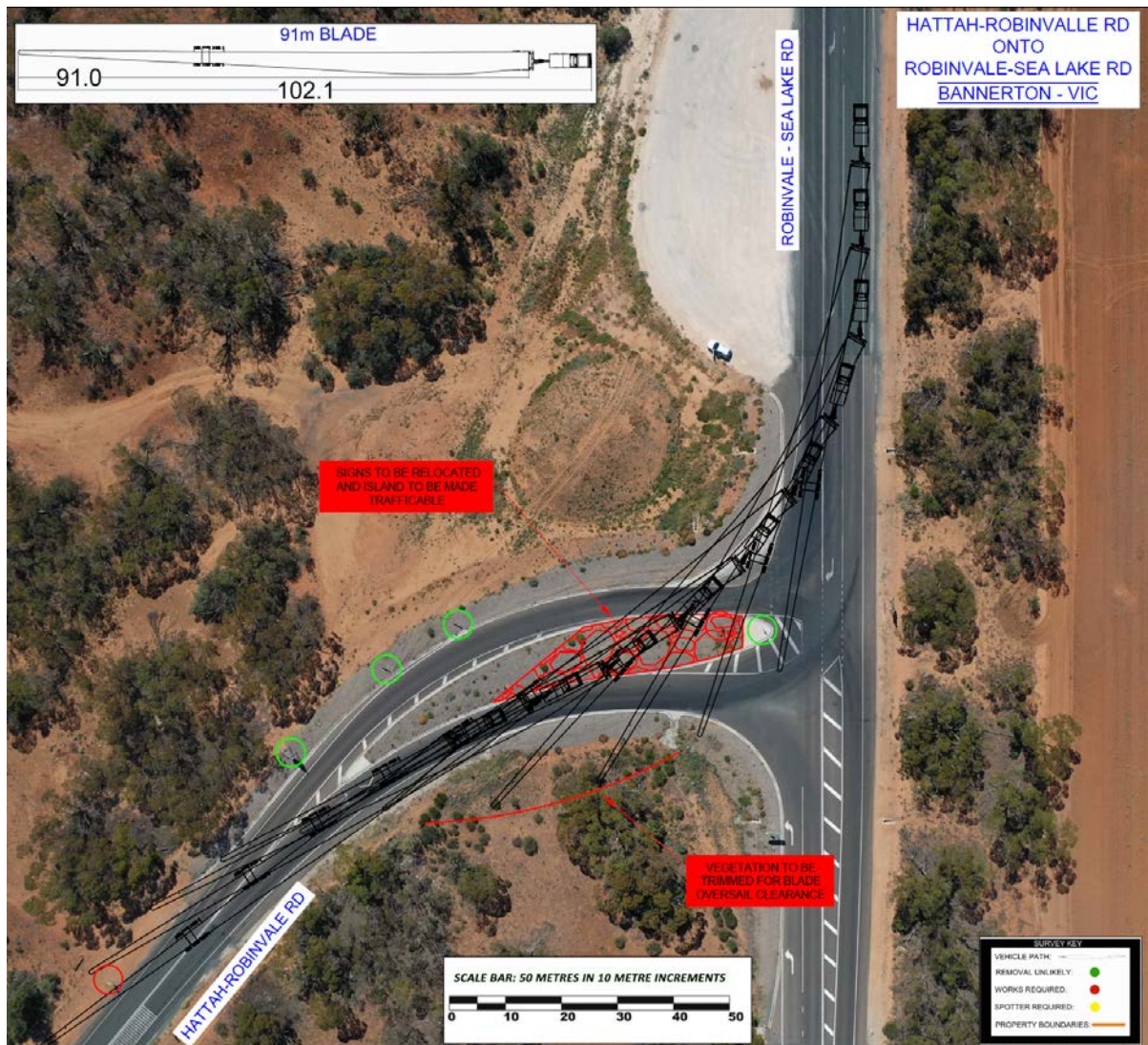


Figure 21 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4FwG4Lh1Qr95TX1t9>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Hardstand to be installed on island and kerbs made trafficable. Signs to be relocated or made removable. Vegetation to be trimmed for blade oversail clearance.

612.0 Km's: Murray Valley Highway onto Sturt Highway

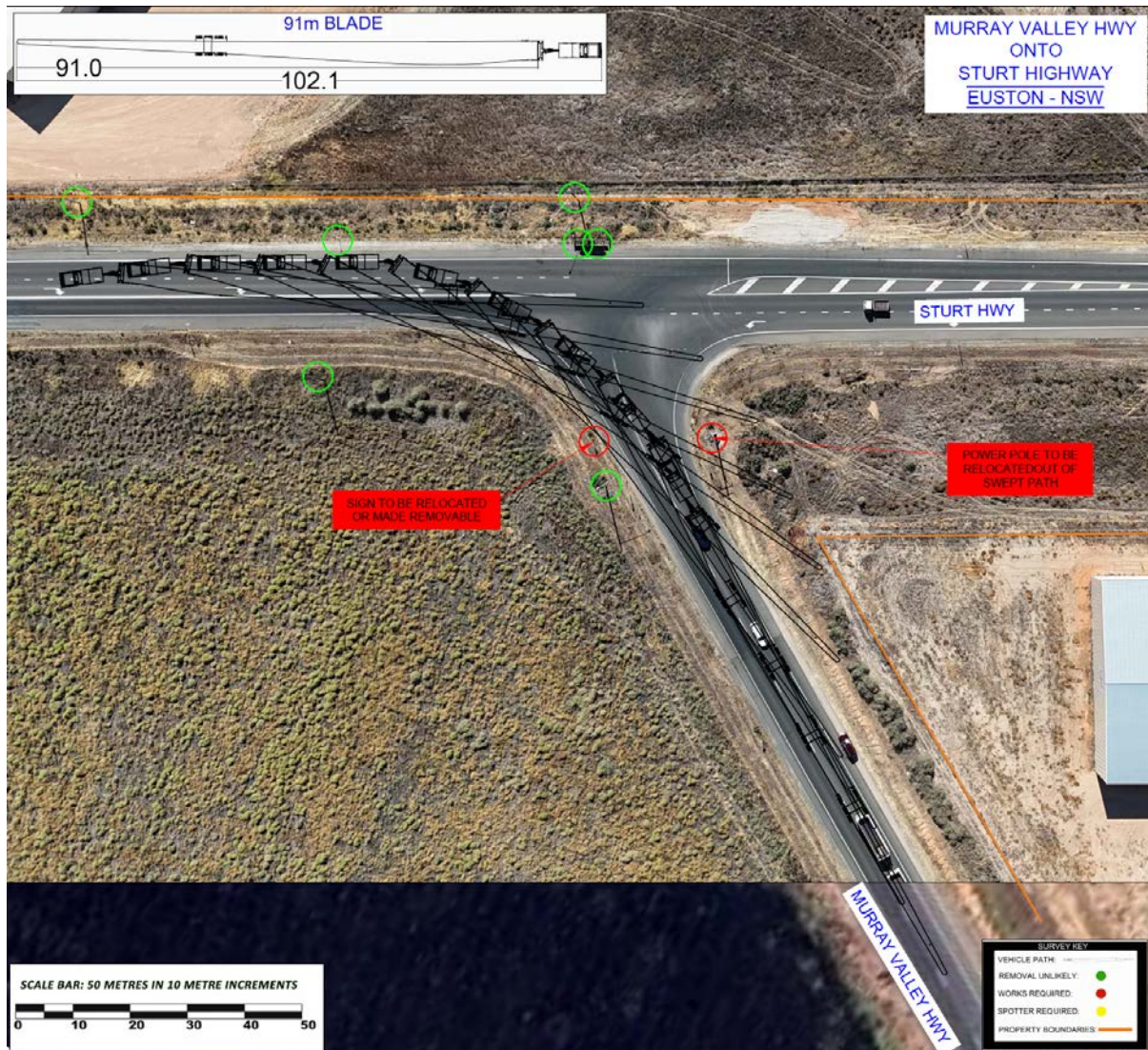


Figure 22 - Murray Valley Highway onto Sturt Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/rnhvnjnN6VkAWX3eA>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Power pole to be relocated out of swept path. Sign to be relocated or made removable.

615.0 Km's: Sturt Highway Roundabout at Carey Street

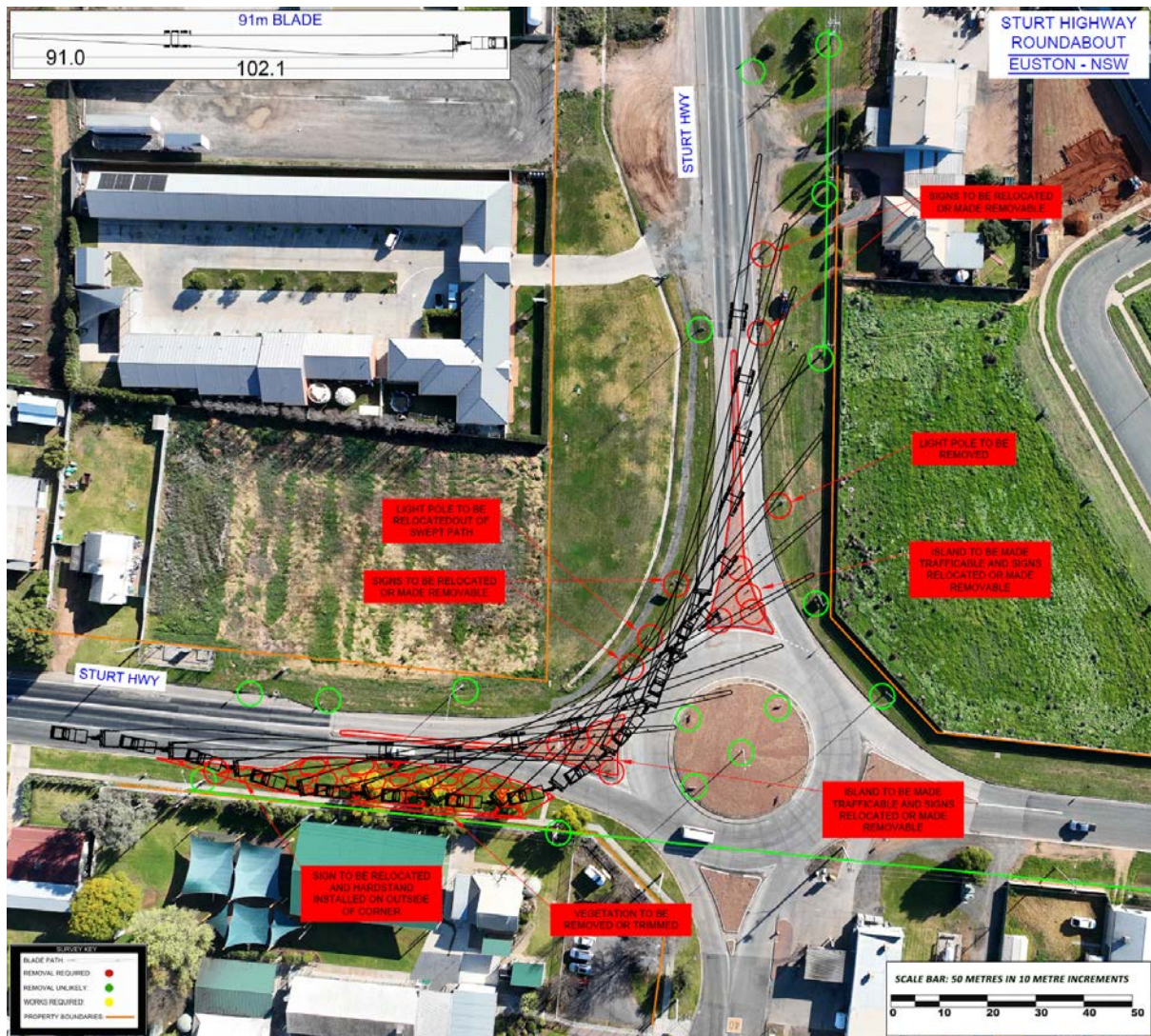


Figure 23 - Sturt Highway Roundabout at Carey St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/uufR6raWdwSyWMHK6>

PROCEDURE: Right hand turn using incorrect side of roundabout.

ROAD MODIFICATIONS: Traffic islands on entry and exit to be made trafficable. Hardstand to be installed on outside of corner. light poles to be removed or relocated and multiple signs relocated or made removable. Vegetation to be trimmed.

689.0 Km's: Sturt Highway onto Silver City Highway

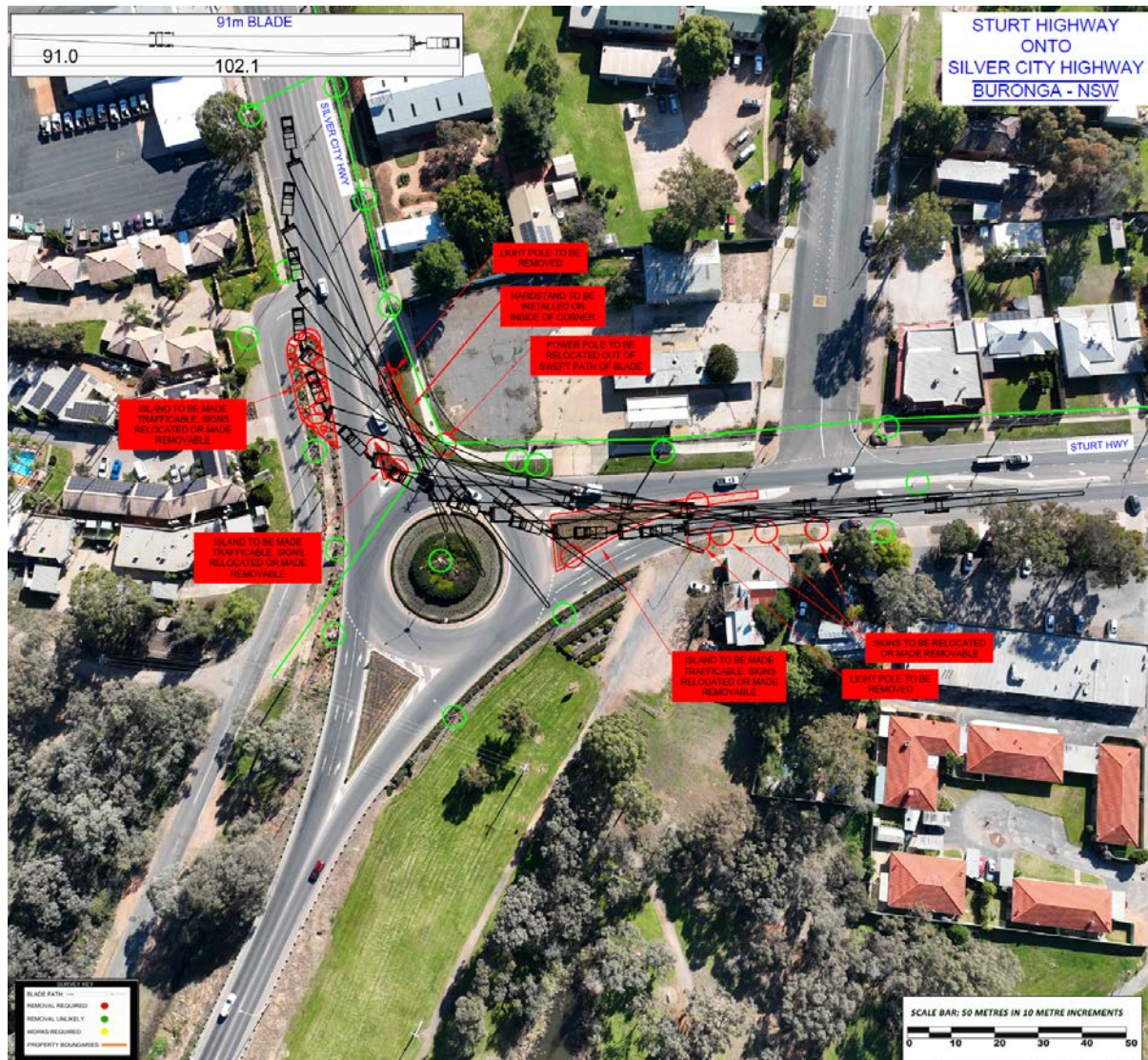


Figure 24 - Sturt Hwy Roundabout onto Silver City Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/qGczCY2sNeHvYeQE9>

PROCEDURE: Right hand turn using either option as selected.

ROAD MODIFICATIONS: Major modifications required. Islands to be made trafficable. Power and light poles to be relocated out of swept path. Multiple signs to be relocated or made removable. Kerbs made trafficable and hardstand installed. An option to bypass Buronga is provided at the end of this section.

691.0 Km's: Silver City Highway onto Arumpo Road



Figure 25 – Silver City Hwy onto Arumpo Rd

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/B9eX3mgi1bs2eq9H6>

PROCEDURE: Right hand turn.

ROAD MODIFICATIONS: Several signs/delineators relocated or made removable. Vegetation to be trimmed for blade oversail clearance.

723.0 Km's: Arumpo Rd into Site Entry No. 1

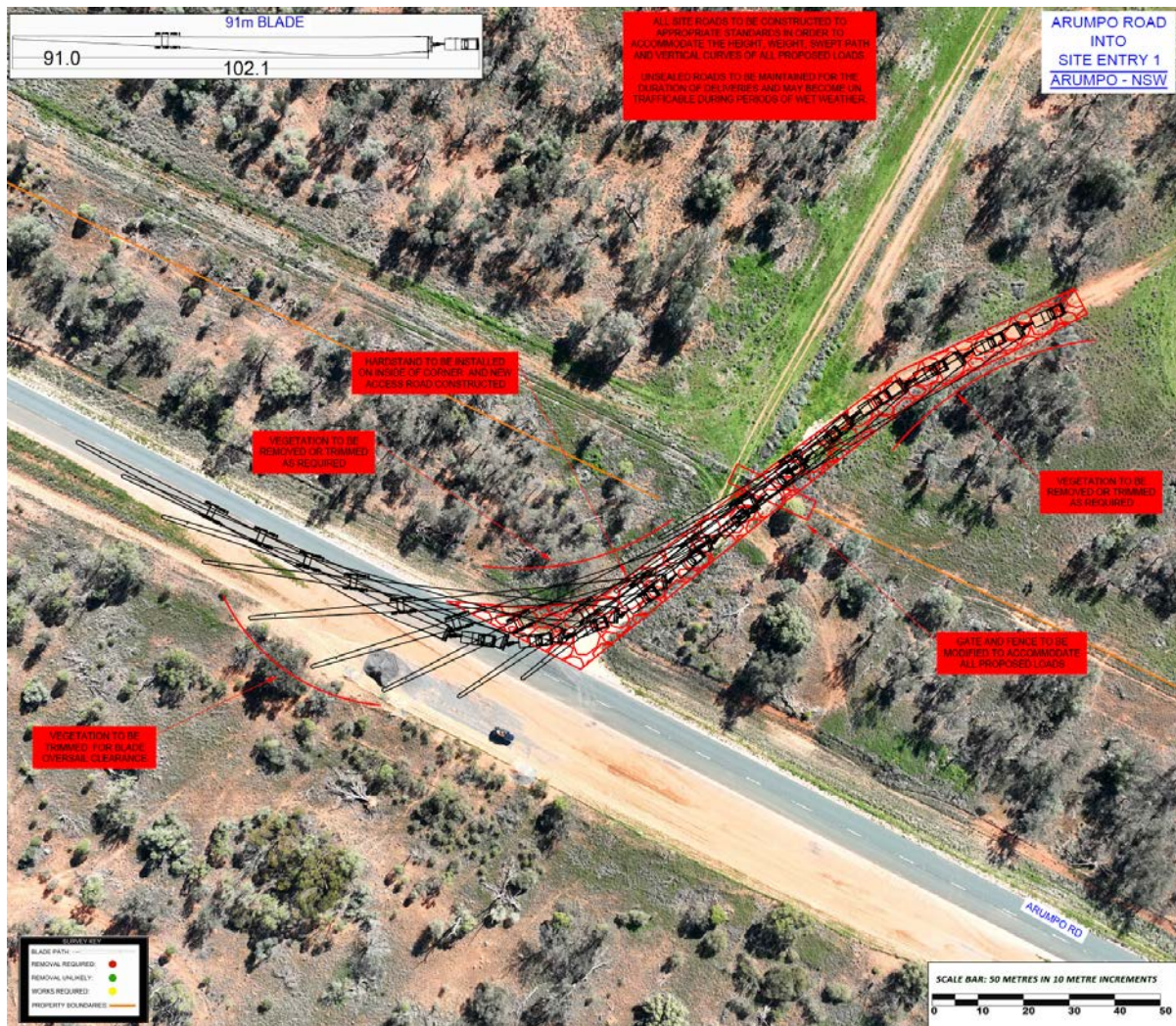


Figure 26 – Site Entry # 1

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/isnpFUM61dPrJdvP7>

PROCEDURE: Left hand turn.

ROAD MODIFICATIONS: Hardstand to be installed on inside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

723.0 Km's: Arumpo Rd into Site Entry No. 2

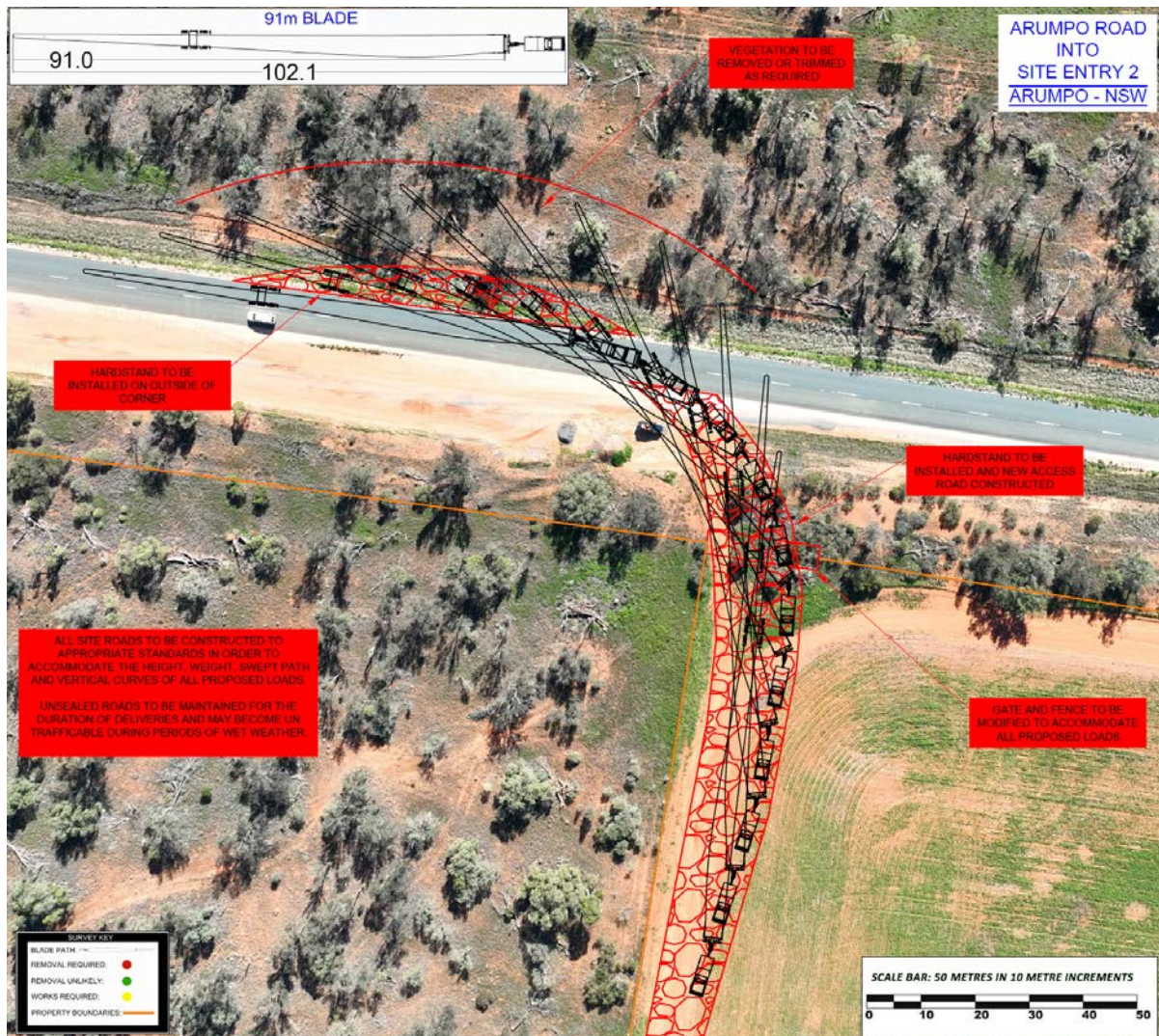


Figure 27 - Site Entry # 2

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/iscWEaj936ECc2vE9>

PROCEDURE: Right hand turn.

ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.



Figure 28 - Proposed Windfarm Entry Looking South East



Figure 29 - Proposed Windfarm Entry Looking North East

Alternate Blade Route to Bypass Buronga

The roundabout from the Sturt Hwy onto the Silver City Hwy at Buronga is extremely tight for the proposed blade type. The swept path required is constrained on all sides by electrical and telecommunications infrastructure, private property and road infrastructure. As a result, significant upgrading will be required as well as negotiating with private land holders, infrastructure owners and road managers.

Therefore, a route has been identified that may provide a method for bypassing Buronga. The route uses Danson's Road to access the Southern end of the windfarm, from where the remainder of the site could be accessed via internal roads. During on site scoping Danson's road was not accessible due to private property signage so the condition of the road could not be determined. However, the available aerial imagery appears to indicate the road is a gazetted road and in a maintained condition. If the viability of this road can be proven, then further onsite scoping will be required to confirm the routes suitability.

Route: <https://maps.app.goo.gl/RMGLPjVMLJ24xs1D8>



Figure 30 - Buronga Bypass Route Option



Figure 31 - Danson Rd Looking North

614.00 Km's: Sturt Highway onto Dansons Road

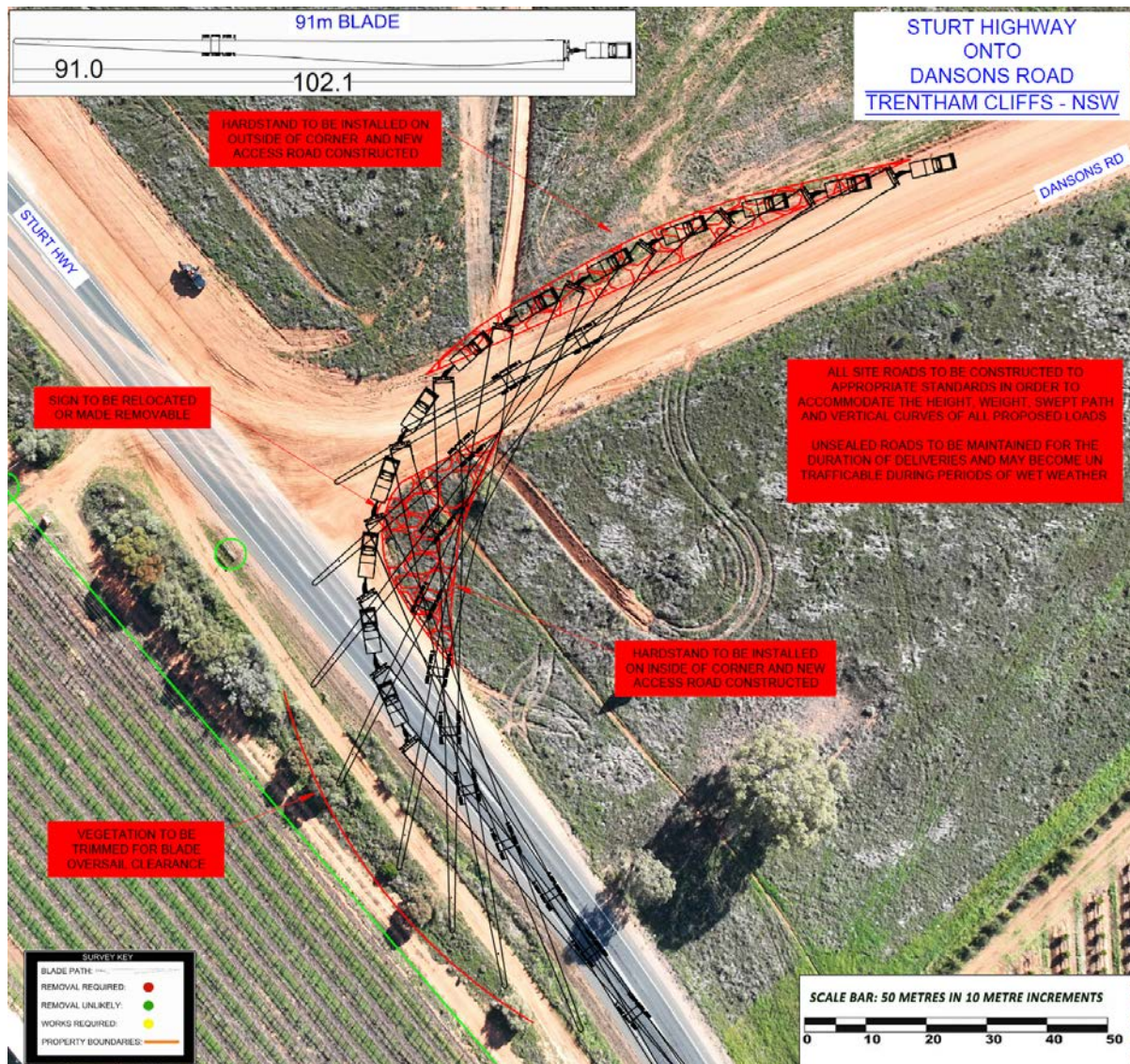


Figure 32 - Sturt Hwy onto Dansons Rd

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/aKYh4eZU3TBDvfNS6>

PROCEDURE: Right hand turn.

ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Signs to be relocated or made removable and vegetation trimmed for blade oversail clearance. Detailed survey required if route selected.

8.0 Route 1 Conclusion

After studying all options and undertaking a route survey, the route in its current condition will require a moderate to major amount of upgrades before it could be deemed suitable for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- There are numerous sections along the route that need moderate to major work to allow a blade of this size through.
- The corners requiring significant work outlined in the report should be investigated early in the planning stages to avoid delays or rejections.

OVERHEAD STRUCTURES: (5.3 Maximum loaded height)

- The lowest structure is the overpass on the Henty Highway travelling under Cape Bridgewater Road.

OVERHEAD UTILITIES:

- The route will need to be checked by an authorised scoping company. It is likely that a route of at least 5.4 metres is required for this project.

BRIDGES:

- Bridge assessments will still be required for the entire route.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations.

PAVEMENT:

- The Pavement the route is of highway standard up to the site entries. Bypasses or modifications will be required at several corners and is to be constructed to a suitable standard and maintained for the duration of deliveries if not sealed.
- Site roads which are gravel will require grading prior to commencement and to be maintained for the duration of the project. Site roads should be all weather otherwise the roads may become unusable in wet conditions which will impact delivery schedules.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

9.0 Route 2 Study: High Load Route (6.4m Max Loaded Height)

DISTANCE: 700 kilometres

GPS LINK: <https://maps.app.goo.gl/SVebXRxHqzmMGApn6>

ROUTE: Quay Road, Madeira Packet Way, Cape Nelson Road, Mailings Road, Thorns Road, Bridgewater Road, Henty Highway, Glenelg Highway, Henty Highway, Rifle Butts Road, Lower Norton-Nurrabel Road, Horsham-Noradjuha Road, Wimmera Highway, Curran Road, Obrees Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Highway, Sturt Hwy, Silver City Hwy, Arumpo Road.

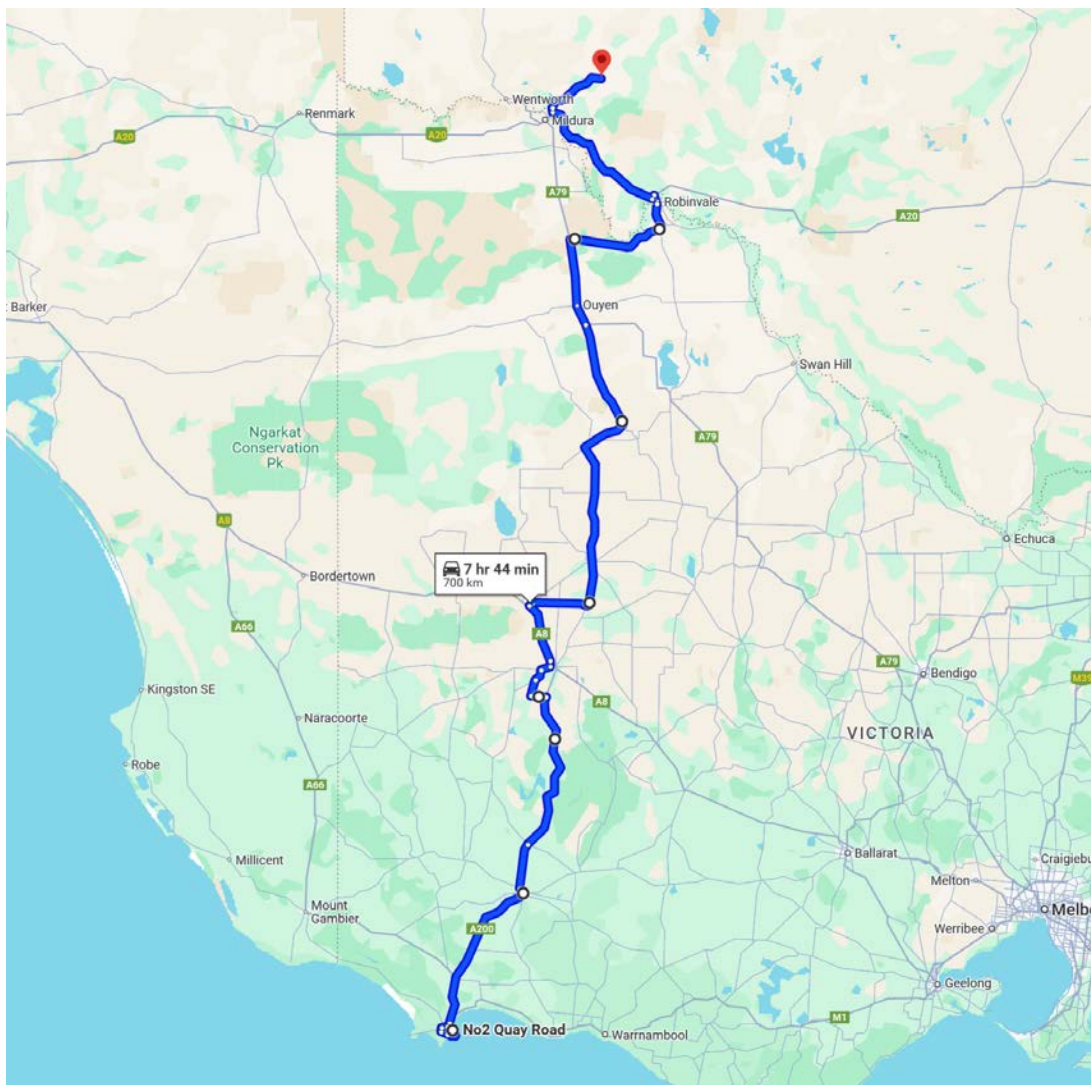


Figure 33 - Route 2

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KEY	
CRITICAL	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
0.0	Portland	Port access Road onto Madeira Packet Road GPS Link: https://goo.gl/maps/Dmb15XGrSK2	Length: 50.0 M Width: 9.0 M	Left hand turn	No Problems with this section of road. Rail manager approvals required.
0.2	Portland	Madiera Packet Road GPS Link: https://goo.gl/maps/5q7JLgBymao	Height: 8.5 m	Travel under pipe	No problems with this section of road.
4.1	Portland	Madiera Packet Road, corner of Quarry Road GPS Link: https://goo.gl/maps/WVU9NgB8Utu	Length: 50.0 M Width: 8.0 M	Right hand turn	No problems with this section of road.
4.2	Portland	Madiera Packet Road, corner of Private Road GPS Link: https://maps.google.com/maps/@41.1202474,147.0000000	Length: 50.0 M Width: 8.0 M	Left hand turn	Hardstand to be installed on outside of corner.
7.8	Portland	Madeira Packet Road onto Cape Nelson Road GPS Link: https://goo.gl/maps/wQ39hnCaznK2	Length: 40.0 M Width: 6.5 M	Left hand turn	Signs to be relocated or made removable with flush bases. Islands to be made trafficable.
8.6	Portland	Cape Nelson Road onto Mailings Road. GPS Link: https://goo.gl/maps/eM6FTqeoIvE2	Length: 45.0 M Width: 7.0 M	Tight right-hand turn	Hardstand to be installed on outside of corner.
9.3 to 12.8	Portland	Mailings Road. GPS Link: https://goo.gl/maps/9ynH1BDn1US2	Width: 6.0 M	Travel directly ahead	Road partly unsealed. Road to be made all weather or maintained for duration of deliveries. May become unpassable during wet weather.
12.3	Portland	Mailings Road onto Thorns Road. GPS Link: https://goo.gl/maps/boIqsYLCQDK2	Length: 40.0 M Width: 6.0 M	Right hand turn	Hardstand to be installed on outside of corner.
14.2	Portland	Thorns Road onto Bridgewater Road. GPS Link: https://goo.gl/maps/rS25dg63Mkr	Length: 45.0 M Width: 7.0 M	Right hand turn	Hardstand to be installed on outside of corner.
17.6	Portland	Bridgewater Road onto Henty Highway on ramp GPS Link: https://goo.gl/maps/x2ZGQeSWbG41	Length: 45.0 M Width: 8.0 M	Left hand turn	Hardstand to be installed on inside of corner.

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KM index	Location	Section of road	Current clearance	Procedure	Notes
17.7	Portland	Henty Highway on ramp onto Henty Highway GPS Link: https://maps.app.goo.gl/YB9M1bCkKd0d0u6E8	Length: 45.0 M Width: 8.0 M	Left hand turn	Sign to be relocated or made removable and hardstand installed on inside of corner.
20.0	Portland	Corner on Henty Highway at New St GPS Link: https://maps.app.goo.gl/DS7S9Cn1YU33Xwme7	Length: 50.0 M Width: 6.0 M	Left hand turn	No problems with this section of road. Spotter to guide load through the corner.
32.6	Heathmere	Henty Highway GPS Link: https://qoo.gl/maps/frhxovwmcpp	Width: 8.0 M	Travel over rail crossing	Rail clearance required.
74.6	Condah	Henty Highway GPS Link: https://qoo.gl/maps/RUreZwZRCnB2	Width: 8.0 M	Travel over rail crossing	Rail clearance required.
96.4	Branxholme	Henty Highway GPS Link: https://qoo.gl/maps/mpFriD87RsdYRZZb7	Width: 8.0 M	Travel over rail crossing	Rail clearance required.
101.4	Hamilton	Henty Highway intersection of Scoresby Road GPS Link: https://qoo.gl/maps/dsBUZu0Ysict8eH7	Length: 75.0 M Width: 7.0 M	Left hand turn	Signs to be made removable with flush bases and island made trafficable
102.4	Hamilton	The Henty Highway intersection of Mt Bainbridge Road GPS Link: https://qoo.gl/maps/vKvuaLquvr52	Length: 75.0 M Width: 9.0 M	Left hand turn at roundabout	Hardstand to be installed on outside of corner and island to be made trafficable.
104.6	Hamilton	The Glenelg Highway onto Henty Highway GPS Link: https://qoo.gl/maps/hDyeK6zXAvSArkSY6	Length: 75.0 M Width: 9.0 M	Right hand turn	No problems with this section of road.
126.0	Cavendish	Henty Highway intersection of Riley Street GPS Link: https://qoo.gl/maps/GdM568.0YbZ1Z762u7	Length: 45.0 M Width: 6.5 M	Left hand turn	Signs to be made removable with flush bases and island made trafficable, hardstand installed on outside of corner and no parking put in place.
217.0	Horsham	Henty Highway onto Rifle Butts Road GPS Link: https://qoo.gl/maps/FILMyPDWKBcuJBQa7	Length: 45.0 M Width: 8.0 M	Left hand turn	Spotter to guide load through this corner.
220.0	Horsham	Bend on Rifle Butts Road GPS Link: https://qoo.gl/maps/fMoZpmsaVobAu3NM6	Length: 45.0 M Width: 8.0 M	Left hand bend	Spotter to guide load through this corner.
220.1	Horsham	Rifle Butts Road intersection of lanes Road GPS Link: https://qoo.gl/maps/c6uLWNizyMEcNhN29	Length: 45.0 M Width: 3.0 M	Right hand bend	Spotter to guide load through this corner.
225.0	Horsham	Rifle Butts Road onto Lower Norton-Nurrabel Road GPS Link: https://qoo.gl/maps/Tkrh6QY3iaQ8oZYJ9	Length: 45.0 M Width: 8.0 M	Right hand turn	Hardstand to be installed on outside of corner, suitable vertical curves to be maintained.

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KM index	Location	Section of road	Current clearance	Procedure	Notes
233.0	Horsham	Lower Norton-Nurrabiel Road onto Horsham-Noradjuha Road GPS Link: https://goo.gl/maps/NuYHEadk49rPCN37	Length: 45.0 M Width: 8.0 M	Right hand turn	Spotter to guide load through this corner.
240.0	Horsham	Horsham-Noradjuha Road onto Wimmera Highway GPS Link: https://goo.gl/maps/EdikqkLpu9uLi9FG9	Length: 50.0 M Width: 8.0 M	Right hand turn	Spotter to guide load through this corner.
245.0	Horsham	Wimmera Highway onto Curran Road GPS Link: https://goo.gl/maps/HEBeWMnbZhFyBWaFA	Length: 50.0 M Width: 8.0 M	Left hand turn	Spotter to guide load through this corner.
248.0	Horsham	Curran Road onto the Western Highway via Obrees Road. GPS Link: https://goo.gl/maps/56aarDHBYNxzhVEJ8	Length: 50.0 M Width: 8.0 M	Dog leg turn	Spotter to guide load through this corner.
279.0	Dimboola	Western Highway onto Borung Highway GPS Link: https://goo.gl/maps/3XWYrH00duuSouf	Length: 73.0 M Width: 7.0 M	Right hand turn	Sign to be relocated or made removable with flush base and island made trafficable.
281.0	Dimboola	Borong Highway onto Dimboola-Minyip Road GPS Link: https://goo.gl/maps/7Eafi3RgrKcT2ynV9	Length: 73.0 M Width: 9.0 M	Right hand turn	Spotter to guide load through this corner.
310.0	Kewell	Dimboola-Minyip Road onto Henty Hwy GPS Link: https://maps.app.goo.gl/3uChicFoAYU19UjPCvX9	Length: 40.0 M Width: 5.0 M	Left hand turn	Sign to be relocated or made removable with flush base and island made trafficable.
332.7	Warracknabeal	Rail Crossing 1 on Henty Hwy GPS Link: https://maps.app.goo.gl/XJo6s2bGdeG4hiqT9	Width: 9.0 M	Travel directly ahead	Rail manager approvals required
335	Warracknabeal	Rail Crossing 2 on Henty Hwy GPS Link: https://maps.app.goo.gl/ev1SqPrQNH9cs3PD6	Width: 9.0 M	Travel directly ahead	Rail manager approvals required
390.7	Hopetoun Railway	Rail Crossing on Henty Hwy GPS Link: https://maps.app.goo.gl/3LHsmzZWx4XvfnSaA	Width: 9.0 M	Travel directly ahead	Rail manager approvals required
394.1	Hopetoun	Roundabout on Henty Hwy at Austin St GPS Link: https://maps.app.goo.gl/3VNZ1GB73Pp375v0	Length: 40.0 M Width: 6.0 M	Travel directly ahead	Island on entry and roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.
416.6	Lascelles	Rail Crossing on Henty Hwy GPS Link: https://maps.app.goo.gl/cioAM93tQST11M9	Width: 9.0 M	Travel directly ahead	Rail manager approvals required
418.0	Lascelles	Henty Hwy becomes Sunraysia Hwy GPS Link: https://maps.app.goo.gl/3N8Vm5RuyXFuHJNL9	Width: 9.0 M	Travel directly ahead	No problems with this section of road
473.0	Ouyen	Sunraysia Hwy onto Calder Hwy GPS Link: https://maps.app.goo.gl/aRMoAKAYWriXhW2T8	Width: 6.0 M	Left hand turn	No problems with this section of road
518.0	Hattah	Calder Hwy onto Hattah-Robinvale Rd GPS Link: https://maps.app.goo.gl/3Phu5UKXxEM2K2v3A	Length: 40.0 M Width: 6.0 M	Right hand turn	Load to cross to incorrect side of roundabout using modifications made for blade route.
571.0	Bannerton	Hattah-Robinvale Rd onto Robinvale-Sea Lake Rd GPS Link: https://goo.gl/maps/3FxcG41b1Cp95TX1W	Length: 50.0 M Width: 5.0 M	Left Hand Turn	Load to cross to incorrect side of roundabout using modifications made for blade route.
583.7	Robinvale	Robinvale-Sea Lake Rd turns into Murray Valley Hwy GPS Link: https://goo.gl/maps/55pknwKNHsoA1ydA	N/A	Continue Straight	No problems with this section of road

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

KM index	Location	Section of road	Current clearance	Procedure	Notes
586.5	Robinvale	Murray Valley Highway over the Euston-Robinvale Bridge https://goo.gl/maps/uKnaBJZG5yVWVJQ9	Width: 6.5 m	Continue straight	A sign was noted saying the bridge has a load limit of 21.0t for a tri-axle group. A bridge assessment will be required to check suitability.
589.0	Euston	Murray Valley Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/mhvninN6VkAWX3eA	Length: 50.0 M Width: 7.5 M	Left Hand Turn	No problems with this section of road.
591.0	Euston	Sturt Hwy roundabout at Carey St GPS Link: https://maps.app.goo.gl/uJF6mWdeSvWMdk6	Length: 40.0 M Width: 4.5 M	Right hand turn using incorrect side of roundabout	Load to cross to incorrect side of roundabout using modifications made for blade route.
658.2	Trentham Cliffs	POTENTIAL ALTERNATE ROUTE TO BYPASS BURONGA Sturt Hwy onto Dansons road GPS Link: https://maps.app.goo.gl/9dY7mG5uTTRQ-4G8	Length: 40.0 M Width: 6.5 M	Right hand turn	Hardstand to be installed on inside and outside of corner. Signs to be relocated or made removable and vegetation trimmed for blade oversail clearance. Detailed survey required if route selected.
666.0	Buronga	Sturt Hwy roundabout onto Silver City Hwy GPS Link: https://maps.app.goo.gl/9dY7mG5uTTRQ-4G8	Length: 40.0 M Width: 6.5 M	Right hand turn using incorrect side of road.	Load to cross to incorrect side of roundabout using modifications made for blade route.
668.0	Buronga	Silver City Hwy onto Arumpo Rd GPS Link: https://maps.app.goo.gl/B9eX3mqj1bs2eq9H6	Length: 50.0 M Width: 7.5 M	Right hand turn	No problems with this section of road.
Unsealed roads to be upgraded, widened & vegetation trimmed to accommodate the height, weight, vertical curve and swept path requirements of all proposed loads.					
Unsealed roads to be maintained for the duration of deliveries and may become un trafficable during periods of wet weather					
700.0	Arumpo	Arumpo Rd into Site Entry No. 1 GPS Link: https://maps.app.goo.gl/9dY7mG5uTTRQ-4G8	TBD	Left hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.
700.1	Arumpo	Arumpo Rd into Site Entry No. 2 GPS Link: https://maps.app.goo.gl/9dY7mG5uTTRQ-4G8	TBD	Right hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

0.0 Km's: Port Access Road onto Madeira Packet Road

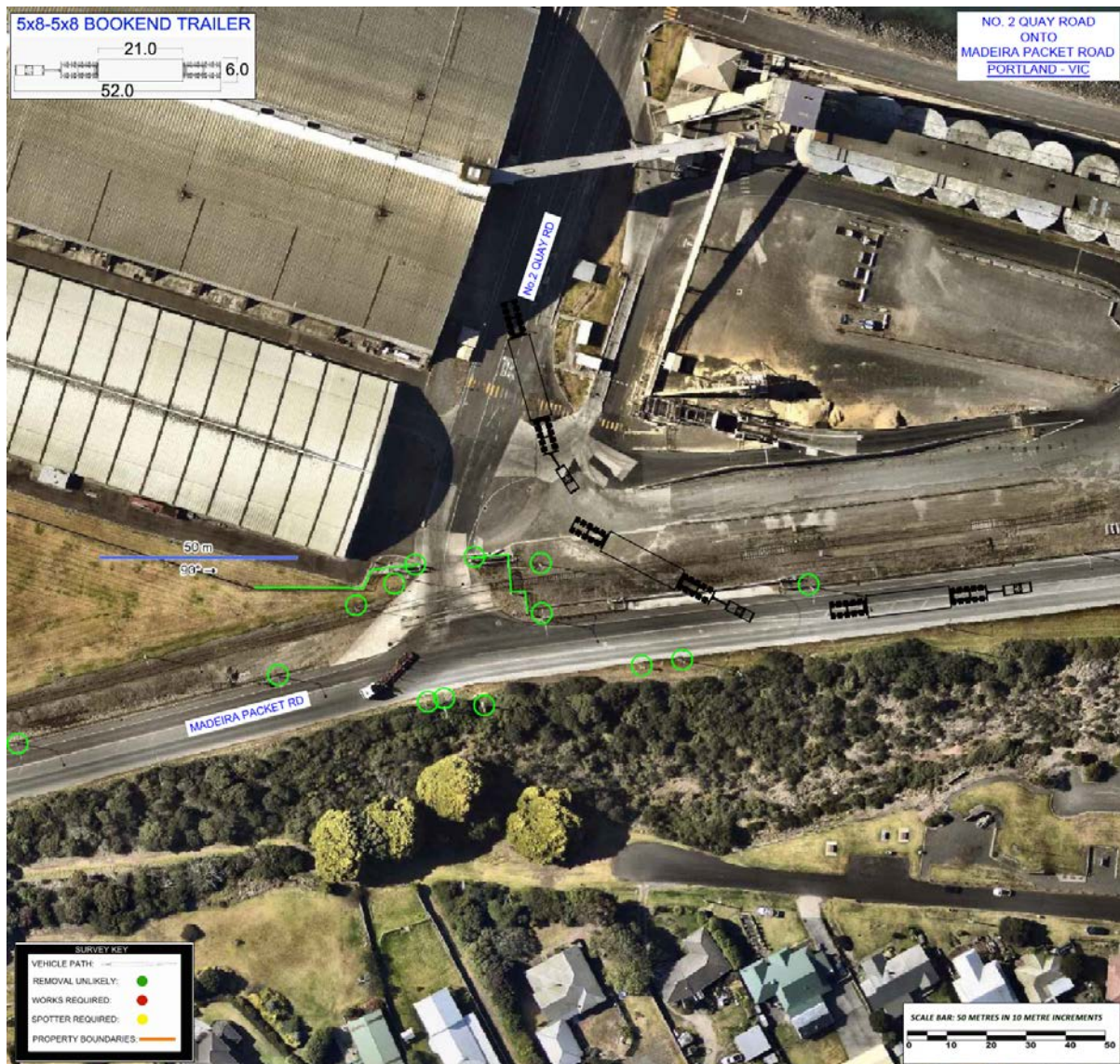


Figure 34 - Port Access Road onto Madeira Packet Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Dmb15XGtrSK2>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: No Problems with this section of road.

Rail manager approvals required.

4.1 Km's: Madeira Packet Road at Quarry Road



Figure 35 - Madeira Packet Road at Quarry Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/WVU9NgB8Utu>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: No problems with this section of road.

4.2 Km's: Madeira Packet Road at Private Road



Figure 36 - Madeira Packet Road at Private Road

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/1TCrZdF8dUyDDKCQ6>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner.

7.8 Km's: Madeira Packet Road onto Cape Nelson Road

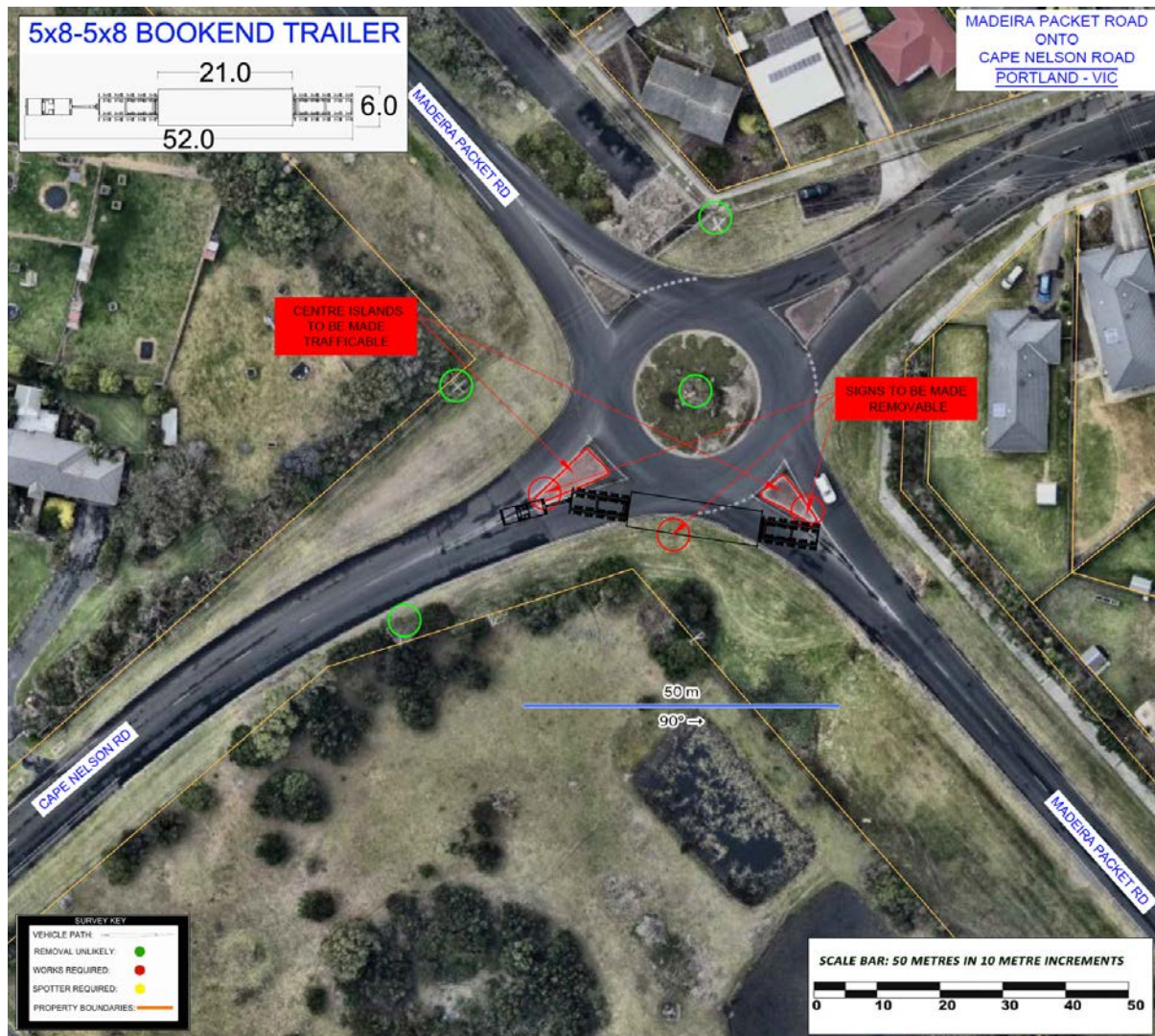


Figure 37 - Madeira Packet Road onto Cape Nelson Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/wQ39hnCqzxK2>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Signs to be relocated or made removable with flush bases. Islands to be made trafficable.

8.6 Km's: Cape Nelson Road onto Mailings Road

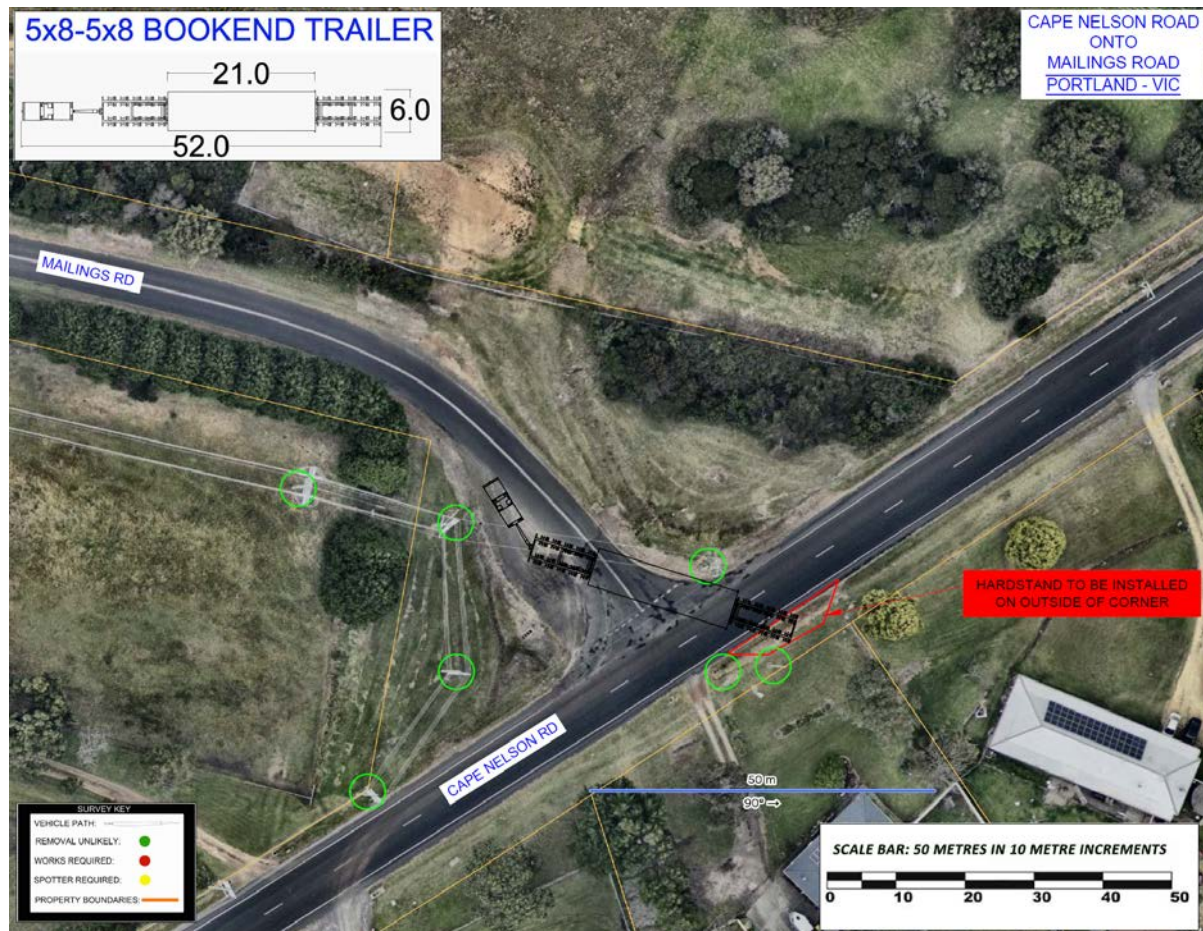


Figure 38 - Cape Nelson Road onto Mailings Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/eM6FTqeoIyE2>

PROCEDURE: Tight right-hand turn

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner.

12.3 Km's: Mailings Road onto Thorns Road



Figure 39 - Mailings Road onto Thorns Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/bqigsYLCQDK2>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner.

14.2 Km's: Thorns Road onto Bridgewater Road

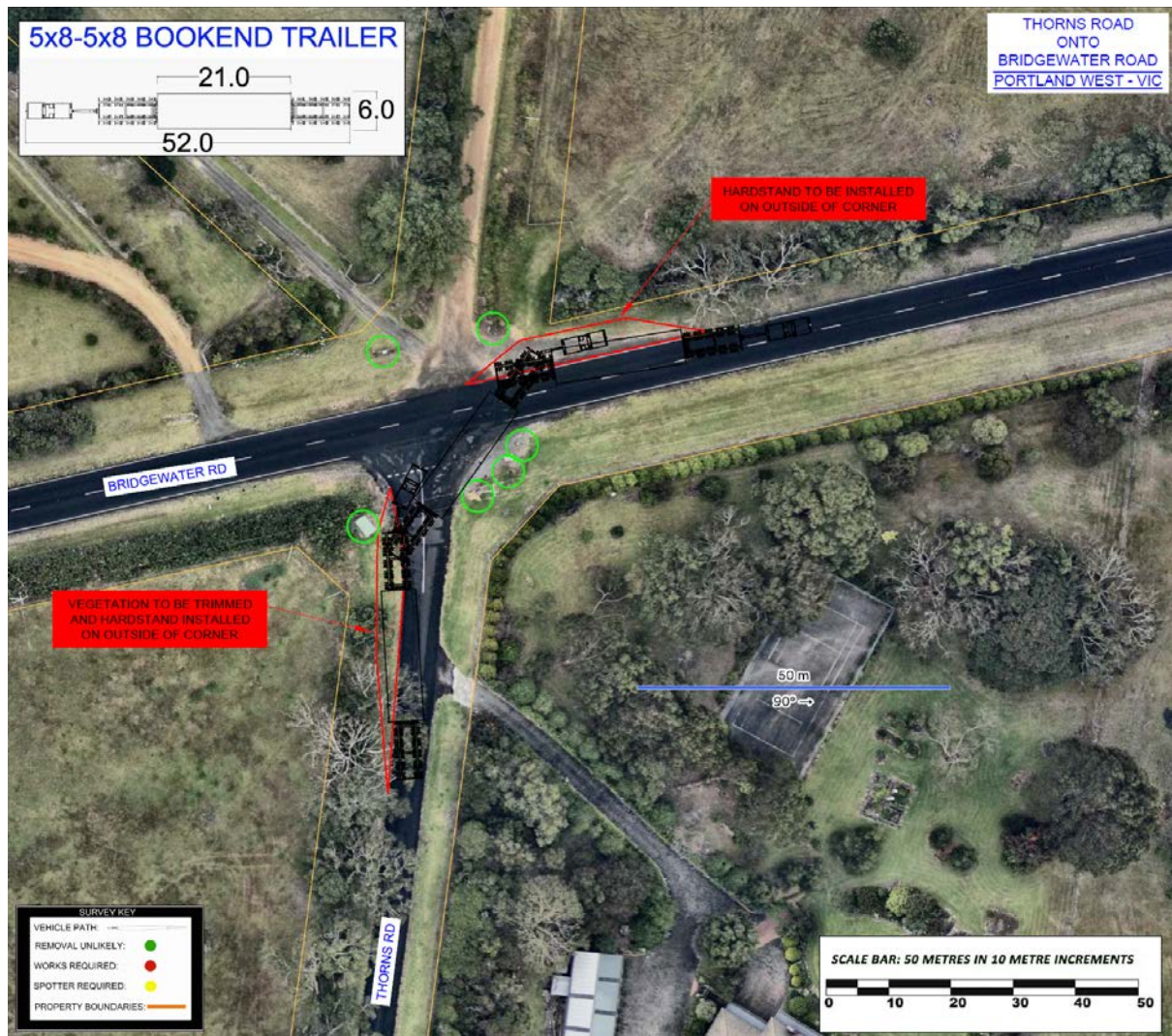


Figure 40 - Thorns Road onto Bridgewater Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/r525dg63MKr>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner.

17.6 Km's: Bridgewater Road onto Henty Highway on Ramp

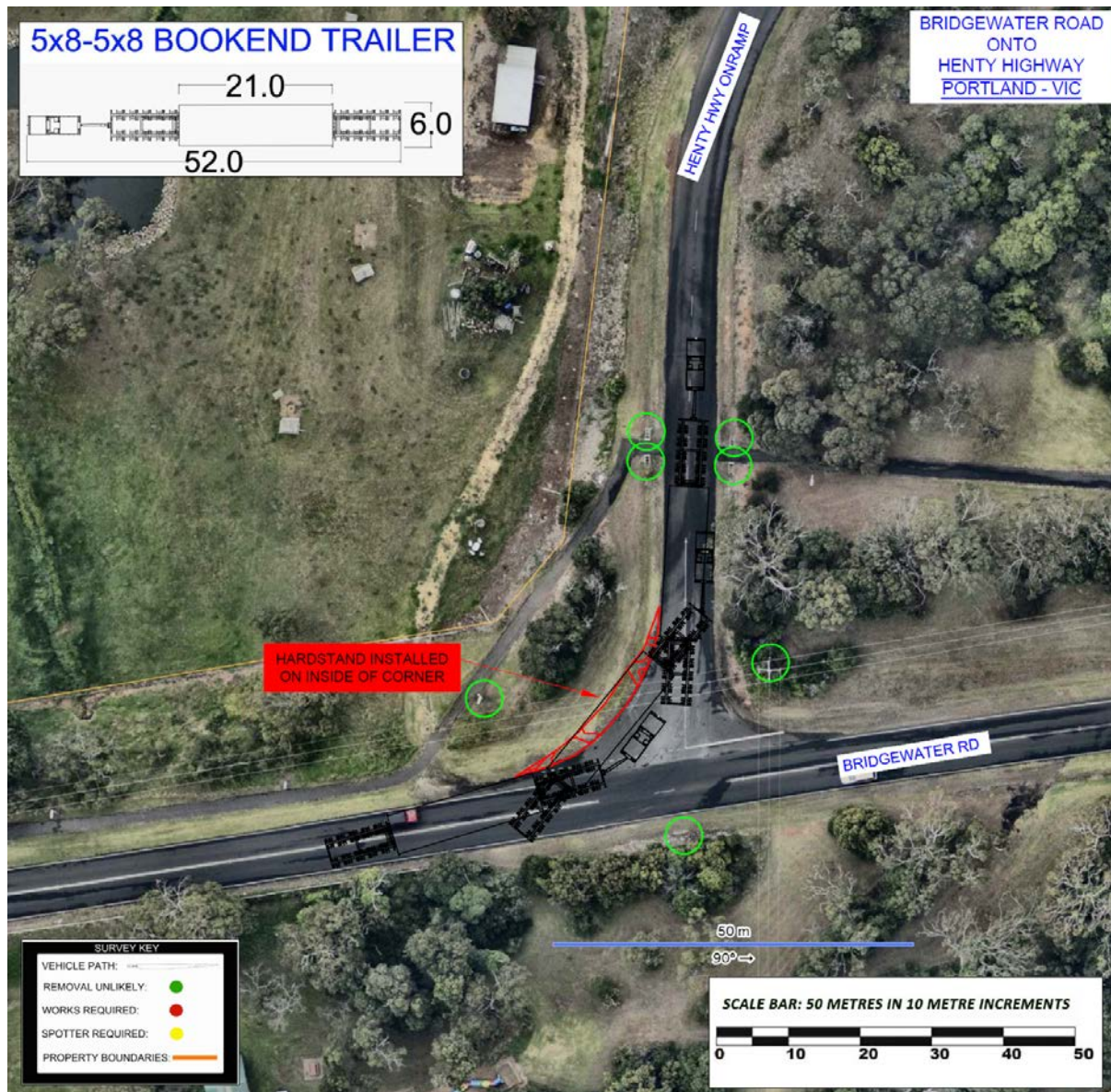


Figure 41 - Bridgewater Road onto Henty Highway on Ramp

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/z2ZGQsSWbG42>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Hardstand to be installed on inside of corner.

17.7 Km's: Henty Highway on ramp onto Henty Highway

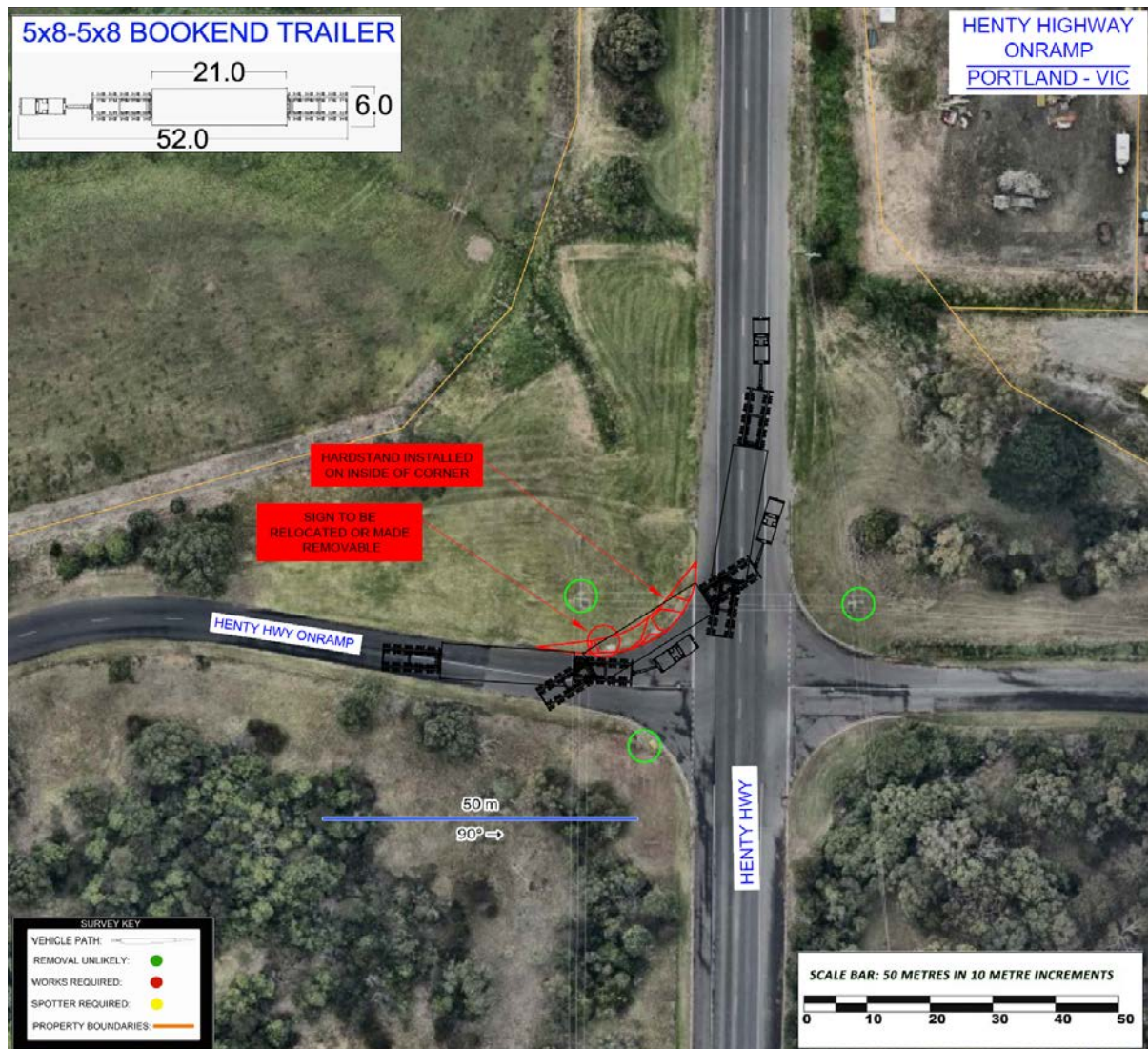


Figure 42 - Henty Highway on ramp onto Henty Highway

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/VB8M1bCkG8iubE8>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Sign to be relocated or made removable and hardstand installed on inside of corner.

20.0 Km's: Corner on Henty Highway at New Street

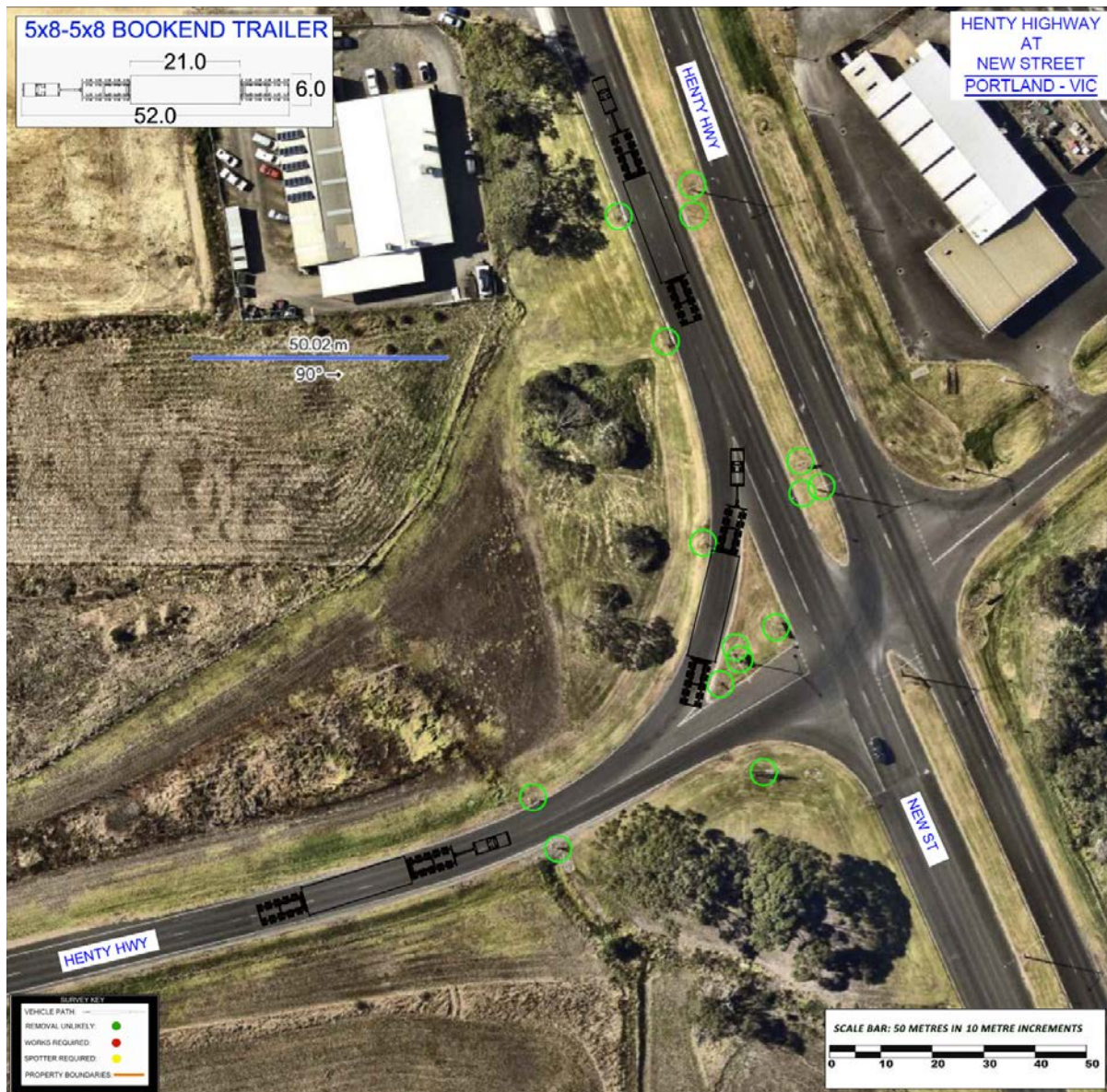


Figure 43 - Corner on Henty Highway at New St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/DS7S9Cn1YU33Xwme7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: No problems with this section of road. Spotter to guide load through the corner.

101.4 Km's: Henty Highway intersection of Scoresby Road

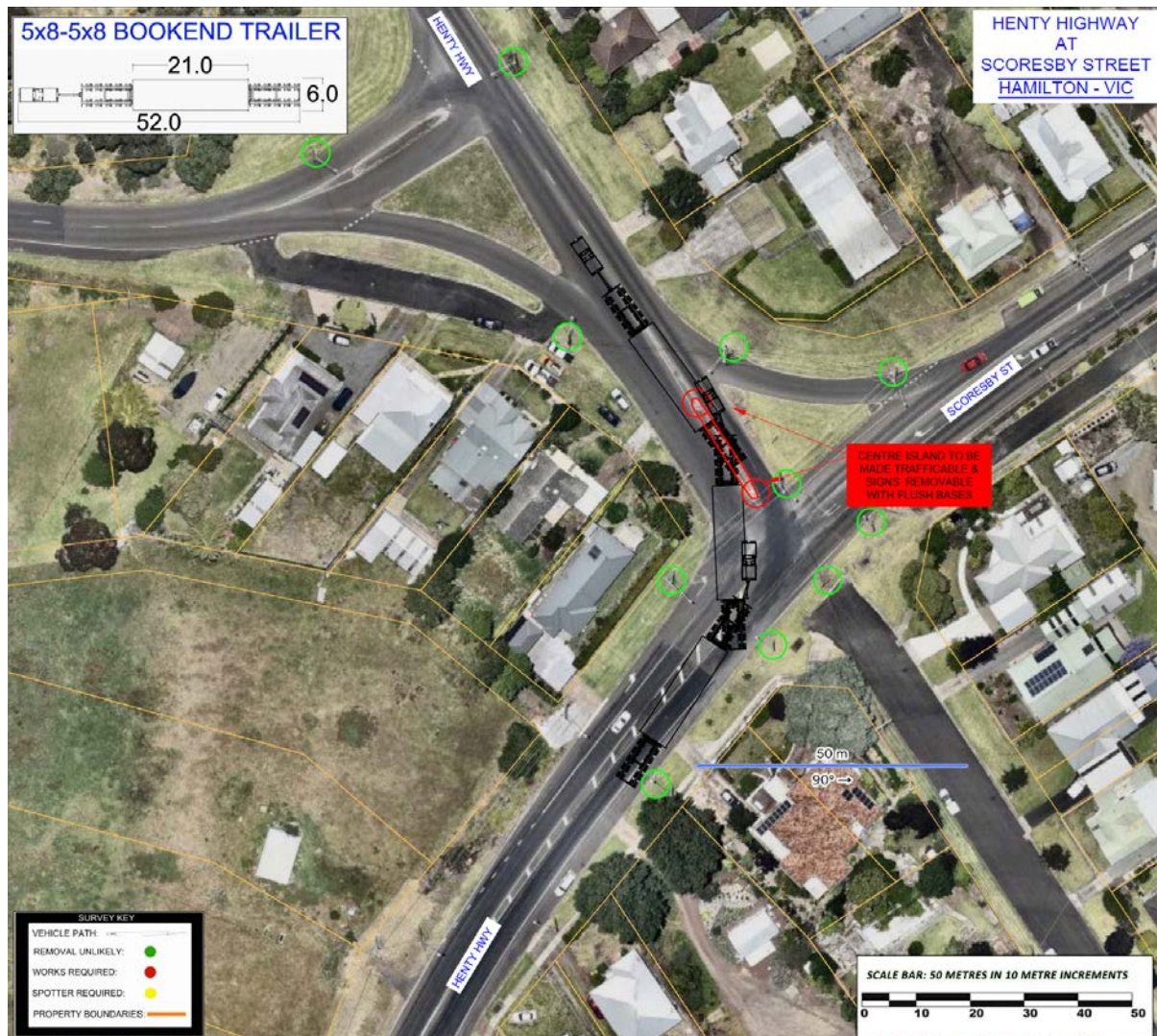


Figure 44 - Henty Highway intersection of Scoresby Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/dsBUZuu2Ysjpb9eH7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Signs to be made removable with flush bases and island made trafficable

102.4 Km's: The Henty Highway intersection of Mt Bainbridge Road



Figure 45 - The Henty Highway intersection of Mt Bainbridge Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/yKvuaLquvrS2>

PROCEDURE: Left hand turn at roundabout

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner and island to be made trafficable.

104.6 Km's: The Glenelg Highway onto Henty Highway

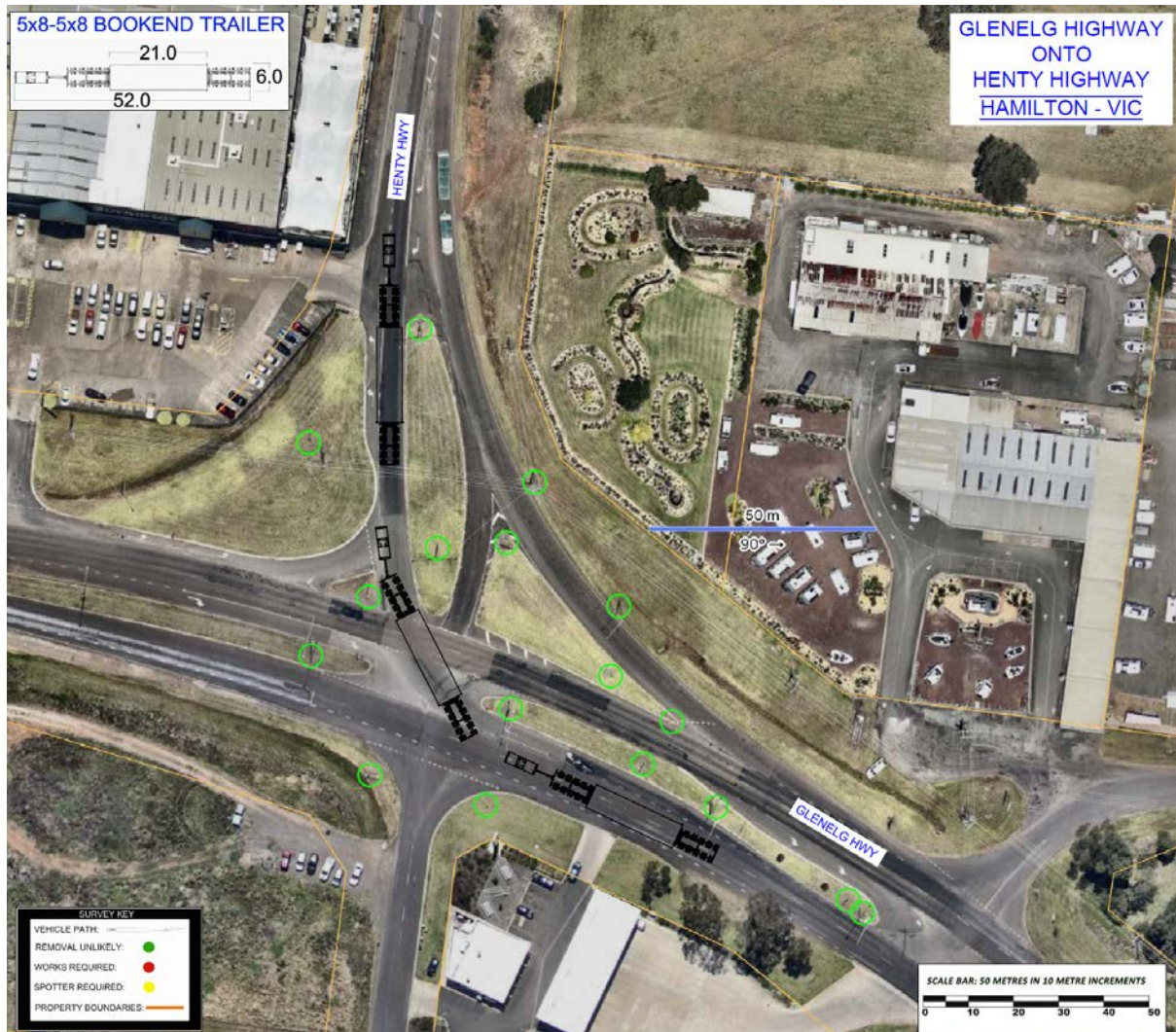


Figure 46 - The Glenelg Highway onto Henty Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/hDyeK6zXAvSArkSY6>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: No problems with this section of road.

126.0 Km's: Henty Highway intersection of Riley Street

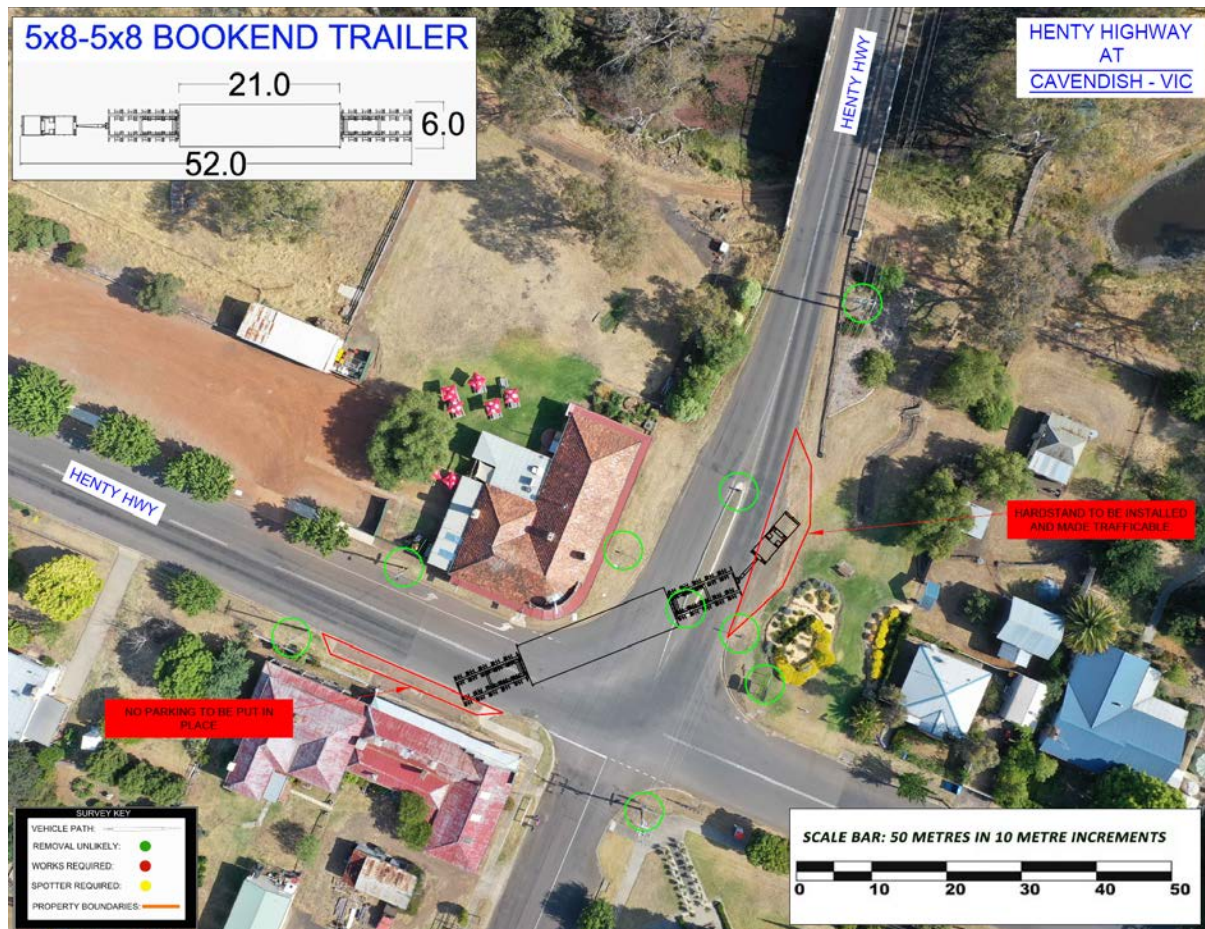


Figure 47 - Henty Highway intersection of Riley Street

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/GrMSWLDThZt7Zb2n7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Signs to be made removable with flush bases and island made trafficable, hardstand installed on outside of corner and no parking put in place.

217.0 Km's: Henty Highway onto Rifle Butts Road

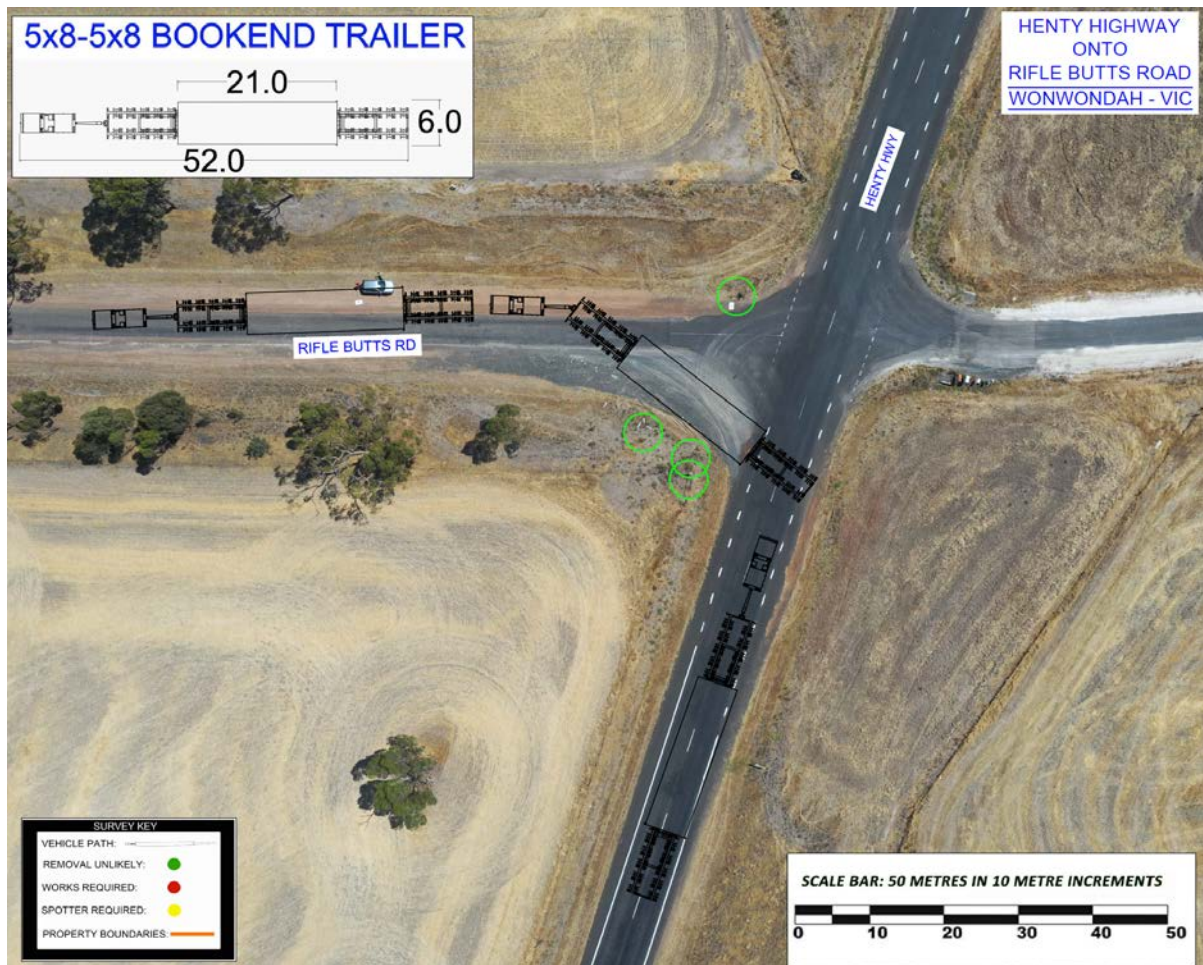


Figure 48 - Henty Highway onto Rifle Butts Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/FfLMYPDWKBCuJBQa7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

220.0 Km's: Bend on Rifle Butts Road

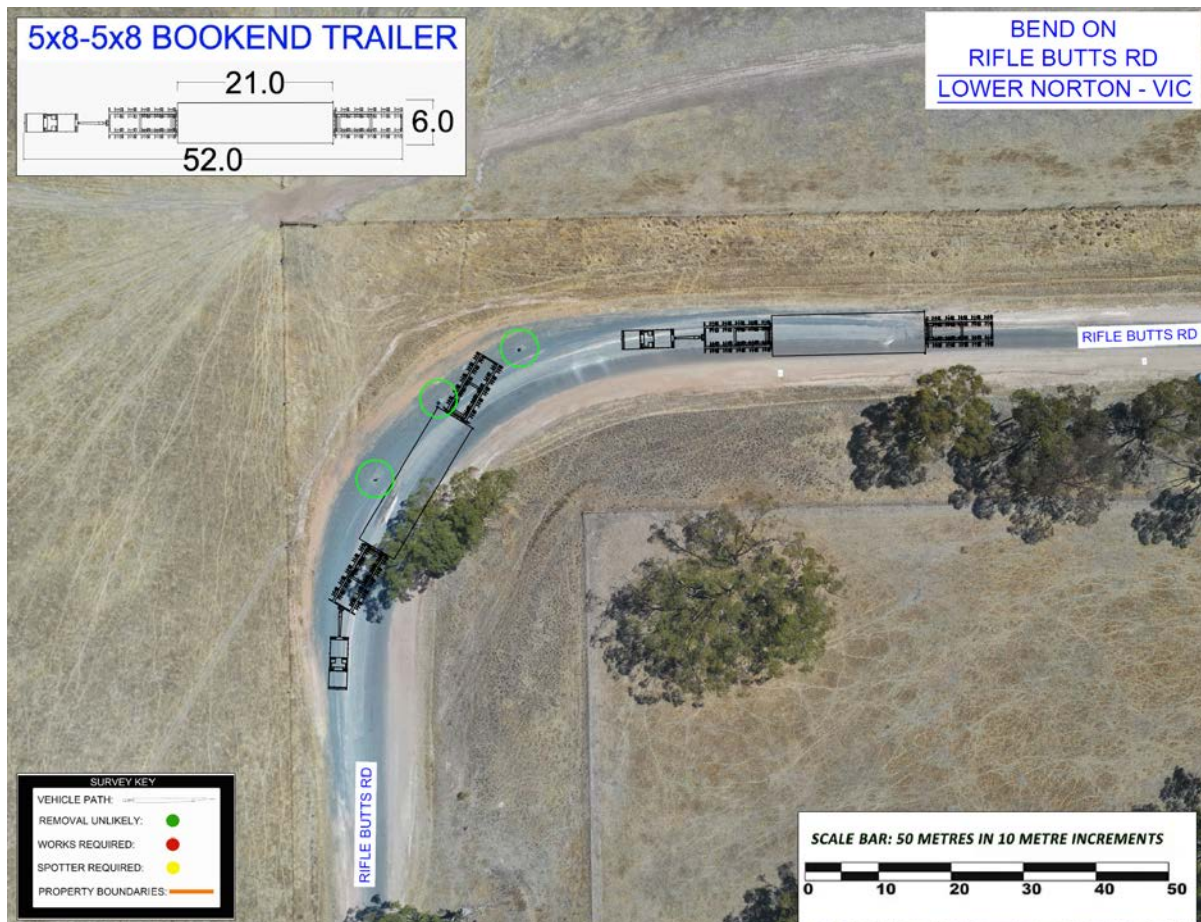


Figure 49 - Bend on Rifle Butts Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/fMoZpmsaVobAu3NM6>

PROCEDURE: Left hand bend

ROAD MODIFICATIONS: Spotter to guide load through this corner.

220.1 Km's: Rifle Butts Road intersection of lanes Road

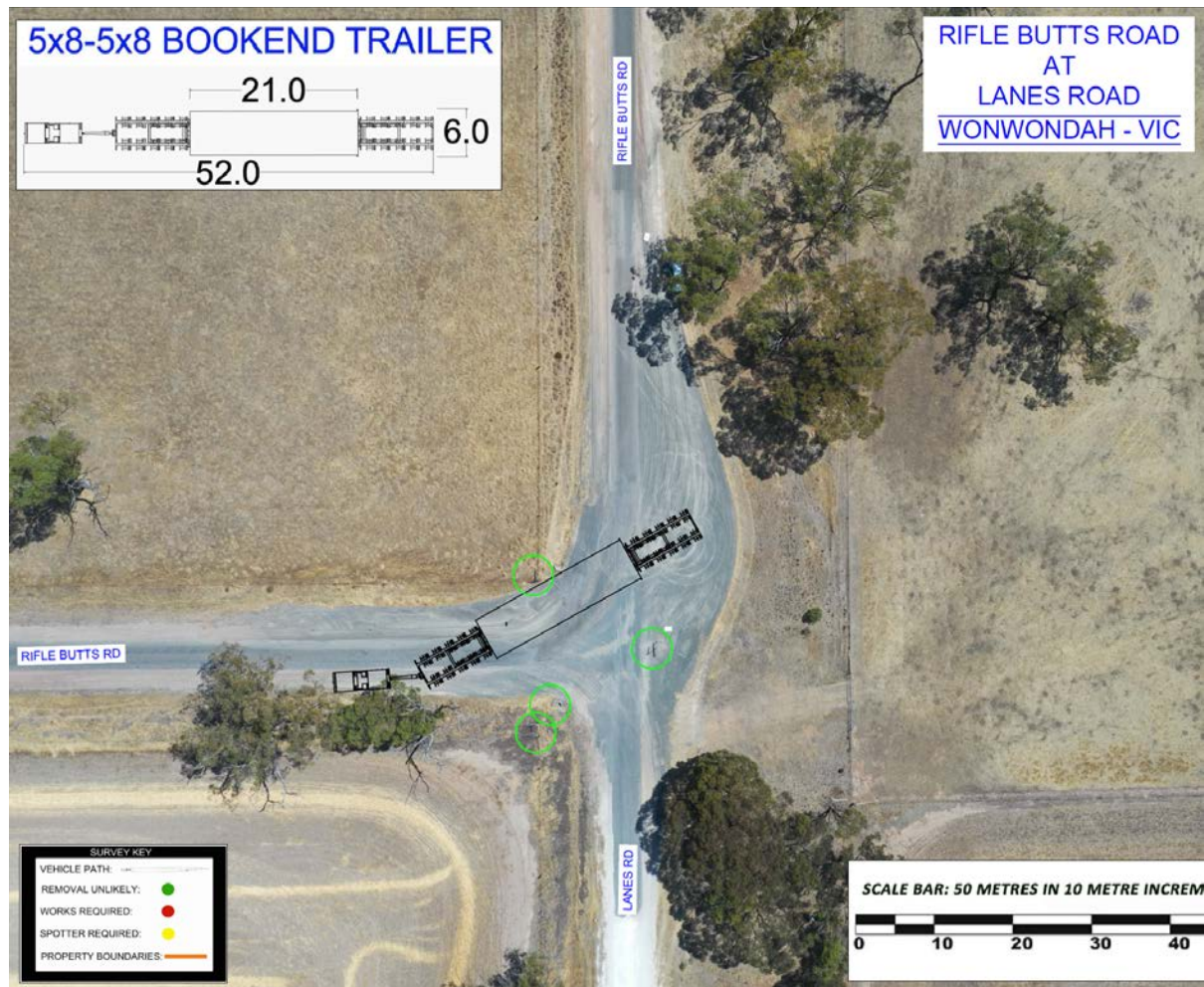


Figure 50 - Rifle Butts Road intersection of lanes Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/c6uLVNizyMEcNhN29>

PROCEDURE: Right hand bend

ROAD MODIFICATIONS: Spotter to guide load through this corner.

225.0 Km's: Rifle Butts Road onto Lower Norton-Nurrabiel Road



Figure 51 - Rifle Butts Road onto Lower Norton-Nurrabiel Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Tkrh6QY3jaQ8oZYJ9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Hardstand to be installed on outside of corner, suitable vertical curves to be maintained.

233.0 Km's: Lower Norton-Nurrabel Road onto Horsham-Noradjuha Road

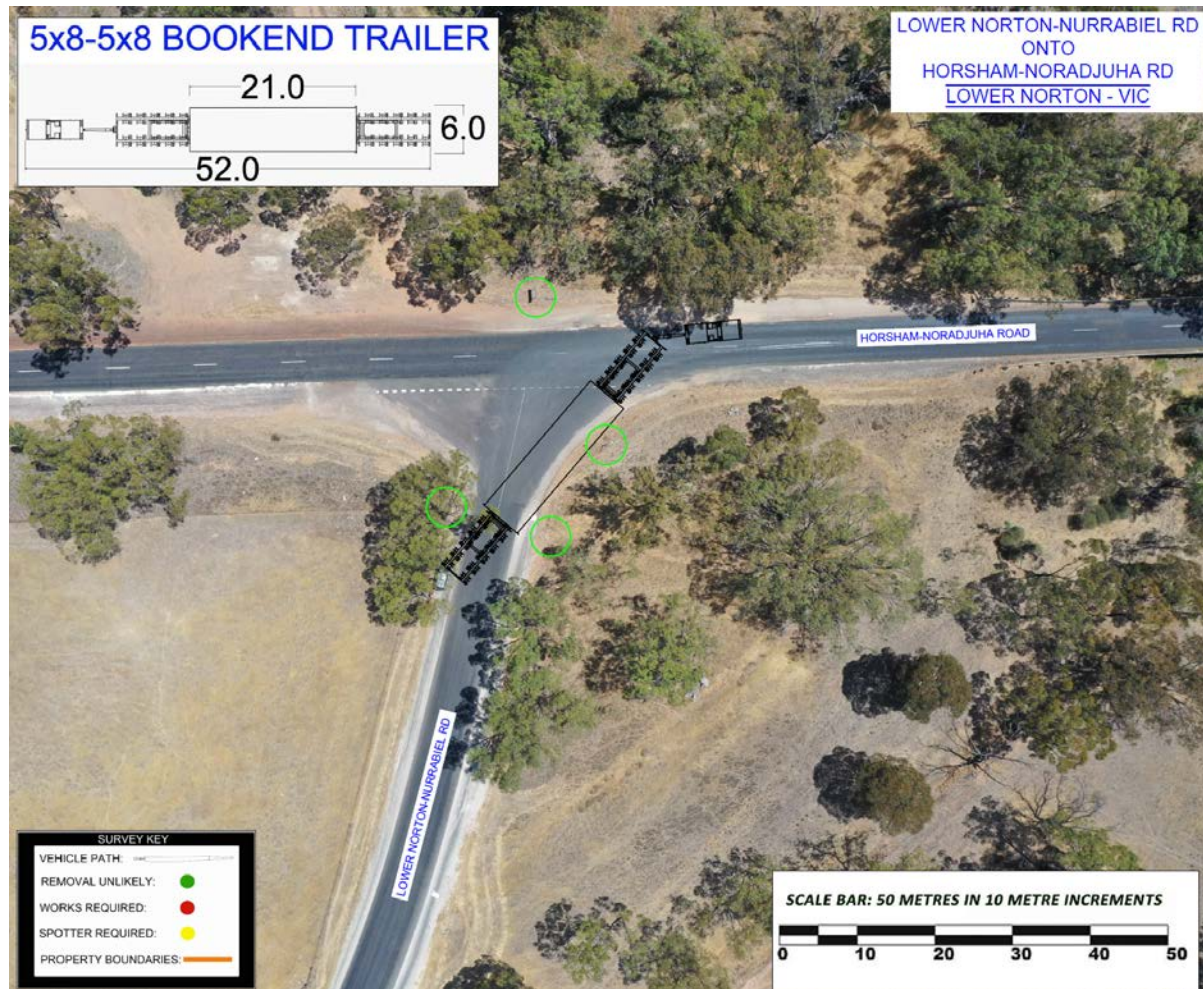


Figure 52 - Lower Norton-Nurrabel Road onto Horsham-Noradjuha Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/NuYHEEadk49rPCN37>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

240.0 Km's: Horsham-Noradjuha Road onto Wimmera Highway

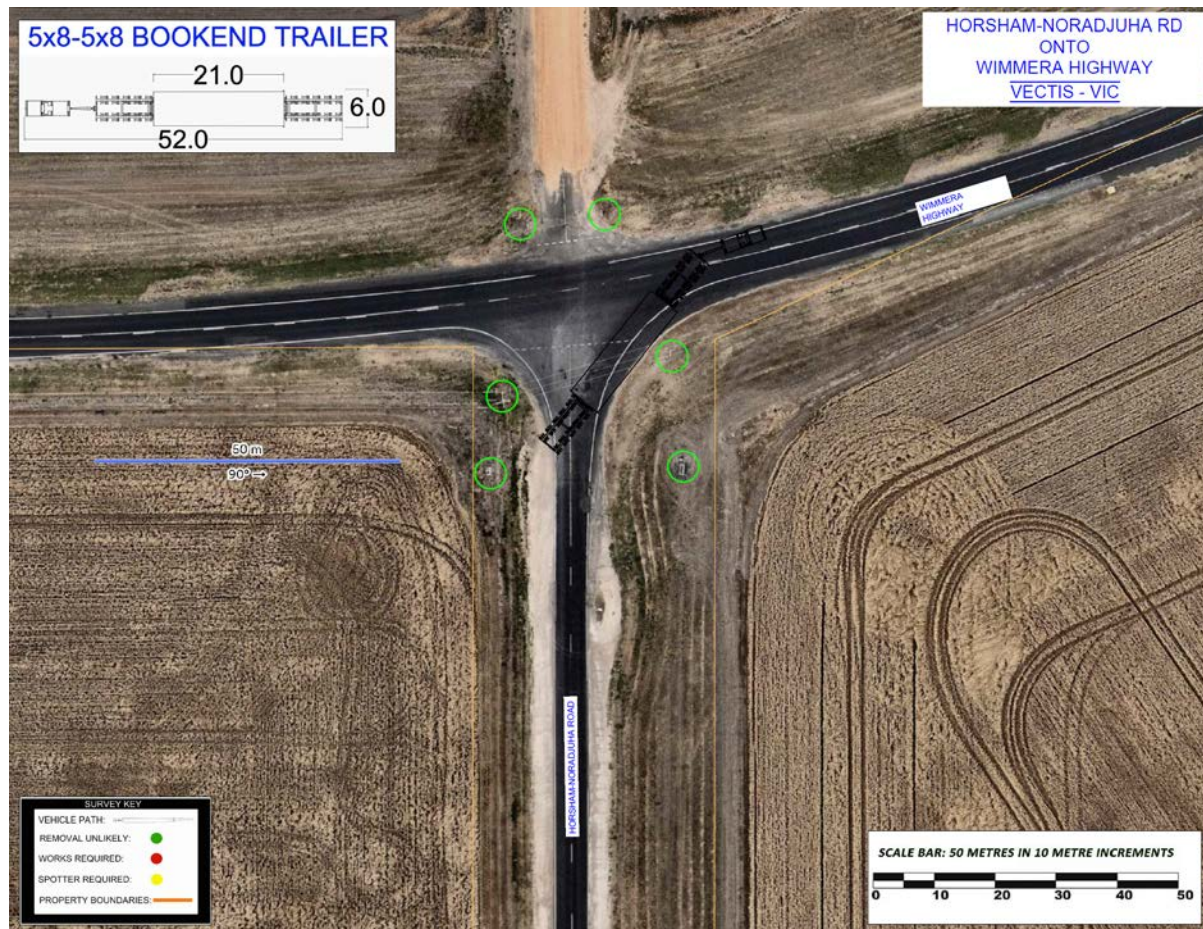


Figure 53 - <https://goo.gl/maps/EdikqkLpu9uLi9FG9>

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/EdikqkLpu9uLi9FG9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

245.0 Km's: Wimmera Highway onto Curran Road



Figure 54 - Wimmera Highway onto Curran Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/HEBeWMnbZhFyBWaFA>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

248.0 Km's: Curran Road onto the Western Highway via Obrees Road



Figure 55 - Curran Road onto the Western Highway via Obrees Road.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/56aarDHBYNxzhVEJ8>

PROCEDURE: Dog leg turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

279.0 Km's: Western Highway onto Borung Highway

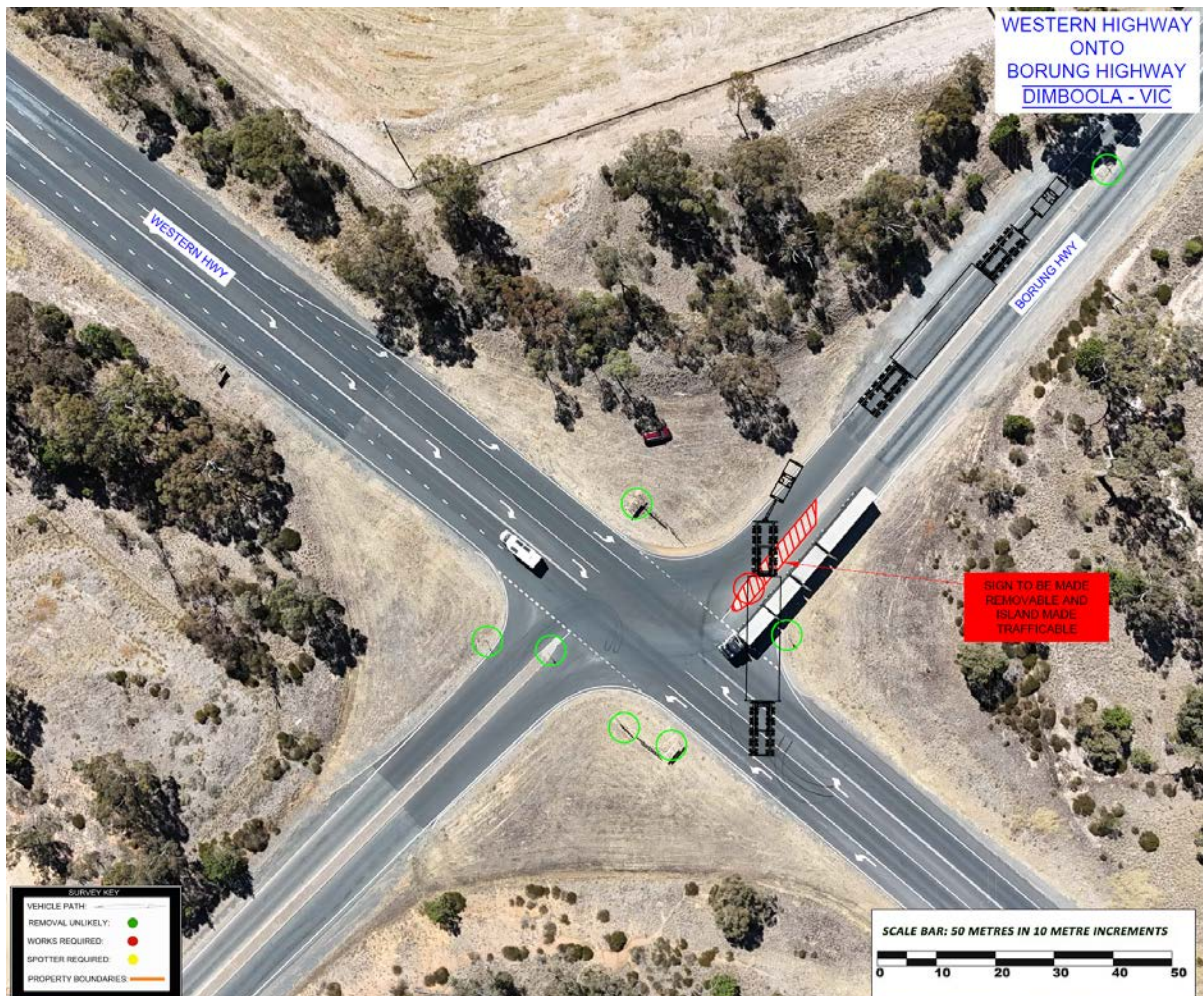


Figure 56 - Western Highway onto Borung Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/iXKWYrr5QDduuSou6>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Sign to be relocated or made removable with flush base and island made trafficable.

281.0 Km's: Borung Highway onto Dimboola-Minyip Road

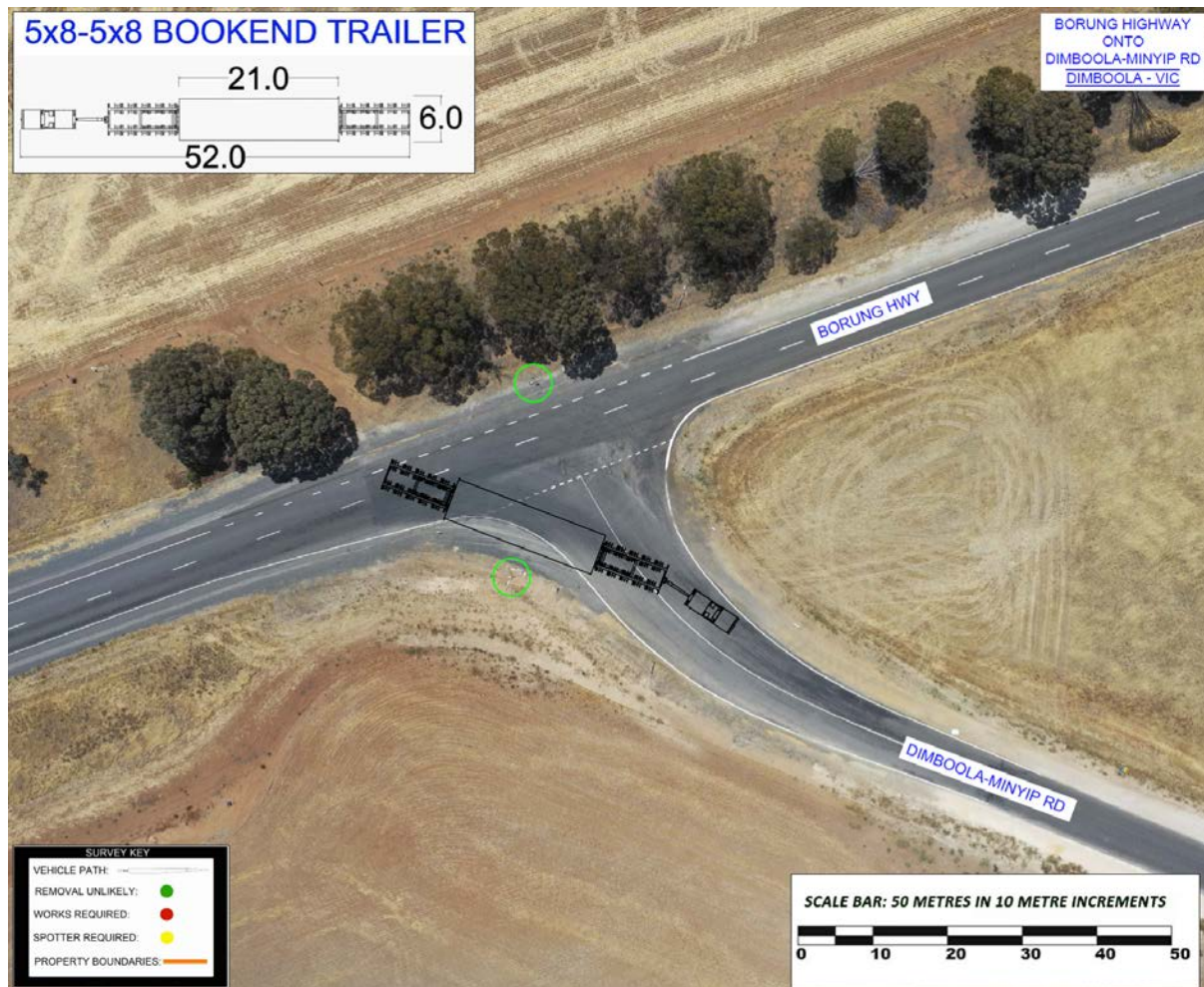


Figure 57 - Borung Highway onto Dimboola-Minyip Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/7Eafj3RgrKcT2ynV9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Spotter to guide load through this corner.

310.0 Km's: Dimboola-Minyip Road onto Henty Highway

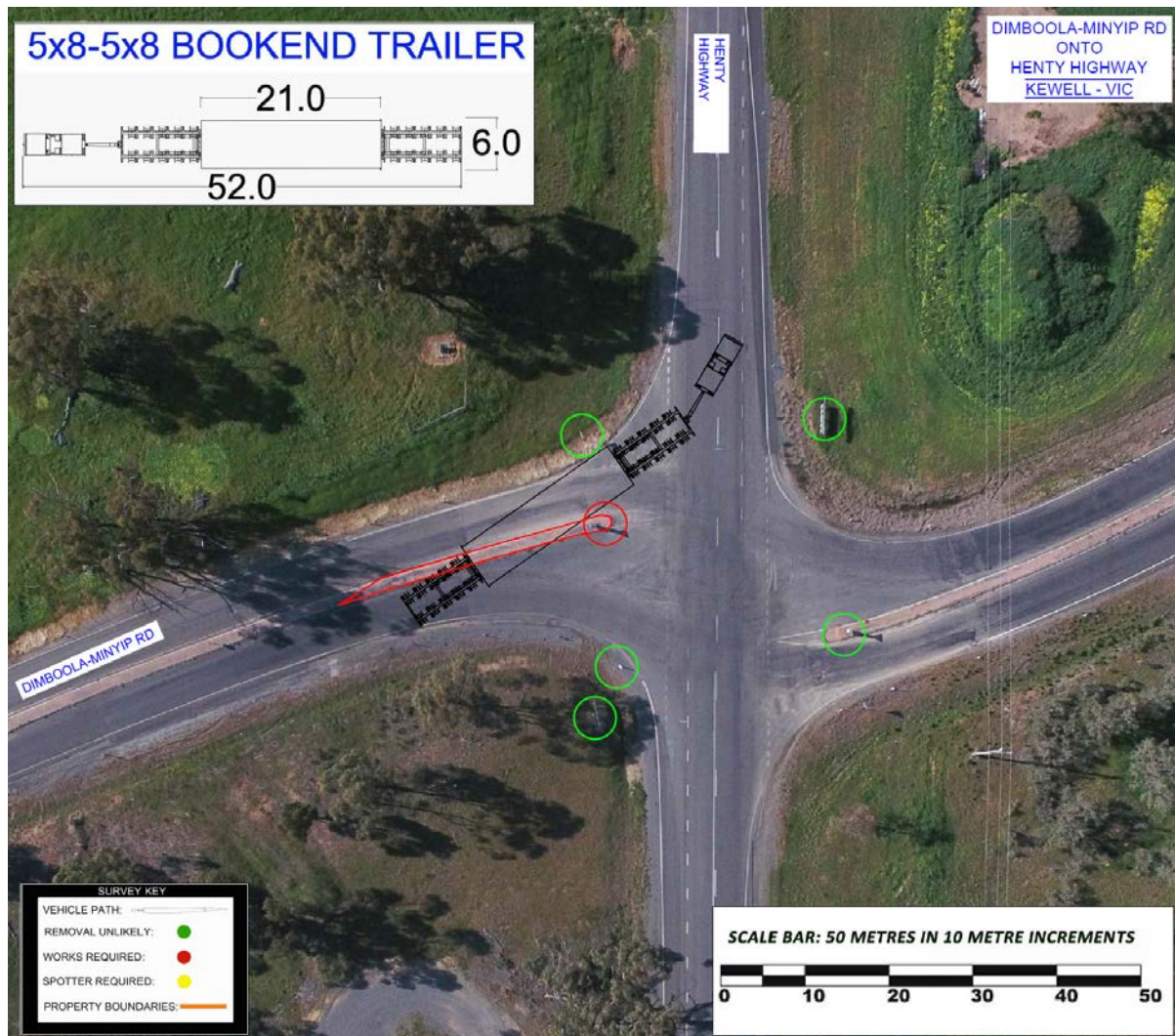


Figure 58 - Dimboola-Minyip Road onto Henty Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/qCNcBoAWU9bUrCvX8>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Sign to be relocated or made removable with flush base and island made trafficable.

394.1 Km's: Roundabout on Henty Highway at Austin Street

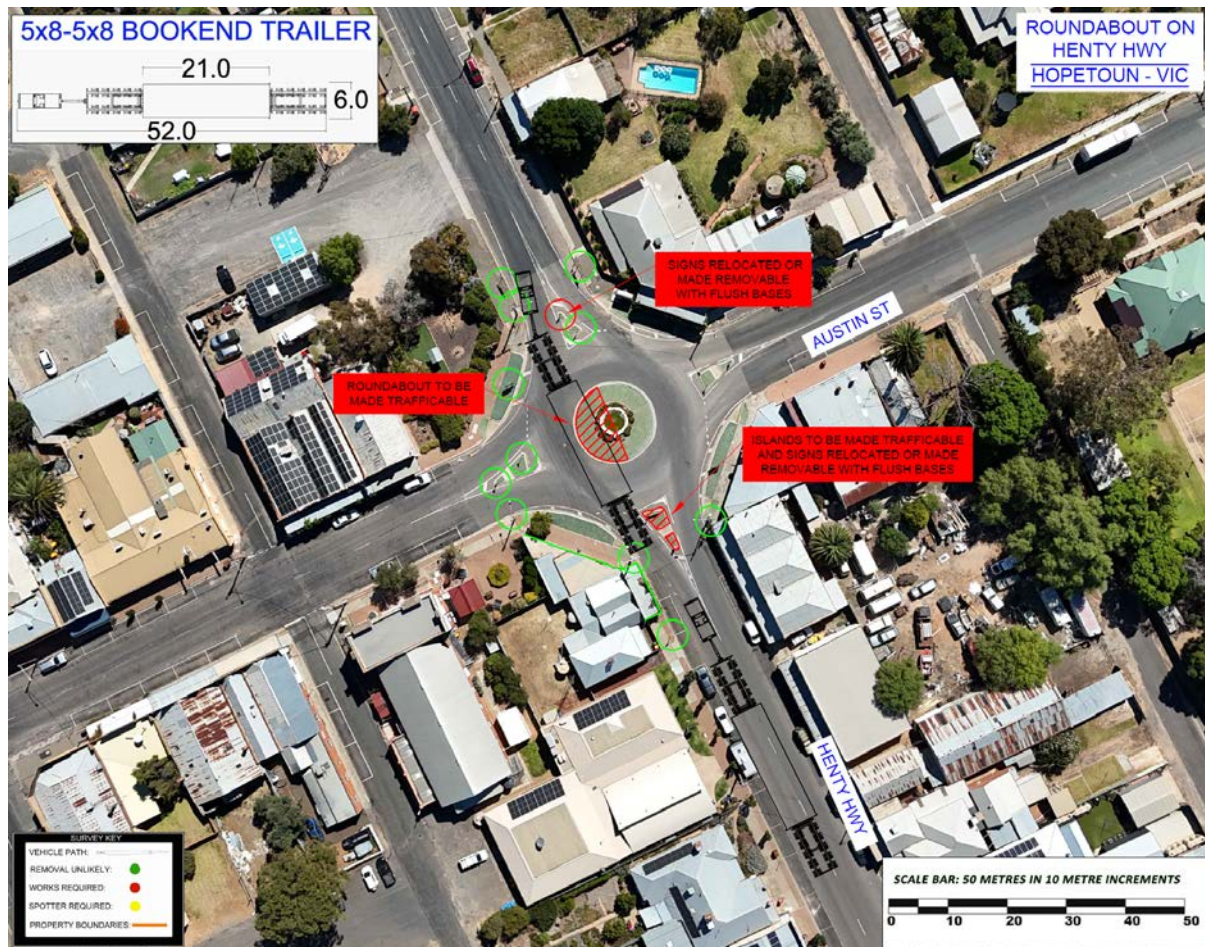


Figure 59 - Roundabout on Henty Hwy at Austin St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/vNZ1GB7XPoZ675ur9>

PROCEDURE: Travel directly ahead

ROAD MODIFICATIONS: Island on entry and roundabout to be made trafficable.
Signs to be relocated or made removable with flush bases.

473.0 Km's: Sunraysia Highway onto Calder Highway



Figure 60 - Sunraysia Hwy onto Calder Hwy

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/aRMoAKAYWrjXHw2T8>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: No problems with this section of road

518.0 Km's: Calder Highway onto Hattah-Robinvale Road

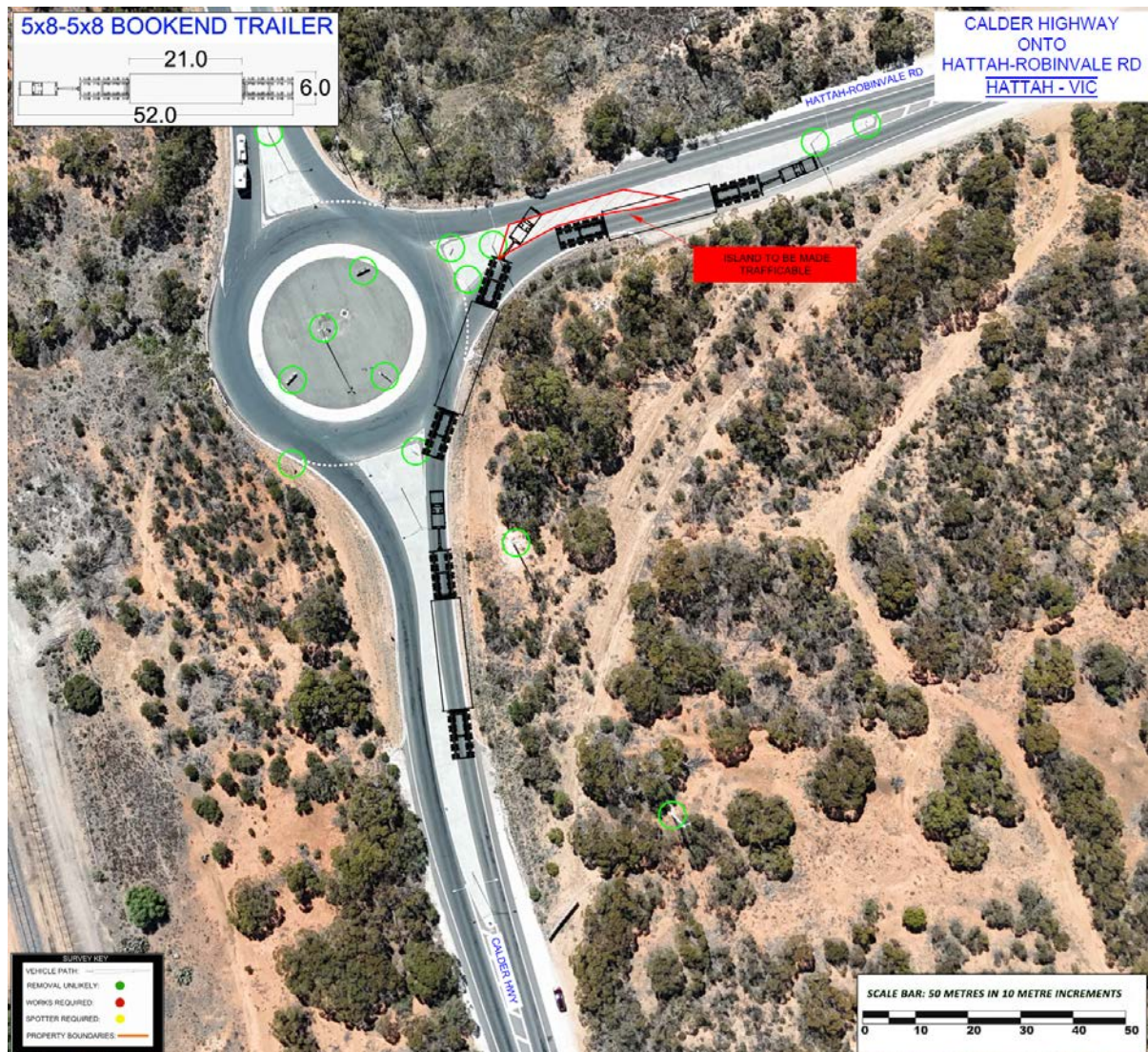


Figure 61 - Calder Highway onto Hattah-Robinvale Road

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/tPNu5UKXxEMZK2d3A>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Load to cross to incorrect side of roundabout using modifications made for blade route.

571.0 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road



Figure 62 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4FwG4Lh1Qr95TX1t9>

PROCEDURE: Left Hand Turn

ROAD MODIFICATIONS: Load to cross to incorrect side of roundabout using modifications made for blade route.

589.0 Km's: Murray Valley Highway onto Sturt Highway

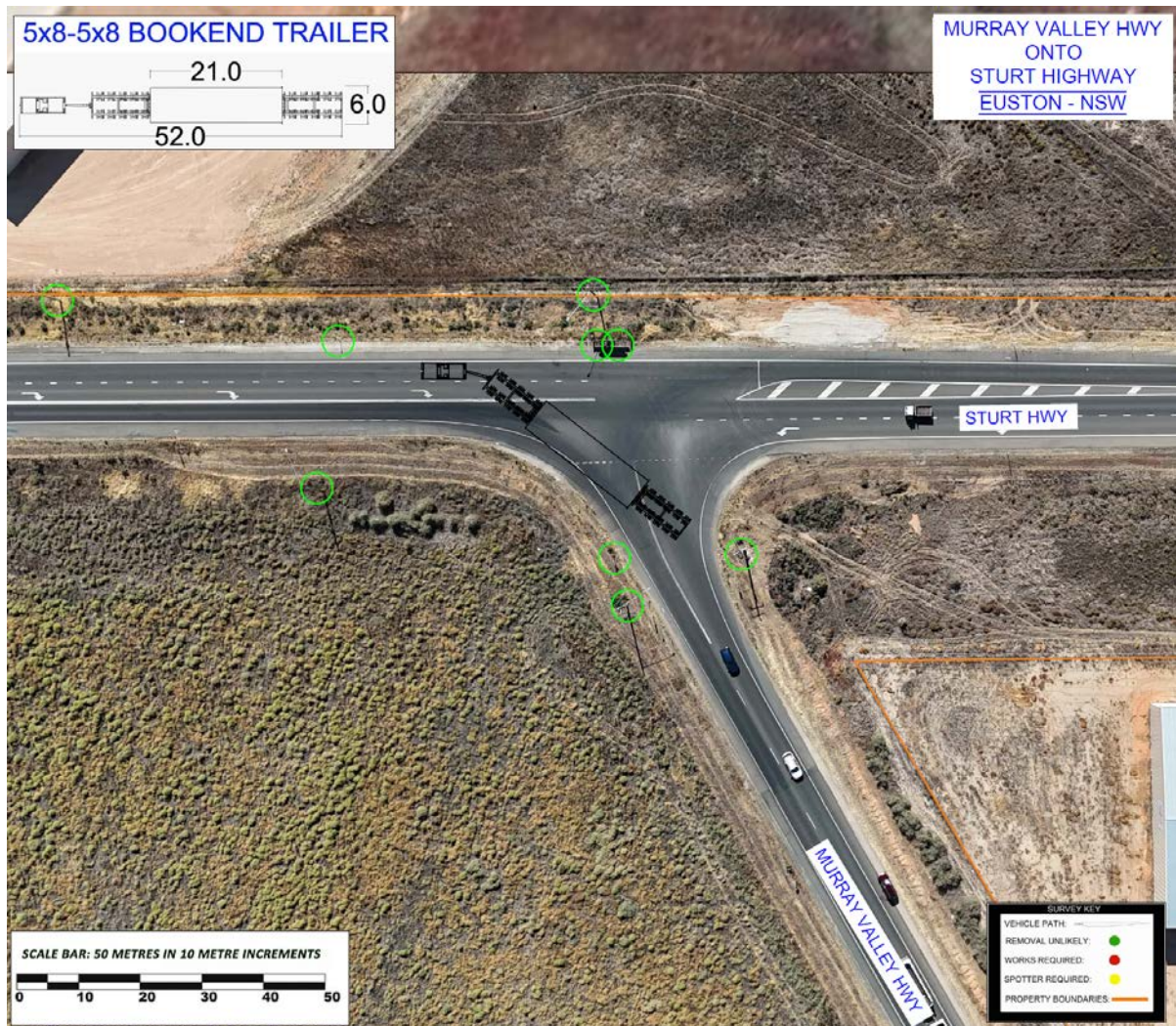


Figure 63 - Murray Valley Highway onto Sturt Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/rnhvnjnN6VkAWX3eA>

PROCEDURE: Left Hand Turn

ROAD MODIFICATIONS: No problems with this section of road.

591.0 Km's: Sturt Highway Roundabout at Carey Street



Figure 64 - Sturt Hwy roundabout at Carey St

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/uufR6raWdwSyWMHK6>

PROCEDURE: Right hand turn using incorrect side of roundabout

ROAD MODIFICATIONS: Load to cross to incorrect side of roundabout using modifications made for blade route.

666.0 Km's: Sturt Highway onto Silver City Highway



Figure 65 - Sturt Highway onto Silver City Highway

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/qGczCY2sNeHvYeQE9>

PROCEDURE: Right hand turn using incorrect side of road.

ROAD MODIFICATIONS: Load to cross to incorrect side of roundabout using modifications made for blade route.

668.0 Km's: Silver City Highway onto Arumpo Road

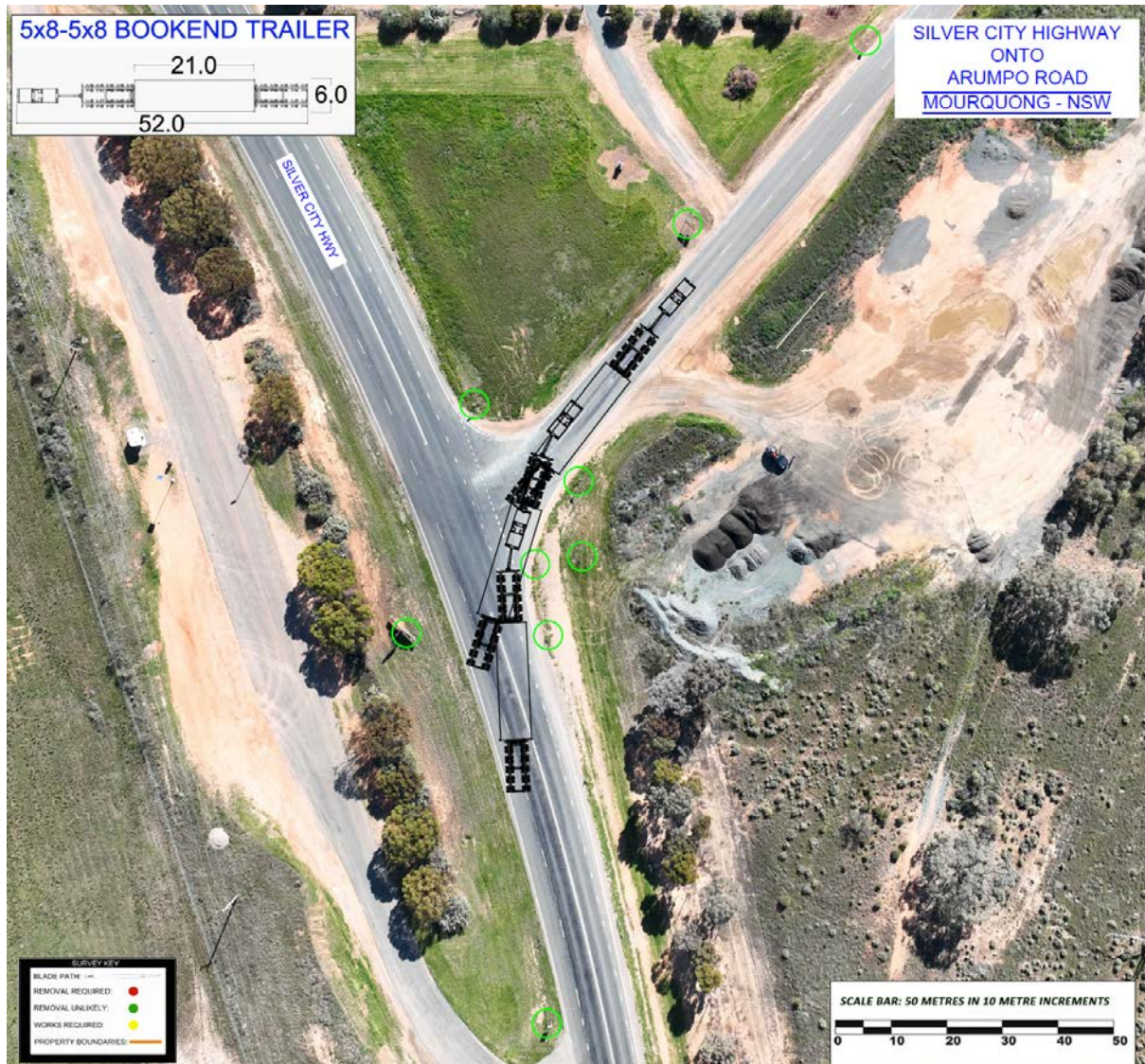


Figure 66 - Silver City Highway onto Arumpo Road

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/B9eX3mgi1bs2eq9H6>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: No problems with this section of road.

700.0 Km's: Arumpo Rd into Site Entry No. 1

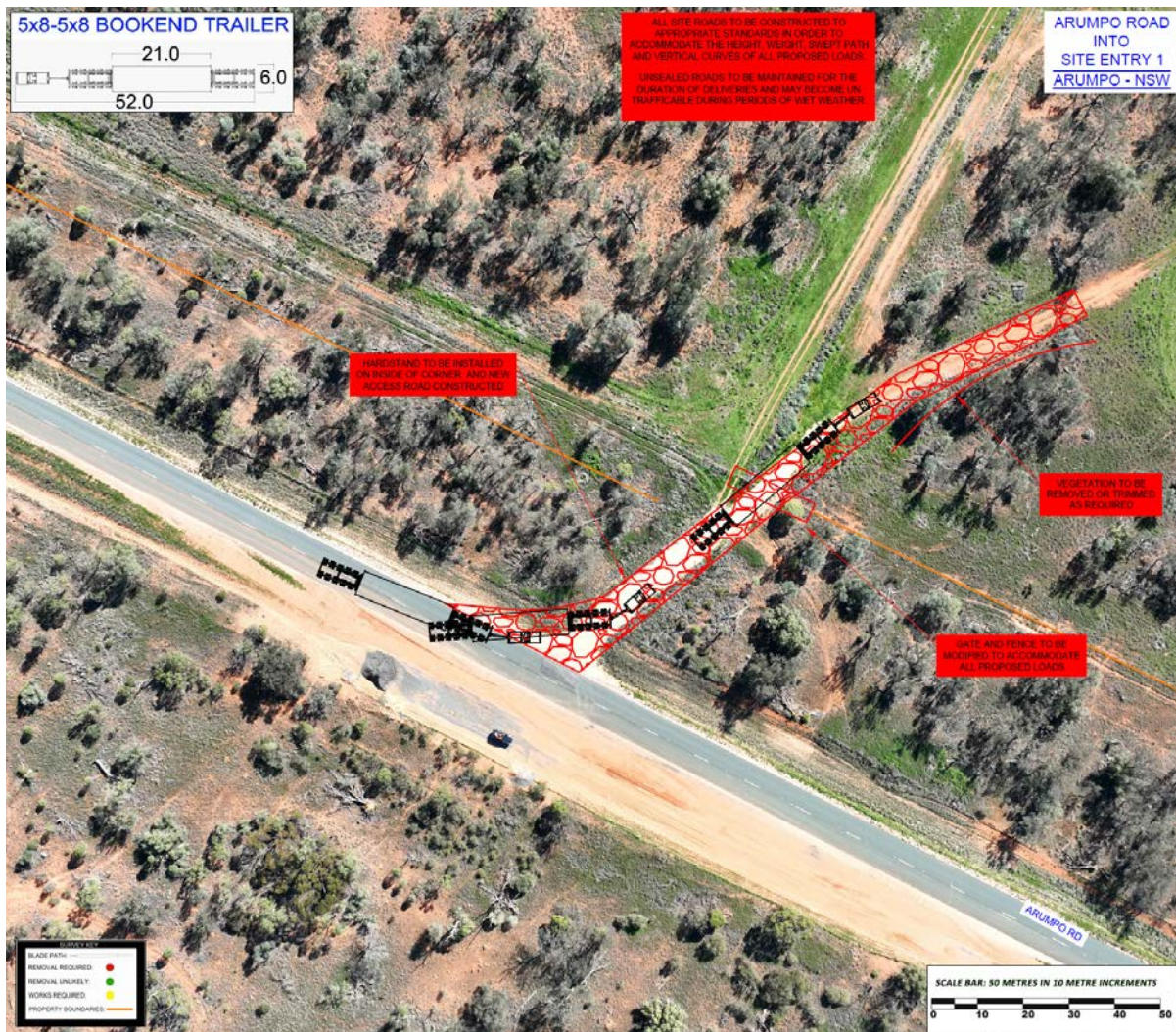


Figure 67 - Arumpo Rd into Site Entry No. 1

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/isnpFUM61dPrJdvP7>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

700.1 Km's: Arumpo Rd into Site Entry No. 2

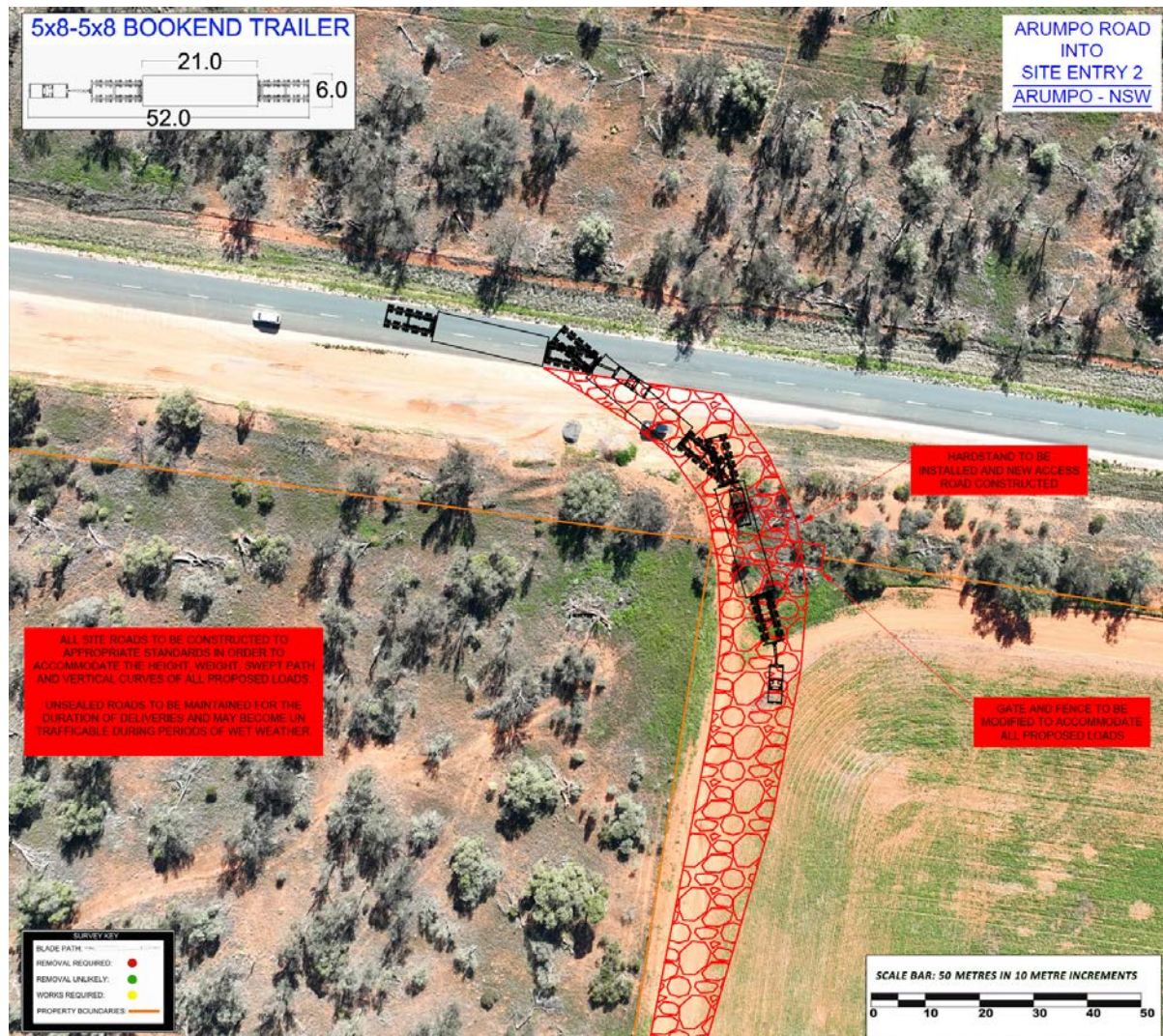


Figure 68 - Arumpo Rd into Site Entry No. 2

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/iscWEaj936ECc2vE9>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

10.0 Route 2 Conclusion

After studying all options and undertaking a route survey, this route is suitable in its current condition for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

LENGTH

- The longest combination that can travel along this route without upgrades is **40m overall length**

OVERHEAD STRUCTURES: (Maximum loaded height 6.4m)

- The lowest structure on this route is the pipe over Mainera Packet Road just outside the port with a 7.4 metre height clearance. However, due to a large number of overhead utilities on the route, it is recommended at keeping the overall height of the loads to under 6.5 metres.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.4m metres is required for this project.

BRIDGES:

- Bridge assessments will still be required for the entire route.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.

-

PAVEMENT:

- The Pavement the route is of highway standard up to the site entries. Bypasses or modifications will be required at several corners and is to be constructed to a suitable standard and maintained for the duration of deliveries if not sealed.
- Site roads which are gravel will require grading prior to commencement and to be maintained for the duration of the project. Site roads should be all weather otherwise the roads may become unusable in wet conditions which will impact delivery schedules.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan "TMP" has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

11.0 References

Rex J Andrews P/L
Rex J Andrews P/L Route Survey # 508
Google Earth/Maps
Nearmaps
Spark Renewables
Nearmaps
NHVR (OSOM)
Australian Load Restraint Guide

Disclaimer: This route study is provided on the basis of information only purposes and is to be used strictly as a guide only; Government approvals would be required before these routes could be deemed suitable for transporting the components over the listed routes.

Any, and all parties using information contained this submission do so at own risk.

RJA accept no responsibility for the use of all information contained within this report.

Actual approved routes may differ from those surveyed.

Proposed routes may change subject to approvals from authorities.

The blade listed in this report is a prototype only. More information on this blade is required before confirmation that the route can accommodate this size load.

This study was undertaken using data supplied by Rex J Andrews P/L. Equipment and swept paths might vary if using transport methodology other than the data supplied by Rex J Andrews.

12.0 Appendix 1 - Transport Combinations (Examples)

TURBINE EXAMPLE:

Machine Head or Nacelle (13.4l x 4.8w x 4.2h x 98.0T)
Possible transport configuration. Prime mover with 10x8 platform trailer and backup truck.

Overall Dimension: 39.0l x 4.8w x 5.2h x 199.5T.

Drivetrain 7.4l x 3.3w x 3.2h x 82.0T)
Possible transport configuration. Prime mover with 8x8 platform trailer.
Overall Dimension: 32.0l x 4.5w x 4.9h x 144.5T.

Generators (5.49l x 5.49w x 4.16h x 127.8T)
Transport configuration. Prime mover with 10x8 Platform trailer.
Overall Dimensions: 30.0l x 5.5w x 5.3h x 183.5T.

Hubs (4.6l x 4.1w x 3.8h x 50.0T)
Possible transport configuration. Prime mover with 2x8 4x8 Low Loader.
Overall Dimension: 28.0l x 4.2w x 5.0h x 97.5T.

Blades (91.0l x 4.95w x 3.8h x 30T)
Possible transport. Prime mover with 3x8-3x8 Extending blade trailer.
Overall Dimension: 102.7l x 4.953w x 5.0h x 96.5T.

166 METRE TOWER EXAMPLE:

Base Towers (9.3l x 5.85 x 5.85 x 85T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 40.0l x 6.0w x 6.1h x 151.5T

Section 2 Towers (13.8l x 5.85 x 5.6 x 85T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 45.0l x 6.0w x 6.1h x 151.5T

Section 3 Towers (15.4l x 5.6 x 5.6 x 87T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 47.0l x 6.0w x 6.1h x 153.5T

Section 4 Towers (16.8l x 5.6 x 5.1 x 86T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 48.4l x 6.0w x 6.0h x 152.5T

Section 5 Towers (21.0l x 5.1 x 5.1 x 92T)
Configuration. Prime mover with 10x8 Low platform.
Overall dimension: 35.0l x 5.5w x 6.1h x 166.5T

Section 6 Towers (27.2l x 5.1 x 5.1 x 91T)
Configuration. Prime mover with 5x8-5x8 Low platform.
Overall dimension: 40.0l x 5.5w x 6.1h x 175.5T

Section 7 Towers (29.9l x 5.1 x 4.25 x 77T)
Configuration. Prime mover with 3x8 dolly - 4x8 low Jinker.
Overall dimension: 37.0l x 5.5w x 6.1h x 123.5T

Top Towers (30.0l x 4.25w x 4.1h x 65T)
Configuration. Prime mover with 4x4 dolly 3x8 low Jinker.
Overall dimension: 38.0l x 4.5w x 5.2h x 105.0T

148 METRE TOWER EXAMPLE:

Door tower section (11.2l x 5.5 x 5.0 x 76T)
Possible transport configuration. Prime mover with 2x8-4x8 Bookend
Overall Dimension: 39.0l x 5.6w x 5.7h x 120.5T.

Mid Tower E (15.1l x 5.0 x 5.0 x 76.5T)
Possible transport configuration. Prime mover with 8x8 low platform
Overall Dimension: 35.0l x 5.1w x 5.7h x 144.5T.

Mid Tower D (17.4l x 5.0 x 4.6 x 75T)
Possible transport configuration. Prime mover with 8x8 low platform
Overall Dimension: 35.0l x 5.1w x 5.4h x 144.5T.

Mid Tower C (18.2l x 4.6 x 4.3 x 71T)
Possible transport configuration. Prime mover with Extending 8x8 Platform
Overall Dimension: 37.0l x 4.7w x 5.6h x 144.5T.

Mid Tower B (19.9 x 4.3 x 4.3 x 75T)
Possible transport configuration. Prime mover with Extending 8x8 Platform
Overall Dimension: 39.0l x 4.5w x 5.2h x 144.5T.

Mid Tower A (28.9 X 4.3 X 4.3 X 73.5T)
Possible transport configuration. Prime mover with 3x4 Dolly 3x8 Jinker
Overall Dimension: 45.0l x 4.3w x 5.2h x 102.5T.

Top Towers (36.8l x 4.3w x 3.7h x 64T)
Possible transport configuration. Prime mover with 3x4 Dolly 3x8 Jinker
Overall Dimension: 49.0l x 4.3w x 5.2h x 92.5T.

130 METRE TOWER EXAMPLE:

T1 tower section (10.9l x 5.8 x 5.8 x 96.0T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 45.0l x 5.9w x 6.0h x 191.5T

T2 tower section (13.3l x 5.49 x 5.49 x 99.0T)
Possible transport configuration. Prime mover with 10x8 Low platform trailer.
Overall dimensions: 30.0l x 5.5w x 6.1h x 163.5T.

T3 tower section (13.9l x 5.49 x 5.49 x 88.0T)
Possible transport configuration. Prime mover with 10x8 Low platform trailer.
Overall dimensions: 30.0l x 5.5w x 6.1h x 154.5T.

T4 tower section (18.1l x 5.45 x 5.45 x 89.8T)
Possible transport configuration. Prime mover with 10x8 Low platform trailer.
Overall dimensions: 30.0l x 5.5w x 6.1h x 164.5T.

T5 tower section (18.1l x 5.45 x 5.45 x 57.0T)
Possible transport configuration. Prime mover with 10x8 Low platform trailer.
Overall dimensions: 30.0l x 5.5w x 6.1h x 134.5T.

T6 tower section (28.7l x 4.5 x 5.45 x 69.7T)
Transport configuration. Prime mover with 3x8-3x8 dolly jinker.
Overall dimensions: 39.9l x 5.45w x 6.1h x 114.5T.

T7 tower section (29.0l x 4.5 x 3.9 x 58.0T)
Possible transport configuration. Prime mover with 3x4-2x8 Dolly jinker.
Overall dimensions: 39.0l x 4.5w x 5.6h x 84.5T.

ERECTION CRANES:

LG1750 carrier (19.2l x 3.0 x 4.0 x 96T)

Configuration. Prime mover with 10x8 Platform trailer + Backup truck

Overall dimensions: 36.0l x 4.2w x 5.2h x 174.5T + Backup truck

LTM1500 carrier (21.0l x 3.0 x 4.0 x 96T)

Configuration. Prime mover with 10x8 Platform trailer + Backup truck

Overall dimensions: 36.0l x 5.0w x 5.2h x 174.5T + Backup truck

TRANSFORMER:

Possible Transformer size (9.2l x 4.0 x 4.35 x 175T)

Configuration. Prime mover with 10x8-10x8 Beamset + 4 x Backup trucks

Overall dimensions: 120.0l x 6.5w x 5.2h x 324.5T + 4 x Backup trucks

Possible Transformer size (9.2l x 4.0 x 4.35 x 130T)

Configuration. Prime mover with 12x8 Platform trailer + 1 x Backup trucks

Overall dimensions: 45.0l x 4.3w x 5.4h x 222.5T

SWITCHROOM:

The largest switchroom size that is recommended for this site would be as follows.

Switchroom dimensions: 30.0l x 6.0w x 4.4h x 90.0T

Overall dimensions: 45.0l x 6.0w x 5.4h x 180.5T

NOTES: SUMMARISED VEHICLE DIMENSIONS

- a. Maximum axle/tyre weight for the vehicle configuration (noting indicative values where required)
- b. Longest unarticulated vehicle section and overhand if relevant (noting indicative values where required) to provide the comparison between unarticulated length vs intersection critical dimensions
- c. The dimensions given above and in the transport drawings are indicative only based on information known at time of the study been undertaken, and may vary based on the selected turbine.

13.0 Appendix 2 - Transport Drawings (Examples)

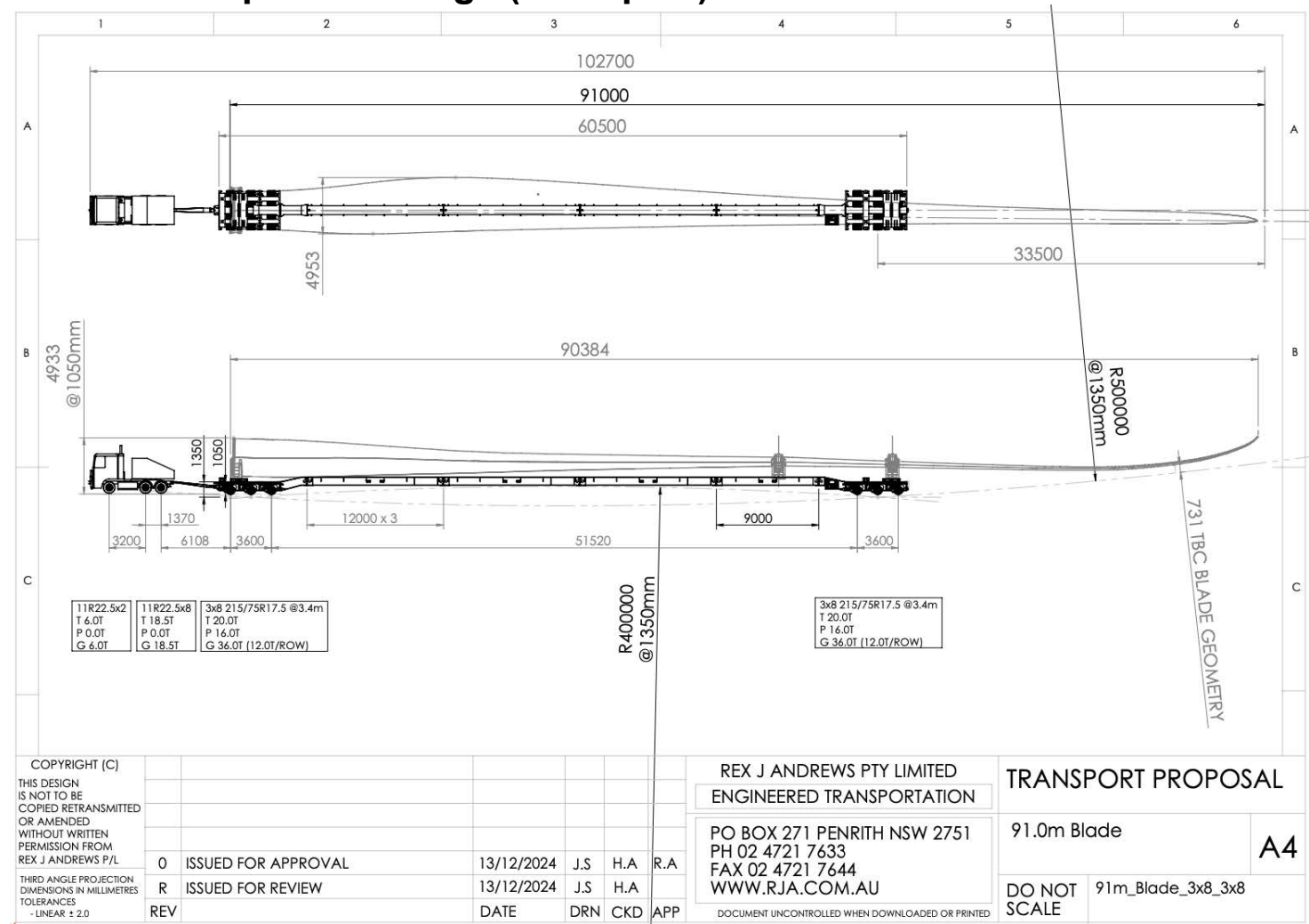


Figure 69 - Blade drawing

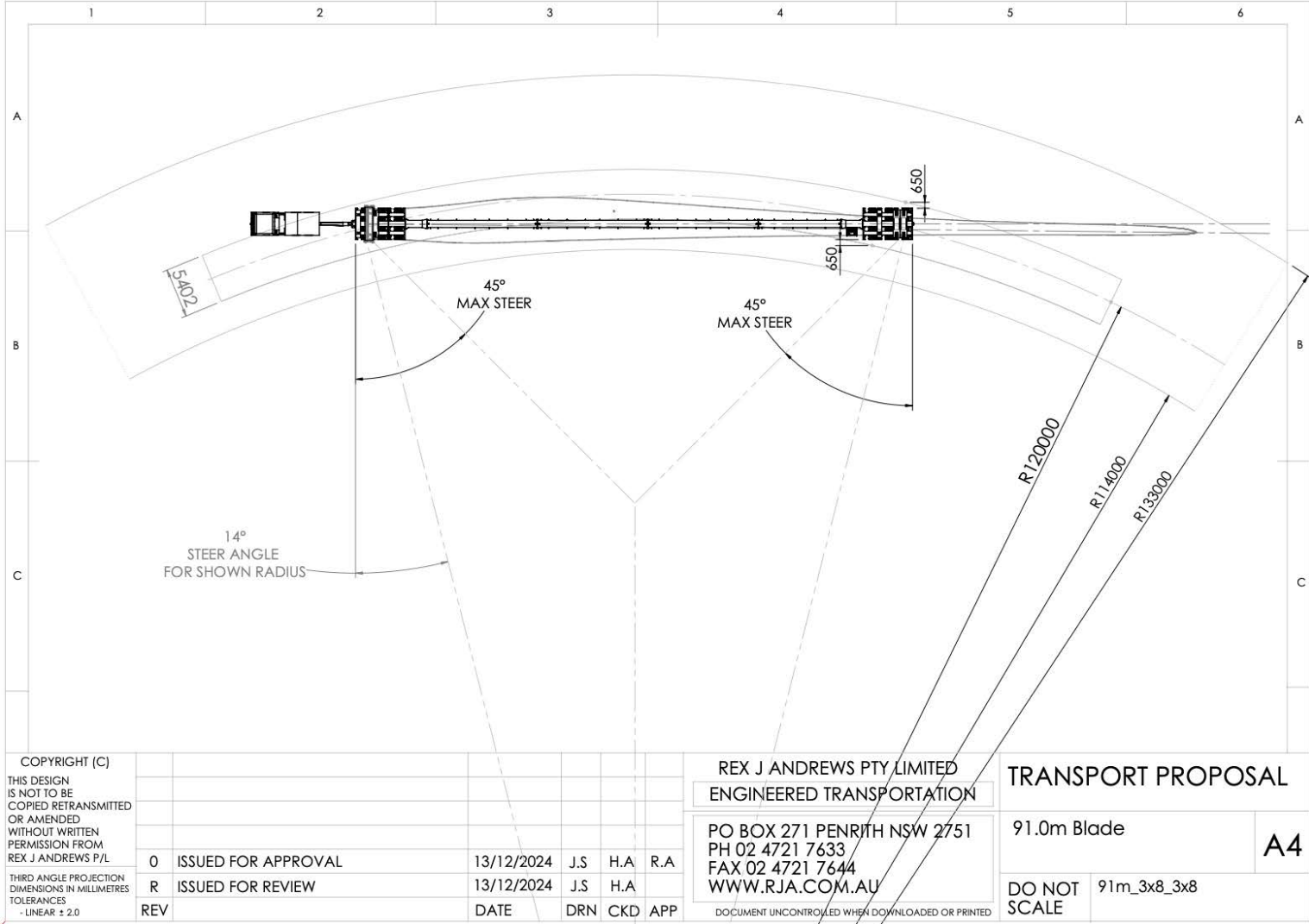


Figure 70 - Blade swept path drawing

ROUTE STUDY MALLEE WINDFARM - PORTLAND

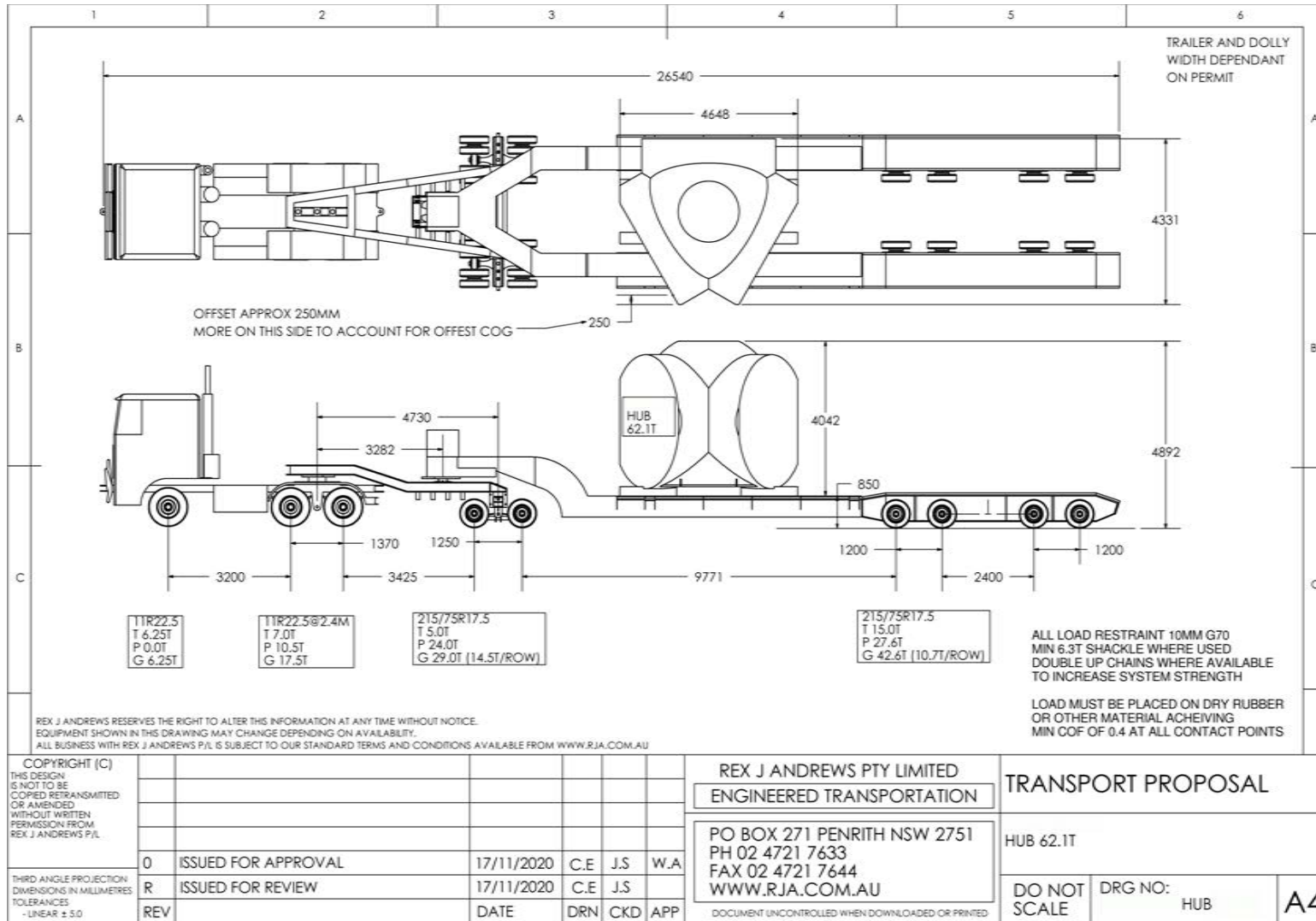


Figure 71 – Hub Combination Example

ROUTE STUDY

MALLEE WINDFARM - PORTLAND

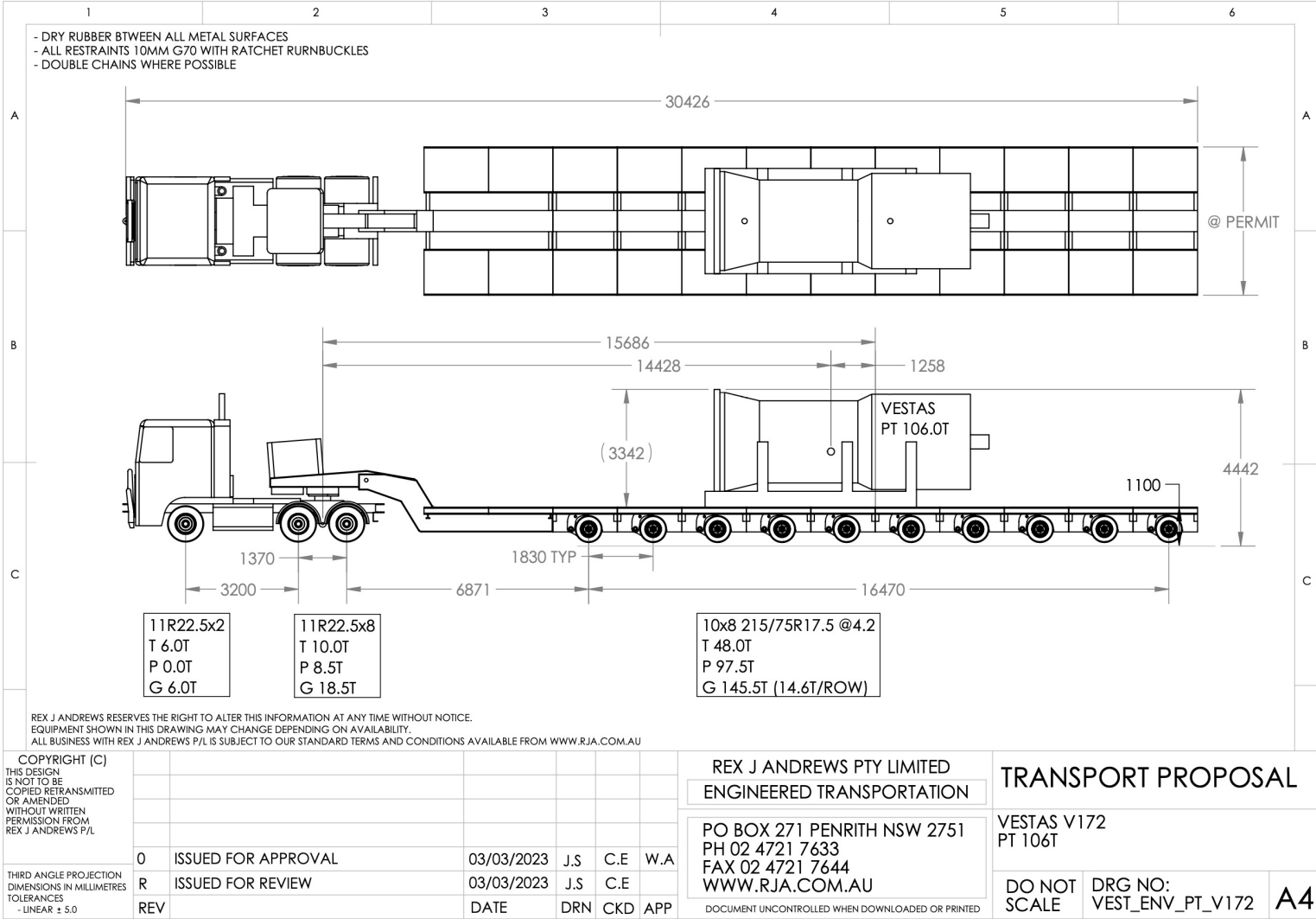


Figure 72 - Drivetrain Combination Example

ROUTE STUDY MALLEE WINDFARM - PORTLAND

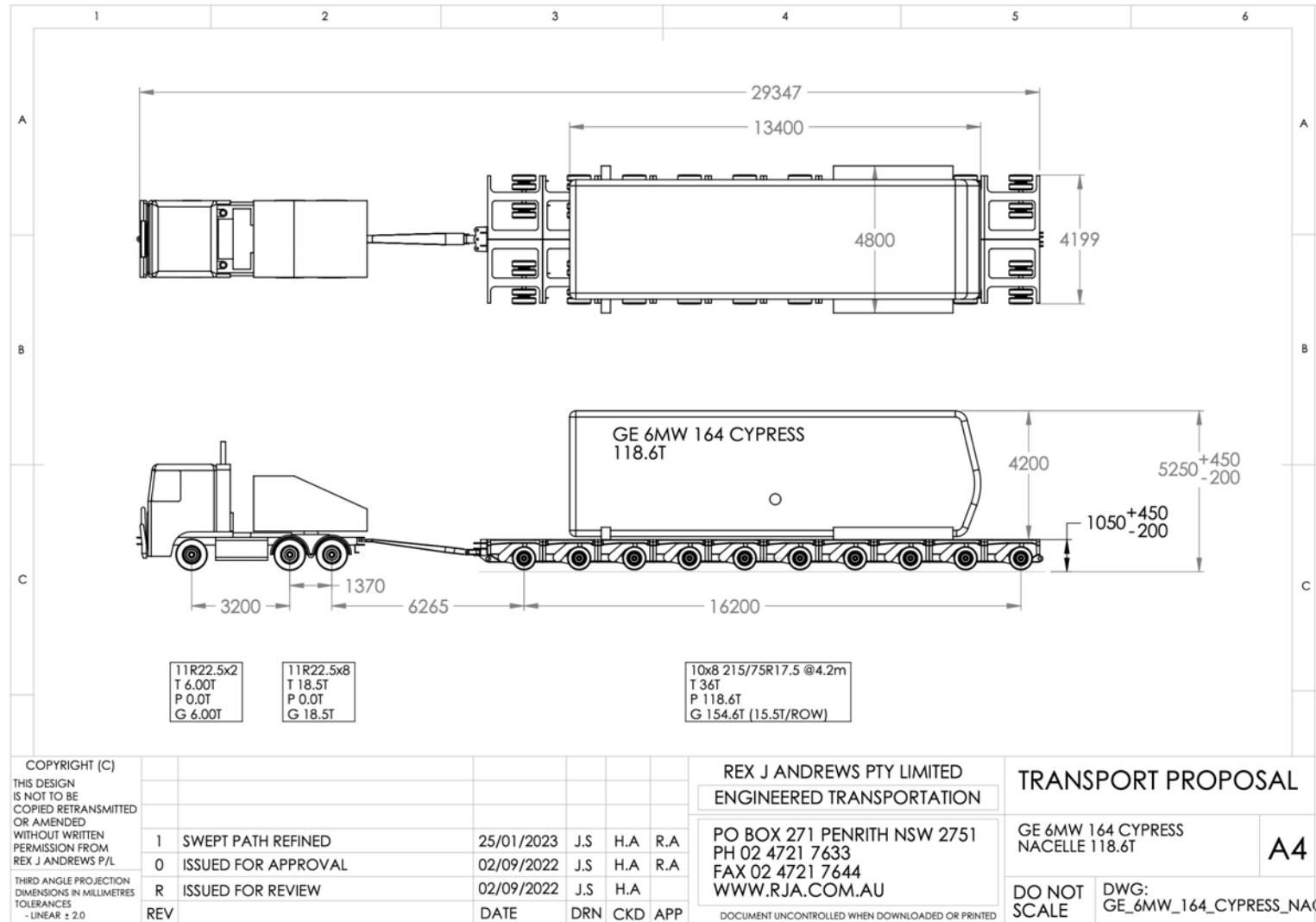


Figure 73: Machine head combination

ROUTE STUDY
MALLEE WINDFARM - PORTLAND

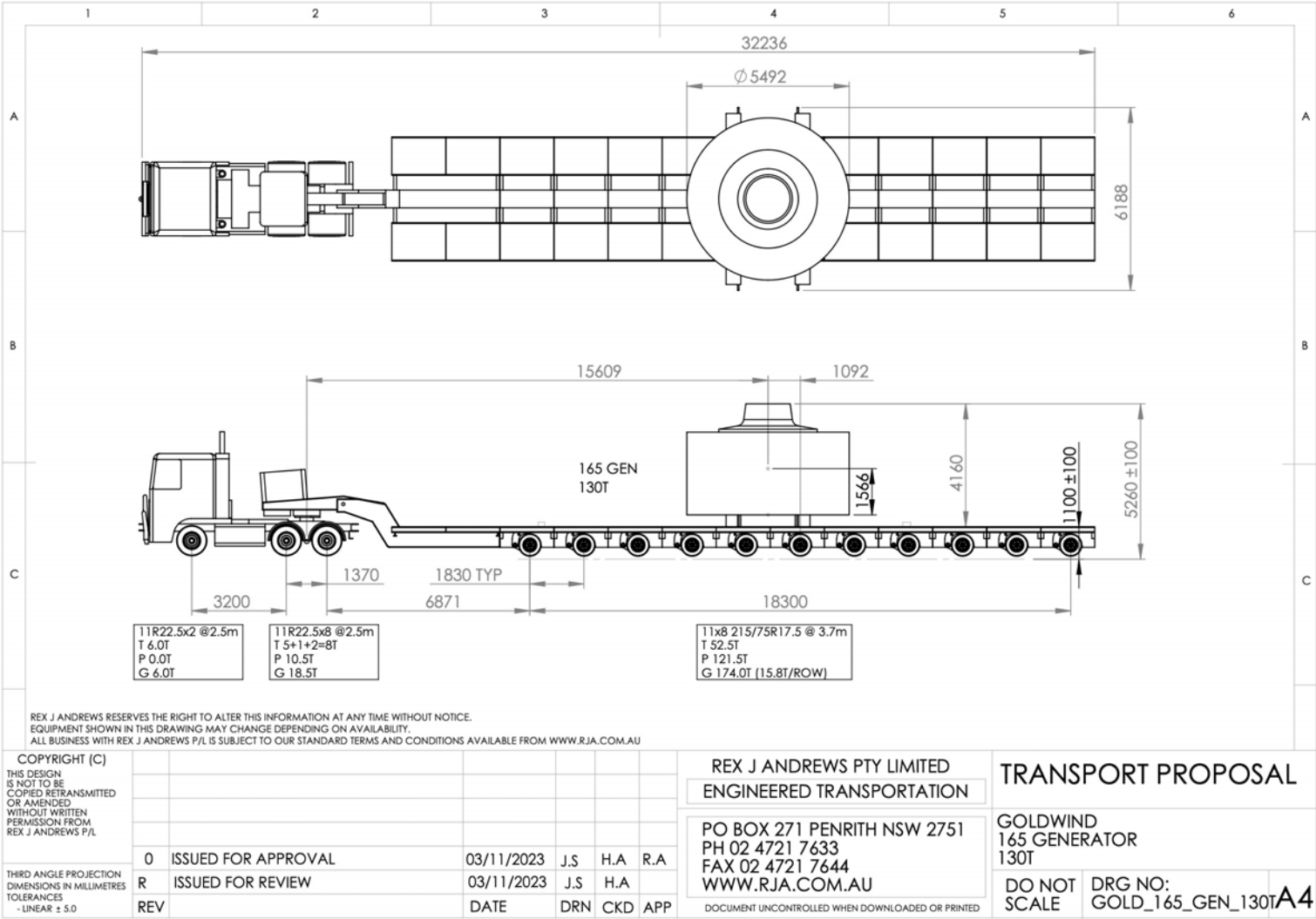


Figure 74 - Generator Combination Example

ROUTE STUDY MALLEE WINDFARM - PORTLAND

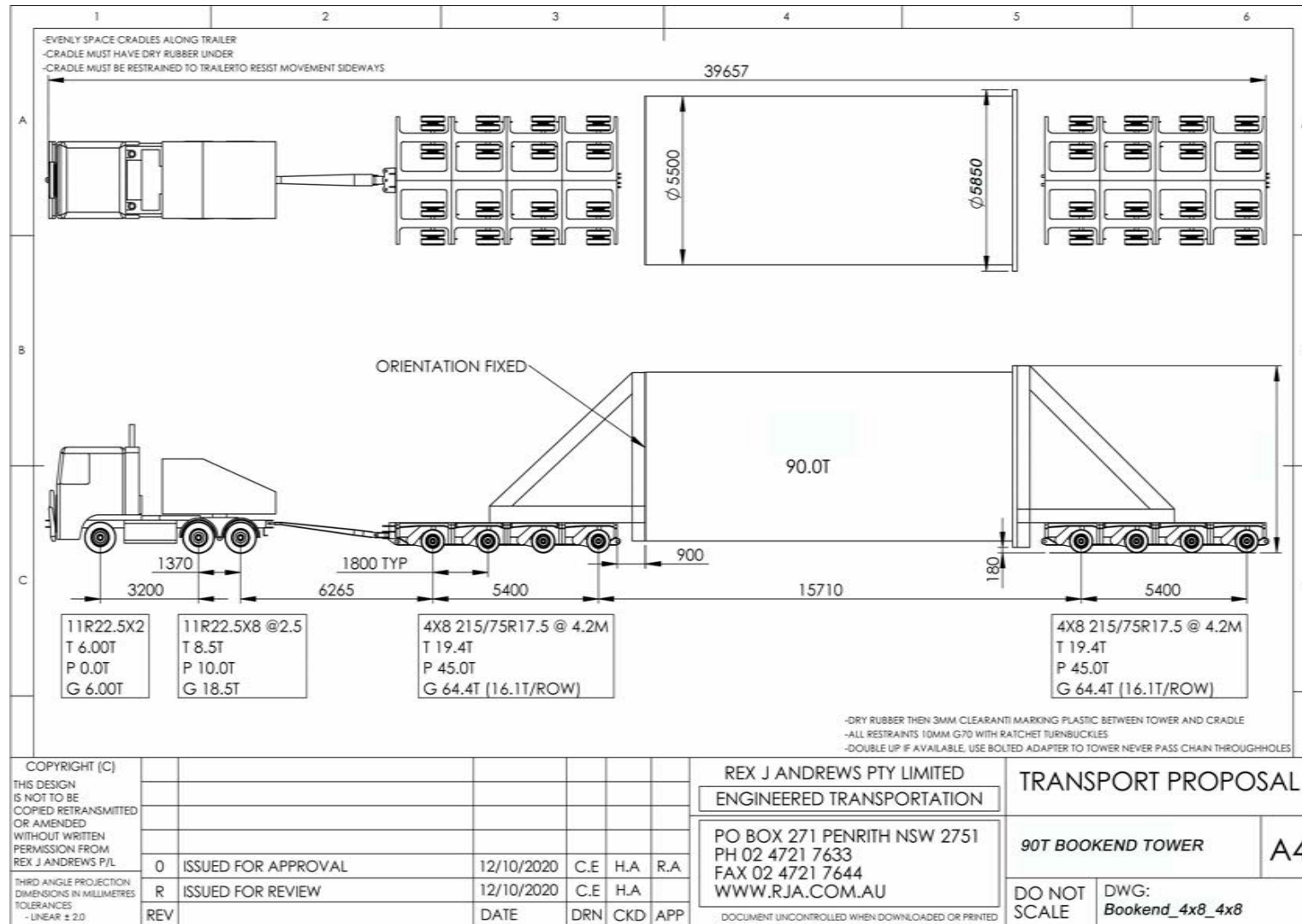


Figure 75 - Tower Trailer Bookend

ROUTE STUDY MALLEE WINDFARM - PORTLAND

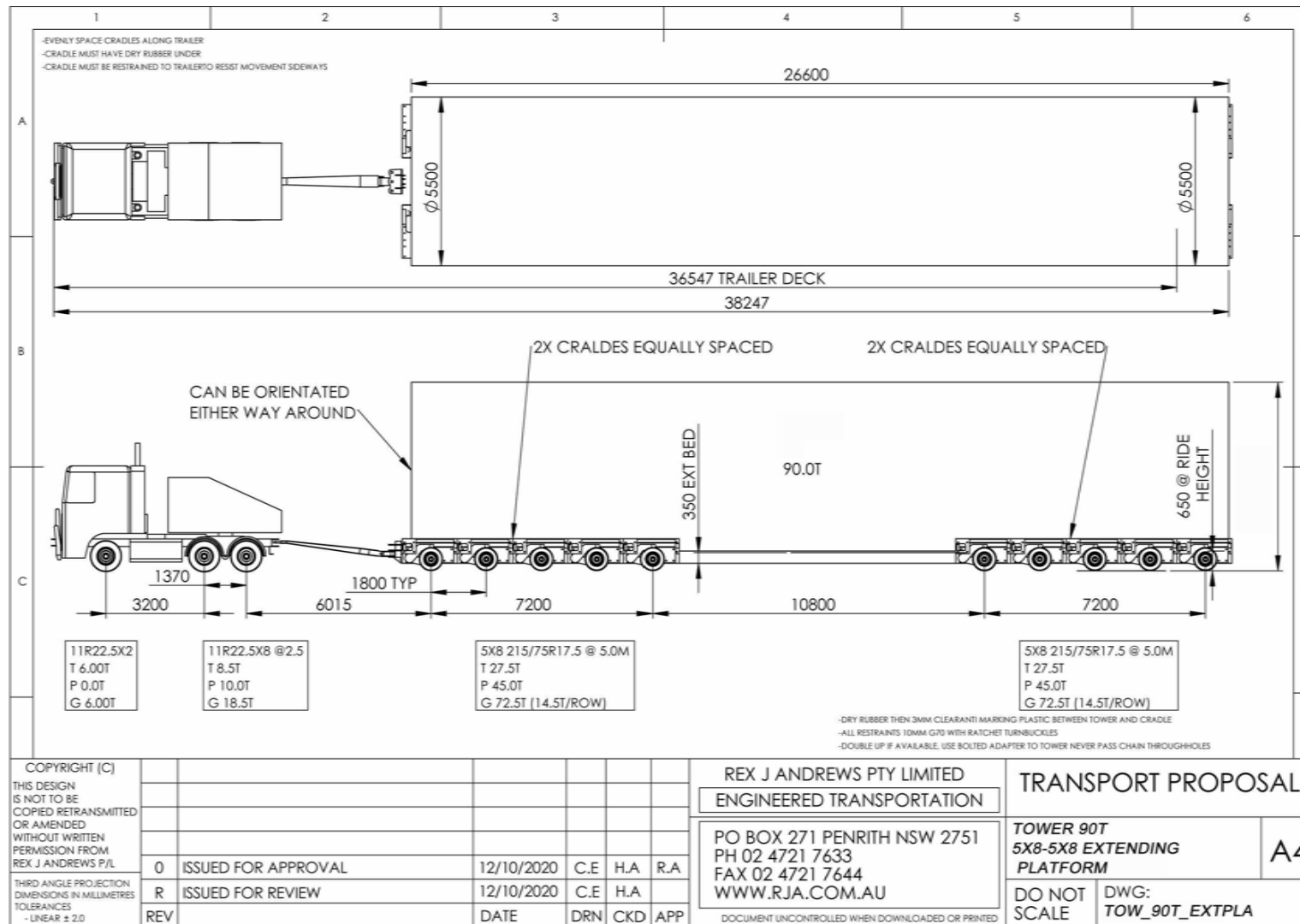


Figure 76 - Tower Trailer Extending 5x8_5x8

ROUTE STUDY
MALLEE WINDFARM - PORTLAND

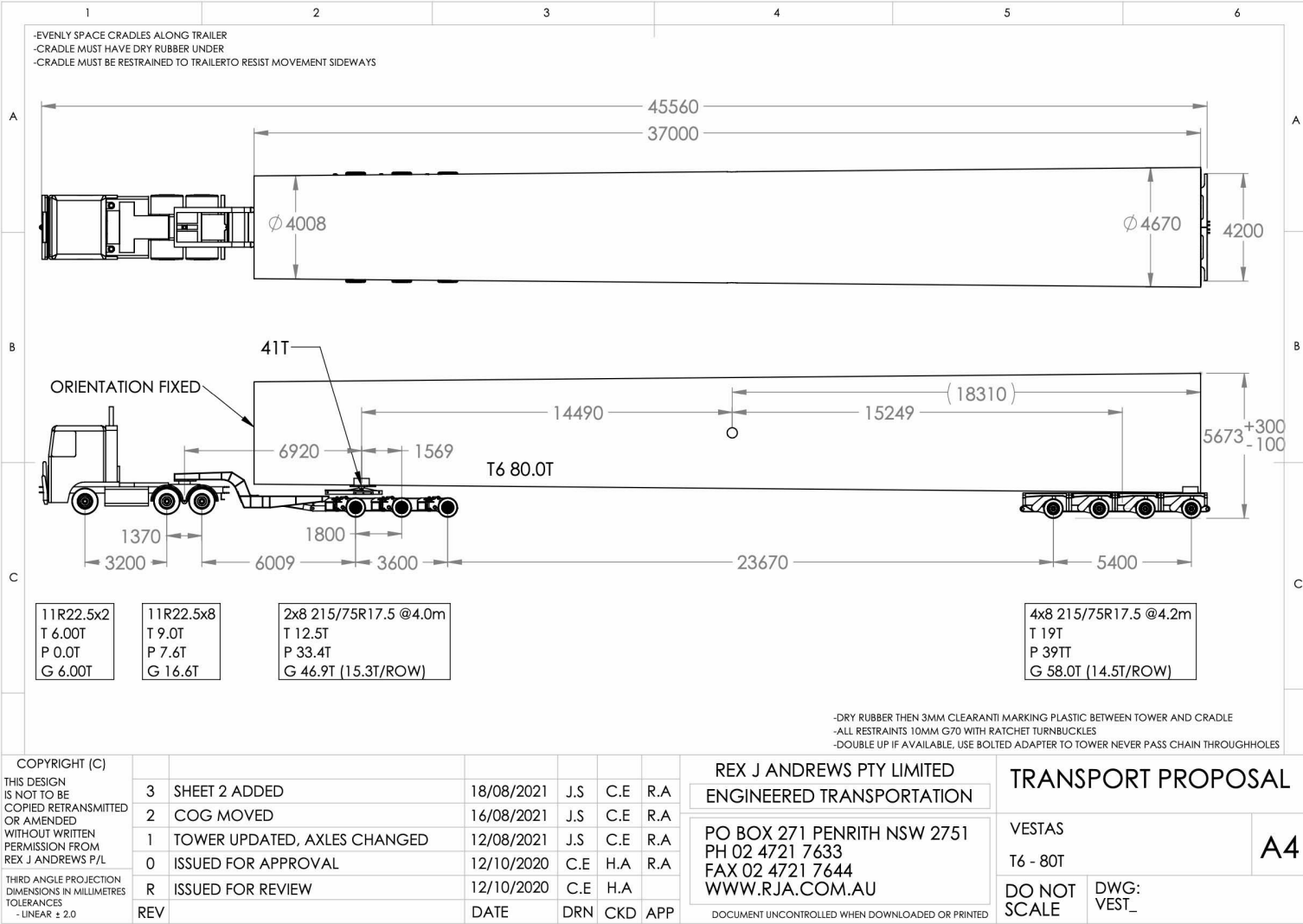


Figure 77 - Tower Trailer Dolly And Jinker

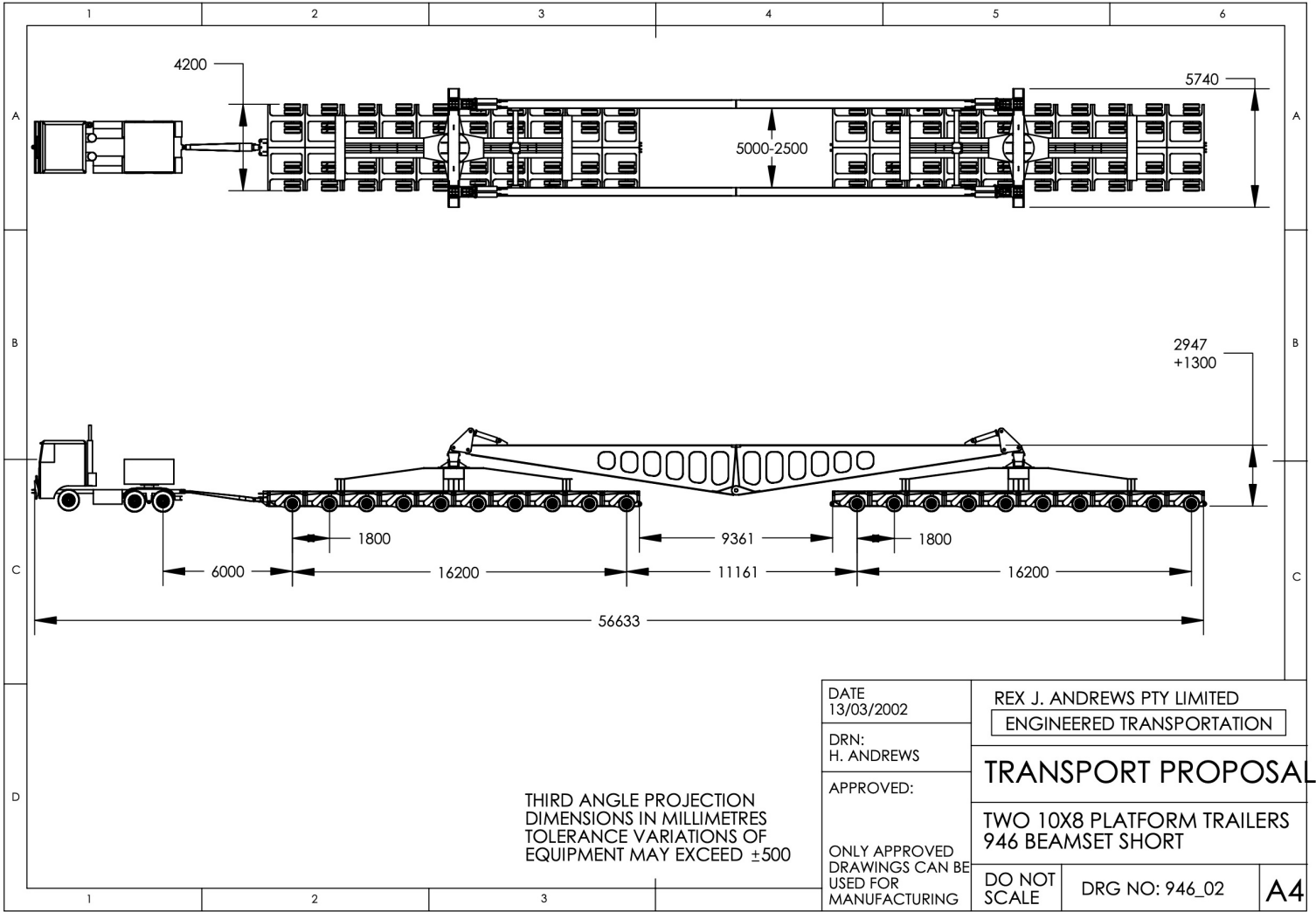


Figure 78 – 300MVA Transformer Trailer 10x8-10x8 Beamset

ROUTE STUDY
MALLEE WINDFARM - PORTLAND

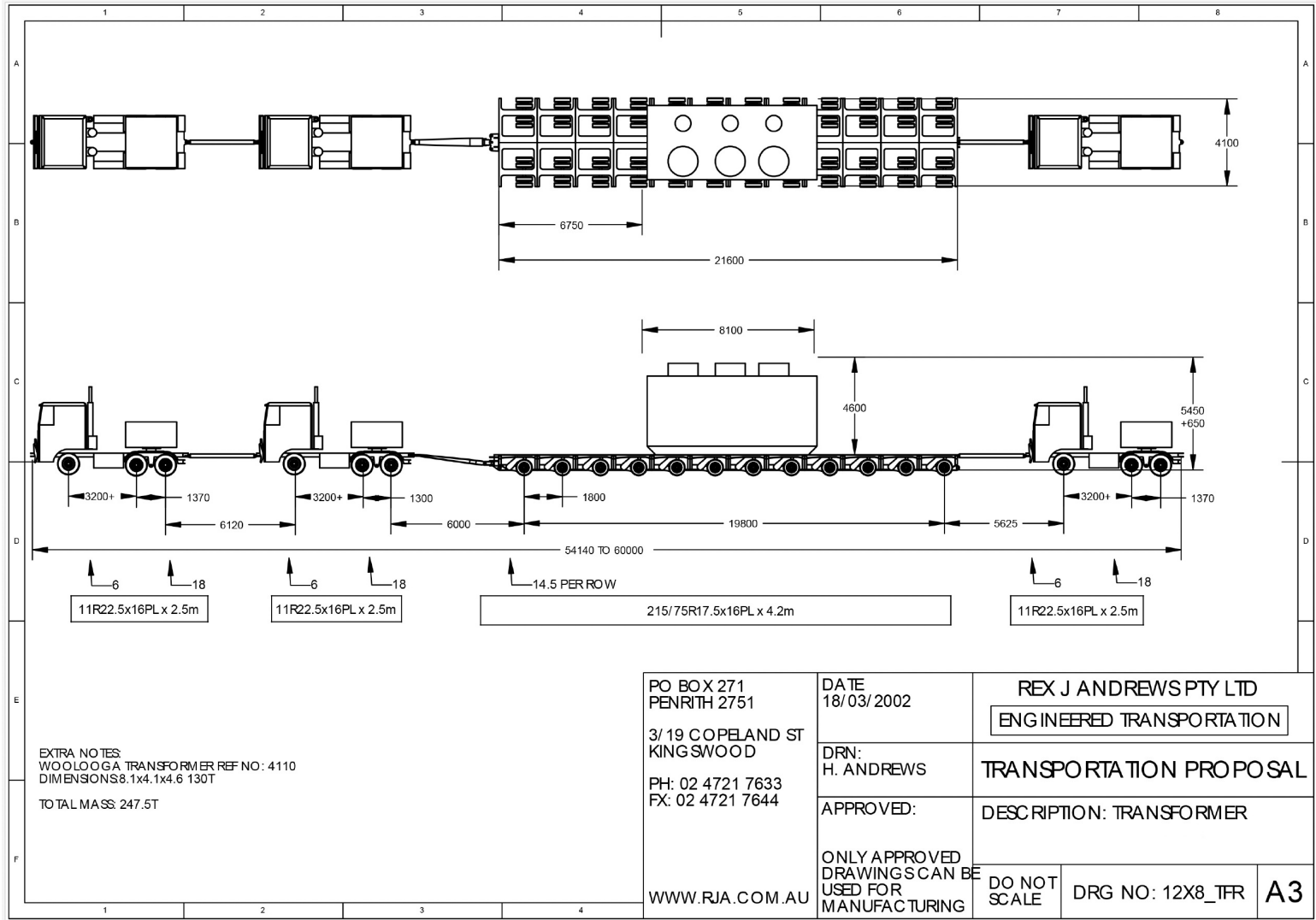


Figure 79 – 150MVA Transformer Trailer 12x8 Platform

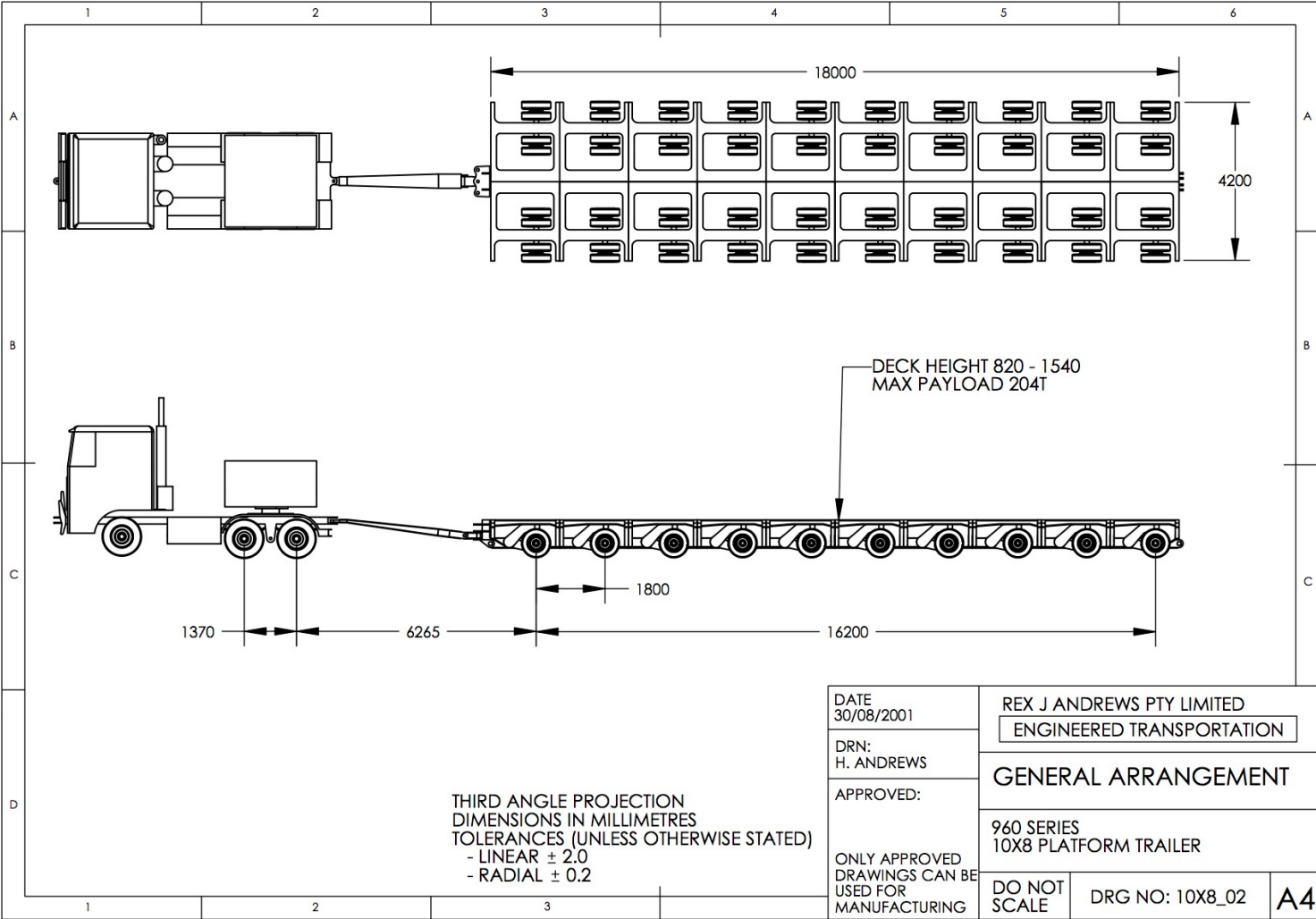


Figure 80 - Crane Trailer 10x8 Platform



P 1300 793 267 **E** info@umwelt.com.au **W** umwelt.com.au
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