



ROUTE STUDY:

PROJECT: JUNCTION RIVERS WIND FARM

EX PORT ADELAIDE

BLADE SIZE: 100 METRE

24/03/2025 REV 03

Rev	Date	Change	Responsible	Checked
00	26/03/22	Route Assessed	W Andrews	✓
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02	24/03/25	Report Updated	W Andrews	✓
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1.0 Introduction

Windlab Developments Pty Ltd (Windlab) proposes to develop the Junction Rivers Wind Farm project (the Project) to provide a reliable and affordable source of energy for the people of New South Wales (NSW) and contribute to reducing greenhouse gas (GHG) emissions associated with energy generation.

The Project is located approximately 15 kilometres (km) south of Balranald, 140 km west of Hay and 20 km northeast of the NSW and Victorian border within the southern section of the Murray-Darling Basin.

The Project is within the Murray River Council Local Government Area (LGA) and immediately east of Balranald Shire LGA. The Project is located within the South-West Renewable Energy Zone (SW REZ), which the NSW Government has identified as a target area for renewable energy development in its Transmission Infrastructure Strategy and Electricity Infrastructure Roadmap.

This study is to understand the transport route constraints for the components listed in this report and assist in planning of the windfarm layout.

This document describes observations and previous experience on route and explains the Transport of Wind turbine equipment from Adelaide to Junction Rivers Windfarm.

This study is based on a 100 Metre blade with a hub height of up to 200 metres.

This Route survey took place on the 26/03/2022 and was revised on the 07/08/2023 and again on the 07/02/2025.

2.0 Project Data

Date of latest Route Assessment: 07/02/2025

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

Project name: Junction Rivers Windfarm

Location: Port Adelaide (SA) to Burrawong (NSW)

Turbine types:

Up to 96 wind turbine generators with blades of up to 100 metres in length and a hub height of up to 200 metres. The overall tip height of the turbine is up to 300 metres.

3.0 Route Selection and 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 that is used 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	Large Amount of Work								
Route 1	Blades Only	3	4	4	3	4	2	2	3.5
Route 2	Loads under 5.2m High	1	3	3	3	4	4	4	3.0
Route 3	High Load route up to 6.4m high	1	3	3	3	4	3	4	3.0
Route 4	High Load route up to 6.4m high	1	3	3	3	4	3	4	3.0

Table 1 - Route Evaluation

The Projects largest design vehicles are associated with transportation of WTG blades and towers to site. Our analysis identifies that the largest design vehicles will need to cross into the incorrect lane at select intersections and corners (as indicated by the swept paths). Limiting the largest design vehicles to the correct lane for these intersections and corners would result in unnecessary environmental impacts and encroachment onto private land to accommodate short term OSOM vehicle

movements. On this basis the Junction Rivers Wind Farm proposes to use the complete intersection where needed i.e. the largest design vehicles would cross onto the incorrect side of the road (as indicated by the swept paths) with local traffic controlled by Police and Pilots etc. Further, and as indicated by the swept paths, the largest design vehicles will remain well within the existing pavement and within existing intersection treatments (where applicable) at the majority of intersections and corners. However, new hardstands are proposed as documented in this Route Options Assessment. The largest design vehicles will remain well within the proposed pavement and intersection treatments (where applicable).

Note: Throughout this report, references to making roundabouts, kerbs, median strips or islands 'trafficable' means physically modifying these structures to allow the truck to drive over them. While the scope of work required in each location will be determined during detailed design, in consultation with the relevant road authority, this may include partial or total removal of these structures and reconstruction or replacement with painted lines.

3.1 Route Optionality

This study considers multiple routes to provide the Project contingencies for haulage of OSOM components from the Port of Adelaide. There is opportunity to consolidate route options with Route 2 and 3 utilising Route 1 from Cullulleraine to Robinvale, as shown in section 14.1. This consolidation will only be considered if an assessment of the Robinvale bridge determines the structure is adequate to accommodate the relevant loads.

4.0 Haulage Impact Mitigation Measures

The Project will be required to manage or mitigate impacts to other road users, including other OSOM transport. The Project should develop a traffic and transport management plan that will include key transport details and should be shared with key stakeholders along the haulage routes.

Suggested mitigation measures for the Project:

- a. Avoid peak travel periods on road network with OSOM movements to minimise impact to other road users,
- b. Movement of OSOM vehicles to be scheduled to reduce OSOM interactions with other vulnerable users; the Project's Traffic and Transport assessment includes analysis of vulnerable road users including local bus routes (EIS Appendix 14 Section 5.7)
- c. Multiple route options considered for OSOM components (exc. blades) to assist in mitigating disruptions to other road users as required
- d. Development of traffic / transport management plan with relevant details (including schedule and location/s of transport) to be shared with key stakeholder including other major road users and locals:
 - i. A TMP will be prepared and include key safety initiatives:
 1. Driver Code of Conduct
 2. OSOM vehicle operating protocols (including use of UHF while transporting to notify road users ahead)
 3. Key information relating to road safety to be provided to all staff
 4. Consultation with road stakeholders and local authorities regarding delivery of OSOM
 5. Suitable signage provided to advise road users
 - i. Communication of TMP, notably the transport schedule and locations, may include:
 1. Online via website
 2. Shared directly with transport companies, road stakeholders and emergency services
 3. Shared directly (and/or Face-to-Face consultation) with involved hosts, neighbours and local community
 4. Informing via media (newspaper and online), emails, letterbox drops/newsletters
 5. Provide contact details including out of hours contact information to key stakeholder (residents, schools, public activities and businesses)
- e. OSOM traffic travelling in opposite directions will be managed via UHF communication and pilots/escorts, the OSOM convoys are able to communicate and identify opportunities to pass.
- f. Vehicles travelling behind OSOM are managed with the use of pilot or police vehicles that will clear traffic at regular intervals (for example, every 15kms) to ensure traffic is able to pass safely

5.0 Port of Import

The wind turbine equipment will be imported from various countries and will arrive on ships into the Port of Adelaide. The client may alternately source local towers. The ideal berth for these shipments is the Berth 18-20 Inner Harbor. This facility has a hardstand storage area of roughly 20,000 s/q meters, adjacent to the berth.

Access from the storage to the public roads, is via Ocean Steamers drive. This route will require some upgrades to accommodate a 100m blade.



Figure 1 - Port of Adelaide and Storage Area

6.0 Junction Rivers Windfarm Site Location

This proposed Junction Rivers wind farm development is located approximately 15 kilometres (km) south of Balranald, in southwest New South Wales. Access is via Balranald Road. The Project Area is within the Murray Region of New South Wales (NSW)

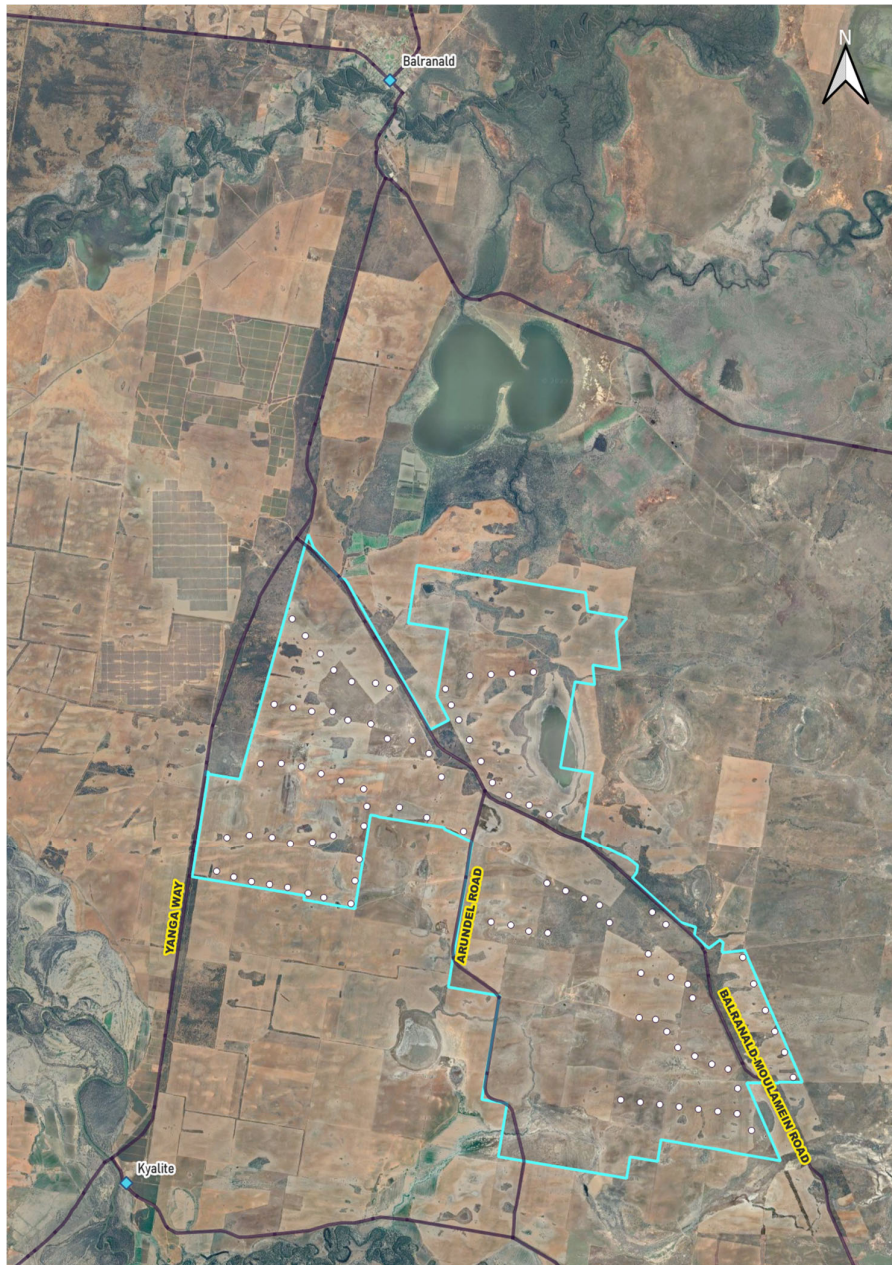


Figure 2 – Junction Rivers Windfarm

7.0 Transport Summary

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

The study has chosen 4 routes based on the type of turbine component that needs to be delivered from the port of import through to the windfarm. Route 1 is specifically for the blades. Route 2 is for the components up to 5.2 metres in height. Routes 3 & 4 are the 2 options for the high tower sections.

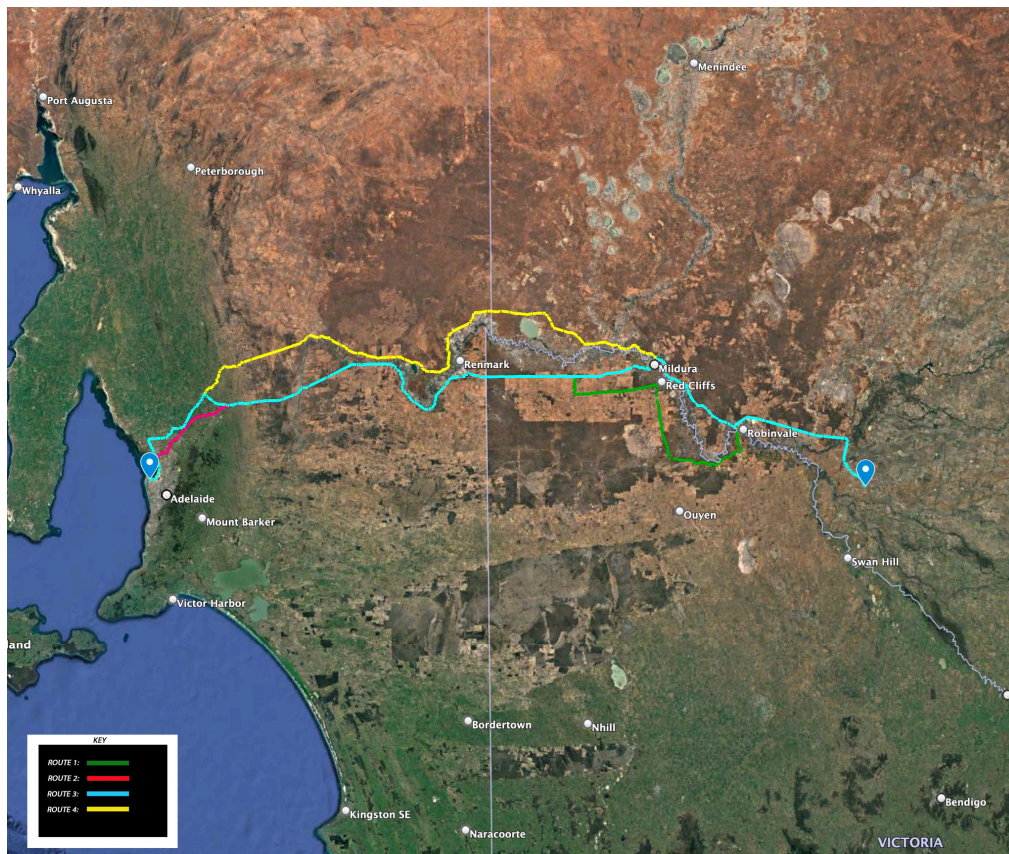


Figure 3: Routes from Pt Adelaide to Junction River WF

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm



ROUTE 1: Port Adelaide SA to Junction Rivers Windfarm NSW via Robinvale.

COMPONENTS: Blades only

DISTANCE: 658 kilometres

GPS LINK: <https://maps.app.goo.gl/f8y6PMEPu939C75w9>

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Werrimull N Rd, Millewa Rd, Calder Hwy, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Yanga Way, Balranald Road.

ROUTE 2: Port Adelaide SA to Junction Rivers Windfarm NSW via Mildura.

COMPONENTS: Components with a **Max loaded height 5.2 metres**

DISTANCE: 610 kilometres

GPS LINK: <https://maps.app.goo.gl/DDCP2zgijieWsGkE8>

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Yanga Way, Balranald Road.

ROUTE 3: Port Adelaide SA to Junction Rivers Windfarm NSW, High load option 1

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 641 kilometres

GPS LINK: <https://maps.app.goo.gl/t9y1Q6n8RGWVi8s99>

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Drogemuller Road, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.

ROUTE 4: Port Adelaide SA to Junction Rivers Windfarm NSW, High load option 2

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 659 kilometres

GPS LINK: <https://maps.app.goo.gl/n87wjSd8tn6y6pt18>

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Road, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy Road, Thiele Hwy, East Terrace, Thiele Hwy, Goyder Hwy, Sturt Hwy, Airport Rd, Government Rd, Ral Ral Ave, Wentworth-Renmark Rd, Renmark Rd, Silver City Hwy, Armstrong Ave, Silver City Hwy, Sturt Hwy, Yanga Way, Balranald Road.

8.0 Route 1 Study: Port Adelaide, SA to Junction Rivers Windfarm, NSW via Robinvale

COMPONENTS: Blades

DISTANCE: 658 kilometres

GPS LINK: <https://maps.app.goo.gl/f8y6PMEPu939C75w9>

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Werrimull N Rd, Millewa Rd, Calder Hwy, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Yanga Way, Balranald Road.

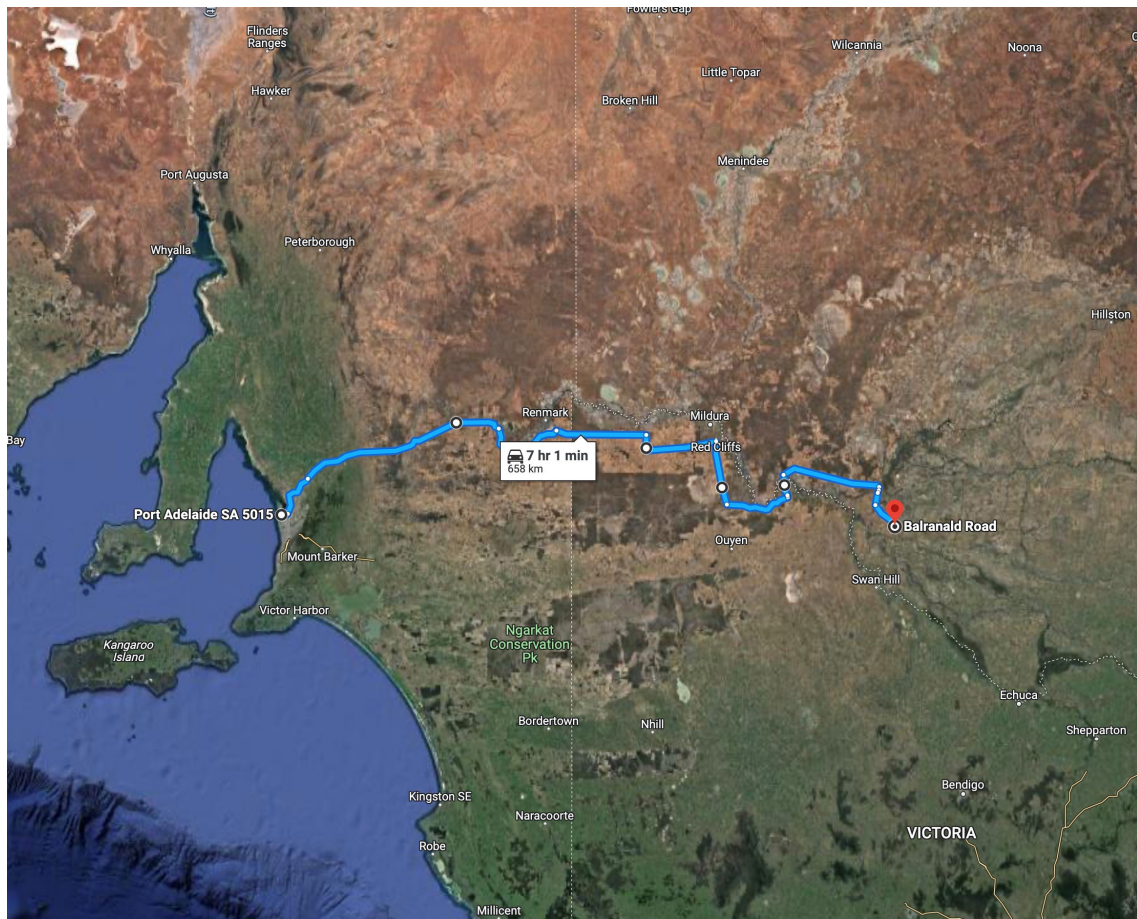


Figure 4 - Route 1 - Blades

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KEY	
PINCH POINT	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide, SA	Intersection of Ocean Steamers Rd and Eastern Pde GPS Link: https://goo.gl/maps/3M2e0t2BvuzTb3G80	9.9 metres wide at gate	Slight right hand turn	The perimeter fence will need to be modified to allow transit. Sign to be made removable and overhead conductor clearances confirmed.
0.2	Port Adelaide	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UFZLw4DkKzRyTzd9	Length: 80.0 metres Width: 7.0 metres Height: N/A	Travel directly ahead	Height of 3 signals to be checked for blade tip clearance. Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.75	Port Adelaide, SA	Eastern Parade onto Port River Expressway GPS Link: https://goo.gl/maps/00r7XGz7qy1A1N3v0	80 metres	Left Hand Merge	To enable the blade to make this corner 1 x light poles and 1x street sign need to be removed. An area of hardstand is also required on the outside of the corner on the Port River on ramp. The blade tip will hang over the drain on the outside of the corner and traffic light on centre island. Blade must be able to lift over traffic signals (4m) The area must be clear of obstacles.
5.65	Dry Creek, SA	Port River Expressway onto North-South Motorway GPS Link: https://goo.gl/maps/tnXSxEvy2zhvWHnLA	120 metres	Left Hand merge	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
21.05	Burton, SA	North-South Mwy onto Northern Expy, Sturt Hwy GPS Link: https://goo.gl/maps/23zth7ZxmiDCFotY7	120 metres	Left hand bend	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
21.05 to 42.6	Burton to Gawler, SA	Northern Expressway GPS Link: https://goo.gl/maps/GbEiYz81FUAdJh4Q7	Bridge heights: 5.2 metres clearance	Travel directly ahead	Loads are not to exceed 5.2 metres in height on this section of road.
42.6	Gawler, SA	Northern Expressway onto Sturt Highway GPS Link: https://goo.gl/maps/cG4yPULRZKy4V73h9	120 metres	Travel directly ahead	No problems with this section of road.
45.0	Gawler, SA	Sturt Highway under Redbanks Road GPS Link: https://goo.gl/maps/n2aHh6MwHyCeMRH9	Bridge height: 5.2 metres clearance	Travel directly ahead	Loads to slow for this bridge if over 5.0 metres in height. Loads exceeding 5.2 will need to stop and lower to 5.2 metres to travel under this structure.
45.0	Nuriootpa, SA	Sturt Highway under Sir Condor Laucke Way GPS Link: https://goo.gl/maps/J2DaymuDAmZK2PYs8	Bridge height: LHS: 6.15 Centre: 5.8m RHS: 5.6	Travel directly ahead	Loads to slow for this bridge if over 5.5 metres in height. Loads exceeding 6.0m will need to stop and lower to 6.0 metres to travel under this structure.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
85.2	Truro, SA	Sturt Highway GPS Link: https://maps.app.goo.gl/rJdEaaSMzPzzgceW7	Length: 100.0 metres Width: 8.0 metres	Right hand bend	Spotter to assist load at this pinch point
132.05	Accommodation Hill, SA	Sturt Highway at Baldon road rest area GPS Link: https://maps.app.goo.gl/maTZaskK4SVgslav88	100.0 metres long 10.0 metres wide	Left hand merge	Emergency parking for the blades
208.75	Kingston on Murray, SA	Sturt Highway onto Kingston Road GPS Link: https://goo.gl/maps/cvatfMBJpqWNRudqp8	110 metres	Right Hand Turn	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
244.3	Loxton, SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqgneMAHa8ew7Gg9	120 metres	Travel directly ahead	No problems with this section of road.
246.45	Loxton, SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/gZXFUllf5sc2oGxcPA	80 metres	Second exit on Roundabout	Hardstand is required on the edge of the roundabout so the blade can cut straight across. 2x signs need to be made removable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
256.35	Bookpurnong, SA	Bookpurnong Road onto Stanitzki Road GPS Link: https://goo.gl/maps/4D9S2wy8wpSkWqCG8	120 metres	Right Hand Turn	Vegetation on the outside of the corner will need to be checked before deliveries commence. Some trimming may be required. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
284.45	Pike River, SA	Stanitzki Road onto Sturt Hwy GPS Link: https://goo.gl/maps/CuNooMy7B3cJ8MAUA	60 metres	Right Hand Turn	A large amount of hardstand is required on the inside of the corner. Existing shoulder on entry to be made trafficable. Vegetation on the outside of the corner to be trimmed or removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
287.40	Yamba, SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJJ7	150.0 metres long 8.0 metres wide	Left Hand Merge	Suitable parking for the blades.
321.80	Meringur, Vic	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDegxcSf6pt5A	100.0 metres long 6.0 metres wide	Left Hand Merge	Emergency parking for the blades
355.5	Cullulleraine, Vic	Sturt Hwy onto Werrimull N Rd GPS Link: https://goo.gl/maps/mEXbnCwPCDYMM4fj8	60 metres	Right Hand Turn	Hardstand is required on the outside of the corner. Numerous trees will need to be removed to allow the tail swing to pass. 2x signs need to be made removable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
368.1	Werrimull, Vic	Werrimull N Rd onto Millewa Rd GPS Link: https://goo.gl/maps/obd9t9RS5b7q5uB9	80 metres	Left Hand Turn	Hardstand is required on the entry and inside of the corner. 1x sign needs to be made removable. Vegetation to be removed or trimmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
422.6	Red Cliffs, Vic	Bend on Millewa Rd GPS Link: https://goo.gl/maps/4v6M06CbY3aG7Wl	50 metres	Right Hand Turn	Hardstand to be installed on inside and outside of corner. Signs removed and vegetation trimmed as required. Overhead conductor clearance to be confirmed.
422.7	Red Cliffs, Vic	Millewa Rd onto Calder Hwy GPS Link: https://goo.gl/maps/RmiZ2EuQW5Nobkcl	50 metres	Right Hand Turn	The sharp right hand turn on to the Calder highway will need a significant amount of work, including a new bypass road and a new rail crossing. Signs and obstacles to be removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
474.2	Hattah, Vic	Calder Hwy GPS Link: https://goo.gl/maps/R26CpzXrFJYpJ6TB9	100.0 metres long 10.0 metres wide	Left Hand Merge	Emergency parking for the blades
474.5	Hattah, Vic	Calder Hwy onto Hattah-Robinvale Rd GPS Link: https://goo.gl/maps/Z6zEDLCo71tpPZUGZ	50 metres	Left Hand Turn Via new bypass road	New bypass road to be installed, vegetation removed and trimmed as required. Overhead conductor clearance to be confirmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
527.7	Bannerton, Vic	Hattah-Robinvale Rd onto Robinvale-Sea Lake Rd GPS Link: https://goo.gl/maps/4FwG4Jh1Qj95TX16	80 metre	Left Hand Turn	Hardstand is required on the centre island and 6x signs will need to be made removable. Delineators made removable, Vegetation trimmed as required. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
527.8	Bannerton, Vic	Robinvale-Sea Lake Rd GPS Link: https://maps.app.goo.gl/M4GOrt2NGNGqshNY6	120.0 metres long 10.0 metres wide	Right Hand Merge	Suitable parking for the blades.
540.9	Robinvale, Vic	Robinvale-Sea Lake Rd turns into Murray Valley Hwy GPS Link: https://goo.gl/maps/55pknuwKNHsoA1vdA	120 metres	Continue Straight	No issues with this section
543.6	Robinvale, Vic	Murray Valley Highway over the Euston-Robinvale Bridge https://goo.gl/maps/uKnaIBJZG5yVVVVJQ9	Width: 8.0 metres	Continue straight	TfNSW have advised that the structure is suitable for OSOM loads. However, a bridge assessment will be required to cross this structure.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
546.0	Euston, NSW	Murray Valley Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/rbhwjtuN6VtAAWX3eA	50 metres	Right Hand Turn	This is a very tight corner that cuts back on itself. A large amount of hardstand is required. The new alignment will need a lot of fill to bring it level with the highway. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
561.0	Meilman East area, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MOsEdXDrQGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
623.7	Balranald, NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4Zrbu0kqgFvVz7	50 metres	Right Hand Turn	This section is very tight. A large area of hardstand will be required along with the removal of trees, light poles and numerous signs. Median strip to be made trafficable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
626.7	Balranald, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/qpK5mgXJGFK2tqNk9	100.0 metres long 8.0 metres wide	Merge left	Emergency parking for the blades
636.8	Yanga, NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/LymdHJ77M3pGdAA	70 metres	Left Hand Turn	An area of hardstand is required on the inside of the corner. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
645.8	Kyalite, NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/bvFUKmM2PL_bu0rJ8		Site Entrances	Some vegetation may need to be trimmed/removed on the inside and outside of this corner. The first site entrances are proposed in this location. The land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.
659.0	Moolpa, NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/HBQzRGMFgskXDHyE9		Site Entrances	The western site entrances are proposed in this location. As with the eastern entrances the land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

0.0 Km's: Exiting the Port Storage Area onto Eastern Parade, SA.

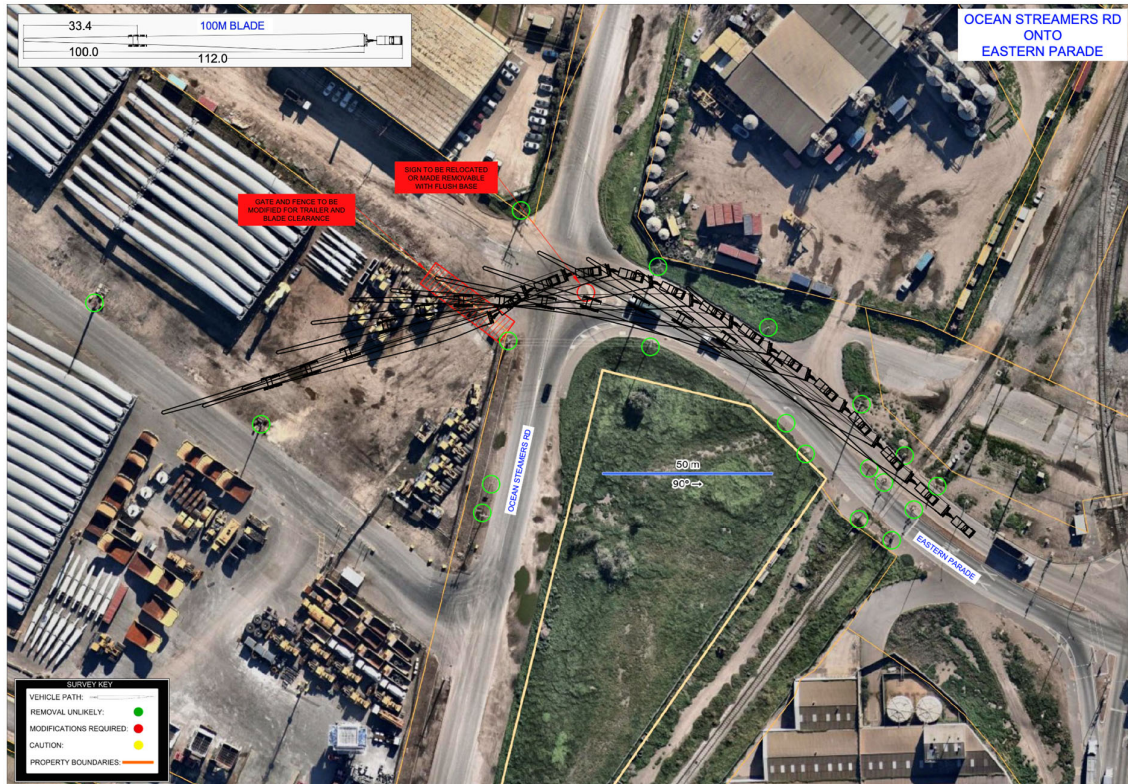


Figure 5 - Exiting the Port Storage Area onto Eastern Parade, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/RMGe61BrczTbEQR8>

PROCEDURE: Slight right hand turn.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, the perimeter fence will need to be modified to allow transit. Sign to be made removable and overhead conductor clearances confirmed.

0.20 Km's: Eastern Parade over rail crossings in Port Adelaide

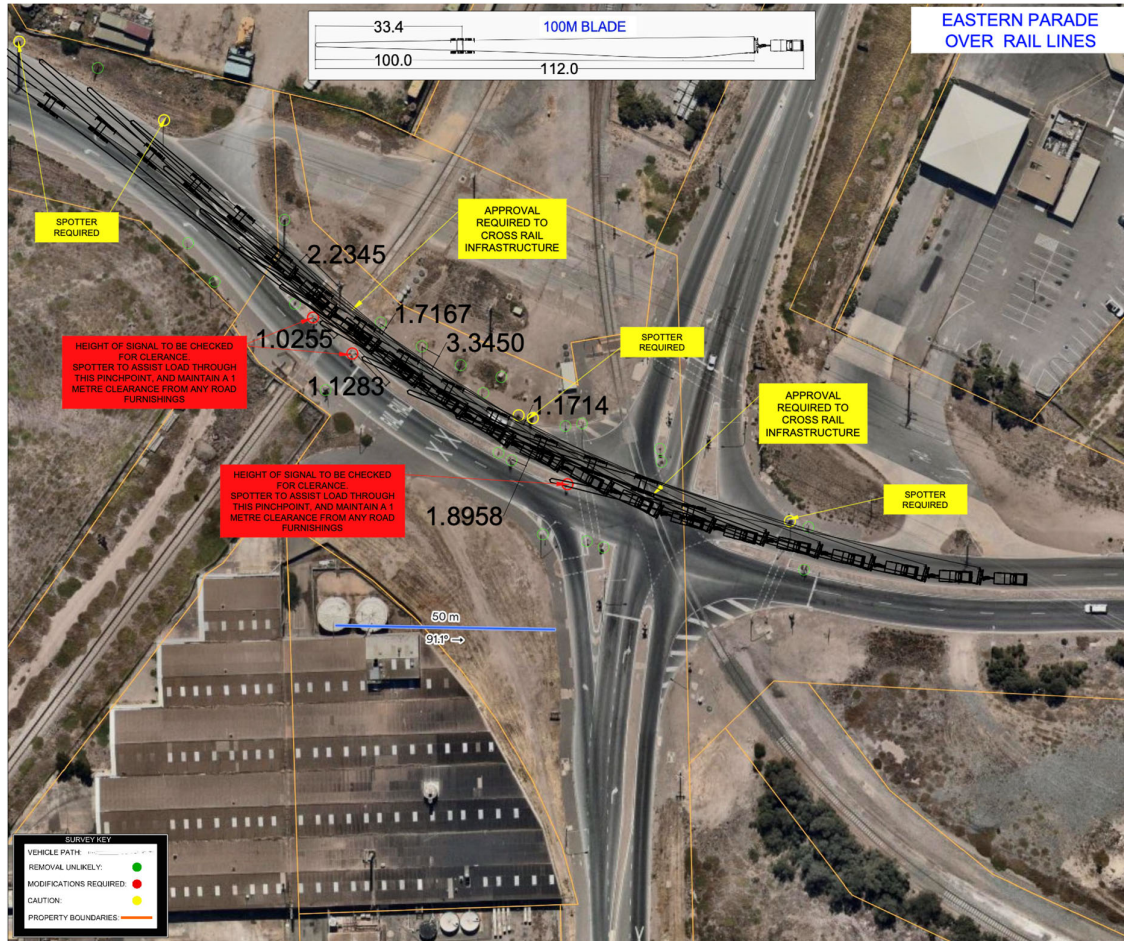


Figure 6 - Eastern Parade over rail crossings

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/UfZfLvNDkKxRyTed9>

PROCEDURE: Travel directly ahead over 2 rail crossings.

COMMENTS: The height of 3 signals needs to be checked for the blade tip height clearance.

Rail protection officer to be present for each blade movement. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, a moderate amount of work is likely.

0.75 Km's: Eastern Parade onto Port River Expressway, SA.

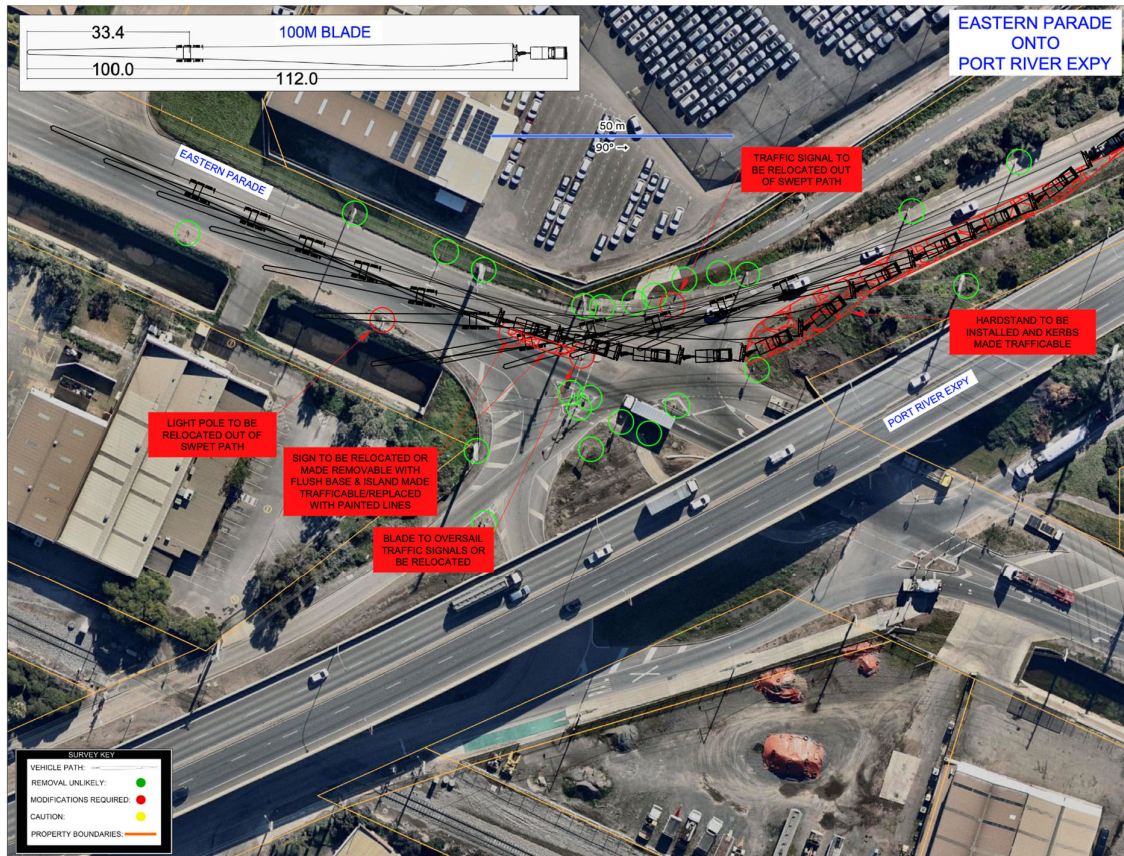


Figure 7 - Eastern Parade onto Port River Expressway, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/ora7XGzZqv1zLN3v6>

PROCEDURE: Left hand merge onto Port River Expressway.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. To enable the blade to make this corner 1 x light poles and 1x street sign need to be removed. An area of hardstand is also required on the outside of the corner on the Port River on ramp. The blade tip will hang over the drain on the outside of the corner and traffic light on centre island. Blade must be able to lift over traffic signals (4m) The area must be clear of obstacles.

85.2 Km's: Sturt Highway at Truro



Figure 8 – Sturt Highway at Truro

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/rJuEaaSMzPzzgeeW7>

PROCEDURE: Right hand bend.

COMMENTS: Spotter to guide the load throughout this pinchpoint. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Nil.

208.75 Km's: Sturt Highway onto Kingston Road at Kingston on Murray, SA.

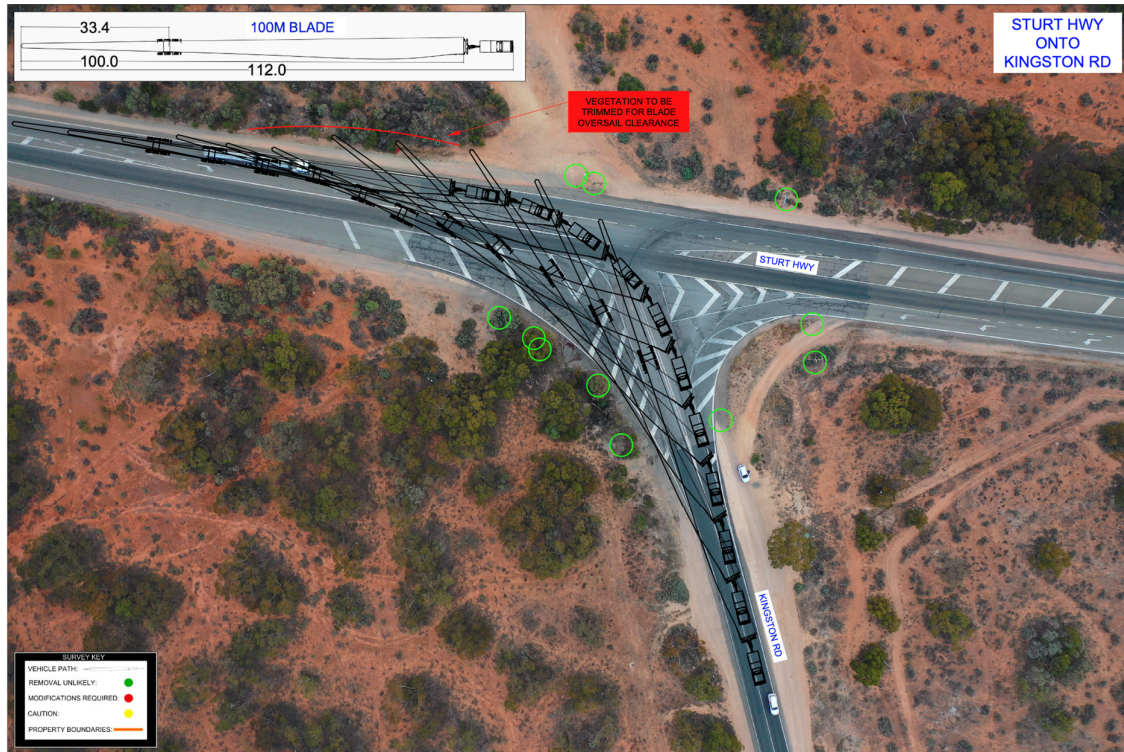


Figure 9 - Sturt Highway onto Kingston Road at Kingston, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/cvafMBJpqWNRudqp8>

PROCEDURE: Right hand turn

COMMENTS: No issues with this corner.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: No work is required.

246.45 Km's: Karoonda Hwy Roundabout in Loxton, SA.



Figure 10 - Karoonda Hwy Roundabout in Loxton, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/gZXFU8r5scZwGxqPA>

PROCEDURE: Travel straight ahead using the hardstand installed on the roundabout and continue on Karoonda Hwy

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the edge of the roundabout so the blade can cut straight across. 2x signs need to be made removable.

256.35 Km's: Bookpurnong Road onto Stanitzki Road at
Loxton North, SA.



Figure 11 - Bookpurnong Road onto Stanitzki Road, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4D9S2wy8wpSkWqCG8>

PROCEDURE: Right hand turn

COMMENTS: Vegetation on the outside of the corner will need to be checked before deliveries commence. Some trimming may be required.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: No work is required.

284.45 Km's: Stanitzki Road onto Sturt Highway at Pike River, SA.

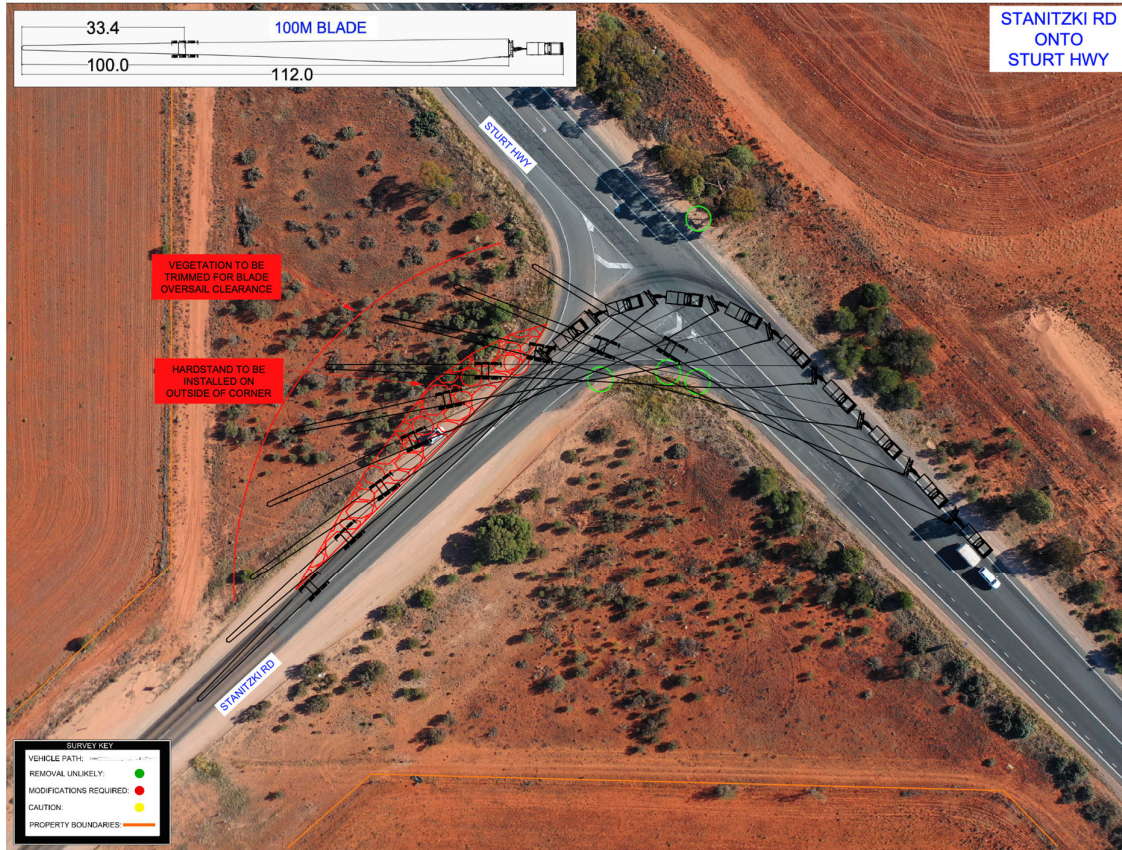


Figure 12 - Stanitzki Road onto Sturt Highway, SA.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/QtyNogMy3b9zq8MAUA>

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. A large amount of hardstand is required on the inside of the corner. Existing shoulder on entry to be made trafficable. Vegetation on the outside of the corner to be trimmed or removed.

355.50 Km's: Sturt Highway onto Werrimull N Road at Cullulleraine, Vic.

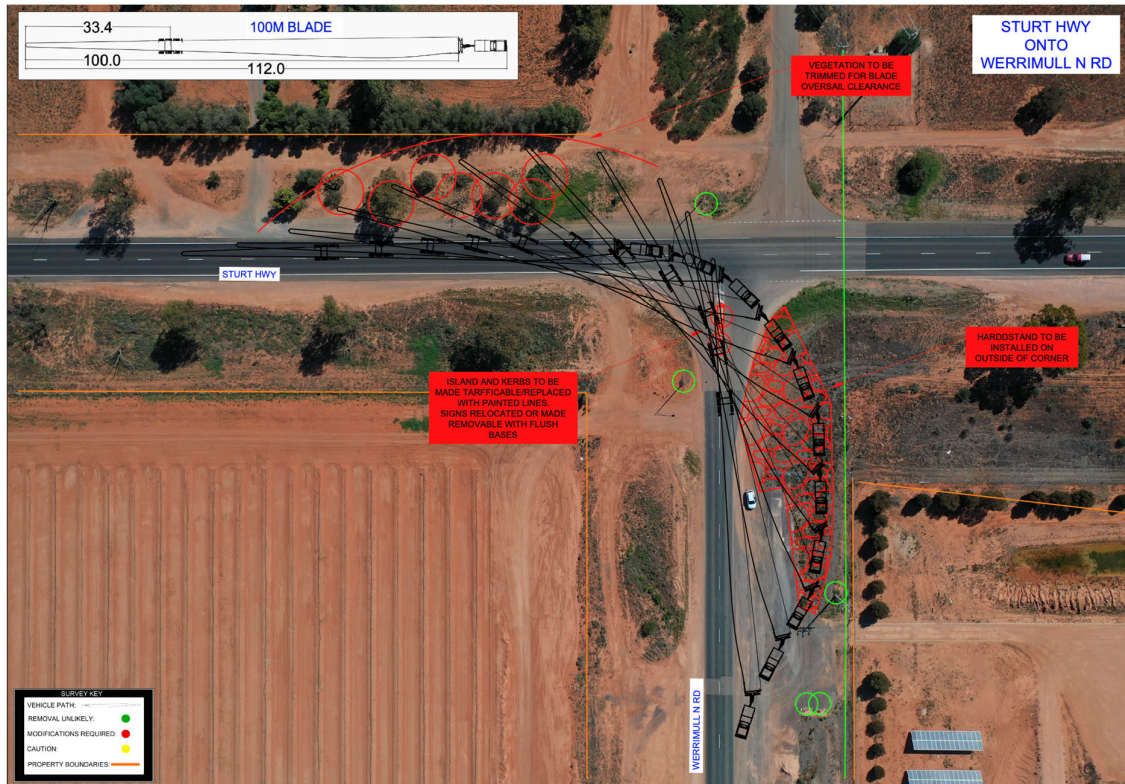


Figure 13 - Sturt Highway onto Werrimull N Road, Vic.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/mEXbnEwPCDYMM4Fh8>

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the outside of the corner. Numerous trees will need to be removed to allow the tail swing to pass. 2 x signs need to be made removable.

368.10 Km's: Werrimull N Road onto Millewa Road at Werrimull, Vic.

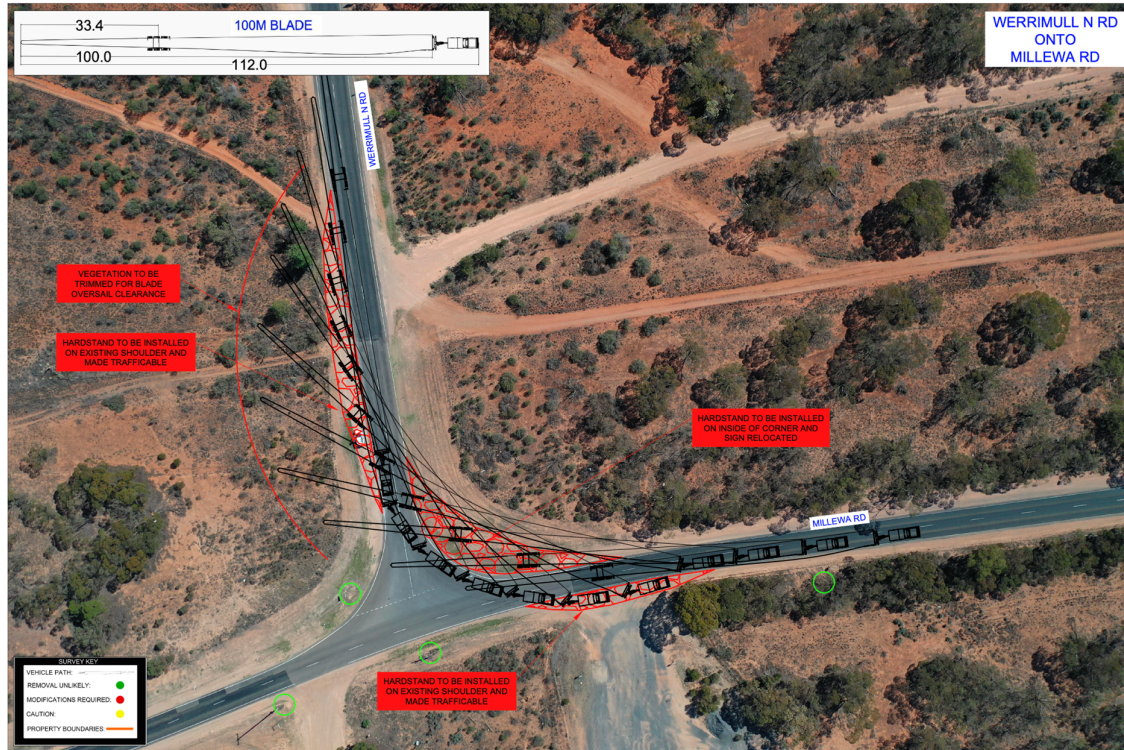


Figure 14 - Werrimull N Road onto Millewa Road, Vic.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/ohs9s9RSbbfqi5uN9>

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the entry and inside of the corner. 1x sign needs to be made removable. Vegetation to be removed or trimmed.

422.60 Km's: Right hand bend on Millewa Road before rail crossing, Vic.

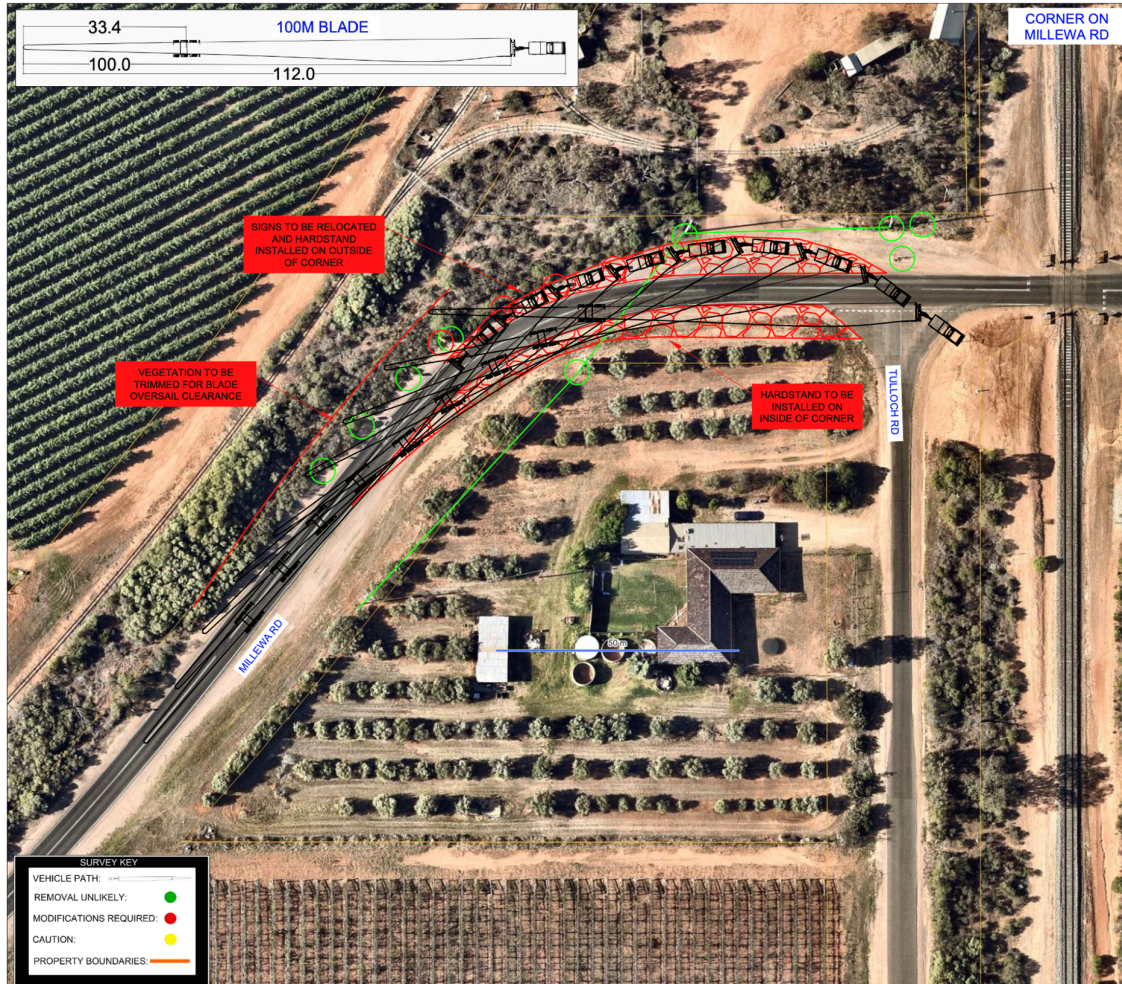


Figure 15 - Right hand bend on Millewa Road, Vic.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4VgMQjQQvY3arG786>

PROCEDURE: Right hand bend then sharp right hand turn over the rail crossing.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand to be installed on inside and outside of corner. Signs removed and vegetation trimmed as required. Overhead conductor clearance to be confirmed.

422.70 Km's: Millewa Road onto Calder Hwy, Vic.

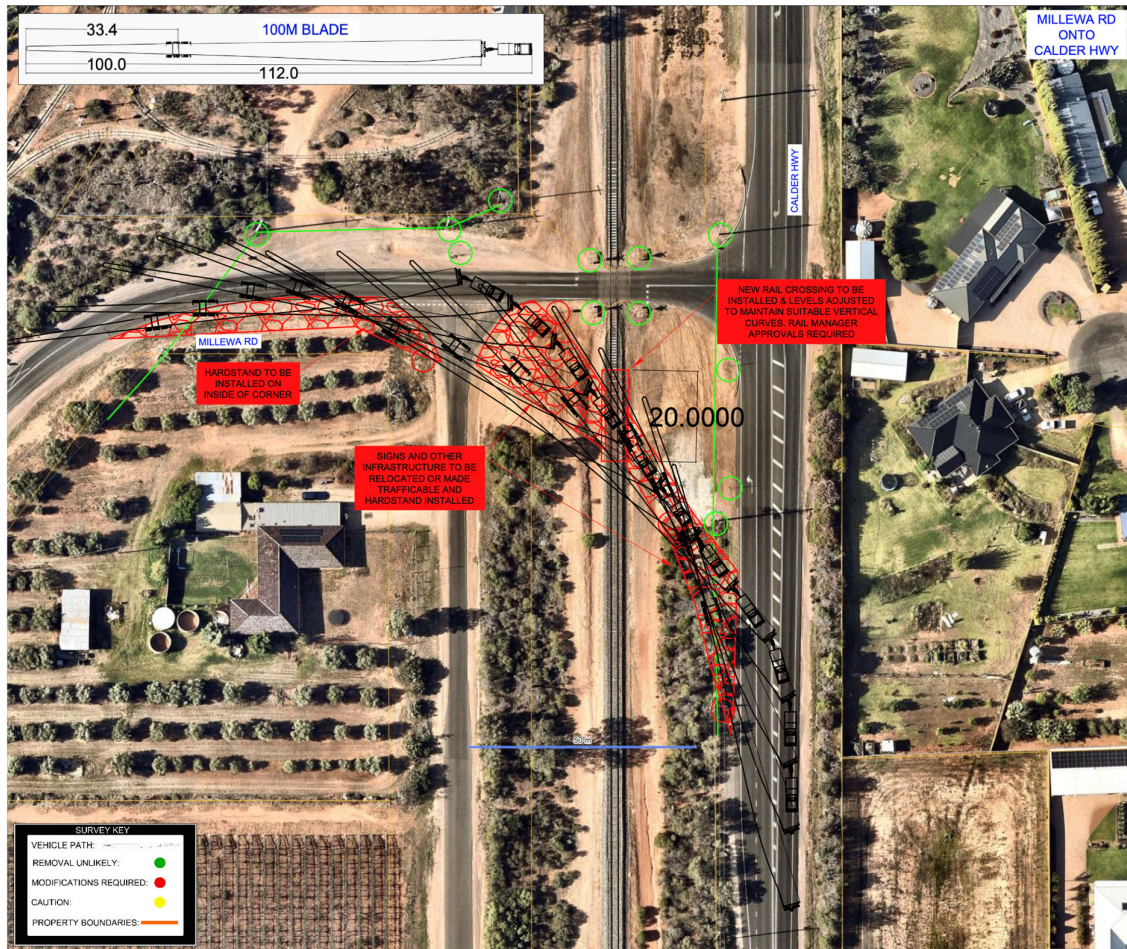


Figure 16 - Millewa Road onto Calder Hwy, Vic.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Rm6ZZEukQW5Nmbkc8>

PROCEDURE: Right hand bend then sharp right hand turn over new rail crossing.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. The sharp right hand turn on to the Calder highway will need a significant amount of work, including a new bypass road and a new rail crossing. Signs and obstacles to be removed.

474.5 Km's: Calder Highway onto Hattah-Robinvale Road at Hattah, Vic.

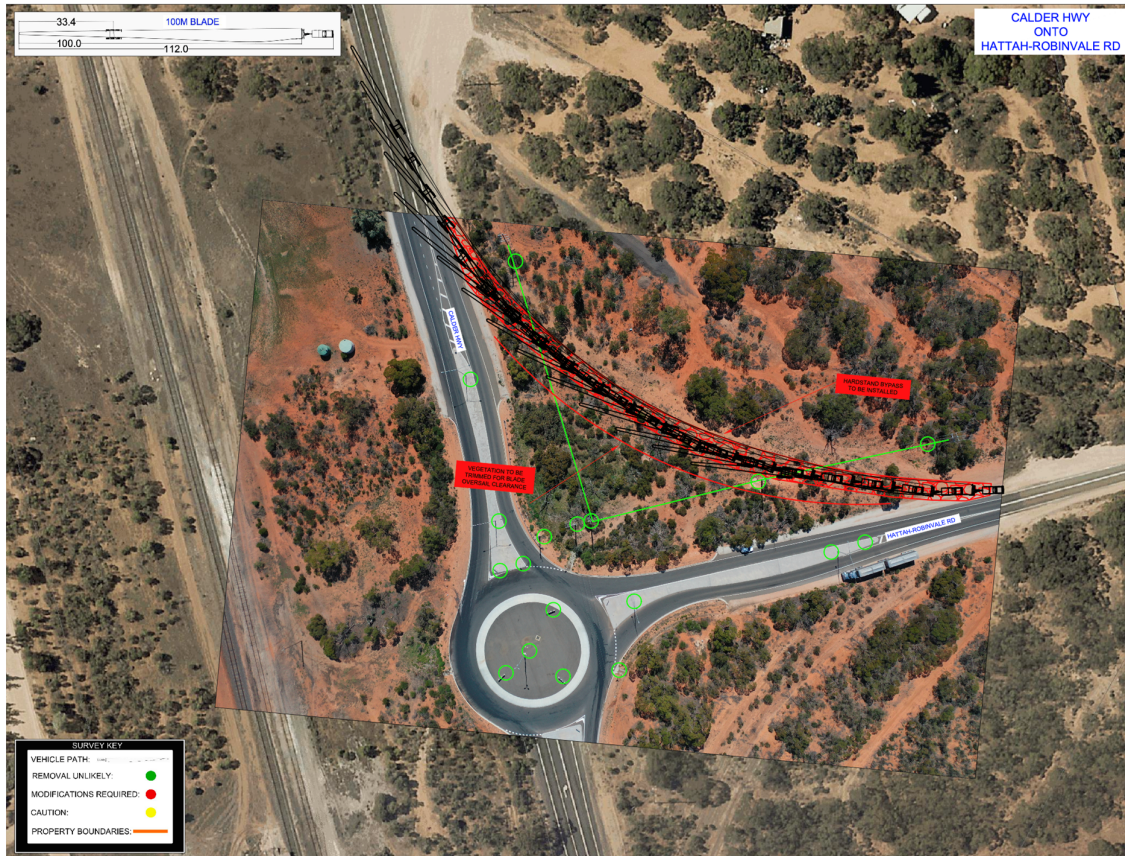


Figure 17 - Calder Highway onto Hattah-Robinvale Road, Vic.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Z6zEDLCq71fpPZU27>

PROCEDURE: Left hand turn at the roundabout

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. New bypass road to be installed, vegetation removed and trimmed as required. Overhead conductor clearance to be confirmed.

527.7 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road at Bannerton, Vic.



Figure 18 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road, Vic.

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

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the centre island and 6x signs will need to be made removable. Delineators made removable, Vegetation trimmed as required.

546.00 Km's: Murray Valley Highway onto Sturt Highway at Euston, NSW.

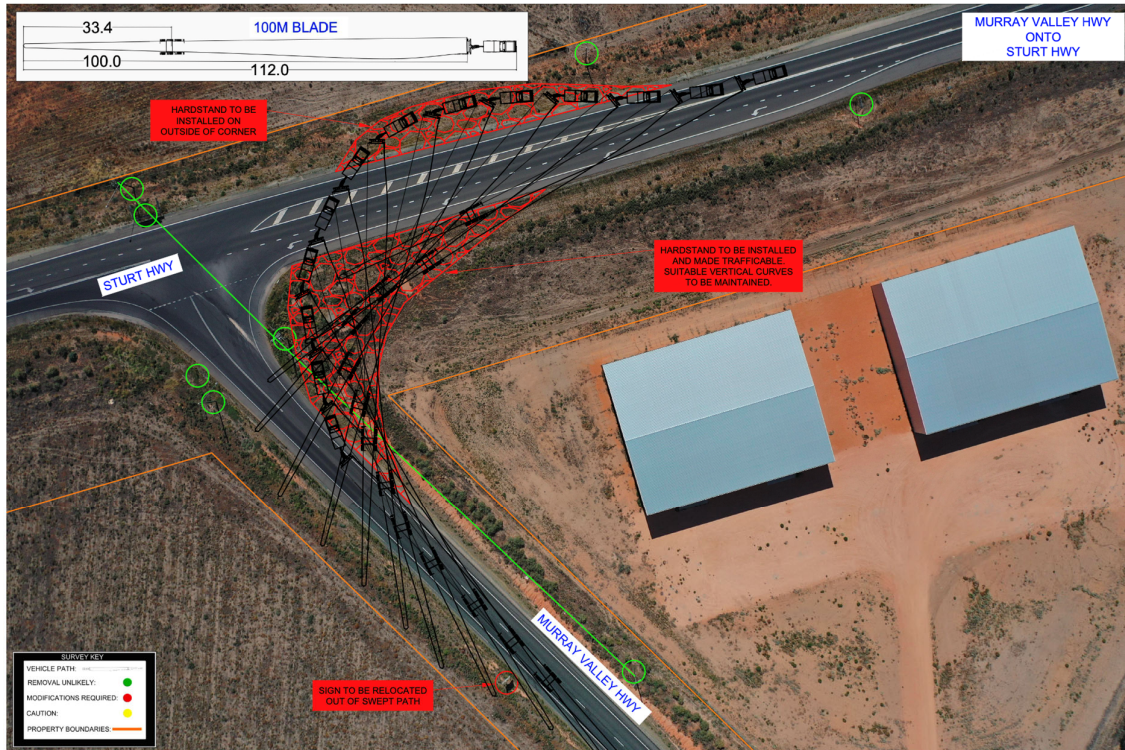


Figure 19 - Murray Valley Highway onto Sturt Highway, NSW.

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

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. This is a very tight corner that cuts back on itself. A large amount of hardstand is required. The new alignment will need a lot of fill to bring it level with the highway.

Option 2:

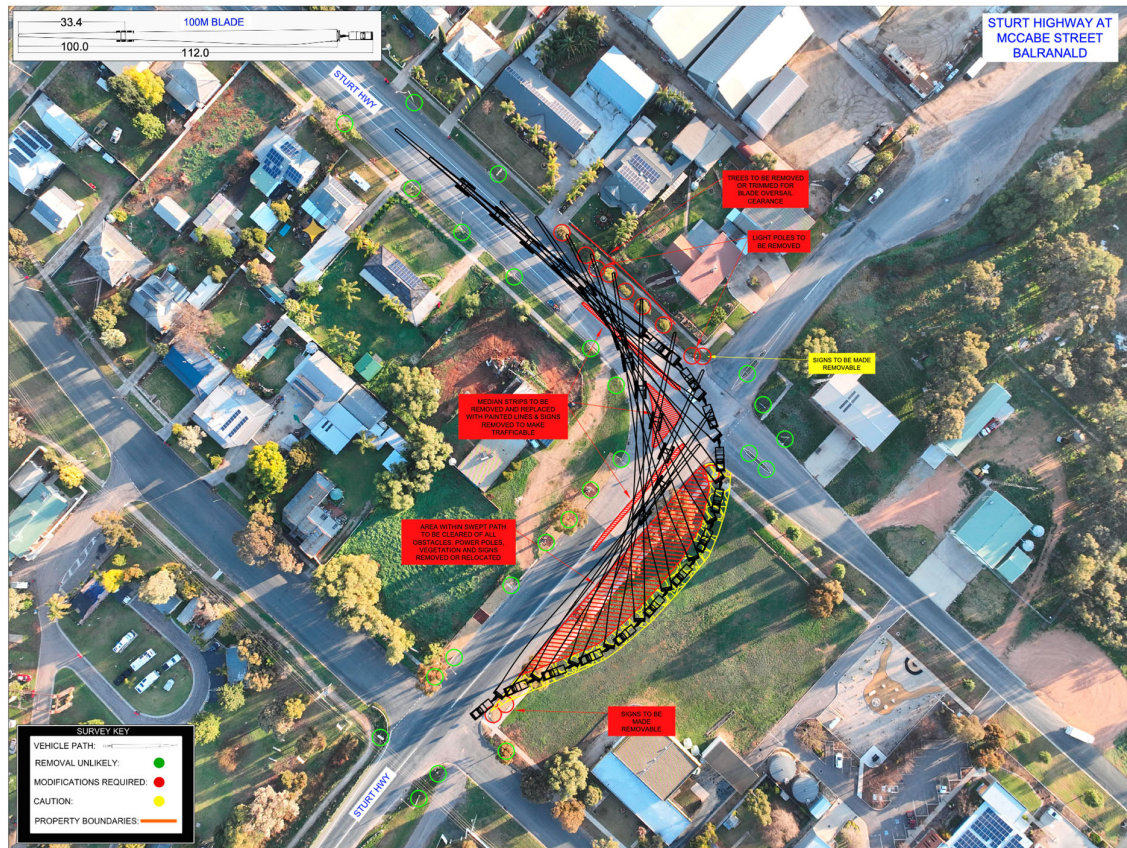


Figure 21 –Sturt Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/xve4ZgbuRkqgPvVr7>

PROCEDURE: Right hand turn

COMMENTS: This path requires landholder permission and significant work to be undertaken. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS:

Roadway/hardstand to be installed on outside of corner. Light poles, trees and signs to be removed from swept path. Median strips to be removed and replaced with painted lines and made trafficable.

625.00 Km's: Sturt Highway onto Mallee Highway at Balranald, NSW.



Figure 22 - Sturt Highway onto Mallee Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/sUqgHV9PKpztyi5g9>

PROCEDURE: Right hand turn onto the Mallee Highway

COMMENTS: 1x sign will need to be made removable. No issues with this corner otherwise.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

636.80 Km's: Mallee Highway onto Balranald Road at Yanga, NSW.

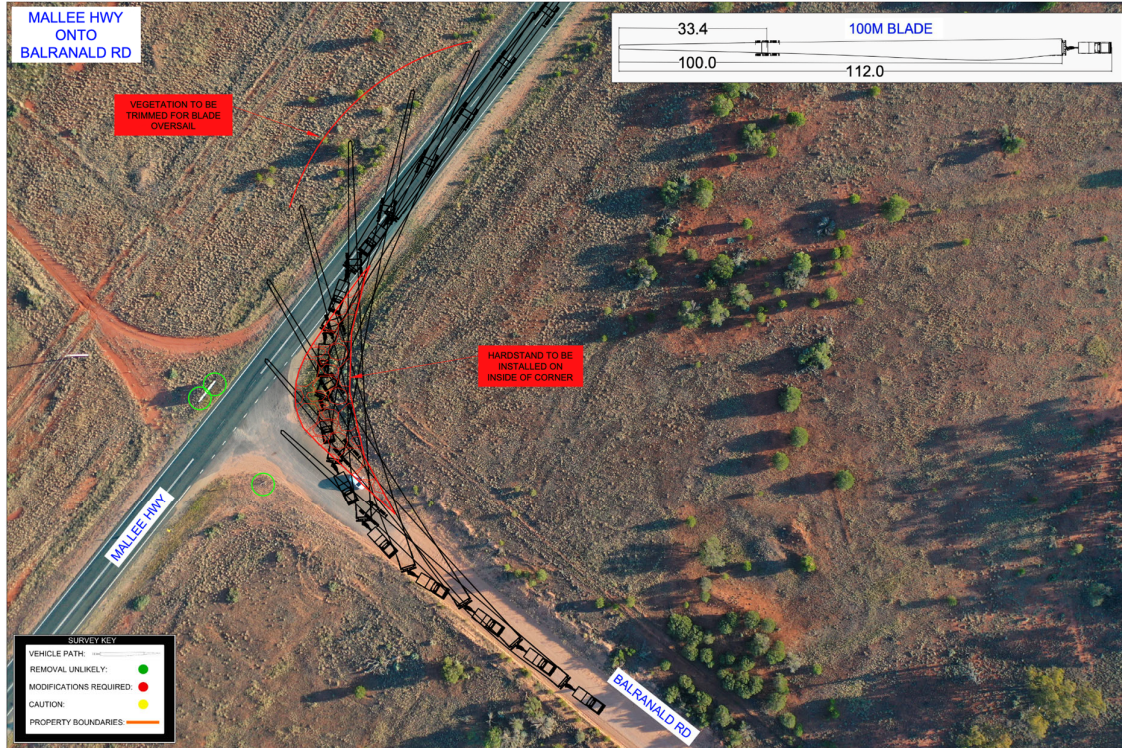


Figure 23 - Mallee Highway onto Balranald Road at Yanga, NSW.



Figure 24 - Low Angle Shot, Mallee Highway onto Balranald Road at Yanga, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/LvawNfJ77rM3pQdAA>

PROCEDURE: Left hand turn

COMMENTS: An area of hardstand is required on the inside of the corner.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, a moderate amount of work is required.

645.80 Km's: Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 25 - Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 26 - Low Angle Shot, Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 27 - Aerial shot of surrounding landscape, NSW.



Figure 28 - Typical section of road along Balranald Road, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/bwFVKmM2PLJrJLoJ8>

PROCEDURE: Right hand turn

COMMENTS: Some vegetation may need to be trimmed/removed on the inside and outside of this corner. The eastern site entrances are proposed in this location. The land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

659.00 Km's: Balranald Road into western site entrances at Moolpa, NSW.



Figure 29 - Proposed Western Site Entrance, NSW.



Figure 30 - Proposed Western Site Entrance, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/H89zRQMFgqkXDHvE9>

PROCEDURE: Left hand bend to continue on the Newell Highway

COMMENTS: The western site entrances are proposed in this location. As with the eastern entrances the land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

9.0 Route 1: Rail crossing conflicts

01 Eastern parade, Port Adelaide

GPS: <https://maps.app.goo.gl/GS6qo8BNQJDNASDn6>

Type: Level crossing

Asset Owner: ARTC

Line: Dry Creek-Port Flat

LXM ID: 1887

Operational: Yes

Maximum width clearance: 8.5 Metres

Conflict: Non



Figure 31: Eastern Parade rail crossing

02 Millewa Road, Red Cliffs

GPS: <https://maps.app.goo.gl/TWvVPzxqUdxbLpwx8>

Type: Level crossing

Asset Owner: V-Line

Line: TBC

LXM ID: TBC

Operational: Yes

Maximum width clearance: 9.8 Metres

Conflict: Yes. New corridor for the blades will be required.



Figure 32: Millewa Road rail crossing

10.0 Route 1 Conclusion

After studying all options and undertaking a route survey, this route in its current condition will require a major number 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 major work to allow a blade of this size through.
- The corners that we consider will need significant work and should be investigated early in the planning stages to avoid delays or rejections are:
 - The right hand turn from Millewa Road onto the Calder Highway at Red Cliffs
 - The right hand turn from Murray Valley Highway onto the Sturt Highway at Euston
 - The right-hand bend on the Sturt Highway at Balranald.
 - Initial consultation with relevant road and rail authorities within SA, VIC and NSW have commenced as apart of the EIS process

OVERHEAD STRUCTURES: (5.2 metres maximum loaded height)

- The lowest structures are the overpasses along the Northern Expressway. The lowest of these has a clearance of 5.2 metres.
- Loads higher than 5.2 metres cannot use this route and will need to travel along route 3 (high load route)

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 5.6 metres is required for this project.

BRIDGES:

- Majority of the bridges have been used previously for similar loads so it is expected they will be ok. A bridge assessment will still be required.

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.
- The corner onto the Calder Highway at Red Cliffs requires a new level rail crossing for the blade trailer. This will need to be discussed with the authorities to determine if it's achievable.

VEGETATION:

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

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until Balranald Road.
- Balranald Road is a gravel road of varying quality. The road will need to be graded before deliveries commence and regular grading will be required over the project delivery period. The road may become unusable in wet conditions which will impact delivery schedules. The average width is 8m so not a concern.

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.

COMPONENTS THAT WOULD USE ROUTE 1:

- Blades.

11.0 Route 2 Study: Port Adelaide SA to Junction Rivers Windfarm NSW Via Mildura

COMPONENTS: Smaller components with a **Max loaded height 5.2 metres**

DISTANCE: 610 kilometres

GPS LINK: <https://maps.app.goo.gl/DDCP2zgijieWsGkE8>

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Yanga Way, Balranald Road.

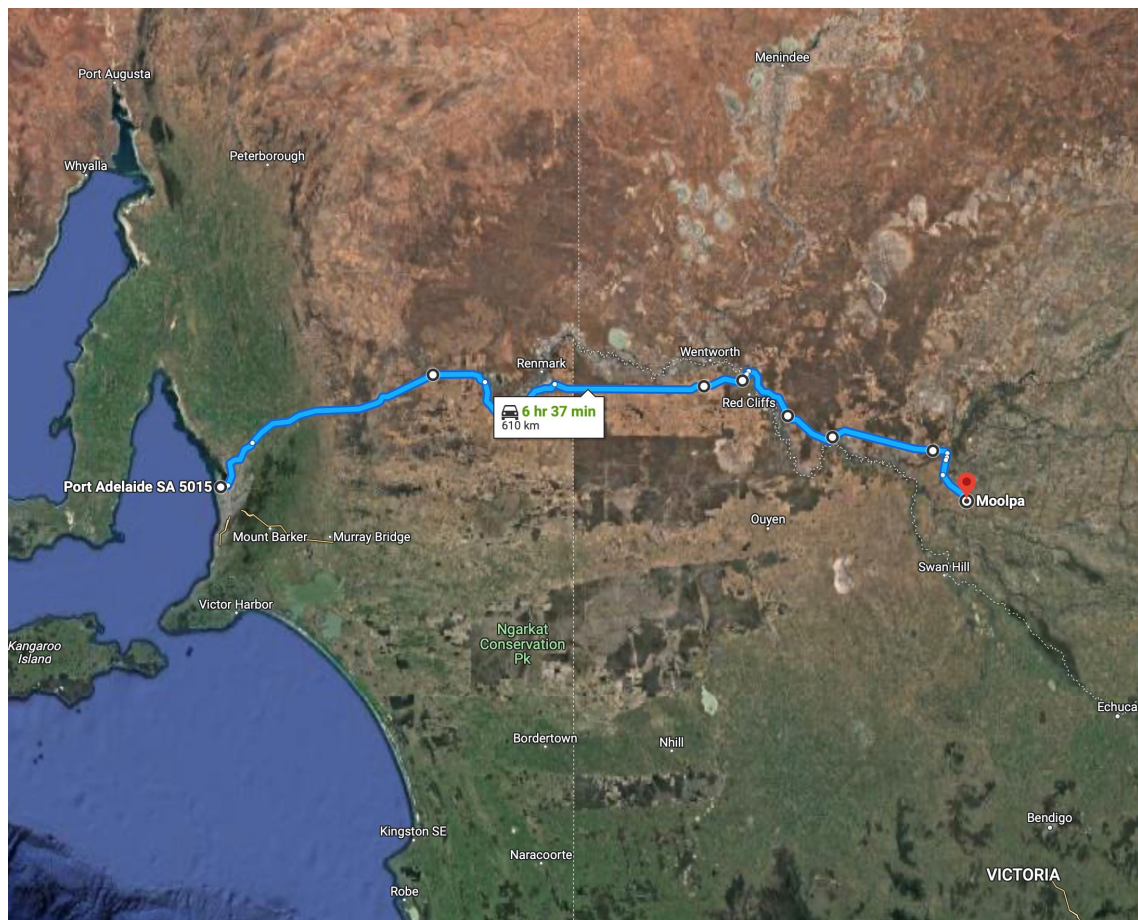


Figure 33 - Route 2

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KEY	
PINCH POINT	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide SA	Intersection of Ocean Steamers Rd and Eastern Pde GPS Link: https://goo.gl/maps/RMGe61BrvczTbEQR8	9.9 metres wide at gate	Slight right hand turn	No problems with this section of road.
0.2	Port Adelaide, SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UJZFLvNDkKxRyTed9	Length: 80.0 metres Width: 7.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.75	Port Adelaide SA	Eastern Parade onto Port River Expressway GPS Link: https://goo.gl/maps/ora7XGzZqv1zLN3v6	80 metres	Left Hand Merge	No problems with this section of road.
5.65	Dry Creek SA	Port River Expressway onto North-South Motorway GPS Link: https://goo.gl/maps/tnXSxEvy2zhyWHnLA	120 metres	Left Hand merge	No problems with this section of road.
21.05	Burton SA	North-South Mwy onto Northern Expy, Sturt Hwy GPS Link: https://goo.gl/maps/23zth7ZxmiDCFoY7	120 metres	Left hand bend	No problems with this section of road.
21.05 to 42.6	Burton to Gawler SA	Northern Expressway GPS Link: https://goo.gl/maps/GbEjYZ81FUAdJh4Q7	Bridge heights: 5.2 metres clearance	Travel directly ahead	Loads are not to exceed 5.2 metres in height on this section of road. NOTE: Vehicles that exceed a loaded height of 5.2 metres are to detour via Two Wells as per the following link. See route survey 3 for details. https://goo.gl/maps/mS6AuxPmuEHyHzca9
42.6	Gawler SA	Northern Expressway onto Sturt Highway GPS Link: https://goo.gl/maps/cG4yPULRZKy4V73h9	120 metres	Travel directly ahead	No problems with this section of road.
45.0	Gawler SA	Sturt Highway under Redbanks Road GPS Link: https://goo.gl/maps/n2aHh6MiwHyCeMRH9	Bridge height: 5.2 metres clearance	Travel directly ahead	Loads are not to exceed 5.2 metres in height on this section of road. NOTE: Vehicles that exceed a loaded height of 5.2 metres are to detour via Two Wells as per the following link. See route survey 3 for details. https://goo.gl/maps/mS6AuxPmuEHyHzca9

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
45.0	Nuriootpa SA	Sturt Highway under Sir Condor Laucke Way GPS Link: https://goo.gl/maps/J2DaymuDAmZk2PYs8	Bridge height: LHS: 6.15 Centre: 5.8m RHS: 5.6	Travel directly ahead	Loads over 5.6m must stay as far left as possible under this structure. Loads exceeding 6.0m will need to stop and lower to 6.0 metres to travel under this structure. This is the lowest structure on the route without a bypass option.
132.05	Blanchetown SA	Sturt Highway GPS Link: https://goo.gl/maps/fQvt31Kceog	100 metres long 10.0 metres wide	Left hand merge	Overnight parking at BP service centre
208.75	Kingston on Murray SA	Sturt Highway onto Kingston Road GPS Link: https://goo.gl/maps/cvafMBJpqWNRudqp8	110 metres	Right Hand Turn	No problems with this section of road.
244.3	Loxton SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqacneMAHa8ew7Gq9	120 metres	Travel directly ahead	No problems with this section of road.
246.45	Loxton SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/qZXFU8r5scZwGxqPA	80 metres	Second exit on Roundabout	No problems with this section of road.
251.25	Loxton North SA	Bookpurnong Road GPS Link: https://goo.gl/maps/whYI2TCsTw7U5cDH9	100.0 metres long 10.0 metres wide	Left hand merge	Fatigue parking
256.35	Bookpurnong SA	Bookpurnong Road onto Stanitzki Road GPS Link: https://goo.gl/maps/4D9S2wy8wpSkWqCG8	120 metres	Right Hand Turn	No problems with this section of road.
284.45	Pike River SA	Stanitzki Road onto Sturt Hwy GPS Link: https://goo.gl/maps/QyNoqMy3b9zq8MAUA	60 metres	Right Hand Turn	No problems with this section of road.
287.40	Yamba SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJZ	150.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road. Fuel on incorrect side of Road- Ampol
287.50	Yamba SA	Sturt Hwy under the Big Dunlop Tyre GPS Link: https://goo.gl/maps/YLKNB6KuDyZezoQS6	Structure height: LHS: 8.5 Centre: 10.0 RHS: 8.5	Travel under the Big Dunlop Tyre	Loads move to the centre of the road under this structure.
321.80	Meringur VIC	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDegxcSf6pt5A	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
373	Wargan VIC	Sturt Hwy GPS Link: https://goo.gl/maps/pvNeBreE9nzEY47E8	6 metres wide	Travel Directly Ahead	Road curves to the left, stay on Sturt Hwy No Issues with this section
387.10	Merrinee VIC	Sturt Hwy GPS Link: https://goo.gl/maps/2dIXF7FjyE8VTwd66	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
405.9	Mildura VIC	Sturt Hwy onto Seventeenth St GPS Link: https://goo.gl/maps/RLd39IU6czs9mWjZA	6 metres wide	Right Hand Turn	No problems with this section of road.
407.9	Mildura VIC	Seventeenth St onto Benetook Ave GPS Link: https://goo.gl/maps/zQWVB95NUiss9sdJ8	6 metres wide	First Exit on Round-about	Left turn at Round-about

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
409.3	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/mCqLEb19oYNkdgrX6	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
410.6	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/FazFiKo4eUykUqDf9	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
411.9	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/GskD21Q6SSqZM6y99	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
413.3	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/QXvR9ZDk57M9zeba8	6 metres wide	Second Exit on Round-about	Travel Straight through round-about. If loads exceed 26 metres in overall length or 4.5 metres in width, Rail clearance will be required.
414.2	Mildura VIC	Benetook Ave onto Seventh St E GPS Link: https://goo.gl/maps/BnvS1sBNeMyLJFTz7	6 metres wide	Left Hand Turn	Left Hand Sweeping Bend
415.5	Mildura VIC	Seventh st E onto Sturt Hwy GPS Link: https://goo.gl/maps/DCWU9cDTpnWQFpudA	6 metres wide	Third Exit on Round-about	Right Hand Turn at round-about
417.7	Buronga NSW	Sturt Hwy GPS Link: https://goo.gl/maps/eSH3JMoHGAK221YVA	6 metres wide	Second Exit on Round-about	Travel right at round-about
441.4	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBnzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
493.6	Euston NSW	Sturt Hwy GPS Link: https://goo.gl/maps/4WoDVv7TwnbDad6z5	6 metres wide	First Exit on Round-about	Travel left at round-about
561.0	Meilman East area, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MOsEdXDrOGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
573.9	Balranald NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4ZgbuRkqgPvVr7	6 metres wide	Right Hand Turn	No problems with this section of road.
575.2	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUggHV9PKpztyi5g9	8 metres wide	Right Hand Turn	No problems with this section of road.
587.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
596.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/buFVKm62PLJrL5uJ8	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
610.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/bH6cRCMEFqkXDhE9	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

12.0 Route 2: Rail crossing conflicts

01 Eastern parade, Port Adelaide

GPS: <https://maps.app.goo.gl/GS6qo8BNQJDNASDn6>

Type: Level crossing

Asset Owner: ARTC

Line: Dry Creek-Port Flat

LXM ID: 1887

Operational: Yes

Maximum width clearance: 8.5 Metres

Conflict: Non



Figure 34: Rail crossing on Eastern Parade at Port Adelaide

02 Benetook Avenue, Mildura

GPS: <https://maps.app.goo.gl/x8MGw2pv4MxF96s9>

Type: Level crossing

Asset Owner: V-Line

Line: TBC

LXM ID: TBC

Operational: Yes

Maximum width clearance: 7.5 Metres

Conflict: Non



Figure 35: Rail crossing on Benetook Avenue at Mildura

13.0 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.

SWEPT PATH:

- The longest combination that can travel along this route without upgrades is **40 metres overall length**.
- There are numerous roundabouts in Mildura that will be tight but achievable for a load of this length.

OVERHEAD STRUCTURES: (5.2 metres maximum loaded height)

- The lowest structures are the overpasses along the Northern Expressway. The lowest of these has a clearance of 5.2 metres.
- Loads higher than 5.2 metres cannot use this route and will need to travel along route 3 (high load route)

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

BRIDGES:

- Majority of the bridges have been used previously for similar loads so it is expected they will be ok. A bridge assessment will still be required.

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.
- The corner onto the Calder Highway at Red Cliffs requires a new level rail crossing for the blade trailer. This will need to be discussed with the authorities to determine if it's achievable.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until Balranald Road.
- Balranald Road is a gravel road of varying quality. The road will need to be graded before deliveries commence and regular grading will be required over the project delivery period. The road may become unusable in wet conditions which will impact delivery schedules. The average width is 8m so not a concern.

COMPONENTS THAT WOULD USE ROUTE 2:

- Loads under 5.2 metres in height which are usually the Hubs, Nacelles, Generators.
- Transformers and switchrooms if they don't exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.
- Standard loads and containers

14.0 Route 3 Study: Port Adelaide SA to Junction Rivers Windfarm NSW, High Load Route - Option 1

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 641 kilometres

GPS LINK: <https://maps.app.goo.gl/t9y1Q6n8RGWVi8s99>

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Drogemuller Road, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.

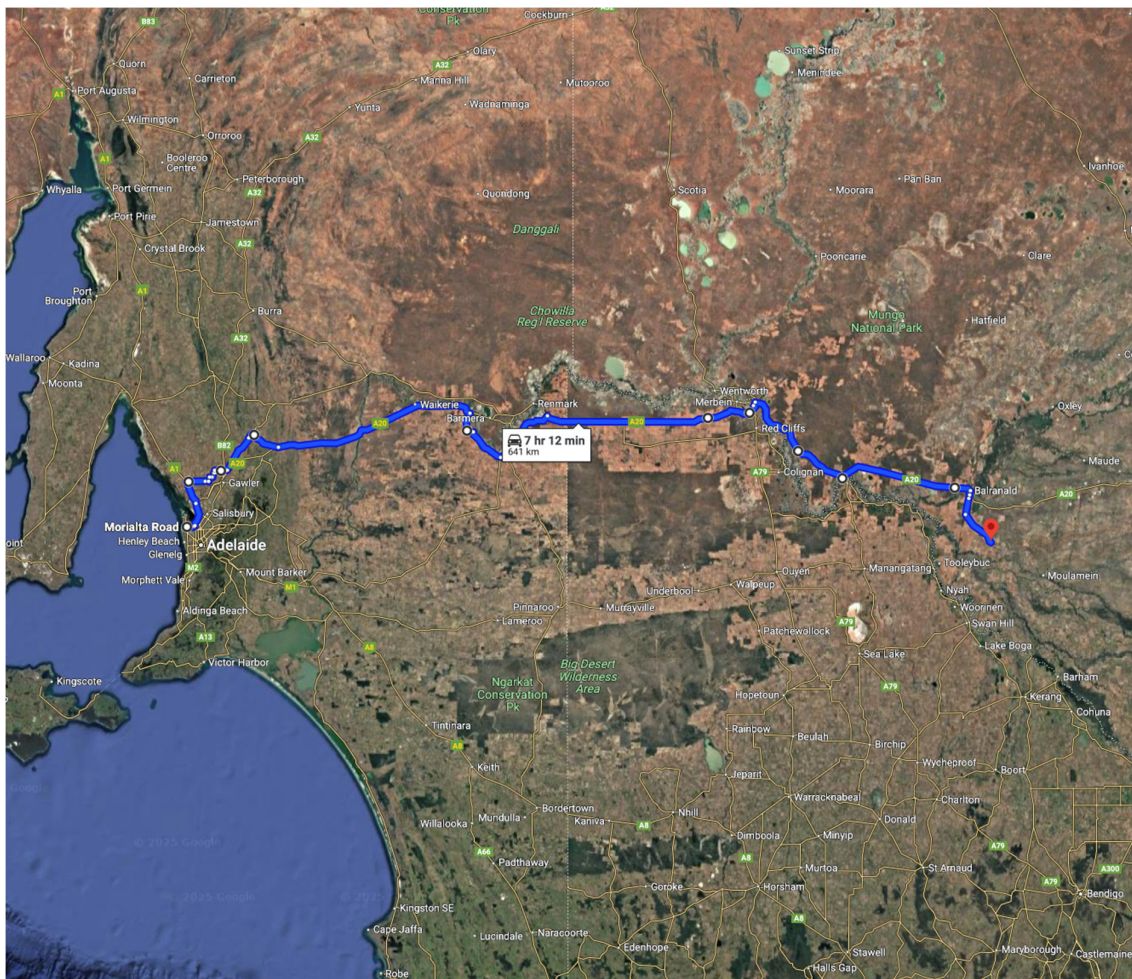


Figure 36 - Route 3

ROUTE INDEX

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide, SA	Port storage area across Ocean Steamers Rd and onto eastern Parade GPS Link: https://goo.gl/maps/tK6JgG1AidMDqgSs5	Length: 75.0 metres Width: 8.0 metres Height: N/A	Drive out of storage area and cross to the incorrect side of Eastern Parade	No problems with this section of road.
0.2	Port Adelaide SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZfLvNDkKxRyTed9	Length: 80 metres Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this infrastructure. Spotter to Guide load through this pinchpoint.
0.9	Gilman SA	The Eastern Parade onto the Port River Expressway GPS Link: https://goo.gl/maps/mPFZDKYzewGxvm8S8	Length: 70.0 metres Width: 10.9 metres Height: N/A	Left hand turn	No problems with this section of road.
0.9 to 4.3	Gilman to Wingfield SA	Port River Expressway GPS Link: https://goo.gl/maps/rpFDwXM41ACYr2Vv6	Length: 100.0 metres Width: 10.0 metres Height: 6.2 metres	Travel directly ahead.	Loads over 6.2 metres will need to travel over the top of Hansen Road.
4.3	Wingfield SA	Port River Expressway onto Northern Connector GPS Link: https://goo.gl/maps/BtCb3VPgq3vqpCt57	Length: 100.0 metres Width: 8.0 metres Height: 6.5 metres	Left hand bend	No problems with this section of road.
4.3 To 19.2 Km's	Wingfield to Waterloo Corner SA	Northern Connector GPS Link: https://goo.gl/maps/onzFMbVb3PpaJg52A	Length: 100.0 metres Width: 10.5 metres Height: 6.5 metres	Travel directly ahead	No problems with this section of road.
19.8	Waterloo Corner SA	Northern Connector onto Port Wakefield Highway "A1" GPS Link: https://goo.gl/maps/yclGFDqzQ8idciv47	Length: 100.0 metres Width: 8.0 metres Height: N/A	Right hand merge onto A1	No problems with this section of road.
33.4	Two wells SA	Port Wakefield Highway "A1" onto Mallala Road GPS Link: https://goo.gl/maps/U78MZSBL43D2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.7	Two wells SA	Mallala Road onto Old Port Wakefield Road GPS Link: https://goo.gl/maps/GapYPnc3c0M2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	Centre island to be made trafficable.
33.9	Two wells SA	Old Port Wakefield Road onto Gawler Road GPS Link: https://goo.gl/maps/TfEJNdGpFP12	Length: 50 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
34.4	Two wells SA	Gawler Road over rail crossing GPS Link: https://maps.app.goo.gl/QUe9rFL1eXjhiNEb8	Length: N/A Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this infrastructure.
44.6	Gawler River SA	Gawler Road onto Two Wells Road GPS Link: https://goo.gl/maps/ijQJCIKW6uH2	8.0 metres wide	Travel directly ahead	No problems with this section of road
46.8	Gawler River SA	Two Wells Road onto Wilkinson Road GPS Link: https://goo.gl/maps/6DeWPh5rKF32	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	Hardstand to be added prior and after the corner.
49.3	Kangaroo Flat SA	Wilkinson Road onto Hatcher Road GPS Link: https://goo.gl/maps/XQ8cNtqzQUG2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
51.3	Kangaroo Flat SA	Hatcher Road onto Oates Road GPS Link: https://goo.gl/maps/qXcidwDzNxCDwL8AA	Length: 60 metres Width: 8.0 metres Height N/A	Left hand bend	No problems with this section of road
54.5	Kangaroo Flat SA	Oates Road onto Redbanks Road GPS Link: https://goo.gl/maps/tvCv2BFmz72	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	Hardstand to be added to the outside of the corner.
55.1	Kangaroo Flat SA	Redbanks Road onto Mudla Wirra Road GPS Link: https://goo.gl/maps/2yC31AASRxM2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
56.5	Roseworthy SA	Mudla Wirra Road onto College Road GPS Link: https://goo.gl/maps/bu28YmgfQP2	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	Vegetation to be trimmed.
60.8	Roseworthy SA	College Road onto Cliff Road GPS Link: https://goo.gl/maps/n6BL5sACgHT2	Length: 40 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
61.4	Roseworthy SA	Cliff Road onto Gartrell Street GPS Link: https://goo.gl/maps/UGN6vnZ8DDG2	9.0 Metres into 9.0 metres	Right hand turn	No problems with this section of road
62.5	Roseworthy SA	Gartrell Street onto Roseworthy Road GPS Link: https://goo.gl/maps/Py6YuP9aWyH2	Length: 80 metres Width: 9.0 metres Height N/A	Left hand bend	No problems with this section of road
64.8	Kingsford SA	Roseworthy Road onto Thiele Hwy GPS Link: https://goo.gl/maps/GpH6AaL4yS4exER47	Length: 80 metres Width: 9.0 metres Height N/A	Left hand turn	No problems with this section of road
88.3	Kapunda SA	Thiele Hwy onto East Terrace GPS Link: https://goo.gl/maps/vqgkXWMZMhphCgAK9	Width: 6.5 metres	Right hand turn	No problems with this section of road

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
88.3 to 91.8	Kapunda SA	East Terrace GPS Link: https://maps.app.goo.gl/XEWTBkgA7q67FLx9	Width: 6.5 metres	Travel directly ahead on a gravel road	This section of road may need to be maintained during deliveries.
91.8	Kapunda SA	East Terrace onto Thiele Hwy GPS Link: https://goo.gl/maps/wVeWZTnSnDTAaxEs6	Length: 60 metres Width: 6.0 metres	Right hand turn	No problems with this section of road
92.0	Kapunda SA	Thiele Hwy onto Truro Rd GPS Link: https://goo.gl/maps/rupYTUbWTIDqQblq9	Length: 55 metres Width: 6.0 metres	Right hand turn	No problems with this section of road
111.0	Truro SA	Truro Rd onto Sturt Hwy GPS Link: https://goo.gl/maps/VsQYKAe4MpcqiyYd7	Length: 55 metres Width: 10.0 metres	Left hand turn	No problems with this section of road
235.0	Kingston on Murray SA	Sturt Hwy onto Heinrich Rd GPS Link: https://maps.app.goo.gl/wMMliMNMgJzi9d29A	Length: 60 metres Width: 10.0 metres	Right hand turn	No problems with this section of road
246.0	Yinkanie SA	Heinrich Rd onto Drogemuller Road GPS Link: https://maps.app.goo.gl/BYU3Z7vFNtk7dX89	Length: 40 metres Width: 6.0 metres	Left hand turn	Hardstand will need to be added to this intersection.
249.0	Moorook South SA	Drogemuller Road onto Kingston Road GPS Link: https://maps.app.goo.gl/4uG3FH1EDv5hy4eXD7	Length: 60 metres Width: 10.0 metres	Right hand turn	Hardstand will need to be added to this intersection.
272.0	Loxton SA	Kingston Rd onto Karoonda Hwy GPS Link: https://goo.gl/maps/pFS9uJqw6ivxmETP8	Length: 100 metres Width: 6.5 metres	Travel directly ahead	No problems with this section of road.
275.0	Loxton SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/gZXFU8r5scZwGxqPA	Length: 80 metres Width: 7.0 metres	Second exit on Roundabout	No problems with this section of road
285.0	Bookpurnong SA	Bookpurnong Road onto Stanitzki Rd GPS Link: https://goo.gl/maps/qPivFcCbl8mXfecF6	Length: 80 metres Width: 8.0 metres	Right Hand Turn	No problems with this section of road
313.0	Pike River SA	Stanitzki Rd onto Sturt Hwy GPS Link: https://goo.gl/maps/Kww9FkoF8hAPpoBh7	Length: 55 metres Width: 8.0 metres	Right Hand Turn	No problems with this section of road
316.0	Yamba SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJJ7	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road. Fuel on incorrect side of Road- Ampol
316.0	Yamba SA	Sturt Hwy under the Big Dunlop Tyre GPS Link: https://goo.gl/maps/YLKNB6KuDYzezoQS6	Structure height: LHS: 8.5 Centre: 10.0 RHS: 8.5	Travel under the Big Dunlop Tyre	Loads move to the centre of the road under this structure.
350.0	Meringur VIC	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDeqxcSf6pt5A	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
401.0	Wargan VIC	Sturt Hwy GPS Link: https://goo.gl/maps/pvNeBreE9nzEY47E8	6 metres wide	Travel Directly Ahead	Road curves to the left, stay on Sturt Hwy No Issues with this section
415.0	Merrinee VIC	Sturt Hwy GPS Link: https://goo.gl/maps/2dIXF7FiyE8VTwd66	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
434.0	Mildura VIC	Sturt Hwy onto Seventeenth St GPS Link: https://goo.gl/maps/8Ld3BU6-czs5mWjZA	6 metres wide	Right Hand Turn	Loads to cross to the incorrect side. Median strips will need to be made trafficable and signs relocated or made removable.
436.0	Mildura VIC	Seventeenth St onto Benetook Ave GPS Link: https://goo.gl/maps/zQWVB95NUiss9sdJB	6 metres wide	Left hand turn	No problems with this section of road
436.0 to 442.0	Mildura VIC	Benetook Ave GPS Link: https://maps.app.goo.gl/3DjC5Q6m3W0CUE	5.5 metres wide and 5.5 metres in height	Travel directly ahead through 4 roundabouts and over a rail crossing.	A roundabout will need the centre filled with hardstand and temporary Bollards installed. Vegetation will need to be trimmed on sections of this road.
437.0	Mildura VIC	Benetook Ave at Sixteenth Ave GPS Link: https://goo.gl/maps/mCqLEb19oYNkdgrX6	6 metres wide	Travel directly ahead	No problems with this section of road
439.0	Mildura VIC	Benetook Ave at the Calder Highway GPS Link: https://goo.gl/maps/FazFIKo4eUykUqDf9	6 metres wide	Travel directly ahead	No problems with this section of road
440.0	Mildura VIC	Benetook Ave at Fourteenth Ave GPS Link: https://goo.gl/maps/GskD21Q6SSqZM6y99	6 metres wide	Travel directly ahead	No problems with this section of road
442.0	Mildura VIC	Benetook Ave at Eleventh Street GPS Link: https://goo.gl/maps/Q8vB9ZGk5TM9veta6	5.5 metres wide	Travel directly ahead through the centre of the roundabout.	A temporary hardstand will need to be added to the centre of the roundabout. This will allow the loads a direct path across the railway crossing. Temporary bollards would need to be installed over this hardstand. If loads exceed 26 metres in overall length or 4.5 metres in width, Rail clearance will be required.
443.0	Mildura VIC	Benetook Ave onto Seventh St E GPS Link: https://goo.gl/maps/BnvS1sBNeMyLJFTzZ	6 metres wide	Left Hand Turn	Left Hand Sweeping Bend
444.0	Mildura VIC	Seventh St E onto Sturt Hwy GPS Link: https://goo.gl/maps/DCW99s6TepW06pud6	6 metres wide	Right hand turn	Load to cross the incorrect side of the roundabout. 2 Median strips will need to be made trafficable, and signs made removable.
446.0	Buronga NSW	Sturt Hwy roundabout at Silver City Hwy GPS Link: https://goo.gl/maps/eSH3JMoHGak221YVA	6 metres wide	Right hand turn	Load to cross the incorrect side of the roundabout. Pilots and police assist with traffic control.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
467.0	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBrzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
522.0	Euston NSW	Sturt Hwy GPS Link: https://goo.gl/maps/4WnDyV7TwnbDad6x5	6 metres wide	Left Hand Turn	Travel left at round-about. Median strips will need to be made trafficable, and signs made removable.
535.0	Meilman East area	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
602.0	Balranald NSW	Sturt Hwy (Market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/6vred3ZpbuPkqgPvAr7	6 metres wide	Right Hand Turn	Load to cross the incorrect side of the corner. Median strips will need to be made trafficable, and signs made removable.
603.0	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUggHV9PKpztvi5q9	8 metres wide	Right Hand Turn	No problems with this section of road.
615.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
626.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/baFvXNm2PLjRLoJf	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
641.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/HB9zRCMEcokXDHvE9	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

0.0 Km's: Exiting Adelaide Port



Figure 37 - Exiting Adelaide Port

PROCEDURE: Travel directly ahead from the port access gate and across Ocean Steamers Road with a slight right merge onto Eastern Parade.

GPS LINK: <https://goo.gl/maps/tK6JqG1AidMDgqSs5>

COMMENTS: Spotter to guide the load through the intersection. Approval required to cross rail infrastructure.

ROAD MODIFICATIONS: No works required.

0.9 Km's: Eastern Parade onto the Port River Expressway

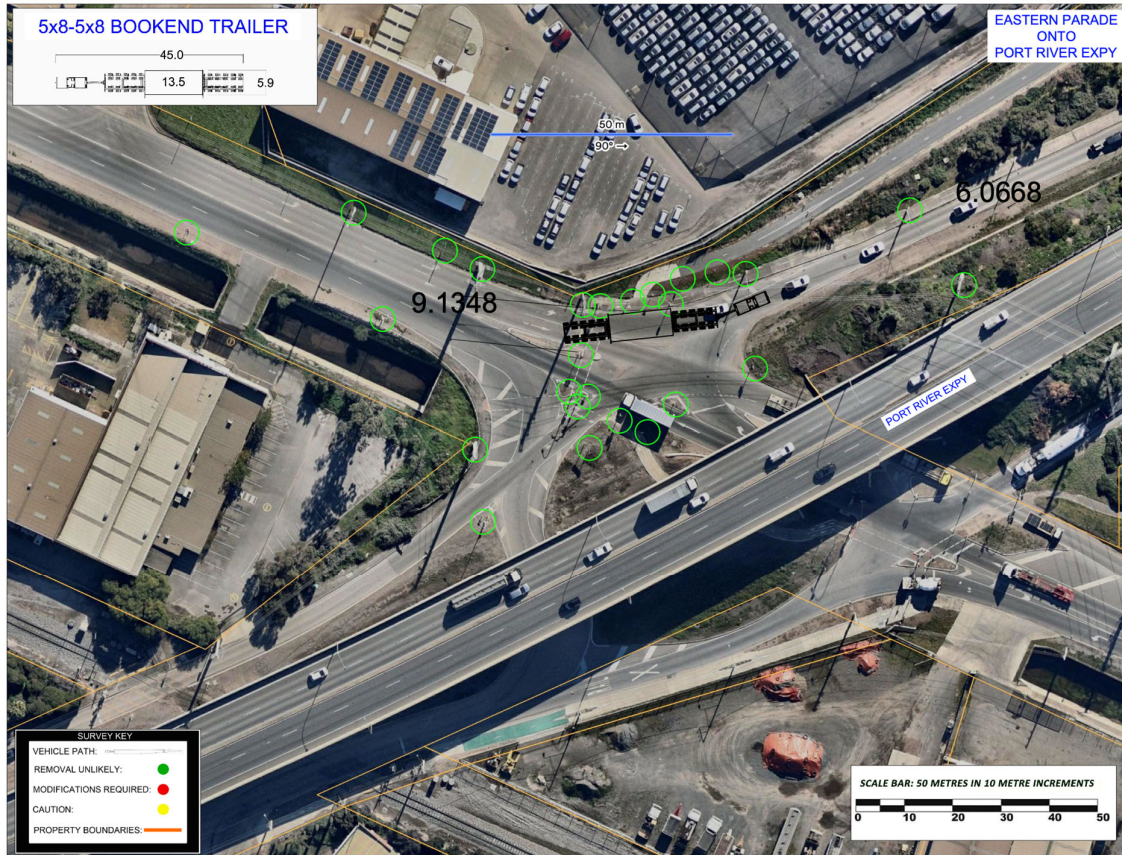


Figure 38 - Eastern Parade onto the Port River Expressway

PROCEDURE: Left hand turn from Eastern Parade onto the Port River Expressway.

GPS LINK: <https://goo.gl/maps/mPFZDKYzewGxvm8S8>

COMMENTS: The loads will travel from the correct side of Eastern Parade onto the Port River Expressway.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

33.4 Km's: A1 onto Mallala Road at Two Wells.

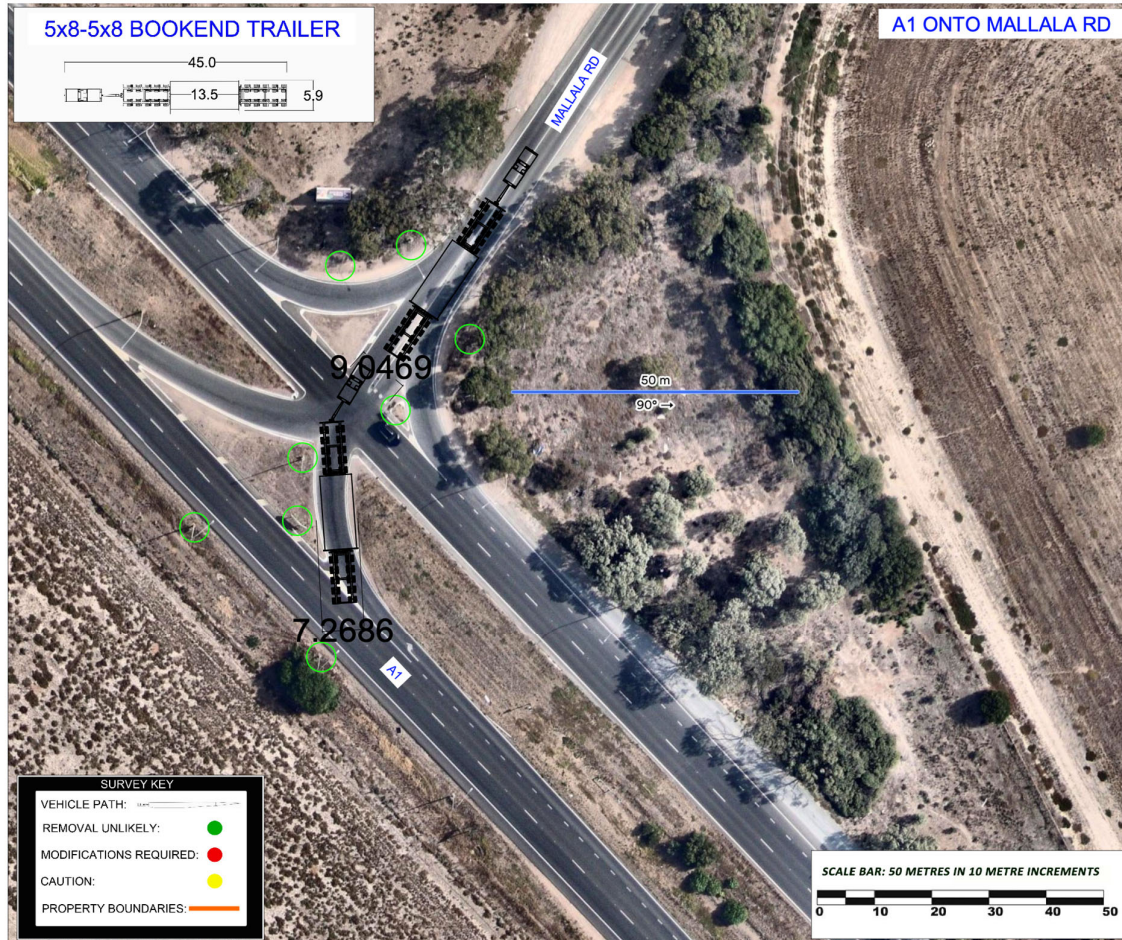


Figure 39 – A1 onto Mallala Road

PROCEDURE: Right hand turn from the A1 onto Mallala Road.

GPS LINK: <https://goo.gl/maps/U78MZSBL43D2>

COMMENTS: The loads will travel around the corner on the correct side of the road.
Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

33.7 Km's: Mallala Road onto Old Port Wakefield Road at Two Wells.



Figure 40 – Mallala Road onto Old Port Wakefield Road

PROCEDURE: Right hand turn from Mallala Road onto Old Port Wakefield Road.

GPS LINK: <https://goo.gl/maps/CzpYPwc9cBM2>

COMMENTS: The loads will travel around the corner on the correct side of the road. Spotter to assist with this procedure.

ROAD MODIFICATIONS: Centre island to be removed or made trafficable.

33.9 Km's: Old Port Wakefield Road onto Gawler Road at Two Wells.



Figure 41 –Old Port Wakefield Road onto Gawler Road

PROCEDURE: Left hand turn from Old Port Wakefield Road onto Gawler Road.

GPS LINK: <https://goo.gl/maps/TfEJNdGpFP12>

COMMENTS: The loads will travel around the corner on the correct side of the road.
Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

46.8 Km's: Two Wells Road onto Wilkinson Road at Gawler River.

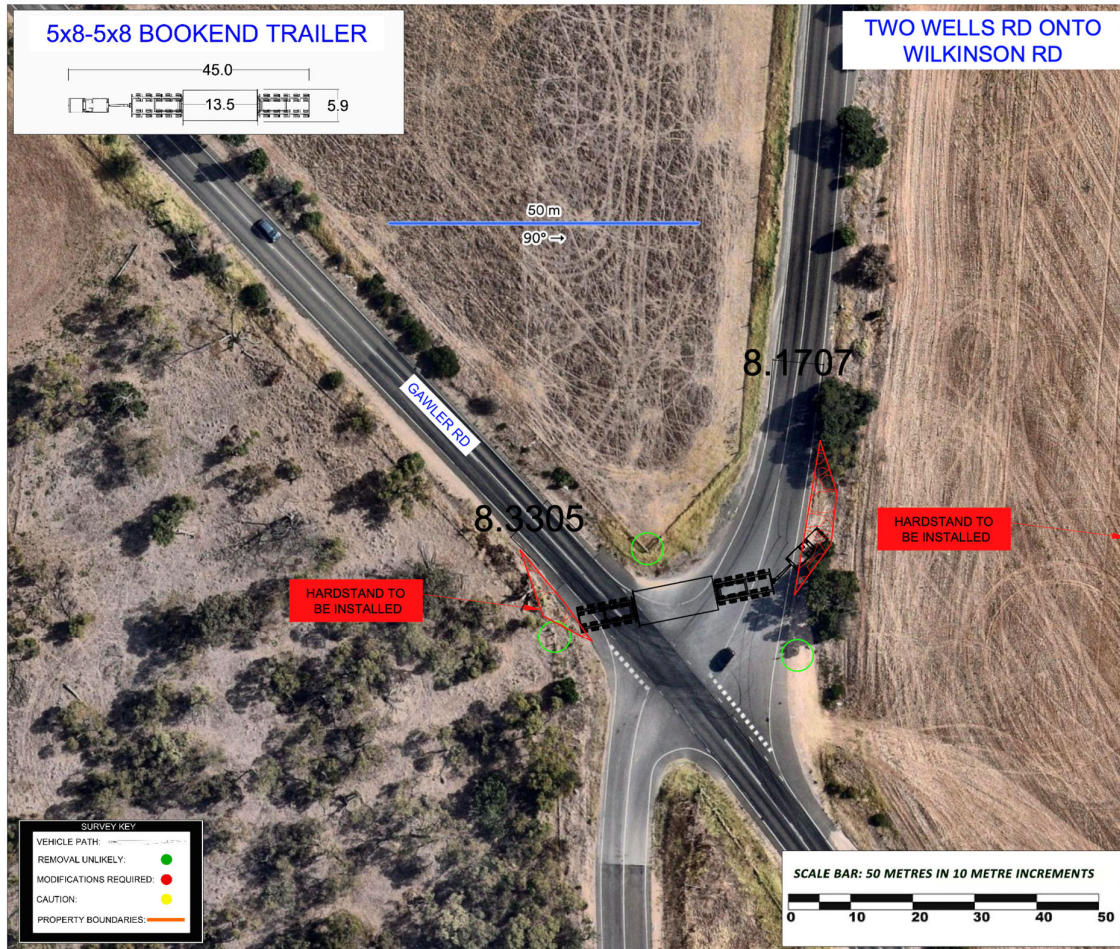


Figure 42 –Two Wells Road onto Wilkinson Road

PROCEDURE: Left hand turn from Two Wells Road onto Wilkinson Road.

GPS LINK: <https://goo.gl/maps/6DeWPK5rKF32>

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Hardstand is required on the entrance and exit of the corner.

49.3 Km's: Wilkinson Road onto Hatcher Road at Kangaroo Flat.

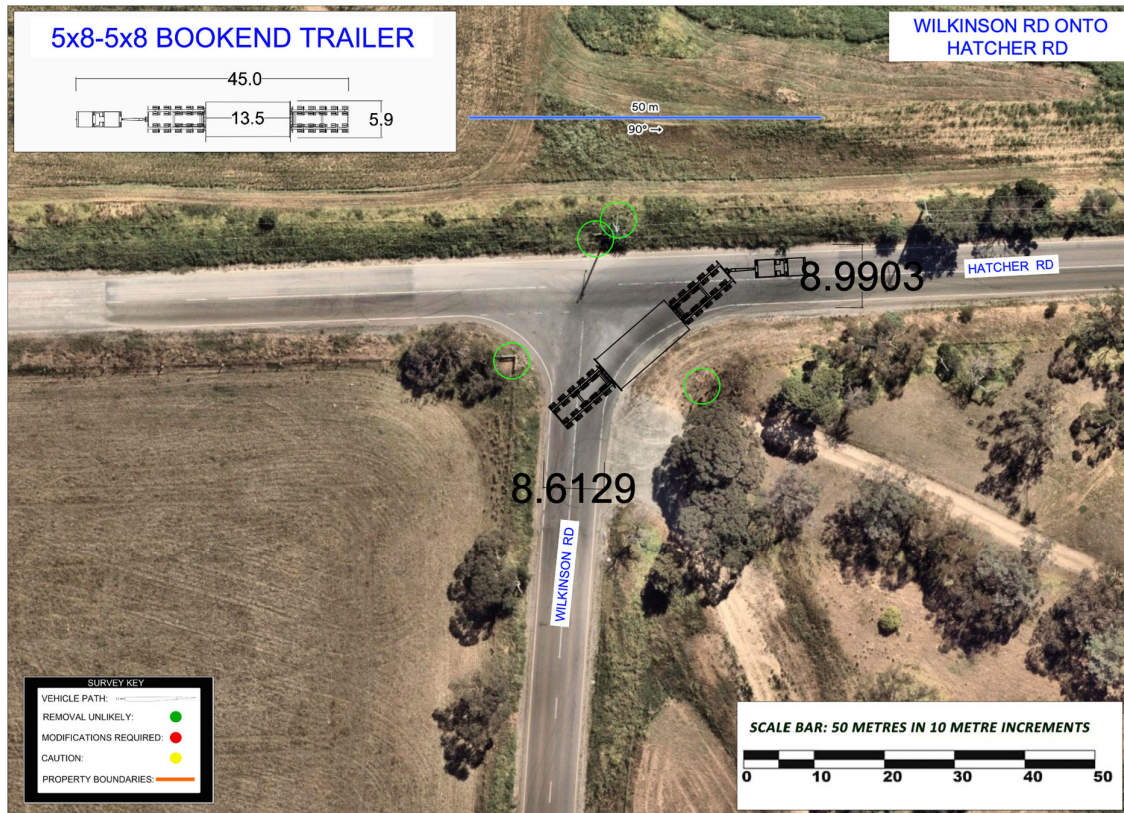


Figure 43 –Wilkinson Road onto Hatcher Road

PROCEDURE: Right hand turn from Wilkinson Road onto Hatcher Road.

GPS LINK: <https://goo.gl/maps/XQ8cNtgzQUG2>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

54.5 Km's: Oates Road onto Redbanks Road at Kangaroo Flat.

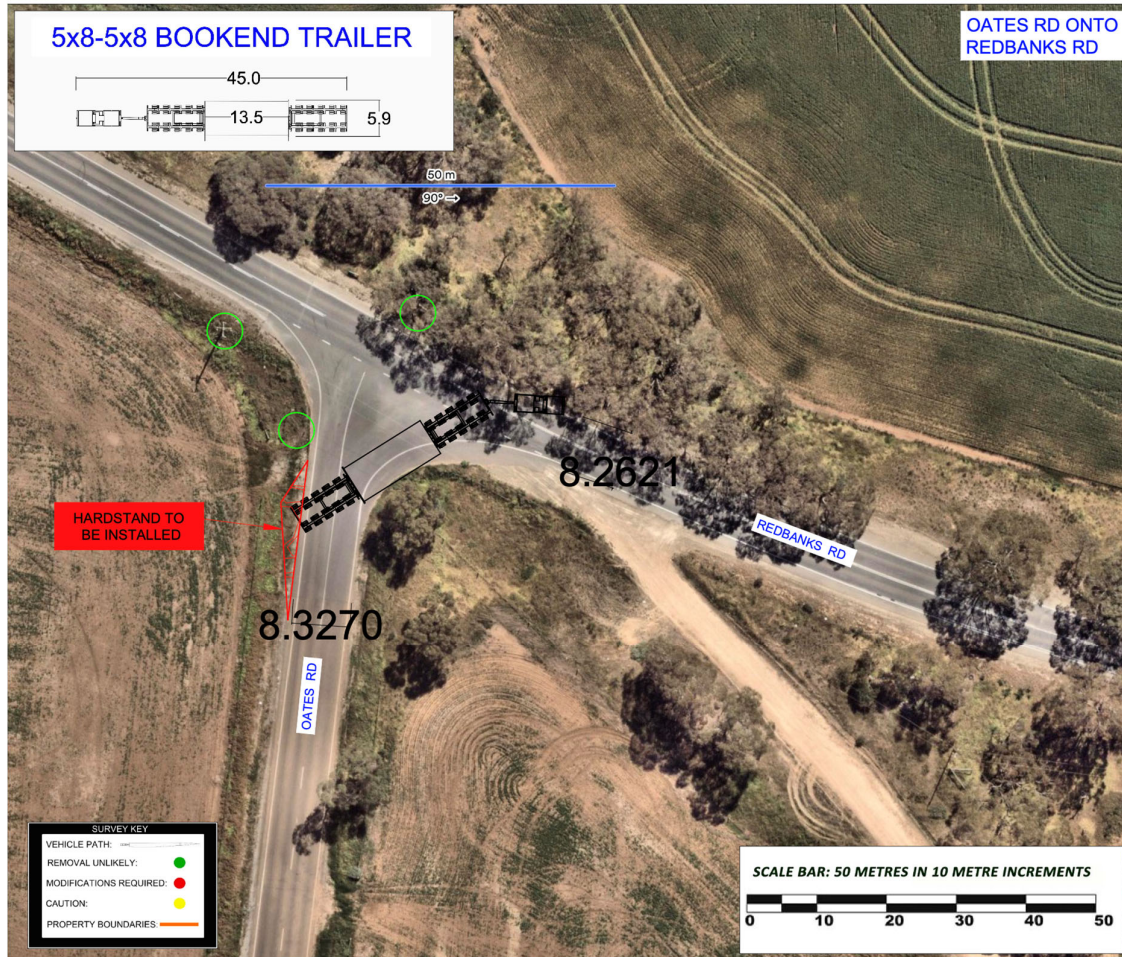


Figure 44 –Oates Road onto Redbanks Road

PROCEDURE: Right hand turn from Oates Road onto Redbanks Road.

GPS LINK: <https://goo.gl/maps/tVCv2BFmnZ72>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Hardstand is required on the left-hand side while entering the corner.

55.1 Km's: Redbanks Road onto Mudla Wirra Road at Kangaroo Flat.



Figure 45 –Redbanks Road onto Mudla Wirra Rd

PROCEDURE: Left hand turn from Redbanks Road onto Mudla Wirra Road.

GPS LINK: <https://goo.gl/maps/2yC31AASRxM2>

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

**56.5 Km's: Mudla Wirra Road onto College Road at
Roseworthy.**

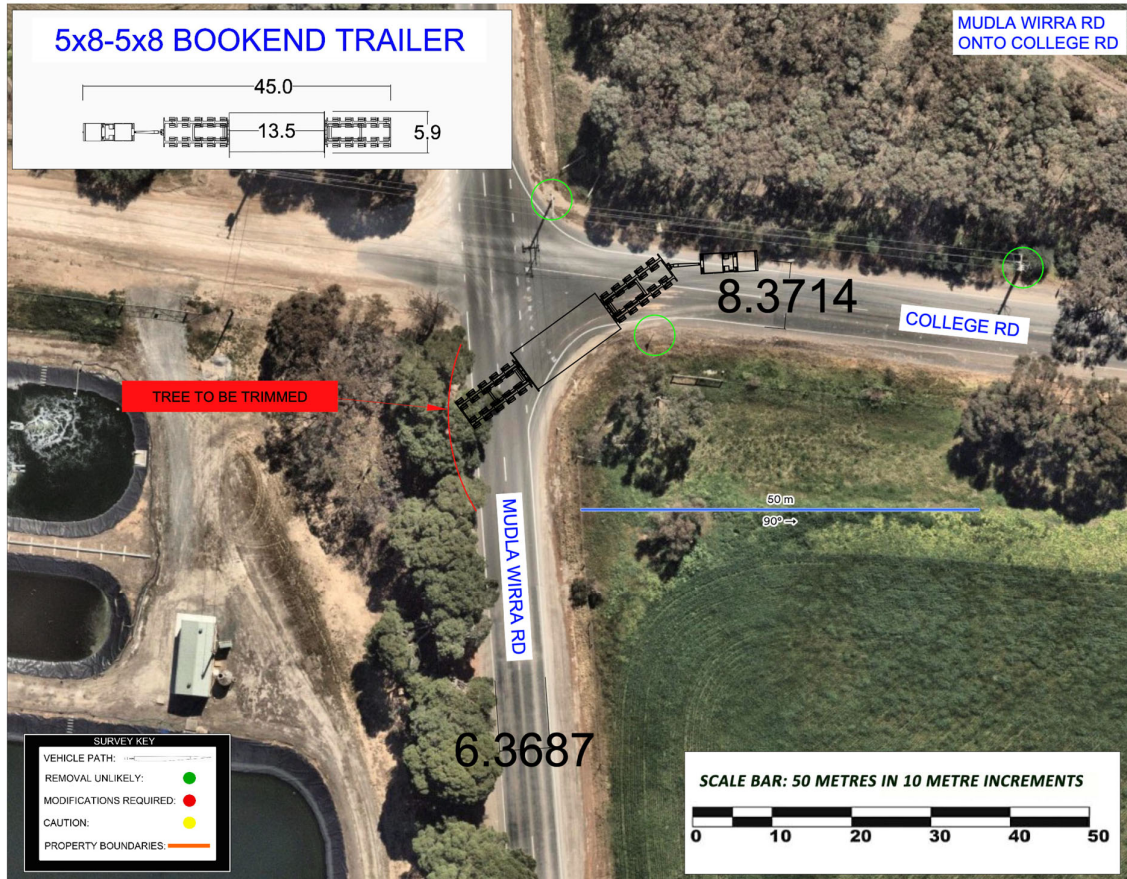


Figure 46 –Mudla Wirra Rd onto College Road

PROCEDURE: Right hand turn from Mudla Wirra Road onto College Road.

GPS LINK: <https://goo.gl/maps/bu28YmqsfDP2>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Some vegetation needs to be trimmed on this corner.

60.8 Km's: College Road onto Cliff Road at Roseworthy.

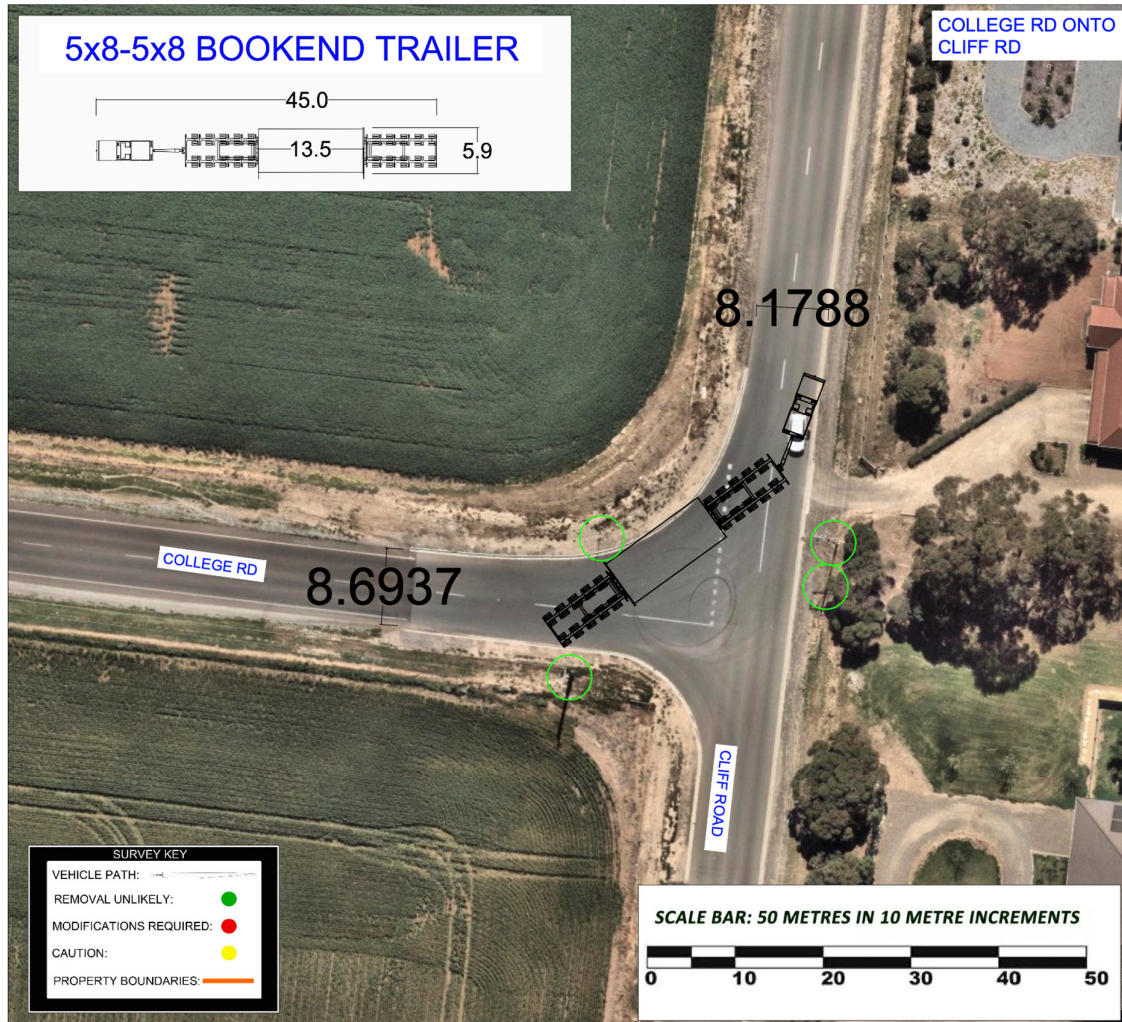


Figure 47 –College Road onto Cliff Road

PROCEDURE: Left hand turn from College Road onto Cliff Road.

GPS LINK: <https://goo.gl/maps/n6BLSsACgHT2>

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

61.4 Km's: Cliff Road onto Gartrell Street at Roseworthy.

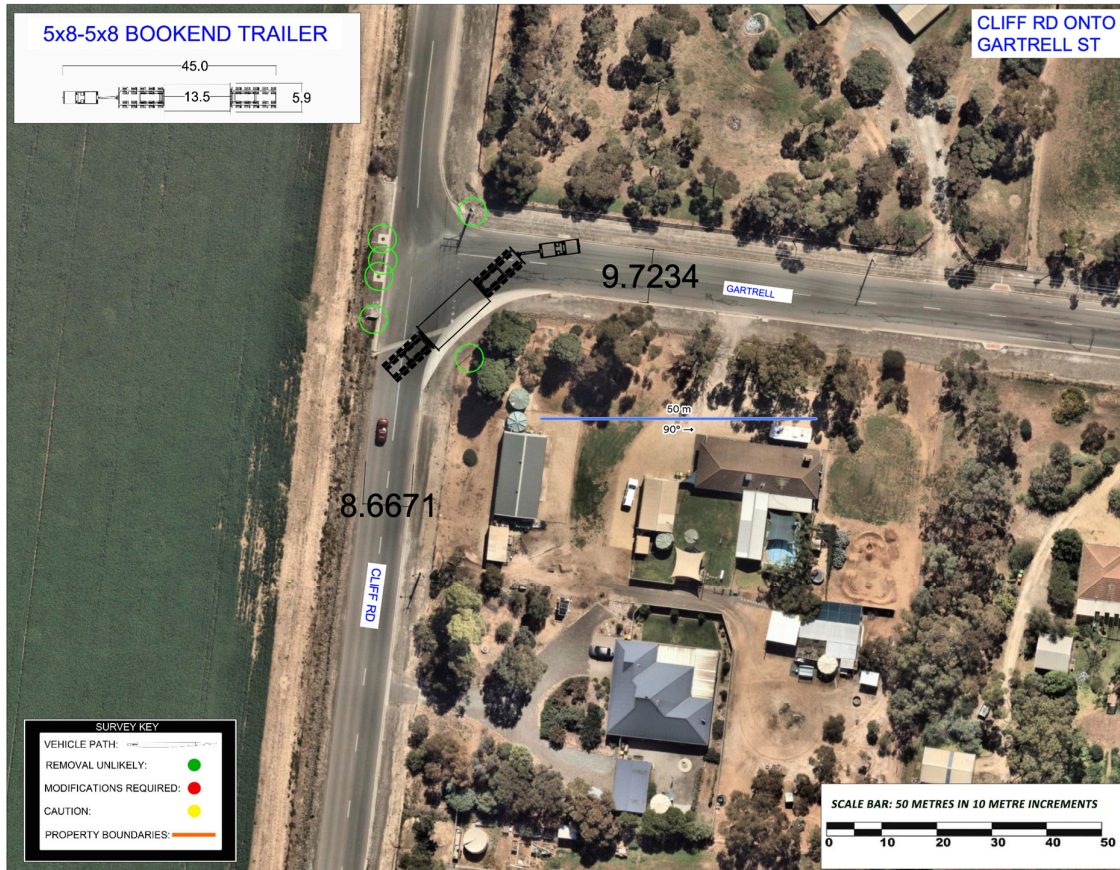


Figure 48 –Cliff Road onto Gartrell Street

PROCEDURE: Right hand turn from Cliff Road onto Gartrell Street.

GPS LINK: <https://goo.gl/maps/UGN6vnZ8DDG2>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

64.8 Km's: Roseworthy Road onto the Thiele Hwy at Kingsford.

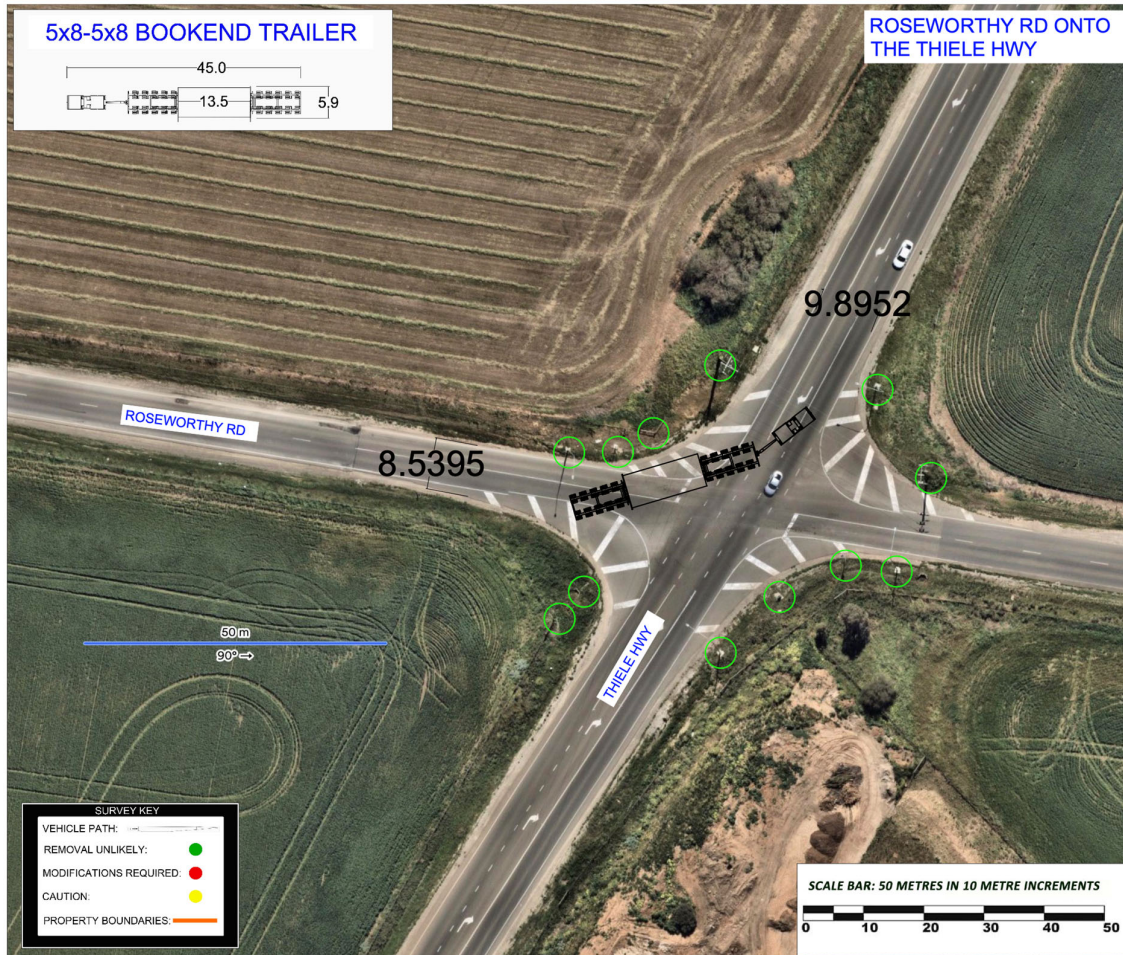


Figure 49 –Roseworthy Road onto the Thiele Highway

PROCEDURE: Left hand turn from Roseworthy Road onto the Thiele Highway.

GPS LINK: <https://goo.gl/maps/GpH6AaL4yS4exER47>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

88.3 Km's: Thiele Hwy onto East Terrace at Kapunda.

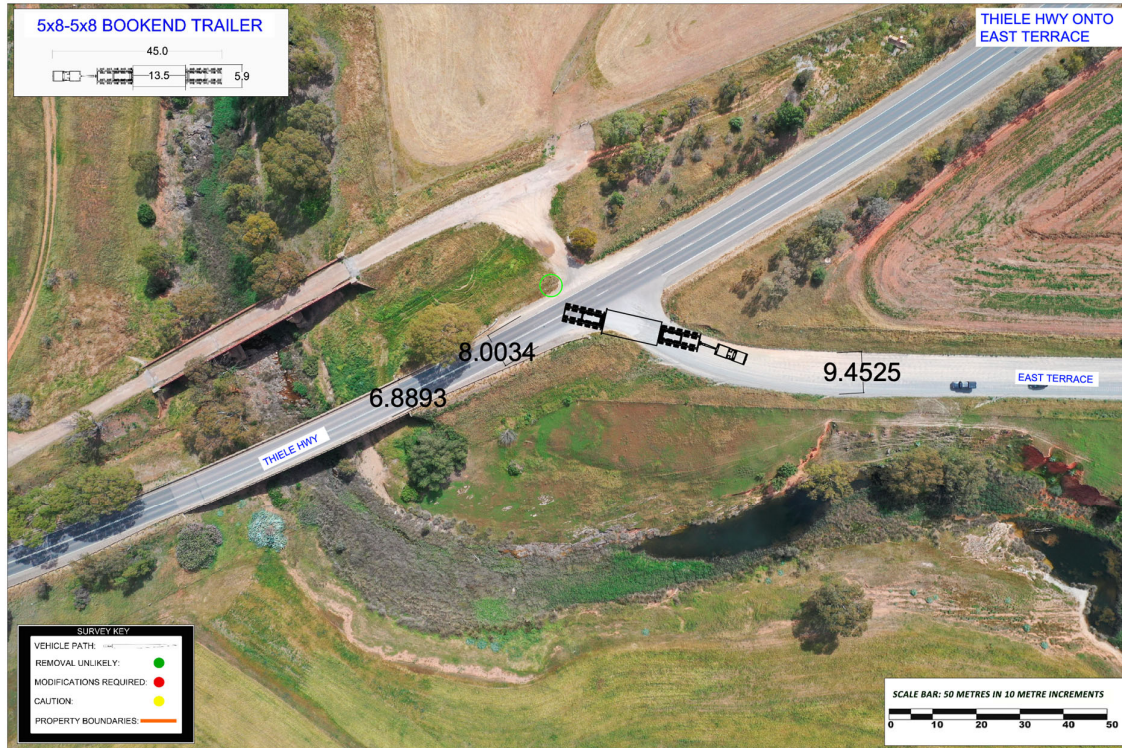


Figure 50 –Thiele Highway onto East Terrace

PROCEDURE: Right hand turn from the Thiele Highway onto East Terrace.

GPS LINK: <https://goo.gl/maps/vqgkXWMZMhhpCgAK9>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

91.8 Km's: East Terrace onto the Thiele Hwy at Kapunda.

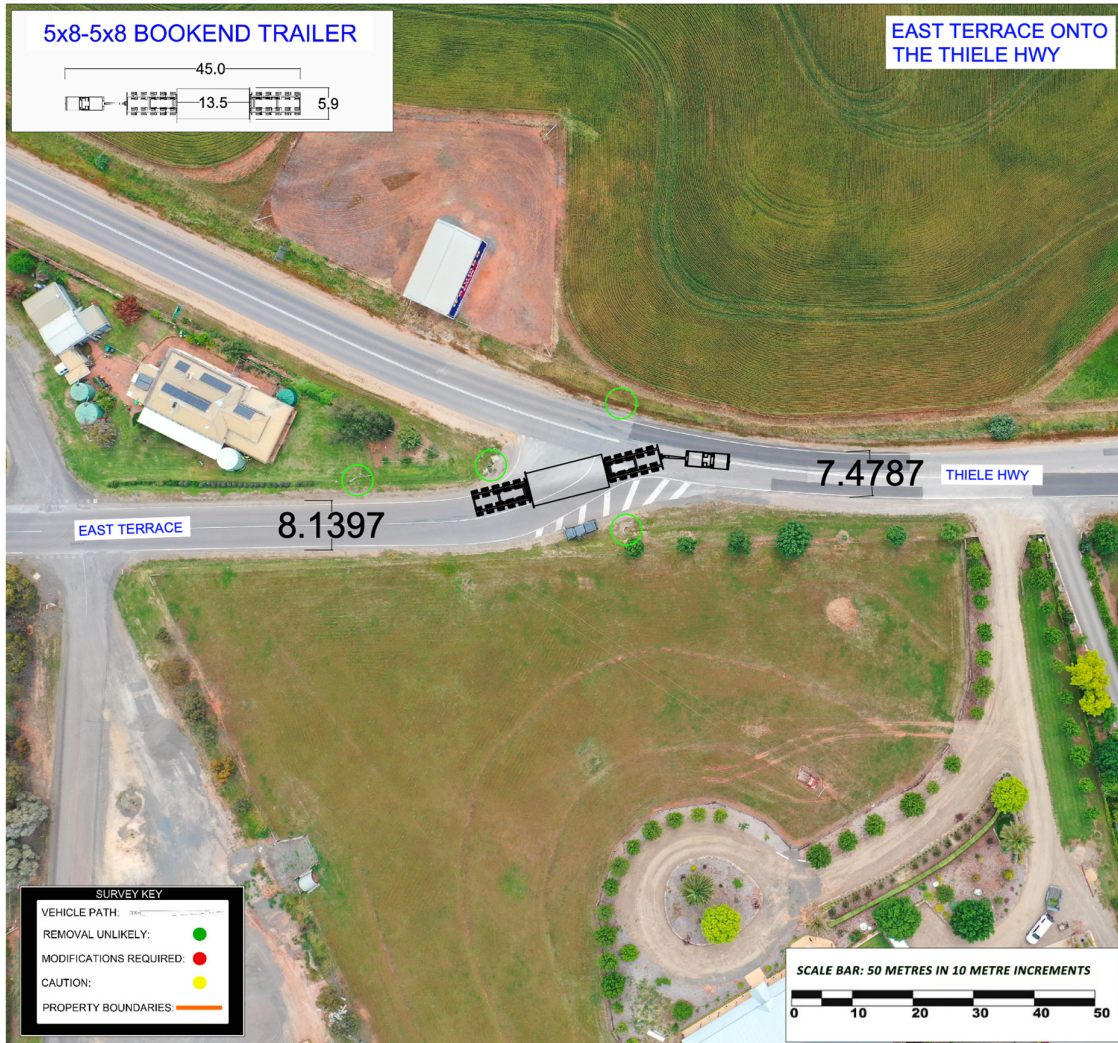


Figure 51 –East Terrace onto the Thiele Highway

PROCEDURE: Right hand turn from East Terrace onto the Thiele Highway.

GPS LINK: <https://goo.gl/maps/wVeWZTnSnDTAaxEs6>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

92.0 Km's: Thiele Hwy onto Truro Road at Kapunda.

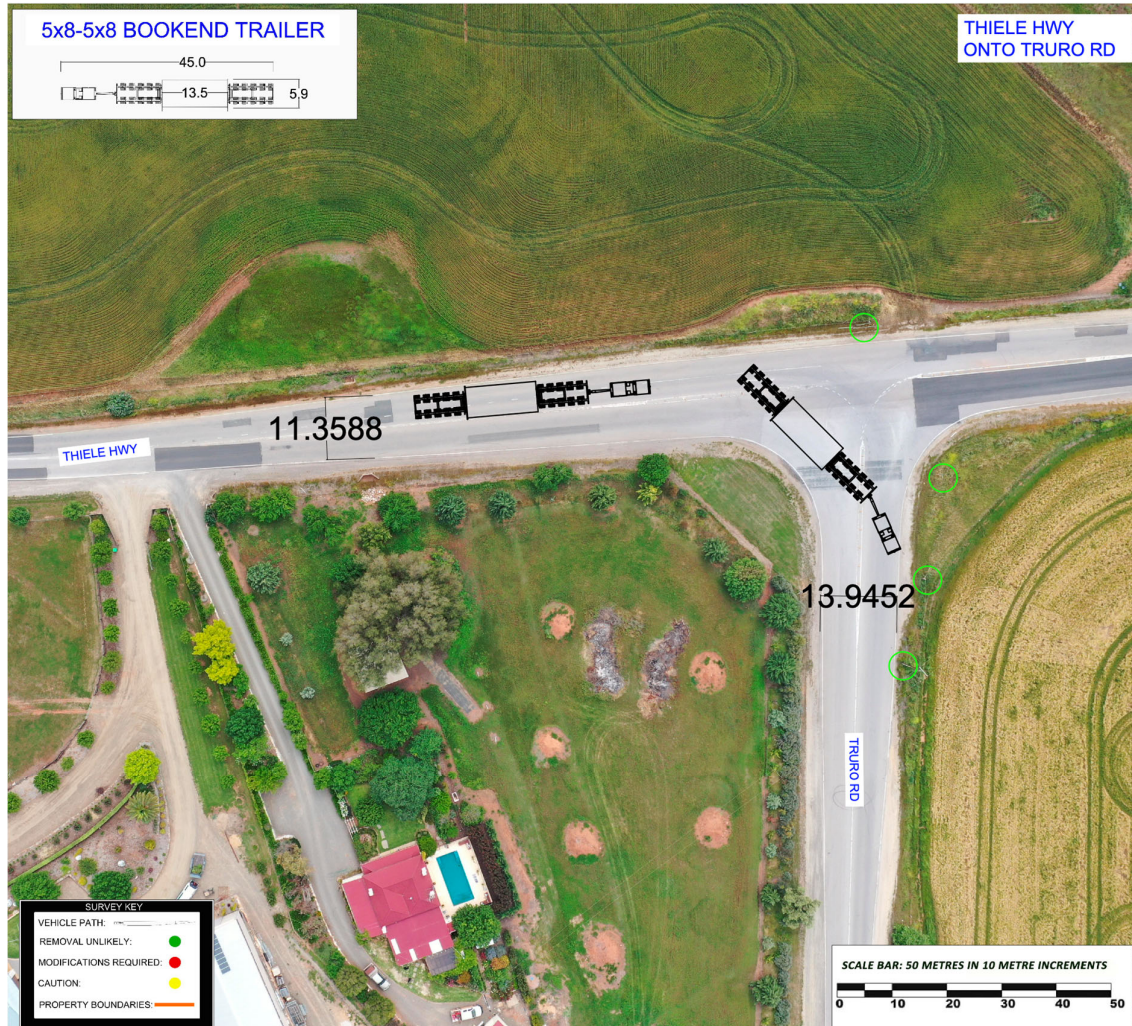


Figure 52 –Thiele Highway onto Truro Road

PROCEDURE: Right hand turn from the Thiele Highway onto Truro Road.

GPS LINK: <https://goo.gl/maps/rupYTUbWTiDqQbLq9>

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

111.0 Km's: Truro Road onto the Sturt Highway at Truro.

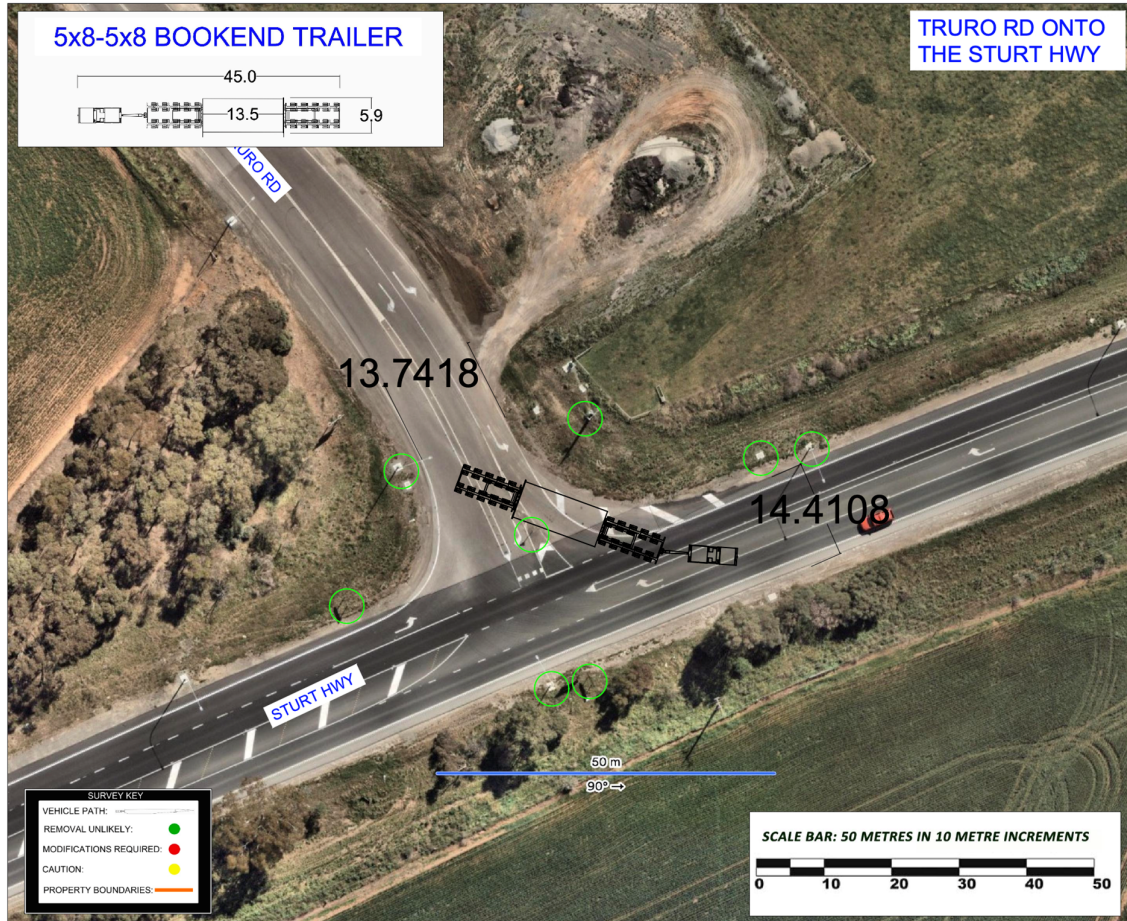


Figure 53 –Truro Road onto the Sturt Highway

PROCEDURE: Left hand turn from Truro Road onto the Sturt Highway.

GPS LINK: <https://goo.gl/maps/VsQYKAe4MpcgYd7>

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

275.0 Km's: Karoonda Hwy Roundabout in Loxton

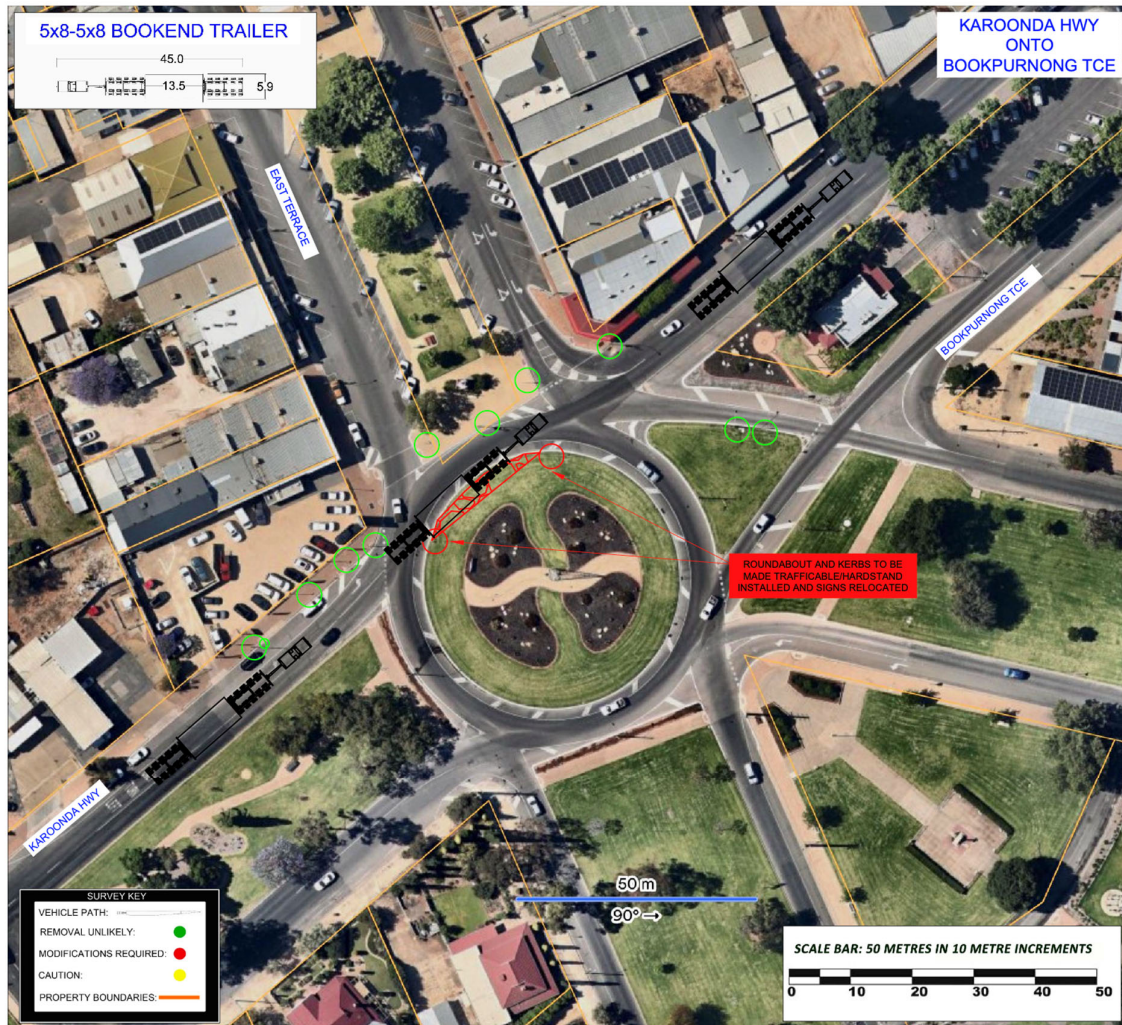


Figure 54 - Karoonda Hwy Roundabout in Loxton.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/qZXFU8r5scZwGxqPA>

PROCEDURE: Travel straight ahead using the hardstand installed on the roundabout and continue onto Bookpurnong Terrace.

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

285.0 Km's: Bookpurnong Road onto Stanitzki Road at Loxton North



Figure 55 - Bookpurnong Road onto Stanitzki Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4D9S2wy8wpSkWqCG8>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: No works required.

313.0 Km's: Stanitzki Road onto Sturt Highway at Pike River

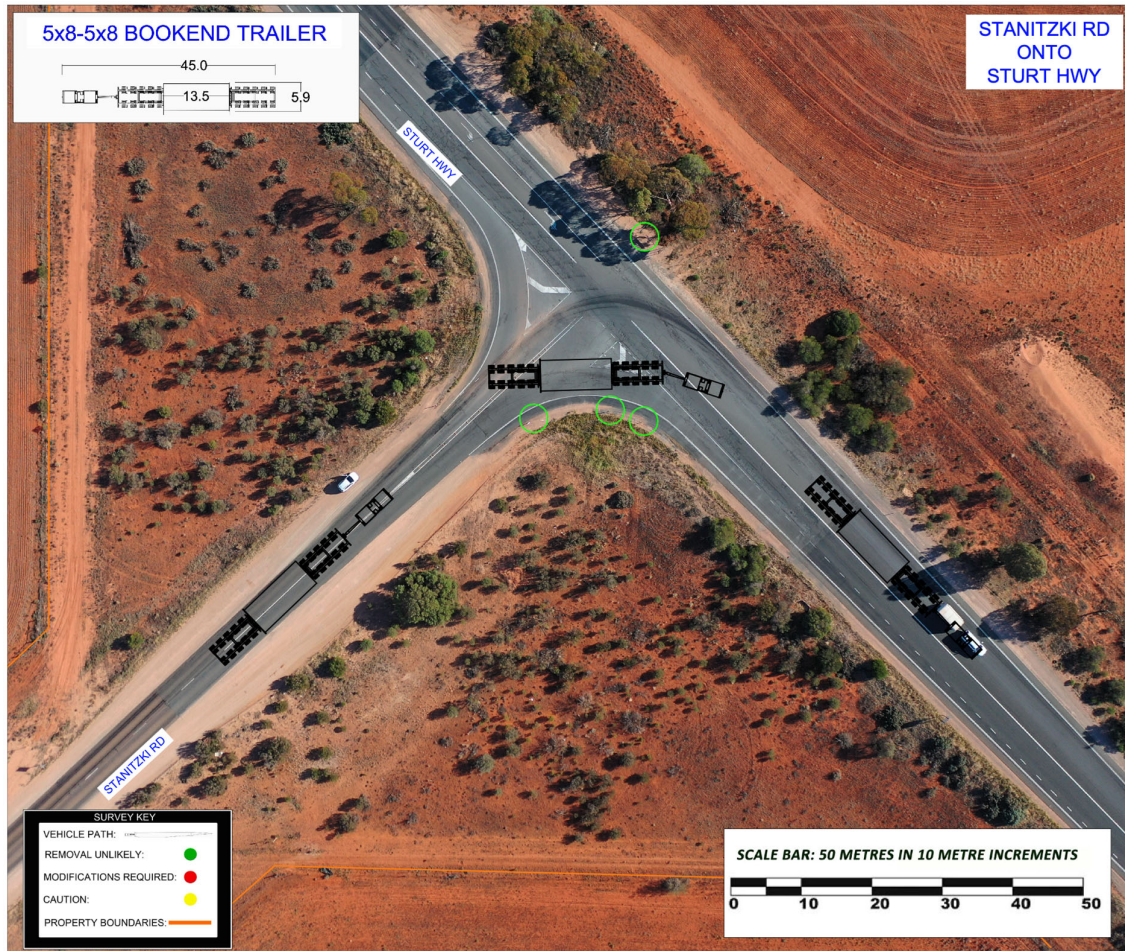


Figure 56 - Stanitzki Road onto Sturt Highway

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/QyNogMy3b9zg8MAUA>

PROCEDURE: Right hand turn.

ROAD MODIFICATIONS: No works required.

316.0 Km's: Sturt Hwy under the Big Dunlop Tyre at Yamba

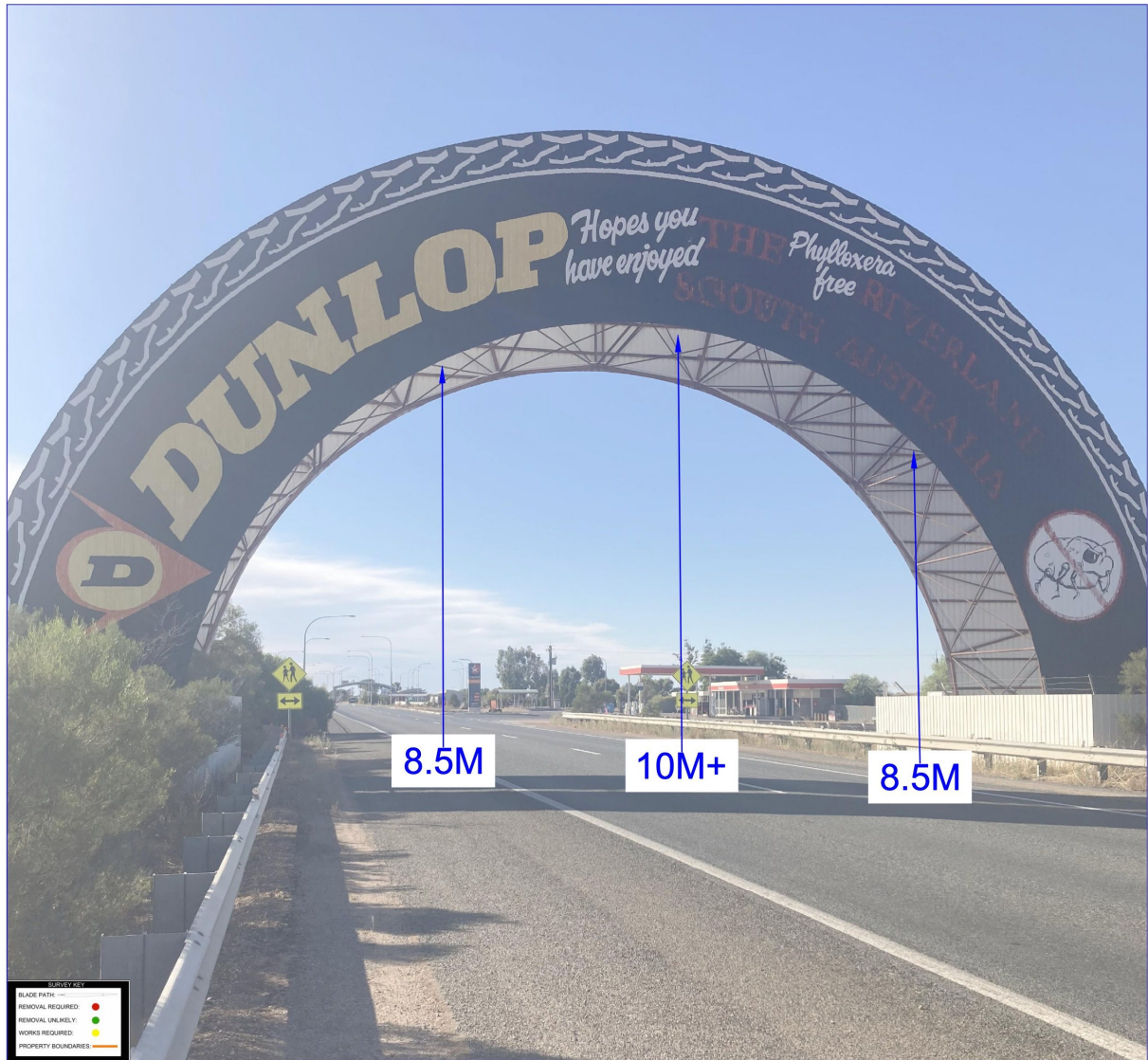


Figure 57: Sturt Highway under the big tyre at Yamba

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/YLKNB6KuDyZezoQS6>

PROCEDURE: Continue on the Sturt Highway

COMMENTS: Loads move to the centre of the road under this structure.

522.0 Km's: Sturt Highway at roundabout in Euston.



Figure 58 - Sturt Highway roundabout at Euston, NSW

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4WoDVv7TwnbDad6z5>

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Some signs need to be made removable, some sections of the island will need to be made trafficable, and some hardstand will need to be added to the side verge.

602.0 Km's: Right hand bend on Sturt Highway at Balranald

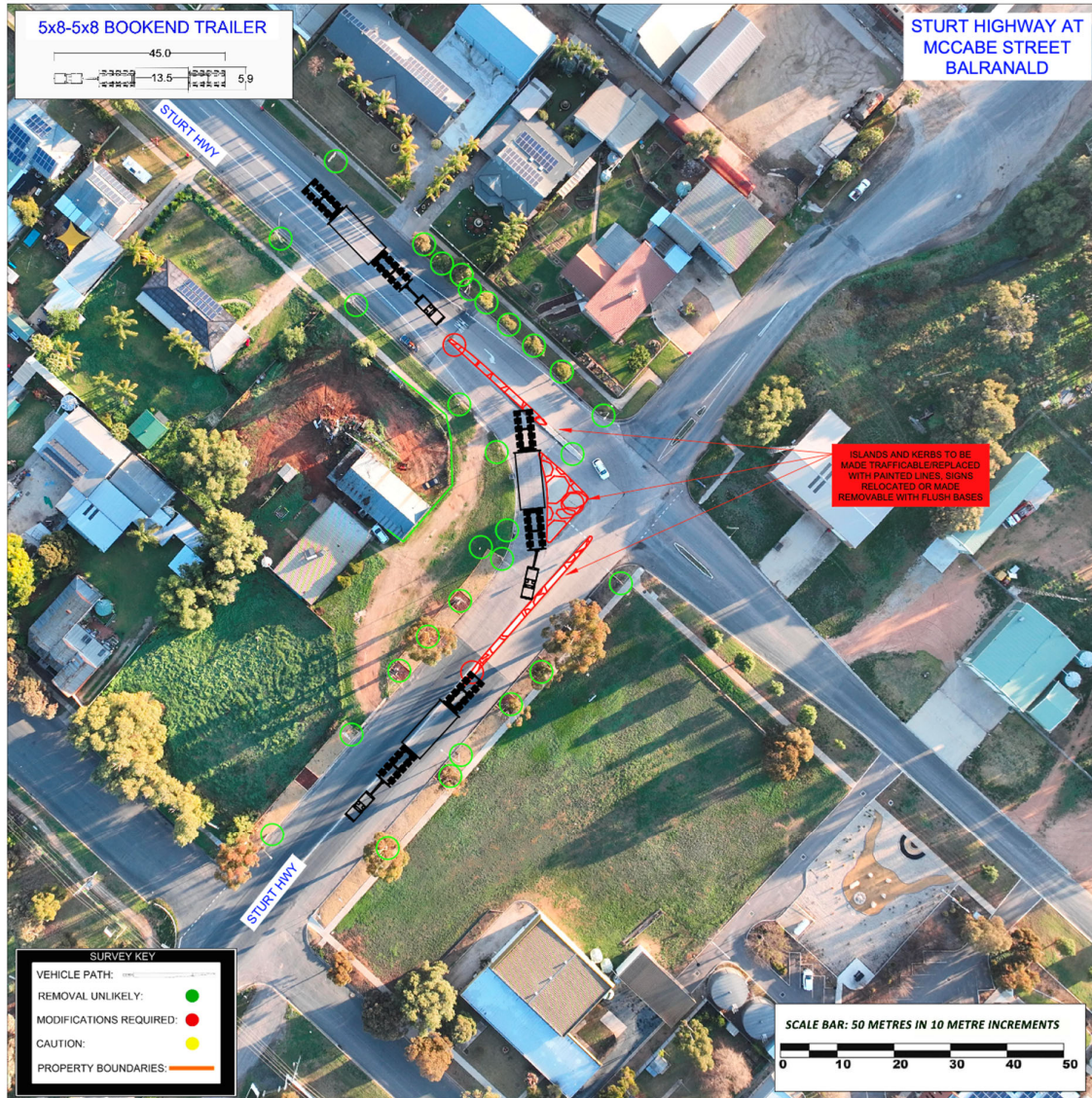


Figure 59 - Sturt Highway at Balranald option 1

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/xve4ZgbuRkqgPvVr7>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

14.1 High Loads Utilisation of Route 1 Cullulleraine to Euston via Robinvale - Optionality Assessment

The use of this route for heavy loads would require an assessment of the Robinvale bridge.

381.0 Km's: Sturt Highway onto Werrimull N Road

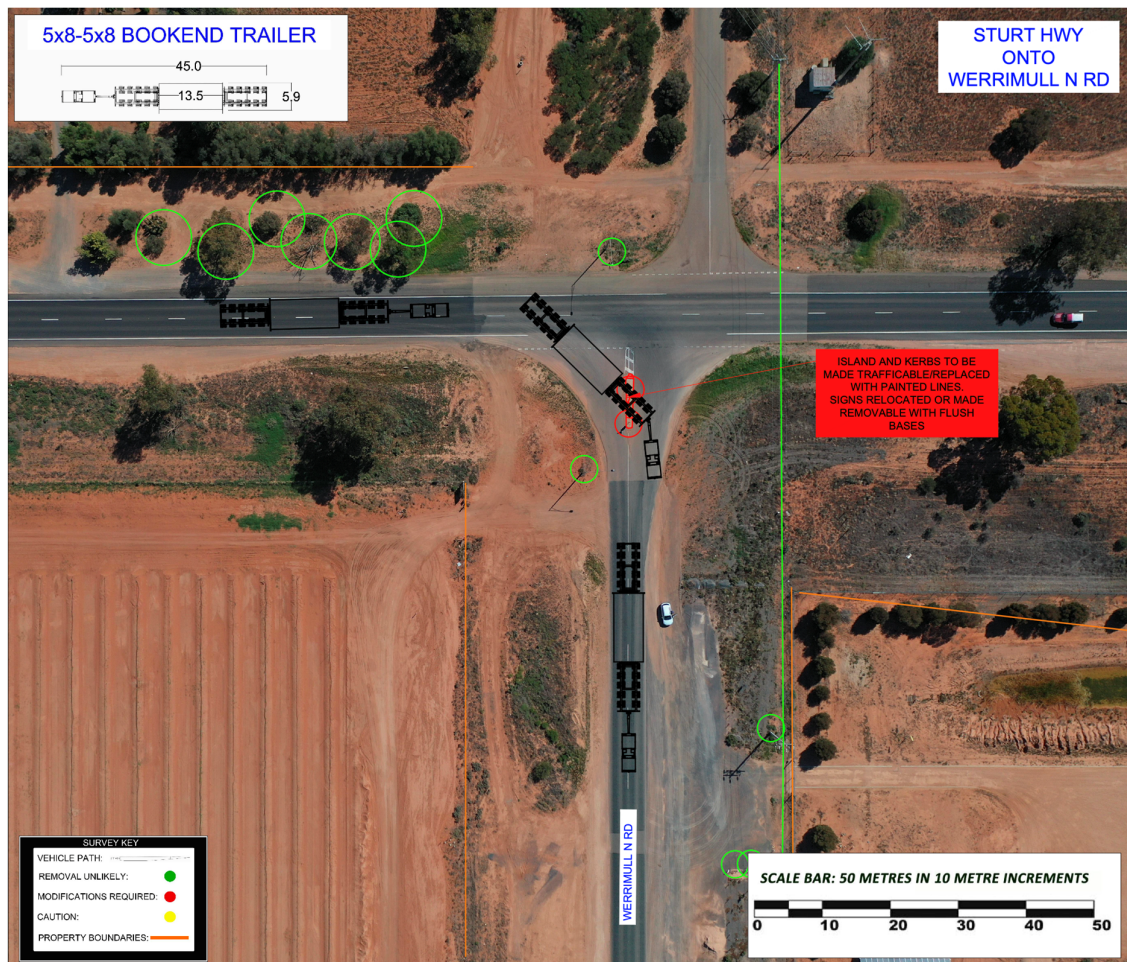


Figure 60 - Sturt Highway onto Werrimull N Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/mEXbnEwPCDYMM4Fh8>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

393.0 Km's: Werrimull N Road onto Millewa Road

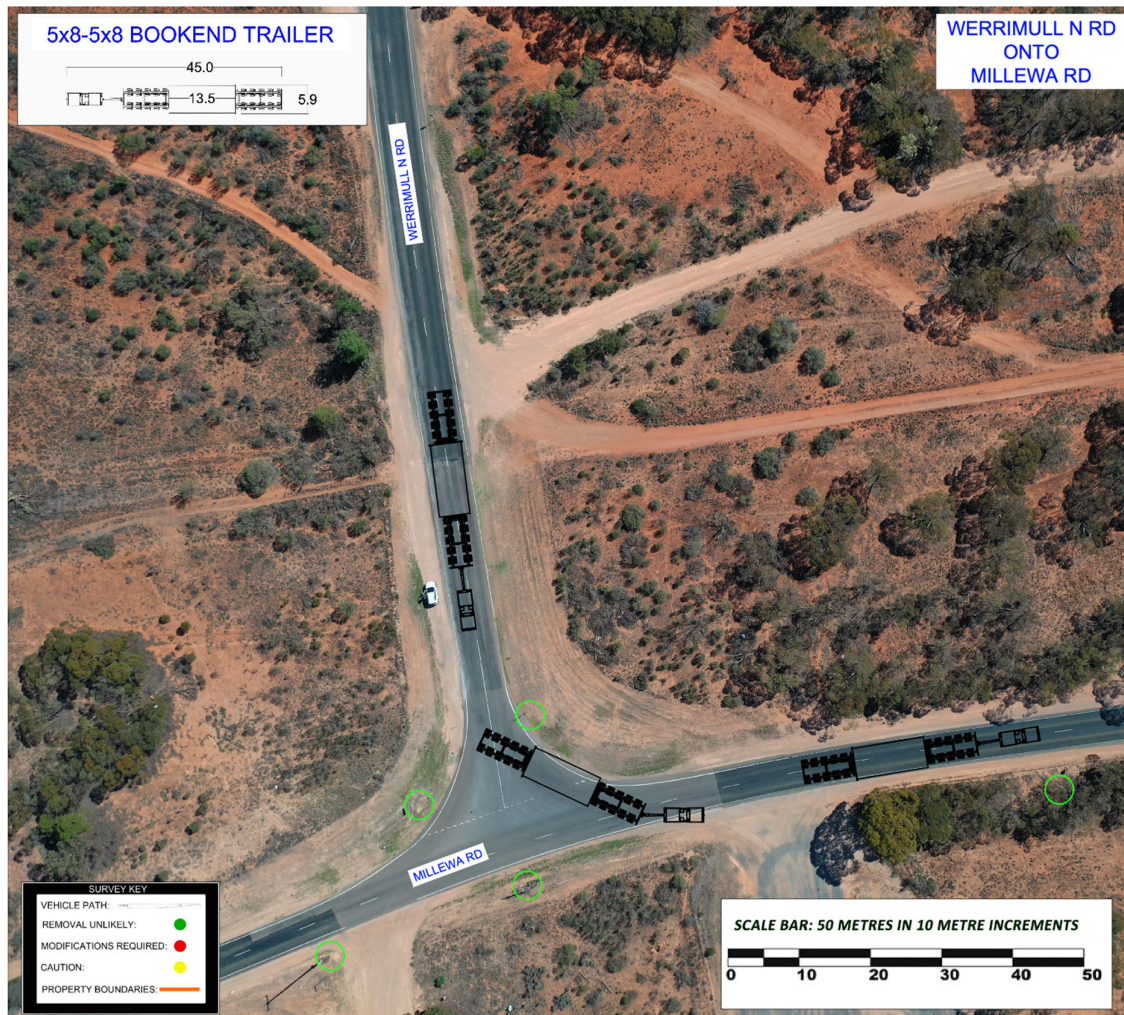


Figure 61 - Werrimull N Road onto Millewa Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/ohs9s9RSbbfqi5uN9>

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: No works required.

447.8 Km's: Right hand bend on Millewa Road before rail crossing



Figure 62 - Right hand bend on Millewa Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4VgMQjQQvY3arG786>

PROCEDURE: Right hand bend then sharp right hand turn over the rail crossing.

ROAD MODIFICATIONS: No works required.

448.0 Km's: Millewa Road onto Calder Hwy

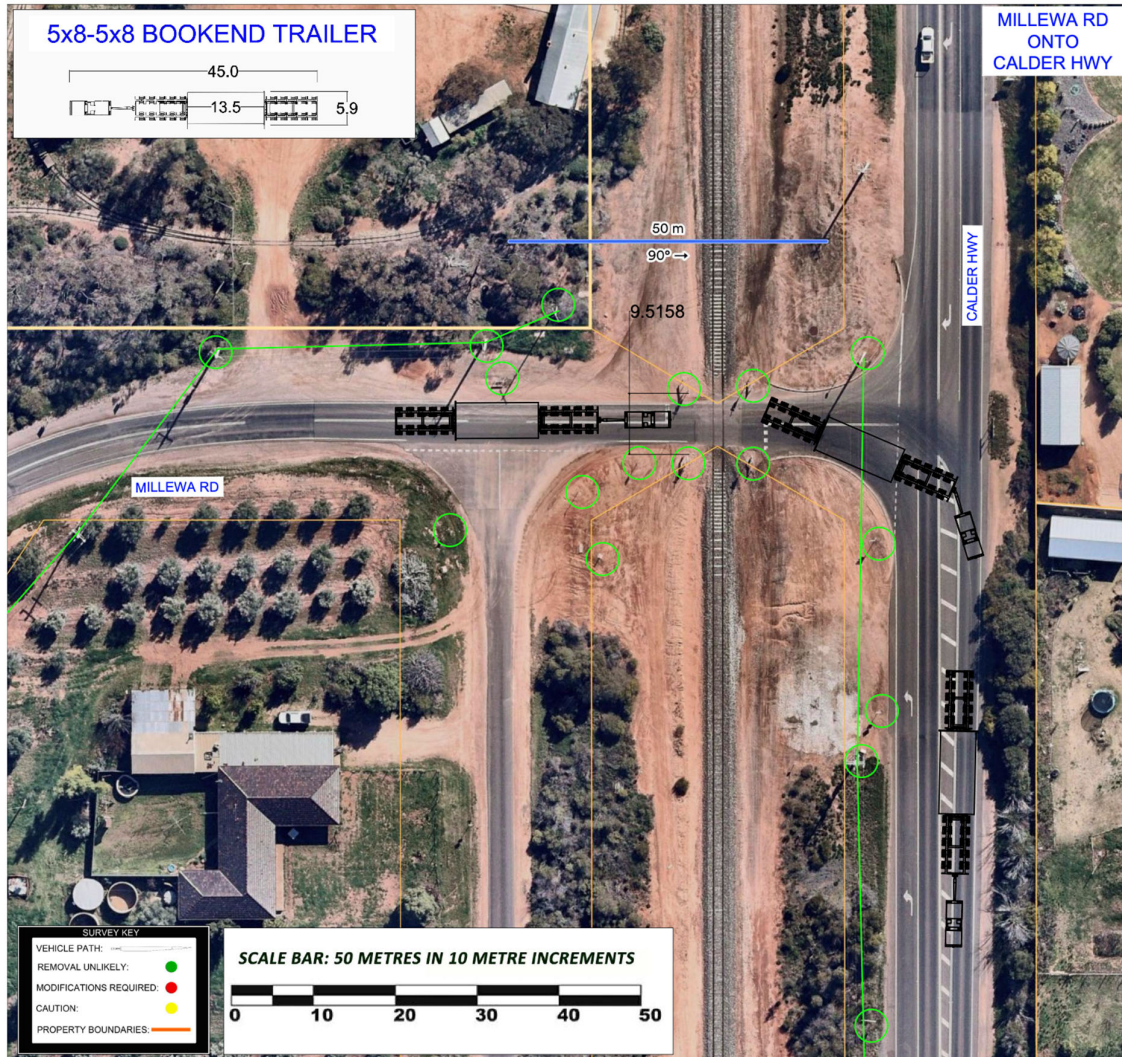


Figure 63 - Millewa Road onto Calder Hwy

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Rm6ZZEukQW5Nmbkc8>

PROCEDURE: Right hand bend then sharp right hand turn over new rail crossing.

ROAD MODIFICATIONS: No works required.

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

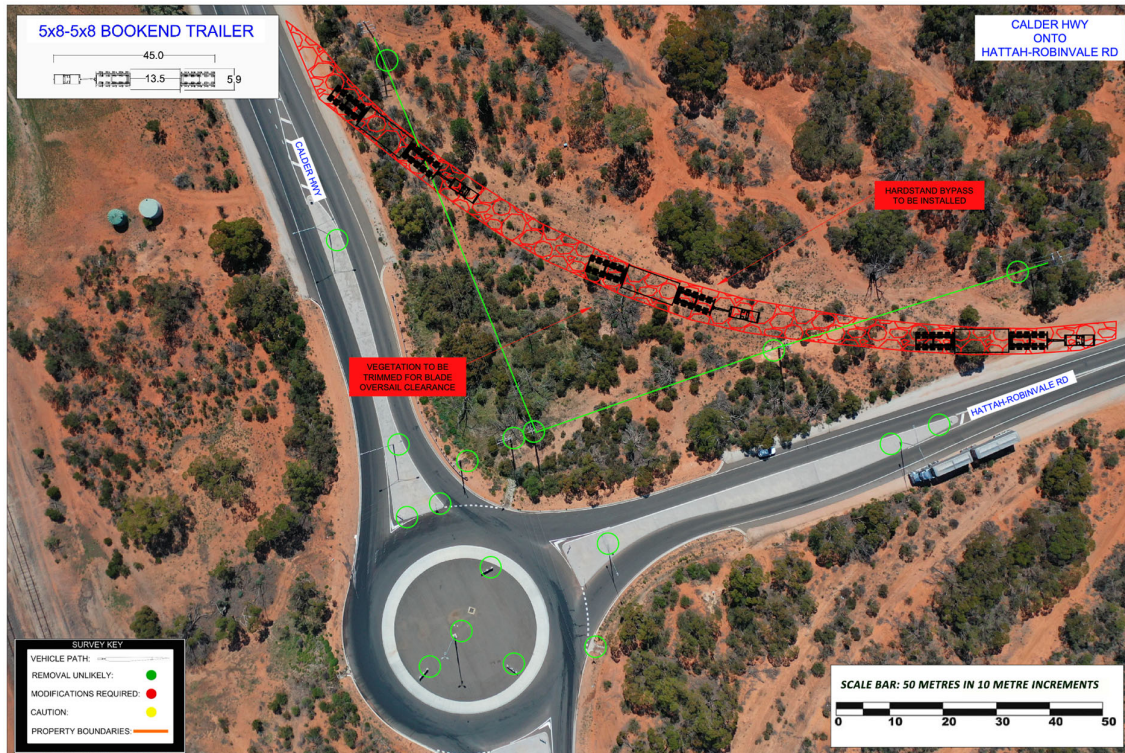


Figure 64 - Calder Highway onto Hattah-Robinvale Road

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Z6zEDLCg71fpPZU27>

PROCEDURE: Left hand turn at the roundabout

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

551.0 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road at Bannerton

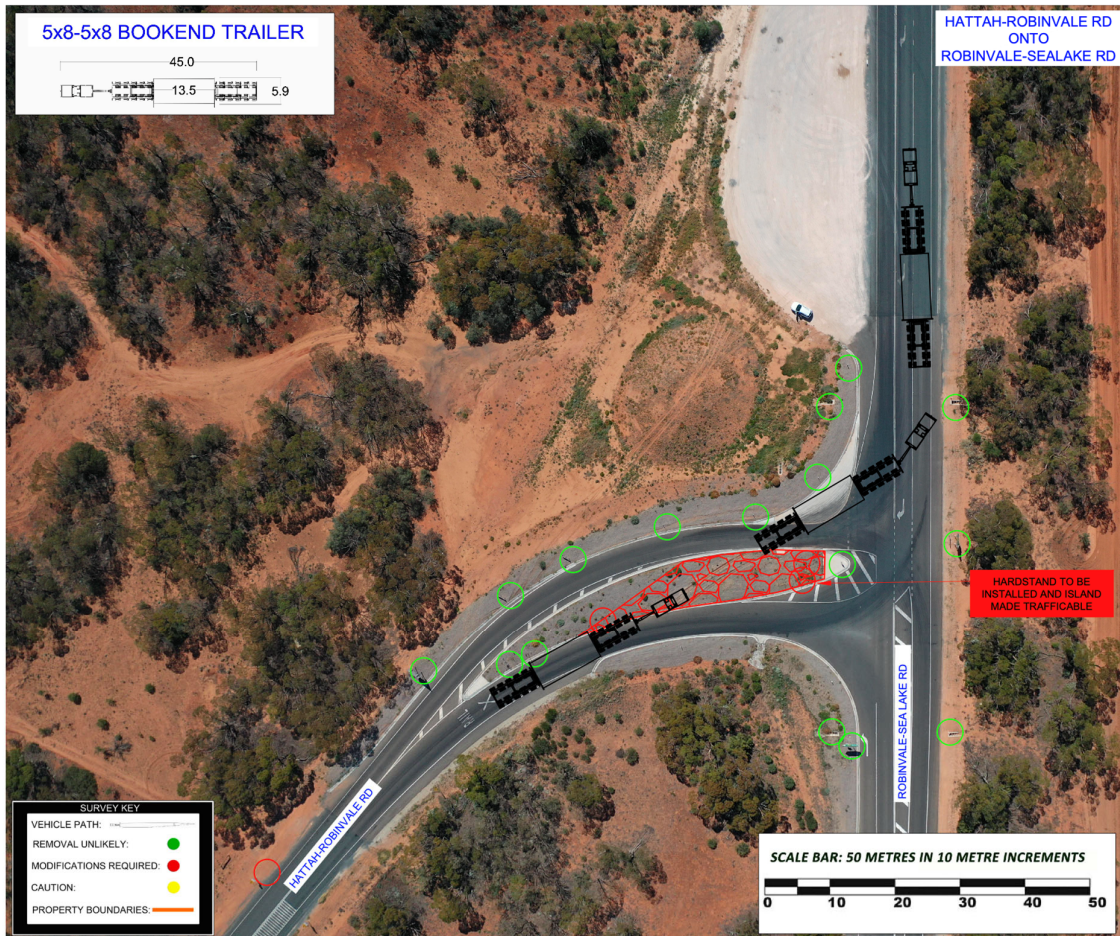


Figure 65 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road

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

PROCEDURE: Left hand turn

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

569.0 Km's: Murray Valley Highway onto Sturt Highway

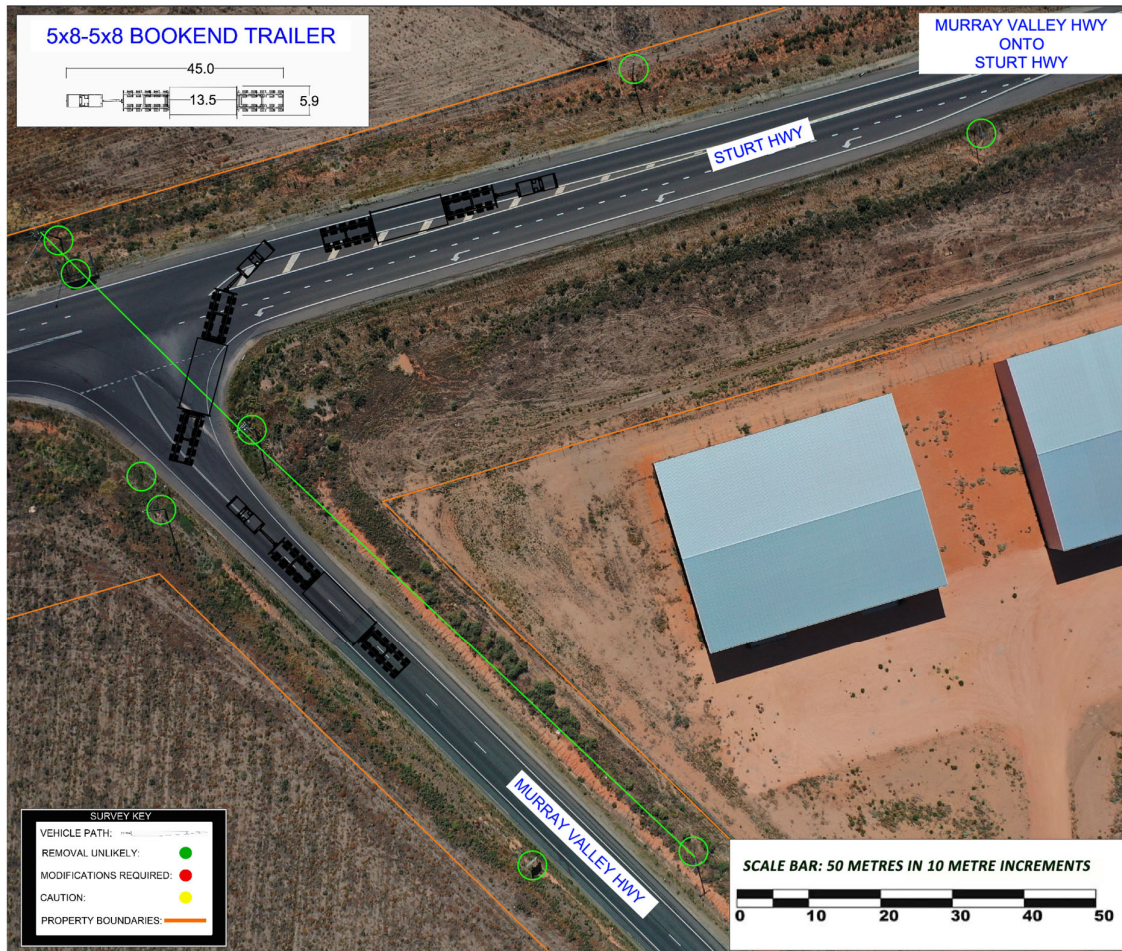


Figure 66 - Murray Valley Highway onto Sturt Highway

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

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: No works required.

602.0 Km's: Right hand bend on Sturt Highway at Balranald

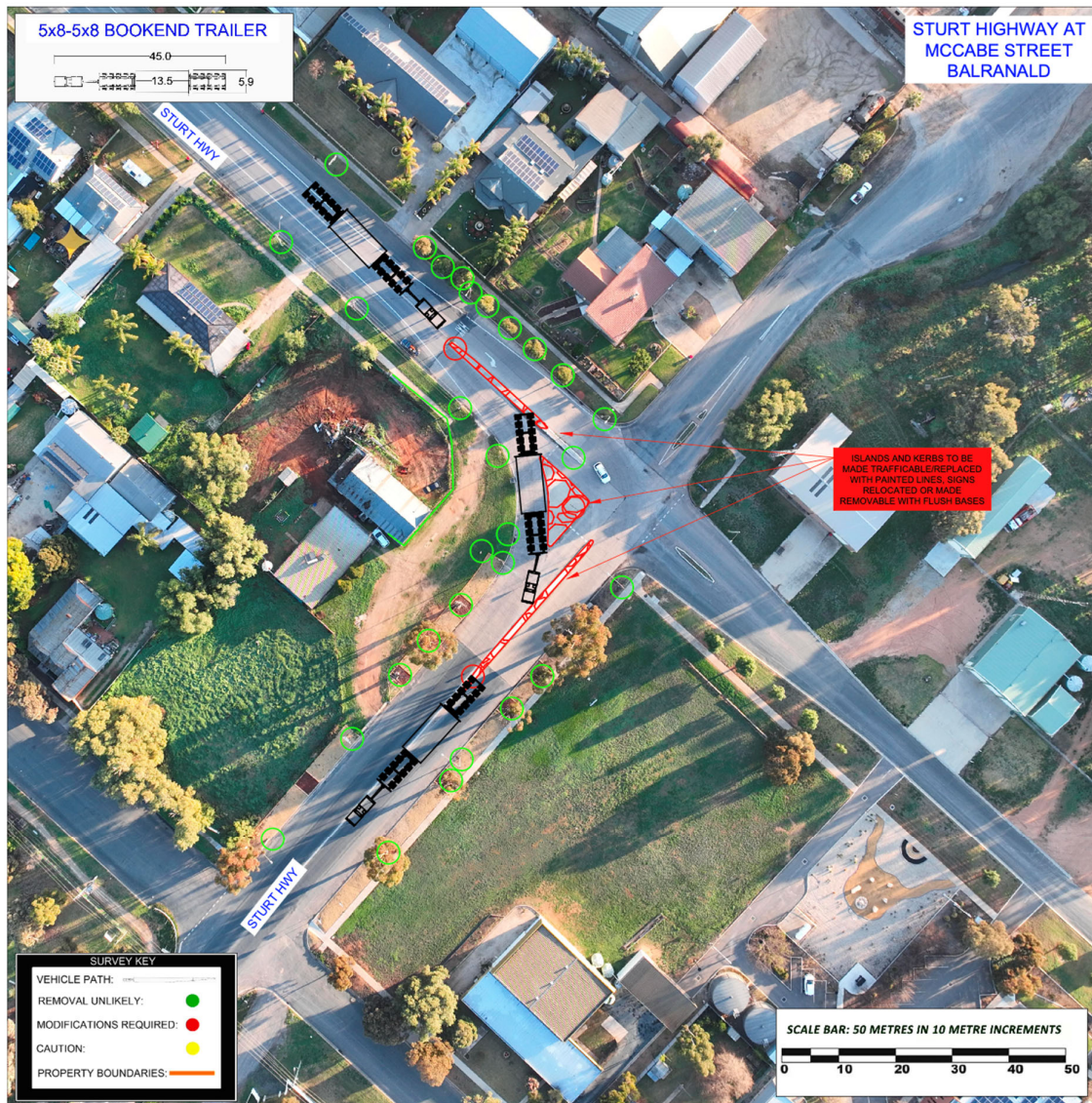


Figure 67 - Sturt Highway at Balranald option 1

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/xve4ZgbuRkqgPvVr7>

PROCEDURE: Right hand turn

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

14.2 Route 3 Detour: Kingston on Murray to Loxton SA

Loaded heights >5.2m High Loads detour

Following feedback from SA Power, an approx. 53km detour from Kingston on Murray to Loxton should be considered to significantly reduce the amount of overhead infrastructure augmentation required for high loads with loaded heights greater than 5.2m. The detour aims to reduce interruption to overhead services, and greatly enhance operational efficiency and safety.

Note this is relevant to loaded heights of more than 5.2m, maximum loaded height maintained at 6.4m.

The swept path on this route is adequate for the vehicles listed in this report.

COMPONENTS: Larger items with a loaded height >5.2m up to 6.4 metres

DISTANCE: detour 53km, total route 626 kilometres

GPS LINK: <https://maps.app.goo.gl/N6JQGFwLDUpLEHXGA>

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Stott Highway, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.



Figure 68 - Route 3 detour from Kingston on Murray to Loxton

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KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

132.05	Blanchetown SA	Sturt Highway GPS Link: https://goo.gl/maps/fQvt31Kceog	10.0 metres wide	Left hand merge	Overnight parking at BP service centre
235.0	Kingston on Murray SA	Sturt Hwy onto Heinrich Rd GPS Link: https://maps.app.goo.gl/wMM1iMNMgZi9d29A	Length: 60 metres Width: 10.0 metres	Right hand turn	No problems with this section of road
265.0	Wunkar SA	Heinrich Road onto Stott Highway GPS Link: https://maps.app.goo.gl/iw3NILFWVcYD8Rb7	Length: 60 metres Width: 10.0 metres	Left Hand Turn	No problems with this section of road.
282.0	Pyap SA	Stott Highway onto Kingston Road GPS Link: https://maps.app.goo.gl/megnH5aUETzMAY7s8	Length: 60 metres Width: 10.0 metres	Right Hand Turn	No problems with this section of road.
288.0	Loxton SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqcneMAha8ew7Gq9	120 metres	Travel directly ahead	No problems with this section of road.

15.0 Route 3: Rail crossing conflicts

01 Eastern parade, Port Adelaide

GPS: <https://maps.app.goo.gl/GS6qo8BNQJDNASDn6>

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 69: Eastern Parade rail crossing

02 Gawler Road, Two Wells

GPS: <https://maps.app.goo.gl/bprikfGH1CZggQVdA>

Type: Level crossing
Asset Owner: ARTC
Line: Adelaide-Crystalbrook
LXM ID: 1726
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 70: Gawler Road rail crossing

03 Benetook Avenue, Mildura

<https://maps.app.goo.gl/x8MGw2pv4MxFe96s9>

Type: Level crossing
Asset Owner: V-Line
Line: TBC
LXM ID: TBC
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 71: Rail crossing on Benetook Avenue at Mildura

16.0 Route 3 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.

SWEPT PATH:

- The longest combination that can travel along this route without upgrades is **35 metres overall length**.
- If loads exceed 35 metres in overall length, then several corners will need to have hardstand added. They are listed in the index.

OVERHEAD STRUCTURES: (6.5 metres maximum loaded height)

BRIDGES:

- Majority of the bridges have been used previously for similar loads; however, every load will need to be checked/assessed for capacity to be sure that they could transit this route.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

VEGETATION:

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

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until midway along Balranald Road.
- Balranald Road becomes gravel and would need to be maintained throughout the delivery of the turbines.

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.

COMPONENTS THAT WOULD USE ROUTE 3:

- Loads over 5.2 metres in height which are usually the towers.
- Transformers and switchrooms if they exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.

COMPONENTS THAT WOULD USE ROUTE 3 DETOUR:

- All loads proposed for Route 3 (inc. tower sections and transformers) should utilise the detour as this would significantly reduce overhead infrastructure augmentation.

COMPONENTS THAT COULD UTILISE FOLLOW ROUTE 1 FROM CULLULLERAIN:

- All loads proposed for Route 3 (inc. tower sections and transformers) pending load assessment of the Robinvale bridge.

17.0 Route 4 Study: Port Adelaide SA to Junction Rivers windfarm NSW, High Load Route, Option 2

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 659 kilometres

GPS LINK: <https://maps.app.goo.gl/n87wjSd8tn6y6pt18>

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Road, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy Road, Thiele Hwy, East Terrace, Thiele Hwy, Goyder Hwy, Sturt Hwy, Airport Rd, Government Rd, Ral Ral Ave, Wentworth-Renmark Rd, Renmark Rd, Silver City Hwy, Armstrong Ave, Silver City Hwy, Sturt Hwy, Yanga Way, Balranald Road.

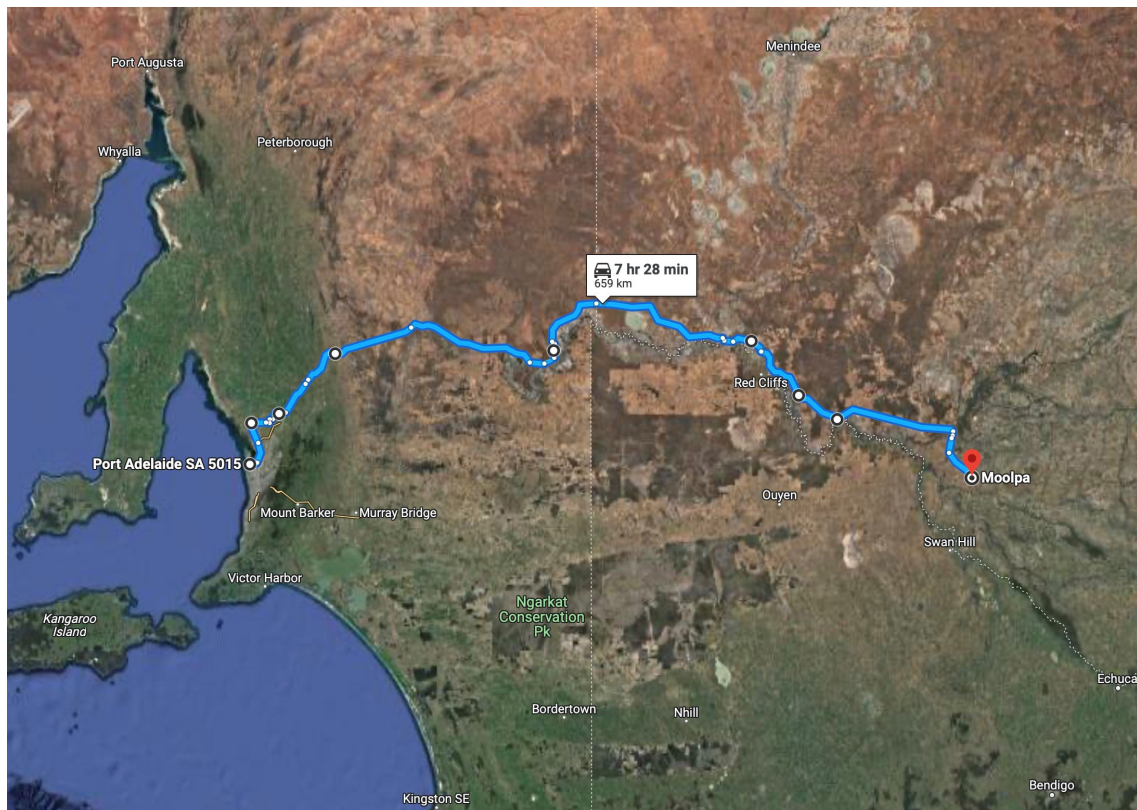


Figure 72 - Route 4

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide SA	Port storage area across Ocean Steamers Rd and onto eastern Parade GPS Link: https://goo.gl/maps/tK6JqG1AidMDqgSs5	Length: 75.0 metres Width: 8.0 metres Height: N/A	Drive out of storage area and cross to the incorrect side of Eastern Parade	No problems with this section of road to be modified.
0.2	Port Adelaide SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZFLvNDkKxRyTed9	Length: 80.5 metres Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.9	Gilman SA	The Eastern Parade onto the Port River Expressway GPS Link: https://goo.gl/maps/mPFZDKYzewGxvm8S8	Length: 70.0 metres Width: 10.9 metres Height: N/A	Left hand turn	No problems with this section of road.
0.9 to 4.3	Gilman to Wingfield SA	Port River Expressway GPS Link: https://goo.gl/maps/rpFDwXM41ACYr2Vv6	Length: 100.0 metres Width: 10.0 metres Height: 6.2 metres	Travel directly ahead.	Loads over 6.2 metres will need to travel over the top of Hansen Road.
4.3	Wingfield SA	Port River Expressway onto Northern Connector GPS Link: https://goo.gl/maps/BtCb3VPGq3yqpCt57	Length: 100.0 metres Width: 8.0 metres Height: 6.5 metres	Left hand bend	No problems with this section of road.
4.3 To 19.2 Km's	Wingfield to Waterloo Corner SA	Northern Connector GPS Link: https://goo.gl/maps/onzFMbVb3PpaJq52A	Length: 100.0 metres Width: 10.5 metres Height: 6.5 metres	Travel directly ahead	No problems with this section of road.
19.8	Waterloo Corner SA	Northern Connector onto Port Wakefield Highway "A1" GPS Link: https://goo.gl/maps/yclGFDqzQ8idciv47	Length: 100.0 metres Width: 8.0 metres Height: N/A	Right hand merge onto A1	No problems with this section of road.
33.4	Two Wells SA	Port Wakefield Highway "A1" onto Mallala Road GPS Link: https://goo.gl/maps/U78MZSBL43D2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.7	Two Wells SA	Mallala Road onto Old Port Wakefield Road GPS Link: https://goo.gl/maps/CzpYPwc9cBM2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.9	Two Wells SA	Old Port Wakefield Road onto Gawler Road GPS Link: https://goo.gl/maps/TfEJNdGpFP12	Length: 50 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
44.6	Gawler River SA	Gawler Road onto Two Wells Road GPS Link: https://goo.gl/maps/ijQJCiKW6uH2	8.0 metres wide	Travel directly ahead	No problems with this section of road

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KM index	Location	Section of road	Critical Measurement	Procedure	Notes
46.8	Gawler River SA	Two Wells Road onto Wilkinson Road GPS Link: https://goo.gl/maps/6DeWPk5rKF32	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
49.3	Kangaroo Flat SA	Wilkinson Road onto Hatcher Road GPS Link: https://goo.gl/maps/XQ8cNtqzQUG2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
51.3	Kangaroo Flat SA	Hatcher Road onto Oates Road GPS Link: https://goo.gl/maps/qXcidwDzNxCDwL8AA	Length: 60 metres Width: 8.0 metres Height N/A	Left hand bend	No problems with this section of road
54.5	Kangaroo Flat SA	Oates Road onto Redbanks Road GPS Link: https://goo.gl/maps/tV/Cv2BFmnZ72	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
55.1	Kangaroo Flat SA	Redbanks Road onto Mudla Wirra Road GPS Link: https://goo.gl/maps/2yC31AASRxM2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
56.5	Roseworthy SA	Mudla Wirra Road onto College Road GPS Link: https://goo.gl/maps/bu28YmqsfDP2	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
60.8	Roseworthy SA	College Road onto Cliff Road GPS Link: https://goo.gl/maps/n6BLSSAcgHT2	Length: 40 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
61.4	Roseworthy SA	Cliff Road onto Gartrell Street GPS Link: https://goo.gl/maps/UGN6vnZ8DDG2	9.0 Metres into 9.0 metres	Right hand turn	No problems with this section of road
62.5	Roseworthy SA	Gartrell Street onto Roseworthy Road GPS Link: https://goo.gl/maps/Pv6YuP9aWvH2	Length: 80 metres Width: 9.0 metres Height N/A	Left hand bend	No problems with this section of road
64.8	Kingsford SA	Roseworthy Road onto Thiele Hwy GPS Link: https://goo.gl/maps/GpH6AaL4yS4exER47	Length: 80 metres Width: 9.0 metres Height N/A	Left hand turn	No problems with this section of road
88.3	Kapunda SA	Thiele Hwy onto East Terrace GPS Link: https://goo.gl/maps/viqt2WM7MnUcA83	Width: 6.5 metres	Right hand turn	Sign to be made removable
91.8	Kapunda SA	East Terrace onto Thiele Hwy GPS Link: https://goo.gl/maps/wVeWZTnSnDTAaxEs6	Length: 60 metres Width: 6.0 metres	Right hand turn	Overhead conductor clearance to be confirmed
174.0	Morgan SA	Thiele Hwy corner at Morgan GPS Link: https://goo.gl/maps/i8dyAS2ding9ix6U6	Length: 45 metres Width: 6.0 metres	Left hand turn	Overhead conductor and streetlight clearance to be confirmed

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KM index	Location	Section of road	Critical Measurement	Procedure	Notes
175.0	Morgan SA	Thiele Hwy onto Goyder Hwy GPS Link: https://goo.gl/maps/itxK3tVH3dQw1FgcA	Width: 7.0 metres	Travel directly ahead	No problems with this section of road
176.0	Morgan SA	Goydey Hwy GPS Link: https://maps.app.goo.gl/B7iDfHCbwd64bKLLA	100.0 metres long 9.0 metres wide	Merge to the left	Suitable parking on the correct side of the road.
264.0	Monash SA	Goyder Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/WiNggF14DYrwsHGh8	Length: 75 metres Width: 9.0 metres	Left hand turn	No problems with this section of road
273.0	Monash SA	Sturt Hwy Roundabout GPS Link: https://goo.gl/maps/ri4hoYgDyaATRDUt9	Width: 6.0 metres	Left hand turn	Use slip lane to continue on Sturt Hwy
277.0	Monash SA	Sturt Hwy GPS Link: https://maps.app.goo.gl/H5GgSMnYNDd6nMJq8	150.0 metres long 10.0 metres wide	Merge to the left	Suitable parking on correct side of the road.
281.0	Renmark South SA	Sturt Hwy onto Airport Rd GPS Link: https://goo.gl/maps/Mxs4f678Vpz62Jyw7	Width: 7.5 metres Length: 50 metres	Left hand turn	Delineators to be made removable
281.4	Renmark South SA	Airport Rd onto Government Rd GPS Link: https://goo.gl/maps/WATme8Chd8uayVdP8	Width: 7.0 metres Length: 45 metres	Right hand turn	Hardstand to be installed on outside of corner. Overhead conductor clearance to be confirmed.
291.0	Renmark North SA	Government Rd onto Ral Ral Ave GPS Link: https://goo.gl/maps/BwhFYX9pHptfAMw7	Width: 6.5 metres Length: 40 metres	Left hand turn	No problems with this section of road
293.0	Cooltong SA	Ral Ral Ave onto Wentworth-Renmark Rd GPS Link: https://goo.gl/maps/TA1wuHwQG7ArPdFy8	Width: 7.0 metres Length: 60 metres	Right hand turn	No problems with this section of road
293.5	Cooltong SA	Wentworth-Renmark Rd GPS Link: https://maps.app.goo.gl/vdM66JyHLOGpdBqN8	80.0 metres long 12.0 metres wide	Merge to the left	Suitable parking on correct side of the road.
298.0-431.0	Cooltong SA/NSW	Wentworth-Renmark Rd GPS Link: https://maps.app.goo.gl/bmrVkuTTozAtaxVm6	Width: 4.5 metres	Travel directly ahead	Gravel road with multiple stock crossings. Road to be graded prior to commencement and maintained for project duration. May become unusable in wet conditions.
338.0	Donggall NSW	Wentworth-Renmark Rd becomes Renmark Rd GPS Link: https://goo.gl/maps/ZuFAU4EdRT1KAf6m9	Width: 4.5 metres	Travel directly ahead	SA-NSW border
432.0	Wentworth NSW	Renmark Rd onto Silver City Hwy GPS Link: https://goo.gl/maps/Wv3auw9tcb4ahhDy6	Width: 6.0 metres Length: 60 metres	Right hand turn	No problems with this section of road
434.0	Wentworth NSW	Silver City Hwy onto Armstrong Ave GPS Link: https://goo.gl/maps/6hVYF8x4Nz98Ls10c7	Width: 9.0 metres Length: 50 metres	Left hand turn	Signs to be made removable as required and island made trafficable
434.5	Wentworth NSW	Armstrong Ave onto Silver City Hwy GPS Link: https://goo.gl/maps/TCQ4L3c37NcUCRJa6	Width: 5.0 metres Length: 50 metres	Right hand turn	Load to use slip lane on incorrect side of road.

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KM index	Location	Section of road	Critical Measurement	Procedure	Notes
435.0	Wentworth NSW	Silver City Highway GPS Link: https://maps.app.goo.gl/xLrMSbrhfVzq2cHD9	70.0 metres long 9.0 metres wide	Merge to the left	Possible parking on correct side of the road.
441.0	Curlwaa NSW	Corner on Silver City Hwy at Calder Hwy GPS Link: https://goo.gl/maps/L8FS9vEtsSVduJUA	Width: 10.0 metres Length: 45 metres	Left hand turn	No problems with this section of road
464.0	Buronga NSW	Silver City Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/vccENVHns8NSNUT96	Width: 6.0 metres Length: 50 metres	Left hand turn first exit on roundabout	No problems with this section of road
488.0	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBrzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
540.0	Euston NSW	Sturt Hwy roundabout at Carey St GPS Link: https://goo.gl/maps/4WuGVvz7TverhQad6s5	6 metres wide	Left hand turn first exit on roundabout	Signs on entry and exit island to be relocated or made removable and islands made trafficable and hardstand to be added to side of road.
556.0	Meilman East, NSW	Sturt Highway, Meilman East Rest Area	280 metres long 7 metres wide	Right Hand Turn	Suitable parking on the incorrect side of the road.
620.0	Balranald NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/6vce4ZqhuRkagPvA7	6 metres wide	Right Hand Turn	Load to cross the incorrect side of the roundabout. Median strips will need to be made trafficable, and signs made removable.
621.0	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUggHV9PKpztyi5q9	8 metres wide	Right Hand Turn	No problems with this section of road.
633.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
644.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/foaPvXnmM2PLjJLqJf	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
659.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/8H8zRCMEcokXQHv59	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

434.0 Km's: Silver City Highway at Wentworth.



Figure 73 – Silver City Highway at Wentworth, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/nDWFRzcNzg8Lc1Gc7>

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Centre island will need to be made trafficable, and a sign will need to be made removable.

540.0 Km's: Sturt Highway at roundabout in Euston.



Figure 74 – Sturt Highway roundabout at Euston, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/4WoDVv7TwnbDad6z5>

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Some signs need to be made removable, some sections of the island will need to be made trafficable, and some hardstand will need to be added to the side verge.

620.0 Km's: Right hand turn on the Sturt Highway at Balranald, NSW.

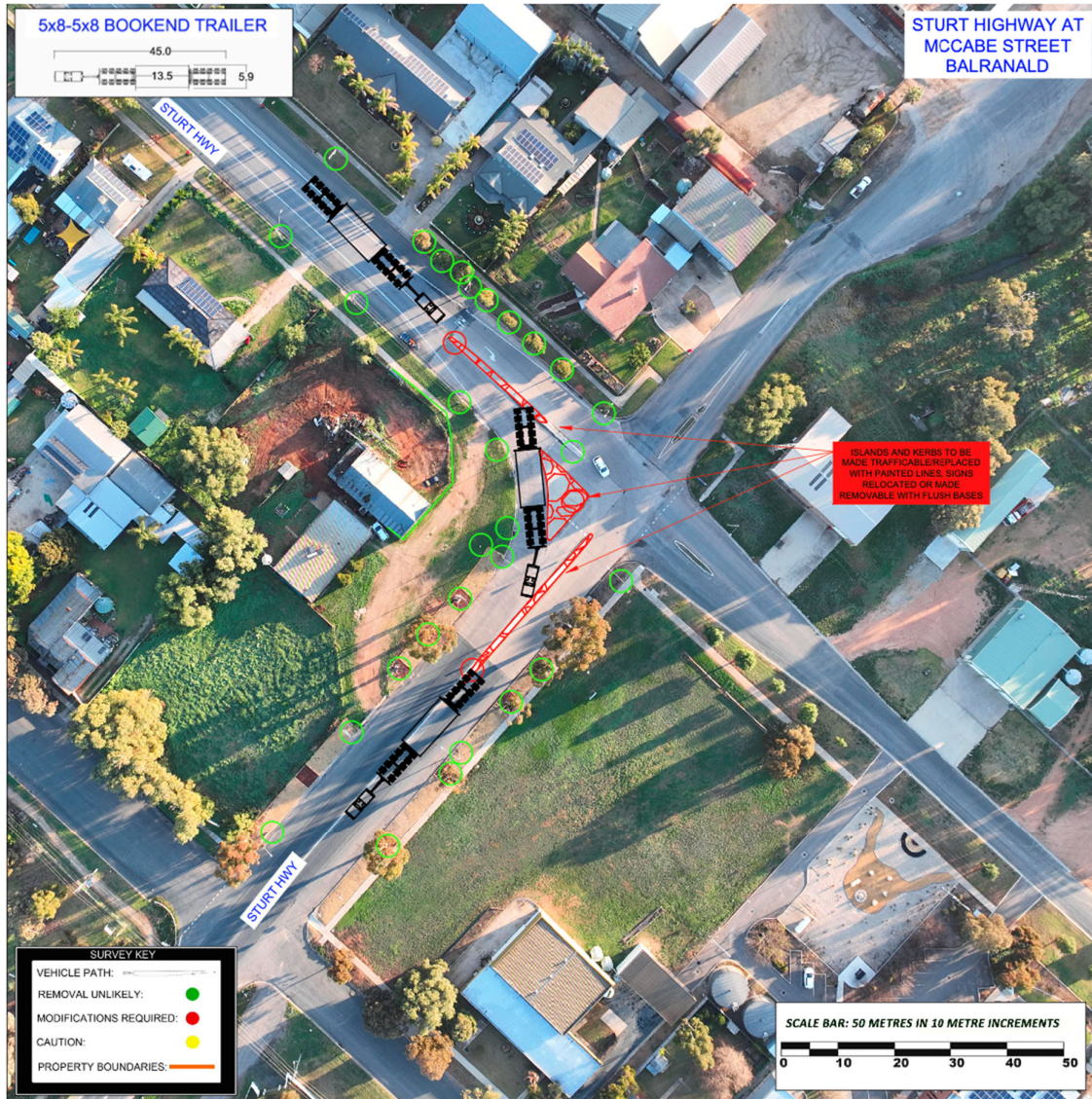


Figure 75 –Sturt Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/xve4ZgbuRkqgPvVr7>

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, signs to be made removable and median strips to be removed and replaced with painted lines and made trafficable.

18.0 Route 4: Rail crossing conflicts

01 Eastern parade, Port Adelaide

GPS: <https://maps.app.goo.gl/GS6qo8BNQJDNASDn6>

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 76: Eastern Parade rail crossing

02 Gawler Road, Two Wells

GPS: <https://maps.app.goo.gl/bprikfGH1CZggQVdA>

Type: Level crossing
Asset Owner: ARTC
Line: Adelaide-Crystalbrook
LXM ID: 1726
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 77: Gawler Road rail crossing

19.0 Route 4 Conclusion

After studying all options and undertaking a route survey, this route can be made suitable for transporting the proposed components provided the modifications outlined in the report are completed as a minimum.

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 **35 metres overall length**
- If loads exceed 35 metres in overall length, then several corners will need to have hardstand added. They are listed in the index.

OVERHEAD STRUCTURES: (6.5 metres maximum loaded height)

BRIDGES:

- This route will need to have all bridge structures checked for capacity before the route could be deemed suitable for use.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

VEGETATION:

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

PAVEMENT:

- The Pavement on the majority of the roads have adequate highway pavement.
- Wentworth-Renmark Road is gravel and will require grading prior to commencement and to be maintained for the duration of the project. The road may become unusable in wet conditions which will impact delivery schedules.
- Balranald Road becomes gravel and would need to be maintained throughout the delivery of the turbines.

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.

COMPONENTS THAT WOULD USE ROUTE 4:

- Loads over 5.2 metres in height which are usually the towers.
- Transformers and switchrooms if they exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.

20.0 Route 3 & Route 4 Comparison

We have given 2 different options for the large diameter towers which will allow the project some flexibility if either Route 3 or 4 becomes a problem. Below are the pros and cons of each of the routes.

ROUTE 3:

Pros

- Route is currently used for similar weight loads.
- Sealed for the entirety.
- Shorter out of the 2 routes.

Cons

- Travels through 3 states.
- Travels through a major town centre of Mildura.
- Far larger number of overhead services would need to be relocated.
- Busier route that would likely affect more motorists.

ROUTE 4:

Pros

- Travels through 2 states only.
- Route is remote for long distances and wouldn't affect as many motorists.
- Fewer overhead services to relocate.

Cons

- Route would need to be assessed for capacity.
- Route has 133 km's of unsealed road.
- Slightly longer route.

CONCLUSION:

Both routes should be kept as options for the project. This takes away some risk to the project in case one of the routes becomes unusable for any reason.

While route 3 is likely the easiest option and the least complicated, route 4 does have merit. If the SW REZ had support from the states if all projects are looked at, as a whole.

Route 4 could be upgraded along the gravel section to accommodate all of the towers, which would take a significant volume of large OSOM loads off the busiest section of the Sturt Highway for over 300 kilometres.

Additionally, there are likely to be far fewer overhead assets to relocate on route 4.

21.0 Rest Areas Summary

The assessed haulage routes predominantly utilise State Highways which provide regular HV parking opportunities for rest breaks. These also provide passing opportunities for other road users allowing the OSOM vehicles to utilise the full width of the road.

The below table summarises suitable rest areas for OSOM vehicles along each route.

Routes	Location	Critical Dimensions	State	Link
1,2,3	Sturt Highway, Blanchetown SA	100 m long 10 m wide	SA	link
1, 2	Bookpurnong Road, Loxton North SA	100 m long 10 m wide	SA	link
1,2,3	Sturt Highway, Yamba SA	150 m long 8 m wide	SA	link
1,2,3	Sturt Highway, Meringur VIC	100 m long 6 m wide	VIC	link
3	Sturt Highway, Merrinee VIC	90m long 10m wide	VIC	link
1	Calder Highway, Hattah VIC	100 m long 10 m wide	VIC	link
1	Robinvale-Sea Lake Road, Bannerton VIC	120 m long 10 m wide	VIC	link
4	Goyder Highway, Morgan SA	90m long 10m wide	SA	link
4	Sturt Highway, Monash SA	150m long 10m wide	SA	link
4	Wentworth-Renmark Road, Cooltong SA	80m long 12m wide	SA	link
4	Silver City Highway, Wentworth NSW	70m long 9m wide	NSW	link
1,2,3,4	Sturt Highway, Meilman East Rest Area, NSW	280m long 8m wide	NSW	link
2,3,4	Sturt Highway, Paringi NSW	90m long 10m wide	NSW	link

21.1 Rest Areas NSW

KEY	
EMERGENCY PARKING	
SUITABLE PARKING	

Location	Section of road	Rest area dimensions	Procedure	Comments
561.0	Meilman East area Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	Length: 280.0m Width: 8.0m	Merge right	Emergency parking for the blades A sign needs to be modified.
626.7	Balranald Sturt Highway GPS Link: https://maps.app.goo.gl/qoK5mgXJGFK2tqNk9	Length: 100.0m Width: 8.0m	Merge left	Emergency parking for the blades



Figure 78 – Euston parking area

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/2FK9LSVFtVd1JUMLA>

PROCEDURE: Merge to right into the Meilman East rest area.

COMMENTS: Can be used for overnight parking or fatigue breaks. Police and pilots to control all traffic.

SUITABILITY: This parking bay is asphalt and could accommodate a blade as well as multiple other vehicles.

ROAD MODIFICATIONS: Yes. A sign will need to be relocated or made removable.



Figure 79 – Balranald parking area

GPS LINK FOR THIS LOCATION: <https://maps.app.goo.gl/YWhKDDuG8iWCezRRA>

PROCEDURE: Merge to left

PAVEMENT TYPE: Dirt

SHARED USE: No other vehicles could use this parking bay while a turbine was parked in this bay.

COMMENTS: Can be used for overnight parking or fatigue breaks. Police and pilots to control all traffic.

ROAD MODIFICATIONS: Nil.

22.0 References

Rex J Andrews P/L
Rex J Andrews P/L Route survey # 348 REV04
Windlab Developments Pty Ltd
Google Earth/Maps
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.

23.0 Appendix 1 - Transport Combinations (Examples)

TURBINE EXAMPLES:

Blades (100.0 x 4.5w x 4.0h x 30.0T)
Configuration. Prime mover with 2x4 dolly 3x4 Jinker
Overall dimensions: 110.0l x 4.5w x 4.9h x 227.0T

Nacelles (15.1l x 4.2w x 4.2h x 130T)
Configuration. Prime mover with 12x8 Platform trailer + Backup truck.
Overall dimensions: 46.0l x 4.3w x 5.2h x 204.5T + Backup truck.

Drive train/Power train/Generator (8.0l x 5.5w x 4.0h x 110T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck.
Overall dimensions: 39.9l x 5.5w x 5.0h x 199.5T + Backup truck.

Hubs (5.5l x 5.0w x 4.2h x 70.0T)
Configuration. Prime mover with 2x8 dolly and 5x8 Low loader.
Overall dimensions: 26.0l x 5.0w x 5.2h x 106.5T.

149 METRE TOWER EXAMPLE:

Base Towers (10.1l x 6.0 x 5.5 x 91T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 42.0l x 5.85w x 6.1h x 164.5T (+ Push truck)

Section 2 Towers (14.1l x 5.5 x 5.5 x 89T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 44.0l x 5.5w x 5.7h x 164.5T (+ Push truck)

Section 3 Towers (16.5l x 5.5 x 4.95 x 89T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 46.0l x 5.5w x 5.7h x 164.5T (+ Push truck)

Section 4 Towers (17.2l x 4.95 x 4.65 x 86T)
Configuration. Prime mover with 8x8 low platform.
Overall dimension: 35.0l x 5.0w x 5.9h x 154.5T (+ Push truck)

Section 5 Towers (20.5l x 4.65 x 4.65 x 84T)
Configuration. Prime mover with 10x8 platform trailer.
Overall dimension: 38.0l x 4.7w x 5.7h x 164.5T (+ Push truck)

Section 6 Towers (29.9l x 4.65w x 4.65 x 87T)
Configuration. Prime mover with 5x8-5x8 Extending platform trailer.
Overall dimension: 45.0l x 4.7w x 5.7h x 164.5T (+ Push truck)

Top Towers (35.5l x 4.65w x 3.97h x 74T)
Configuration. Prime mover with 4x8-4x8 Extending platform trailer.
Overall dimension: 54.0l x 5.1w x 5.7h x 152.5T (+ Push truck)

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

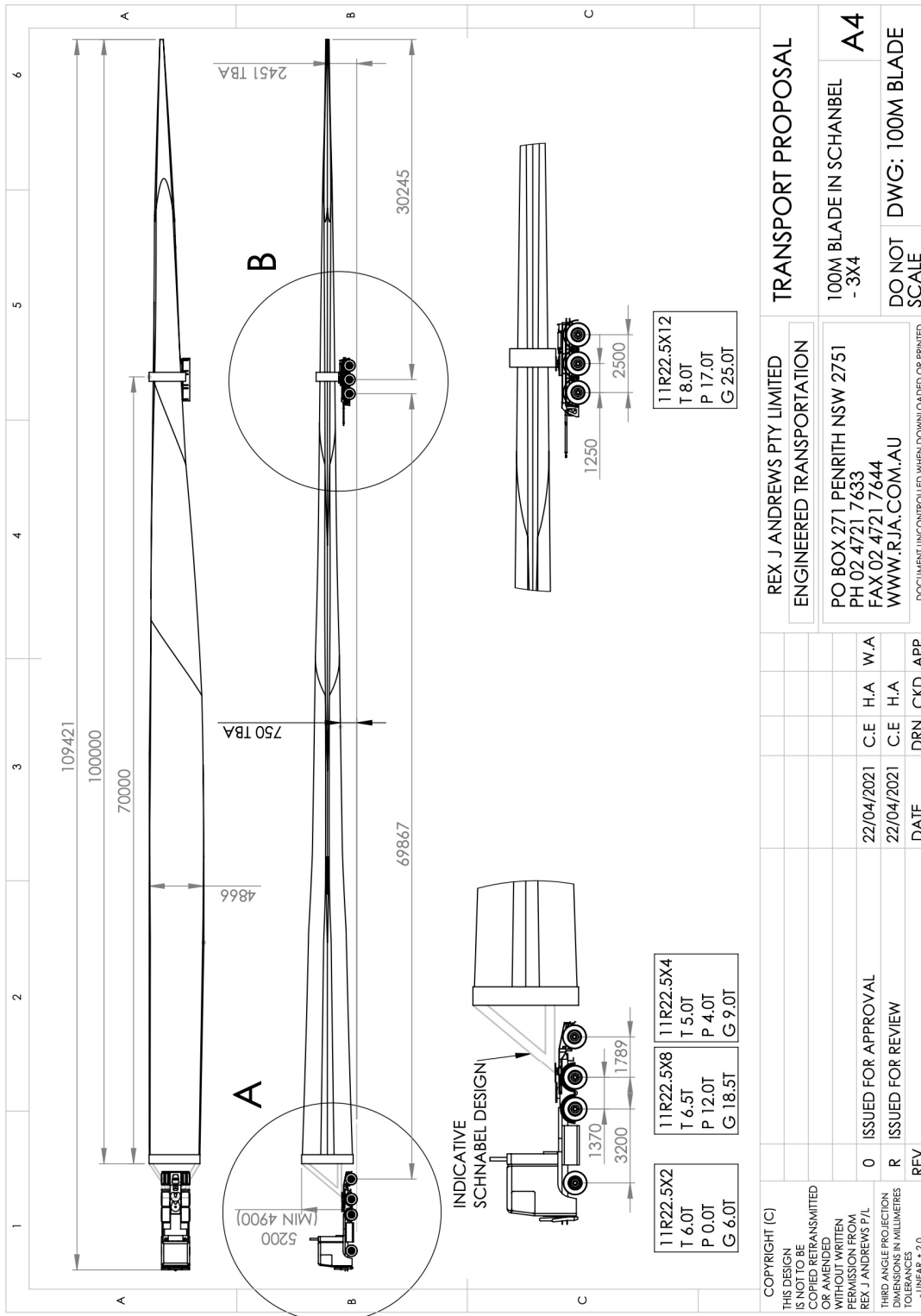
TRANSFORMER:

Possible Transformer size (9.2l x 4.0 x 4.35 x 167T)
Configuration. Prime mover with 10x8-10x8 Beamset + 4 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 324.5T + 4 x Backup trucks
Or
Configuration. Prime mover with 16x8 Platform trailer + 3 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 256.5T + 3 x Backup trucks

SWITCHROOM:

The largest switch room size that is recommended for this site would be as follows.
Switch room dimensions: 30.0l x 6.0w x 4.4h x 90.0T

24.0 Appendix 2 - Transport Drawings (Possible Combinations)



ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

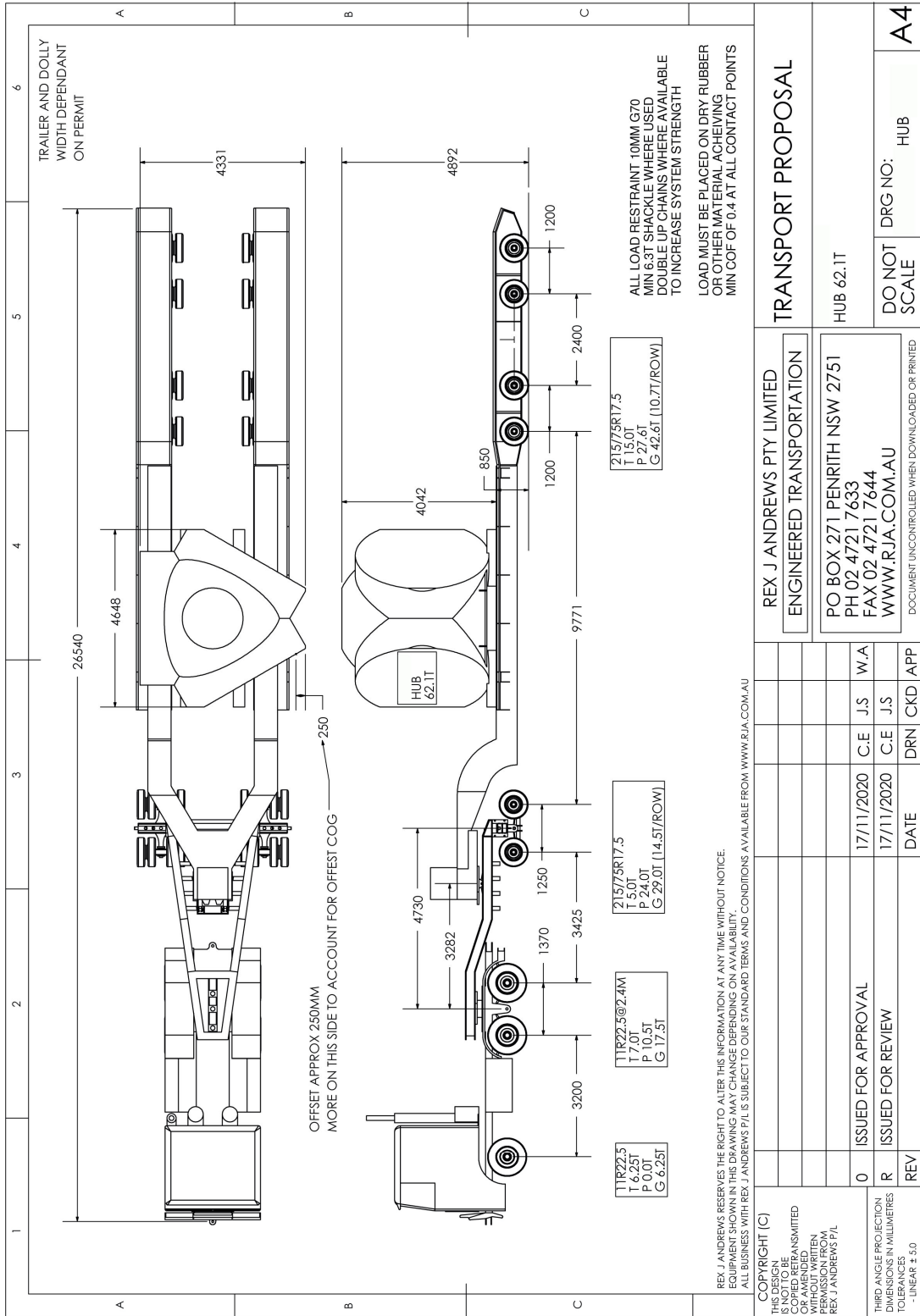


Figure 82 - Hub Combination Example

REX J ANDREWS PTY LIMITED ENGINEERED TRANSPORTATION		HUB 62.1T		DO NOT SCALE		DRG NO: HUB		A4	
PO BOX 271 PENRITH NSW 2751 PH 02 4721 7633 FAX 02 4721 7644 WWW.RJA.COM.AU		HUB 62.1T		DO NOT SCALE		DRG NO: HUB		A4	
0 ISSUED FOR APPROVAL		17/11/2020		C.E J.S W.A		DRN CKD APP		DATE	
R ISSUED FOR REVIEW		17/11/2020		C.E J.S		DRN CKD APP		DATE	
REV		DATE		DRN CKD APP		DATE		DATE	
REX J ANDREWS RESERVES THE RIGHT TO ALTER THIS INFORMATION AT ANY TIME WITHOUT NOTICE. EQUIPMENT SHOWN IN THIS DRAWING MAY CHANGE DEPENDING ON AVAILABILITY. ALL BUSINESS WITH REX J ANDREWS P/L IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS AVAILABLE FROM WWW.RJA.COM.AU									
COPYRIGHT (C) THIS DESIGN IS NOT TO BE COPIED, REPRODUCED, TRANSMITTED OR IN ANY MANNER DISCLOSED WITHOUT WRITTEN PERMISSION FROM REX J ANDREWS P/L									
THIRD ANGLE PROJECTION DIMENSIONS IN MILLIMETRES TOLERANCES - LINEAR ± 3.0									

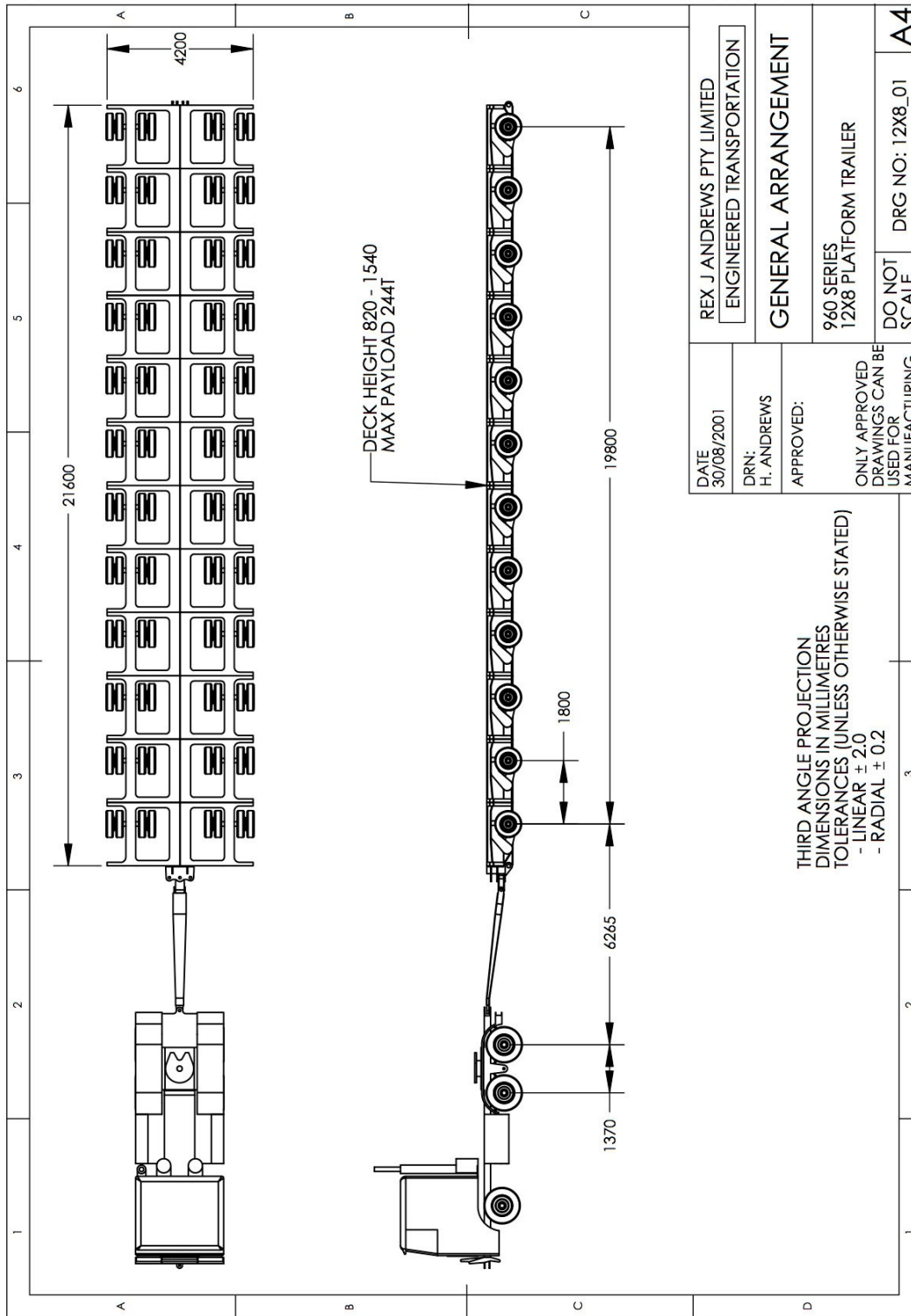


Figure 83 - Nacelle Combination Example

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

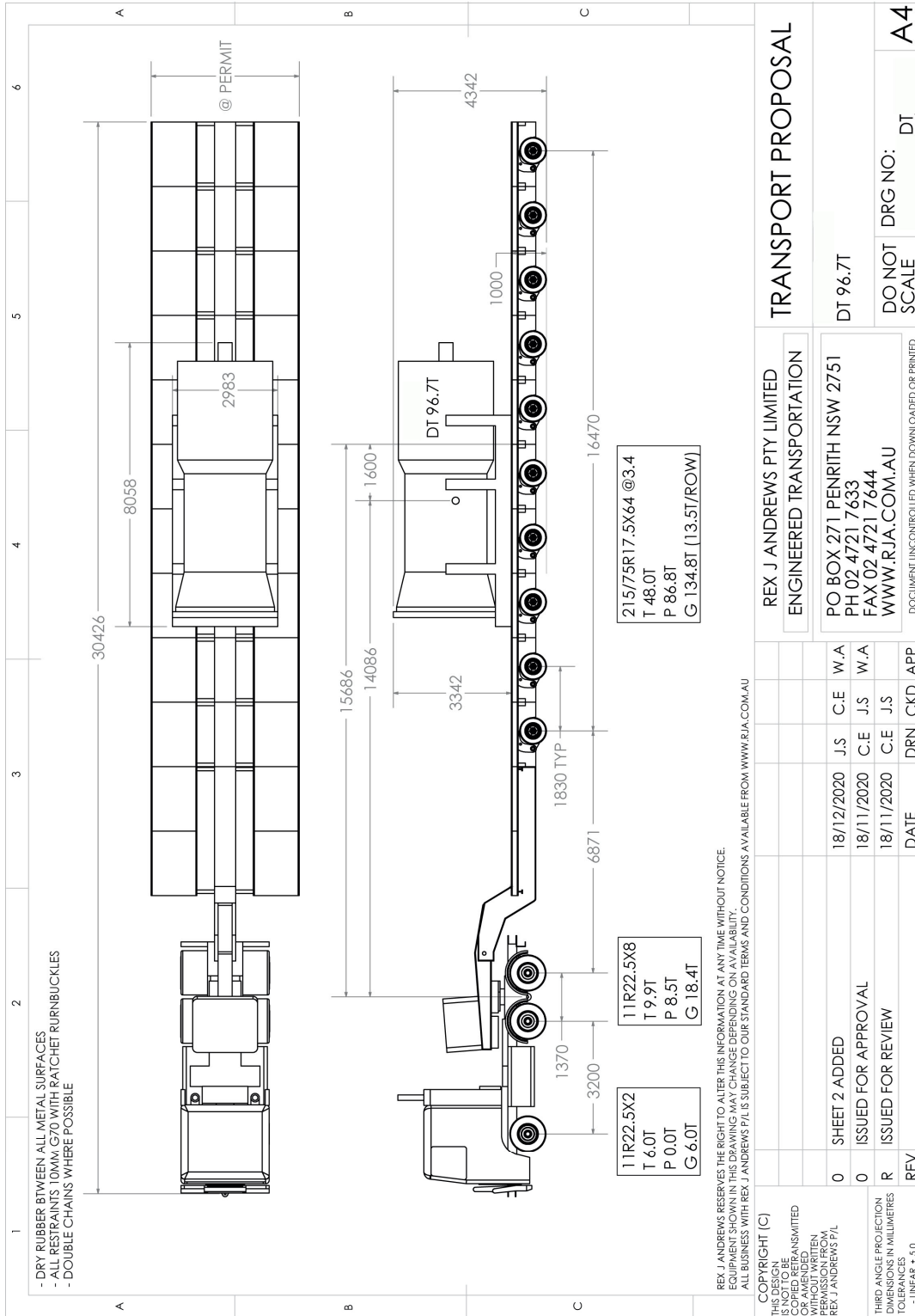


Figure 84 - Drivetrain Combination Example

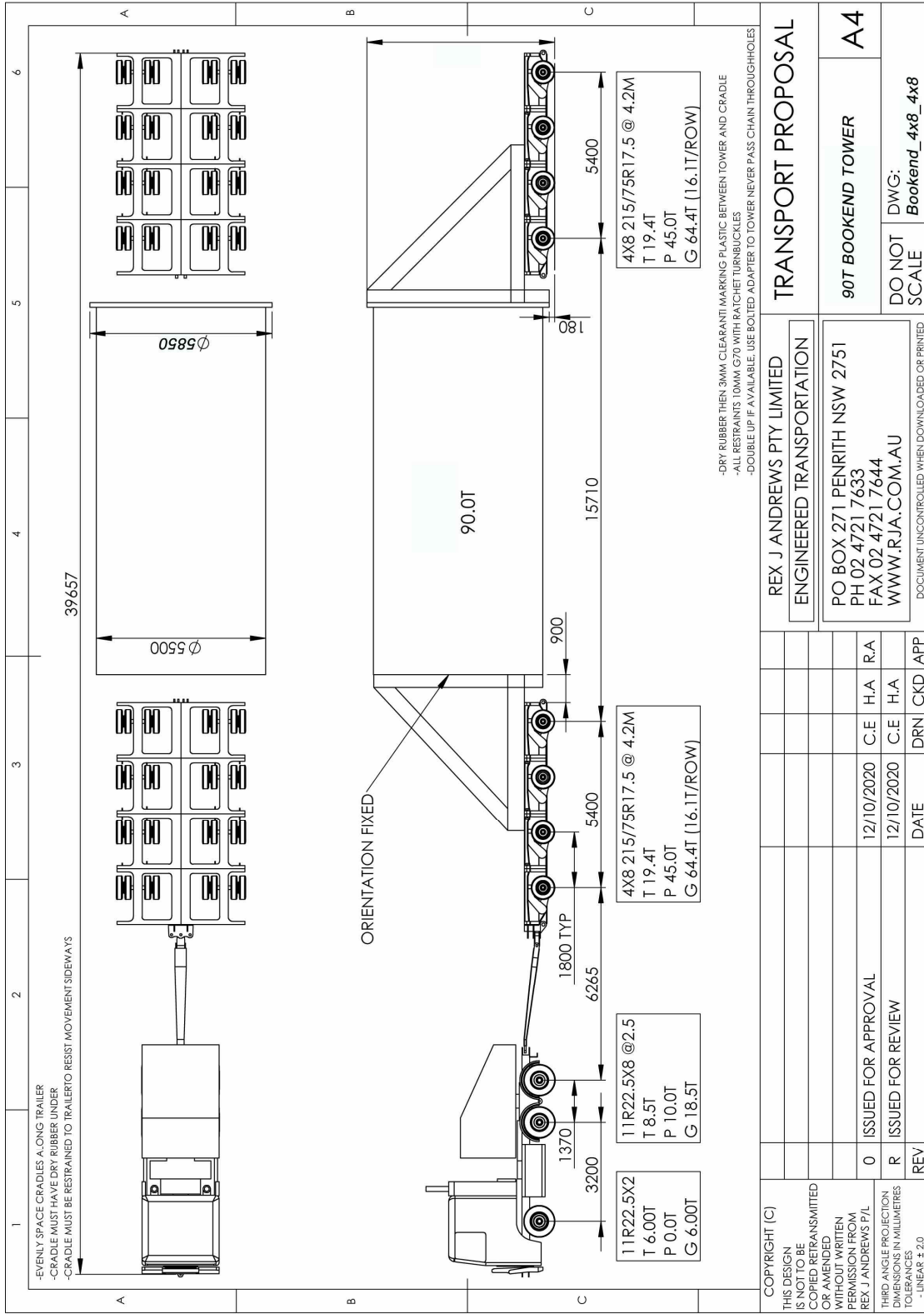


Figure 85 - Tower Trailer Bookend

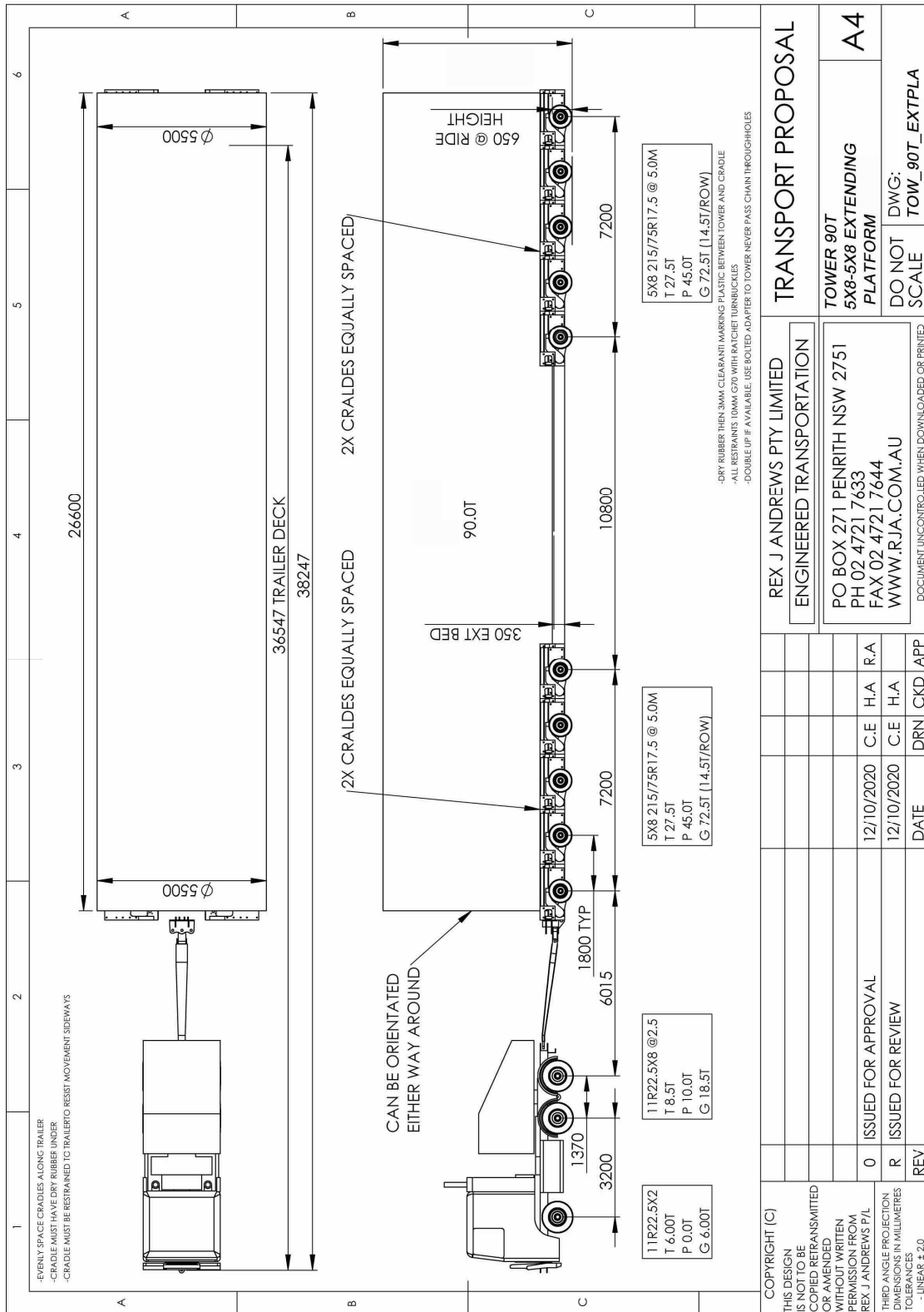


Figure 87 - Tower Trailer Extending 5x8_5x8

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

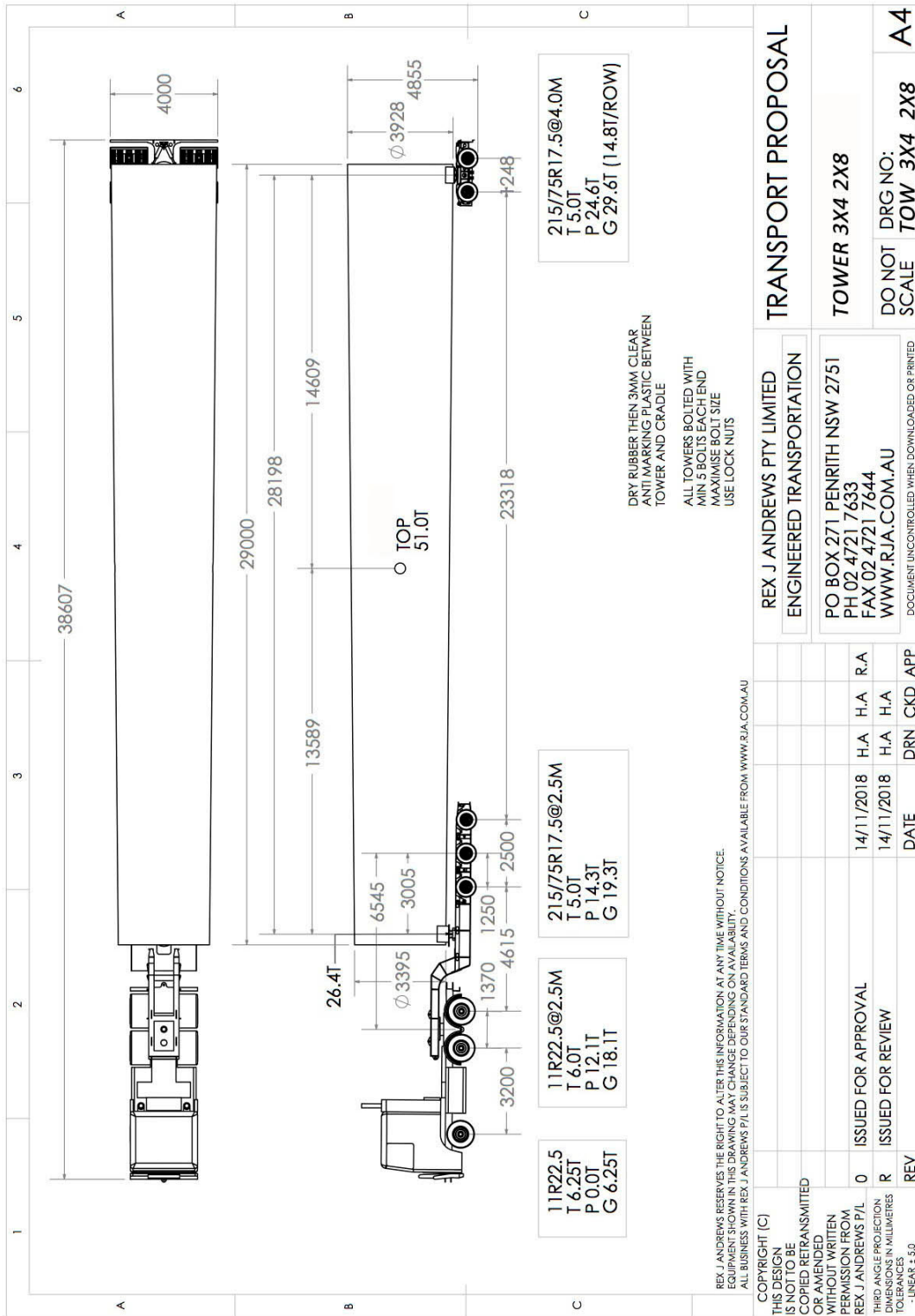


Figure 88 - Tower Trailer Dolly and Jinker

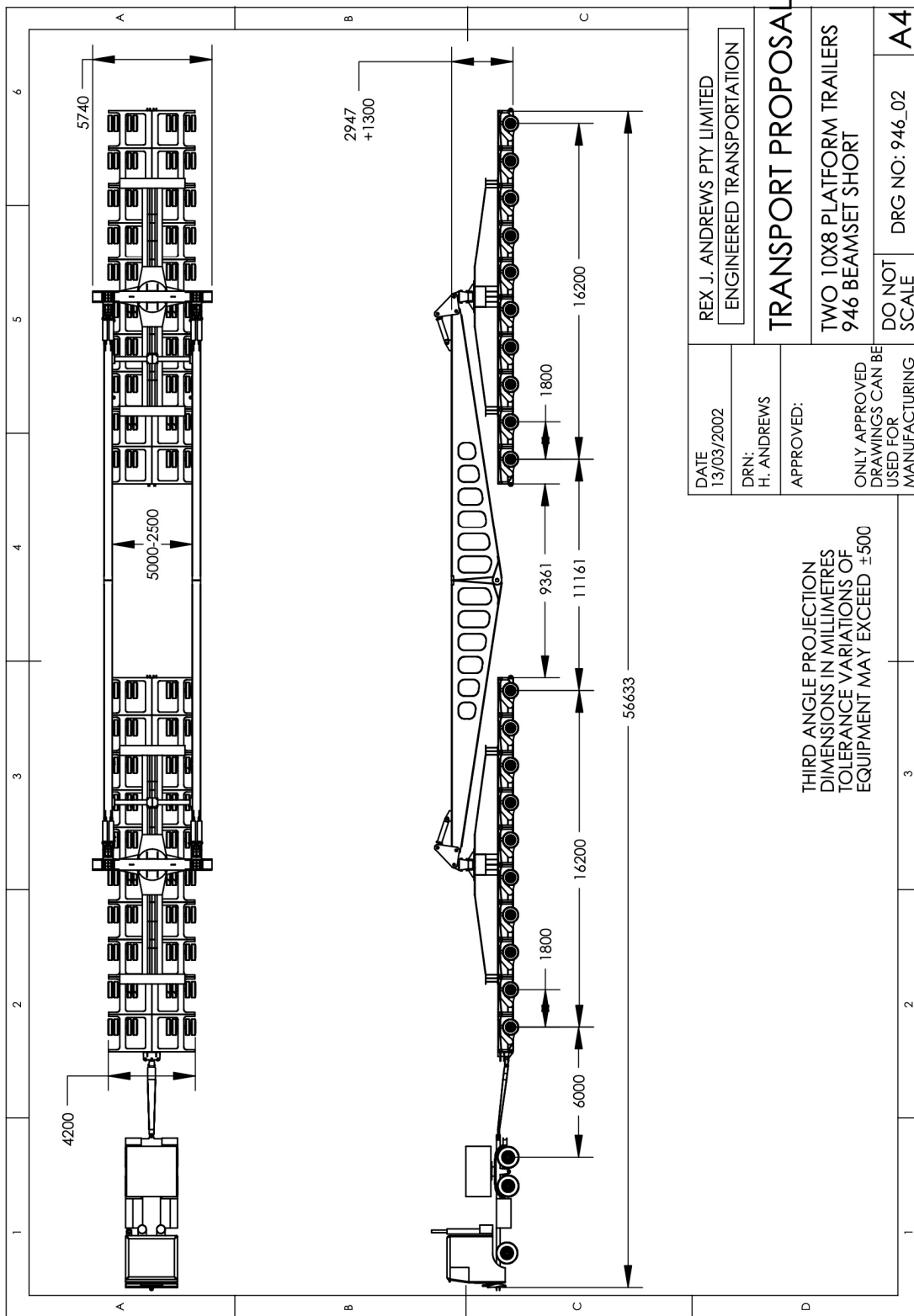


Figure 89 – 300MVA Transformer Trailer 10x8-10x8 Beamset

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

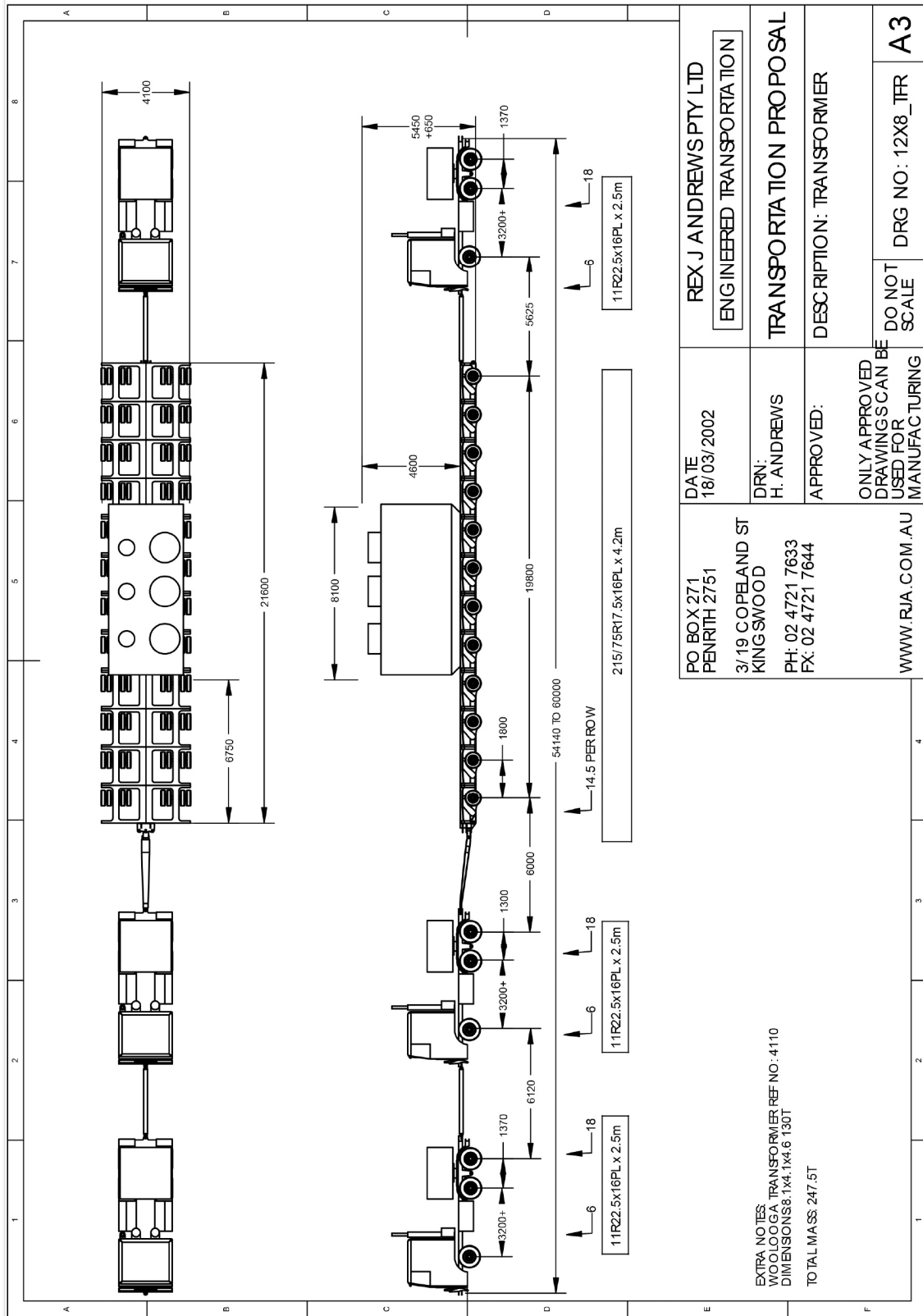


Figure 90 – 150MVA Transformer Trailer 12x8 Platform

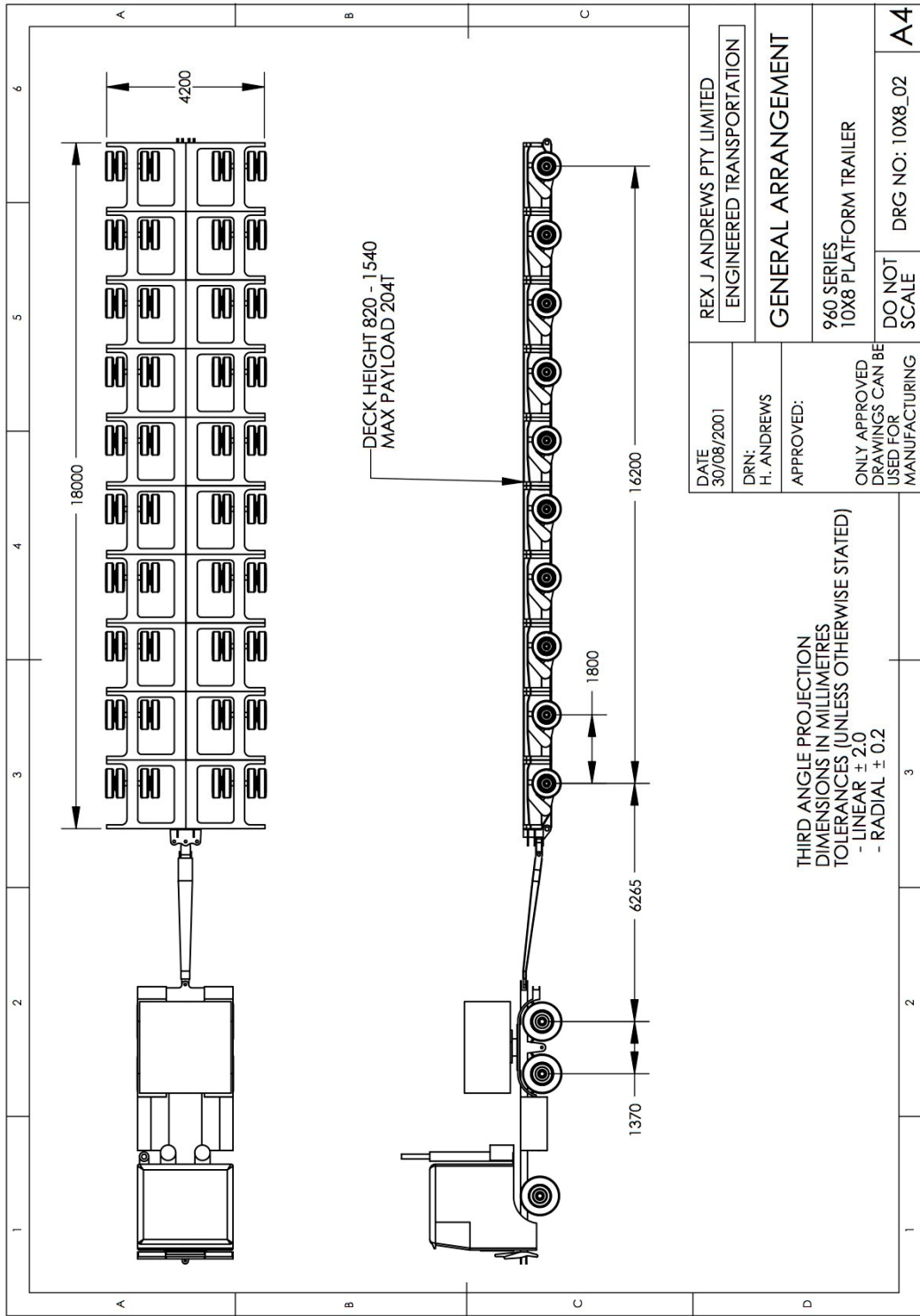


Figure 91 - Crane Trailer 10x8 Platform