



ROUTE STUDY: CWP

PROJECT: SPICERS CREEK WINDFARM

EX PORT OF NEWCASTLE

BLADE SIZE: 85 METRES

03/03/2023 REV 03

Rev.	Date	Change	Responsible	Checked
00	15/04/20	Route Assessed	W Andrews	✓
00	12/05/21	Report Compiled	W Andrews	✓
00	17/05/21	Report Completed	W Andrews	✓
01	09/06/21	Revisions	W Andrews	✓
02	26/08/22	Revised routes	W Andrews	✓
03	03/03/23	Various edits	W Andrews	✓

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Note: Updates since the finalisation of this report:-

- CWP Renewables Pty Ltd is now Squadron Energy Pty Ltd (SQE).
 - Recognising the need to coordinate the planning and delivery of enabling works to support the Central West Orana Renewable Energy Zone (CWO REZ) as a whole, Energy Corporation of NSW (EnergyCo) has committed to upgrades to the State road network to facilitate the transport of OSOM components from the Port of Newcastle to the Project Site. A single program of works is proposed to be undertaken by Transport for NSW (TfNSW) on behalf of EnergyCo, to be completed by 2024. The works will be subject to a separate approval pathway and includes upgrades off the Golden Highway (Golden Highway / Sweeneys Lane and Golden Highway / Saxa Road). SQE will work with EnergyCo and TfNSW going forward on the design of these two intersections.
-

1.0 Introduction

CWP Renewables is developing the proposed Spicers Creek Wind Farm in central west NSW. The Project is located approximately 25 km north west of Gulgong and 30 km north east of Wellington in the NSW Central West Local Land Services region, within the Dubbo Regional and Warrumbungle Shire Local Government Areas (LGAs). The Project is located within the Central-West Orana Renewable Energy Zone (CWO REZ) and is located on privately owned agricultural land.

This study is to understand the transport route constraints for the components listed in this report and assist in planning of the windfarm. This document describes observations and previous experience on the transport route and explains the transport of wind turbine and transformer equipment from Newcastle to Spicers Creek Wind Farm.

This study is based on an 85 Metre blade with a hub height of up to 170 metres.

The Project also includes provision for battery storage. Battery storage component delivery is not specifically considered in this study, as load sizes and weights are well within the range of wind turbine and transformer equipment that is considered in this study.

The Route survey took place on the 15/04/2021.

2.0 Evaluation

1	No Cost
2	Some Work
3	Moderate Amount of Work
4	Extreme Amount of Work

(Mark below boxes with an X)

		1	2	3	4
A	Harbour			X	
B	Road Modification				X
C	Road Furnishings				X
D	Trees				X
E	Site Entrance				X
F	Bridge Calculations		X		
G	Traffic Control			X	

3.0 Project data

Date of latest Route Assessment: 24/01/2022 (Desktop)

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

Project name: Spicers Creek Wind Farm

Location: Newcastle Port (NSW) to Spicers Creek (NSW)

Turbine type:

Vestas V172 wind turbine with a tower of up to 170 metres.

4.0 Transport combinations

VESTAS V172 EXAMPLE:

Nacelle (17.5l x 4.2 w x 4.25h x 87.0T)

Configuration. Prime mover with 10x8 Platform.

Overall dimensions: 35.0l x 4.2w x 5.3h x 144.5T (+ Push truck)

Power train (7.5l x 2.7 w x 3.0h x 98.0T)

Configuration. Prime mover with 8x8 Platform.

Overall dimensions: 30.0l x 4.2w x 5.2h x 136.5T (+ Push truck)

Hubs (5.0l x 4.4w x 4.0h x 63.0T)

Configuration. Prime mover with 2x8-5x8 low loader c.

Overall dimension: 26.0l x 4.5w x 5.6h x 120.5T.

Blades (85.0l x 4.5w x 4.0h x 28T)

Configuration. Prime mover with 2x4 dolly 3x4 Jinker.

Overall dimension: 95.0l x 4.3w x 4.7h x 67.5T.

TOWER EXAMPLE:

Base Towers (10.1l x 5.85 x 5.5 x 91T)

Configuration. Prime mover with 5x8-5x8 Bookend.

Overall dimension: 42.0l x 5.85w x 5.9h 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

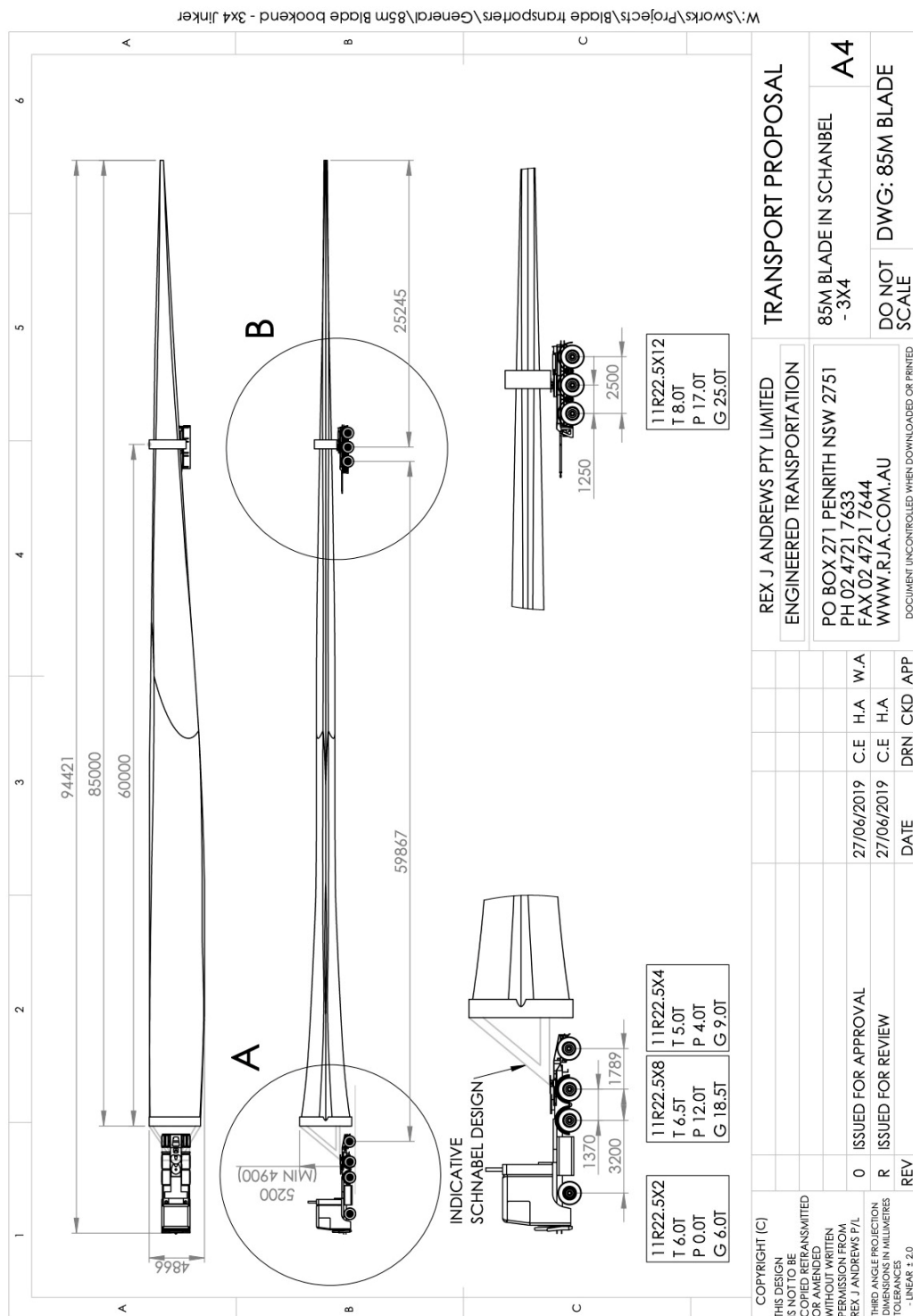
Configuration. Prime mover with 16x8 Platform trailer + 3 x Backup trucks

Overall dimensions: 45.0l x 4.3w x 5.4h x 256.5T + 3 x Backup trucks

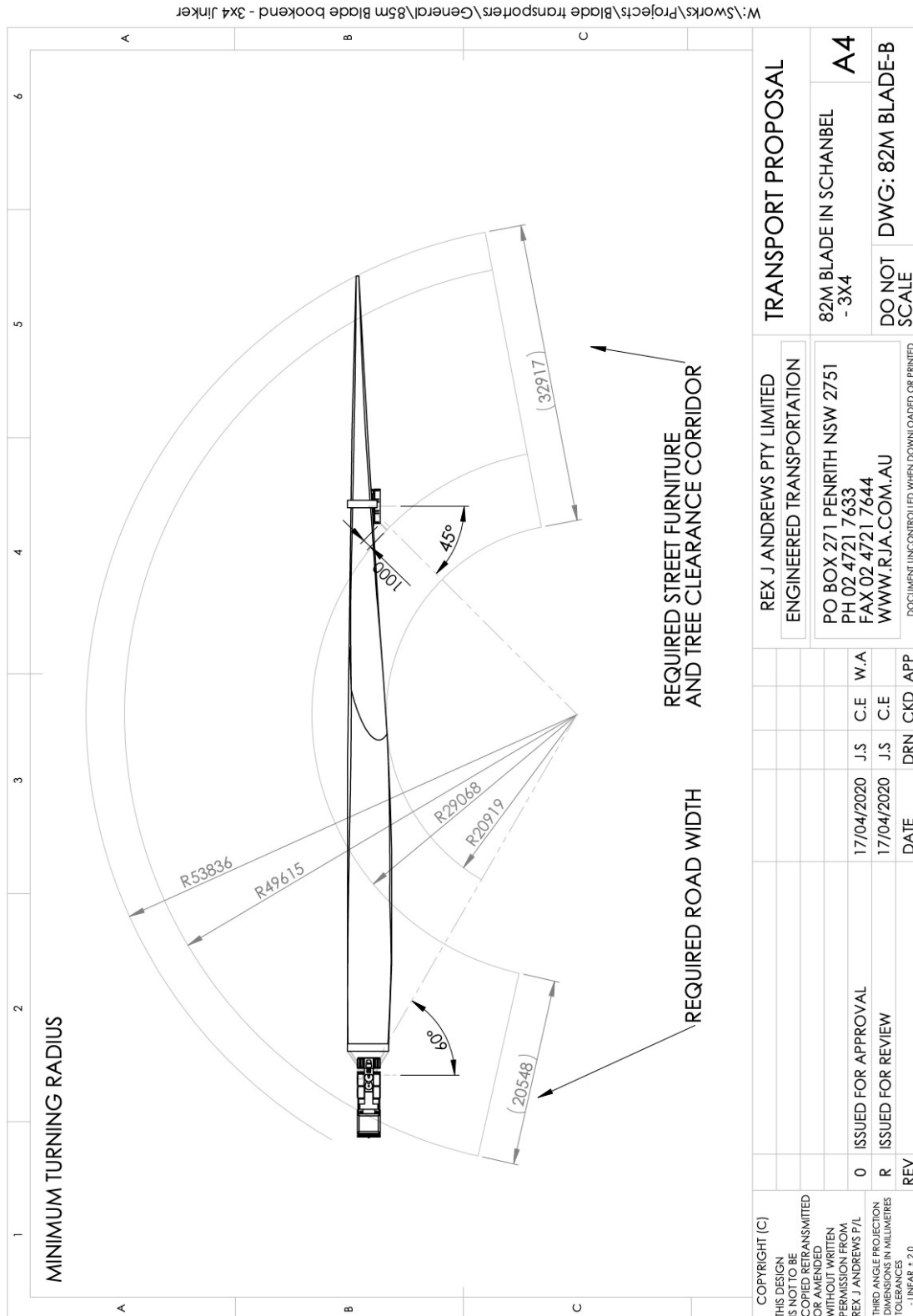
5.0 Transport drawings

(Possible combinations)

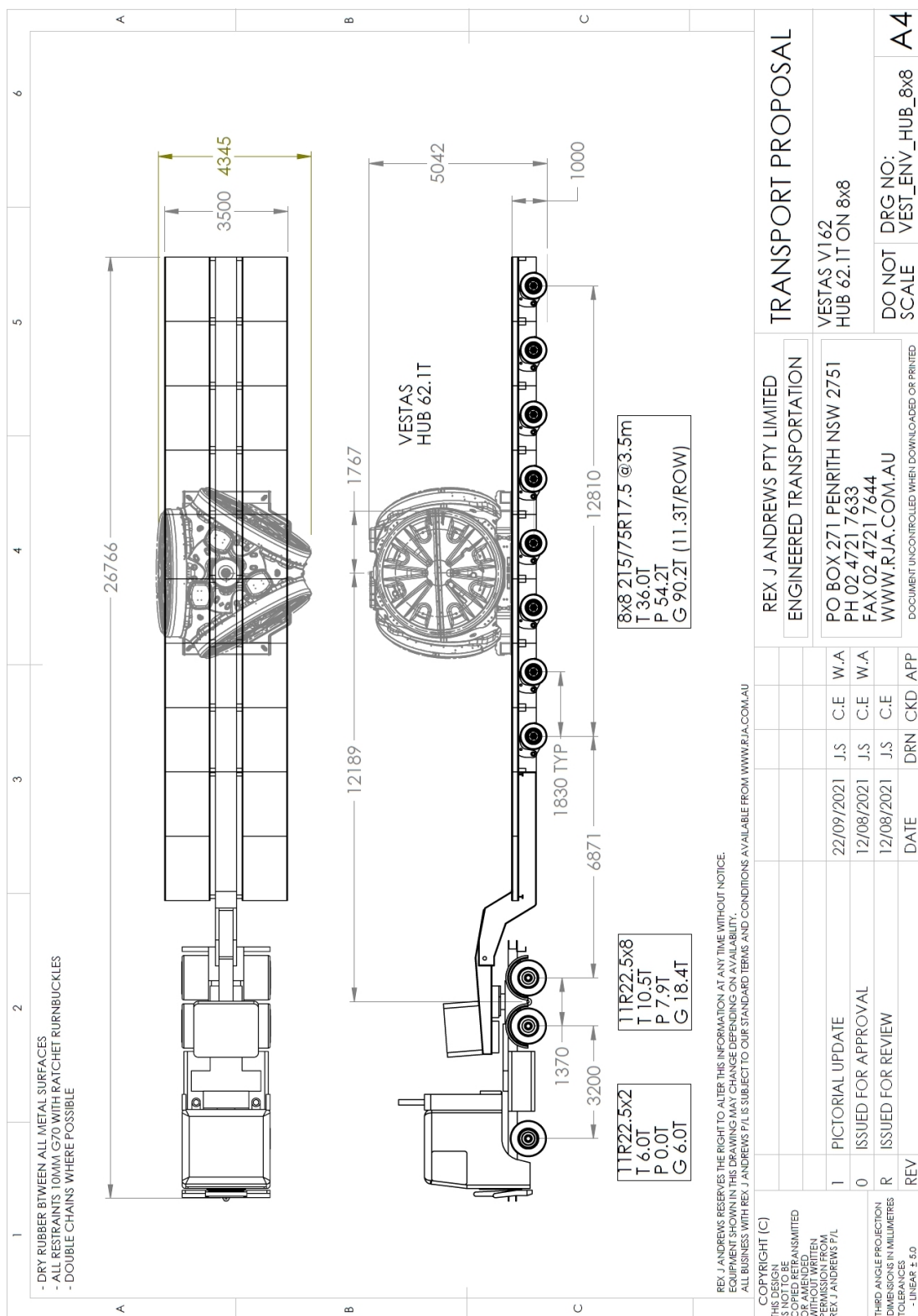
Blade diagram (85 Metre blade case study).



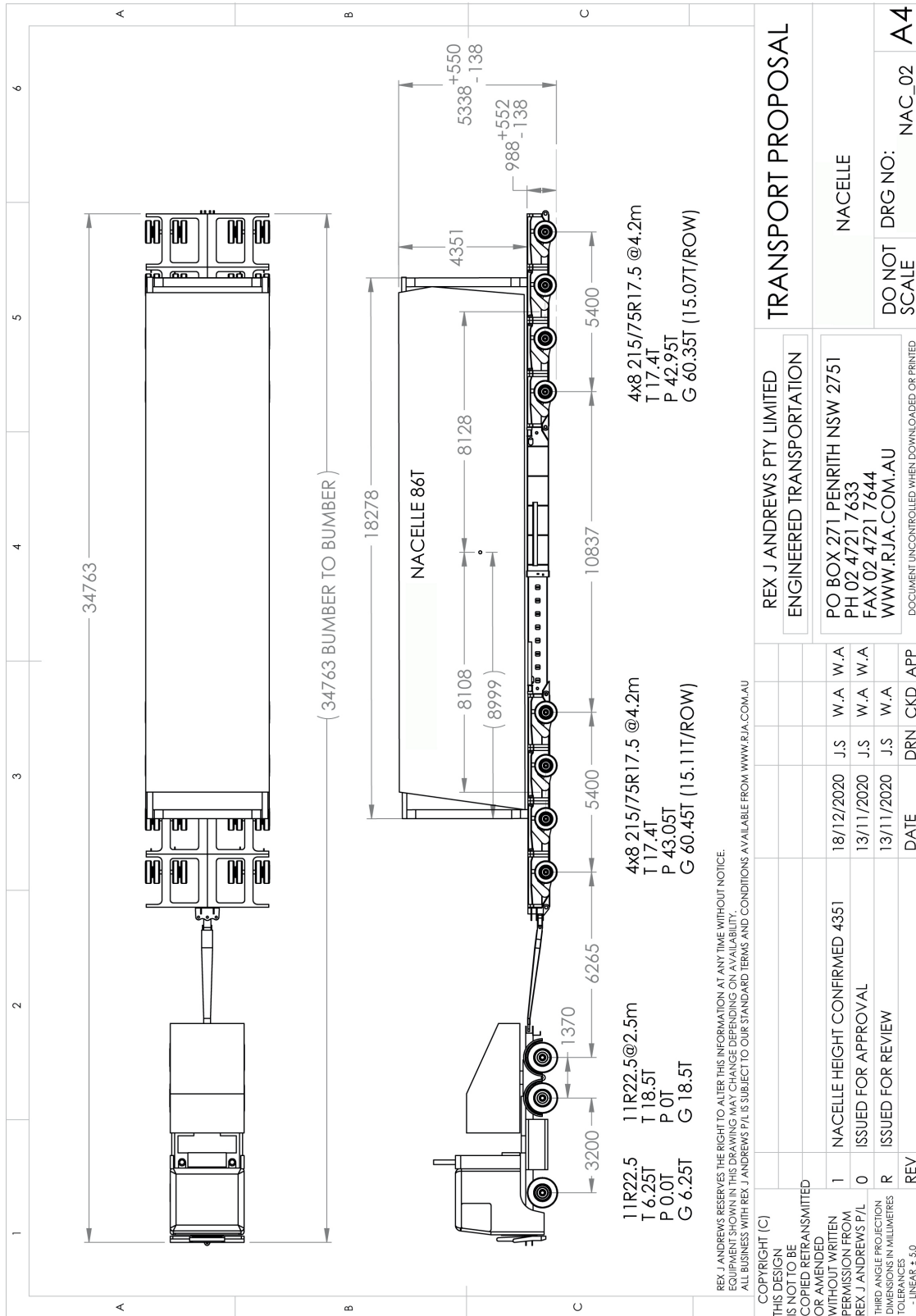
Blade diagram (85 Metre blade case study): Swept path



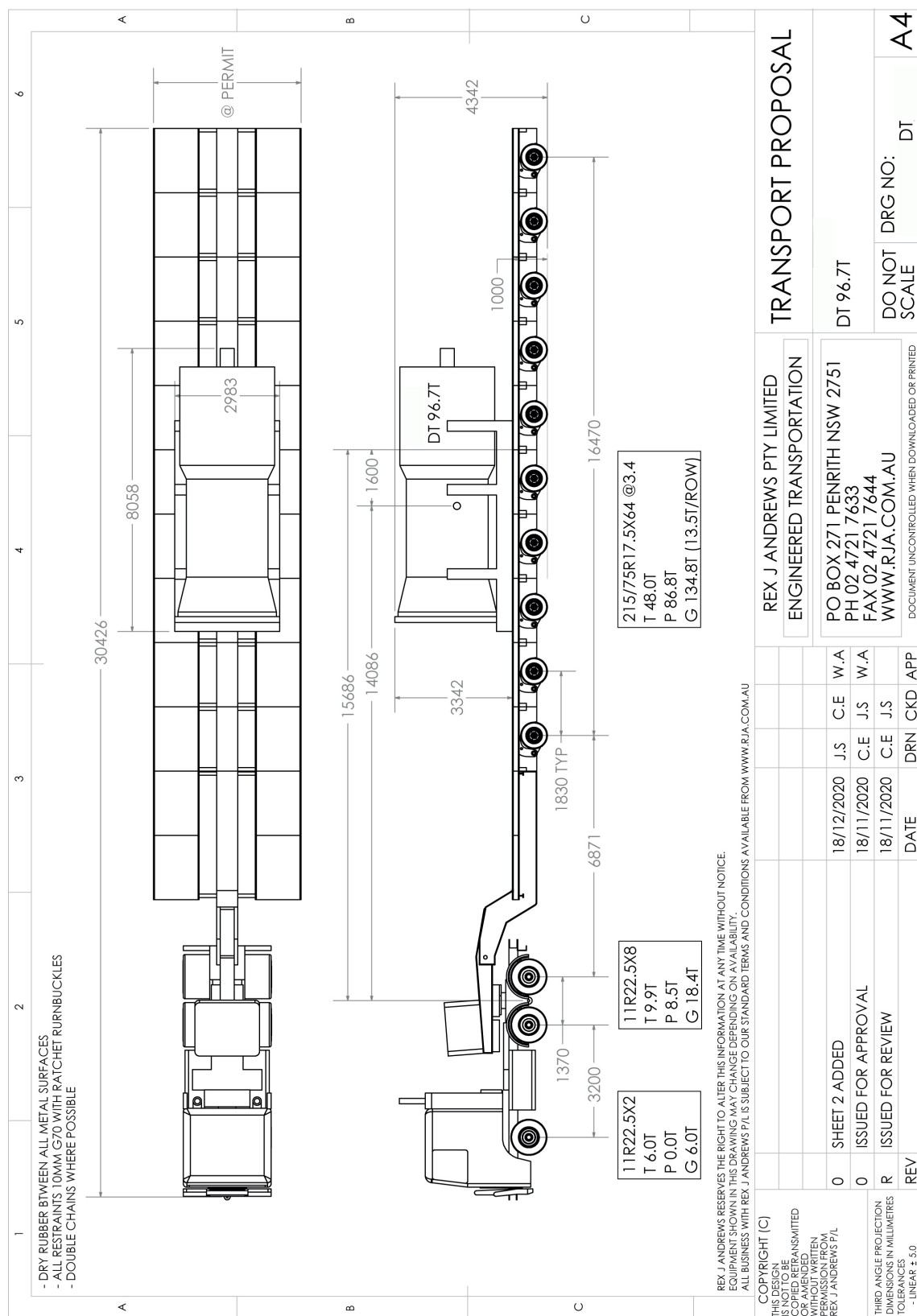
Hub combination:



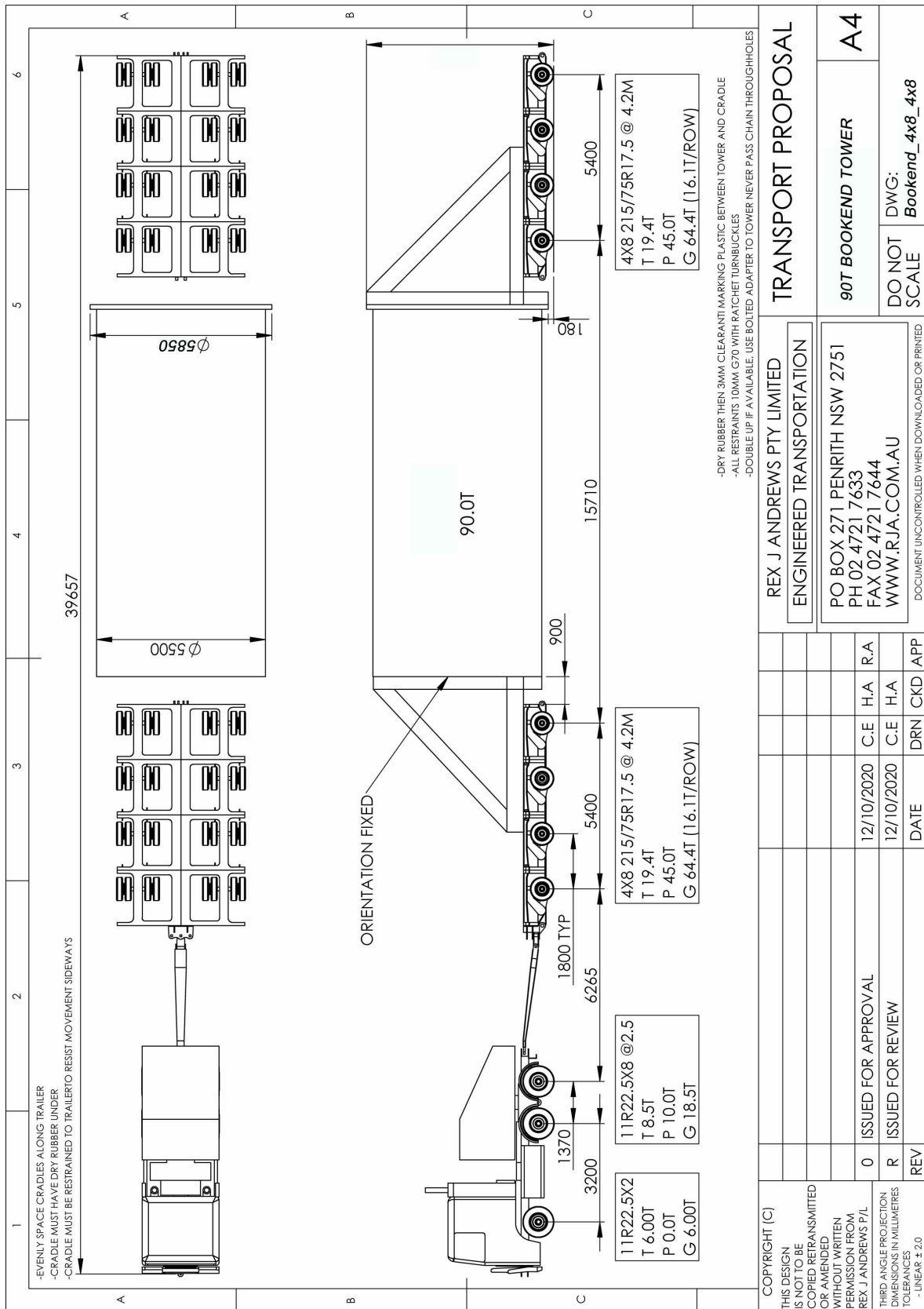
Nacelle combination:



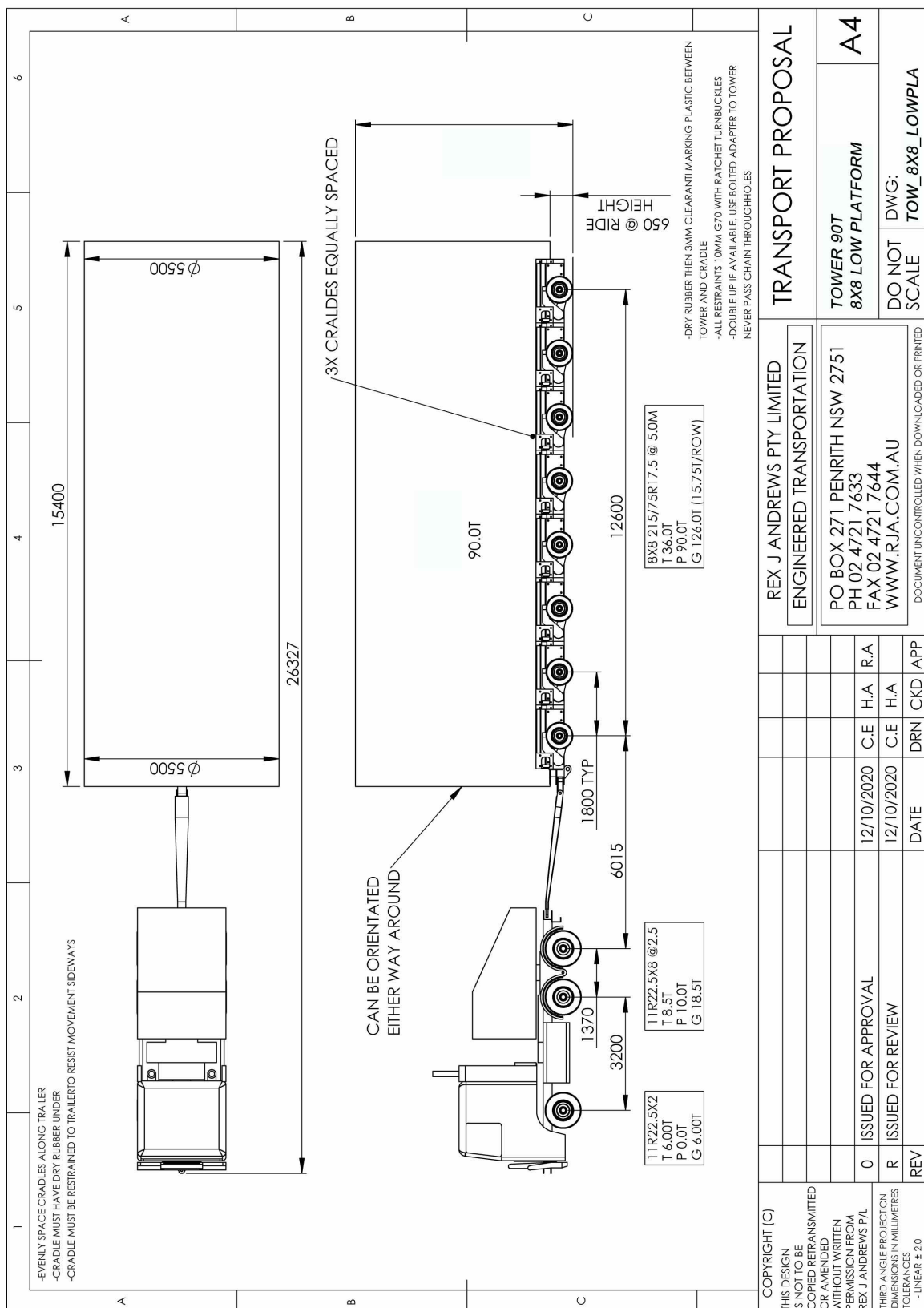
Drivetrain combination example:



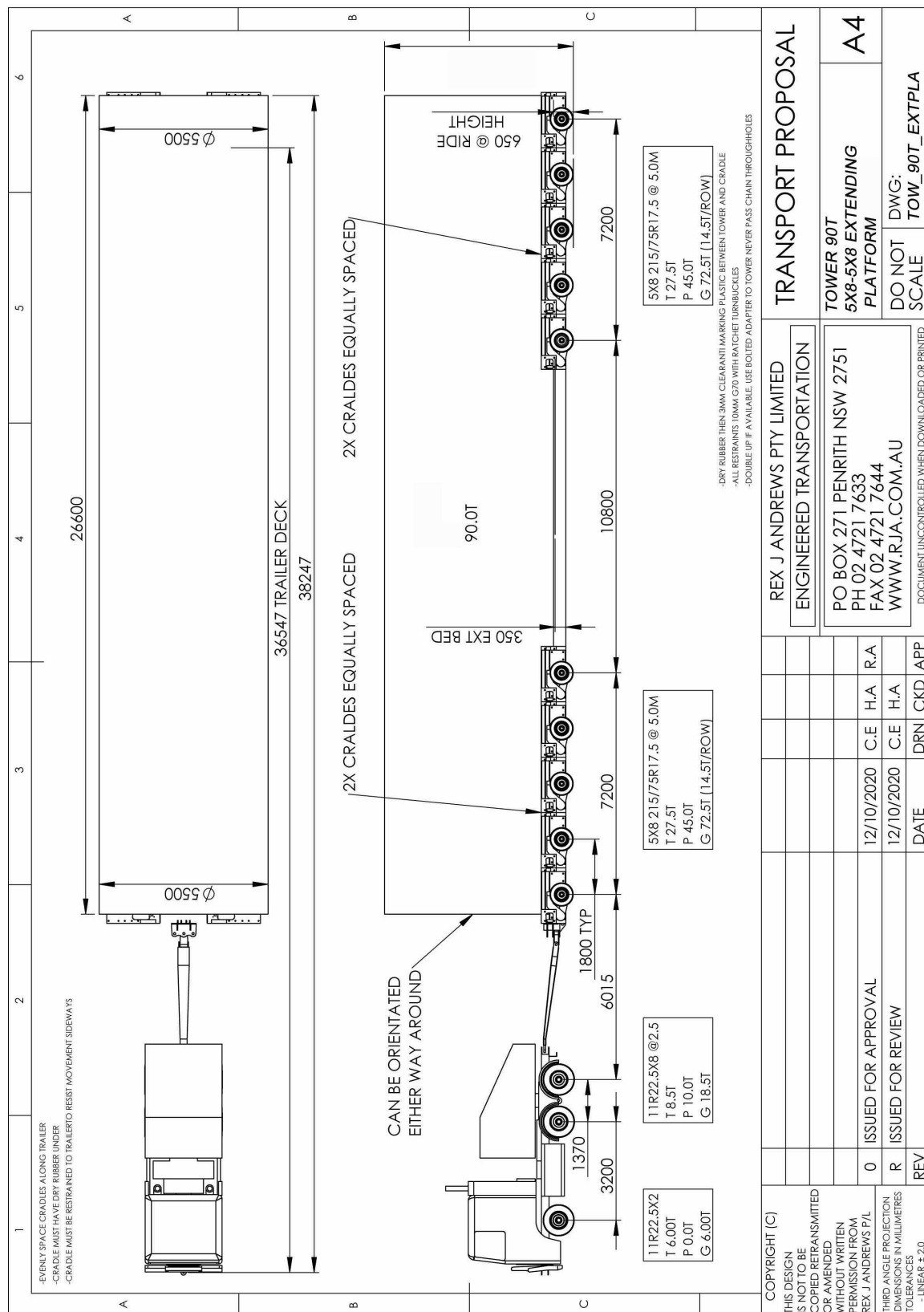
Tower Trailer Bookend:



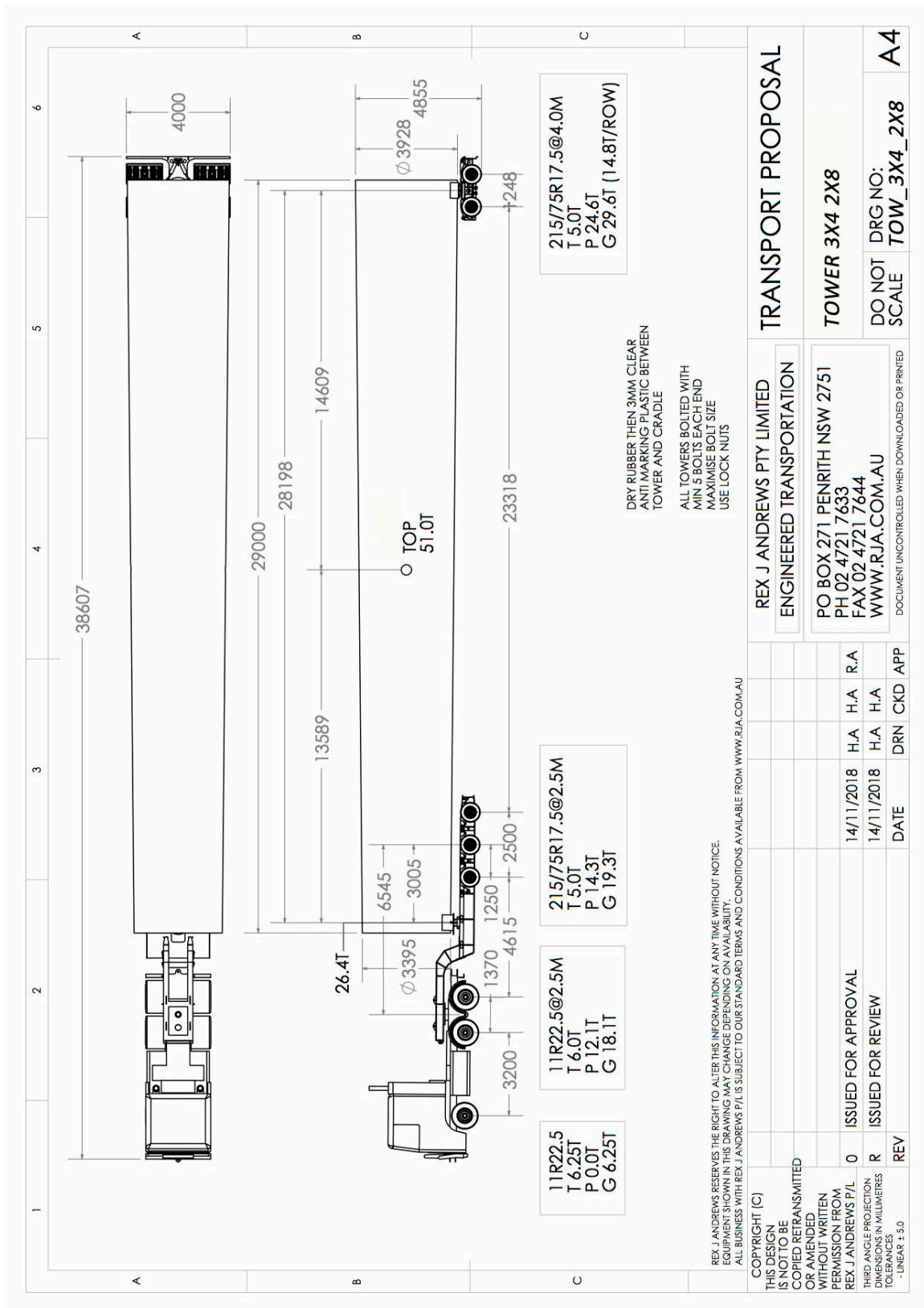
Tower trailer 8x8:



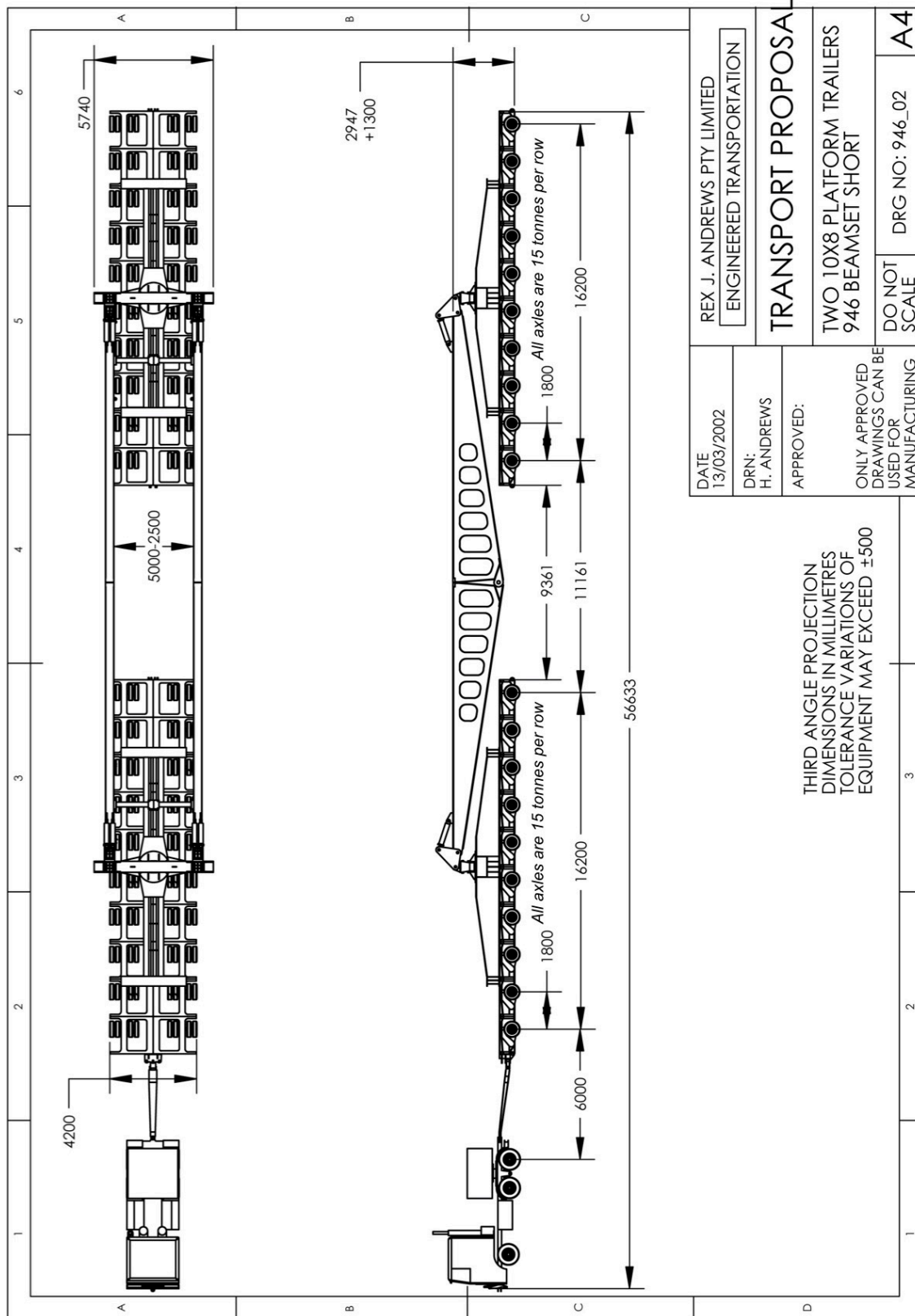
Tower trailer extending 5x8_5x8:



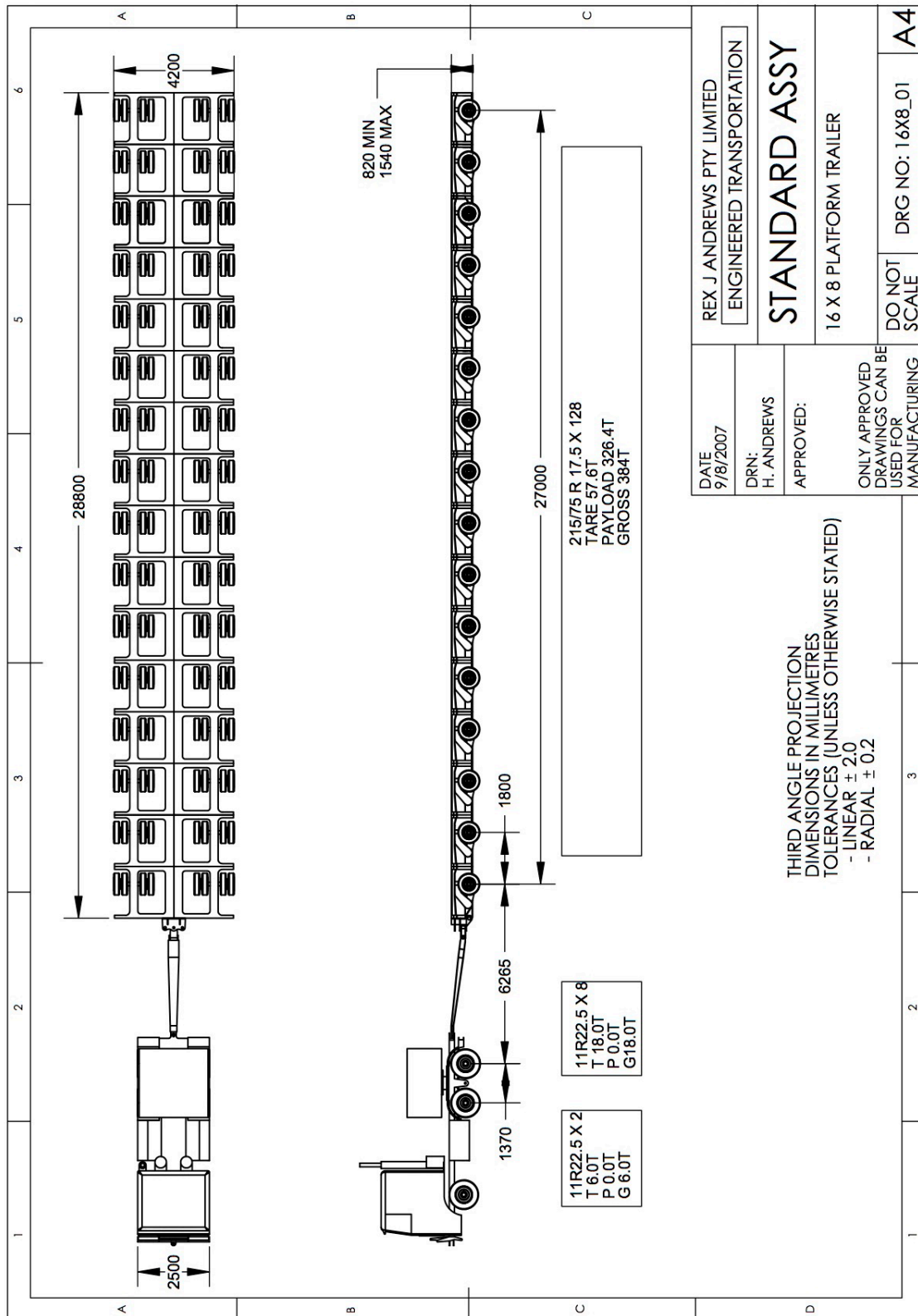
Tower trailer Dolly and Jinker:



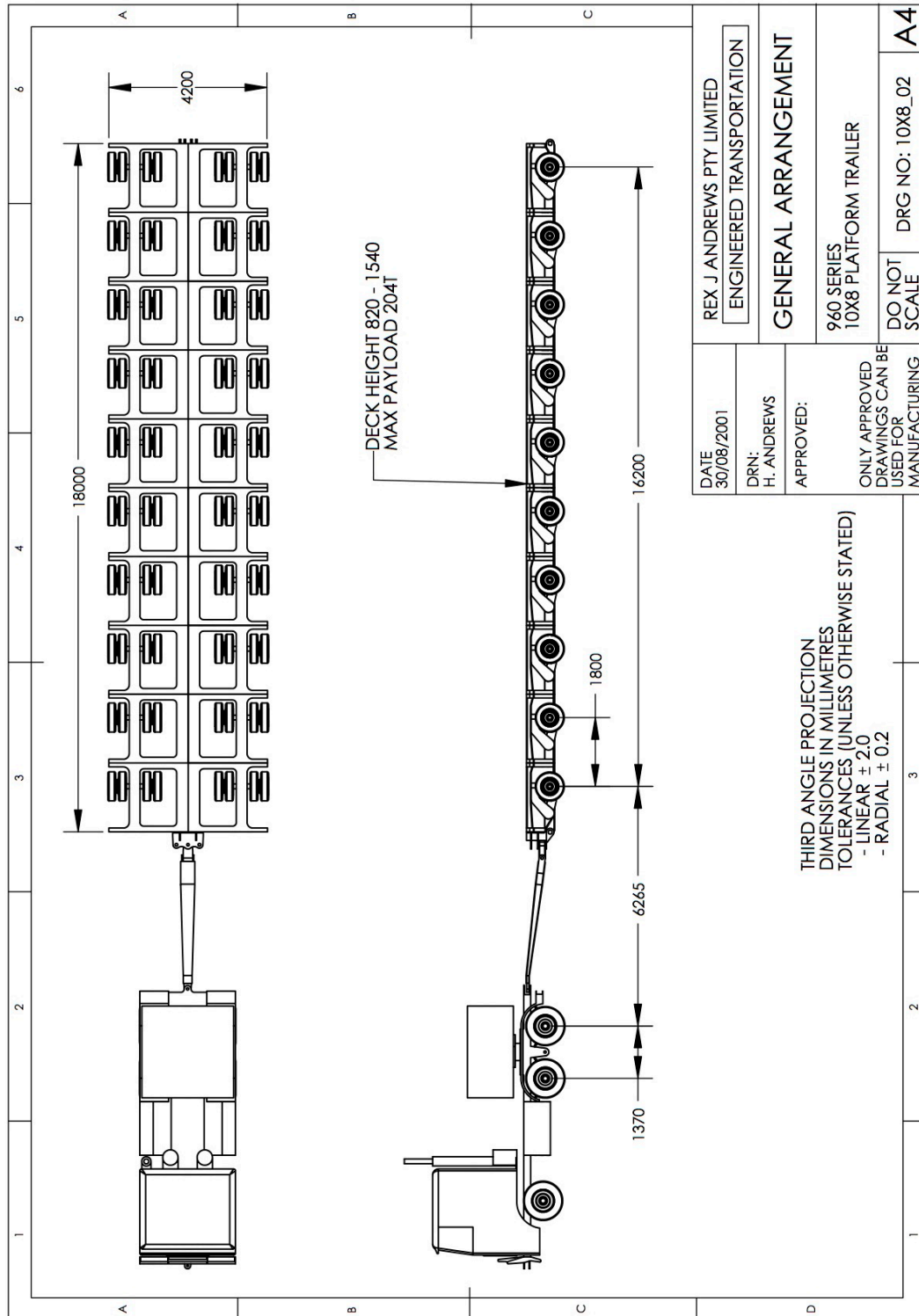
Transformer trailer 10x8-10x8 beamset:



Transformer trailer 16x8 Platform:

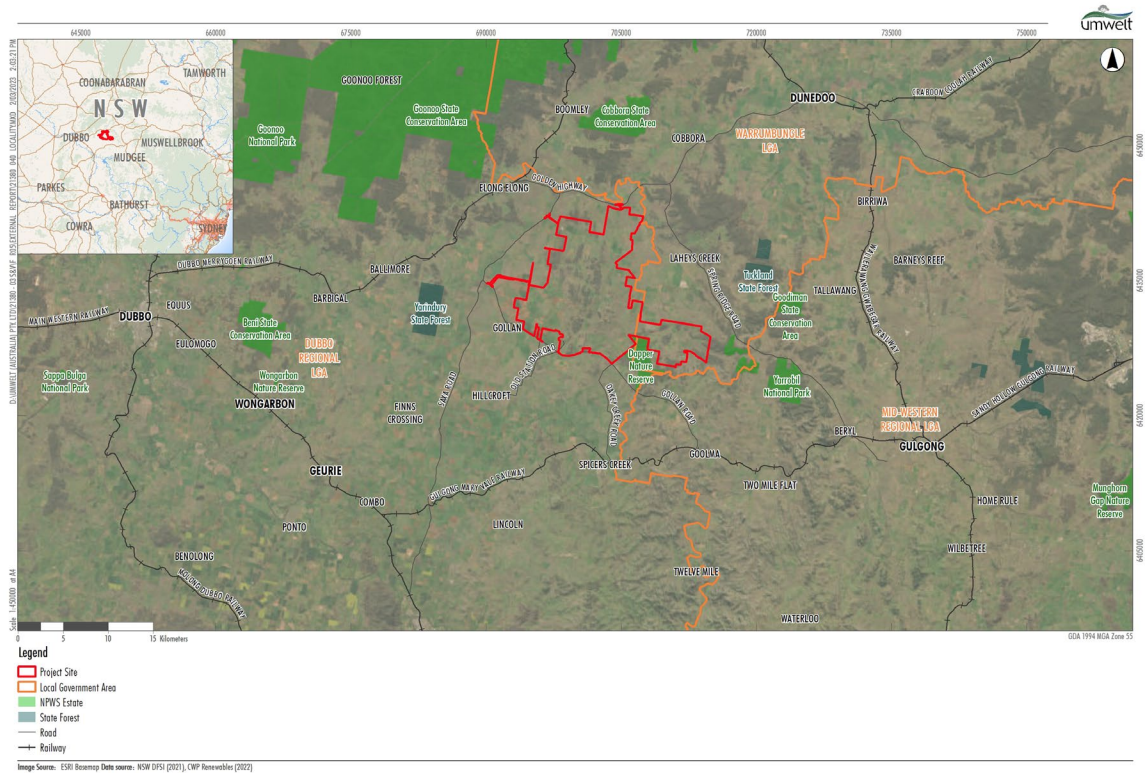


Crane trailer 10x8 Platform:



6.0 Windfarm site location

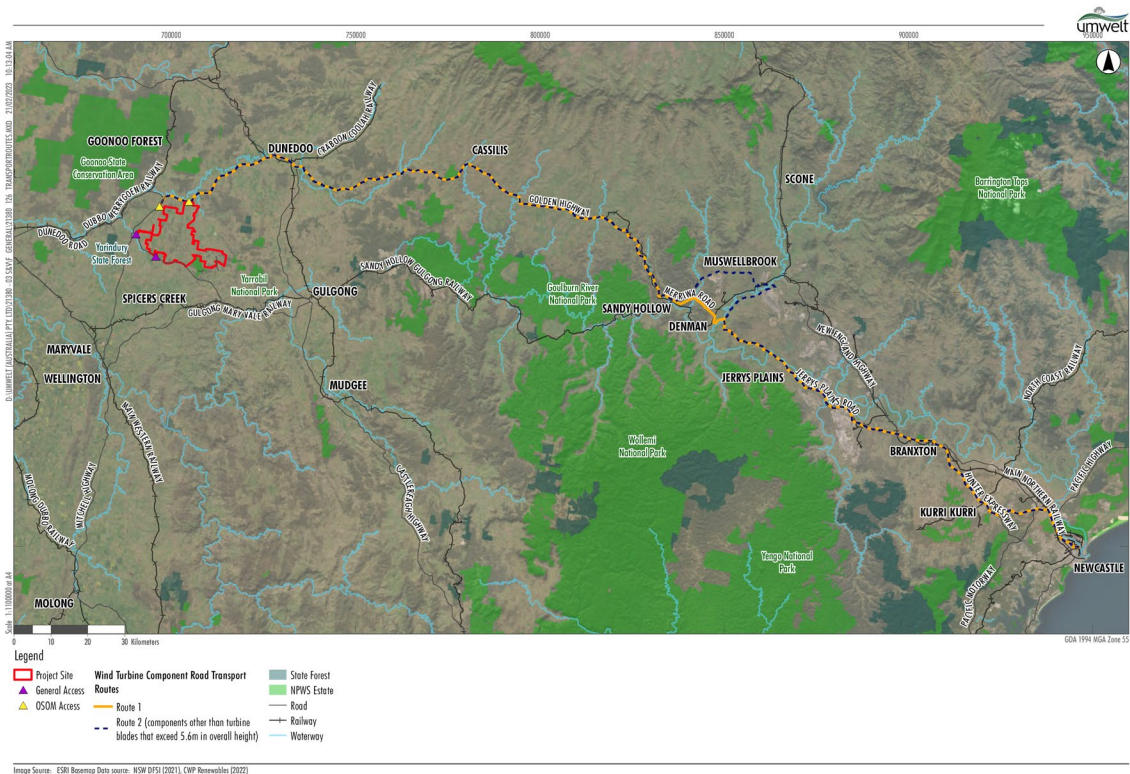
The Project is located west of Gulgong and northeast of Wellington in the Central West of NSW.



7.0 Spicers Creek windfarm boundaries and turbine locations

The Project boundaries will include areas south of the Golden Highway at Elong Elong using Sweeneys Lane, Saxa Road and Tallawonga Road to access the site.

Below is the road transport route for the wind turbine components and the proposed Project layout.





Project Site	Proposed Underground Powerline	Substation	EnergyCo Elong Elong Energy Hub	State Forest
Wind Turbine Generator	Proposed Overhead Powerline (HV or MV)	Site Compound	EnergyCo Indicative REZ Transmission Corridor	NPWS Estate
Associated - House	Proposed Overhead Powerline (MV)	Electrical Plant Compound	EnergyCo Potential Southern Extension	Road
Non Associated - House	Proposed Overhead Powerline (HV)			Railway
Development Corridor	Access Track			Waterway
Site Access Point				

Image Source: ESRI Basemap Data source: NSW DFSI (2021), CWP Renewables (2022)

8.0 Port of Import

The wind turbine and transformer equipment will be imported from various countries and will arrive on ships into the Port of Newcastle. The ideal berth for these shipments is the Mayfield #4 Berth. This facility has a hardstand storage area of roughly 100,000 s/q meters, adjacent to the berth.

Access from the storage to public roads, is via a port operated road onto Selwyn Street. There will need to be a small amount of road modifications within the port.

Image 1: Mayfield #4 berth overview

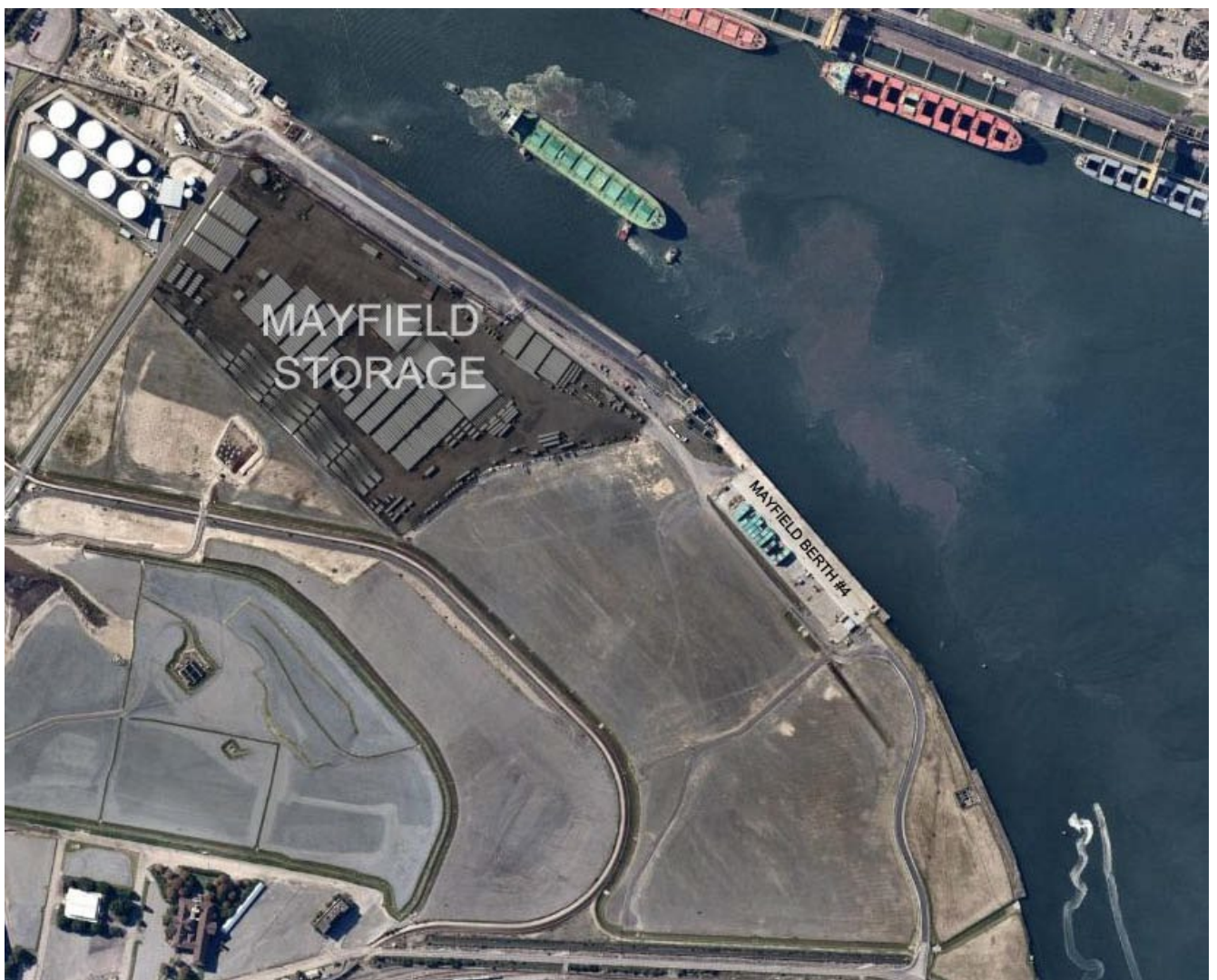


Image 2: Mayfield #4 Port storage area



9.0 Transport Summary

We have based this study on the turbine components accessing the site via the Port of Newcastle. The study will show the likely route for these components, and the restraints that they may encounter on the route. The study will show Route survey 1 (Standard route) as the preferred option for an 85m blade and all loads up to 5.6 metres in overall height, through to Dunedoo.

Route survey 2 (High load route) is for loads that exceed 5.6 metres in overall height, except the blades and also through to Dunedoo.

Additionally, Route surveys A and B will detail 2 possible site access routes from Dunedoo through to the windfarm boundaries. Both routes would be used for all components.

ROUTE SURVEY 1: STANDARD ROUTE-NEWCASTLE TO DUNEDOO

DISTANCE: 291.0 kilometres

GPS LINK: <https://goo.gl/maps/f3e5EJNjwJdiHX7S9>

VIA: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway.

ROUTE SURVEY 2: HIGH LOAD ROUTE FROM PORT OF NEWCASTLE TO DUNEDOO

DISTANCE: 323.0 kilometres

GPS LINK: <https://goo.gl/maps/gRvKqvwzMzteT2dP8>

VIA: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway.

ROUTE SURVEY SITE ACCESS A: Golden Highway, Sweeneys lane.

DISTANCE: 28.0 kilometres

GPS Link: <https://goo.gl/maps/mG8WoTP6HNDBeyK8A>

VIA: Golden Highway, Sweeneys lane.

ROUTE SURVEY SITE ACCESS B: Golden Highway, Saxa Road, Tallawonga Road

DISTANCE: 47.0 kilometres

GPS Link: <https://goo.gl/maps/vTQBQfgv5pZPrw8a7>

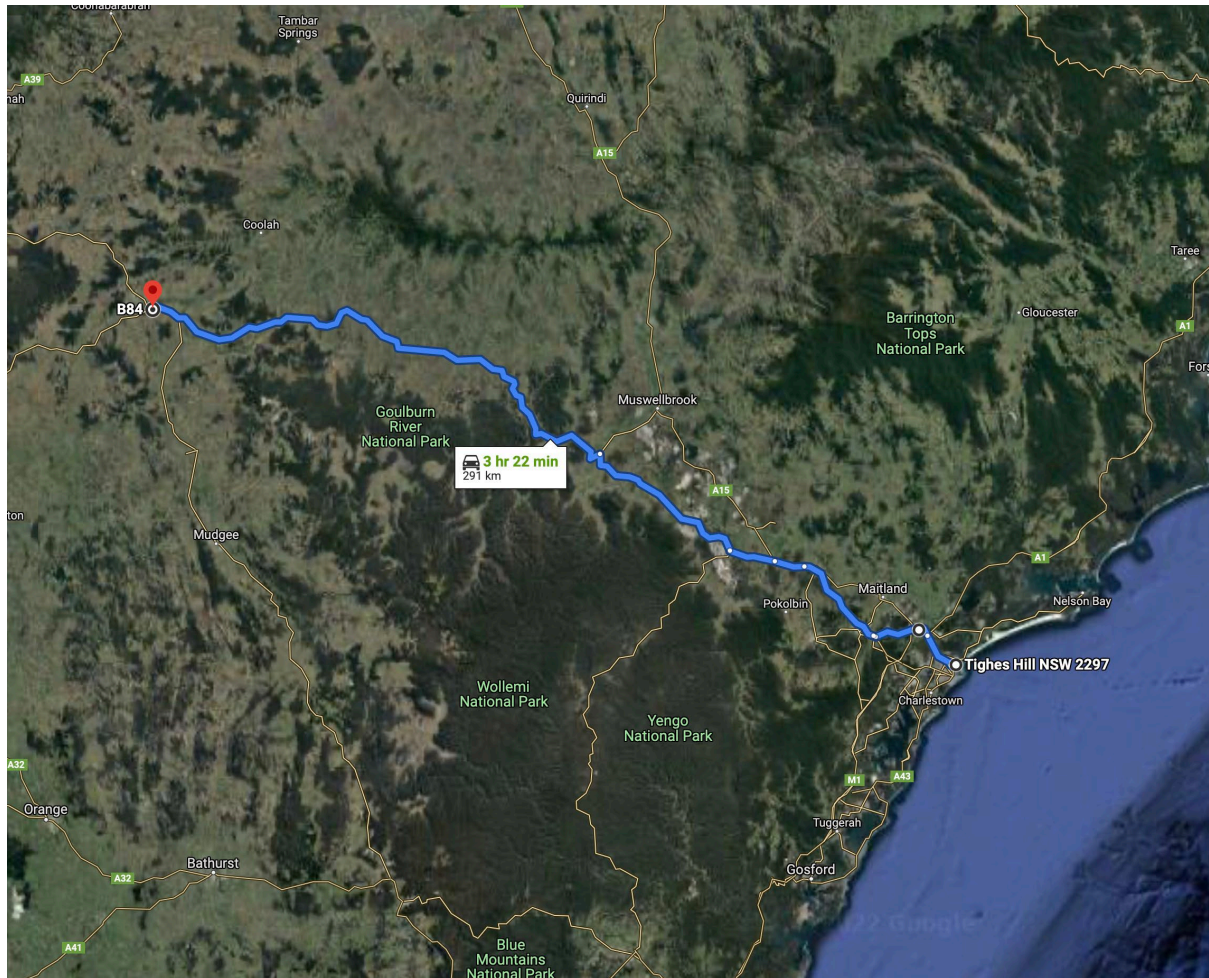
VIA: Golden Highway, Saxa Road, Tallawonga Road

10.0 Route Survey 1: Standard Route-Newcastle to Dunedoo

Distance: 291 Kilometres

GPS LINK: <https://goo.gl/maps/f3e5EJNjwJdiHX7S9>

This route travels via Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway.



KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street https://goo.gl/maps/c8LwPYKuN4m	Length: 70.0m Width: 8.0m	Moderate right hand turn	Hardstand will need to be added to the left entry and exit of the corner. The existing culvert will be satisfactory. Some signs will need to be relocated and or made removable and a section of fence will need to be relocated.
0.4	Mayfield	Selwyn Street rail crossing https://goo.gl/maps/864FhMSaF9P2	Width: 9.0m	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto Industrial Drive via George Street https://goo.gl/maps/biPRA6Lc572	Length: 70.0m Width: 8.0m	Right hand turn	The first right hand turn through George Street will need a sign made removable and a disused pole on the overhang removed. Entering Industrial Drive the prime mover will cross from the correct side to the correct side with the trailer cutting the corner and travelling over the centre median strip. The traffic lights in the centre median will need to be relocated or made to fold down. Some hardstand will need to be placed on the south side of the intersection.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/5DpD3b7KnT72	Clearance: Height: 5.4m	Travel directly ahead	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 metres will need to travel in the right-hand lane.
5.5	Mayfield West	Industrial Drive onto Maitland Road https://goo.gl/maps/Kn49dhWG2qG2	Length: 70.0m Width: 8.0m	Right hand turn	The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. Two signs will need to be made removable or relocated.
14.8	Tarro	New England Highway https://goo.gl/maps/aED5Y4ccdW3A47x37	Length: 90.0m Width: 8.0m	Left hand bend	No problems with this section of road.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JigkBg	Length: 100.0m Width: 12.0m	Left hand merge	No problems with this section of road.

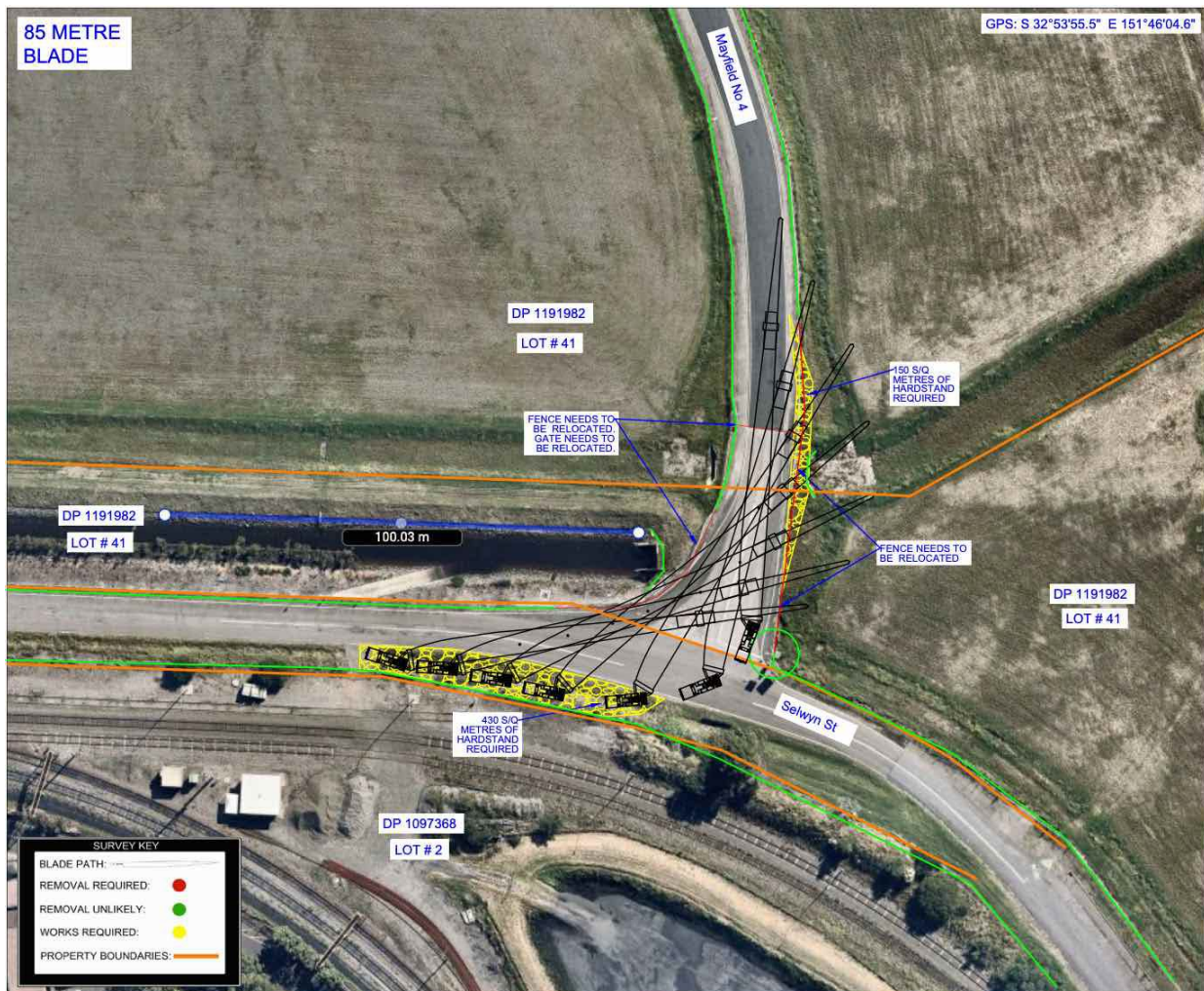
KM index	Location	Section of road	Current clearance	Procedure	Comments
29.0	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQt9E2	Length: 65m Width: 6.0m	Right hand turn	Cross to the incorrect side than down the off-ramp onto the incorrect side of the expressway. Approx 600 metres along the expressway there is a break in the road, which will allow the blades to cross back to the correct side of the expressway. Traffic control and or police will be required to perform this procedure.
59.0	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjg	Length: 100m Width: 12.0m	Travel directly ahead	No problems with this section of road.
67.0	Whittingham	The New England Highway onto the Golden Highway GPS link: https://goo.gl/maps/nAnkYte1b42	Length: 70m Width: 7.0m	Left Hand turn	The NSW Government is currently upgrading this intersection. The intersection in its current form has several signs that would need to be made removable, but no modifications are required on the existing corner. At this stage the data that is available for the upgrades shows that the section of road that would need to be accessed does not change considerably. However, it is recommended that the upgrade is monitored, and that any changes are thoroughly looked at.
67.4	Whittingham	Golden Highway GPS link: https://goo.gl/maps/R86RFuPnmFU2	115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
68.0	Whittingham	Golden Highway over rail bridge GPS link: https://goo.gl/maps/5NwDQofandvvMKFY9	Width: 9.0m	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.3	Mount Thorley	Golden Highway over rail bridge GPS link: https://goo.gl/maps/qTxSbkxPu87L5hx4A	Width: 9.0m	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.4	Whittingham	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/7uGdEmk1EgE2	Length: 50.0m Width: 7.0m	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable.

KM index	Location	Section of road	Current clearance	Procedure	Comments
77.5	Mount Thorley	Golden Highway GPS link: https://goo.gl/maps/zGvdupDuixx	100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
80.6	Mount Thorley	Golden Highway over rail bridge GPS link: https://goo.gl/maps/ipGU4USXmWZ8GkJs6	Width: 9.0m	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
80.8	Mount Thorley	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/VyA42n1CqZx	Length: 85.0m Width: 7.0m	Right hand turn	Blades to cross from the incorrect side and cross back to the correct side approx. 500 metres west of the intersection.
98.0	Warkworth	Golden Highway GPS link: https://goo.gl/maps/Y6V6EXaCwqx	100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village GPS link: https://goo.gl/maps/Wg9CReJ5Z1Q	Length: 70m Width: 7.0m	Left hand than right hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added. Additionally some trees will need to be Trimmed/Removed.
126.0	Ogilvy	Golden Highway GPS link: https://goo.gl/maps/58Tj9ojs7CC2	6% gradient	Travel directly ahead	This section of road has a steep mountain range that will require additional pull trucks to assists loads that exceed 80T gross weight.
131.9	Denman	Golden Highway onto Denman Road GPS link: https://goo.gl/maps/c4PNoycx832	Length: 65.0m Width: 7.0m	Left hand turn	The blades will travel around the corner from incorrect side onto the incorrect side. The existing corner will require hardstand to be added and signs made removable. Height of the trees will need to be monitored.
132.8	Denman	Golden Highway over Denman Bridge GPS link: https://goo.gl/maps/UToXyFe3QKu	5.8 Metres height clearance 6.9 Metres width clearance	Travel directly ahead in the centre of the lane	A width of 6.5 metres and a height of 5.6 metres should not be exceeded of this structure. If loads are over these dimensions than they may detour the bridge via Bengalla and Wybong Roads.
134.0	Denman	Golden Highway GPS link: https://goo.gl/maps/WFGzzyByugeKghuo8	Length: 90.0m Width: 7.0m	Right hand bend	No problems with this section of road.
135.0	Denman	Golden Highway GPS link: https://goo.gl/maps/Npm1Ut7bP6Pmg9qe7	Length: 90.0m Width: 7.0m	Right hand bend	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Comments
137.9	Denman	Golden Highway rail crossing GPS link: https://goo.gl/maps/r7x7Qc685d82	Width: 9.0m	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
150.1	Sandy Hollow	Golden Highway GPS link: https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
161.2	Gungal	Golden Highway GPS link: https://goo.gl/maps/WDol2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
184.8	Merriwa	Golden Highway GPS link: https://goo.gl/maps/NqrWzTsRmmt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
186.0	Merriwa	Golden Highway GPS link: https://goo.gl/maps/RW9qwfRzqr6MLA1H8	Length: 90.0m Width: 7.0m	Left hand bend	No problems with this section of road.
234.0	Cassilis	Golden Highway GPS link: https://goo.gl/maps/vs6YMT6TxCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
282.0	Leadville	Golden Highway merge with the Castlereagh Highway GPS link: https://goo.gl/maps/aJMXknfMmuH2	Width: 9.0m	Merge directly ahead	No problems with this section of road.
290.0	Dunedoo	Golden Highway GPS link: https://goo.gl/maps/nQ38396uqk1FQN4P6	Length: 90.0m Width: 7.0m	Left hand bend	No problems with this section of road.
291.0	Dunedoo	Golden Highway rail crossing GPS link: https://goo.gl/maps/wsyNKfcoAij3SosY9	8.0 metres in width	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
291.1	Dunedoo	Golden Highway intersection with Wargundy Street GPS link: https://goo.gl/maps/Y6AGJ4Hcy3Tnd1K7	Length: 75.0m Width: 7.0m	Right hand bend	The blades will travel around the corner from correct side onto the correct side. The sign on the inside of the corner will need to be relocated. The blades tail swing will need to travel over the top of the existing signals. If these signals are changed then the height will need to be rechecked.

0.0 Km's: Mayfield #4 onto Selwyn Street at Mayfield.

Image 1:



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

PROCEDURE: Right hand turn.

COMMENTS: Hardstand will need to be added to the left entry and exit of the corner. The existing culvert will be satisfactory. Some signs will need to be relocated and or made removable and some fence will need to be relocated.

A spotter will need to keep the driver informed throughout the procedure.

ROAD MODIFICATIONS: A moderate amount of work is required.

0.4 Km's: Rail crossing over Selwyn Street at Mayfield.

Image 1:



GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/864FhMSaF9P2>

PROCEDURE: Travel directly ahead over the crossing.

COMMENTS: Large width clearance and good ground clearance over this crossing.

Police and escorts to control local traffic either side of the crossing. ARTC approval will need to be obtained to travel over this crossing. Likely to cross with caution, no escort required.

ROAD MODIFICATIONS: No works are required.

1.3 Km's: Selwyn Street onto Industrial Drive, via George Street at Mayfield.

Image 1:



GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/brPRAckLr572>

PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive.

COMMENTS: The first right hand turn through George Street will need a sign made removable and a disused pole on the overhang removed. Entering Industrial Drive the prime mover will cross from the correct side to the correct side with the trailer cutting the corner and travelling over the centre median strip. The traffic lights in the centre median will need to be relocated or made to fold down. Some hardstand will need to be placed on the south side of the intersection.

A spotter would need to assist the load through this intersection.

ROAD MODIFICATIONS: A large amount of work is required.

4.9 Km's: Standard overhanging Traffic signals Mayfield to Hunter Expressway.

Image 1:



GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/5DpD3b7KnT72>

PROCEDURE: Overhanging signals while travelling through the intersection.

COMMENTS: The lowest traffic signal on route has 5.4 metres clearance. This signal is on the corner of Steel River Blvd at Mayfield West. Loads with an overall height of 5.3 or higher, can avoid this signal by travelling in the centre lane. Loads to slow down while doing this manoeuvre. All other signals exceed 5.6 metres high on this section of road.

ROAD MODIFICATIONS: No works are required.

5.5 Km's: Industrial Drive onto Maitland Road at Mayfield West.

Image 1:



GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/Kn49dhWG2qG2>

PROCEDURE: Right hand turn from Industrial Drive onto Maitland Road.

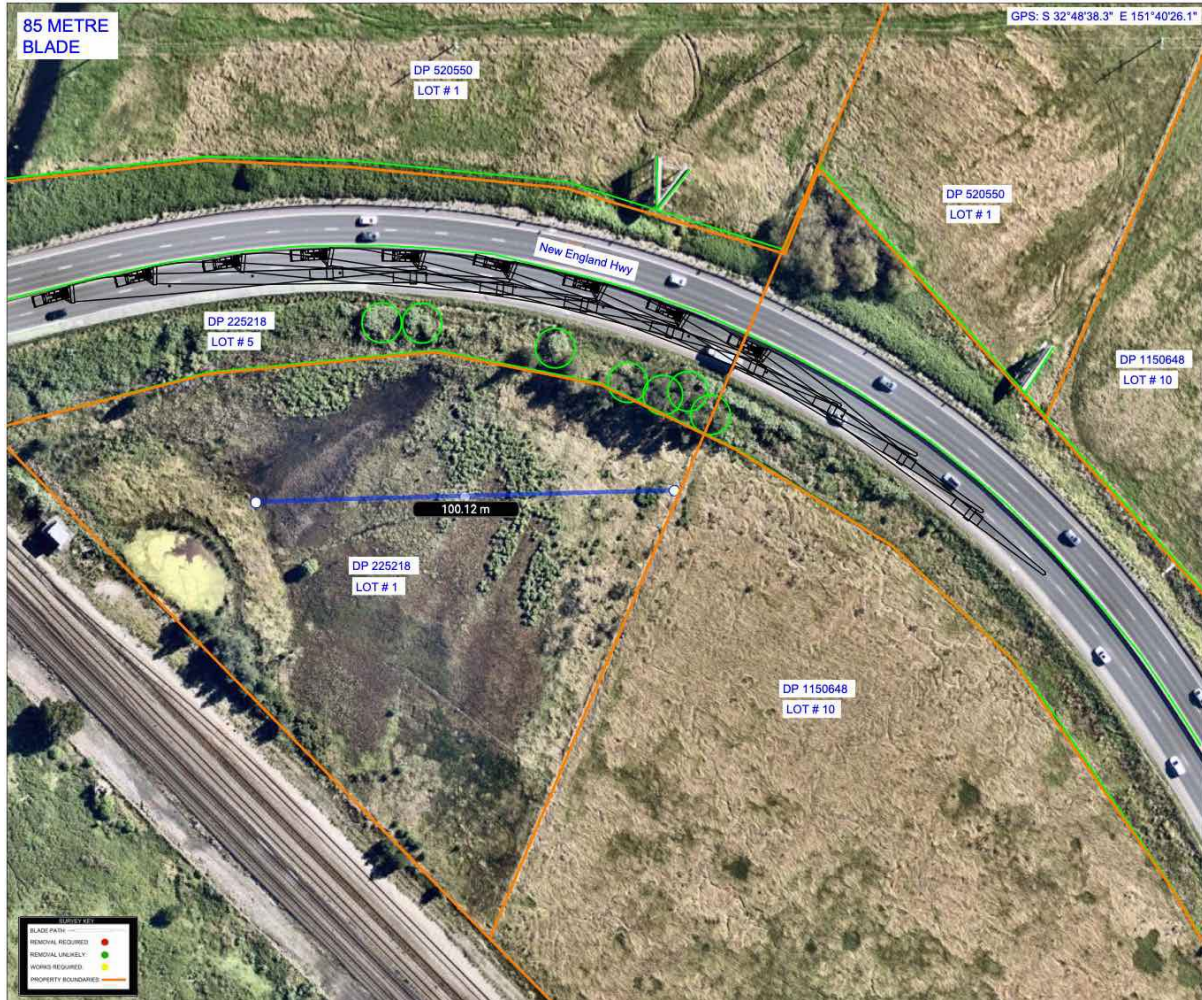
COMMENTS: The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. Two signs will need to be made removable or relocated.

Spotter to keep the driver informed throughout the procedure.

ROAD MODIFICATIONS: A small amount of work is required.

14.8 Km's: New England Highway at Tarro.

Image 1:



GPS LINK FOR THIS LOCATION: <https://goo.gl/maps/aED5Y4ccdW3A47x37>

PROCEDURE: Right hand turn from Industrial Drive onto Maitland Road.

COMMENTS: Prime mover to travel around the corner in the right-hand lane.

Spotter to keep the driver informed throughout the procedure.

ROAD MODIFICATIONS: No works required.

29.0 Km's: John Renshaw Drive onto the Hunter Expressway at Buchanan.

Image 1:

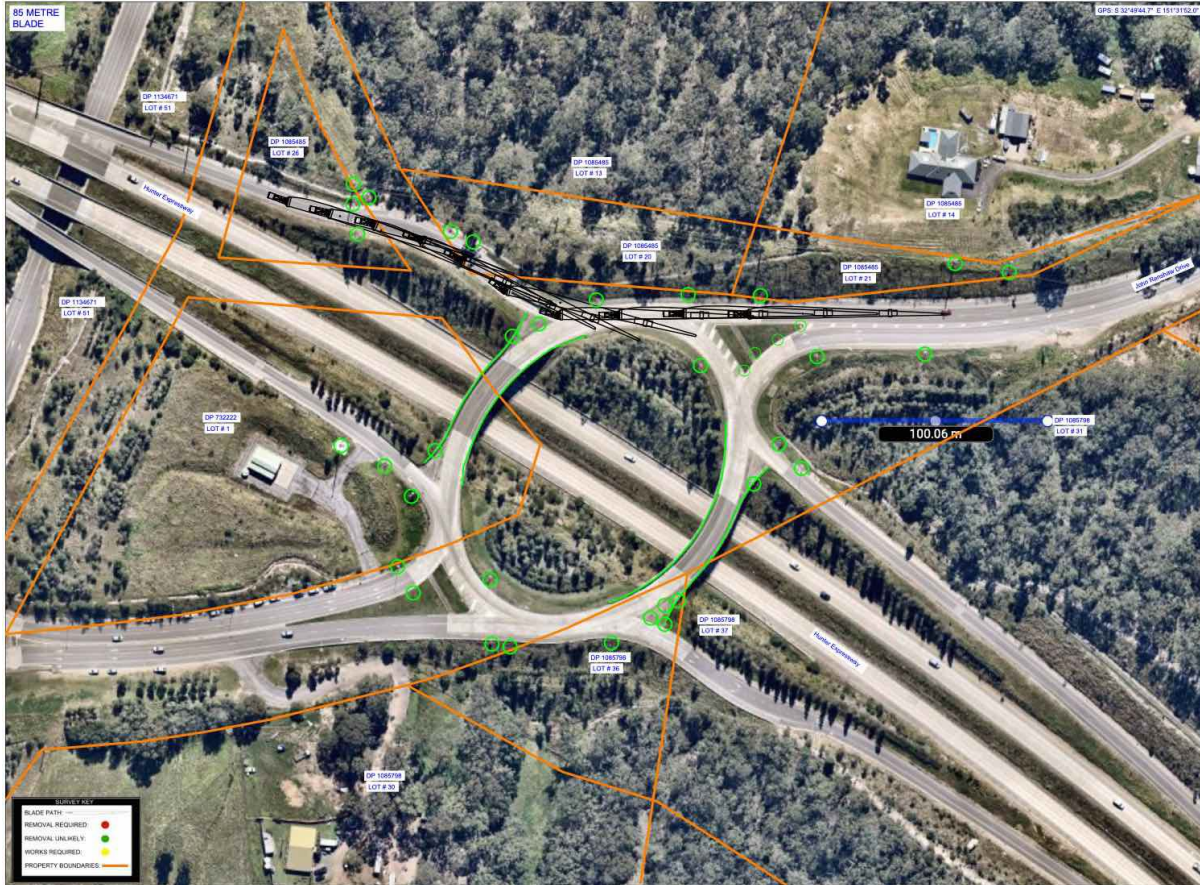


Image 2:



PROCEDURE: Right hand turn onto the incorrect side of the Motorway, before crossing back onto the correct side at the crossover bay.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/cEnuC5th1p52>

COMMENTS: Cross to the incorrect side then down the off-ramp onto the incorrect side of the expressway. Approx 600 metres along the expressway there is a break in the road, which will allow the blades to cross back to the correct side of the expressway.

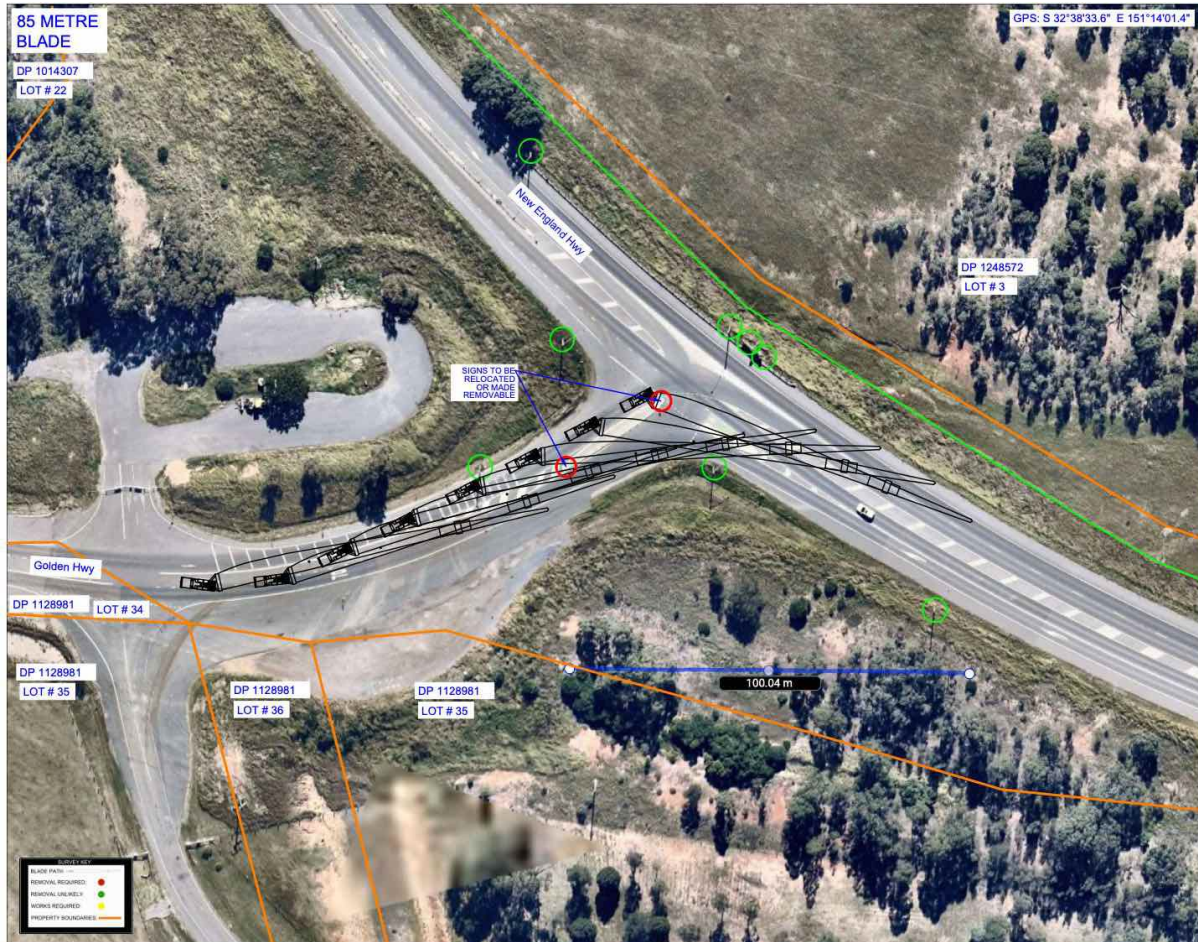
Spotter to keep the driver informed throughout the procedure.

Traffic control and or police will be required to perform this procedure.

ROAD MODIFICATIONS: No works required.

67.0 Km's: New England Highway onto Golden Highway at Whittingham.

Image 1:



PROCEDURE: Left hand turn from the New England Highway onto the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/GZ3VbkLrKf42>

COMMENTS: Loads to turn from the incorrect side to the incorrect side. The signs in the center median will need to be made removable.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes, a small amount of works is required.

NOTE: This intersection is currently earmarked for an upgrade. The upgrades will not conflict with our current proposal. However, it is recommended that this intersection swept path be updated once the final design has been released.

77.4 Km's: Golden Highway intersection with Putty Road at Whittingham.

Image 1:



PROCEDURE: Left hand turn from the Golden Highway at the intersection of the Putty Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/esuS6TUUwQ92>

COMMENTS: Loads to turn from the incorrect side to the incorrect side. Spotter to keep the driver informed throughout the procedure.

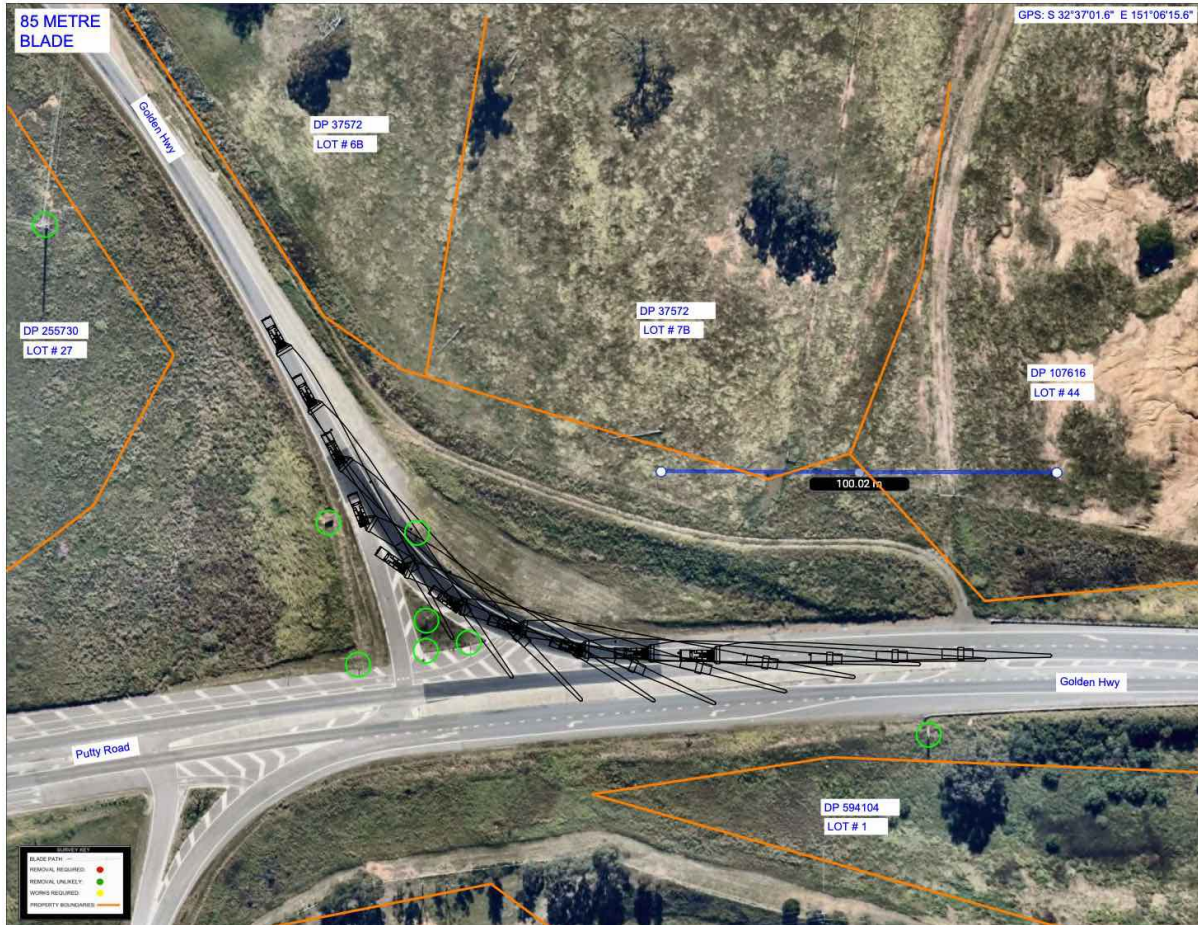
Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: A small amount of work is required.

80.8 Km's: Jerrys Plains Road intersection with Putty Road at Mount Thorley.

Image 1:

**PROCEDURE:** Right hand turn from the Putty Road onto Jerry's Plains Road.**GPS LINK FOR SECTION OF ROAD:** <https://goo.gl/maps/Qj4tjSSjN932>**COMMENTS:** Loads to turn from the incorrect side to the incorrect side.

Blade loads are to cross to the incorrect side prior to the intersection and return to the correct side when the lanes remerge.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

NOTE: Towers and general loads up to 5.6 metres in overall height can stay on the correct side of the highway and will travel under the overpass. The overpass is 5.6 in the center of the road. Loads that exceed 5.6 high will need to take the blade detour.**ROAD MODIFICATIONS:** No works required.

107.0 Km's: Golden Highway through Jerrys Plains.

Image 1: Right hand turn

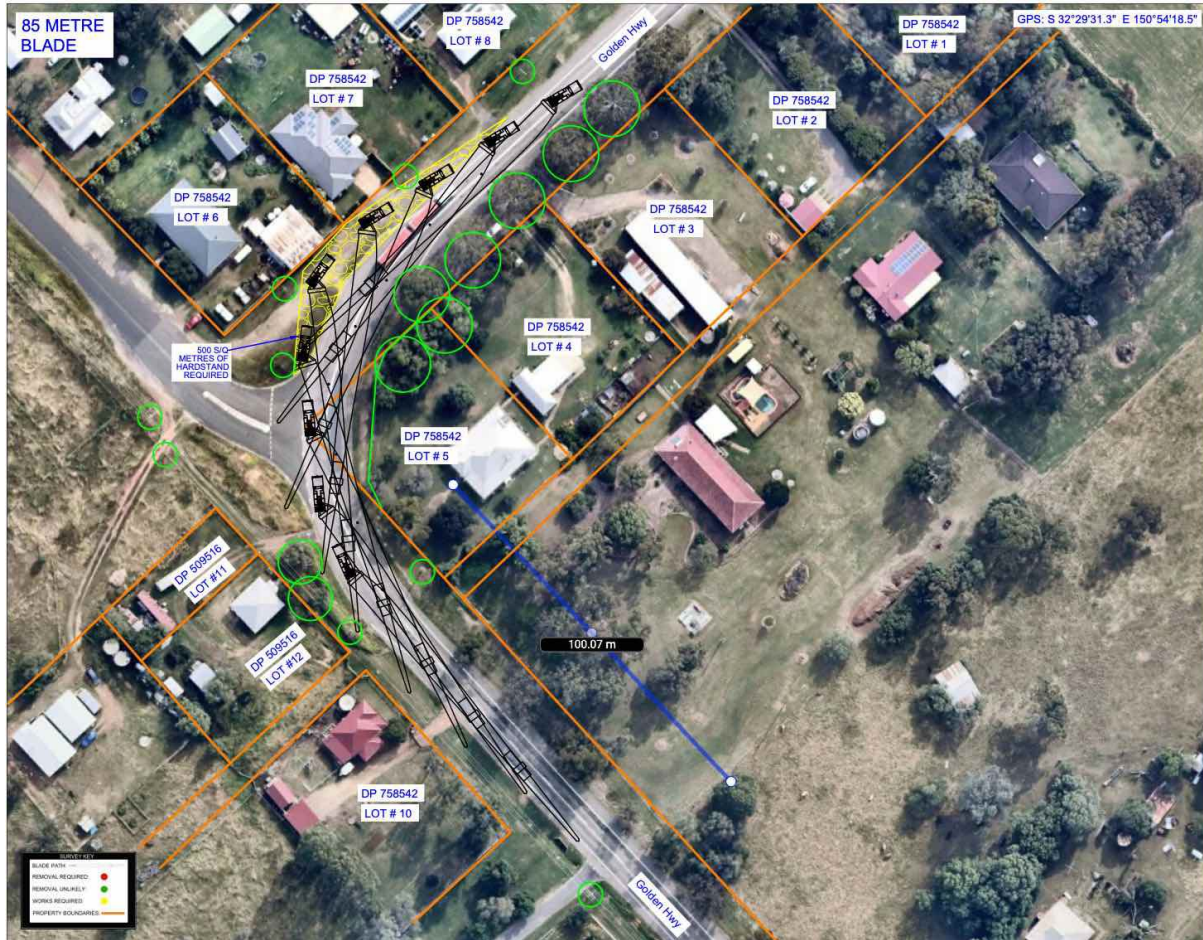


Image 2: Left hand turn



PROCEDURE: Right and left hand turn through the village.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Ys3yKZ6vQs62>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be relocated and some hardstand added.

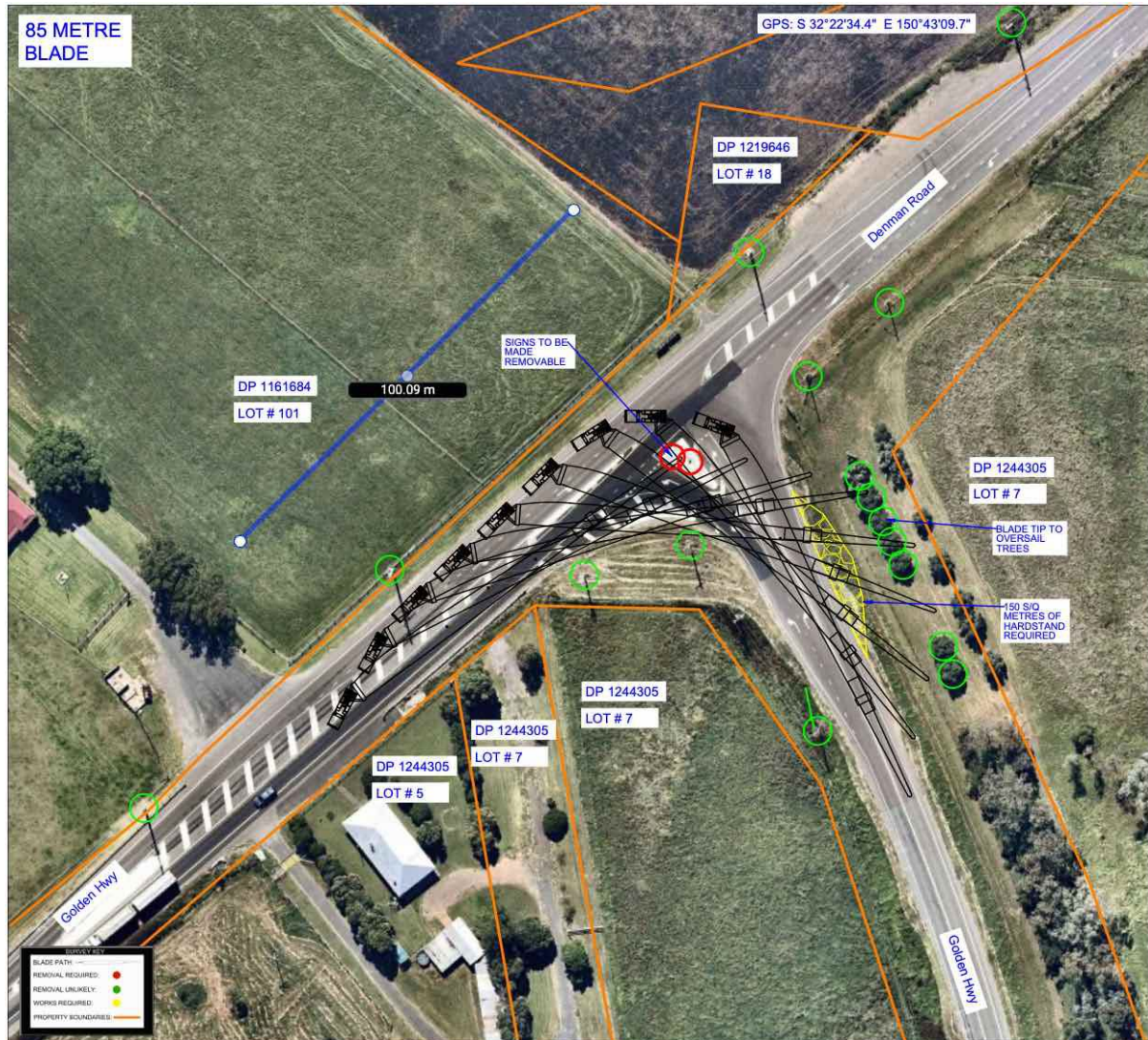
Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: A moderate amount of work is required.

131.9 Km's: Golden Highway intersection with Denman Road at Denman.

Image 1:



PROCEDURE: Left hand turn from the Golden Highway at the intersection of Denman Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/T4m46bBNuro>

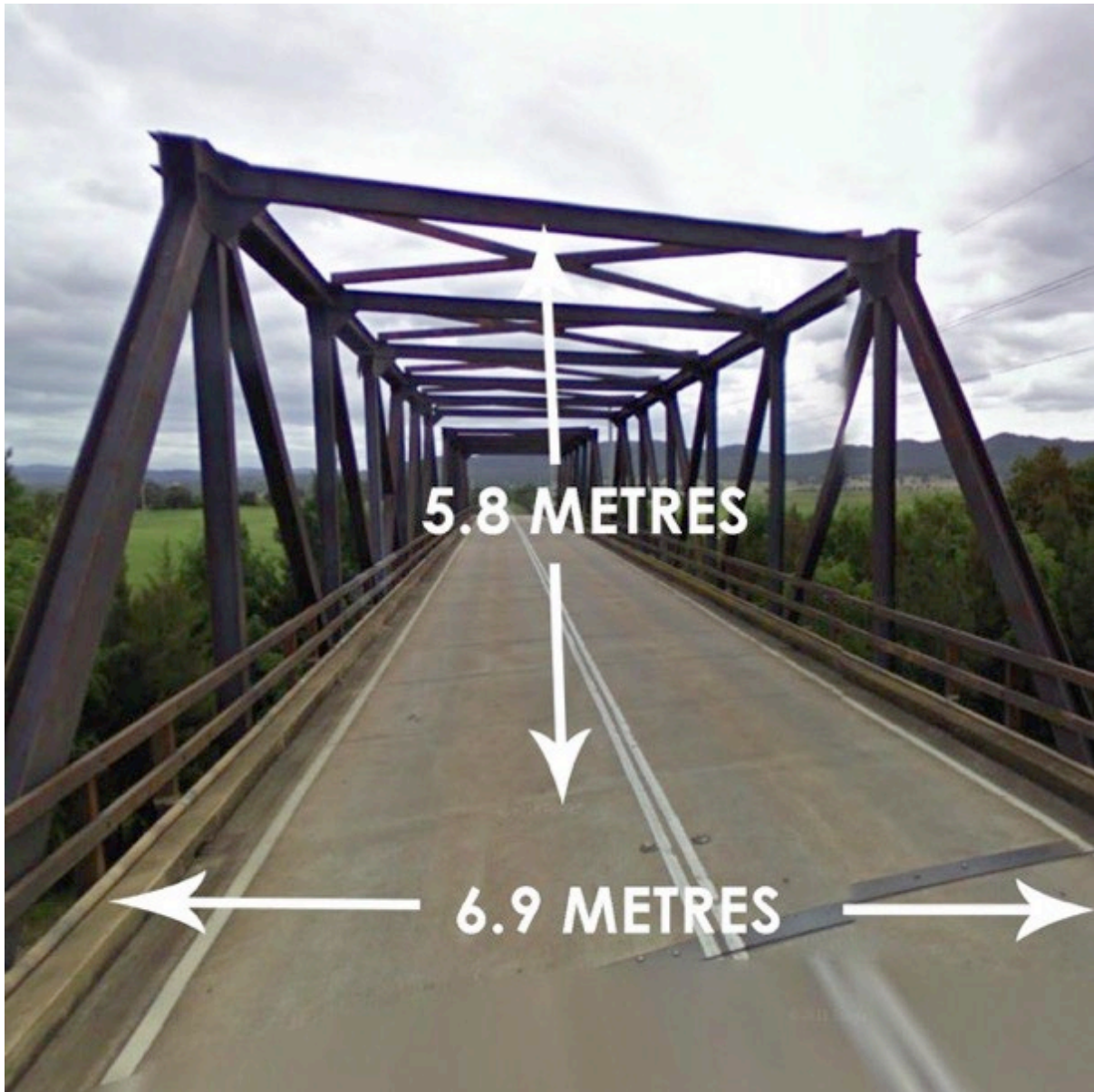
COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added to the outside of the corner. The blade tip will overhang trees in the property to the right of the intersection, so the height of these trees will need to be monitored.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: A moderate amount of works are required.

132.8 Km's: Denman Bridge.



PROCEDURE: Travel over the bridge.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/UToXyFe3QKu>

COMMENTS: A width of 6.5 metres and a height of 5.6 metres should not be exceeded over this structure. If loads are over these dimensions then they may detour the bridge via Bengalla and Wybong Roads as per **Route B**.

134.0 Km's: Golden Highway at Denman.

Image 1:



PROCEDURE: Right hand bend on the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/WFGzzyByugeKghuo8>

COMMENTS: Prime mover to travel around this corner on the far-left side of the road.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

135.0 Km's: Golden Highway at Denman.

Image 1:



PROCEDURE: Right hand bend on the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Npm1Ut7bP6Pmq9qe7>

COMMENTS: Prime mover to travel around this corner on the far-left side of the road.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

137.9 Km's: Denman Rail crossing.



PROCEDURE: Travel over crossing.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/r7x7Qc685d82>

COMMENTS: Large width clearance and good ground clearance over this crossing.

NOTE: ARTC approval will need to be obtained to travel over this crossing. Likely to cross with caution, no escort required.

186.0 Km's: Golden Highway at Merriwa.

Image 1:



PROCEDURE: Left hand bend on the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/RW9gwfRzgr6MLA1H8>

COMMENTS: Prime mover to travel around this corner on the far-right side of the road.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

290.0 Km's: Golden Highway at Dunedoo.

Image 1: Left hand bend



PROCEDURE: Left hand bend on the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/nQ38396uqk1FQN4P6>

COMMENTS: Prime mover to travel around this corner on the far-right side of the road.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

291.0 Km's: Golden Highway rail crossing at Dunedoo.



PROCEDURE: Travel over crossing.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/wsyNKfcoAij3SosY9>

COMMENTS: Large width clearance and good ground clearance over this crossing.

NOTE: ARTC approval will need to be obtained to travel over this crossing. Likely to cross with caution, no escort required.

291.1 Km's: Golden Highway intersection with Wargundy Street at Dunedoo.

Image 1:



PROCEDURE: Right hand bend on the Golden Highway at the intersection of Wargundy Street.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/WzACUHey3jYadj1K7>

COMMENTS: The blades will travel around the corner from correct side onto the correct side. The sign on the inside of the corner will need to be relocated. The blades tail swing will need to travel over the top of the existing signals. If these signals are changed then the height will need to be rechecked.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

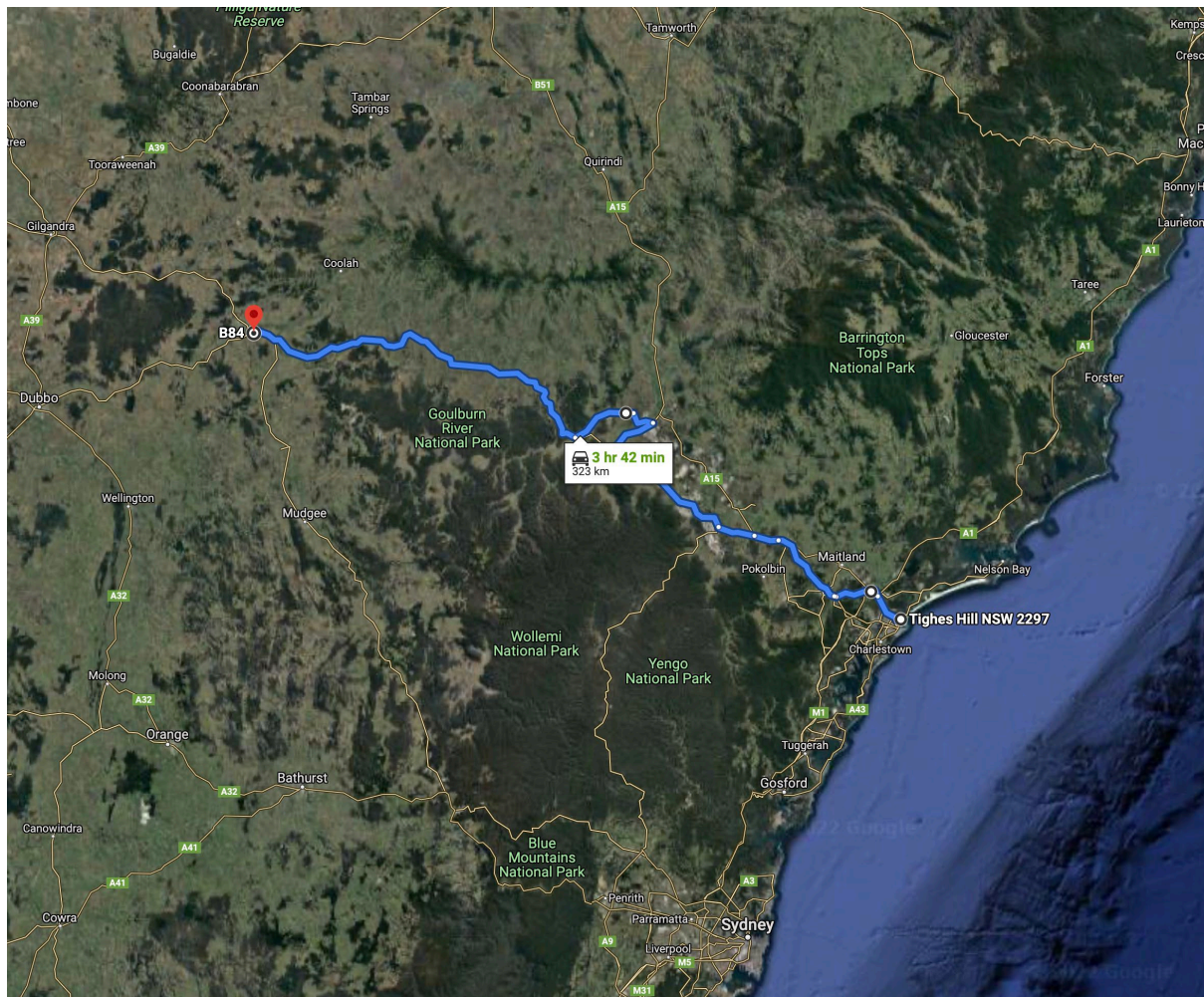
ROAD MODIFICATIONS: A small amount of works are required.

11.0 Route Survey 2: High load route from Newcastle to Dunedoo.

DISTANCE: 323.0 kilometres

GPS LINK: <https://goo.gl/maps/gRvKgwvzMzteT2dP8>

VIA: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway.



KEY	
CRITICAL	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street https://goo.gl/maps/aFLwPYKuNdm	Length: 70.0 Mtrs Width: 8.0 Mtrs	Moderate right hand turn	No problems with the towers on this section of road.
0.4	Mayfield	Selwyn Street over rail crossing https://goo.gl/maps/AmohE54hKSz	Length: 90 metres Width: 9.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto George Street https://goo.gl/maps/gXeHvBtCp4D2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/YmqhiS2iR582	Height: 5.4 metres	Travel directly ahead in the far right lane.	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 metres will need to travel in the right-hand lane. Clearance in the right end lane is 6.0 metres.
5.5	Mayfield West	Industrial Drive onto Maitland Road https://goo.gl/maps/Kn49dhWG2qG2	Length: 40.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
6.4	Sandgate	Maitland Road over rail bridge https://goo.gl/maps/W2JWWjhfqv5UMviB7	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the right-hand lane	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
13.9	Hexham	New England Highway under gantry https://goo.gl/maps/YTMoFe7Aick	Height: 5.9 metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.9 metres should not be exceeded.
15.1	Tarro	New England Highway over rail bridge https://goo.gl/maps/tTnWLwQC2hzSPhAp6	Length: 90 metres Width: 7.0 Metres	Travel directly ahead in the right-hand lane	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JigkBp	Length: 100.0 Mtrs Width: 12.0 Mtrs	Left hand merge	No problems with the towers on this section of road.
18.4	Beresfield	John Renshaw Drive https://goo.gl/maps/N19vJih1Fgr	Length: 100.0 Mtrs Width: 10.0 Mtrs	Travel directly ahead	The roundabout has been removed. A set of dual lanes now takes traffic directly across the intersection.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway https://goo.gl/maps/1STJ1PfQt9E2	Length: 65.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
58.9	Branxton	The Hunter Expressway onto The New England Highway https://goo.gl/maps/7rauNuxzqjq	Length: 100.0 Mtrs Width: 12.0 Mtrs	Travel directly ahead	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
67.3	Whittingham	The New England Highway onto the Golden Highway https://goo.gl/maps/nAnfkYfcUn42	Length: 70.0 Mtrs Width: 8.0 Mtrs	Left Hand turn	The NSW Government is currently upgrading this intersection. At this stage the data that is available for the upgrades shows that the section of road that we would need to access does not change considerably. However, it is recommended that the upgrades are monitored, and that any changes are thoroughly looked at.
67.4	Whittingham	Golden Highway https://goo.gl/maps/R86RFuPnmFU2	115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
68.0	Whittingham	Golden Highway over rail bridge https://goo.gl/maps/5NwDQofandvvMKfY9	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.3	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/qTxSbkxPu87L5hx4A	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.4	Whittingham	Golden Highway intersection with the Putty Road https://goo.gl/maps/7hQdEmK1EgE2	Length: 65 metres Width: 6.0 Metres	Left hand turn	No problems with this section of road.
77.5	Mount Thorley	Golden Highway https://goo.gl/maps/zGvdupDuixx	100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
80.6	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/ipGU4USXmWZ8GkJs6	Length: 90 metres Width: 9.0 Metres Height: 5.2 metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
80.8	Mount Thorley	Putty Road under Mt Thorley Road https://goo.gl/maps/SMzSLP1kvQYDMqa86	Heights: Left: 6.6 metres Centre: 6.3 Metres Right: 6.3 metres	Travel under the bridge in the left lane	Mt Thorley underpass is 6.3 metres in the centre of the road. Towers to pass under this structure on the correct side.
80.8	Mount Thorley	Golden Highway intersection with the Putty Road https://goo.gl/maps/QS9quvSyHYWaFHoX9	Length: 45 metres Width: 6.0 Metres	Right hand turn	No problems with this section of road.
98.0	Warkworth	Golden Highway https://goo.gl/maps/Y6V6EXaCwxq	100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village https://goo.gl/maps/WgSCRsJ9ZGt	Length: 60 metres Width: 6.0 Metres	Left hand than right hand turn	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
126.0	Ogilvy	Golden Highway https://goo.gl/maps/58Tj9ojs7CC2	6% gradient	Travel directly ahead	This section of road has a steep mountain range that will require additional pull trucks to assist loads that exceed 80T gross weight. Additionally, the NSW Government is currently upgrading this section of road. It is recommended that you monitor the progress of the upgrades, and that any changes are thoroughly looked at.
131.9	Denman	Golden Highway onto Denman Road https://goo.gl/maps/sf4PNnycxB32	Length: 55 metres Width: 6.0 Metres	Right hand turn	No problems with this section of road.
137.9	Muswellbrook	Denman Road onto Bengalla Road https://goo.gl/maps/3sK4m6YSHNHqkn68	Length: 60 metres Width: 8.0 Metres	Left hand turn	No problems with this section of road.
149.0	Bengalla	Bengalla Road onto Wybong Road https://goo.gl/maps/zfDyG4GQq6G37imB9	Length: 90 metres Width: 8.0 Metres	Left hand bend	No problems with this section of road.
158.0 to 183.0	Bengalla	Wybong Road https://goo.gl/maps/ckGZA5wFFK55Mvmc7	Length: 60 metres Width: 8.0 Metres	Travel directly ahead	This road is maintained by Muswellbrook Council. Approval will be required to travel on this section of Road.
183.0	Sandy Hollow	Wybong Road onto Golden Highway https://goo.gl/maps/5ft3VnWpnPhpeN4u7	Length: 60 metres Width: 8.0 Metres	Right hand turn	No problems with this section of road.
190.1	Sandy Hollow	Golden Highway https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
193.0	Sandy Hollow	Golden Highway under safety Cam https://goo.gl/maps/b7t9zH2ankJcvWpT6	Height: Left: 6.3 metres	Travel directly ahead on the correct side	No problems with this section of road.
201.0	Gungal	Golden Highway https://goo.gl/maps/WDoL2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
221.0	Merriwa	Golden Highway under safety Cam https://goo.gl/maps/D92rzQ8vnUcYsqj56	Height: Right: 6.4 metres	Travel directly ahead on the correct side	No problems with this section of road.
224.0	Merriwa	Golden Highway https://goo.gl/maps/NqrWzTsRmnt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
266.0	Cassilis	Golden Highway https://goo.gl/maps/vs6YMT6TxCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
305.0	Leadville	Golden Highway https://goo.gl/maps/ujxMGukhopeFWRhb8	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
315.0	Leadville	Golden Highway merge with the Castlereagh Highway GPS link: https://goo.gl/maps/aJMXknfMmuH2	Width: 9.0m	Merge directly ahead	No problems with this section of road.
323.0	Dunedoo	Golden Highway GPS link: https://goo.gl/maps/nQ38396uqk1FQN4P6	Length: 120.0m Width: 7.0m	Left hand bend	No problems with this section of road.

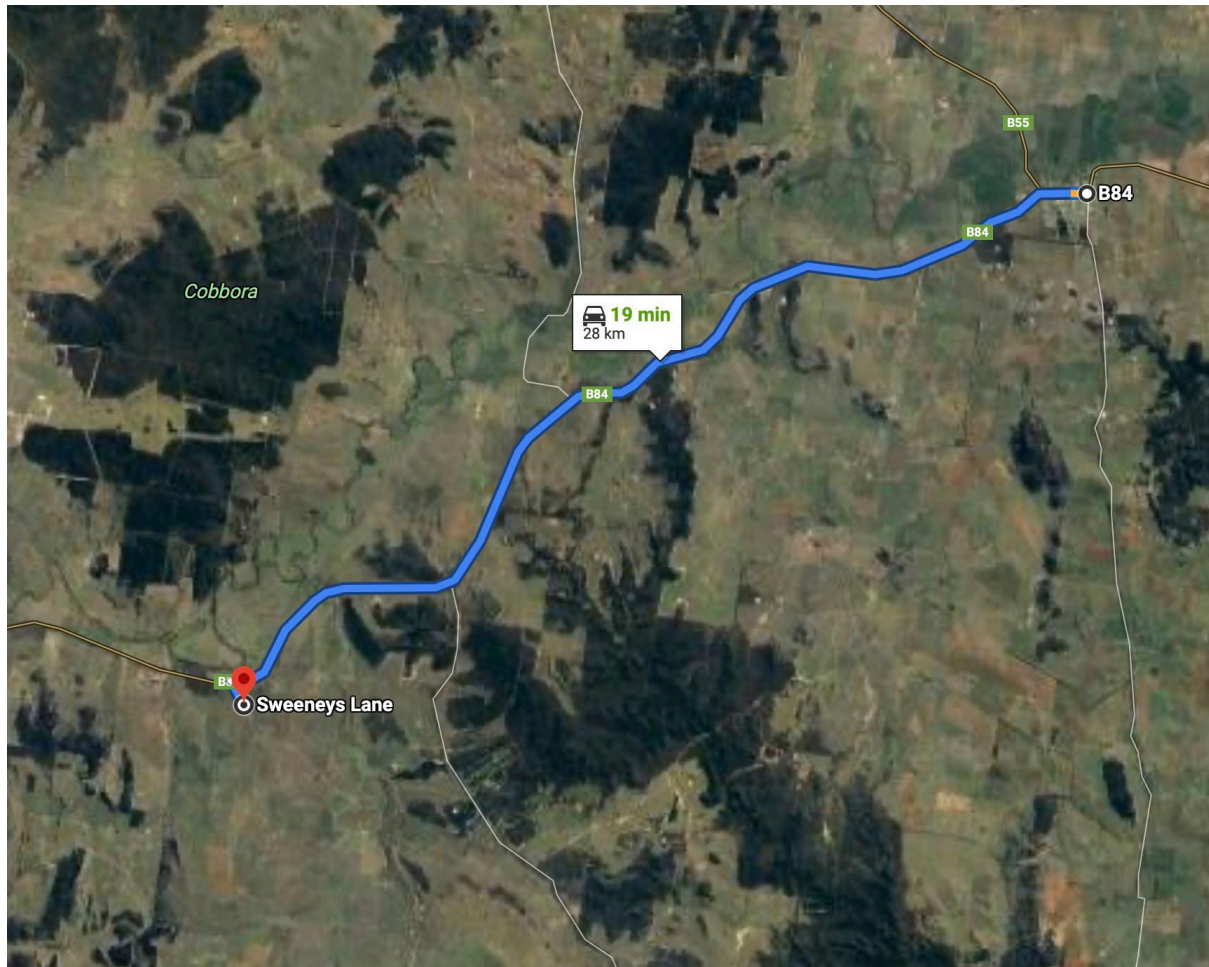
KM index	Location	Section of road	Current clearance	Procedure	Notes
323.9	Dunedoo	Golden Highway rail crossing GPS link: https://goo.gl/maps/wsyNKfcoAij3S0sY9	8.0 metres in width	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
324.0	Dunedoo	Golden Highway intersection with Wargundy Street GPS link: https://goo.gl/maps/WzACUHev3jYadj1K7	Length: 75.0m Width: 7.0m	Right hand bend	No problems with this section of road.

12.0 Route Survey A: Dunedoo to Sweeneys Lane.

DISTANCE: 28.0 kilometres

GPS Link: <https://goo.gl/maps/mG8WoTP6HNDBeyK8A>

VIA: Golden Highway, Sweeneys lane.



KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
27.3	Elong Elong	Golden Highway onto Sweeneys lane GPS link: https://goo.gl/maps/9hLmDkXyotBqrcn7	Length: 40.0m Width: 7.0m	Left hand turn	Blades to turn from the incorrect side to the incorrect side. Hardstand and drainage works are required on the inside of the corner. A number of trees need to be removed on the tailswing and on the inside of the corner.
27.3 to 28.0	Elong Elong	Sweeneys Lane GPS link: https://goo.gl/maps/RD5MRJCWg868UJ5b8	Length: 40.0m Width: 6.0m	Left hand turn	Sweeneys Lane will need to be made suitable for the swept path and weight of the largest loads, and some widening will need to take place in sections. Tree pruning and or removal will also be required.
28.0	Elong Elong	Sweeneys Lane into possible site entrance GPS link: https://goo.gl/maps/TcARjc16kxapDGx5	Length: Nil Width: Nil	Right hand turn	Site entrance has been included in Development Corridor and will be part of the agreement with the host landowner.

27.3 Km's: Golden Highway onto Sweeneys Lane at Elong Elong.

Image 1:



PROCEDURE: Left hand turn from the Golden Highway onto Sweeneys lane.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/9hLmDsXyofJ8qivm7>

COMMENTS: Blades to turn from the incorrect side to the incorrect side.

Hardstand and drainage works are required on the inside of the corner. A number of trees need to be removed on the tailswing and on the inside of the corner.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

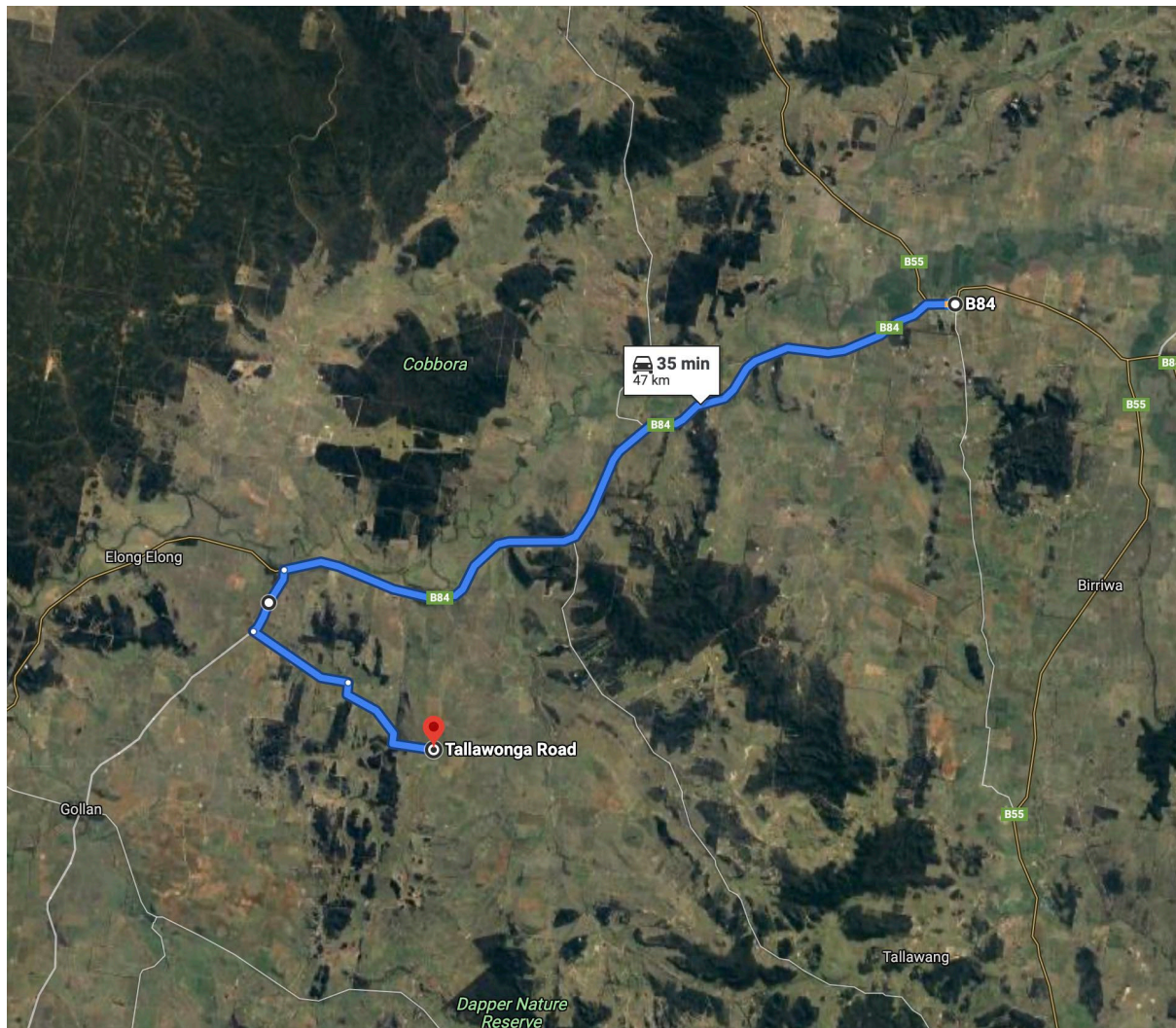
ROAD MODIFICATIONS: This is the primary access road into site and intersection upgrade works are proposed as part of the Project.

13.0 Route Survey B: Dunedoo to Tallawonga Road

DISTANCE: 47.0 kilometres

GPS Link: <https://goo.gl/maps/vTQBQfgv5pZPrw8a7>

VIA: Golden Highway, Saxa Road, Tallawonga Road

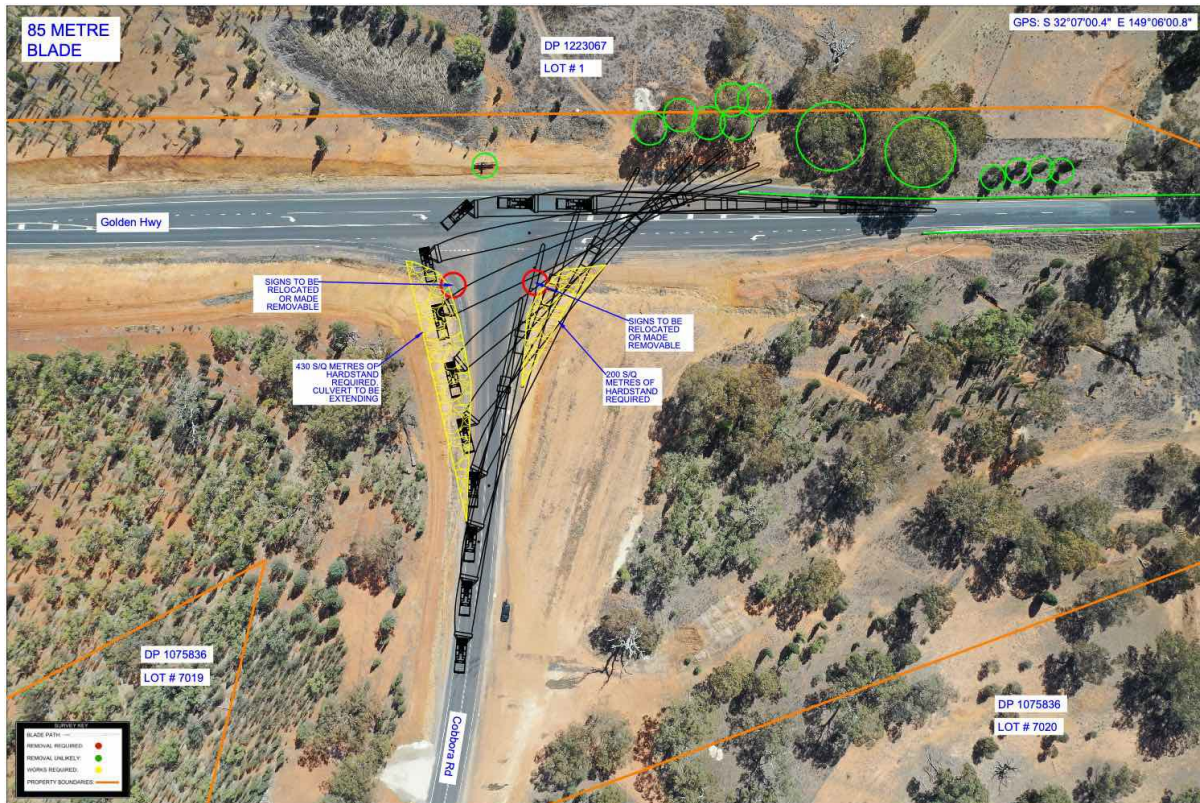


KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
34.0	Elong Elong	Golden Highway onto Saxa Road GPS link: https://goo.gl/maps/XScTDvABTZxhGed7	Length: 60.0m Width: 7.0m	Left hand turn	Hardstand is required on both sides of the road. Drainage works are required on the outside of the corner. Some side markers will need to be relocated, and 2 signs made removable. Additionally, a section of Armco needs to be reduced or relocated.
37.0	Elong Elong	Saxa Road onto Tallawonga Road GPS link: https://goo.gl/maps/LmPecVfRwdh13n8	Length: 40.0m Width: 6.0m	Left hand turn	Hardstand is required on both sides of the road. Some trees will require removal and trimming. A sign will need to be made removable. Additionally, a fence needs to be relocated.
41.4	Elong Elong	Tallawonga Road GPS link: https://goo.gl/maps/G6KbRrEy1V3HVf4n9	Length: 30.0m Width: 4.0m	Right hand bend	Hardstand is required on the outside on both sides of the corner. A tree will need to be removed.
41.9	Elong Elong	Tallawonga Road GPS link: https://goo.gl/maps/WlmedGofieNjvo2JA	Length: 30.0m Width: 4.0m	Left hand bend	Hardstand is required on the outside of the corner. A number of trees will need to be removed.
44.6	Elong Elong	Tallawonga Road GPS link: https://goo.gl/maps/TblmoHWGUMWcf6	Length: 30.0m Width: 4.0m	Right hand bend	Hardstand is required on the outside of the corner and a fence relocated. A number of trees will need to be removed.
45.0	Elong Elong	Tallawonga Road GPS link: https://goo.gl/maps/u1Y37ZGMEZzf1nJS7	Length: 30.0m Width: 4.0m	Left hand bend	Hardstand is required on the outside on both sides of the corner. A number of trees will need to be removed. A fence needs to be relocated.
47.0	Elong Elong	Tallawonga Road into possible site entrance GPS link: https://goo.gl/maps/s5C13n8zahiZhGtP6	Length: Nil Width: Nil	Right hand turn	Exact location will be within the Development Corridor and is to be confirmed as part of detailed design.

34.0 Km's: Golden Highway onto Saxa Road at Elong Elong.

Image 1:



PROCEDURE: Left hand turn from the Golden Highway onto Saxa Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/XSoTDVA8TZwNsGo47>

COMMENTS: Blades to turn from the incorrect side to the incorrect side.

Hardstand is required on both sides of the road. Drainage works are required on the outside of the corner. Some side markers will need to be relocated, and 2 signs made removable.

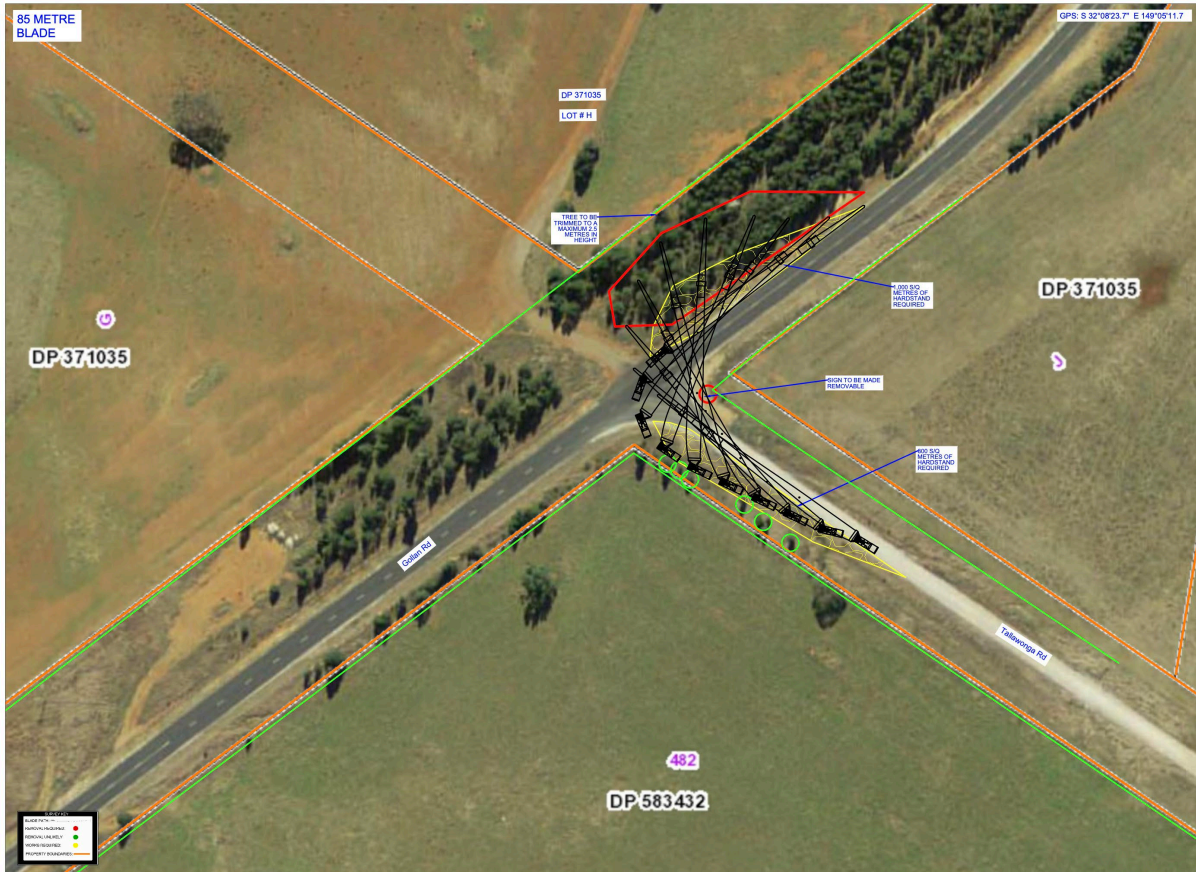
Additionally, a section of Armco needs to be reduced or relocated.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: This is an alternative route for OSOM components and intersection upgrade works are proposed as part of the Project.

37.0 Km's: Saxa Road onto Tallawonga Road at Elong Elong.
Image 1:



PROCEDURE: Left hand turn from Saxa Road onto Tallawonga Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/LkmRwqVBnwidi13o6>

COMMENTS: Blades to turn from the incorrect side to the incorrect side.

Hardstand is required on both sides of the road. Some trees will require removal and trimming. A sign will need to be made removable. Additionally, a fence needs to be relocated.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: A large amount of work is required.

37.0 Km's to 47.0 Km's:

Image 1: Left hand turn from Saxa Rd onto Tallawonga Road.



Image 2: Right hand bend on Tallawonga Road at 4.6 Km.



Image 3: Left hand bend on Tallawonga Road at 5.1 Km.



Image 4: Right hand bend on Tallawonga Road at 7.8 Km.

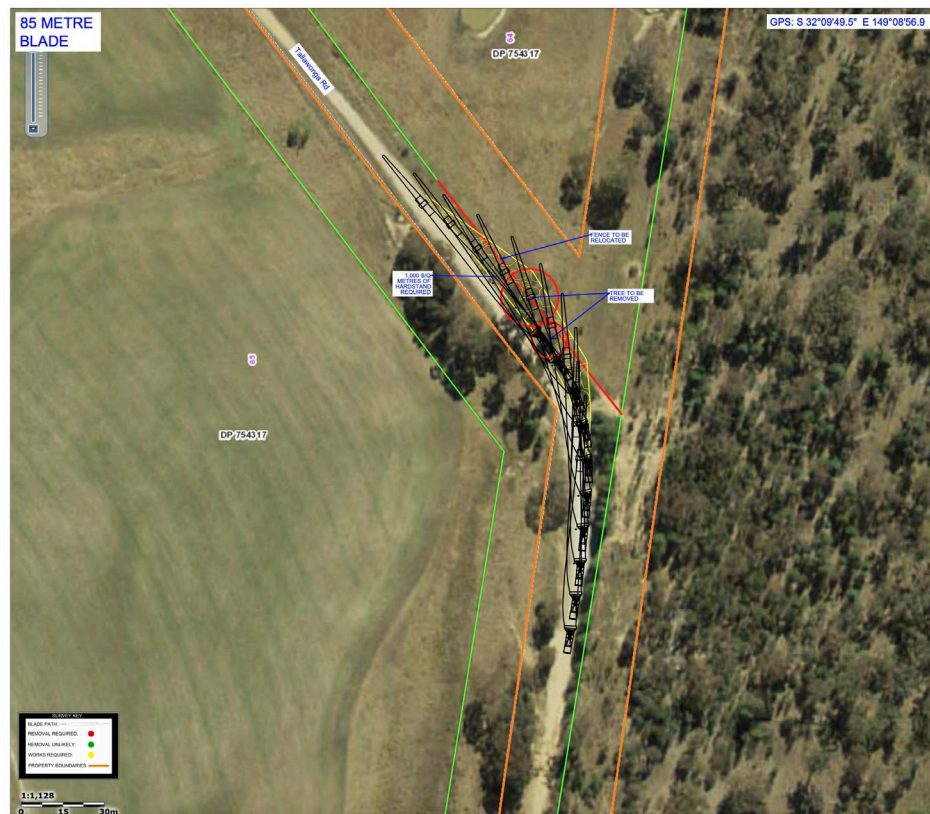


Image 5: Right hand bend on Tallawonga Road at 8.2 Km.



PROCEDURE: Travel directly ahead along Tallawonga Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/3itFzvfd8vKUEXTN7>

COMMENTS: Tallawonga road is gravel for the entirety and will need to be widened to at least a 5.5 metre pavement width.

It has a number of corners that will need a large number of upgrades, including areas of hardstand, tree removal and fence relocation.

Additionally, the vertical curve of the road will need to be checked for the entirety. We have shown a number of these corners in the above report.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: A Significant amount of works are required.

14.0 Conclusion Route 1:

After studying all the options and undertaking a route survey, it was observed that the components would need to be transported on several different routes through to Spicers Creek windfarm. Route 1 would be used for all blades and loads under a loaded height of 5.6 metres. The Central West-Orana Renewable Energy Zone has several projects underway that will undertake these works within 2023-2024, so it is possible that this route will already have the road modifications completed prior to this Project starting.

NEWCASTLE:

- Upgrades required while exiting the port and at the corner of George Street and Industrial Drive at Mayfield looks to be the most difficult corner. Relocation of the traffic signal in the centre of the intersection would be necessary to allow the 85-metre blade to traverse the bend.
- The corner from Industrial Drive onto Maitland Road will require some signs to be made removable.

HUNTER EXPRESSWAY:

- The blades will need to cross to the incorrect side of the roundabout on John Renshaw Drive and travel down the incorrect offramp and onto the eastbound lanes of the Hunter Expressway. Approx. 500 metres along the Expressway the blades will cross back to the correct side through the hardstand area in the middle of the expressway.
- Remaining loads to travel around the correct side of the roundabout.

OVERHEAD STRUCTURES: (5.6 Maximum loaded height)

- The lowest structure is the Denman bridge with 5.8 metres height limit. However, it is advised that loads over 5.6 metres in height detour via Bengalla and Wybong road.
- The traffic signal overhanging the road on Industrial Drive is 5.4 metres in the left lane, however if the high loads pass under this in the right-hand lane than they will not be restricted.

Summary for overhead structures

- Loads up to 5.6m loaded height can travel from Newcastle through to Dunedoo on 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 5.6 metres is required for this Project.

WIDTH:

- The route is good for loads up to 6.0 metres wide. The widest load proposed for the Project is 5.9 metres in width which is satisfactory.

BRIDGES:

- There are a number of bridges on route that will require bridge assessments.
- The route up to the turnoff of the Golden Highway is likely to be satisfactory for the mass of the components listed in this report.

RAIL ASSETS:

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

VEGETATION:

- The route requires some vegetation clearing in discrete areas up to Dunedoo.

PAVEMENT:

- The Pavement on all roads have adequate Highway pavement up until Dunedoo.

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 transport NSW to make all road stakeholders aware of the scheduled movements for each day.
- The Project will need to regularly check with TfNSW on any new upgrades not listed in this report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study will need to be undertaken on that section of road to confirm that it can still be used.

SUMMARY OF ROUTE 1:

- After reviewing Route 1, we are under the opinion that the loads could be delivered through to Spicers Creek with a number of upgrades to suit the required swept path of the 85-metre blade and the 5.6 metre high loads. However, we recommend that the listed actions in this report are undertaken at a minimum.

15.0 Conclusion Route 2:

After studying all the options and undertaking a route survey, it was observed that loads over 5.6 metres in overall height and up to 5.9 metres in overall height could be transported on this route. Route 2 would be used for all loads over a loaded height of 5.6 metres up until Dunedoo.

BENGALLA AND WYBONG ROADS:

- Denman bridge has a maximum clearance of 5.6 metres. To detour this bridge the loads would need to travel via Bengalla and Wybong Roads. These are council roads and council would need to be consulted before this route can be confirmed.

BRIDGES:

- This route has accommodated similar mass loads in the past.

OVERHEAD STRUCTURES: (5.9 Maximum loaded height)

- The lowest structure is the Gantry at Hexham and the Tarro overpass with a 5.9 metres height limit. These structures cannot be avoided.
- The traffic signal overhanging the road on Industrial Drive is 5.4 metres in the left lane, however if the high loads pass under this in the right hand lane than they will not be restricted.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of 5.9 metres in overall height is required for this Project.

WIDTH:

- The route is good for loads up to 6.0 metres wide. The widest load proposed for the Project is 5.9 metres in width which is satisfactory.

VEGETATION:

- The route is likely clear of vegetation along the major Highways, however there will need to be some pruning on Wybong and Goolma Roads if the loads exceed 5.6 metres in overall height.

WIDTH:

- The route is suitable for loads up to 6.5 metres wide.

SUMMARY OF ROUTE 2:

- After reviewing the High tower route, we are of the opinion that towers up to 5.9 metres in overall height could be delivered through to Dunedoo. However, approvals would be required to access council roads and to lift the powerlines to the 5.9 metres in height on the entire route.

16.0 Conclusion Spicers Creek access routes A & B.

We have surveyed 2 possible access routes that are located off the Golden Highway and Saxa Road. These access routes would be used to access the windfarm site entries. Listed below is a summary on these routes.

SWEENEYS LANE:

- Sweeneys Lane will be accessed off the Golden Highway.
- Sweeneys Lane is gravel for the section that will be used and will need to be widened to at least a 5.5 metre pavement width. It is noted that CWPR proposes to upgrade the Sweeneys Lane / Golden Highway intersection.
- It has a number of corners that will need upgrades, including large areas of hardstand, tree removal and fence relocation.
- Additionally, the vertical curve of the road will need to be checked for the entirety. We have shown a number of these corners in the above report.
- This route will need to be checked by an authorised scoping company for overhead utilities. It is likely that a route of 5.9 metres is required for this Project.

TALLAWONGA ROAD:

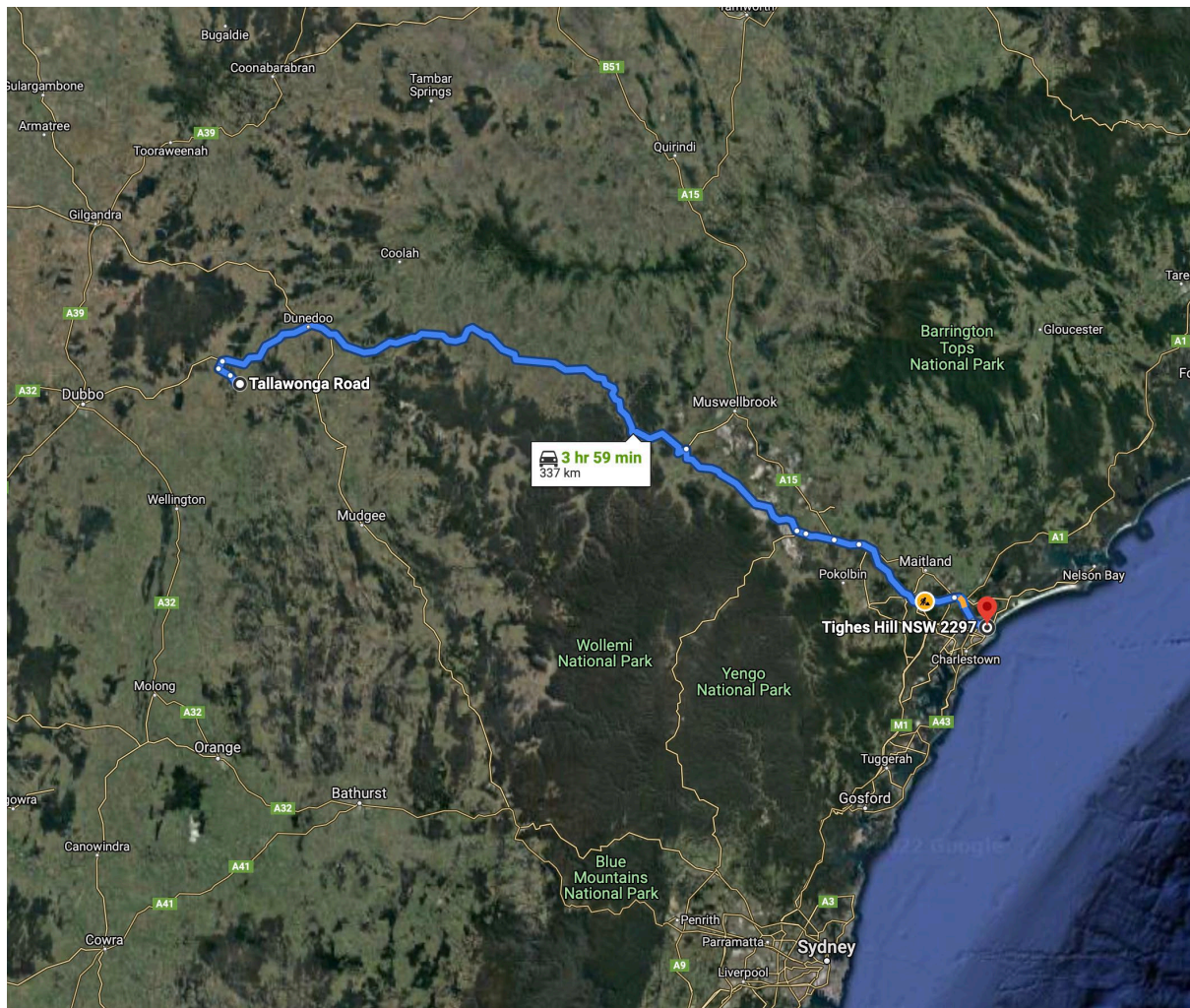
- Tallawonga Road will be accessed off Saxa Road.
- Tallawonga road is gravel for the entirety and will need to be widened to at least a 5.5 metre pavement width.
- It has a number of corners that will need a large number of upgrades, including large amounts of hardstand, tree removal and fence relocation.
- Additionally, the vertical curve of the road will need to be checked for the entirety. We have shown a number of these corners in the above report.
- This route will need to be checked by an authorised scoping company for overhead utilities. It is likely that a route of 5.9 metres is required for this Project.

17.0 Route Survey: Return route from Spicers Creek to Newcastle Port

DISTANCE: 337.0 kilometres

GPS LINK: <https://goo.gl/maps/xMuptwpivS2xPPjH9>

VIA: Tallawonga Road, Saxa Road, Golden Highway, New England Highway, Hunter Expressway, John Renshaw Drive, New England Highway, Maitland Road, Industrial Drive, George Street, Selwyn Street.



18.0 Approvals:

At a minimum, the following are required for approval to access these routes.

- NHVR
- TfNSW
- Newcastle Council
- Muswellbrook Council
- Mid-Western council
- Dubbo Regional Council
- NSW Police
- Ausgrid
- Essential Energy
- Telstra
- CRN JHG (Rail)
- ARTC (Rail)

19.0 References:

Rex J Andrews Pty. Ltd.
Rex J Andrews Route survey # 315 REV02
CWP
Vestas
Google Earth/Maps
Nearmaps
NHVR
NHVAS Maintenance Management (NHVAS21193)
NHVAS Basic Fatigue Management (NHVAS21193)

Disclaimer: This route study is 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.

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.