

ROUTE STUDY: GPG
PROJECT: PALING YARDS WIND FARM
TURBINE TYPE: GE 158 SPLIT BLADE
FROM NEWCASTLE PORT.

16/09/2022 REV 02

Rev.	Date	Change	Responsible	Checked
00	11/02/21	Route Assessed	W Andrews	✓
00	12/08/22	Report compiled	W Andrews	✓
00	25/08/22	Report completed	W Andrews	✓
01	02/09/22	Several edits	W Andrews	✓
02	16/09/22	Several edits	W Andrews	✓

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1.0 Introduction

This document describes observations and previous experience on sections of this route and explains the Transport of Wind turbine equipment from Newcastle to Paling Yards wind farm.

This Route survey took place on 11-02-21.

2.0 Evaluation

1	No work required
2	Some Work required
3	Moderate amount of works required
4	Large amount of works required

(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. 11/02/2021

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

Project name. Paling Yards Windfarm

Location. Newcastle (NSW) to Paling Yards (NSW)

Possible turbine types.

50 x GE158, with 151 Metre H/H

4.0 Transport dimensions for GE158.

Machine heads (14.12l x 3.97w x 3.45h x 98T)

Possible transport configuration. Prime mover with 10x8 platform trailer and backup prime mover.

Overall dimensions: 48.0l x 4.3w x 5.0h x 150.0T.

Drivetrains (6.6l x 3.98w x 3.45h x 82.0T)

Possible transport configuration. Prime mover with 8x8 platform trailer.

Overall dimensions: 30.0l x 4.3w x 4.8h x 136.0T.

Hubs (4.6l x 4.2w x 3.85h x 51T)

Possible transport configuration. Prime mover with 5x8 Low Loader.

Overall dimensions: 26.0l x 4.2w x 5.0h x 82.0T.

Blades (Root) (65.4l x 4.0w x 3.3h x 28T)

Possible transport. Prime mover with 2x8 dolly and 4x4 Extending trailer.

Overall dimensions: 77.0l x 4.5w x 5.0h x 68.5T.

Blades (Tip) (15.1l x 2.4w x 2.4h x 2.5T)

Possible transport. Prime mover with 3x4 Extending trailer.

Overall dimensions: 22.0l x 2.5w x 4.0h x 32.5T.

Base Towers (9.3l x 5.5 x 5.0 x 73T)

Configuration. Prime mover with 4x8-4x8 Bookend.

Overall dimension: 40.0l x 6.0w x 5.7h x 140.5T (+ Push truck)

Section 2 Towers (12.6l x 4.85 x 5.0 x 74T)

Configuration. Prime mover with 6x8 Low platform.

Overall dimension: 30.0l x 5.0w x 5.7h x 117.5T

Section 3 Towers (14.0l x 4.6 x 4.85 x 74T)

Configuration. Prime mover with 6x8 Low platform.

Overall dimension: 30.0l x 5.0w x 5.7h x 117.5T

Section 4 Towers (19.8l x 4.6 x 4.3 x 90T)

Configuration. Prime mover with 9x8 Low platform.

Overall dimension: 34.0l x 4.7w x 5.5h x 159.5T (+ Push truck)

Section 5 Towers (23.5l x 4.3 x 4.3 x 82T)

Configuration. Prime mover with 4x8-4x8 platform trailer.

Overall dimension: 38.0l x 4.3w x 5.5h x 149.5T (+ Push truck)

Section 6 Towers (30.8l x 4.3 x 4.3 x 75T)

Configuration. Prime mover with 4x8-4x8 platform trailer.

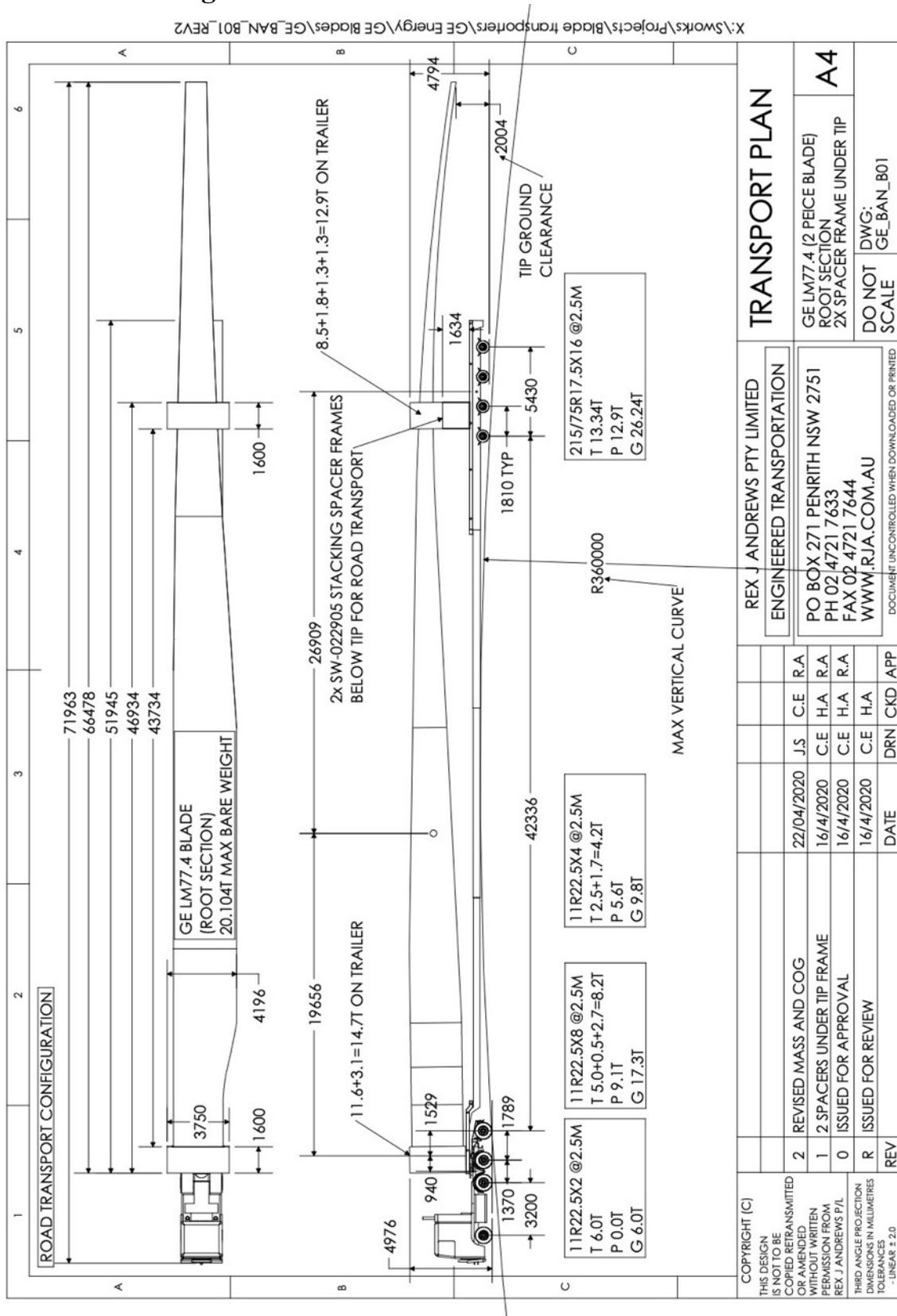
Overall dimension: 45.0l x 4.3w x 5.5h x 144.5T (+ Push truck)

Top Towers (35.9l x 4.3w x 3.7h x 63T)

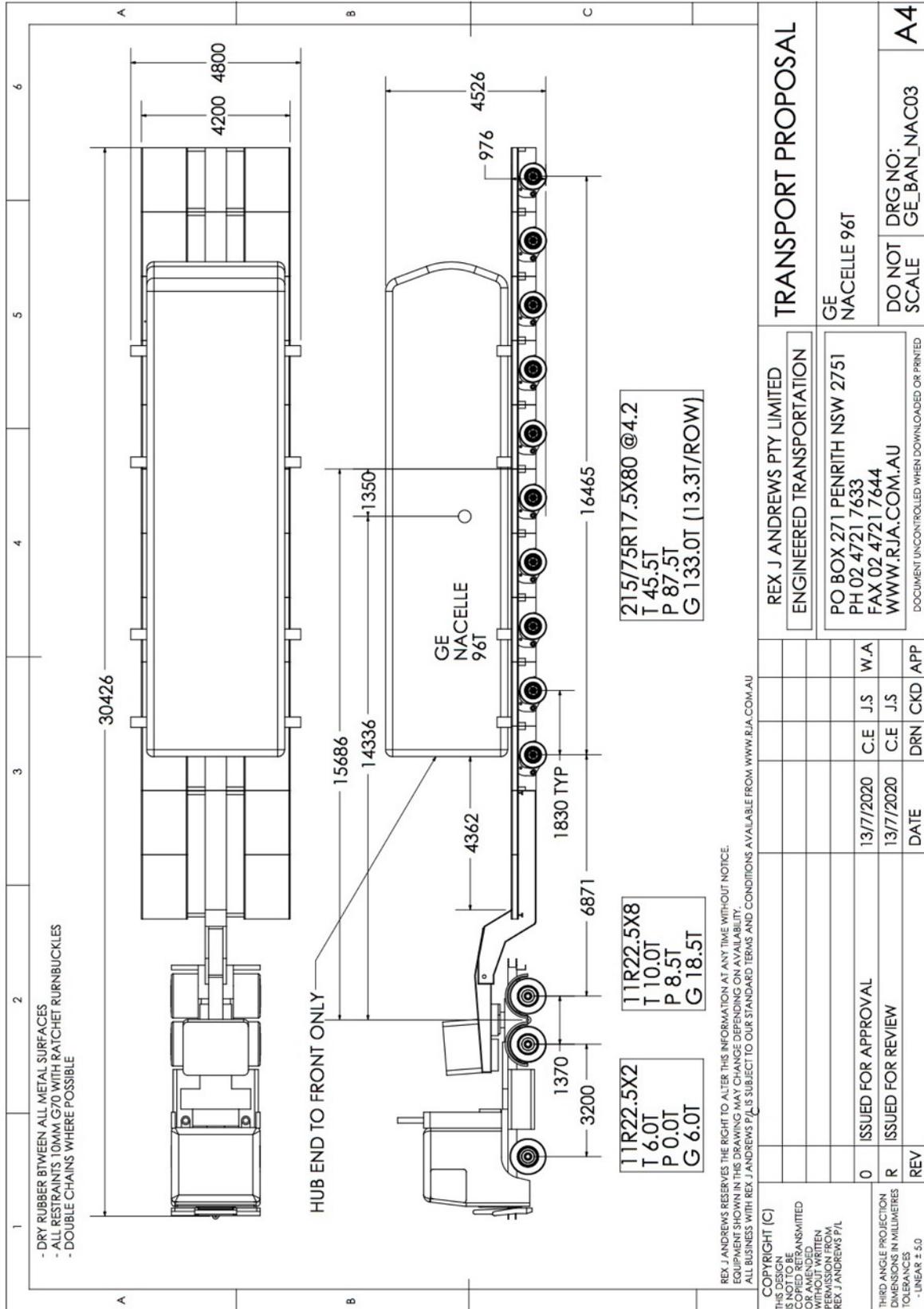
Configuration. Prime mover with 4x4 dolly 3x8 Jinker trailer.

Overall dimension: 49.0l x 4.5w x 5.5h x 102.5T (+ Push truck)

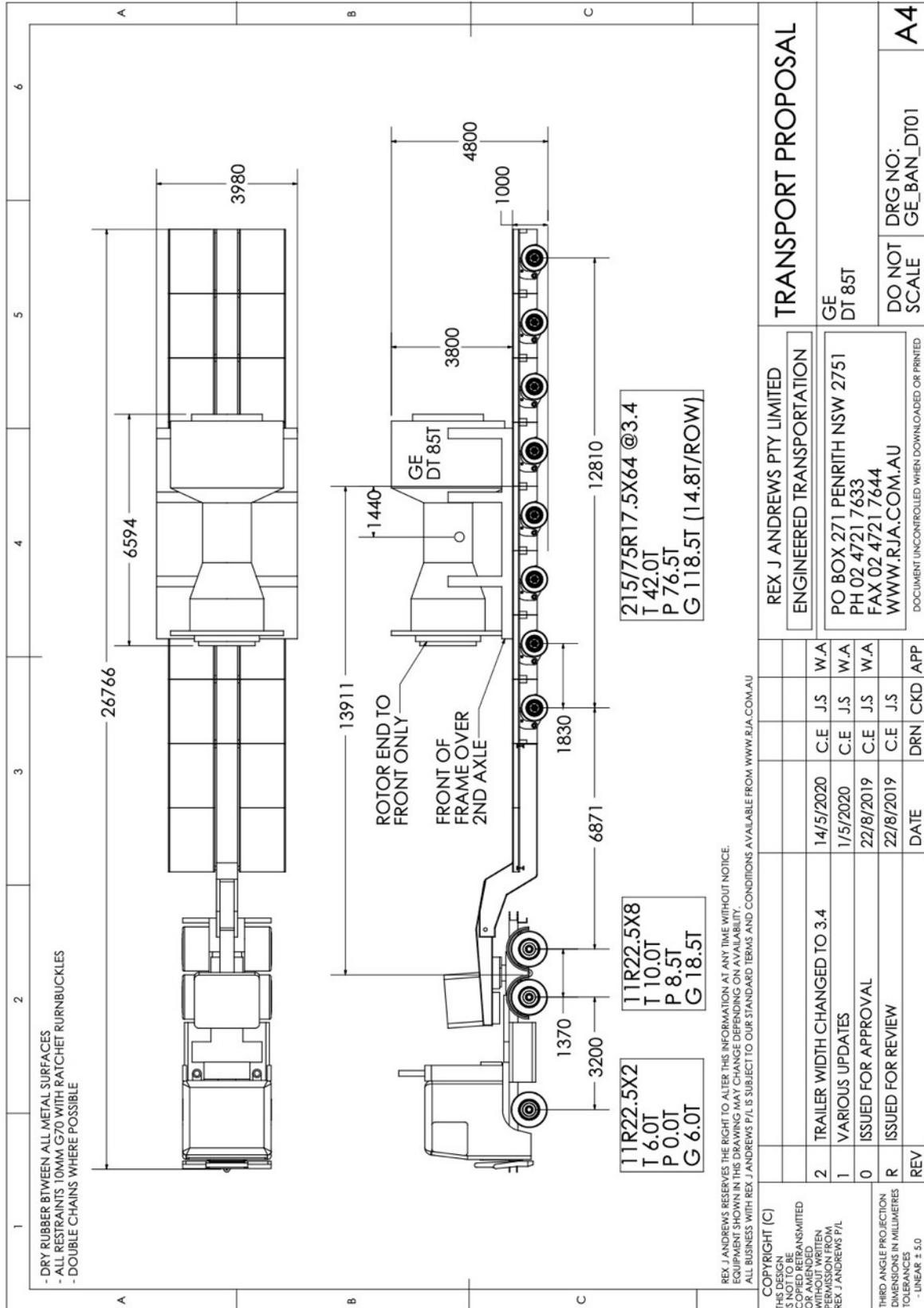
5.0 Transport drawings for GE158.
GE158 Blade diagram:



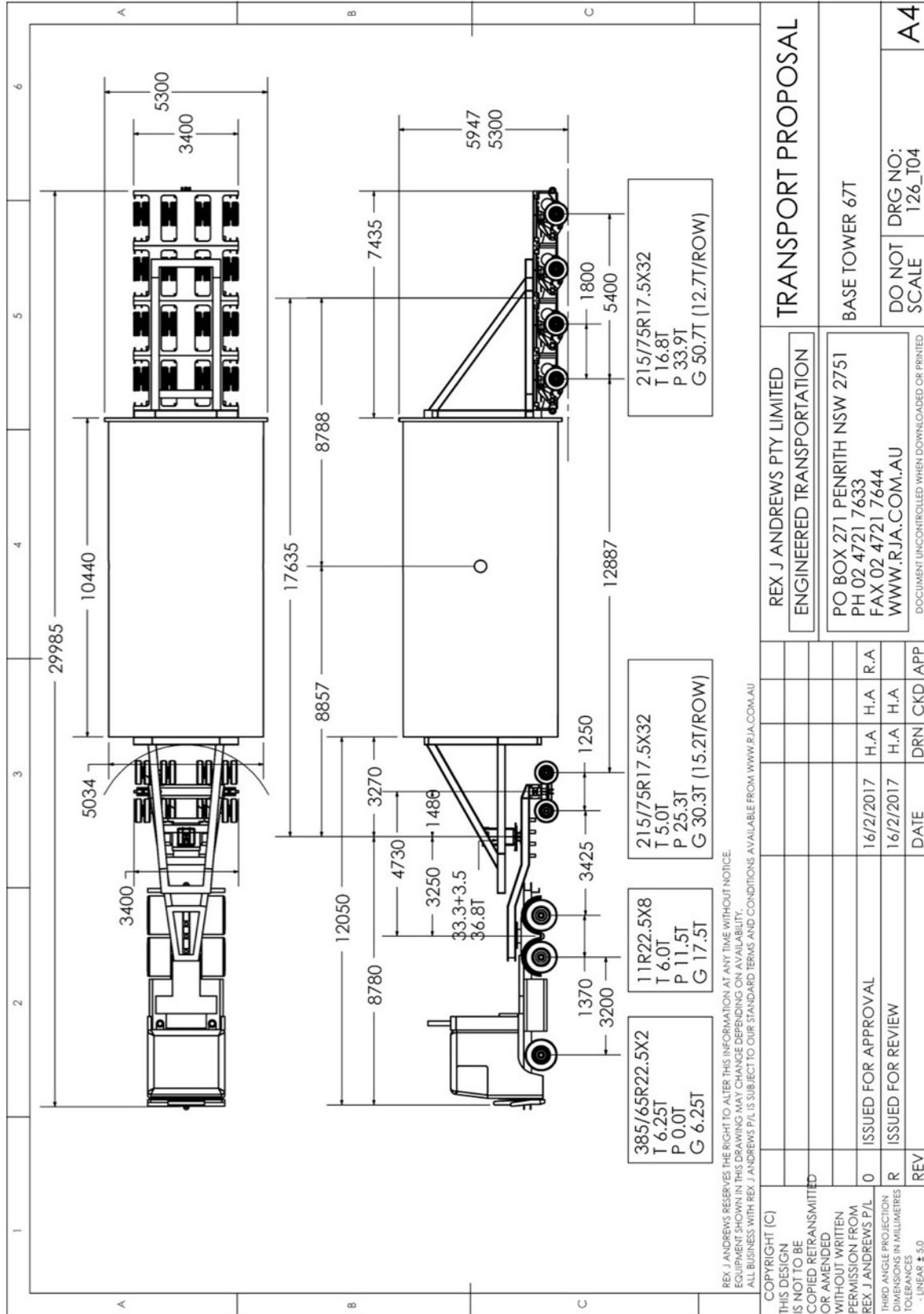
GE158 Machine Head diagram:



GE158 Drive train diagram:



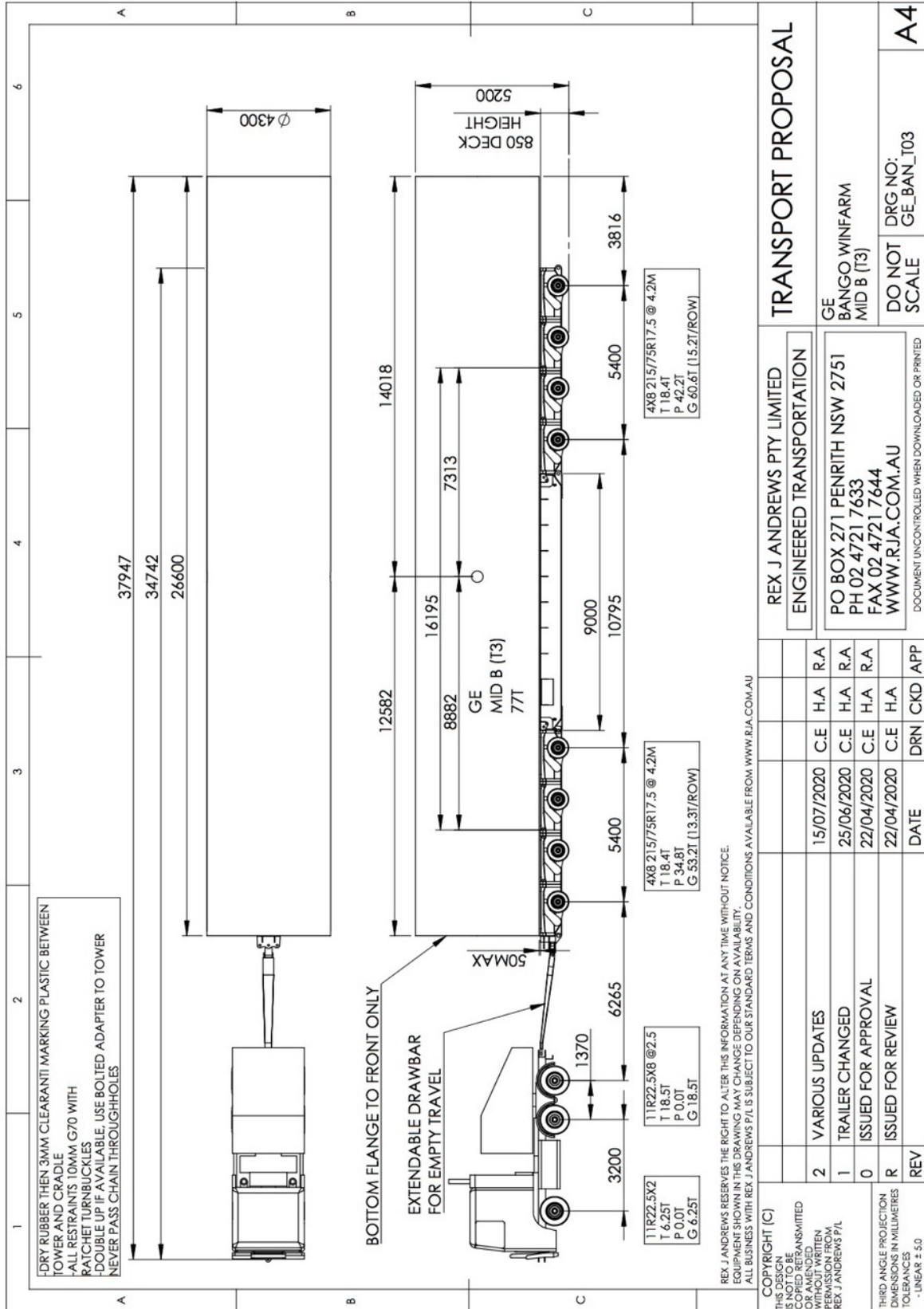
GE158 tower diagram: Bookend



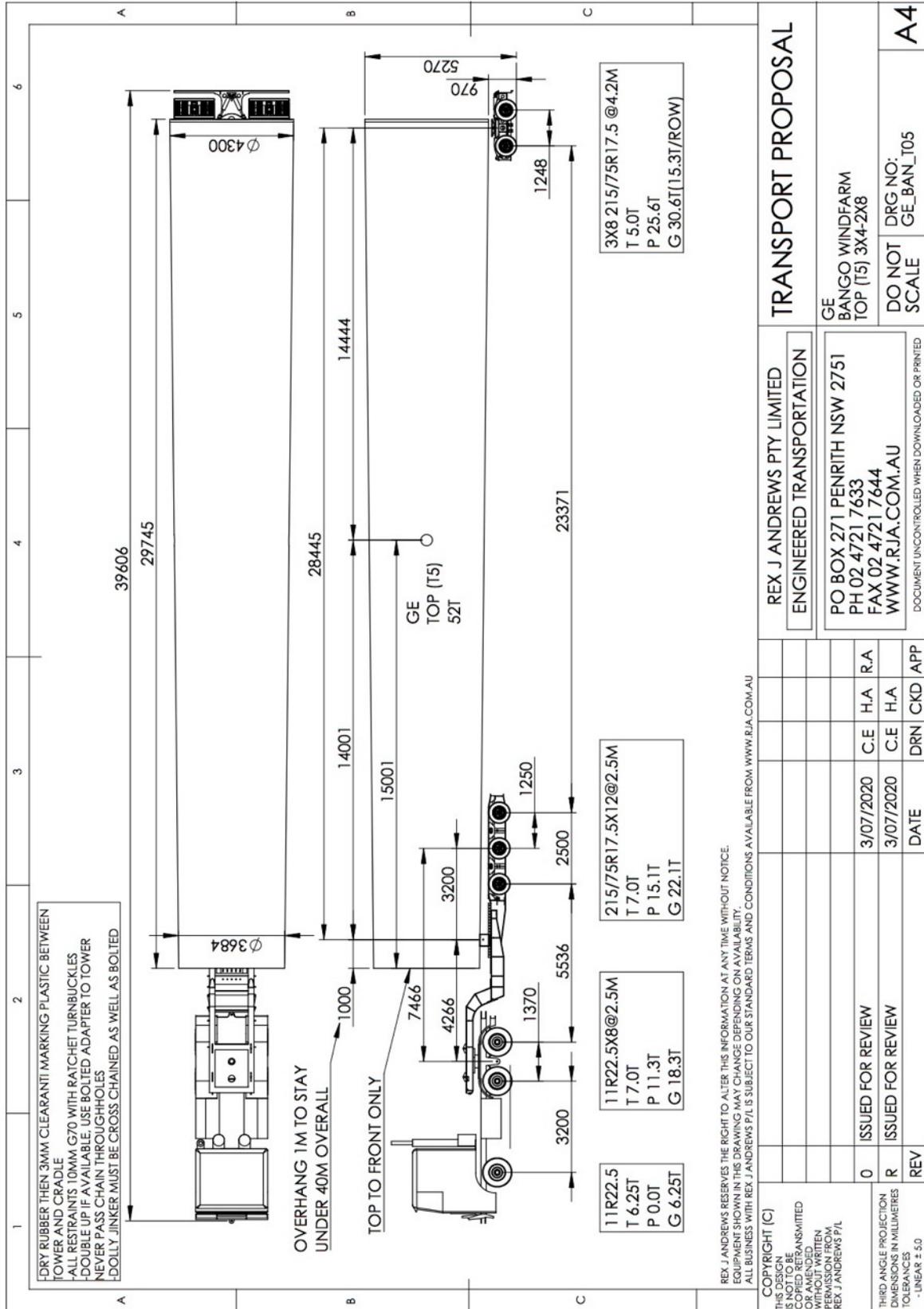
REV	DATE	DRN	CKD	APP
0	16/2/2017	H.A	H.A	R.A
R	16/2/2017	H.A	H.A	H.A
ISSUED FOR APPROVAL				
ISSUED FOR REVIEW				

TRANSPORT PROPOSAL	
BASE TOWER 67T	
DO NOT SCALE	DRG NO: 126_T04
	A4

GE158 tower diagram: Extending platform



GE158 tower diagram: Dolly Jinker combo



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THIS DESIGN IS NOT TO BE OPERATED OR MODIFIED WITHOUT WRITTEN PERMISSION FROM REX J ANDREWS P/L		ENGINEERED TRANSPORTATION		GE BANGO WINDFARM TOP (T5) 3X4-2X8	
0	ISSUED FOR REVIEW	C.E	H.A	R.A	DO NOT SCALE
R	ISSUED FOR REVIEW	3/07/2020	C.E	H.A	DRG NO: GE_BAN_T05
REV		DATE	DRN	CKD	APP
					A4

6.0 Port of Import.

The wind turbine equipment will be imported from various countries and will arrive on ships into the Port of Newcastle. The client may alternately source local towers. 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 the 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: Port overview.

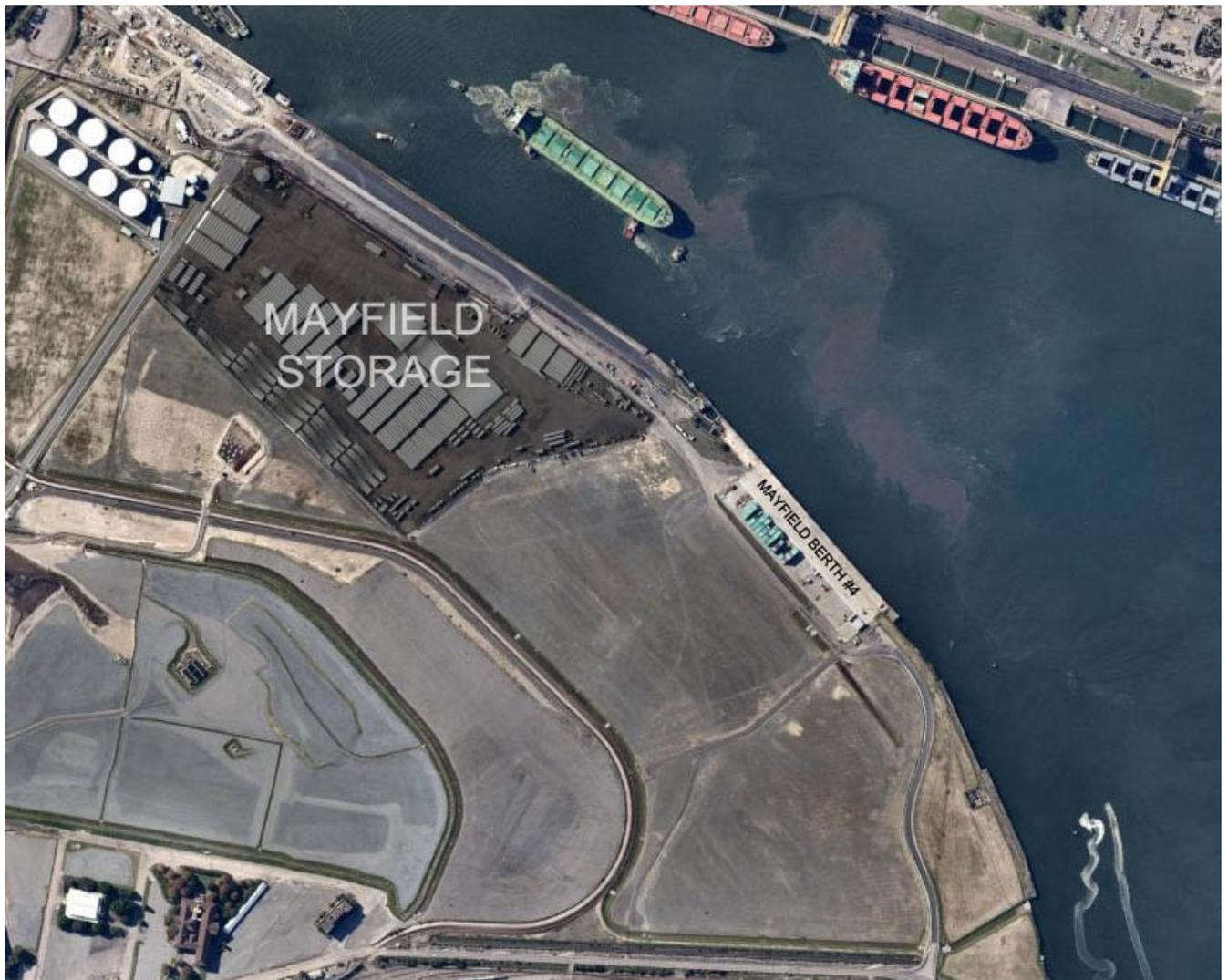
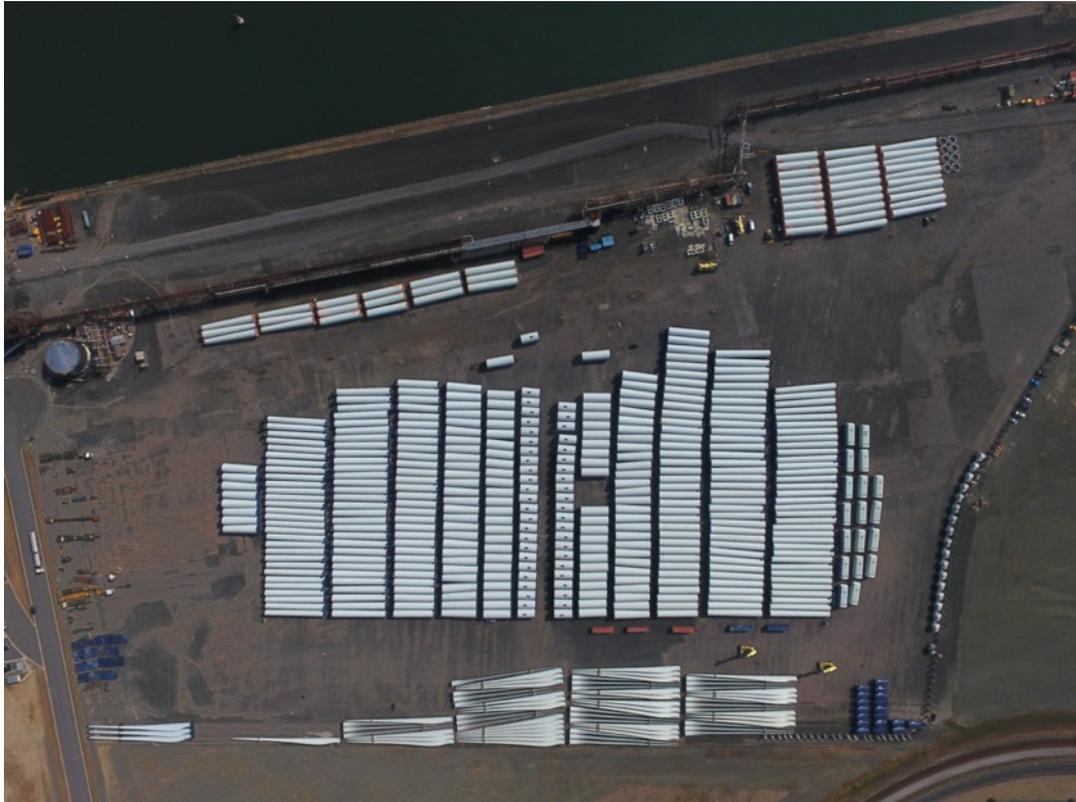


Image 2 & 3: Mayfield #4 Port storage area.

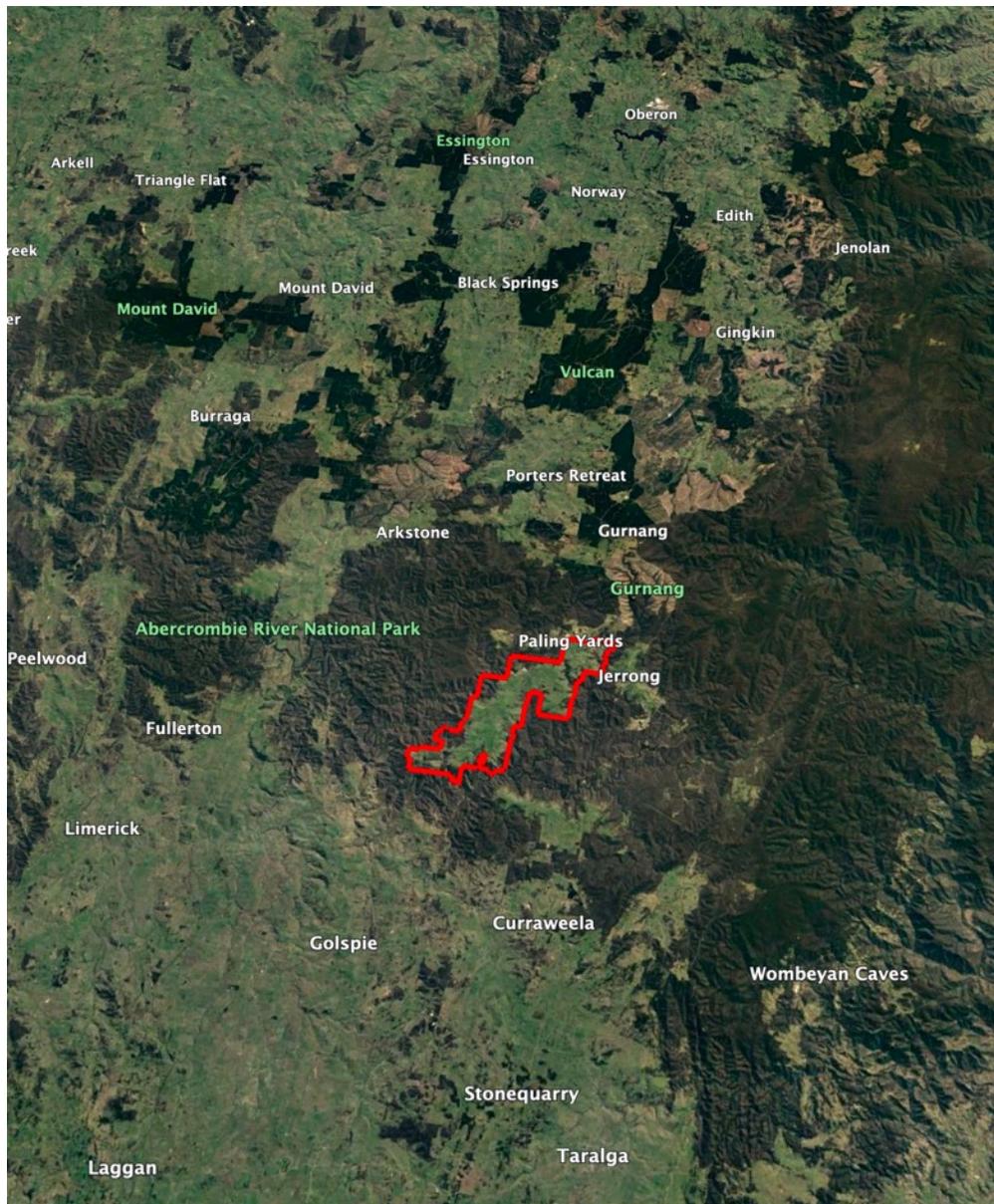


7.0 Site Location and layout.

The project site is proposed to cover four landholdings known as 'Mingary Park', 'Paling Yards', 'Middle Station' and 'Hilltop', which comprise a total of approximately 4,600 hectares. The site is within the Central Tablelands of NSW, approximately 60km south of Oberon and 60km north of Goulburn and falls within the Oberon LGA.

The Project will involve the following:

- Up to 47 wind turbines with maximum tip height of 240m
- On-site electrical substation and approximately 9km of overhead transmission line of up to 500kV - connecting to the Mt Piper to Bannaby transmission line.



8.0 Route studies: Newcastle to Paling Yards Wind Farm.

We have based this study on the turbine components, and all imported towers entering Australia via the Mayfield # 4 Berth at Newcastle. After reviewing the possible transport routes, we believe there should be 2 options. The blades and loads up to 5.1 metres in loaded height are to use Route 1. Loads over 5.1 metres and up to 5.9 metres in height are to use route 2.

ROUTE SURVEY 1 (Loads under 5.1 Metres in height): Newcastle to Paling Yards

Distance: 635.0 kilometres:

Route: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Thomas Mitchell Drive, Denman Road, Golden Highway, Castlereagh Highway, Great Western Highway, Littlebourne Street, O,Connell Road, Abercrombie Road.

GPS LINK: <https://goo.gl/maps/xQgSuWKKEEyVefR69>

ROUTE SURVEY 2 (Loads up to 5.9 Metres in height): Newcastle to Paling Yards

Distance: 654.0 kilometres:

Route: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Castlereagh Highway, Main Street, Pipers Flat Road, Range Road, Great Western Highway, Littlebourne Street, O,Connell Road, Abercrombie Road.

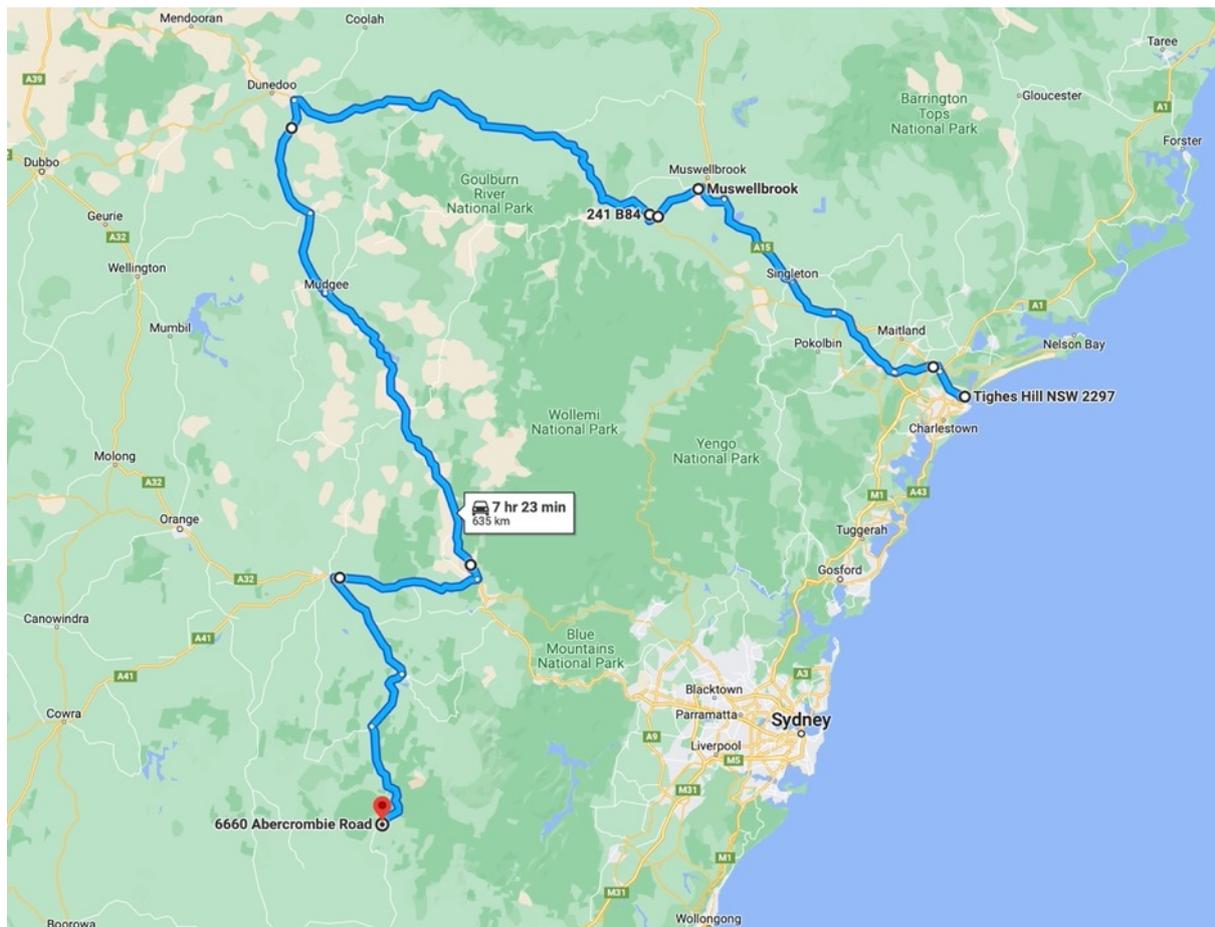
GPS LINK: <https://goo.gl/maps/8KqByBnVx3f113mk9>

9.0 Route Survey 1: Loads under 5.1 metres in height.

Distance: 635.0 kilometres:

Route: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Thomas Mitchell Drive, Denman Road, Golden Highway, Castlereagh Highway, Great Western Highway, Littlebourne Street, O,Connell Road, Abercrombie Road.

GPS LINK: <https://goo.gl/maps/xOgSuWKKEEyVefR69>



KEY	
MODIFICATIONS REQUIRED	
PINCH POINT	
EMERGENCY PARKING	

KM index	Location	Section of road	Current Measurement	Procedure	Notes
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	70.0 metres clearance	Moderate right hand turn	No works required. Spotter to guide the load through this pinchpoint.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	9.0 Metres wide	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 GPS link: https://goo.gl/maps/gXeHvBtCp4D2	70.0 metres clearance	Right hand turn	Blades to travel right from Selwyn Street onto George Street, before turning to the incorrect side of Industrial Drive. Once onto Industrial Drive the loads will travel over the centre median strip and back onto the correct side of the road. No work required. Spotter to guide the load through this pinchpoint.
5.5	Mayfield West	Industrial Drive onto Maitland Road GPS link: https://goo.gl/maps/Kn49dhWG2qG2	70.0 metres clearance	Right hand turn	This blade will need to cross to the incorrect side 150 metres prior to the intersection, then return to the correct side 120 metres past the intersection. No work required. Spotter to guide the load through this pinchpoint.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDt5JigkBp	Length: N/A Width: 12.0 Mtrs	Left hand merge	No problems with the loads on this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/pWg3RxcPzz9sYLBc8	Length: 65.0 Mtrs Width: 7.0 Mtrs	Right hand turn	Blades to travel around the roundabout on the correct side of the road. No work required. Spotter to guide the load through this pinchpoint.
59.0	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzjqj	Length: 100.0 Mtrs Width: 12.0 Mtrs	Travel directly ahead	No problems with the loads on this section of road.
116.0	Muswellbrook	The New England Highway onto Thomas Mitchell Drive GPS link: https://goo.gl/maps/maNc7eaSDCvNdtT6eBYLjaA	Length: 70.0 Mtrs Width: 8.0 Mtrs	Left Hand turn	For the blades the prime mover will travel to the incorrect side of the road. Several signs will need to be made removable. Spotter to guide the load through this pinchpoint.
126.0	Muswellbrook	Thomas Mitchell Drive onto Denman Road GPS link: https://goo.gl/maps/3sqU2VXJekSFYk9K6	Length: 70.0 Mtrs Width: 8.0 Mtrs	Left Hand turn	No works required. Spotter to guide the load through this pinchpoint.
144.0	Denman	Denman Road onto Golden Highway GPS link: https://goo.gl/maps/Vvh7Avx7QcdyC82k8	Length: N/A Width: 10.0 Metres	Travel directly ahead	No problems with the loads on this section of road.

KM index	Location	Section of road	Current Measurement	Procedure	Notes
149.0	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 centre of the road. Approval required crossing this line, likely cross with caution.
176.0	Sandy Hollow	Golden highway GPS link: https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
180.0	Sandy Hollow	Golden Highway under safety Cam GPS link: https://goo.gl/maps/b7i9zH2ankJcvWpT6	Height: 6.3 metres	Travel directly ahead on the correct side	No problems with the loads on this section of road.
187.0	Gungal	Golden highway GPS link: https://goo.gl/maps/WDoL2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
193.0	Merriwa	Golden Highway under safety Cam GPS link: https://goo.gl/maps/D92rzQ8vnUcYsqj56	Height: 6.4 metres	Travel directly ahead on the correct side	No problems with the loads on this section of road.
210.0	Merriwa	Golden highway GPS link: https://goo.gl/maps/NqrWzTsRmnt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
245.0	Cassilis	Golden highway GPS link: https://goo.gl/maps/vs6YMT6TCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
275.0	Leadville	Golden highway GPS link: https://goo.gl/maps/ujxMGukhopeFWRhb8	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
293.0	Leadville	Golden highway onto the Castlereagh Highway GPS link: https://goo.gl/maps/sCmgFmgEZ621DVrf9	Length: 65.0 metres Width: 11.0 metres	Left hand turn	No work required. Spotter to guide the load through this pinchpoint.
322.0	Birriwa	Castlereagh Highway rail crossing GPS link: https://goo.gl/maps/BTRCz8VaeLN2	Length: 65.0 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.
349.0	Gulgong	Castlereagh Highway Goolma Road intersection GPS link: https://goo.gl/maps/US53QJHQ6R92	Length: 80 metres Width: 8.0 metres	Travel directly ahead	No work required. Spotter to guide the load through this pinchpoint.
337.0	Gulgong	Fisher Street onto Medley Rd GPS link: https://goo.gl/maps/0aJvNX0v80h7cl30	Length: 45.0 metres Width: 9.0 metres	Right hand turn	Hardstand is required on the inside of the corner. Several signs and a barrier will need to be relocated. Additionally, some trees on the overhang will need to be trimmed.
362.0 to 372.0	Mudgee	Castlereagh Highway GPS link: https://goo.gl/maps/iZ4qK5Mo28KzNSDT7	Width: 6.0 metres	Follow the main Highway through Mudgee	Loaded trailers are to avoid travelling through Mudgee on schooldays between 7:00am and 9:00am and again 2:00pm and 4:30pm

KM index	Location	Section of road	Current Measurement	Procedure	Notes
365.0	Mudgee	Market Street onto Douro Street GPS link: https://goo.gl/maps/iZ4yK5Mo28K4hSQT7	Length: 45.0 metres Width: 6.0 metres	Right hand turn	Prime mover to stay on the correct side of the road, however the trailer will need to travel to the inside of the corner and over the centre median strip. The centre median strip will need to be concreted, and kerbs lowered. Additionally, some signs will need to be made removable and some no parking areas put in place.
365.4	Mudgee	Douro Street GPS link: https://goo.gl/maps/DsVfr7axnanL6XTm8	Length: 70.0 metres Width: 7.0 metres	Cross to the incorrect side of the road.	No work required. Spotter to guide the load through this pinchpoint. Police and pilots to provide suitable traffic control.
365.5	Mudgee	Douro Street onto Horatio Street GPS link: https://goo.gl/maps/VARs1R2ooCW8hckr6	Length: 50.0 metres Width: 7.0 metres	Left hand turn	Blades to travel around this corner on the incorrect side of the road. The centre median strip will need to be concreted, and kerbs lowered. Some trees will need to be removed, and some no parking areas put in place. Additionally, some signs will need to be made removable.
366.0	Mudgee	Horatio Street GPS link: https://goo.gl/maps/LtMDGuX6cbAL8eri6	Width: 6.5 metres	Travel directly ahead on the correct side of the roundabout	No work required. Spotter to guide the load through this pinchpoint.
367.0	Mudgee	Horatio Street onto the Castlereagh Highway GPS link: https://goo.gl/maps/v2USqGmbxFP1vFR58	Length: 45.0 metres Width: 9.0 metres	Right hand bend	Blade to travel around this corner on the incorrect side of the road. Several signs will need to be made removable.
399.0	Cudgegong	Castlereagh highway GPS link: https://goo.gl/maps/uh9zoP97RyC2ie8d6	Length: 250 metres Width: 20.0 metres	Parking Bay	Large parking bay. Suitable for fatigue breaks.
456.0	Ben Bullen	Castlereagh Highway rail crossing GPS link: https://goo.gl/maps/SZtGAGDHBtq1vX2r8	Length: 60.0 metres Width: 9.0 metres	Left hand than right hand dogleg turn	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
480.0	Wallerawang	Castlereagh Highway under rail overpass GPS link: https://goo.gl/maps/ArPjKGWvbsycKYhu8	Height: 5.1 metres	Travel directly ahead	Loads over 5.1 metres high are to use route 2.
482.0	Wallerawang	Castlereagh Highway onto the Great Western Highway access ramp. GPS link: https://goo.gl/maps/bF71VXv7L55Q1uQ9	Length: 50.0 metres Width: 8.0 metres	Right hand turn	The centre median strip will need to be made trafficable, and some signs made removable.
483.0	Wallerawang	Castlereagh Highway onto the Great Western Highway access ramp. GPS link: https://goo.gl/maps/bF71VXv7L55Q1uQ9	Length: 50.0 metres Width: 8.0 metres	Right hand turn	The centre median strip will need to be made trafficable, and a cable removed and some signs made removable.
511.0	Yetholme	Great Western Highway GPS link: https://goo.gl/maps/Ds2WjpbmKCP1C5A8	Length: 150.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.
532.0	Kelso	Great Western Highway Roundabout GPS link: https://goo.gl/maps/keKjPhuNshG4hYeEC8	Length: 50.0 metres Width: 6.5 metres	Travel directly ahead through the roundabout	A light pole will need to be relocated and several signs will need to be made removable.

KM index	Location	Section of road	Current Measurement	Procedure	Notes
533.0	Kelso	Great Western Highway onto O'Connell Road GPS link: https://goo.gl/maps/E173WvU1hX1cp3dPA	Length: 50.0 metres Width: 7.0 metres	Left hand turn	Several signs will need to be made removable.
537.0	Kelso	O'Connell Road GPS link: https://goo.gl/maps/tE5Mq3onTKm1V9LG8	Length: 100.0 metres Width: 6.0 metres	Left merge	Parking on the left-hand side of the road.
551.0	O'Connell	O'Connell Road GPS link: https://goo.gl/maps/pAAeAGkYPdZnYhf8A	Width: 6.0 metres	Continue on O'Connell Rd	Low trees on either side of the road. Some trimming may be required.
552.0	O'Connell	O'Connell Road GPS link: https://goo.gl/maps/zDc3rvvAUv2IXddo8	Length: 80.0 metres Width: 6.0 metres	Left merge	Parking on the left-hand side of the road.
561.0-562.5	Oberon	O'Connell Road (Range) GPS link: https://goo.gl/maps/3_qDyNM3M8wZQnA9C8	Length: 70 metres Width: 6.0 metres	Very steep ascent with several very tight turns.	A large number of modifications are required on several of the corners. This will require some embankments cut back, and vegetation removed as a minimum
563.0	Oberon	O'Connell Road GPS link: https://goo.gl/maps/8cjX5U4oL9WJLm2C7	Length: 60.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.
574.0	Oberon	O'Connell Road onto Abercrombie Road GPS link: https://goo.gl/maps/rV3ys1L9S173yfc8	Length: 60 metres Width: 6.0 metres	Right hand turn	2x trees and 4x signs need to be removed. A large amount of hardstand is required on the inside and outside of the corner.
597.0	Black Springs	Abercrombie Road intersection of Campbells River Road GPS link: https://goo.gl/maps/wPB6YRiyWCrVfUJ6	Length: 55.0 metres Width: 7.0 metres	Left hand turn	Several signs need to be removed on the corner. A small amount of hardstand is also required.
627.0	Gurnang	Abercrombie Road GPS link: https://goo.gl/maps/bfTzpcyaorh6CYVs6	Length: 100.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.
627.0-635.0	Paling Yards	Abercrombie Road GPS link: https://goo.gl/maps/pTsfWJczPgB319mK7	Length: 100.0 metres Width: 10.0 metres	Undulating section with sweeping bends	No issues with this section for blades up to 68m in length
635.0	Paling Yards	Abercrombie Road into windfarm entrances GPS link: https://goo.gl/maps/scdJaoEa7huOwXXW8	Proposed design Length: 70.0 metres Width: 10.0 metres	Left and right hand turns	Location of site entrance to be confirmed. Site entrance will need to be designed to suit all components.

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



PROCEDURE: Right hand turn.

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

COMMENTS: Spotter to guide load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

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



PROCEDURE: Travel directly ahead over the crossing.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/864FhMSaF9P2>

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 required.

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



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

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/brPRAckLr572>

COMMENTS: Load to travel right from Selwyn Street onto George Street, before turning to the incorrect side of Industrial Drive. Once onto Industrial Drive the loads will travel over the centre median strip and back onto the correct side of the road.

Spotter to guide load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

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



GPS LINK FOR SECTION OF ROAD: <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 150 metres prior to the intersection, then return to the correct side 120 metres past the intersection.

Spotter to guide load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

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



PROCEDURE: Blades to travel around the roundabout on the correct side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/pWg3RxePzz9sYLBe8>

COMMENTS: Loads to turn left onto the slip lane. Spotter to guide the load through the corner.

ROAD MODIFICATIONS: No modifications required.

116.0 Km's: New England Highway onto Thomas Mitchell Drive.



PROCEDURE: Blades to travel onto the incorrect side of the road for this procedure.

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

COMMENTS: Several signs will need to be made removable.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A small amount of works are required.

126.0 Km's: Thomas Mitchell Drive onto Denman Road.



PROCEDURE: Blades to travel onto the incorrect side of the road for this procedure.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/5oqU2VXfehSFYk9K6>

COMMENTS: Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

293.0 Km's: Golden Highway onto Castlereagh Highway.



PROCEDURE: Blades to travel onto the incorrect side of the road for this procedure.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/sCmgFmgEZ621DVrf9>

COMMENTS: Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

337.0 Km's: Fisher St onto Medley St at Gulgong.



PROCEDURE: Blades to travel around this right hand corner on the correct side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/GxJvNXi8vB6h7oLS6>

COMMENTS: Hardstand is required on the inside of the corner. Several signs and a barrier will need to be relocated.

Additionally, some trees on the overhang will need to be trimmed.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A moderate amount of work is required.

365.0 Km's: Market St onto Douro St at Mudgee.



PROCEDURE: Prime mover to stay on the correct side of the road, however the trailer will need to travel to the inside of the corner and over the centre median strip.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/jZ4gK5Mo28KzNSDT7>

COMMENTS: The centre median strip will need to be concreted, and kerbs lowered. Additionally, some signs will need to be made removable and some no parking areas put in place.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A large amount of work is required.

365.5 Km's: Douro St onto Horatio St at Mudgee.



PROCEDURE: Blades to travel around this corner on the incorrect side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/VARs5R2ooQWShcim6>

COMMENTS: The centre median strip will need to be concreted, and kerbs lowered. Some trees will need to be removed, and some no parking areas put in place.

Additionally, some signs will need to be made removable.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A large amount of work is required.

366.0 Km's: Horatio St at Mudgee.



PROCEDURE: Blades to travel through this roundabout on the correct side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/LtMDGuX6cbAL8eri6>

COMMENTS: Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: No works required.

367.0 Km's: Horatio St onto Sydney Road at Mudgee.



PROCEDURE: Blades to travel around this corner on the incorrect side of the road.

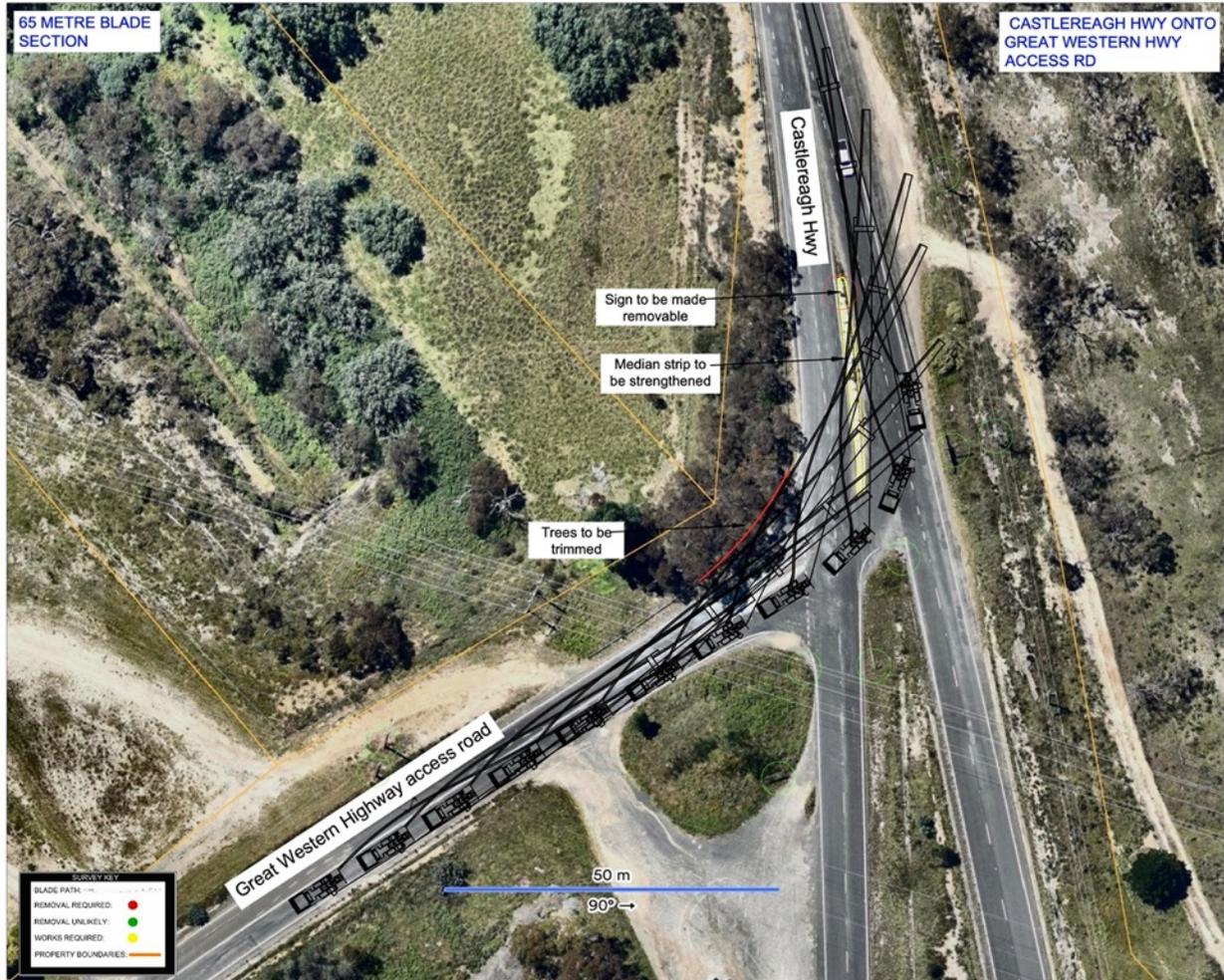
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/z2USgGmixFP1vfR58>

COMMENTS: Several signs need to be made removable.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A small amount of work is required.

482.0 Km's: Castlereagh Highway onto the Great Western Highway access Road at Wallerawang.



PROCEDURE: Blades to travel around this corner on the correct side of the road.

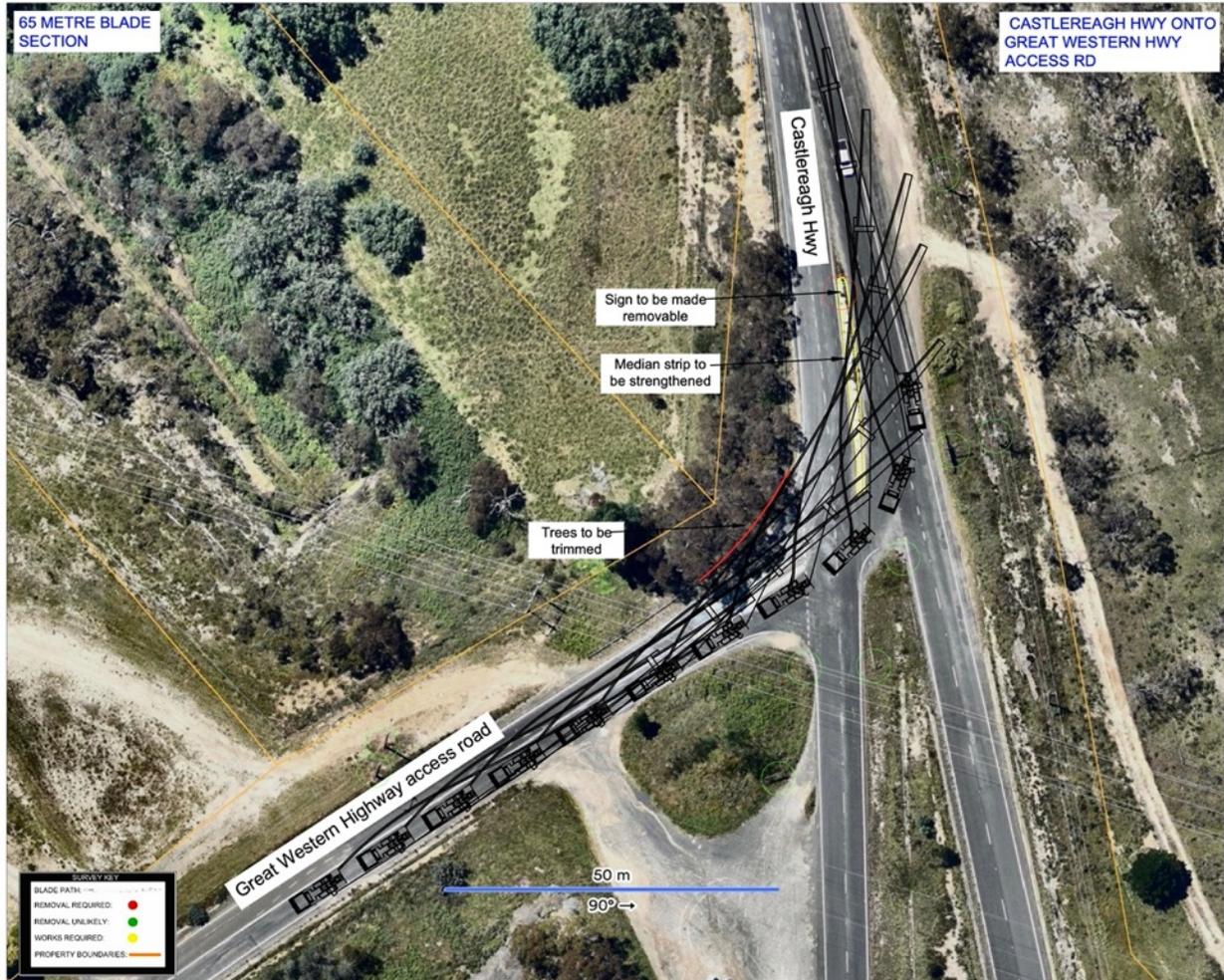
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/qF71VXv7L55QfurG9>

COMMENTS: The centre median needs to be made trafficable, and several signs need to be made removable.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A moderate amount of work is required.

483.0 Km's: Castlereagh Highway access Road onto the Great Western Highway at Wallerawang.



PROCEDURE: Blades to travel around this corner on the correct side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/qF71VXv7L55QfurG9>

COMMENTS: The centre median strip will need to be made trafficable, and a cable removed and some signs made removable.

Spotter to guide the load through this pinchpoint.

ROAD MODIFICATIONS: A moderate amount of work is required.

532.0 Km's: Great Western Highway roundabout at Kelso.



PROCEDURE: Travel through the roundabout on the correct side of the road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/eKjPbsNshG4bYeEC9>

COMMENTS: A light pole will need to be relocated and several signs will need to be made removable.

ROAD MODIFICATIONS: Yes, large amounts of works are required.

533.0 Km's: Great Western Highway onto Littlebourne St at Kelso.



PROCEDURE: Left turn at the roundabout.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/iF173WmTbXTcnXsFA>

COMMENTS: Loads will turn from the correct side of Great Western Highways onto the wrong-side of Littlebourne St and cut back to the correct side after the traffic island. The tail swing will overhang onto the Eastbound lanes of the Great Western Highway so the roundabout will need to be blocked form all directs. Several signs will need to be made removable.

ROAD MODIFICATIONS: Yes, minor amount of works are required.

561.0 Km's to 562.5 Km's: O'Connell Road Range

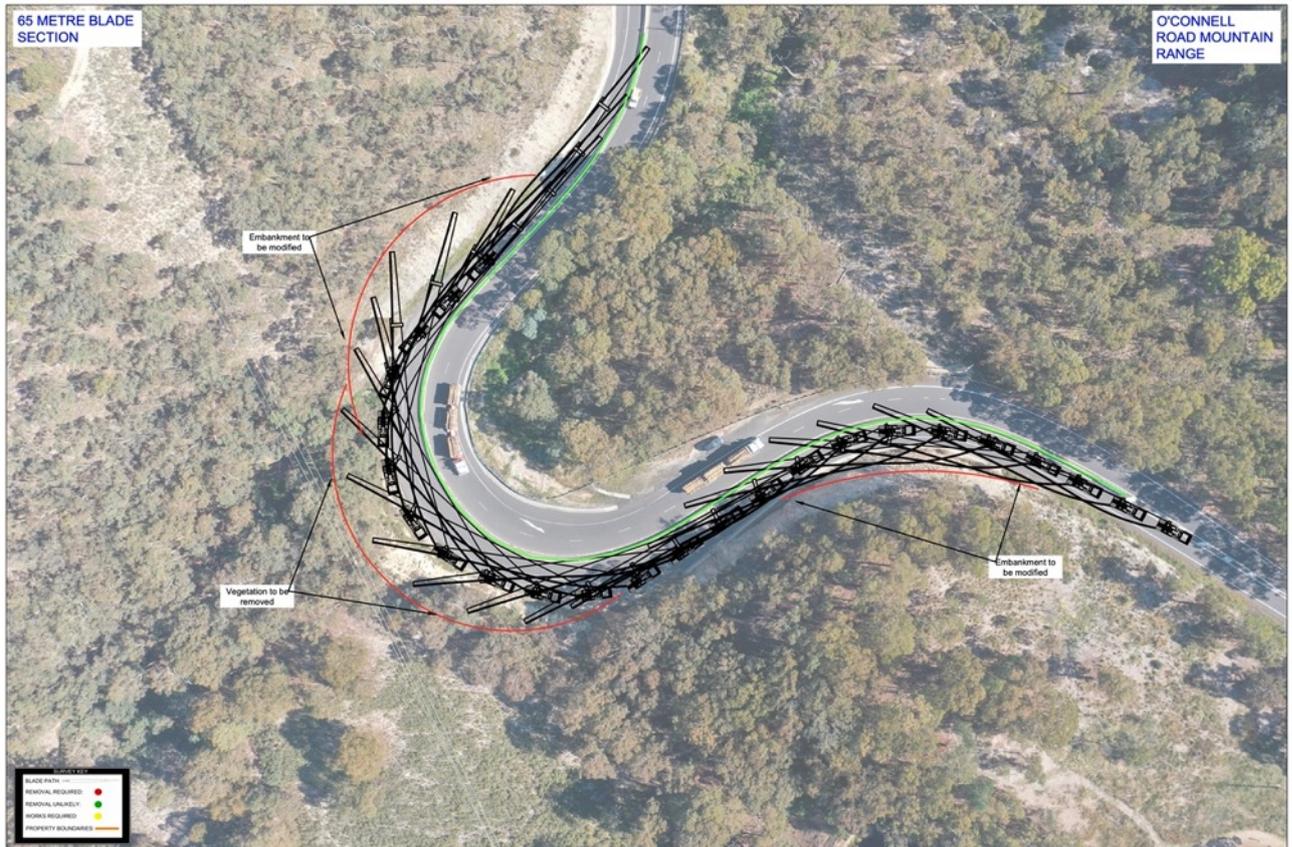
Image 1: Left hand bend



Image 2: Right hand bend



Image 3: Dogleg corner



PROCEDURE: Very steep ascent with several very tight turns.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Lq6yNM3MBwZGpASC6>

COMMENTS: A large number of modifications are required on several of the corner. This will require some embankments cut back, a vegetation removed as a minimum.

ROAD MODIFICATIONS: Yes, major works required.

574.0 Km's: O'Connell Road onto Abercrombie Road at Oberon.



PROCEDURE: Right-hand turn at the roundabout from the wrong side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/nV3ygxLL9SV7xy6z8>

COMMENTS: 2x trees and 4x signs need to be removed. A large amount of hardstand is required on the inside and outside of the corner.

ROAD MODIFICATIONS: Yes, a large amount of works are required.

597.0 Km's: Abercrombie Road intersection of Campbells River Roads at Black Springs.



PROCEDURE: Left-hand turn to stay on Abercrombie Rd.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/wPBfjVRiyWCrVtFU6>

COMMENTS: Several signs need to be removed on the. A small amount of hardstand is required.

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

627.0 – 635.0 Km's: Abercrombie Road.









PROCEDURE: Continue on Abercrombie Rd.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/pTSFwJczPgB319mK7>

COMMENTS: This is an undulating section of road with numerous sweeping bends. Blades up to 70m will navigate this section without issue. Trees should be checked closer to commencement to ensure no trimming is required.

ROAD MODIFICATIONS: No works required.

10.0 Route 1 conclusion:

After studying all options and undertaking a route survey, this route in its current condition will require a large 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.

BRIDGES:

- There are a large number of bridges on route that will require bridge assessments for the capacity of the listed loads.

OVERHEAD STRUCTURES: (5.1 Maximum loaded height)

- There are a large number of overhead structures between Newcastle and Wallerawang. The lowest of these structures is the rail underpass on the Castlereagh Highway at Wallerawang. There are a number of other structures noted as pinchpoints in the survey. Each of these pinch points will show the height clearance in each lane.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 5.2 metres is required for this project.

OVERHEAD TREES:

- Several trees need to be removed in Mudgee.
- The remaining route up until the turnoff onto O'Connell Road is clear of vegetation. All roads from this point through to site will need to be checked for a clear passage of at least 5.3 metres for overhead branches. Some trimming/removal is likely from this point onwards. There is a section of road just before O'Connell that is of particular concern.

ROAD PAVEMENT:

- The road is of highway standard up to the turnoff onto Abercrombie Road at Oberon. The width and quality of the pavement will be ok.
- Abercrombie road to site is generally of good quality and there won't be any issues with width up to site. There were lots of sections of road work along Abercrombie road. During the winter months there could be a lot of snow and ice on the road and conditions may become severe enough to stop transport until they improve.

NEWCASTLE:

- No works required.

GULGONG:

- One corner will require upgrades at Gulgong before the blades could travel along this route.

MUDGEES:

- Several corners require upgrades at Mudgee before the blades could travel along this route.

BEN BULLEN:

- The dogleg turns over the rail line will require some rail signals to be hinged and lowered for each blade load.

WALLERAWANG:

- Two corners require upgrades at Mudgee before the blades could travel along this route.

BATHURST:

- Two corners require upgrades at Bathurst before the blades could travel along this route.

O'CONNELL ROAD:

- Major works are required to travel up the O'Connell Rd range for these blades. However, the loads could travel up the incorrect side of the road and the centre barrier could stay in place.
- There are some sections along this road that will require the embankment to be cut back and trees to be removed and trimmed.

ABERCROMBIE ROAD:

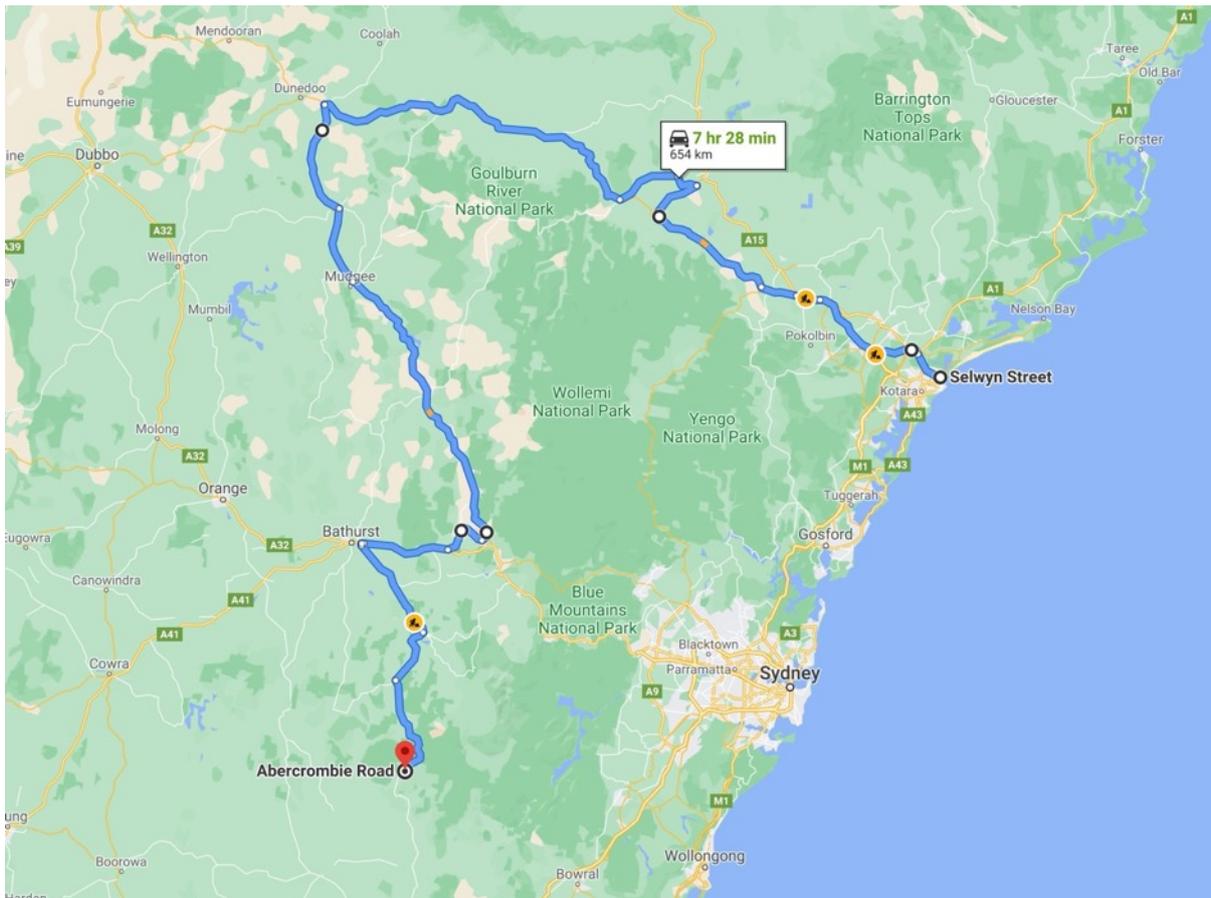
- Two corners require modifications on Abercrombie road at Oberon and the left-hand turn at Black Springs before the blades could travel along this route.
- Some trees may need trimming closer to the project start date.

11.0 Route Survey 2: Loads up to 5.9 metres in height.

Newcastle to Paling Yards via Mudgee 654.0 kilometres:

This route took us via Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Castlereagh Highway, Main Street, Pipers Flat Road, Range Road, Great Western Highway, Littlebourne Street, O,Connell Road, Abercrombie Road.

GPS LINK: <https://goo.gl/maps/8KqByBnVx3f113mk9>



KEY	
CRITICAL	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Current measurement	Procedure	Notes
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	Length: 70.0 Mtrs Width: 8.0 Mtrs	Moderate right hand turn	No problems with the loads on this section of road.
0.4	Mayfield	Selwyn Street over rail crossing GPS link: 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 GPS link: https://goo.gl/maps/gXeHvBtCp4D2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the loads on this section of road.
1.4	Mayfield	George Street onto Industrial Drive GPS link: https://goo.gl/maps/s4ayrsuoAsD2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the loads on this section of road.
4.9	Mayfield	Industrial Drive under traffic signals GPS link: 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 GPS link: https://goo.gl/maps/Kn49dhWG2qG2	Length: 40.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the loads on this section of road.
6.4	Sandgate	Maitland Road over rail bridge GPS link: 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 GPS link: 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 GPS link: 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 GPS link: https://goo.gl/maps/SRDt5JiegkBp	Length: 100.0 Mtrs Width: 12.0 Mtrs	Left hand merge	No problems with the loads on this section of road.
18.4	Beresfield	John Renshaw Drive GPS link: https://goo.gl/maps/N19vJih1Fgr	Length: 100.0 Mtrs Width: 10.0 Mtrs	Travel directly ahead	No problems with the loads on this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQ9E2	Length: 65.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the loads on this section of road.
58.9	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqj	Length: 100.0 Mtrs Width: 12.0 Mtrs	Travel directly ahead	No problems with the loads on this section of road.

KM index	Location	Section of road	Current measurement	Procedure	Notes
67.3	Whittingham	The New England Highway onto the Golden Highway GPS link: https://goo.gl/maps/nAnfkYfeUn42	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 you monitor the progress of the upgrades, 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	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 GPS link: 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 GPS link: https://goo.gl/maps/7hQdEmK1EgE2	Length: 65 metres Width: 6.0 Metres	Left hand turn	No problems with the loads on this section of road.
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	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 GPS link: 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 GPS link: https://goo.gl/maps/QS9quvSvHYWaFH0X9	Length: 45 metres Width: 6.0 Metres	Right hand turn	No problems with the loads on this section of road.
98.0	Warkworth	Golden Highway GPS link: 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 GPS link: https://goo.gl/maps/WgSCRsJ9ZGt	Length: 60 metres Width: 6.0 Metres	Left hand than right hand turn	No problems with the loads on this section of road.
126.0	Ogilvy	Golden Highway GPS link: https://goo.gl/maps/58Tj9ojs7CC2	Length: 90 metres Width: 8.0 Metres	Travel directly ahead up a 6% gradient	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/sf4PNnycxB32	Length: 55 metres Width: 6.0 Metres	Right hand turn	No problems with the loads on this section of road.
137.9	Muswellbrook	Denman Road onto Bengalla Road GPS link: https://goo.gl/maps/3sK4m6YSHNHgkqn68	Length: 60 metres Width: 8.0 Metres	Left hand turn	No problems with the loads on this section of road.
149.0	Bengalla	Bengalla Road onto Wybong Road GPS link: https://goo.gl/maps/zfDvG4GQq6G37imB9	Length: 90 metres Width: 8.0 Metres	Left hand bend	No problems with the loads on this section of road.

KM index	Location	Section of road	Current measurement	Procedure	Notes
158.0 to 183.0	Bengalla	Wybong Road GPS link: https://goo.gl/maps/ekGZA5wFFK53Mvmc7	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 GPS link: https://goo.gl/maps/5ft3VnWpnPhpeN4u7	Length: 60 metres Width: 8.0 Metres	Right hand turn	No problems with the loads on this section of road.
197.0	Sandy Hollow	Golden highway GPS link: https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
201.0	Sandy Hollow	Golden Highway under safety Cam GPS link: https://goo.gl/maps/b7t9zH2ankJcvWpT6	Height: 6.3 metres	Travel directly ahead on the correct side	No problems with the loads on this section of road.
208.0	Gungal	Golden highway GPS link: https://goo.gl/maps/WDoL2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
214.0	Merriwa	Golden Highway under safety Cam GPS link: https://goo.gl/maps/D92rzQ8vnUcYsqj56	Height: 6.4 metres	Travel directly ahead on the correct side	No problems with the loads on this section of road.
231.0	Merriwa	Golden highway GPS link: https://goo.gl/maps/NqrWzTsRmnt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
266.0	Cassilis	Golden highway GPS link: https://goo.gl/maps/vs6YMT6TxCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
296.0	Leadville	Golden highway GPS link: https://goo.gl/maps/ujxMGukhopeFWRhb8	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
314.0	Leadville	Golden highway onto the Castlereagh Highway GPS link: https://goo.gl/maps/sCmgFmgEZ621DVrf9	Length: 65.0 metres Width: 11.0 metres	Left hand turn	No problems with the loads on this section of road.
343.0	Birriwa	Castlereagh Highway rail crossing GPS link: https://goo.gl/maps/BTrCz8VaeLN2	Length: 65.0 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.
370.0	Gulgong	Castlereagh Highway Goolma Road intersection GPS link: https://goo.gl/maps/US53QJHQ6R92	Length: 80 metres Width: 8.0 metres	Travel directly ahead	Spotter to guide load through this pinchpoint. Police and pilots to supply traffic control as per the procedure for this section of road.
358.0	Gulgong	Fisher Street onto Medley Rd GPS link: https://goo.gl/maps/GxJvNXi8vB6h7oLS6	Length: 45.0 metres Width: 9.0 metres	Right hand turn	No problems with the loads on this section of road.
383.0 to 393.0	Mudgee	Castlereagh Highway GPS link: https://goo.gl/maps/iZ4qK5Mo28KzNSDT7	Width: 6.0 metres	Follow the main Highway through Mudgee	Loaded trailers are to avoid travelling through Mudgee on schooldays between 7:00am and 10:00am and again 2:00pm and 4:30pm
386.0	Mudgee	Market Street onto Douro Street GPS link: https://goo.gl/maps/iZ4qK5Mo28KzNSDT7	Length: 45.0 metres Width: 6.0 metres	Right hand turn	Loads to travel over the centre of the roundabout. No problems with the loads on this section of road.
386.5	Mudgee	Douro Street onto Horatio Street GPS link: https://goo.gl/maps/VAR5R2ooQWShcim6	Length: 50.0 metres Width: 7.0 metres	Left hand turn	No problems with the loads on this section of road.
387.0	Mudgee	Horatio Street GPS link: https://goo.gl/maps/LtMDGuX6cbAL8eri6	Width: 6.5 metres	Travel directly ahead on the correct side of the roundabout	No problems with the loads on this section of road.

KM index	Location	Section of road	Current measurement	Procedure	Notes
388.0	Mudgee	Horatio Street onto the Castlereagh Highway GPS link: https://goo.gl/maps/z2USqGmixFP1vfr58	Length: 45.0 metres Width: 9.0 metres	Right hand bend	No problems with the loads on this section of road.
420.0	Cudgegong	Castlereagh highway GPS link: https://goo.gl/maps/uh9zoP97RyC2ie8d6	Length: 250 metres Width: 20.0 metres	Parking Bay	Large parking bay. Suitable for fatigue breaks.
477.0	Ben Bullen	Castlereagh Highway rail crossing GPS link: https://goo.gl/maps/5ZtGAGDHBtq1vX2r8	Length: 60.0 metres Width: 9.0 metres	Left hand than right hand dogleg turn	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
499.0	Wallerawang	Castlereagh Highway onto Main Street GPS link: https://goo.gl/maps/TsL2Ur8tUJJ5CfZe9	Length: 60.0 metres Width: 8.0 metres	Right hand turn	No problems with the loads on this section of road.
502.0	Wallerawang	Main Street onto Pipers Flat Road GPS link: https://goo.gl/maps/KvEM8hfuSLqAGavq9	Length: 45.0 metres Width: 8.0 metres	Right hand turn	Towers to cross to the inside of the corner. Spotter to guide load through this pinchpoint. Police and pilots to supply traffic control as per the procedure for this section of road.
502.0	Wallerawang	Pipers Flat Road GPS link: https://goo.gl/maps/A5Y7hNkBiRdwU4Gi7	Width: 8.0 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.
510.0	Portland	Pipers Flat Road onto Range Road. GPS link: https://goo.gl/maps/h61jrKzNjcyZL22A6	Length: 45.0 metres Width: 8.0 metres	Left hand turn	No problems with the loads on this section of road.
510.0 to 520.0	Portland	Range Road GPS link: https://goo.gl/maps/4eakKvGyqoYWwvqT3	Width: 7.0 metres	Travel directly ahead	This section of road will need trees to be pruned.
520.0	Meadow Flat	Wallerawang-Rydal Road onto the Great Western Highway GPS link: https://goo.gl/maps/qF71VXvL755QfurG9	Length: 50.0 metres Width: 8.0 metres	Right hand turn	No problems with the loads on this section of road.
531.0	Yetholme	Great Western Highway GPS link: https://goo.gl/maps/Ds2WjpbmKCP1rCSA8	Length: 150.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.
551.0	Kelso	Great Western Highway GPS link: https://goo.gl/maps/eKjPbsNshG4bYeEC9	Length: 50.0 metres Width: 6.5 metres	Travel directly ahead through the roundabout	No problems with the loads on this section of road.
552.0	Kelso	Great Western Highway onto O'Connell Road GPS link: https://goo.gl/maps/iF173WmTbXTcnXsFA	Length: 50.0 metres Width: 7.0 metres	Left hand turn	No problems with the loads on this section of road.
556.0	Kelso	O'Connell Road GPS link: https://goo.gl/maps/tE5Mq3onTKm1V9LG8	Length: 100.0 metres Width: 6.0 metres	Left merge	Parking on the left-hand side of the road.
571.0	O'Connell	O'Connell Road GPS link: https://goo.gl/maps/zDc3vrvAUv2tXddo8	Length: 80.0 metres Width: 6.0 metres	Left merge	Parking on the left-hand side of the road.
580.0	Oberon	O'Connell Road GPS link: https://goo.gl/maps/Lq6vNM3MBwZGpASC6	Length: 50.0 metres Width: 6.0 metres	Travel around several tight corners while ascending a mountain range.	All loads over 70T gross will require a backup prime mover to assist with the gradient on this section of road. The largest towers will need to have assistance from a steer operator.
582.0	Oberon	O'Connell Road GPS link: https://goo.gl/maps/8cjX5U4oL9WJLm2C7	Length: 60.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.

KM index	Location	Section of road	Current measurement	Procedure	Notes
593.0	Oberon	O'Connell Road onto Abercrombie Road GPS link: https://goo.gl/maps/LNztcY93MTxbrg3y8	Length: 45.0 metres Width: 6.0 metres	Right hand turn	Some signs will need to be removed for the longest loads.
616.0	Black Springs	Abercrombie Road intersection of Campbells River Road GPS link: https://goo.gl/maps/wPBfjVRiyWCrVtFU6	Length: 55.0 metres Width: 7.0 metres	Left hand turn	No problems with the loads on this section of road.
646.0	Gurnang	Abercrombie Road GPS link: https://goo.gl/maps/btTztcyaorh6CYVs6	Length: 100.0 metres Width: 10.0 metres	Left merge	Parking on the left-hand side of the road.
646.0-651.8	Gurnang	Abercrombie Road GPS link: https://goo.gl/maps/pTSFwJczPgB319mK7	Length: 100.0 metres Width: 10.0 metres	Undulating section with sweeping bends	No problems with the loads on this section of road.
654.0	Paling Yards	Abercrombie Road into windfarm entrance GPS link: https://goo.gl/maps/hdofanEe7bcQwX30W8	Proposed design Length: 70.0 metres Width: 10.0 metres	Left and right hand turns	Location of site entrance to be confirmed. Site entrance will need to be designed to suit all components.

12.0 Route 2 conclusion:

After studying all options and undertaking a route survey, this route in its current condition will require a moderate 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.

BRIDGES:

- There are a large number of bridges on route that will require bridge assessments for the capacity of the listed loads.

OVERHEAD STRUCTURES THAT CANNOT BE DETOURED: (5.9 Maximum loaded height)

- The overhead gantry on the New England Highway at Hexham is the lowest structure on route with a maximum clearance of 5.9 metres in height.

OVERHEAD STRUCTURES THAT CAN BE DETOURED: (5.4 in height)

- A traffic signal on Industrial drive has a maximum clearance of 5.4 metres in the left lane. However, if the loads stay in the right hand lanes, they can pass this signal at up to 5.9 metres in height.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 5.9 metres is required for this project. This will involve extensive works pre lifting assets.

VEGETATION:

- The state highways have suitable clearance from Vegetation; however, Wybong Road, Main Street, Pipers Flat, Range Road, O'Connell Road and Abercrombie Road will have sections where vegetation will require pruning and possible removal.

WIDTH and PAVEMENT:

- The road has suitable clearance other than Range Road and Abercrombie Road and will require some vegetation pruning. The width and quality of the pavement will be ok for the route; however, several council roads would need to be checked for capacity, these include Wybong Road, Main Street, Pipers Flat, Range Road.

O'CONNELL ROAD:

- If the works undertaken by the blades have been done, then the towers will fit along the proposed route.

ABERCROMBIE ROAD:

- If the works undertaken by the blades have been done, then the towers will fit along the proposed route.

13.0 References:

Australian Load Restraint Guide
Rex J Andrews P/L Drawings
Rex J Andrews route survey # 310 REV01
GPG
Google Earth/Maps
Nearmaps
NHVR (OSOM)

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.

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.