APPENDIX H TRAFFIC IMPACT ASSESSMENT

APPENDIX H.1 TRAFFIC IMPACT ASSESSMENT ADDENDUM REPORT

Hills of Gold Wind Farm

Traffic and Transport Addendum

Prepared for:

Hills of Gold Wind Farm Pty Ltd

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The Transport Planning Partnership

E: info@ttpp.net.au

Hills of Gold Wind Farm

Traffic and Transport Addendum

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Table of Contents

Tables

Figures

APPENDICES

A. REX J ANDREWS ROUTE ASSESSMENT

B. SIDRA MODELLING OUTPUTS

C. MUSWELLBROOK COUNCIL MEETING MINUTES

D. SUMMARY OF CONSULTATION AND COMMITMENTS

E. MUSWELLBROOK SHIRE COUNCIL ASSET LIST FOR ASSESSMENT

F. MUSWELLBROOK SHIRE COUNCIL LETTER OF OFFER

1 Introduction

The Transport Planning Partnership (TTPP) has been commissioned by Hills of Gold Wind Farm Pty Ltd to prepare a response to the submissions on the Environmental Impact Statement (EIS) for the Hills of Gold Wind Farm Project (the 'Project'). This report responds directly to the submissions from key stakeholders addressing the issues raised and presenting revised transport routes, opportunities to minimise impacts revised traffic conditions and residual traffic impacts. It should be considered an addendum to the Traffic and Transport Impact Assessment (TTPP, 2020) presented in the EIS.

This report is also intended to be read in conjunction with:

- The updated Route Assessment prepared by Rex J Andrews (RJA, 2021) for the transportation of the over sized and over mass vehicles (OSOM) and the Amended Project Report (ERM, 2021).
- Concept designs provided by Turnbull Engineering.

1.1 Stakeholder Submissions

Key submissions that related to traffic and transport were received from three key agency stakeholders. These were:

- Transport for NSW
- Tamworth Regional Council
- Muswellbrook Shire Council

In addition, concerns raised by the Nundle and Hanging Rock communities and organisations including Nundle Business and Tourism Marketing Group and the Hills of Gold Preservation Inc. through their submissions and subsequent consultation held has been addressed.

The key submissions and the responses are summarised in Table 1.1.

Table 1.1: Submission Responses

Stakeholder	Comment	Response
Muswellbrook Shire Council – Submission	Traffic and Transport Study should consider the Thomas Mitchell Drive Contributions Study and the Muswellbrook Mine Affected Roads Network Plan Review.	See Section 8
	Traffic and Transport Study should look at road safety and crashes within Muswellbrook Shire.	See Section 8
	Roads proposed are used by existing businesses including minutes and horse studs and carry high volumes of traffic during peak hour.	See Annexure D – Summary of Consultation and Commitments
Muswellbrook Shire Council – Issues raised in Meeting held on 31 March 2021 – Minutes provided in Annexure C.	Council requires that the Project must demonstrate diligently the full measures being taken to ensure that safety is not impacted along the proposed transport route.	Section 8
	There was deemed to be not enough information on traffic volumes and movements with the EIS. Data and information required for both the construction and operational phases. Council suggested that the Mt Pleasant mine traffic data, recently published, would be a useful resource for the Project as it is the most up to date data collated on traffic movements and volumes on proposed roads.	Section 8
	Blade movements and blade volumes to be included in updated reports and issued to council for review.	Section 8
	Council expressed concern over the proposed use of Bell St Rd, citing the presence of the school at the top of the hill accommodating over 1500 students.	The Project confirmed that road usage outside of restricted times such as School bus hours would all be included in the Traffic Management Plan. See Section 4 for OSOM Routes and Section 8.
	Council expressed an initial preference that a single route option would be preferable for both blades and tower components. The Project discussed investigating splitting traffic to reduce impact on Bell St, Victoria St and Market St.	Section 8
	Council noted that ARTC also intend on building 3 new bridges over rail line in a similar timescale creating potential works conflicts.	Section 8

Stakeholder	Comment	Response
	Council noted that MACH energy also intend on carrying out road upgrades at a similar time to the Projects proposed upgrades creating the possibility of works conflicts.	Section 8
	Council confirmed that they would like to see a proposed Term Sheet on road usage as well as a statement of commitments provided by the Project for review.	Appendix D
	Alternative Route via Tamworth, suggested alternative to the proposal to widen bridges on Lindsays Gap Road.	Tamworth route no longer being considered.
Transport for NSW	Removal of signage, repositioning of light poles, erection of hard stand must be replaced or made good at Project completion.	See Section 6
	Commitment that any damage to the state road assets should be made good upon Project completion.	See Section 6
	Fig 3.12 of the TTA states that a section of median safety barrier is to be removed at the intersection of MR316 and HW10. Est replacement delivery window of 9 months. Provide further details of how this safety component is to be maintained due to long lead times for replacement.	Arrangements for this have changed see the Rex J Andrews Route assessment report.
	Further justification required to understand Fig 3.13 of the TTA proposing to construct a new crossover of HEX median instead of utilising existing.	Arrangements for this have changed see the Rex J Andrews Route assessment report.
	Section 3.3.2 of the TTA addressing traffic generation and staff movements has not considered carpooling by staff. To be reviewed based on this option.	See Section 4
	Fig 3.2 detailing traffic routes does not appropriately labelled and connections to the New England highway to not match the description of the vehicle movements.	Figure has been corrected see Figure 4.1.
	Route Assessment needs to be refreshed to take into account new road and upgrades proposed in the same time as the Projects construction.	See Section 9
	No intersection analysis undertaken for the indicated routes at key locations on the classified roads for the traffic generated by the Project. All references to intersection analysis throughout the EIS and TTA are in relation to the transportation of the OSOM movements only.	See Section 5

Stakeholder	Comment	Response
	Development Application refers to roads having been previously used for other wind farm developments, however, the largest blade movement in NSW to date has been for 67m long blades. The proposed trailer combination, extending to 92m in length therefore has not been tested in NSW previously.	See Section 6
	If Head of the Peel road is used to carry a significant portion of the traffic, this road should be committed to be tarred as well.	Head of Peel Road no longer being considered.
Tamworth Regional Council	There is no mention of the needs for RAV vehicle movements during operation where a blade may be needed to transport and the impact this will have had on the rehabilitation committed.	See Section 7.1
	Decommissioning would require RAV access.	See Section 7.2
	Nundle Traffic will quadruple during construction phase which will make Nundle feel busier, noisier, than the baseline environment.	See updated traffic generation in section 5 impacts on amenity in Section 7
	There is a potential for accelerated deterioration of council roadways and associated infrastructure. Project to provide commitments to make good through dilapidation surveys, management plans and use of performance bonds.	The Project has committed to undertake dilapidation surveys prior to use of roads and annually thereafter and post construction. The Project has committed to provide performance bonds as per the letter of offer to Tamworth Regional Council attached in Appendix E.
	There are concerns around the engineering of the upgrades required to facilitate blade movement. The concern stems from a "plan-view" geometry and understates the extend of the impacted areas where there are cuttings and batters. The assessment does not consider the mechanism for achieving the extra clearing, infrastructure relocations and land acquisition.	See Section 7.
	The Head of the Peel Road upgrades require private land for upgrades and the landowner is opposed to the Project.	Head of Peel Road no longer being considered.
	Provide a realistic breakdown of the percentage of traffic each of the proposed six routes is estimated to carry on a daily basis during construction and operational period.	Section 4
Hills of Gold Preservation Inc (HoGPI)	Provide intersection modelling to enable the local community to understand the transport impact of the proposal on their main street.	Section 5

Stakeholder	Comment	Response
	Request to do a detailed assessment on traffic and transport based on different terrain levels.	Section 5
	Consultation held with Nundle Business and Tourism Marketing Group on the 4th of May raised concern over traffic congestion and impacts to existing businesses, tourists and locals as a result of expected construction traffic.	Section 5 for Traffic Generation and Section 6 for Project Commitments including a parking restriction placed on construction traffic in Nundle.
Nundle Business and Tourism Marketing Group	Safety was raised for pedestrians in Nundle.	Section 3 for overview of OSOM Route changes in Nundle. Section 4 for Traffic generation changes on account of carpooling and reduced trucks. dedicated car park in Nundle. Section 6 for Project Commitments including greater clarity on communication protocols in the Traffic Management Plan, a proposed dedicated construction car park and temporary parking restrictions in Nundle to preserve local residents' and tourists' amenity, And further safety mitigation measures including commitments to add a pedestrian crossing in Nundle, subject to approval of Council.
	Congestion on Lindsays Gap Road into Nundle.	See updated Project Ccmmitments including adding a layby on Lindsays Gap Road.

1.2 Report Structure

This report is structured as follows:

- Section 2 - Overview of key changes to the submission.
- Section 3 – Updated Oversized and over mass vehicles routes.
- Section 4 - The revised traffic generation assumptions.
- Section 5 - Revised traffic analysis and modelling results.
- Section 6 - Traffic impact mitigation measures.
- Section 7- Addresses issues raised by Tamworth Regional Council.
- Section 8 - Addresses issues raised by Muswellbrook Shire Council.
- Section 9 - Identifies road upgrade Project along the OSOM routes that may impact the Project.
- Section 10 - Conclusion.

2 Overview

The Project has made substantial changes in response to submissions received from agencies, notably Tamworth Regional Council and Muswelbrook Shire Council) and key stakeholders groups, Hills of Gold Preservation Inc (HOGPI) and Nundle Business and Tourism Marketing Group through public submissions and subsequent engagement.

The changes proposed aim to provide certainty to proposed routes, further assessment as requested and additional mitigation of residual impacts determined through consultation. This Traffic and Transport Addendum should be read in conjunction with the Traffic and Transport Assessment (TTPP 2020) with those changes proposed in this report to supersede any conflicts.

The key updates of the Project include:

- The proposed number of wind turbine generators has been reduced from 70 to 68, however this traffic assessment has been based on a ‘worst case’ 70 wind turbine generators.
- Removal of the option to transport Oversized Overmass deliveries via Tamworth and Nundle Road.
- Removal of options to transport Oversized Overmass equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins St, Herron Street North, Gill St and Innes St.
- Alternate Route Options around Muswellbrook for Oversized Overmass equipment deliveries and greater Project commitment towards structural assessment of council assets and community safety.
- 2 x additional laybys along Lindsay Gap Road and Morrisons Gap Road for reduced tourism and commuter impacts entering Nundle.
- Voluntary temporary parking restrictions for construction workers on streets within Nundle providing key services to tourists and residents.
- Commitment to create a dedicated construction staff car park prior to entering Nundle town centre which can enable the introduction of temporary parking restrictions without reducing the benefits of accessing local content for the Project, and could assist the introduction of a shuttle service for peak hour “last mile” site access to reduce traffic through Nundle, on Barry Road and Morrison’s Gap Road, if practicable.
- Improved safety commitments in Nundle with a proposed pedestrian crossing on the corners of Oakenville St and Jenkins St, subject to agreement from Tamworth Regional Council.
- Greater clarity on Traffic Management Plan commitments including for residents along Shearers Road and Morrisons Gap Road for safe ingress and egress, broader community

communication initiatives, escorts for some OSOM movements along along the proposed OSOM route including Morrisons Gap Road, IVMS for regular vehicles accessing the Project Site, and traffic management systems during public road upgrades.

- Geophysical assessment, realignment and construction method consideration for the Devils Elbow Upgrade.
- Revision of the traffic generation assumptions and traffic management strategy to include car pooling as an initiative.
- Additional assessment and traffic modelling on key intersections in Tamworth Regional Council.
- Additional assessment and traffic modelling for Muswelbrook Oversize Overmass route options.
- Project commitments for assessment and upgrades of Muswellbrook Shire Council and Tamworth Regional Council road assets where required, subject to additional consultation.
- Inclusion of key stakeholders and communication protocols in the Traffic Management Plan for residents along the transport routes.
- The Project will provide UHF radios (given mobile phone reception can be intermittent) to residents along Morrisons Gap Road and Shearers Road to communicate any emergency or travel plans to site staff along with a protocol for reaching the site manager.
- Project Commitments to road usage fees, dilapidation surveys, and/or performance bonds for remediation works.

2.1 Updated Oversized Over Mass Route Refinement

The EIS assessment provided access options for oversized and over mass (OSOM) vehicles from the Port of Newcastle to the Project Area. These routes provided contingency to allow for flexibility with equipment procurement and transport contractors and due to the need for potential upgrades identified in the Route Assessment to access the Project Area.

A revised Route Assessment was undertaken by Rex J Andrews detailing the refined OSOM transport routes proposed with commentary on suitability of route and required upgrades.

The key refinements are:

- Removal of the option to transport OSOM deliveries via Tamworth and Nundle Road.
- Removal of options to transport OSOM equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins St, Gill St and Innes St.

- Alternate Route Options around Muswellbrook for OSOM equipment deliveries and greater Project commitment towards structural assessment of council assets and community safety.

In addition, Intersection and Road Upgrade Design was undertaken in areas where significant upgrades were required to facilitate Project OSOM deliveries including:

- The Kayuga and Wybong Road intersection in Muswellbrook Shire Council
- The Devils Elbow Upgrade on Barry Road in Tamworth Regional Council
- The Barry Road and Morrisons Gap Road intersection in Tamworth Regional Council
- The upgrades proposed along Morrisons Gap Road.

These updated routes respond to consultation with Tamworth Regional Council, Transport for NSW and Muswellbrook Shire Council.

2.2 Traffic Generation

The generation and distribution assumptions for the Project have been updated to capture:

- Alternate routes around Muswellbrook following consultation with Muswelbrook Shire Council.
- Removal of construction access via Head of the Peel Road reducing construction related traffic to Head of Peel presented in the previous assessment.
- Traffic generation for new access arrangements around Nundle, Hanging Rock and affected areas of Tamworth.

Despite all traffic accessing the Project Area through Barry Road and Morrisons Gap Road additional mitigation commitments offer a 36% reduction in forecast daily traffic volumes compared to the previous assessment.

Revised assessment on routes within Muswellbrook Shire Council roads offers flexibility to select a combination of routes that respond to results of committed structural assessments on council assets and ongoing consultation with Muswellbrook Shire following equipment selection and detailed Traffic Management Plan. For the purposes of impact assessment this report assesses the most conservative of these route options. The updated assessment is provided in Section 4 of this report.

Traffic has been estimated based on project with 70 turbines.. This has been revised to 65 turbines in the project amendment report. Traffic generated remains as a worst case without changes to account for reduced construction traffic or OSOM traffic. These volumes can be expected to be reduced but have not been updated to continue to present worst case.

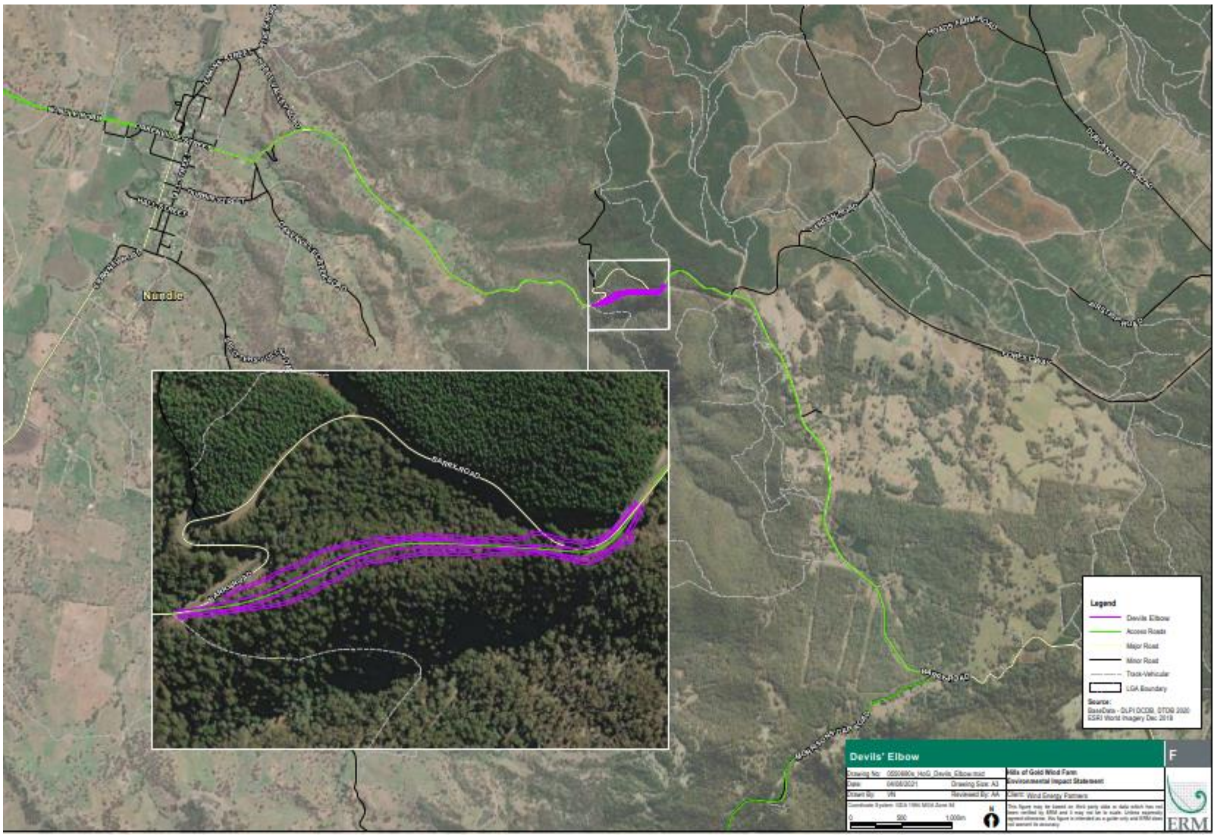
2.3 Traffic Modelling

Further analysis of intersection performance has been undertaken using Sidra intersection modelling. The intersection modelling and road network analysis is provided in Section 5 of this report.

2.4 Devil's Elbow Alignment

The Devil's Elbow alignment will be subject to final detail design, following selection of construction contractor's and final Project technology and equipment. Following geophysical assessment to assess potential for subsurface voids relating to abandoned mine workings in the vicinity of the proposed Devil's Elbow upgrades, Turnbull Engineering have redesigned and realigned the road such that the expected void locations identified in the geophysical assessment are in undisturbed areas or areas of fill, reducing the risk of removing earth support. The realigned road is presented in Figure 2.1.

Figure 2.1: **Devil's Elbow** Concept



3 OSOM Routes

3.1 OSOM Vehicles

The EIS assessment provided access options for OSOM vehicles from the Port of Newcastle to the Project Area. These routes provided contingency to allow for flexibility with equipment procurement and transport contractors and due to the need for potential upgrades identified in the Route Assessment to access the Project Area.

A revised Route Assessment was undertaken by Rex J Andrews detailing the refined OSOM transport routes proposed with commentary on suitability of route and required upgrades.

The key refinements are:

- Removal of the option to transport Oversized Overmass deliveries via Tamworth and Nundle Road.
- Removal of options to transport Oversized Overmass equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins Street, Gill Street and Innes Street.
- Alternate Route Options around Muswellbrook for Oversized Overmass equipment deliveries and greater Project commitment towards structural assessment of council assets and community safety.

These updated routes respond to consultation with Tamworth Regional Council, Transport for NSW and Muswellbrook Shire Council.

In addition, intersection and road upgrade design was undertaken by Turnbull Engineering in areas where significant upgrades were required including:

- The Kayuga and Wybong Road intersection in Muswelbrook Shire Council
- The Devils Elbow Upgrade on Barry Road in Tamworth Regional Council
- The Barry Road and Morrisons Gap Road intersection in Tamworth Regional Council
- The upgrades proposed along Morrison's Gap Road.

3.1.1 Alternate Route Options in Muswellbrook Local Government Area

Following consultation with Muswellbrook Shire Council, a list of Council assets along the proposed routes (provided in Appendix E Muswellbrook Shire Council Asset List for Assessment) was provided to the Project. In addition, structural assessments were provided to the Project on some of these assets where available. RJA have conducted a route survey on these route options in Muswellbrook LGA and visually inspected these assets, see Appendix A, and have confirmed that they have used a combination of these routes in the past to transport loads in excess of those required to deliver this Project.

The Project has committed to assessing the relevant assets from the list of Council Assets for safety and structural adequacy upon final turbine equipment selection and associated transport contractor and vehicles being proposed. Any Council Asset assessed requiring modification to allow the safe transportation of Project components, including works such as strengthening, monitoring during passage, or upgrading, will be undertaken in accordance with Austroads standards and in consultation with Muswellbrook Shire Council for relevant S138 approvals.

Concerns around traffic volumes on the Alternate Heavy Vehicle Route using Bell Street, Victoria Street and Market Street were also raised.

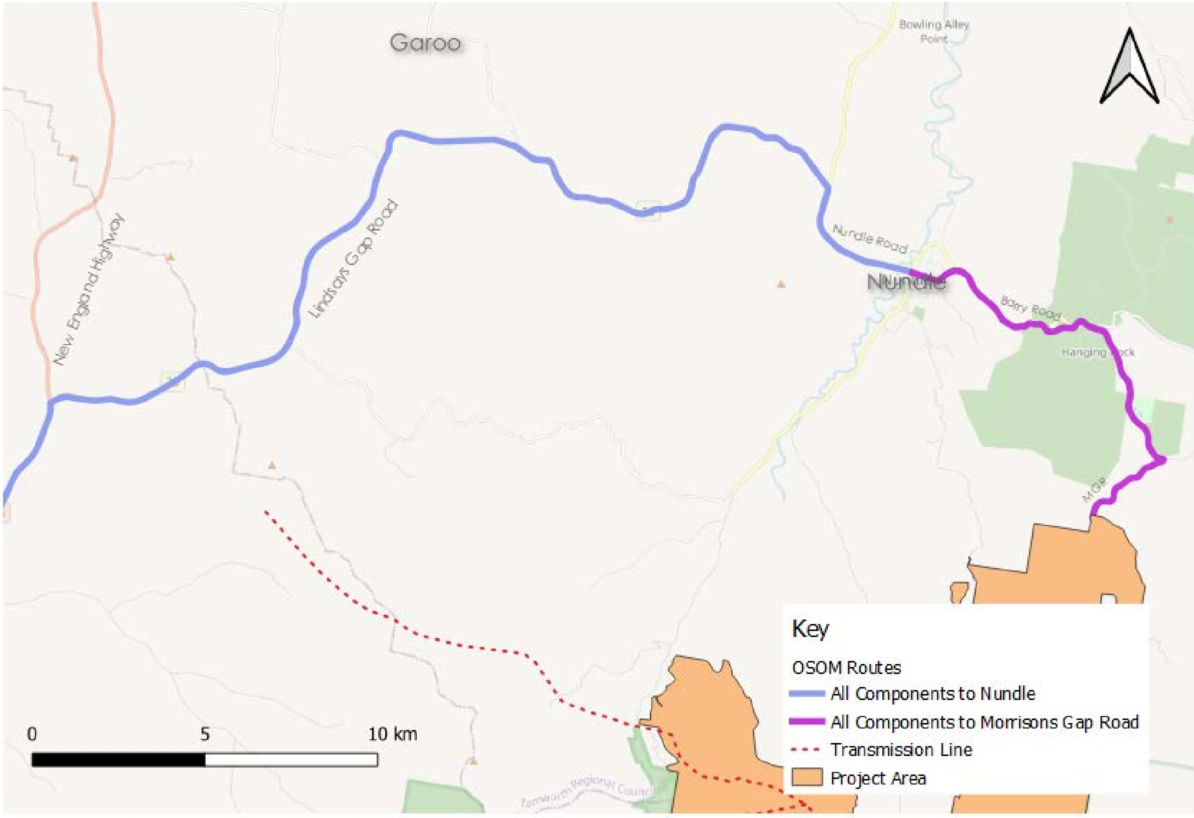
Based on this feedback the Project has undertaken additional route analysis to create possible options to split OSOM traffic based on final volumes proposed and their frequency. This is addressed in Section 8.

3.1.2 Revised Route in Tamworth Regional Council

The final proposed route for OSOM movements through Tamworth Regional Council is updated in Figure 3.1.

The route has been updated to remove the option to transport Oversized Overmass deliveries via Tamworth and Nundle Road. This has the benefit of reduced impact to communities to the south of Tamworth and along Nundle Road including townships such as Nemingha, Piallamore, Dungowan and Woolomin.

Figure 3.1: Proposed Route New England Highway to Project Area



The existing proposed Lindsays Gap Road for blades is now proposed for other OSOM movements.

In addition the option to transport 20% of the Oversized Overmass equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins St, Gill St and Innes St has been removed. This change has significant benefits to residents in Nundle reducing traffic through residential streets in the town and the resident living on Head of the Peel Road.

The traffic generated due to this change is assessed in Section 4 with additional mitigation for existing road users addressed in Section 6.

These changes are a result of consultation and submissions from Tamworth Regional Council, Transport for NSW and residents of Nundle and Hanging Rock.

3.1.3 OSOM Traffic Generated

An exhaustive review of the OSOM vehicle routes from the Port of Newcastle to the Project Area was undertaken by RJA, a logistics company with experience in transporting wind turbine blades and components and with local experience on the proposed routes. This is provided as a supporting document in Appendix A and should be referred to with regards to details of truck dimensions and routes assessment as well as details of additional road works required. A summary of the changes to proposed road modifications is provided in Table 6.1 in Section 6.9.

A summary of the proposed equipment and vehicle types proposed from the Port of Newcastle to the Project Area is shown in in Table 3.1.

Table 3.1: Proposed Oversized and Over Mass Vehicles

Component Type	Vehicle Types	No. of Trips to Site	Daily No. of Trips to site	Duration of Deliveries
Blades (root section)	Prime mover with 1x4 dolly with 4x4 extendable blade trailer	210	0.9 (2 WTGs/week)	35 weeks
Blades (tip section)*	Prime mover with 2x4-4x4 platform trailer	70	0.3	35 weeks
Nacelles	Prime mover with 8x8 Platform trailer	70	0.3	35 weeks
Drivetrain	Prime mover with 2x8-4x8 Platform Low loader	70	0.3	35 weeks
Hubs	Prime mover with 2x8 4x8 Low Loader	70	0.3	35 weeks
Tower Sections	Prime mover with 10x8 platform trailer (lower sections) Prime mover with 3x4-2x8 Dolly jinker (upper sections)	490 (7 section tower)	2.0	35 weeks
Other (2 x 40ft Shipping Container per WTG)	Prime mover with 1x4-3x4 platform trailer	140 (2 per WTG)	0.6	35 weeks
Sub station	Prime mover with 1x4-3x4 platform trailer	20	0.1	10-19 months
Switching Station	Prime mover with 1x4-3x4 platform trailer	20	0.1	10-19 months
Overhead cabling	Prime mover with 1x4-3x4 platform trailer	120	0.5	10-19 months
Underground cabling	Prime mover with 1x4-3x4 platform trailer	20	0.1	10-19 months
Battery System	Standard Semi – Trailer	158	2	35 weeks
Mobile concrete Batch Plant	Standard Semi – Trailer	2	1	1 Week
Transformers	2 x Low Loaders	2	1	2 Weeks

**Blade (tip section) - these movement would only occur if blades are split into two units. Note: Three tips can be transported on one truck.*

***The proposed number of Wind Turbine Generators has been reduced from 70 to 65 however the assessment has continued to be based on 70 Wind Turbine Generators.*

Transportation of the components is forecast to be undertaken over a period of approximately 9 months. This equates to a total of 1250 – 1320 OSOM movements over 9 months or an average of 5.6 movements per day assuming 6 available transport days per week.. These volumes are applicable for traffic generated for OSOM movements on parts of the New England Highway (not proposed to be detoured), Lindsay Gap Road, Nundle Road, Barry Road and Morrison's Gap Road.

It should be noted that existing logging trucks create 72 movements one-way per day and the additional impact to traffic volumes as a result of the Project's OSOM movements is not significant from the New England Highway to the Project Area. To provide the community with greater comfort and benefits for all road users, the Project has committed to three new layby passing bays on Lindsays Gap Road, Barry Road and Morrisons Gap Road to further reduce impacts.

Traffic generated in Muswellbrook LGA is expected to only occur as a result of the Project OSOM movements and not general construction traffic. An updated assessment of road safety, traffic generation, consultation undertaken and the existing road transport environment is provided in Section 8.

4 Traffic Generation Assumptions

4.1 Peak Period Traffic Generation

The following are the updated assumptions used to estimate traffic generation around the Project Area from general construction activities.

4.1.1 Plant and Equipment and Materials

Plant and equipment and materials are those items not included in the OSOM assessment and are carried with more commonly used transport units such as B-Doubles or Semi-trailers. Travel to the Project Area from the New England Highway is via Lindsays Gap Road, Nundle Road and then Barry Road to Morrisons Gap Road.

4.1.2 Water

It is assumed that water would be transported from Tamworth on the basis that it likely represents the worst case for water transport. All trips would use Morrisons Gap Road.

4.1.3 Construction Workers Access

It is assumed that the majority of construction workforce would be coming from Tamworth with a smaller percentage from other areas. The directional plait for this assessment assumed that the routes and percentage of workers to access the Project Area would be:

- 68% - Nundle Road from Tamworth
- 20% - New England Highway from Tamworth, Garoo Road and Lindsay Gap Road (20%)
- 10% - New England Highway from the south (10%) and Lindsay Gap Road
- 2% - Crawney Road from the Upper Hunter LGA .

Use of light vehicles would be reduced through the implementation of car pooling which is assumed to increase the average car occupancy to 2.5 workers per vehicle.

There is little literature on the effectiveness of car pooling initiatives and each case would be different based on location and type of organisation. Given that most construction workforce are estimated to be travelling from Tamworth and the moderate commuting times it could be expected the take up of car pooling would be significant.

The Project is investigating the creation of a dedicated construction staff car park prior to entering Nundle town centre which can enable the introduction of temporary parking restrictions without reducing the benefits of accessing local content for the Project, and could assist the introduction of a shuttle service for peak hour “last mile” site access to reduce traffic through Nundle, on Barry Road and Morrison's Gap Road, if practicable. For more information on the proposed construction car park see Section 6.3.

4.1.4 Bulk Earthworks

It is assumed that earthworks would be balanced on site and there would be no need to transport soil to or from the Project Area. If not balanced, any excess spoil will likely be reused on site and thus assume no transport of spoil to or from the Project Area.

Importation of quarry material: Construction materials including gravel, aggregate and sand will be required for the construction of hardstands and turbine foundations to support Project infrastructure, including internal access roads, wind turbine generators (WTG) hardstands, laydown areas and installation of electrical cabling.

Gravel, aggregate and sand have been assumed to be sourced externally from existing operating quarries. There are a number of existing quarries located within approximately 80km of the Project Area, including quarries located at Tamworth, Willow Tree, Currabubula, Ardglen and on Crawney Road.

It is anticipated that material from excavations will be recycled where suitable which will reduce the estimated traffic volumes upon confirmed geotechnical testing and construction procurement.

The Traffic and Transport Impact Assessment has considered vehicle transport of aggregates from roads in these localities for the purposes of the traffic assessment. Construction materials will be transported to the Project Area by trucks.

4.2 Traffic Generation

For the purpose of this assessment, a vehicle trip is defined in accordance with the RTA Guide to Traffic Generating as a movement to or from the Project Area. For example a water truck arriving at the Project Area and then leaving is two trips (one arriving and one leaving). For each of the stages identified above the estimated vehicle trips and these are provided below. Note this does not include OSOM vehicles which are considered separately.

Typical hours are to be:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 1 pm
- No work on Sundays or public holidays.

A traffic management plan for the Project will also stipulate that movement of heavy vehicles is to avoid school peaks in Nundle from 8:00am – 9:00am and 2:30pm – 4:00pm weekdays. Any changes to the school bus routes or times will be incorporated into the latest Traffic Management Plan.

It is assumed that the evening peak traffic generation is the inverse of the morning peak. There are no expected construction traffic impacts associated with the Muswellbrook Shire Council LGA other than OSOM movements described in Section 4.

4.3 Site Establishment

The estimate for traffic generation during site establishment is shown in Table 4.1. A car occupancy of 2.5 people per vehicle is assumed based on the commitment to provide a car pooling scheme for the Project.

Table 4.1: Site Establishment Trip Generation

Table Heading	Units	Morning to Site (trips)	Morning from site (trips)	Morning total (trips)	Daily (trips)
Light vehicles	125 workers	50	0	50	100
Buses	-	-	-	-	-
Water trucks	11 per day	2	2	4	22
Trucks	20 per day	3	2	5	40

4.4 Construction Period

The following assumptions have been applied to the traffic and transport impact assessment:

- the peak construction workforce of 174 staff;
- that there are some people coming and going from the Project Area throughout the day however this would be substantially lower than the commuter peaks.

A car pooling initiative would further reduce the number of light vehicles by assuming a resulting car occupancy of 2.5 people per vehicle. Table 4.2 shows the peak construction period traffic generated through Nundle to the Project Site. Based on the proposed program the peak would occur only from month 6 to month 14. The peak trips and daily trips have reduced from what was presented in the EIS due to the lower estimate of workers and the car pooling initiatives that are proposed.

Table 4.2: Peak Construction Period (through Nundle to the Project Site)

Table Heading	Units	Morning to Site (trips)	Morning from site (trips)	Morning total (trips)	Daily (trips)
Light vehicles	174 workers	70	15	85	155
Buses	-	-	-	-	-
Water trucks	15 per day	3	3	6	30
Trucks	63 per day	7	7	14	126
Total	-	80	25	105	311

The proposed temporary dedicated construction car park in Nundle could facilitate the implementation of a shuttle bus service at peak times which would reduce the traffic generated from Nundle to the Project Area. The implementation of a shuttle bus service at peak times is subject to further consultation with Project stakeholders including thorough risk assessments and will only be introduced if practicable. For information purposes, Table 4.3 shows the expected reduced peak construction period traffic generated from Nundle to the Project site if a shuttle service was implemented.

Table 4.3: Peak Construction Period (with shuttle service to the Project Site from Nundle)

Table Heading	Units	Morning to Site (trips)	Morning from site (trips)	Morning total (trips)	Daily (trips)
Light vehicles	104 workers	42	10	52	94
Buses	70 workers	3	3	0	6
Water trucks	15 per day	3	3	6	30
Trucks	63 per day	7	7	14	126
Total	-	55	23	72	256

4.5 Operational Phase

During operations, it is estimated that there would be 14 permanent full time staff. The estimated number of trips in a typical operational period is shown in Table 4.4.

Table 4.4: Typical Operational Period

Table Heading	Units	Morning to Site (trips)	Morning from site (trips)	Morning total (trips)	Daily (trips)
Light vehicles	14 workers	14	0	14	28
Heavy Vehicles	2 per day	2	1	-	4

At times there may be more staff on site for major maintenance. Conservatively we have based the assessment on a higher activity period when there would be up to 33 staff during peak operational periods.

Table 4.5: Higher Activity Periods

Table Heading	Units	Morning to Site (trips)	Morning from site (trips)	Morning total (trips)	Daily (trips)
Light vehicles	33 workers	33	0	33	66
Heavy Vehicles	4 per day	2	1	-	8

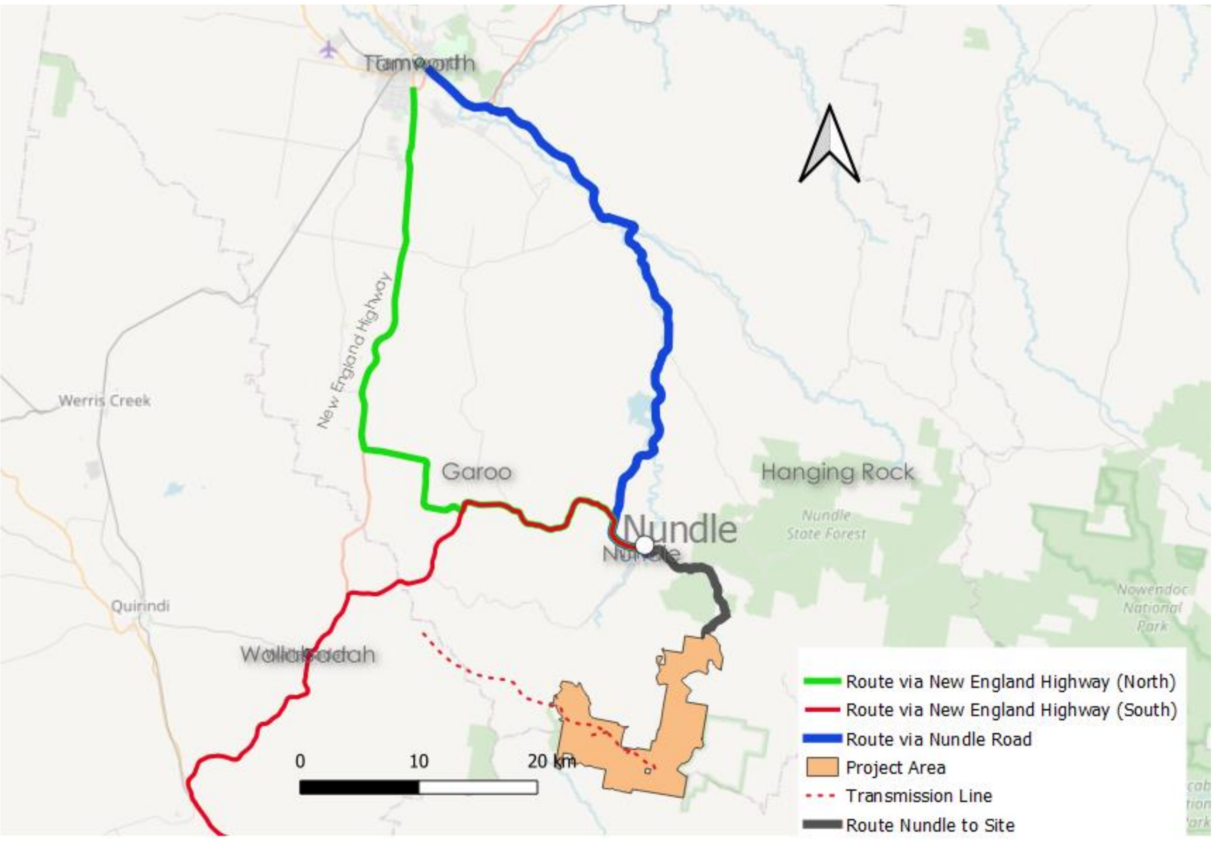
4.6 Traffic Distribution

All traffic is to access the site via Barry Road and Morisons Gap Road. The assumed traffic routes are shown in Figure 4.1. It is assumed that:

- 68% of traffic would use Nundle Road
- 20% of traffic would use New England Highway (from the North)
- 10% of traffic would use New England Highway (from the South)

A small proportion of 2% light vehicles are assumed to use Crawney Road south of Nundle.

Figure 4.1: Construction Traffic Routes from New England Highway to the Project Area



The volumes of traffic on each route are shown in Table 4.6 and Table 4.7 for the morning and evening peaks respectively.

Table 4.6: Morning Peak Traffic Distribution – Workforce and Heavy Vehicle Traffic Flows

Route	Split	To Nundle (vph)	From Project Area (vph)	Total (vph)
Route via Nundle Road (from Tamworth)	68%	54	17	71
Route via New England Highway (North)	20%	16	5	21
Route via New England Highway (South)	10%	8	3	11
Crawney Road (no heavy vehicles)	2%	2	1	2
From Nundle to Project Site (Oakenville Street, Barry Road, Morrisons Gap Road)	100%	55	23	78

Table 4.7: Evening Peak Traffic Distribution – Workforce and Heavy Vehicle Traffic Flows

Route	Split	To Site (vph)	From Site (vph)	Total (vph)
Route via Nundle Road	68%	17	54	71
Route via New England Highway (North)	20%	5	16	21
Route via New England Highway (South)	10%	2.5	8	11
Crawney Road (no heavy vehicles)	2%	1	2	2
From Project Site to Nundle (Morrisons Gap Road, Barry Road and Oakenville Street)	100%	23	55	78

5 Traffic Analysis

Transport for NSW (TfNSW) and HoGPI requested an analysis at key intersections. The key intersections have been modelled using the Sidra Intersection analysis software. Sidra modelling provides several useful indicators to determine the level of intersection performance.

TfNSW uses the performance measure level of service (LoS), to determine how efficient an intersection/network is operating under given prevailing traffic conditions. Level of service is directly related to the delays experienced by traffic travelling through the intersection. SIDRA's level of service ranges from Los A to Los F, with LoS A indicating that the intersection is operating with spare capacity and LoS F indicating the intersection is operating over capacity. LoS D is the long term desirable level of service.

The criteria that Sidra intersection adopts in assessing the level of service is shown in Table 5.1.

Table 5.1: Levels of Service

Level of Service (LoS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity; at signals incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	Greater than 70	Unsatisfactory, requires additional capacity	Unsatisfactory, requires other control mode or major treatment

Source: RMS Guide to Traffic Generating Developments, 2002

5.1 Modelling

The key intersections in Tamworth modelled included:

- Goonoo Goonoo Road (NEH) / Scott Road / Vera Street
- Murray Street / Marius Street
- New England Highway / Nundle Road

These locations have been selected based on the volume of traffic proposed to be moving through these key intersections and input from TfNSW. These locations are shown in Figure 5.1.

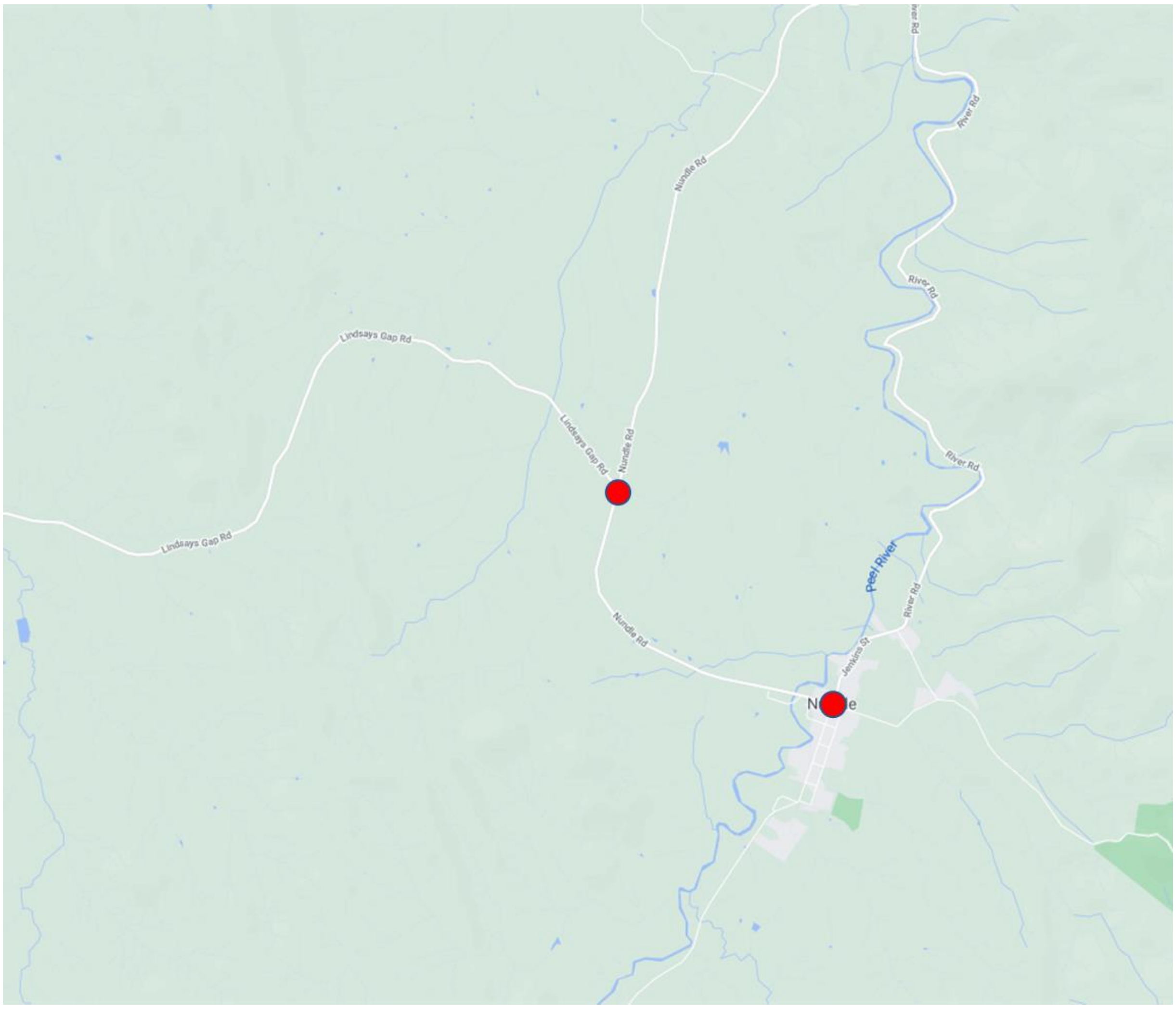
Figure 5.1: Modelled Intersections (Tamworth

In addition to these the local intersections at:

- Lindsays Gap Road and Nundle Road (Nundle)
- Oakenville Street and Jenkins Street (Nundle)

These intersections are show in Figure 5.2. Both these intersections have low traffic volumes that would not normally warrant traffic modelling and Tamworth Regional Council acknowledging in their response to the EIS that traffic volumes generated would not impact the operation of the roads.

Figure 5.2: Modelled Intersections (Nundle)



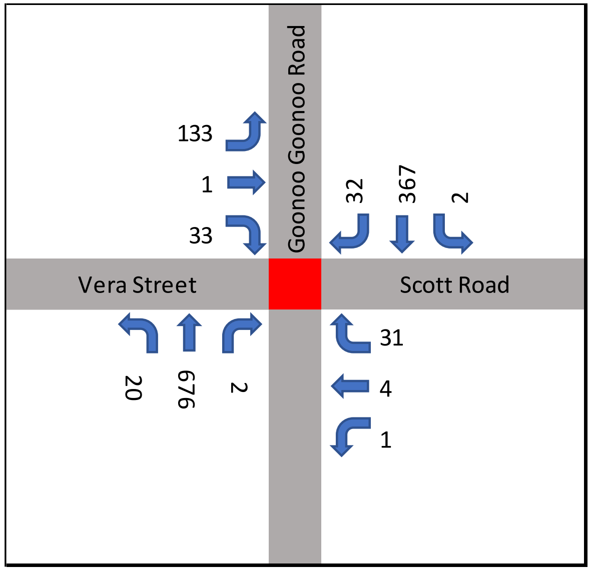
Additional traffic was added to the key intersections in accordance with the traffic distribution assumptions. The model periods were:

- 7:00am – 8:00am
- 5:00pm – 6:00pm

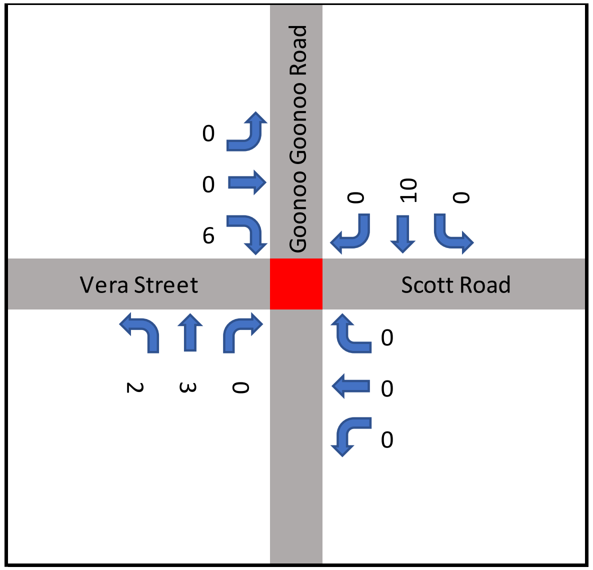
The morning peak for construction traffic is expected to occur earlier than 7:00am however 7:00am – 8:00am hour was chosen in order to be more conservative as traffic volumes before 7:00am are very low. The existing and forecast traffic volumes are shown in Figure 5.3 to Figure 5.12 for key intersections for the morning and evening peaks.

Figure 5.3: Morning Peak Modelled Traffic Volumes (7:00am – 8:00am) Goonoo Goonoo Road and Scott Road

Existing



Construction Traffic



Forecast Traffic Volumes

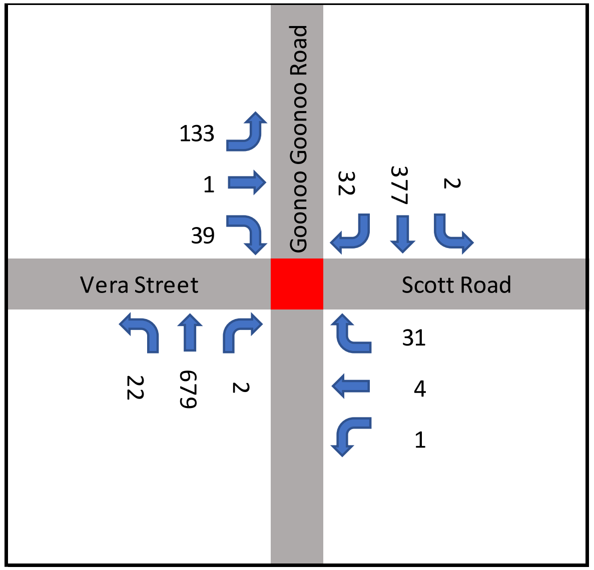


Figure 5.4: Morning Peak Modelled Traffic Volumes (7:00am – 8:00am) Marius Street and Murray Street

Existing *Construction Traffic* *Forecast Traffic Volumes*

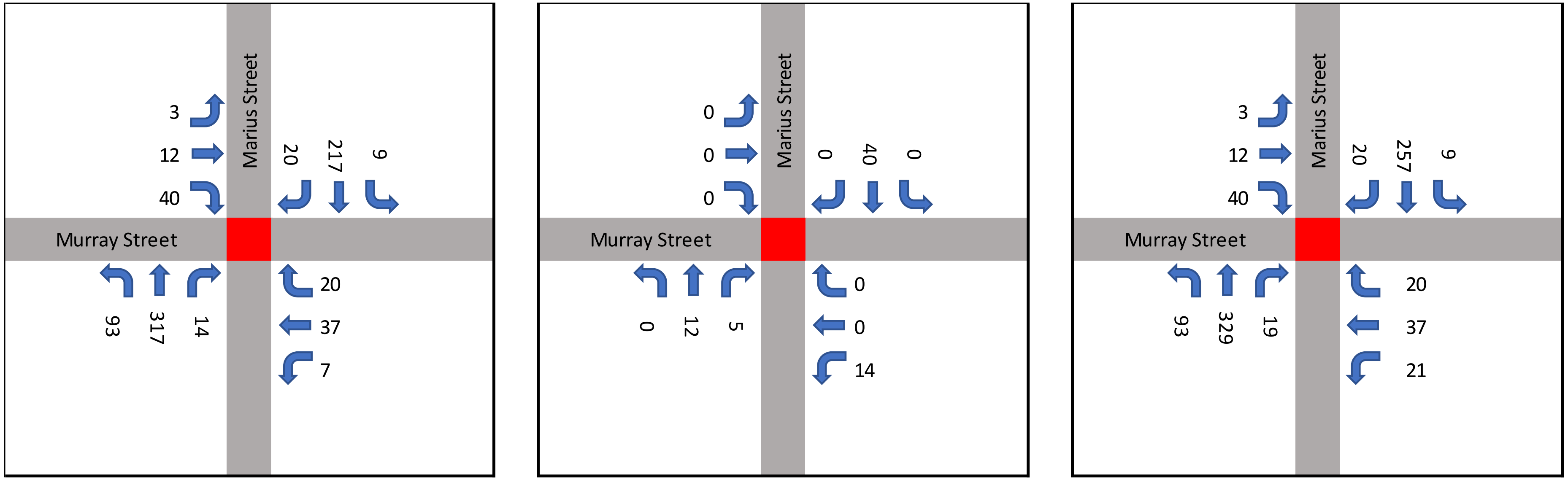


Figure 5.5: Morning Peak Modelled Traffic Volumes (7:00am – 8:00am) New England Highway and Nundle Road

Existing *Construction Traffic* *Forecast Traffic Volumes*

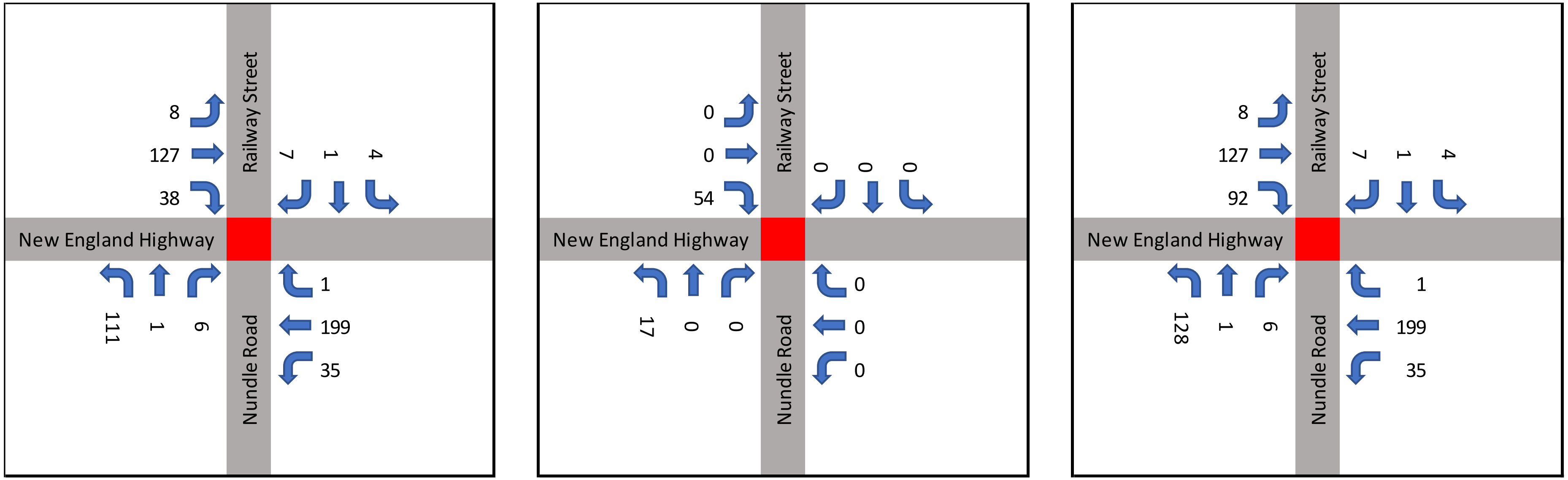
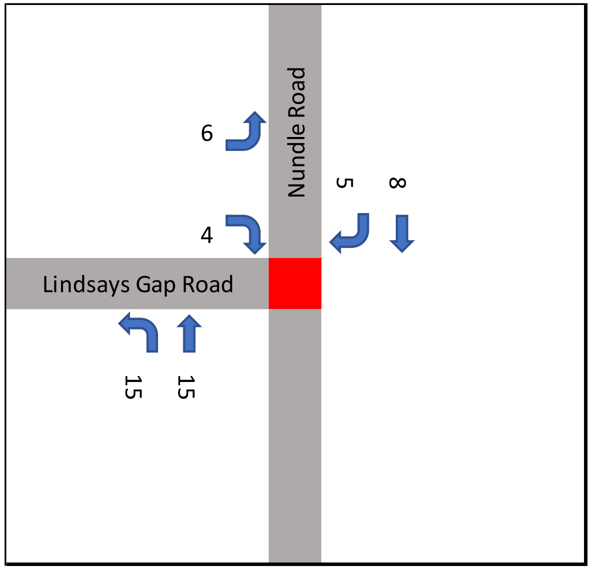
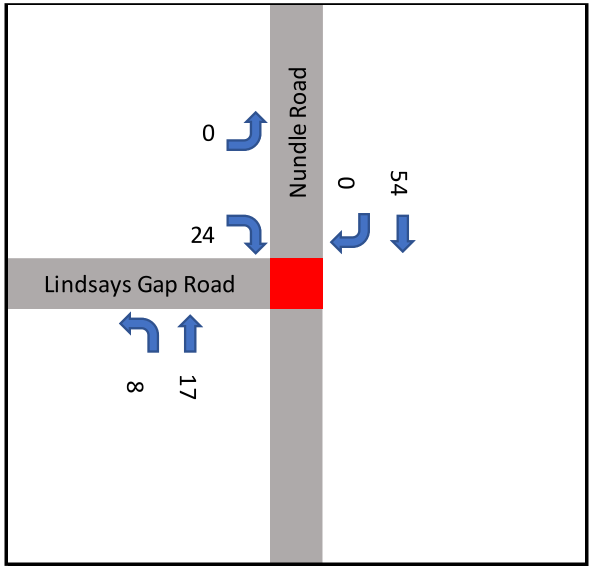


Figure 5.6: Morning Peak Modelled Traffic Volumes (7:00am – 8:00am) Lindsays Gap Road and Nundle Road

Existing



Construction Traffic



Forecast Traffic Volumes

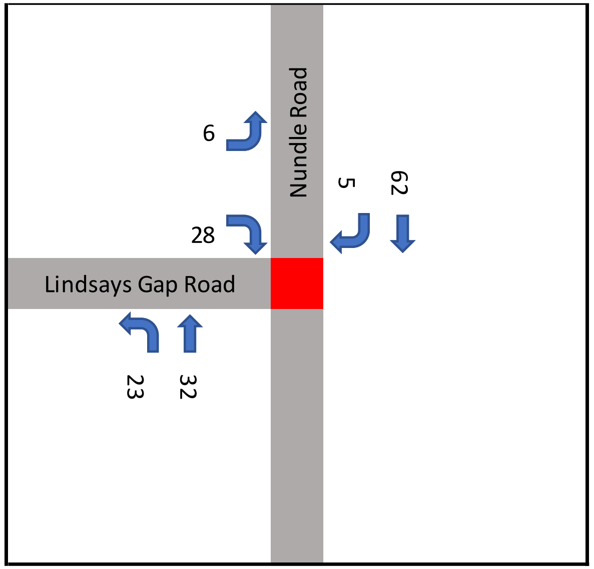


Figure 5.7: Morning Peak Modelled Traffic Volumes (7:00am – 8:00am) Oakenville Street and Jenkins Street

Existing *Construction Traffic* *Forecast Traffic Volumes*

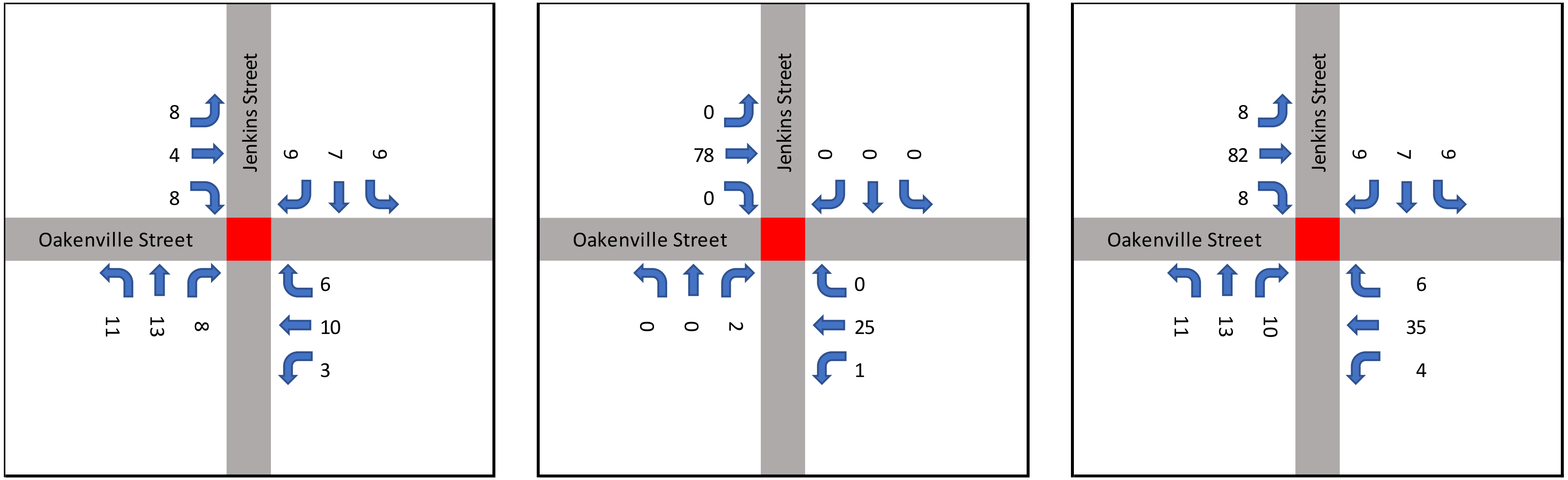


Figure 5.8: Evening Peak Modelled Traffic Volumes (5:00pm – 6:00pm) Goonoo Goonoo Road and Scott Road

Existing *Construction Traffic* *Forecast Traffic Volumes*

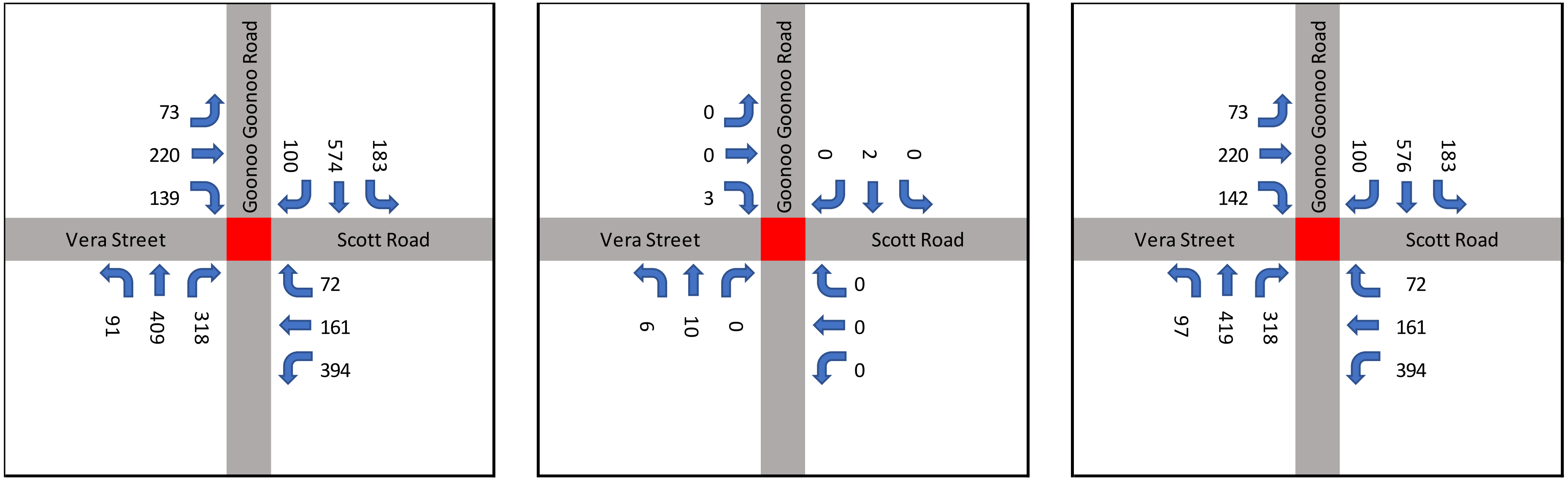


Figure 5.9: Evening Peak Modelled Traffic Volumes (5:00pm – 6:00pm) Murray Street and Marius Street

Existing *Construction Traffic* *Forecast Traffic Volumes*

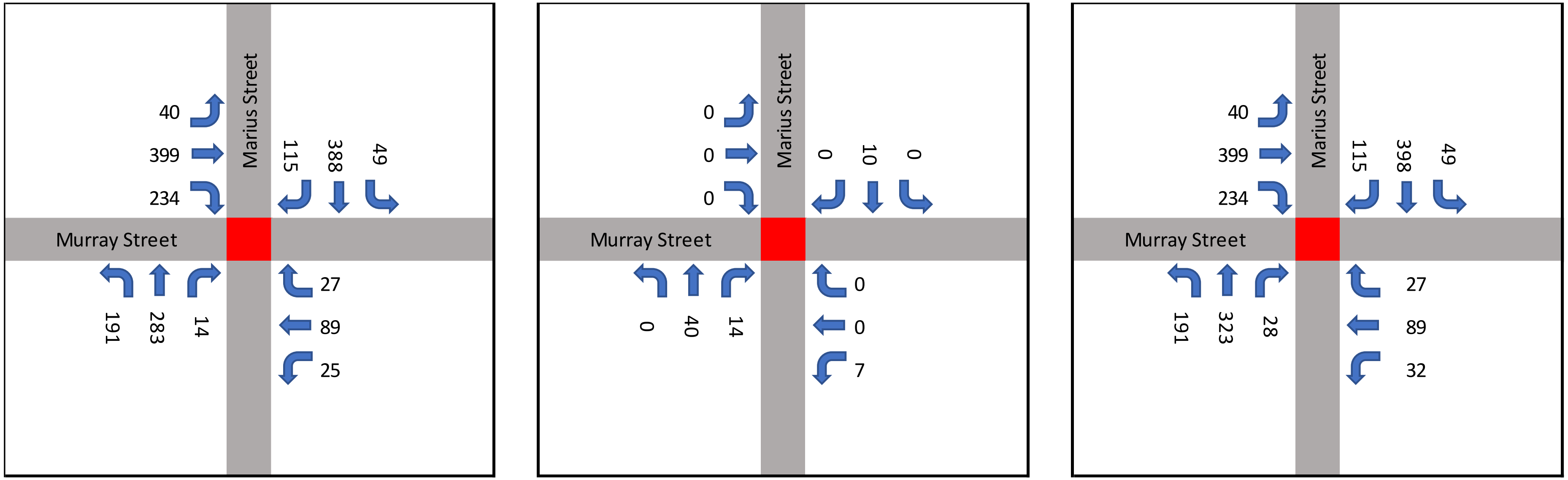
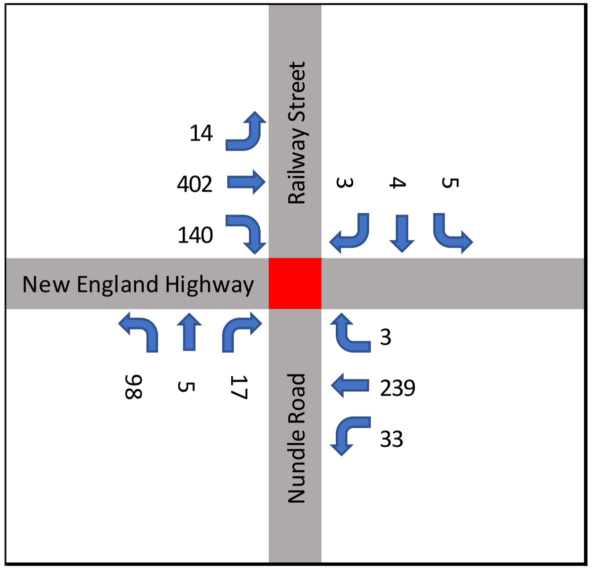
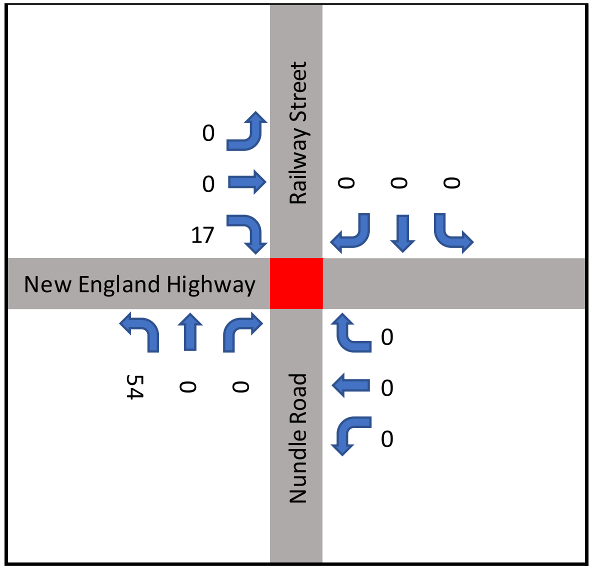


Figure 5.10: Evening Peak Modelled Traffic Volumes (5:00pm – 6:00pm) New England Highway and Nundle Road

Existing



Construction Traffic



Forecast Traffic Volumes

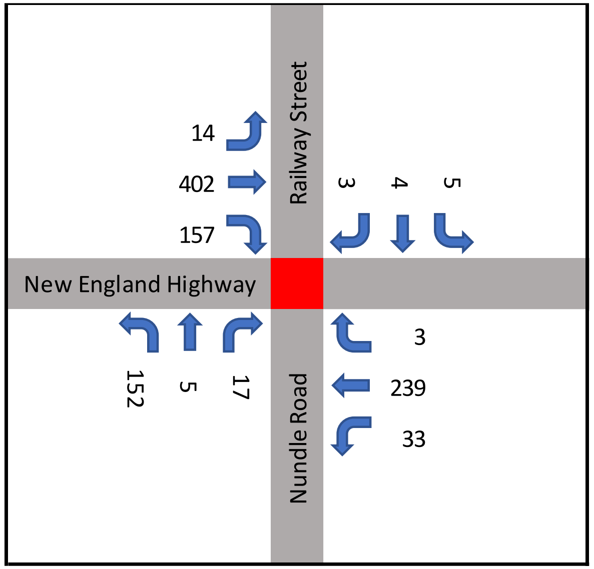
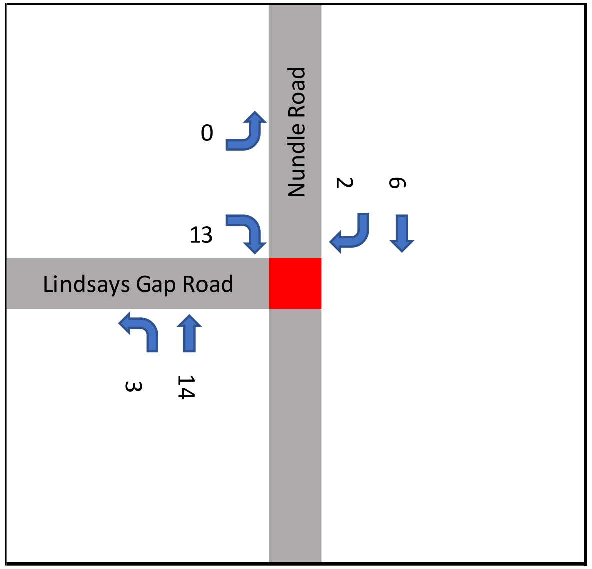
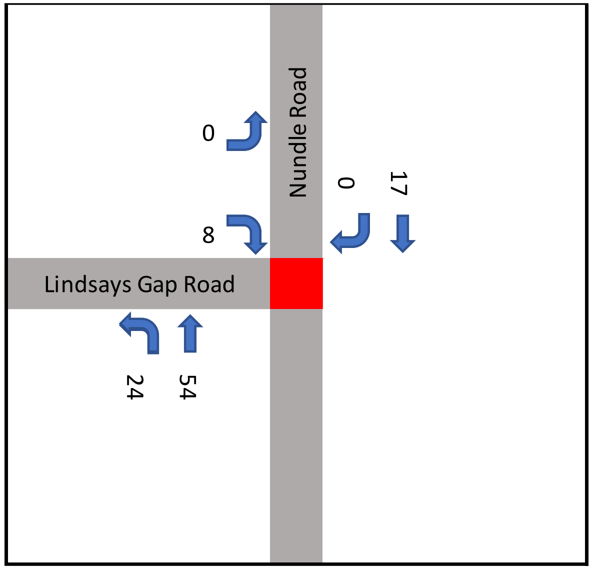


Figure 5.11: Evening Peak Modelled Traffic Volumes (5:00pm – 6:00pm) New England Highway and Nundle Road

Existing | *Construction Traffic* | *Forecast Traffic Volumes*





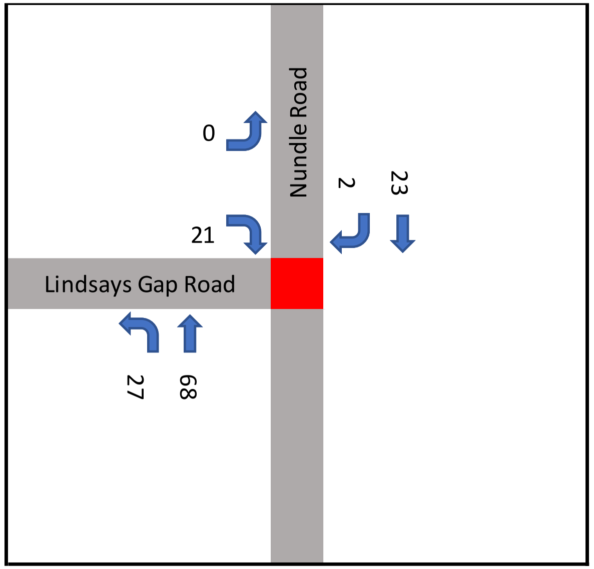
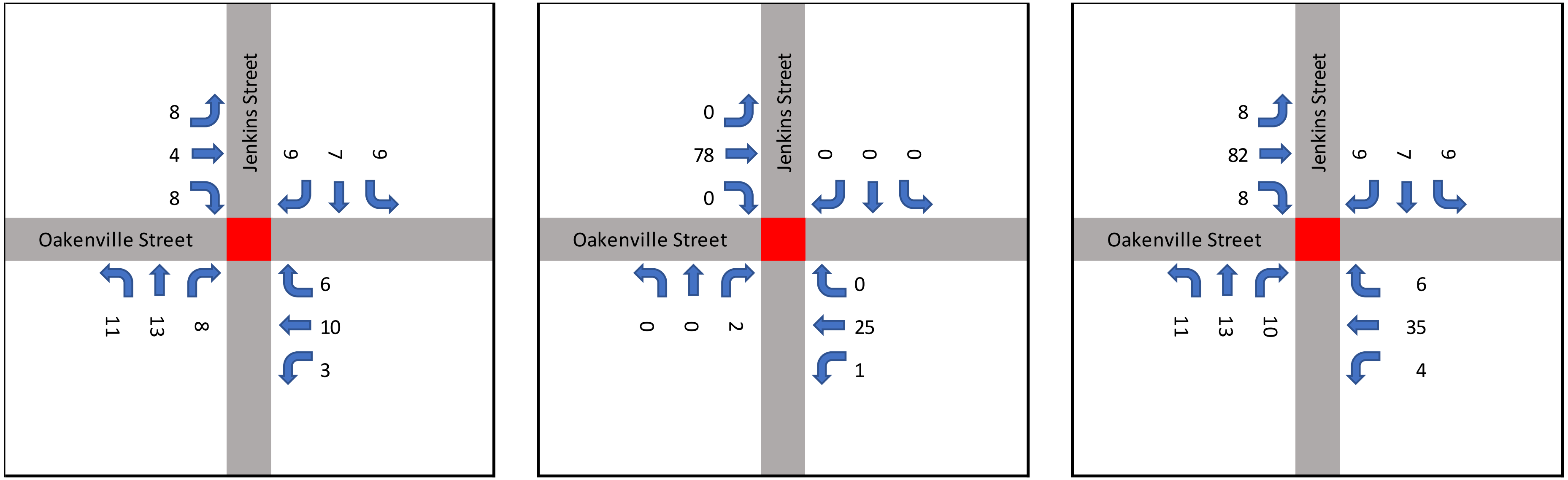


Figure 5.12: Evening Peak Modelled Traffic Volumes (5:00pm – 6:00pm) Oakenville Street and Jenkin Street

Existing *Construction Traffic* *Forecast Traffic Volumes*



5.2 Modelling Results

The modelling results are shown in Table 5.2. In each case the delay and level of service for the worst performing movement is presented as the intersection result in accordance with standard practice stipulated in the RTA Guide to Traffic Generating Developments for priority and roundabout intersections.

Table 5.2: Sidra Model Results

Intersection	Period	Existing		Existing + Construction Traffic	
		Ave. Delay (sec)	LoS	Ave. Delay (sec)	LoS
Goonoo Goonoo Road, Vera Street, Scott Street	Morning Peak	13	A	12	A
	Evening Peak	15	B	16	B
Murray Street, Marius Street	Morning Peak	10	A	10	A
	Evening Peak	11	A	12	A
New England Highway, Nundle Road	Morning Peak	15	B	18	B
	Evening Peak	38	C	44	D
Lindsays Gap Road, Nundle Road	Morning Peak	7	A	7	A
	Evening Peak	7	A	8	A
Oakenville Street, Jenkins Street	Morning Peak	6	A	7	A
	Evening Peak	6	A	7	A

The modelling shows that each of the intersections modelled would perform acceptably with and without the construction traffic from the Hills of Gold Wind Farm. The poorest performing intersection was the New England Highway and Nundle Road. At this intersection the movement with the highest average delay was from the north on Railway Street. This is a minor street with 12 vehicles an hour on approach the average delay for the through movement was 38 seconds in the existing case and 44 seconds in the case with the construction vehicles. The 95th percentile queue would be less than 1 vehicle on all approaches.

Queueing at all intersections modelled was modest with 95th percentile queues of less than 20m at all intersections. The largest queues were modelled at the intersection of Murray Street and Marius Street.

TfNSW were particularly requested the review of the impacts at the intersection of New England Highway and Nundle Road and the right turn from the New England Highway to Nundle Road in the morning peak. Modelling indicates that the 95th percentile queue for this right turn would increase from 1m to 4m (i.e. less than 1 vehicle at all times). While the queue from the worst performing approach, Railway Street, would also be less than 1 vehicle.

The modelling shows that the construction traffic would have minimal impact on the road network operation in both the morning and evening peaks.

5.3 Midblock Capacity

The assessment of traffic capacity has been based on the volume capacity ratio (V/C), rural road level of service and the Environmental Capacity for urban areas based on the RTA (2002) *Guide to Traffic Generating Development*.

The V/C ratio indicates the level of congestion by comparing the forecast traffic volumes to the theoretical lane capacity. For this assessment, the rural roads are assumed to have a capacity of 1000 vehicles / hour / lane. As V/C ratios approach 0.9 it should be expected that flow would become significantly interrupted.

To account for overtaking, the level of service can be estimated based on the RTA Guide to Traffic Generating Developments table for the rural roads this is shown in Table 5.3. This is generally applicable for two-way two lane rural roads with a 100km/h speed limit.

Table 5.3: Rural Road Level of Service

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

Source: RTA Guide to Traffic Generating Developments

The desirable Level of Service as recommended by the RTA Guide to Traffic Generating Developments is Level of Service C.

The environmental capacity is an assessment of the impact on the amenity of an environment. The environmental capacities are estimated by considering a range of differing perceptions of traffic impacts in a particular area. The assessment has used the tables provided in the RTA Guide to Traffic Generating Developments as shown in Table 5.4.

Table 5.4: Environmental Capacity

Road Class	Road Type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Source: RTA Guide to Traffic Generating Developments

The traffic impacts during construction have been analysed based on a scenario without the proposed car park and shuttle bus. The results of the analysis are shown in Table 5.5. The table presents the existing traffic volumes and corresponding Volume Capacity (V/C) ratio and the forecast traffic volumes and V/C during the construction period. The V/C ratio is the comparison of the traffic volumes to the theoretical capacity. This assumes all traffic would go to Morrisons Gap Road.

Table 5.5: Peak Construction Period Generation and V/C Ratio

Road	Period	Direction	Existing Volumes		With Construction Volumes		
			Volume (vph)	V/C	Project Generated traffic (vph)	Total Volume (vph)	V/C
Nundle Road (north of Lindsays Gap Road)	Morning Peak	Northbound	19	0.019	17	36	0.036
		Southbound	13	0.013	54	67	0.067
	Evening Peak	Northbound	6	0.006	54	60	0.060
		Southbound	9	0.009	17	26	0.026
Lindsays Gap Road	Morning Peak	Northbound	3	0.003	24	27	0.027
		Southbound	9	0.009	8	17	0.017
	Evening Peak	Northbound	13	0.013	8	21	0.021
		Southbound	5	0.005	24	29	0.029
Nundle Road (between Lindsay Gap Road and Nundle)	Morning Peak	Westbound	20	0.02	25	45	0.045
		Eastbound	30	0.03	78	108	0.108
	Evening Peak	Westbound	16	0.016	78	94	0.094
		Eastbound	17	0.017	25	42	0.042
From Nundle to Project Area (Oakenville Street, Barry Rd, Morrions Gap Road)	Morning Peak	Westbound	21	0.021	25	46	0.046
		Eastbound	19	0.019	80	99	0.099
	Evening Peak	Westbound	24	0.024	80	104	0.104
		Eastbound	27	0.027	25	52	0.052

The analysis indicates that the forecast volumes would not have a significant impact on the road network efficiency with V/C ratios less than 0.2 on all roads that were assessed.

The Level of Service based on the criteria in Table 5.3 is shown in Table 5.6. This is based on assuming 15% heavy vehicles, rolling terrain or mountainous for Oakenville Street (Barry Road).

Table 5.6: Peak Construction Period Rural Road Level of Service

Road	Period	Existing Volumes		With Construction Volumes	
		Volume (vph)	Level of Service	Total Volume (vph)	Level of Service
Nundle Road North of Lindsays Gap Road	Morning	32	A	103	A
	Evening	15	A	86	A
Lindsays Gap Road	Morning	32	A	44	A
	Evening	15	A	50	A
Nundle Road	Morning	50	A	153	A
	Evening	33	A	136	A
Oakenville Street (Barry Road)	Morning	40	A	145	A
	Evening	51	A	156	B

The assessment shows that almost all the roads would operate at Level of Service A during the peak of construction. If we consider Oakenville Street as mountainous and includes Barry Road, then this would be revised to Level of Service B. In all cases the level of service is equal or better than the Level of Service B which is better than the recommended desirable Level of Service C.

In terms of environmental capacity, the forecast volumes would be less than the maximum 300 vehicles for collector roads and less than 200 vehicles per hour for local roads. Thus, the Project related traffic would operate within environmental capacity guidelines.

As raised in the submission by HOGPI and understood through consultation since the Nundle and Hanging Rock communities have sought to understand how the Project can commit to reduced traffic impact and increased safety. Further details are addressed in Section 6.

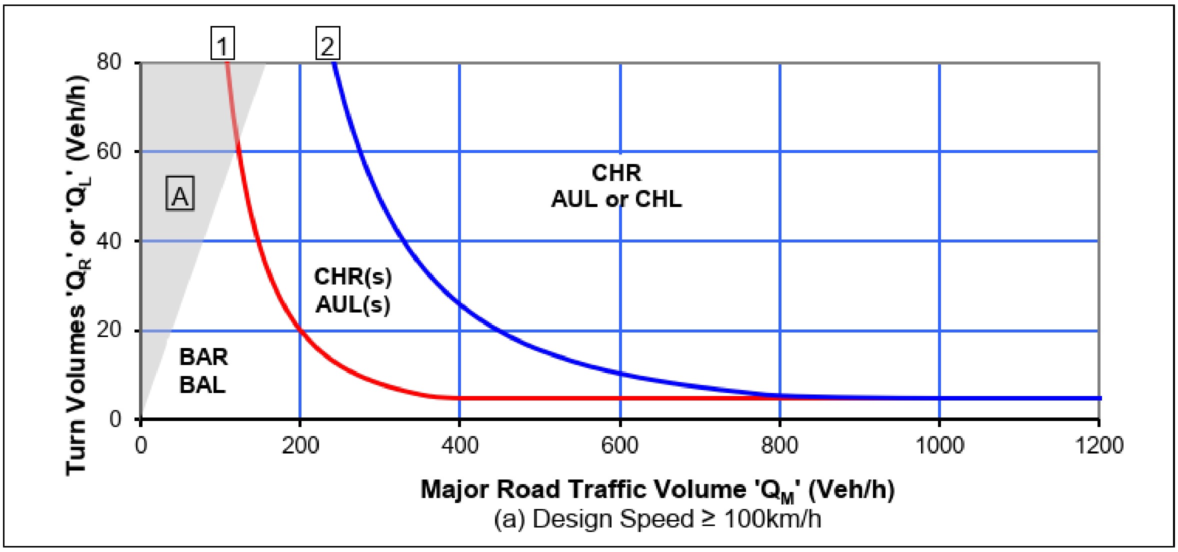
5.4 Turn Treatment Analysis

The intersection of Barry Road and Morisons Gap Road has been checked against the turn treatment warrants provided in Austroads. Other intersections along the route are already used by heavy vehicles including the forestry trucks and assumed to be sufficiently safe. The existing intersection is shown in Figure 5.13.

Figure 5.13: Morrisons Gap Road and Barry Road

The warrants for turn treatments are based on the volume of traffic turning and the conflicting movements. In the case of right turn on an undivided road the flow Qm is the sum of the through movements on the major road and the left turn from the major road to the minor road. The Austroads turn warrants are shown in Figure 5.14.

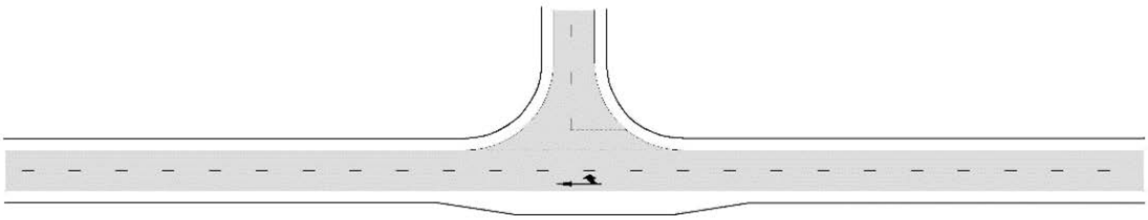
Figure 5.14: Austroads Turn Treatment Warrant



In accordance with the Austroads a right turn bay would not be required as the right turn volumes are estimated to be some 80 vehicles per hour and the major road traffic volumes (Qm) are 5 vehicles an hour. However, any intersection requires a (BAR) basic right turn treatment.

A BAR is simply providing additional sealed shoulder at the intersection. Where the major road is sealed it is preferable that the shoulder is sealed also. As additional hard stand would be required at this intersection for the transport of the turbine blades, additional hard stand could be provided in the shoulder to facilitate a BAR treatment. The arrangement for a typical BAR treatment is shown in Figure 5.15.

Figure 5.15: Basic Right Turn



Basic Right Turn (BAR)
on the Major Road (Two-Lane, Two-Way Road)

6 Mitigation Measures

6.1 Updated Routes

As discussed in this paper routes have been removed for the option to transport OSOM deliveries via Tamworth and Nundle Road and removal of options to transport OSOM equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins Street, Gill Street and Innes Street.

6.2 Car Pooling

The Project commits to providing that the future contractors will instigate a car pooling system for the construction workforce travelling to the Project Area. Provision of an electronic system such as a mobile phone application to match drivers with passengers would encourage this behaviour. This could be similar to a ride share applications. The benefits of a car pooling scheme would be that it reduces traffic while also benefiting works economically.

Car pooling is estimated to be an effective way of reducing traffic for this Project given that most workers are forecast to be travelling from Tamworth to the Project Area where there are common origins and destinations and the distances make if financially beneficial.

6.3 Dedicated Construction Carpark

The Project has committed to creating a dedicated construction staff carpark prior to entering Nundle town centre. This will enable the introduction of the proposed temporary parking restrictions, detailed in Section 6.6, without reducing the benefits of accessing local content for the Project. This carpark could also assist the introduction of a shuttle service for peak hour "last mile" site access to reduce traffic through Nundle, on Barry Road and Morrison's Gap Road, if practicable. The location of this carpark is proposed to be within walking distance to the village of Nundle to ensure the township benefits from increased demand for local content services.

6.4 School Hours

The Traffic Management Plan for the Project will include special consideration to travelling outside school peaks. This will be for the route through Nundle and the Muswellbrook route that travels adjacent to Muswellbrook High School as well as identified school bus routes to be confirmed in the Traffic Management Plan. Nominally the hours to be avoided for heavy vehicles are 8:00am – 9:30am and 2:30pm – 4:00pm around schools and at the times of school buses use routes for school pickup and drop-off.

6.5 Additional Laybys

Additional laybys, one along Lindsay Gap Road and another on Morrisons Gap Road, have been proposed to allow for passing of slower OSOM movements. Consultation with Nundle Business and Tourism Marketing Group raised concerns impacting tourist traffic entering Nundle. These measures should support reduced impact.

6.6 Voluntary Temporary Parking Restrictions

In the Traffic Management Plan a Code of Conduct will include temporary parking restrictions for construction workers on streets within Nundle providing key services to tourists and local residents in order to preserve the current amenity. The location of these restrictions will be determined in consultation with the Nundle Business and Tourism Marketing Group and Tamworth Regional Council, but should consider the services accessed by tourists and local community on Jenkins Street. The nominal times for parking restrictions in these locations will be 8:00am to 5:00pm Monday to Friday, subject to further consultation. An image of key services is shown in Figure 6.1.

Figure 6.1: Nundle Key Services

Temporary signage will be considered subject to further consultation with Tamworth Regional Council and local business owners indicating no "Wind Farm Construction Parking, customers only".

6.7 Pedestrian Crossing in Nundle

Within Nundle, the Project commits to providing a pedestrian crossing on the corner of Oakenville Street and Jenkins Street, subject to further consultation with and approval from

Tamworth Regional Council. It is noted that there are existing pedestrian refuges at this location and a pedestrian crossing at this location will not meet the normal TfNSW warrants required for pedestrian crossings.

6.8 Mitigation of Risks for OSOM and Heavy Vehicles

It is acknowledged that this Project will use the largest turbine blades to date in this area and previous blades to use this route were 62m. However, the state governments policy is for the New England area of NSW to become a Renewable Energy Zone (REZ). This means that the Hills of Gold Wind Farm is one of many Projects in this area that will contemplate using similar sized blades, or larger.

As the routes has not been used for this sized blades it is proposed that before the transportation of 'live' loads that test runs of each of the routes are completed using simulated loads that have the same height width and length. Once the route is demonstrated to be safe for transportation, then the transport of the loads could commence.

6.9 Public Road Modifications and Dilapidation

The following table summarises the public road modifications proposed in the RJA Transport Route Assessment. The key proposed road modifications are listed in Table 6.1.

Table 6.1: Summary of Proposed Road Modifications

ID	Type*	Location	Work
Port to Lindsays Gap Road			
1 – 2, 14 - 15	RU	Mayfield # 4 Port Storage Area; Mayfield # 4 Berth; Mayfield # 4 onto Selwyn Street	Additional hardstand required and fence relocated.
27	RU	Selwyn Street onto Industrial Drive (via George Street)	Signs need to be made removable, traffic signals relocated and additional hardstand.
37	RU	Industrial Drive onto Maitland Road	Minor alteration to concrete median strip.
38	RU	John Renshaw Drive onto the Hunter Expressway	May require additional hardstand on the Hunter Expressway.
39	RU	New England Highway onto Golden Highway at Whittingham	Modifications to the centre island and removable signs.
40 - 41	RU	Golden Highway through Jerrys Plains village	Signs need to be made removable and additional hardstand required.
42	RU	Golden Highway to Denman Road	Additional hardstand required and signs made removable.
43 - 44	RU	Denman Road onto Bengalla Road	Additional hardstand required and signs made removable.

ID	Type*	Location	Work
16	RU	Wybong Road onto Kayuga Road	Signs to be made removable, additional hardstand and adjustment of fences on private land. See Turnbull Engineering Report in Appendix P of the Amendment Report.
17 - 18	RU	Invernmein Street onto Dartbrook Mine Access Road	Signs made removable and additional hardstand including culvert extension required.
19	RU	Dartbrook Road	Additional hardstand required, and signs made removable.
20	RU	Dartbrook Road to New England Highway	Signs to be made removable and some hardstand added.
New England Highway to Nundle via Lindsays Gap Road			
21	RU	New England Highway and Lindsays Gap Road	Widening of hardstand area and make signs removable to allow vehicles to turn from the New England Highway.
3	BU	Goonoo Goonoo Creek Bridge	Bridge needs widening and upgrading for loads with axles exceeding 3.5 m.
4	BU	Middlebrook Creek Bridge	4.5 m clearance, bridge may need upgrading.
22	RU	Lindsays Gap Road to Nundle Road	Requires some intersection widening and additional hardstand, signs made removable and a power pole relocation.
Nundle to the Project Area via Morisons Gap Road (preferred access, 'Northern Route')			
23	RU	Oakenville Street and Old Hanging Rock Road	Requires fence relocation, additional hardstand removable signage and guardrail relocation. Barry Road Layover – It has been identified that an area at the base of the hill where additional road shoulder may need to be constructed to provide a staging area for trucks about to negotiate the gradient up to Hanging Rock. This would be used if multiple prime movers are required.
24 / 25	RU	Nundle to Hanging Rock via Barrys Road	Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow has been assessed and amended alignment proposed for all loads. The proposed concept alignment for Devil's Elbow is detailed in Appendix P of the Amendment Report. To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would installation of laybys. Barry Road Layover – It has been identified that an area at the base of the hill where additional road shoulder may need to be constructed to provide a staging area for trucks about to negotiate the gradient up to Hanging Rock. This would be used if multiple prime movers are required.
26	RU	Barrys Road onto Morrisons Gap Road	Requires additional widening and hardstand, fence relocation and removal of trees. See Turnbull Engineering Report in Appendix P of the Amendment Report.
28	RU	Morrisons Gap Road	Requires upgrade with widening 5.5m width and widening on bends and clearing vegetation on bends. The Proponent is also proposing to seal Morrisons Gap Road to

ID	Type*	Location	Work
			improve road safety and the amenity of local residents. See Turnbull Engineering Report in Appendix P of the Amendment Report.

** Type Abbreviations: GU: General Upgrade; RU: Road Upgrade; BU: Bridge Upgrade; TTPP: TTPP Swept Path Design; CC: Creek Crossing*

The locations of the upgrades are shown in Figure 6.2 and Figure 6.3.

Figure 6.2: Road Upgrades Newcastle Port to Lindsays Gap Road

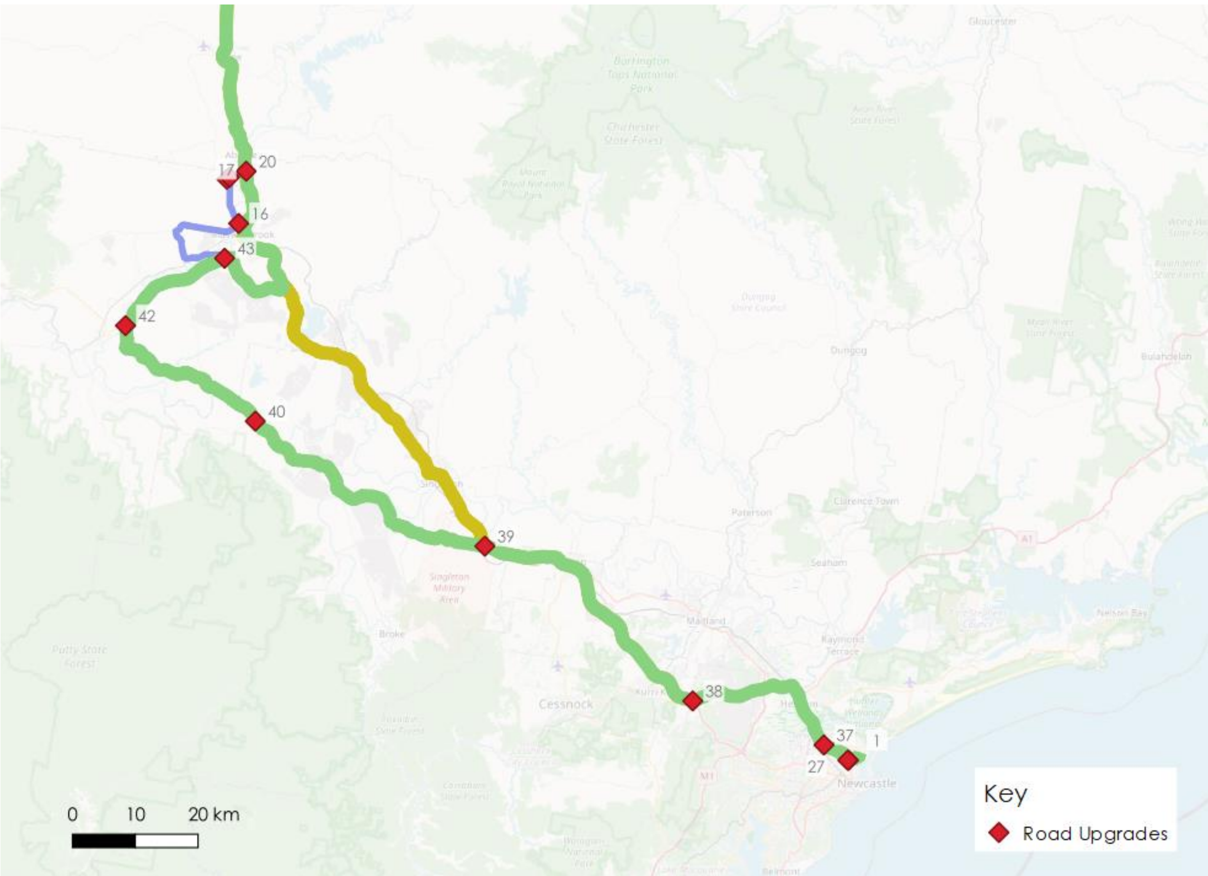
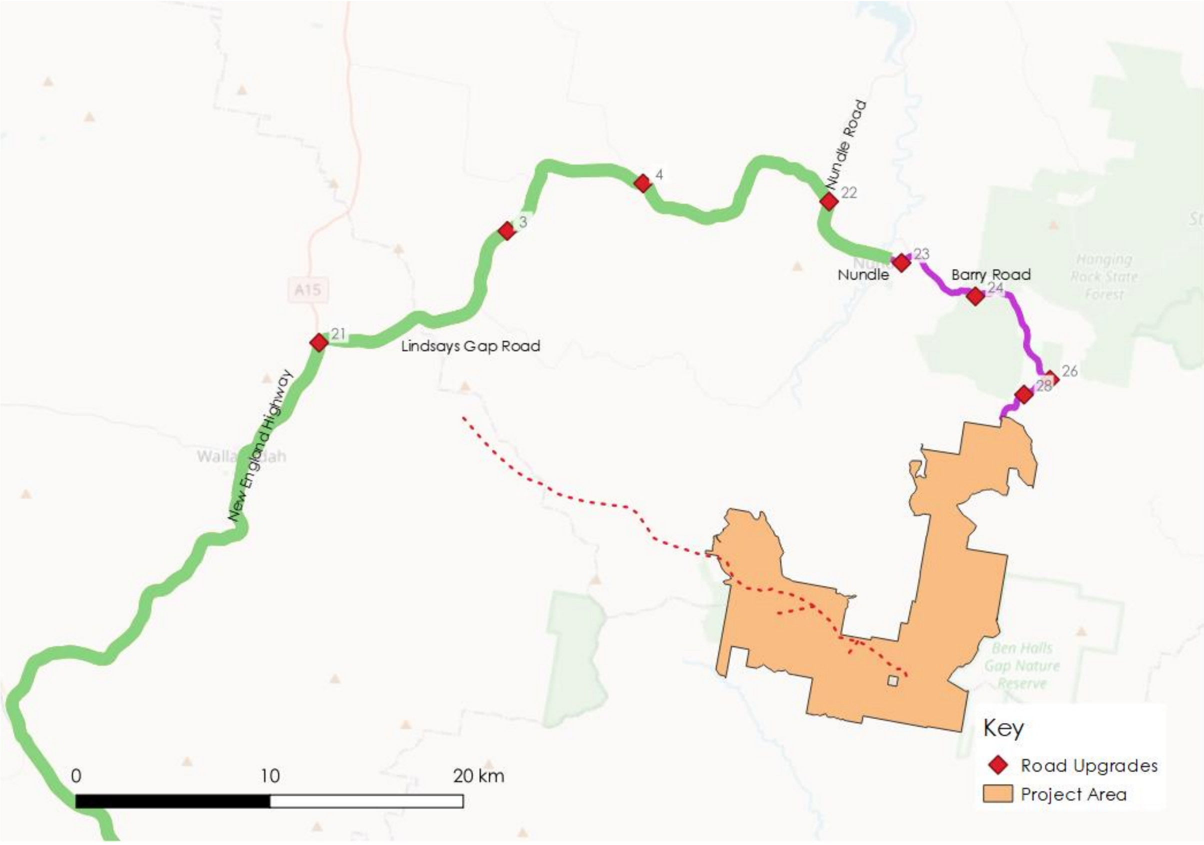


Figure 6.3: Road Upgrade Locations Lindsays Gap Road to Project Area



In addition, the Project has committed to further assessment of Muswellbrook Shire Council listed assets as per Appendix E based on final equipment dimensions and transport contractor selection. Structural assessments will be undertaken by the Project as required, through consultation with Muswellbrook Shire Council, and where required for safe transport. Any assets that the Project determines the need to upgrade, will be upgraded in accordance with the Austroads design requirements.

The Project committed to dilapidation surveys, road usage fees, and/or performance bonds for remedial works through Offer Letters sent to Tamworth Regional Council and Muswellbrook Shire Council. These commitments are included in the RTS Report.

Any removal of signage, repositioning of light poles and temporary changes along the OSOM route and damage caused as a direct result of the OSOM movements will be made good as agreed with the local authority. A dilapidation survey will be undertaken along the route prior to and at completion of OSOM movements.

6.10 Traffic Management

The Project has increased its commitment to safety for ingress and egress to residents along Morrisons Gap Road. The Project will include a commitment in the Traffic Management Plan

(TMP) to provide escorts for the majority of OSOM loads along Morrisons Gap Road, including police escorts for the higher risk OSOM loads, to ensure residents along Shearers Road and Morrisons Gap Road have safe passage. A further layby has been introduced on Morrisons Gap Road to manage these traffic impacts. The TMP Driver's Code of Conduct will also include a commitment that all vehicles regularly accessing the Project Area during construction are required to have In-Vehicle Monitoring Systems installed.

In addition, the Project will provide UHF radios (given mobile phone reception can be intermittent) to residents along Morrisons Gap Road and Shearers Road to communicate any emergency or travel plans to site staff along with a protocol for reaching the site manager.

Prior to OSOM component deliveries commencing on the Project, community information sessions will be held to provide information about the types of components that will be delivered to the Project Area. These will create opportunities to explain the Project and update the community on Project delivery schedules.

Communication of the latest delivery schedules including expected component types, days and times and duration of deliveries will be provided to the local community. This will occur through:

- Website updates including fact sheets.
- Community information boards within Nundle and Hanging Rock.
- A text message service for those registered.
- A permanent community hub will be established in Nundle during construction and a local person (from within the LGA where possible) will be employed to assist in providing information about the Project including transport delivery times to the community.
- Provision of major activity notices to residents along Shearers Road and Morrisons Gap Road, one week in advance.

Consultation was undertaken with businesses within Muswellbrook Shire Council based on the OSOM route proposed and input from Muswellbrook Shire Council. The Project commits to include these businesses in communication protocols as shown in Table 6.1.

Table 6.2: Muswellbrook Stakeholders Consultation

Landowner	Status
Maxwell Underground Mine	Consulted
Mt Arthur Mine	Consulted
Bengalla Mine	Consulted
Jerrys Plains Resident	Consulted
Mt Pleasant Mine	Consulted
Mangoola Mine	Consulted
Dartbrook Underground Mine	Consulted
Coolmore Stud	Consulted
Darley Woodlands Stud	Consulted
Jerrys plains resident	Consulted
Jerrys plains resident	Consulted
Jerrys plains resident	Consulted
Edenglassie Stud	Consulted
Balmoral	Consulted
Tilt Renewables	Consulted

7 Tamworth Regional Council

7.1 Access During Operational Period

After completion of construction, there may be a requirement to transport additional blades or infrastructure to the Project Area for maintenance activities. To facilitate this, it is intended that the infrastructure that was created or modified to transport components to the Project Area during construction would be left available so that it can easily be reinstated if needed. This would be particularly important for the Devil's Elbow bypass which is intended to be maintained by the Project as a private road during the operation of the Project.

Maintenance of the Devils Elbow bypass would be undertaken by the Project to ensure that the infrastructure would be available if needed consistent with private landowner agreements for use of land on the transport route.

The need for additional transportation during the operational phase is assumed to be less than once a year and more likely in the first few years of operation. Additional strategic stockpiling of components within the Project Area would allow further flexibility in the timing of transporting components.

7.2 Decommissioning

At this stage, at the end of the Project's design life, there is the possibility for the Project to have either a life extension, undergo reconditioning, or be removed as part of a decommissioning program. In the event of decommissioning, the Proponent will prepare a decommissioning management plan in consultation with DPIE. The decommissioning plan will take into consideration the status of roads and method for dismantling the turbines, noting that blades are likely to be broken into parts on site for ease of removal with standard vehicles. The Project land agreements include the provision of bank guarantees in order to secure the cost of removal of wind turbines and associated infrastructure at the end of the land tenure.

7.3 Impacts on Amenity

Additional Project commitments, including reducing the number of transport options for OSOM vehicles to avoid residential streets in Nundle and Head of the Peel Road, have reduced traffic through Nundle from the earlier assessment in the EIS. See below table for details.

Estimated reduction in Peak Construction Morning and Evening Traffic and Daily traffic, through Nundle and Hanging Rock are shown in Table 7.1.

Table 7.1: Updated Traffic Generation Estimates

	Units	EIS Assessed Peak Morning and Evening to Site (trips)	Updated Peak Morning and Evening to Site (trips)	Reduction	EIS Assessed Daily to Site (trips)	Updated Daily to Site (trips)	Reduction
Light vehicles	174 workers	87	70	-20%	210	155	-26%
Buses		4	0	-100%	12	0	-100%
Water trucks	15 per day	3	3	0%	40	30	-25%
Trucks	63 per day	14	7	-50%	240	126	-48%
Total	-	108	80	-26%	502	311	-38%

In addition, proposal for a dedicated construction carpark and temporary construction parking restrictions in Nundle would significantly reduce the impacts to local residents and tourists on access to key services and tourist attractions. These measures are proposed in direct response to issues raised during Council and community consultation to preserve amenity in Nundle.

The traffic analysis in Section 5 shows that the additional traffic generated by the Project would have minimal impact on the road network efficiency. In addition, the volumes forecast for the local streets would be less than the environmental capacities presented within the RTA Guide to Traffic Generating developments.

Notwithstanding the construction period will increase traffic volumes in Nundle for the period of the construction. The analysis provided is for the peak of construction and not for the full construction period. Based on the program shown in Figure 7.1 the estimated peak construction activity is shown in Figure 7.2. It shows that the peak construction activity is likely to last for approximately 6 months with periods before and after this having much lower traffic generation.

Figure 7.1: Project Program

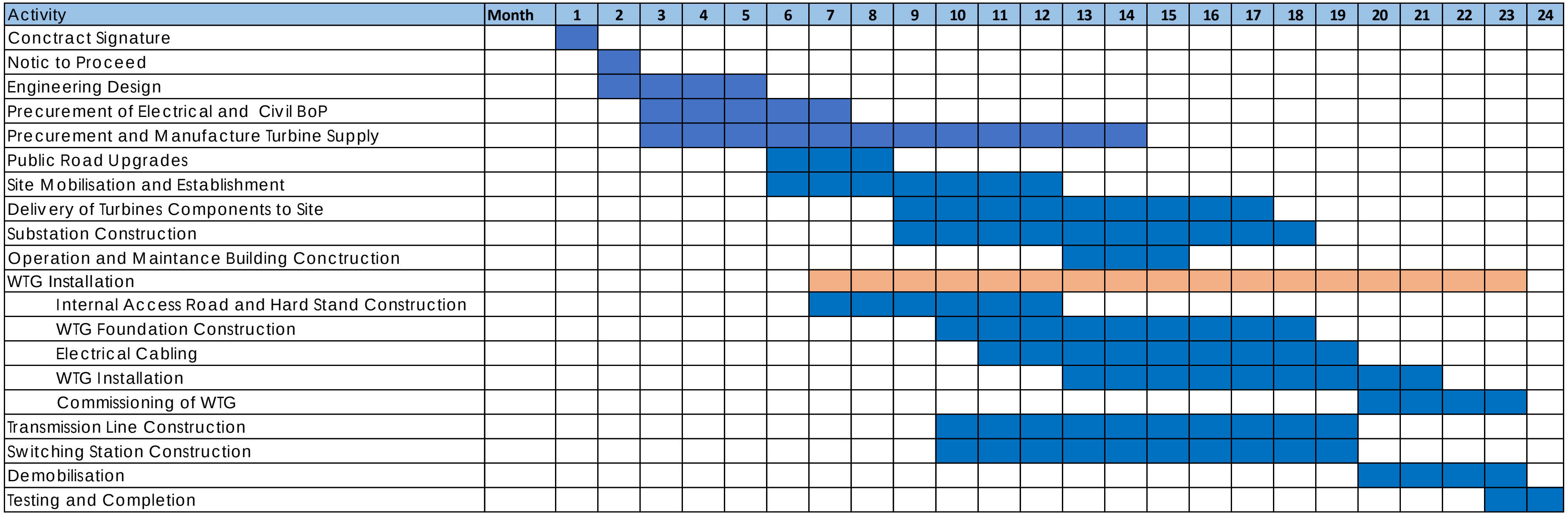
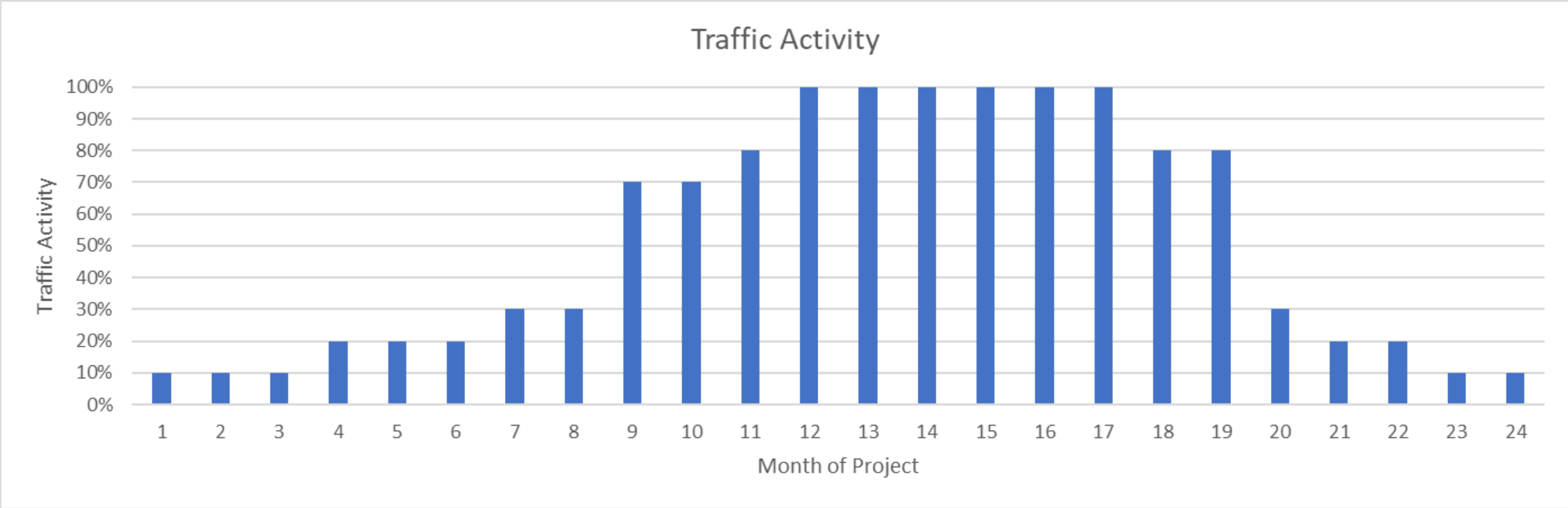


Figure 7.2: Project Activity



7.4 Project Design

Engineering design of the Project Area and the Devils Elbow upgrade was completed prior to the assessment of biodiversity and heritage and lodgement of the EIS. The assessment was completed by Turnbull Engineering and undertaken in 12D (a 3D civil engineering software) to show the expected worst case development impact of earthworks and associated drainage. It is uncommon for a Project to undertake this level of assessment at this stage of the Project but given assessed complexities at Devils Elbow and on parts of the Project Area, concept design was completed in order to present greater detail to likely impacts and address feasibility.

Devils Elbow bypass upgrades have since been modified slightly following site visits by short listed construction contractors and feedback from logistics providers. It has been confirmed suitable for the types of loads being proposed.

As part of consultation with Tamworth Regional Council the original engineering files were provided for assessment. An updated set of designs are including Devils Elbow, Morrisons Gap Road and the intersection of Morrisons Gap Road and Barry Road.

The updated RJA Transport assessment has optimised swept path to reduce the number of affected private landowners along the route. This has resulted in a reduction of properties affected. All works along Morrisons Gap Road stay within the existing road reserve with the exception of the Barry Road intersection upgrade.

The Project has consulted all landowners along the transport route and upon final equipment selection and design will seek licenses or easements as required for either hardstand works or temporary blade overhang.

8 Muswellbrook Shire Council

8.1 Overview

Muswellbrook Shire Council have objected to the Project on the grounds that the Project is to use local roads within the Muswellbrook LGA to transport the wind turbine components.

The key concerns were:

- Road Safety
- Impacts on road infrastructure
- Impact to local businesses along the proposed route.

8.2 Road Safety

Local roads in the Muswellbrook LGA will be used only for transporting OSOM loads to the Project Area and will not include typical construction traffic including water trucks, aggregate trucks, and construction workers in light vehicles.

A review of the 5 year crash history (2015 – 2020) from the Centre for Road Safety identified that there have been two fatal crashes along the route to be used for the blades and vehicles over 5.2m. These occurred at the intersection of Bengalla Road and Wybong Road and on Denman Road.

The location of crashes is shown in Figure 8.1, Figure 8.2 and Figure 8.3.

Figure 8.1: Crashes Wybong Road and Bengalla Road (2015 – 2020)

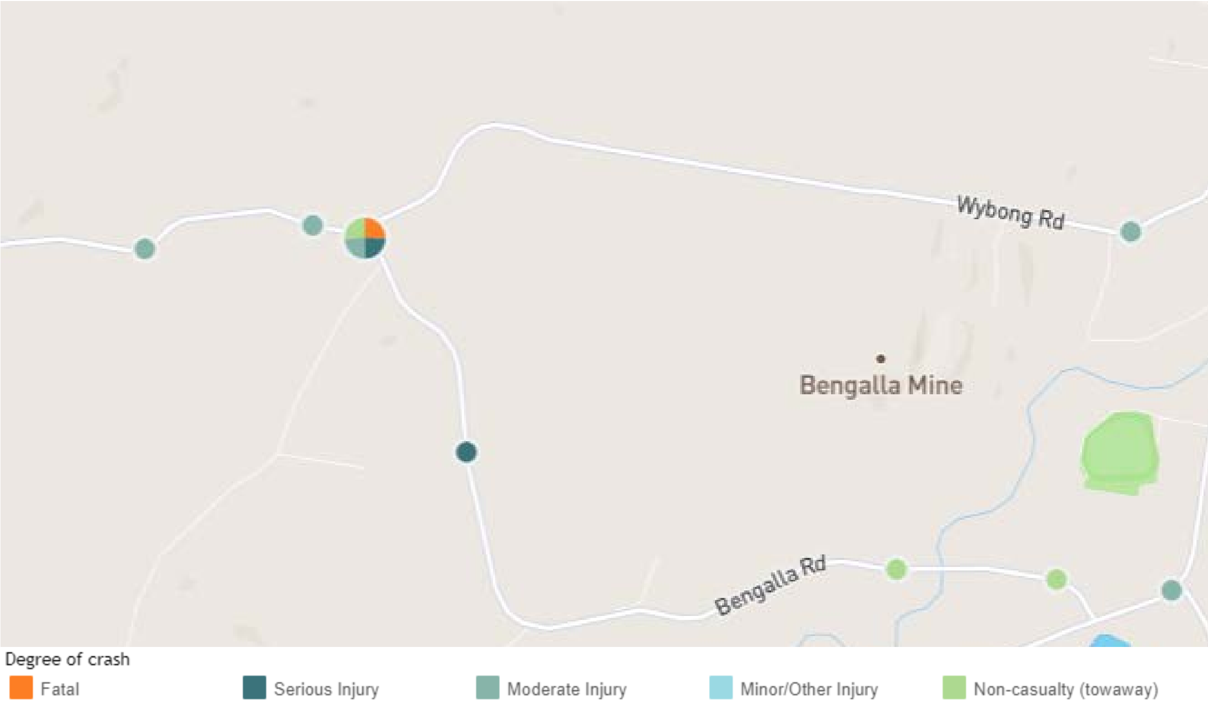
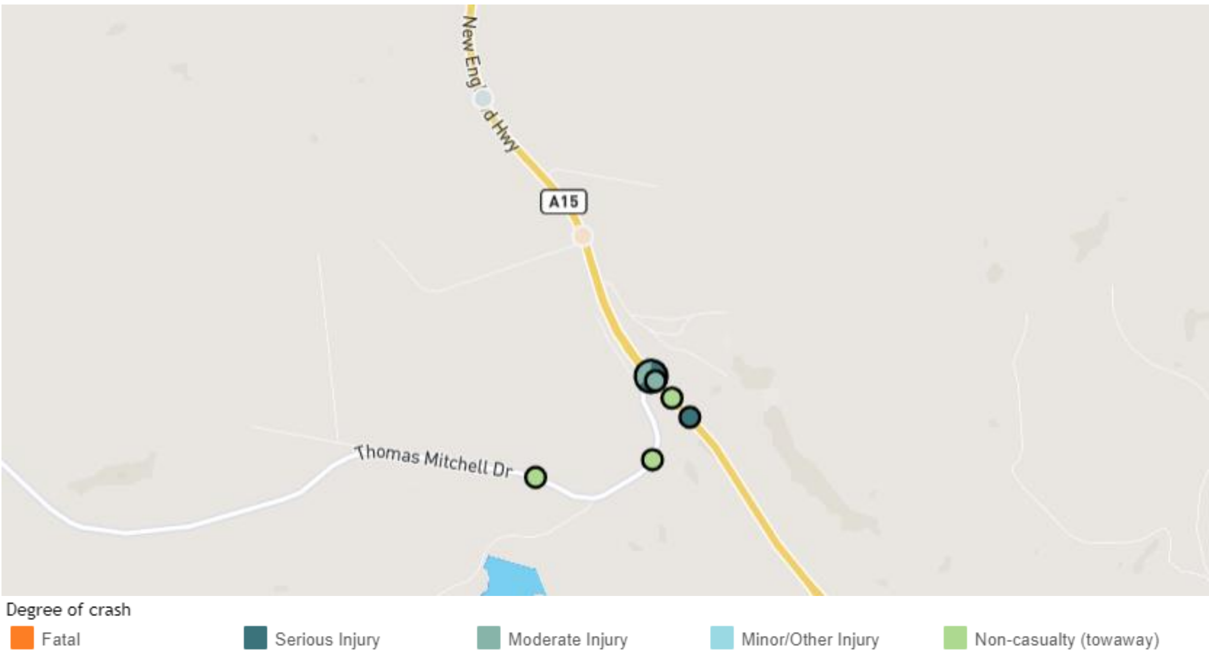


Figure 8.2: Crashes Denman Road (2015 – 2020)

There have also been eight crashes associated with the intersection of Thomas Mitchell Drive and the New England Highway of which three were serious and two moderate injury crashes.

Figure 8.3: Crashes Thomas Mitchell Drive (2015 – 2020)



To minimise risk to road safety, all OSOM loads to be transported through Muswellbrook LGA are to be transported under traffic controllers and police escort, or as required by the relevant NHVR transport permit. Typically, these vehicles will be travelling at low speed and with advance warning given to drivers on approach. The volume of traffic generated is expected to be low on a daily basis so that risk of crashes is minimised.

It is also proposed that the Traffic Management Plan for the transportation of OSOM will be developed to restrict the use of local roads within Muswellbrook LGA to hours outside the typical school times and restricted to outside the hours of 10pm to 5am along Bell Street, Market and Victoria Street.

8.3 Updated Route Development

The following provides a description of the type of loads and routes to be used through Muswellbrook LGA. As the details of type of blades and nacelles to be used for the Project have not been finalised, his assessment has considered different combinations of infrastructure that would need to be transported.

8.3.1 Loads Description

For this description of loads the following terminology has been adopted.

Blades – The blades being considered include single section blades and potential split blades. Split blades can be split so that the root section is transported by one truck each while three tips can be transported on one truck.

Nacelles – Nacelles are the housing that sits on top of the towers and contains the power generating equipment and brakes. There are two options for nacelles to be transported. The first would be to transport the nacelle attached to the drivetrain which would reduce the number of trips but these loads are greater than 4.9m high which will affect the available routes. Alternatively, they can be transported separately reducing the height and weight but doubling the number of vehicles.

Due to the restrictions in travelling through Muswellbrook the OSOM loads have been separated in three categories:

- Route 1 - Turbine Blades and heavy loads over 5.2m
- Route 2 Heavy Loads under 5.2m in height (excluding blades)
- Route 3 Heavy Loads over 5.2m in height (excluding blades)
- Standard loads up to 3.5m wide and 5.2m in height.

The estimated number of trips is described in Section 3.1.3. A further breakdown of the type of loads by categories are shown in Table 8.1.

Table 8.1: Traffic by Type of Load

	Turbine Blades	Heavy Loads over 5.2m in height	Heavy Loads under 5.2m in height	Standard loads up to 3.5m wide and 5.2m in height
OSOM Components	Blades (root section) Blades (tip section)	Hubs Tower Sections Transformers Nacelles with Drivetrain in	Nacelle with Drivetrain Out Drivetrain	Other (2 x 40ft Shipping Container per WTG) Sub station Switching Station Overhead cabling Underground cabling Battery System Mobile concrete Batch Plant
Total Trips	280 (210[1])	650 (580[2])	140[3]	320
Weekly Trips	8 (6)	18 (16)	4	9

Notes:
1. Reduced numbers if blades are transported as a single unit.
2. Reduced number if nacelles and drivetrains are transported separately trips are moved to the under 5.2m category.
3. Only if nacelles and drivetrains are transported separately.

It should be noted that if the nacelles are transported as single units that this would increase their height and require the use of the over 5.2m route. Otherwise, they can use the under 5.2m vehicle heights.

8.3.2 Proposed Routes Muswellbrook

The proposed routes through Muswellbrook are shown in Figure 8.4.

Route 1 – Via Golden Highway, Denman Road, Bengalla Road, Wybong Road, Kyuga Road, Invermein Street, Stair Street, Dartbrook Road to New England Highway

Route 2 – Via New England Highway, Bell Street, Victoria Street, New England Highway

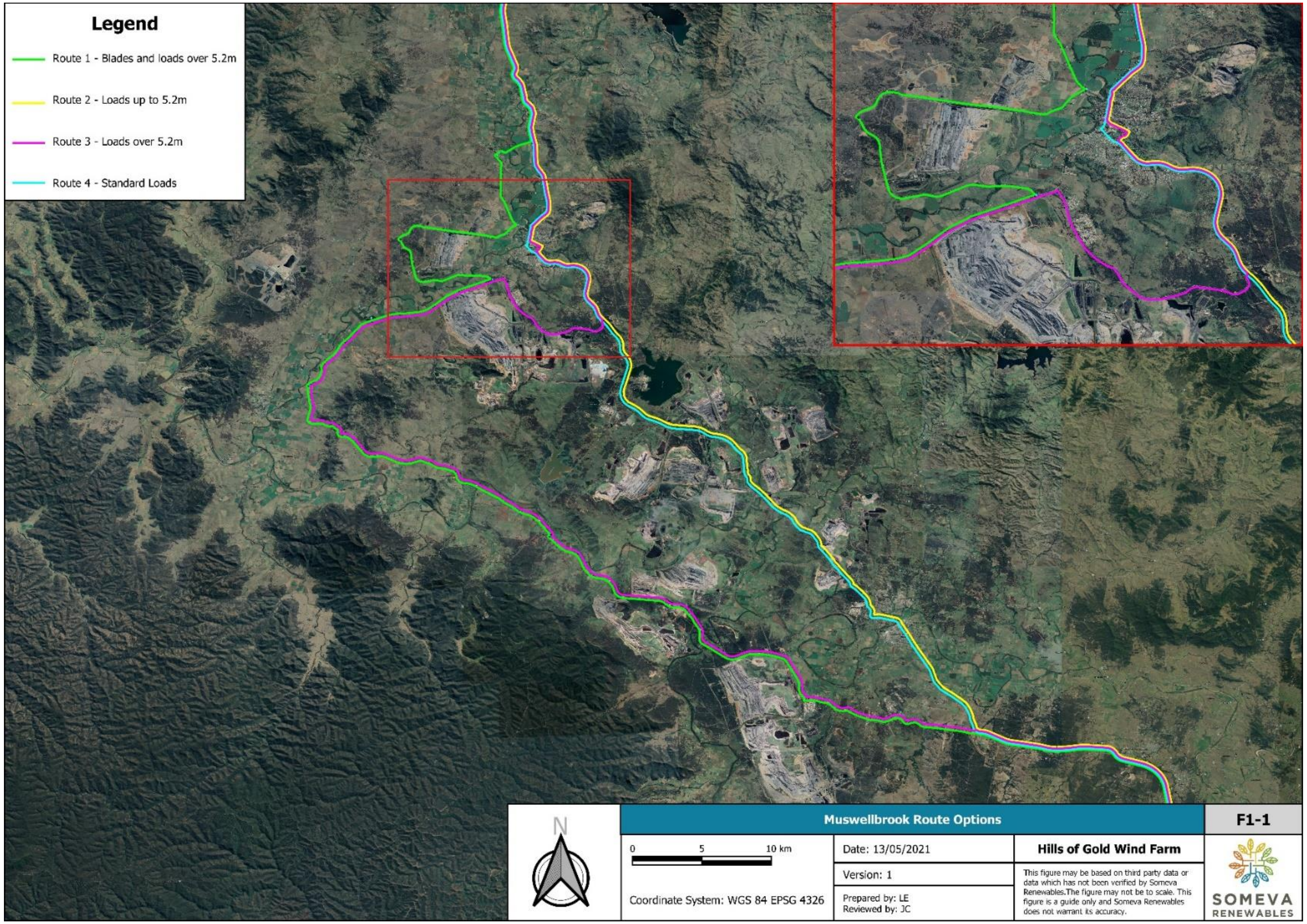
Route 3 – Via Golden Highway, Denman Road, Thomas Mitchell Drive, New England Highway, Bell Street, Victoria Street, New England Highway

Route 4 – Standard loads via New England Highway.

The Project is considering three options for route selection:

- All OSOM loads via Route 1 with standard loads using Route 4 the New England Highway.
- 100% of loads(other than blades) on Route 2 and 3 with blades using Route 1 and standard loads on Route 4.
- Splitting the loads 50/50 between Route 1 and Route 2 and 3, all blades using Route 1 and standard loads using Route 4.

Figure 8.4: OSOM Routes



8.3.3 Route Usage

The routes selected have been assessed and confirmed suitable with the stated upgrades in the RJA Transport Assessment for the proposed wind farm.

The final traffic volumes generated on these routes will be subject to the structural load assessment of Council Assets and further consultation with Muswellbrook Shire Council on required upgrades. This will be based on final turbine equipment, transport logistics operators, proposed vehicles and associated weights.

The estimated worst-case traffic predictions are presented based on a range of possible scenarios including a scenario which reduces impacts to Bell Street, Victoria Street and Market Street by splitting the volumes between routes:

Table 8.2: Estimated Route Usage

Option		Route 1	Route 2 (Includes Bell St)	Route 3 (includes Bell St)	Route 4	Totals
Previous EIS	Total Trips	280	-	1110	0	1390
	Average Weekly	8	-	32	0	
All Heavy Loads on Route 1 with normal loads on Route 4.	Total Trips	1070	-	-	320	1390
	Average Weekly	31	-	-	9	
100% Heavy Loads on Route 2 and 3	Total Trips	280	650[2]	140[3]	320	1390
	Average Weekly	8	192	43	9	
50% Heavy between Route 1 and Routes 2 and 3	Total Trips	605	325[2]	140[3]	320	1390
	Average Weekly	17	92	43	9	

Notes:
1. Reduced numbers if blades are transported as a single unit.
2. Reduced number if nacelles and drivetrains are transported separately trips are moved to the under 5.2m category.
3. Only if nacelles and drivetrains are transported separately

The transportation period for the turbine components has been forecast to occur over approximately 9 months or 35 weeks.

All route options reduce traffic proposed on the Bells St Heavy Vehicle Alternate route (Route 2 and 3) by taking advantage of the updated route 4 option for vehicles under 3.5m wide and 5.2m high and options to use Route 1 for some or all of the heavy vehicles. The range in reduced volume is between 11 and 32 movements per week from the previously submitted EIS.

All trucks returning to the Port of Newcastle would travel as standard loads along the New England Highway.

8.4 Existing Road Transport Environment

8.4.1 Road Network

Muswellbrook Shire Council recommended the Project assess information provided in the Mount Pleasant Optimisation Project Road Transport Assessment of December 2020 by TTPP. The following information is relevant for the Project and has been assessed in response to the Muswellbrook Shire Council submission.

The existing road network through Muswellbrook Shire Council that is proposed to be used by the Project is shown in Figure 8.5, and the key roads in the road network surrounding the site are described below.

New England Highway (Highway 9, Route A15) is a major State road and forms part of the National Land Transport Network, a defined national network of road and rail infrastructure links for which Commonwealth funding is provided to assist national and regional economic and social development. New England Highway is the main north-south link through the Hunter Region and connects Muswellbrook and Newcastle as part of its route between Hexham and the Queensland border. It is an alternative to the Pacific Highway for the north-south vehicular link between Brisbane and Sydney, and as such carries a significant proportion of regional and interstate traffic movements.

Outside of the urban areas, New England Highway is generally a two-lane high standard rural highway with regular overtaking lanes, wide sealed shoulders, designated turning lanes and a posted speed limit of 100 kilometres per hour (km/h). New England Highway is an approved B-double route. The New England Highway bypass of Scone was opened to traffic in early 2020.

Golden Highway (Highway 27, Route B84) is also known as Merriwa Road, Jerrys Plains Road, Putty Road and Mitchell Line of Road, and is a State road under the control of TfNSW. Golden Highway provides a road link between New England Highway at Minimbah and Newell Highway at Dubbo. It is generally a two-lane rural highway with a posted speed limit of 100 km/h outside of urban areas. Golden Highway is an approved B-double route.

Denman Road (Main Road 209) is a State road that is funded by the RMS but maintained by Muswellbrook Shire Council. Denman Road forms the primary connection between the township of Denman and Muswellbrook and provides a road link between Golden Highway and New England Highway. Outside of the urban areas, Denman Road is a two-lane rural road, with a 7 metre (m) wide sealed carriageway, additional sealed shoulders, and a posted speed limit of 100 km/h, reducing to 80 km/h west of Bengalla Road. Denman Road is a designated B-double route.

Denman Road provides access to a number of existing mining operations via local roads such as Edderton Road and Thomas Mitchell Drive. As a result, Denman Road carries a significant proportion of mine-related traffic, particularly employee traffic accessing the mining operations.

Bengalla Road is a local road under the control of Muswellbrook Shire Council and is an approved B-double route between Denman Road and the entry to Bengalla Mine. It is a sealed road, with a single travel lane in each direction and sealed shoulders. The speed limit on Bengalla Road is 100 km/h. Together with Wybong Road, Bengalla Road provides a link between Denman Road south of Muswellbrook and Merriwa Road (Golden Highway) at Sandy Hollow. It provides vehicular access to Bengalla Mine, and crosses the Muswellbrook-Ulan Rail Line at a road over rail crossing approximately 4 km from Denman Road. At the T-intersection formed with Wybong Road, Bengalla Road and Wybong Road west are the priority main road, and Wybong Road north-east is the minor road.

Wybong Road is a local road under the control of Muswellbrook Shire Council, which provides a link between Kayuga Road north-west of Muswellbrook and Merriwa Road (Golden Highway) at Sandy Hollow. The speed limit on Wybong Road is 100 km/h, reducing to 80 km/h for approximately 750 m on approach to Kayuga Road. The vehicular access for the Mount Pleasant Operation is provided from Wybong Road, approximately 8 km from Kayuga Road and 1.5 km from Bengalla Road. East of the Mount Pleasant Operation access, Wybong Road is subject to a gross load limit of 12 tonnes (t) and has centre linemarking and no edgelines. West of the Mount Pleasant Operation access, Wybong Road has centre linemarking, solid edgelines and sealed shoulders. Signage indicates the road is subject to flooding in the vicinity of the Rosebrook Bridge east of Logues Lane. The owner of the Mount Pleasant Mine (MACH Energy) is currently resurfacing Wybong Road between the Mount Pleasant Operation Mine Road and Overton Road as part of the Stage 2 (Modification 4) rail spur construction. Rosebrook Bridge is outside of the upgrades being undertaken by the Mount Pleasant Mine and is included in the Muswellbrook Council list of assets to be assessed as part of the final route selection.

Kayuga Road is a local road under the control of Muswellbrook Shire Council, which provides a link between Aberdeen Street on the western side of the Main Northern Railway Muswellbrook, and the locality of Kayuga. It is a sealed road with a single travel lane in each direction, with the exception of at Kayuga Bridge over the Hunter River immediately west of Aberdeen Street, which is a single lane bridge, at which westbound vehicles must give way to vehicles on the bridge. Kayuga Road has centre linemarking east of Wybong Road and no linemarking to the north-west of Wybong Road. The speed limit on Kayuga Road is 80 km/h from Aberdeen Street to approximately 1.5 km north-west of Wybong Road, 100 km/h over the next approximately 3.5 km, then reduces to 80 km/h through Kayuga.

Thomas Mitchell Drive is a local road under the control of Muswellbrook Shire Council and is an approved B-Double route. It provides a link between Denman Road and New England Highway to the south of Muswellbrook township, thus providing a bypass of Muswellbrook for some traffic and is signposted as an alternative route to Singleton from Denman Road. It is a 7 m wide sealed road, and provides access to the Mt Arthur Coal Mine, the Muswellbrook Industrial Area, and the Maxwell Infrastructure. Thomas Mitchell Drive crosses the Antiene Rail Spur at rail over road crossings at two locations approximately 3 km and 4.8 km west of New England Highway. The speed limit on Thomas Mitchell Drive is 80 km/h through and to the west of the Industrial Area, and between the Maxwell Infrastructure access and New England Highway. The remainder has a speed limit of 100 km/h.

The NSW Department of Planning and Environment (now the Department of Planning, Industry and Environment [DPIE]) produced the Thomas Mitchell Drive Contributions Study (GHD, 2015), with a supplementary report (GHD, 2018). These establish a contributions framework for the allocation of funding to upgrade and maintain Thomas Mitchell Drive. Currently, Mangoola Coal, Bengalla Mine, Mt Arthur Coal Mine and the Mount Pleasant Operation contribute funding.

8.4.2 Intersections

The key intersections in the road network of relevance to the Project are described below.

The intersection of Wybong Road and Mount Pleasant Operation Mine Access Road is a priority-controlled T-intersection with a channelised left turn deceleration lane in Wybong Road for vehicles entering the access road, and wide sealed shoulders and a wire rope barrier on the southern side of Wybong Road over approximately 300 m past the intersection. The site access road has a single approach and single departure lane at the intersection. The Project does not propose to use this intersection but acknowledges it will be required to be included in the Traffic Management Plan and include consultation with Mach Energy, the owner of the Mount Pleasant Mine.

The intersection of Wybong Road and Bengalla Road is a priority-controlled T-intersection with a channelised left turn deceleration lane in Wybong Road west and a channelised right turn deceleration lane in Bengalla Road. Wybong Road north is the minor approach to the intersection, and has a single approach and single departure lane, separated by a concrete median island. The RJA Route Assessment (see Table 6.1 for summary of upgrades) for proposed loads.

The intersection of Bengalla Road and Denman Road is a priority-controlled T-intersection, with channelised left and right turn deceleration lanes in Denman Road, and an eastbound acceleration lane in Denman Road for those vehicles that have turned left from Bengalla Road. Bengalla Road has a single approach and single departure lane at the intersection, separated by a concrete median island. Overhead lighting is provided at the intersection. Proposed upgrades in the RJA Route Assessment (see Table 6.1 for summary of upgrades) for proposed loads and have determined with the recommended escorts proposed for all OSOM loads safety will not be compromised.

The intersection of Wybong Road and Kayuga Road is a basic rural priority-controlled T-intersection, with single approach and departure lanes on all legs, and no auxiliary turn lanes. Kayuga Road is the major road at the intersection, and Wybong Road is the minor road, with "give way" signs. Wybong Road meets Kayuga Road at approximately 75 degrees, and both roads follow a straight and level alignment in the immediate vicinity of the intersection, such that sight lines are good.

The intersection of Thomas Mitchell Drive and Denman Road has a left turn deceleration lane and short left turn acceleration lane in Denman Road, and widening of the northbound carriageway that allows northbound vehicles to pass around vehicles waiting to turn right into Thomas Mitchell Drive. Separate left and right turn lanes are provided in Thomas Mitchell Drive on the approach to the intersection. A single departure lane is provided in Thomas Mitchell Drive, which widens to two eastbound lanes before merging to a single lane over approximately 300m.

The intersection of Thomas Mitchell Drive and New England Highway is a seagull intersection with channelised deceleration lanes for vehicles turning into Thomas Mitchell Drive, and acceleration lanes for vehicles turning into New England Highway in both directions. Vehicles turning right into Thomas Mitchell Drive have priority over those turning left into Thomas Mitchell Drive, which approach via a slip lane with "give way" control. Vehicles turning right from Thomas Mitchell Drive have a "stop" control prior to crossing the northbound lane of New England Highway.

As with any road or intersection TTPP cannot guarantee that a road is completely 'safe'. However, the RJA route assessment and the traffic management plan that would be put in place to manage the transportation of OSOM has been designed to identify and minimise road safety risks. Loads would be transported with escorts and at slower speeds then general traffic and are therefore estimated to be safer than general traffic.

8.4.3 Traffic Survey Program

To quantify existing traffic conditions as a baseline against which future conditions can be assessed, a program of traffic surveys was undertaken on roads and intersections of relevance to the Project. The traffic survey program was developed to quantify the existing characteristics of the traffic generated along the proposed OSOM routes, and the contribution to traffic by the OSOM traffic generated as summarised in this Section.

It is considered that the main constraint on the capacity of the road network proposed is the operation of the intersections in the network during peak hours rather than the midblock capacity of the roads. This is due to the need for vehicles in opposing directions to occupy the same road space at intersections. While the traffic survey program includes midblock traffic volumes, and the assessment which follows considers the midblock capacity at the surveyed locations, the intersection operating characteristics are considered to be the more critical and relevant criteria.

The survey program included mid-block surveys using ATCs of classified vehicle volumes by direction over one week between Tuesday 11 February and Monday 17 February 2020 (inclusive) on:

- Bengalla Road south-east of Wybong Road; and
- Wybong Road between Bengalla Road and Mount Pleasant Operation Road.

To examine the distribution of traffic, vehicle turning movement surveys were undertaken between 6:00 am and 6:00 pm on Wednesday 27 November 2019 at the intersections of:

- Wybong Road and Kayuga Road;
- Wybong Road and Bengalla Road; and
- Bengalla Road and Denman Road.

8.4.4 Midblock Traffic Volumes

Table 8.3 presents a summary of the daily traffic volumes surveyed at the midblock locations during February 2020 as part of the Mount Pleasant Mine Optimisation .

Table 8.3: Existing Traffic Volumes (vehicles per day)

Site	Road	Monday	Tuesday	Wednesday	Thurday	Friday	Saturday	Sunday
B	Bengalla Road south-east of Wybong Road	1,913	1,943	2,111	2,128	1,958	948	900
C	Wybong Road north of Bengalla Road	1,164	1,362	1,460	1,448	1,314	683	661

The results demonstrate that the weekday volumes are distinctly different from those on weekend days at all the surveyed locations. Over the surveyed week, Mount Pleasant Operation generated an average of 888 vehicles per weekday, and 362 vehicles per weekend day.

The surveys included classification of the vehicles based on the Austroads Vehicle Classification System. Light vehicles include motorcycles, cars, vans, 4-wheel drives (4WDs), and utes (including those towing a trailer or caravan). Heavy vehicles include single unit rigid trucks and buses with two, three or four axles and up to 14.5 m long, as well as articulated vehicles (which include semi-trailers and rigid trucks with trailers, B-Doubles and road trains where permitted). The surveyed average weekday daily classified traffic volumes are summarised in Table 8.4.

Table 8.4: Surveyed Daily Traffic Classification (vehicles per day)

Site	Road	Light	Rigid	Articulated	Total	Percentage Heavy
B	Bengalla Road south-east of Wybong Road	1,635	331	44	2,010	18.7
C	Wybong Road north of Bengalla Road	1,146	181	22	1,349	15.0

It is noted that, of the rigid vehicles on the Mount Pleasant Operation Road in Table 4.2, the significant majority are "Class 3" vehicles under the Austroads system, which include longer wheelbase utilities and 4WDs (such as Ford Rangers and RAM 1500 utilities), which are commonly used in mining operations, and which would otherwise be considered as light vehicles. The reported percent heavy vehicles in Table 4.2 assume that these vehicles are all heavy vehicles, and is therefore considered to overestimate the actual number of rigid heavy vehicles.

8.4.5 Traffic Contributions by the Project

The Project will not contribute to an increase in light vehicles through the shire as most of the work force is anticipated to be coming from Tamworth. However, heavy vehicles including OSOM vehicles will use routes through Tamworth Shire as discussed above. The OSOM vehicles would be travelling under controlled conditions with escort traffic controllers or police at slower speed.

While it is generally not relevant to compare the number of OSOM vehicles with background traffic the Project's contribution to existing traffic volumes is shown in Table 8.5.

Table 8.5: Comparison of Traffic Volumes (vehicles per day)

Road	Survey Date	Existing Average Weekday	Existing Average Daily	Data Source	Project Weekly Contribution (Loads per week)
Denman Road west of Bengalla Road	2012	-	2,993	GHD, 2017	8-31
Denman Road north of Golden Highway	October 2013	2,371	2,094	TTPP, 2019	8-31
Denman Road between Golden Highway and Edderton Road	November 2013	2,446	2,219	Cardno, 2013	8-31
Thomas Mitchell Drive east of Industrial Area	February 2013	3,993	3,191	Hyder, 2013	0-19

As shown the number of OSOM vehicles is relatively low compared to the existing traffic volumes and would only contribute a small volume to the existing traffic. The impacts of the vehicles would also be less as the loads would generally travel outside commuter peaks.

8.5 Impacts on Road Infrastructure

Muswellbrook Shire Council has requested that our assessment make reference to:

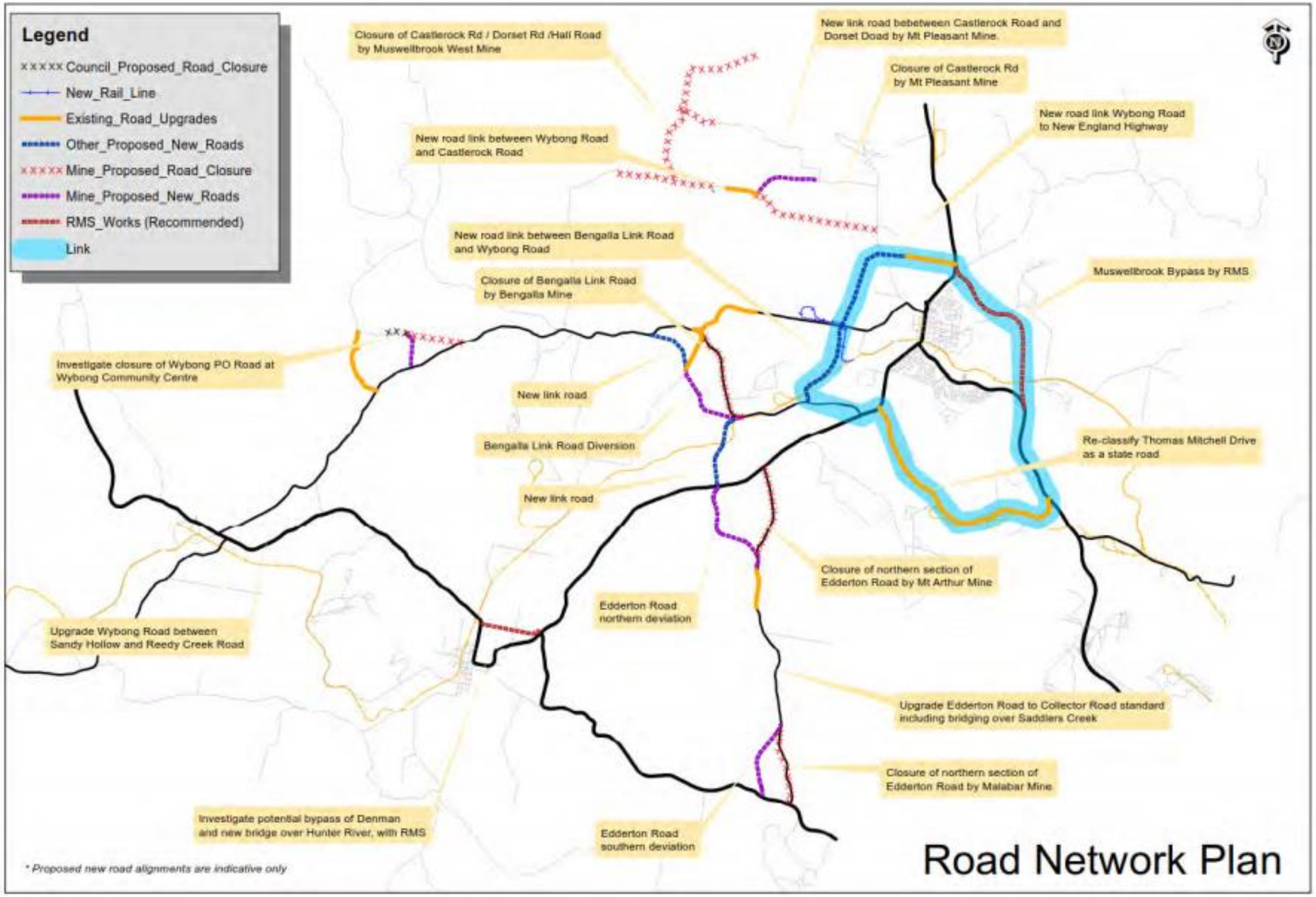
- Muswellbrook Mine Affected Roads Network Plan, Bitzios Consulting, April 2020.
- Thomas Mitchell Drive Contributions Study, GHD May 2015.

8.5.1 Muswellbrook Mine Affect Roads Network Plan (Muswellbrook MARNP)

The Muswellbrook MARNP is a document prepared by Bitzios Consulting (2020) that identifies road upgrades and new road Projects to address access for mine related traffic and transport. It is an update of a similar study undertaken in 2015 with the aim of providing a road network plan that can work with mining activity and support other industry and community needs.

An outline of the recommendations of this study are shown in Figure 8.5.

Figure 8.5: Muswellbrook MARNP



Source: Bitzios Consulting, 2020

The plan identified a number of road network upgrades including a western corridor connecting the Golden Highway to New England Highway and an inner link road. The plan also makes reference to the Muswellbrook Bypass that is proposed by TfNSW.

It is noted that none of the proposed Projects have any commitment at this stage and it is understood that Muswellbrook Shire Council is in a process of developing an apportionment plan for the construction and upgrade of these roads. It is unlikely that these roads will be con

It is unlikely that these roads will be constructed and be operational within the timeframe of the Project construction. The Project should consult with the Muswellbrook Shire Council as part of the preparation of the TMP for any proposed road works likely to affect the timing of the proposed routes.

8.5.2 Thomas Mitchell Drive Contributions Study

The Thomas Mitchell Drive Contributions Study (GHD May 2015) was commissioned by the NSW Department of Planning and Environment to establish a framework for the allocation of funding for the upgrade and maintenance of Thomas Mitchell Drive.

Thomas Mitchell Drive is a local road and is funded by Muswellbrook Shire Council. This means that Council is responsible for the maintenance and upgrade of the road. However, the road is heavily used by the mining industry with local mines using the road to transport heavy equipment and by workers commuting to site.

As such the study suggests that the road should be declared as either a state road or regional road which would allow funding from the state government.

However, the study considered models for funding that included a user pay model where the mines pay for their use of the road and allocates the funding for the road to different road users.

8.5.3 Relevance to Hills of Gold Wind Farm

The studies reviewed do not indicate any clear commitment to particular infrastructure upgrades or the relative timing. However, it is clear from the studies that Muswellbrook Shire Council is managing how their roads are used for heavy industries such as mining and considering how users would contribute to the use of the local roads.

OSOM vehicles will need to use local roads through Muswellbrook due to the existing constraints on the New England Highway. However, the contribution of the Project on the Thomas Mitchell Drive is between 0-19 times per week in addition to the estimated 4000 daily users of the road and is deemed negligible in comparison to other road users.

The Project will work with Council to develop a contributions plan for the fair use of local roads within the Muswellbrook LGA given its relative use. In addition, dilapidation of the roads is to be managed in conjunction with Muswellbrook Shire Council to ensure that any significant damage directly attributable to the Project is made good without cost to the council.

9 Road Projects

9.1 Overview

It is noted that the route for OSOM vehicles is likely to pass a number of road upgrade Projects that are either planned or in construction. The following outlines the key road Projects that have been identified.

9.2 Golden Highway Upgrades

TfNSW have developed a plan for road upgrades along the Golden Highway from the New England Highway to Dunedoo. These Projects may have an impact on the OSOM movements through the area. The Projects are shown in Figure 9.1 noting that the Ogilvies Hill and Winery Hill Projects have now been completed.

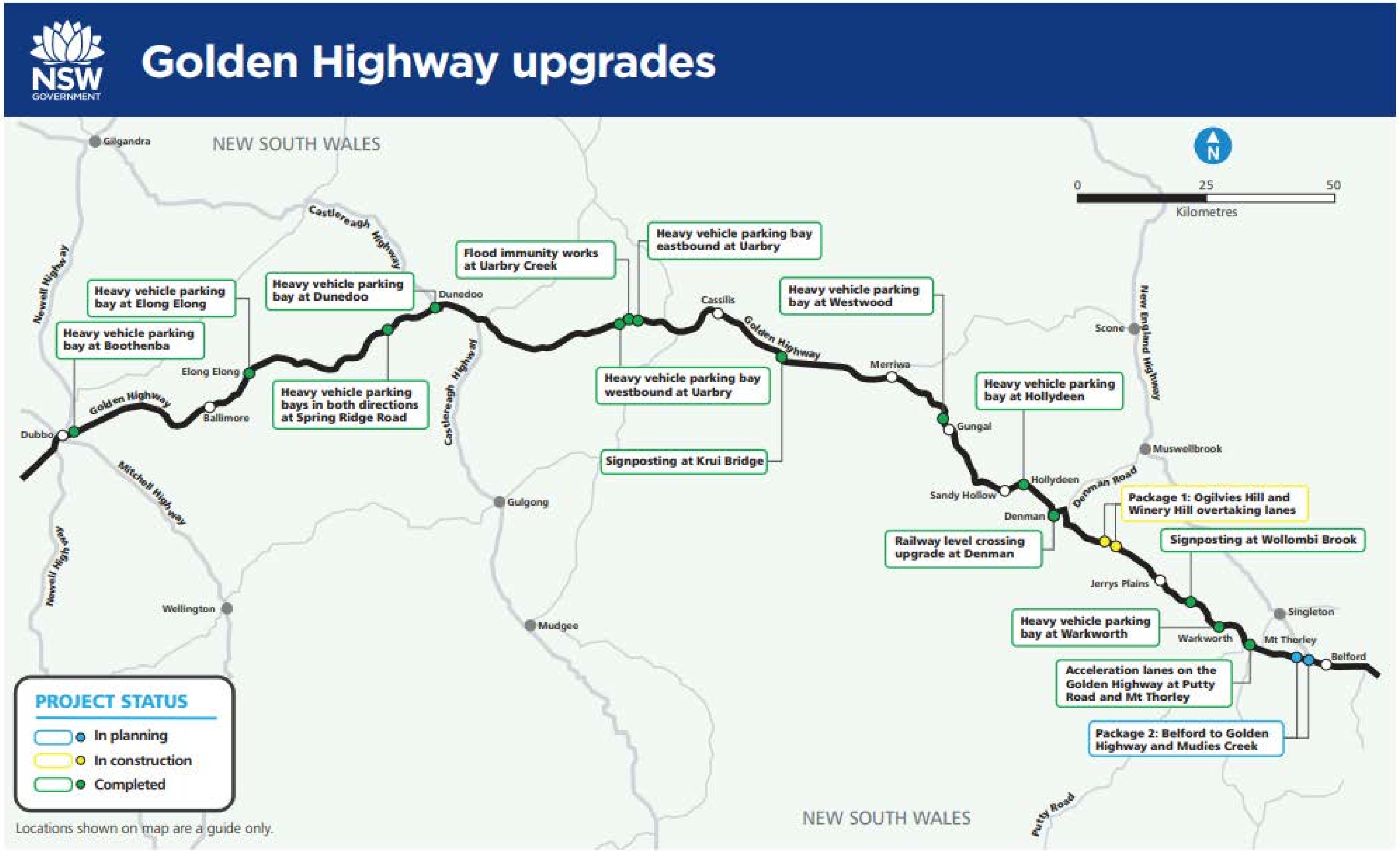
9.2.1 Belford to Golden Highway

The Belford to Golden Highway Project is one of the key upgrades that could impact the Project. The upgrade includes:

- widening the New England Highway to provide a divided road with two lanes in each direction between Belford and the Golden Highway.
- replacing the existing right turn movement from the Golden Highway to the New England Highway with a flyover.
- a roundabout on the Golden Highway with a connection to the New England Highway improves safety for motorists turning left onto the New England Highway towards Singleton and provides safer access to adjoining properties.

Particular attention will need to be considered given that construction of the Belford to Golden Highway Project is likely to begin soon. The transport analysis has included an assessment of the route when completed and before completion. Work is scheduled to begin in late 2021 and be completed within three years.

Figure 9.1: Golden Highway Upgrades



9.2.2 Mudies Creek Bridge

It is proposed to upgrade the bridge over Mudies Creek on the Golden Highway. The proposal involves:

- Building a new road crossing at Mudies Creek to withstand a one in 100 year flood. The new 30 metre long bridge would be three metres higher than the current road level to improve travel reliability along the highway during flood events.
- Upgrading a six kilometre section of highway between Whittingham and Mount Thorley. Improvements include providing a smoother road surface, wider road shoulders and five metre clear zones, safety barriers, and overtaking lanes in both directions to improve safety and traffic flow.

9.3 New England Highway

Potential road upgrade Projects on the New England Highway have also been identified.

9.3.1 Camberwall

The Project involves:

- installing a one metre wide painted centreline along a 350 metre section of the highway between 50 metres east of Lethbridge Street and 80 metres west of Glennie Street. The introduction of the centreline will improve safety by providing greater separation between vehicles travelling in opposite directions.
- widening the highway on approach to Glennie Street to improve safety for motorists turning left.
- installing audio-tactile line marking along the edge and centrelines.
- upgrading drainage on both sides of the highway.
- installing a roadside safety barrier on the northern approach of the bridge over Glennies Creek.
- improving line markings and installing new signage.

This Project is expected to have minimal impact on the Project.

9.3.2 Muswellbrook Bypass

The Muswellbook Bypass will feature:

- A 9.1 kilometres of new highway with a single lane in each direction.

- A refined alignment south of Coal Road, with the bypass shifted further to the east to reduce environmental impacts and improve the road alignment.
- Full southern and northern connections with the existing New England Highway which provide for all traffic movements.

While the Muswellbrook Bypass Project could potentially have significant benefits for the Project, the bypass Project is in early planning phase and is unlikely to begin construction within the timelines of the Hills of Gold Wind Farm Project.

Figure 9.2: Muswellbrook Bypass

9.4 Mitigation Strategies

The Belford to Golden Highway Project is likely to be the most significant impact on the Project. As part of the Traffic Management Plan, it is recommended that the Project maintains a communication with TfNSW Project managers to identify potential impacts. This will include notification of the times when trucks will be travelling through the construction sites.

10 Conclusion

The Transport Planning Partnership (TTPP) has been commissioned to prepare a response to stakeholder submissions for the Hills of Gold Wind Farm Project. The Project will see the construction of 65 wind turbines some 10km south east of Nundle.

The key updates of the Project include:

- The proposed number of wind turbine generators has been reduced from 70 to 65, however this traffic assessment has been based on a 'worst case' 70 wind turbine generators.
- Removal of the option to transport Oversized Overmass deliveries via Tamworth and Nundle Road.
- Removal of options to transport Oversized Overmass equipment deliveries and for construction access to site via Head of the Peel Road and Crawney Road and associated transport options through Nundle residential streets including Happy Valley Road, Jenkins St, Herron Street North, Gill Street and Innes Street.
- Alternate Route Options around Muswellbrook for Oversized Overmass equipment deliveries and greater Project commitment towards structural assessment of council assets and community safety.
- 2 x additional laybys along Lindsay Gap Road and Morrisons Gap Road for reduced tourism and commuter impacts entering Nundle.
- Voluntary temporary parking restrictions for construction workers on streets within Nundle providing key services to tourists and residents.
- Commitment to create a dedicated construction staff car park prior to entering Nundle town centre which can enable the introduction of temporary parking restrictions without reducing the benefits of accessing local content for the Project, and could assist the introduction of a shuttle service for peak hour "last mile" site access to reduce traffic through Nundle, on Barry Road and Morrison's Gap Road, if practicable.
- Improved safety commitments in Nundle with a proposed pedestrian crossing on the corners of Oakenville St and Jenkins St, subject to agreement from Tamworth Regional Council.
- Greater clarity on Traffic Management Plan commitments including for residents along Shearers Road and Morrisons Gap Road for safe ingress and egress, broader community communication initiatives, escorts for some OSOM movements along along the proposed OSOM route including Morrisons Gap Road, IVMS for regular vehicles accessing the Project Site, and traffic management systems during public road upgrades.
- Geophysical assessment, realignment and construction method consideration for the Devils Elbow Upgrade.

- Revision of the traffic generation assumptions and traffic management strategy to include car pooling as an initiative.
- Additional assessment and traffic modelling on key intersections in Tamworth Regional Council.
- Additional assessment and traffic modelling for Muswelbrook Oversize Overmass route options.
- Project commitments for assessment and upgrades of Muswellbrook Shire Council and Tamworth Regional Council road assets where required, subject to additional consultation.
- Inclusion of key stakeholders and communication protocols in the Traffic Management Plan for residents along the transport routes.
- The Project will provide UHF radios (given mobile phone reception can be intermittent) to residents along Morrisons Gap Road and Shearers Road to communicate any emergency or travel plans to site staff along with a protocol for reaching the site manager.
- Project Commitments to road usage fees, dilapidation surveys, and/or performance bonds for remediation works.

The Project has committed to a number measures to minimise the traffic and transport impacts of the Project working with stakeholders throughout the process. Since the submission of the EIS the transport aspects of the Project have been significantly refined to address issues raised by stakeholders. The revised traffic and transport plan includes:

- All construction traffic to access the site via Morrison's Gap Road – no construction-related traffic will use the Head of Peel Road or any residential streets in Nundle as presented in the EIS.
- The Project is committed to upgrading two bridges on Lindsays Gap Road in order to accept the widest loads for the Project, unless other suitable transport arrangements for the Project can be implemented in consultation with Tamworth Regional Council. This will negate the need to transport loads via Tamworth as previously presented in the EIS.
- The Devils Elbow upgrade has been refined based on further design analysis
- Routes around Muswellbrook have been updated to reduce impacts on the town. The Project will work with Muswellbrook Shire Council to develop a suitable contribution plan for the usage of local roads in the shire.
- Commitment to create a dedicated construction staff car park prior to entering Nundle town centre which can enable the introduction of temporary parking restrictions without reducing the benefits of accessing local content for the Project. A policy of car pooling will be implemented by the Project team to further reduce the need for local vehicles to access the site.

This revised assessment has included the modelling of intersections in Tamworth and further analysis of traffic given the revised traffic routes. The analysis shows that:

- Construction traffic will not have an adverse effect on the operation of the road network. Queueing and delay within Tamworth and surrounding intersections will not be significantly impacted by the additional traffic for the short period of peak traffic.
- Volumes of traffic forecast will be lower that the environmental capacity for local streets in Nundle.
- The revised traffic volumes will operate at Levels of Service B or better.

The Project will work with the relevant road authorities, Transport for NSW, Tamworth Regional Council and Muswellbrook Shire Council to ensure that the roads are maintained and there is fair compensation for the use of local roads. The Project will consult with Tamworth Regional Council on the need to undertake dilapidation surveys before and after construction.

Traffic management options described in the EIS have not changed except for including a policy for car pooling.

During construction it has been identified that there may be road upgrade Projects that will coincide with the period that the oversized and over mass loads will be transported from Newcastle port to site. The key Projects identified are the upgrade of the intersection of the New England Highway and Golden Highway and the new bridge at Mudies Creek on the Golden Highway. The Project team proposes to liaise with the relevant Project managers for these Projects to ensure that the impacts to the Project and the road network are minimised.

At the completion of the Project infrastructure that was created for the Project transportation of OSOM will closed but maintained to the degree that they can be used in the future should additional blades need to be transported to site.

To minimise the effects on local streets in Muswellbrook and Nundle it is proposed that the traffic management plan will include limitations on trips during school peak hours from 8:00am – 9:30am and 2:30pm – 4:00pm.

The project involves associated road works including the upgrade of two bridges along Lindsays Gap Road and other enabling works and road upgrades. The project will work with Musewellbrook Shire Council and Tamworth Regional Council to ensure that the road infrastructure are not degraded and contribute to the maintenance and upgrade of the roads. The upgrade of infrastructure would continue to be of beneift community in terms of road safety, maintence of the public assets and support local businesses beyond the construction period of the project.

References

Roads and Traffic Authority – Guide to Traffic Generating Developments, 2002

The Transport Planning Partnership (TTPP) – Hills of Gold Wind Farm, Traffic and Transport Assessment 2020.

Rex J Andrews – Route Study: Someva Hills of Gold Windfarm Ex Port Newcastle (Revision 4) 2021.

Bitzios Consulting - Muswellbrook Mine Affected Roads Network Plan, April 2020.

GHD Thomas Mitchell Drive Contributions Study, May 2015

Appendix A

Rex J Andrews Route Assessment

REX J ANDREWS
ENGINEERED TRANSPORTATION

ROUTE STUDY: SOMEVA P/L

PROJECT: HILLS OF GOLD WINDFARM

EX PORT OF NEWCASTLE.

08/04/2021 REV 04

Rev.	Date	Change	Responsible	Checked
00	17/06/19	Route Assessed	W Andrews	✓
00	03/07/19	Report compiled	W Andrews	✓
00	19/07/19	Report completed	W Andrews	✓
01	04/09/19	GE 158 blade added	W Andrews	✓
02	19/03/21	Revised routes	W Andrews	✓
03	30/03/21	Updated survey drawings	W Andrews	✓
04	08/04/21	Various revisions	W Andrews	✓

Index:

1.0 Introduction

This document describes observations and previous experience on route and explains the Transport of Wind turbine equipment from Newcastle to Hills of Gold Windfarm.

This Route survey took place on 17-06-19.

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. 17/06/2019
Survey undertaken by. (Rex J Andrews P/L)
Project name. White Hills of Gold windfarm
Location. Newcastle port (NSW) to Nundle (NSW)
Turbine type (Example)
Rotor size 170 metre with a hub height of up to 165 Metres.
Rotor size 158 metre with a hub height of up to 165 Metres.

4.0 Transport combinations (Examples).

Nacelle with drivetrain out (12l x 4.2w x 4.2h x 70T)
Possible transport configuration. Prime mover with 8x8 Platform trailer.
Overall length: 30.0l x 4.2w x 4.9h x 122.0T.

Drivetrain (7l x 3.5w x 3.5h x 68T)
Possible transport configuration. Prime mover with 2x8-4x8 Platform Low loader.
Overall length: 30.0l x 4.2w x 4.9h x 122.0T.

Nacelle with drivetrain in (12l x 4.2w x 4.2h x 125T)
Possible transport configuration. Prime mover with 11x8 Platform trailer.
Overall length: 49.0l x 4.2w x 5.2h x 195.0T.

Hubs (4.0l x 3.5w x 3.8h x 50.0T)
Possible transport configuration. Prime mover with 2x8 4x8 Low Loader.
Overall length: 28.0l x 5.1w x 5.9h x 92.5T.

Blade 170 rotor (82.0l x 4.5w x 4.0h x 35T)
Possible transport configuration. Prime mover with 2x8 dolly with 2x8 jinker.
Overall length: 92.0l x 5.6w x 5.3h x 86.5T.

Blade 158 rotor (65.4l x 4.7w x 3.4h x 24T)
Possible transport configuration. Prime mover with 1x4 dolly with 4x4 extendable blade trailer.
Overall length: 92.0l x 5.6w x 5.3h x 86.5T.

Bottom section (16.2l x 4.8 x 4.5 x 100T)
Possible transport configuration. Prime mover with 8x8 Platform trailer.
Overall length: 30.0l x 4.8w x 5.5h x 108.5T.

Mid lower section (21.8l x 4.5 x 4.5 x 95.2T)
Possible transport configuration. Prime mover with 10x8 platform trailer.
Overall length: 32.0l x 4.5w x 5.5h x 157.5T.

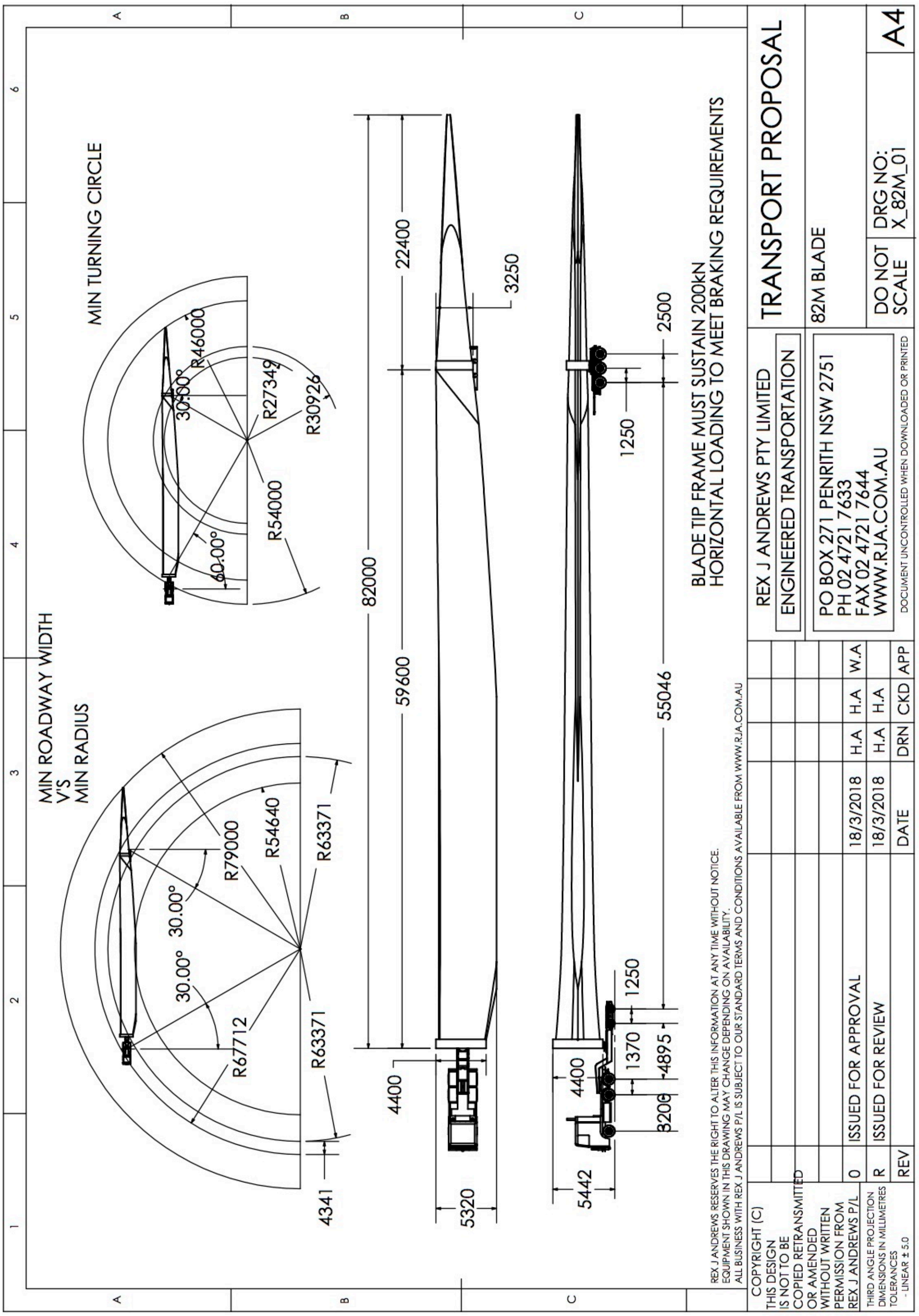
Mid section (21.8l x 4.5 x 4.5 x 72.5T)
Possible transport configuration. Prime mover with 10x8 platform trailer.
Overall length: 32.0l x 4.5w x 5.5h x 137.5T.

Mid upper section (28.8l x 4.5 x 4.5 x 52.3T)
Possible transport configuration. Prime mover with 3x4-2x8 Dolly jinker
Overall length: 40.0l x 4.5w x 5.5h x 92.5T.

Top section (30.8l x 4.5 x 3.4h x 50.0T)
Possible transport configuration. Prime mover with 3x4-2x8 Dolly jinker
Overall length: 40.0l x 4.5w x 5.5h x 90.5T.

5.0 Transport drawings (Examples)

Blade diagram (170 rotor):



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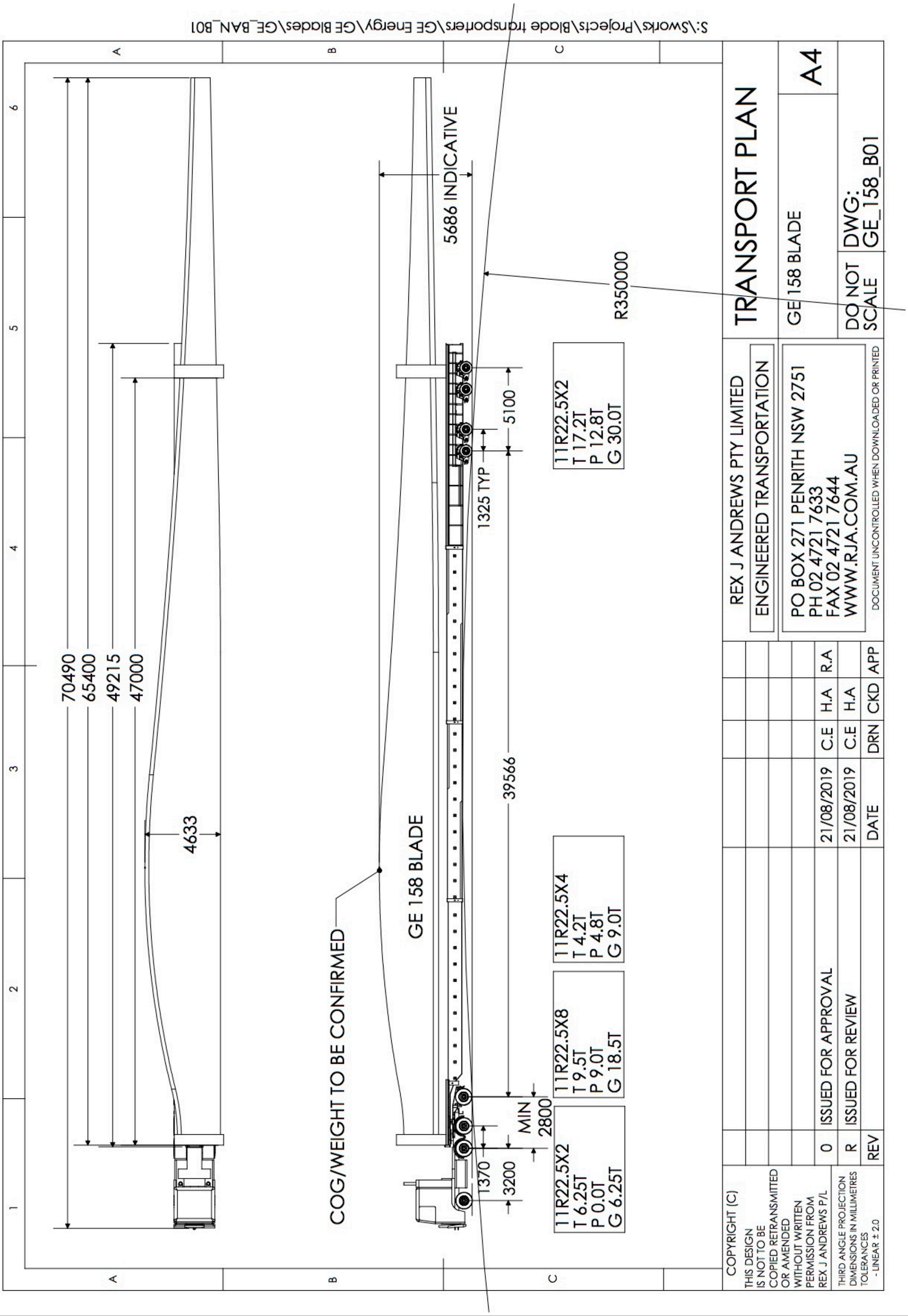

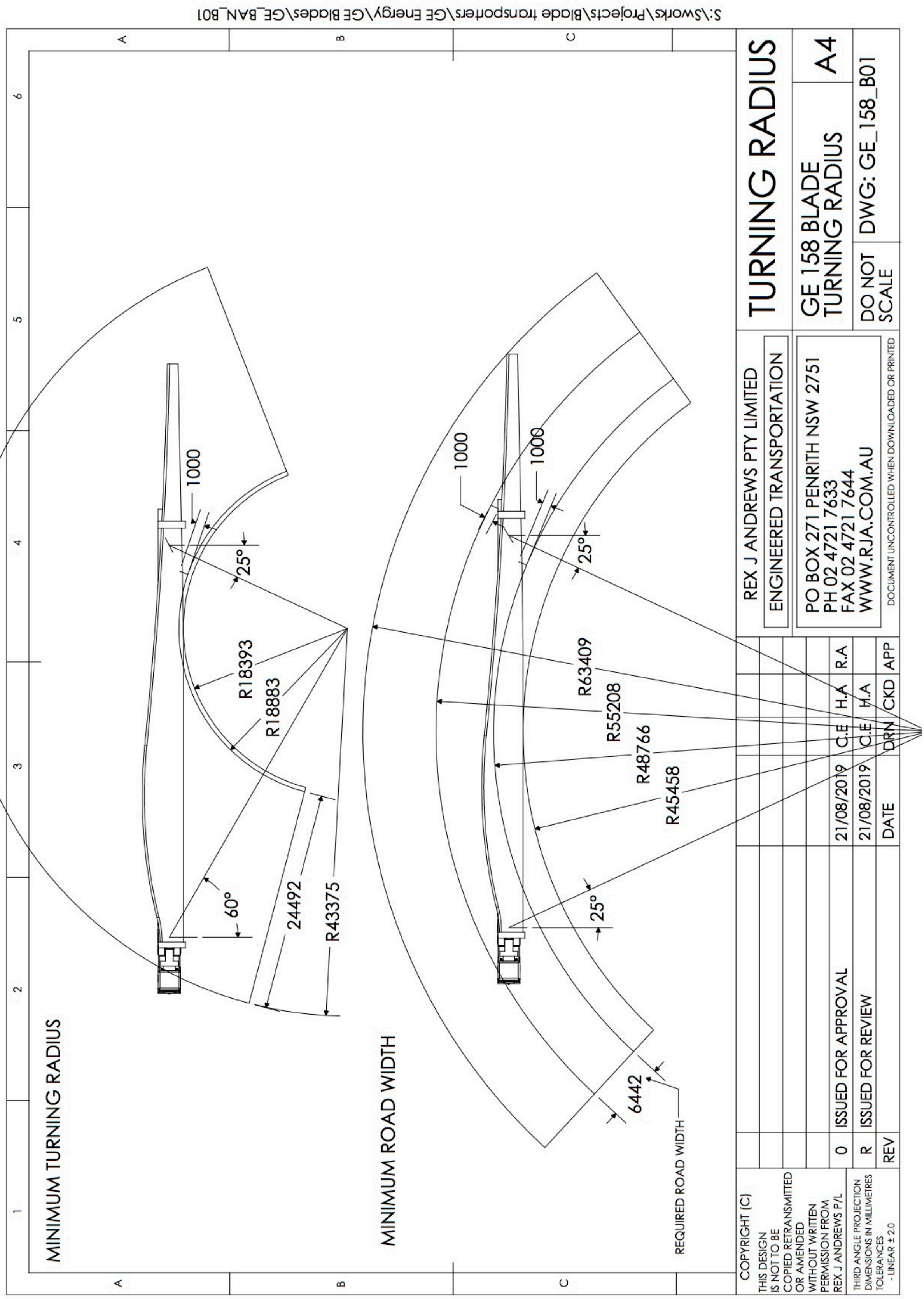
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TURNING RADIUS
GE 158 BLADE TURNING RADIUS
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DO NOT SCALE
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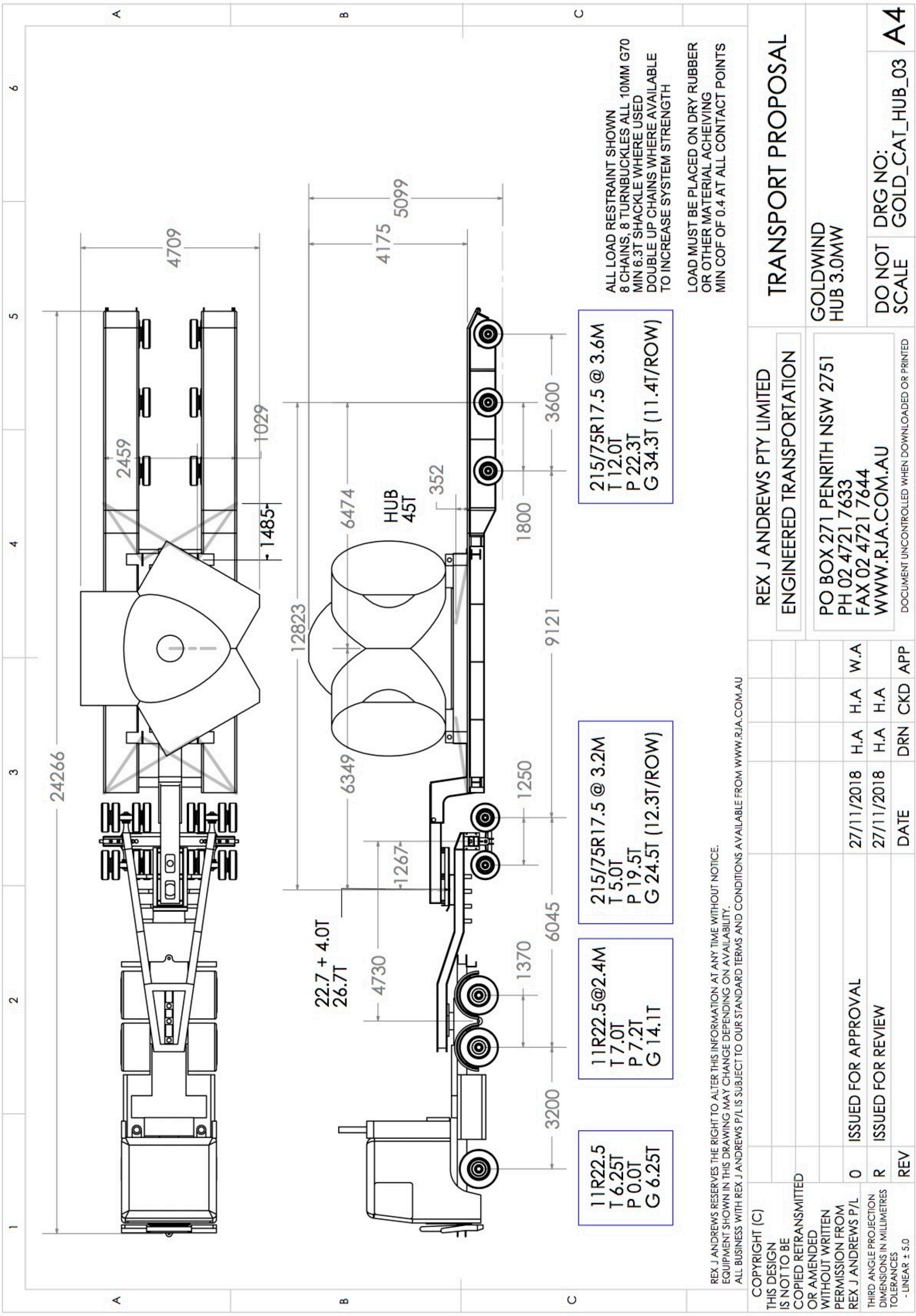
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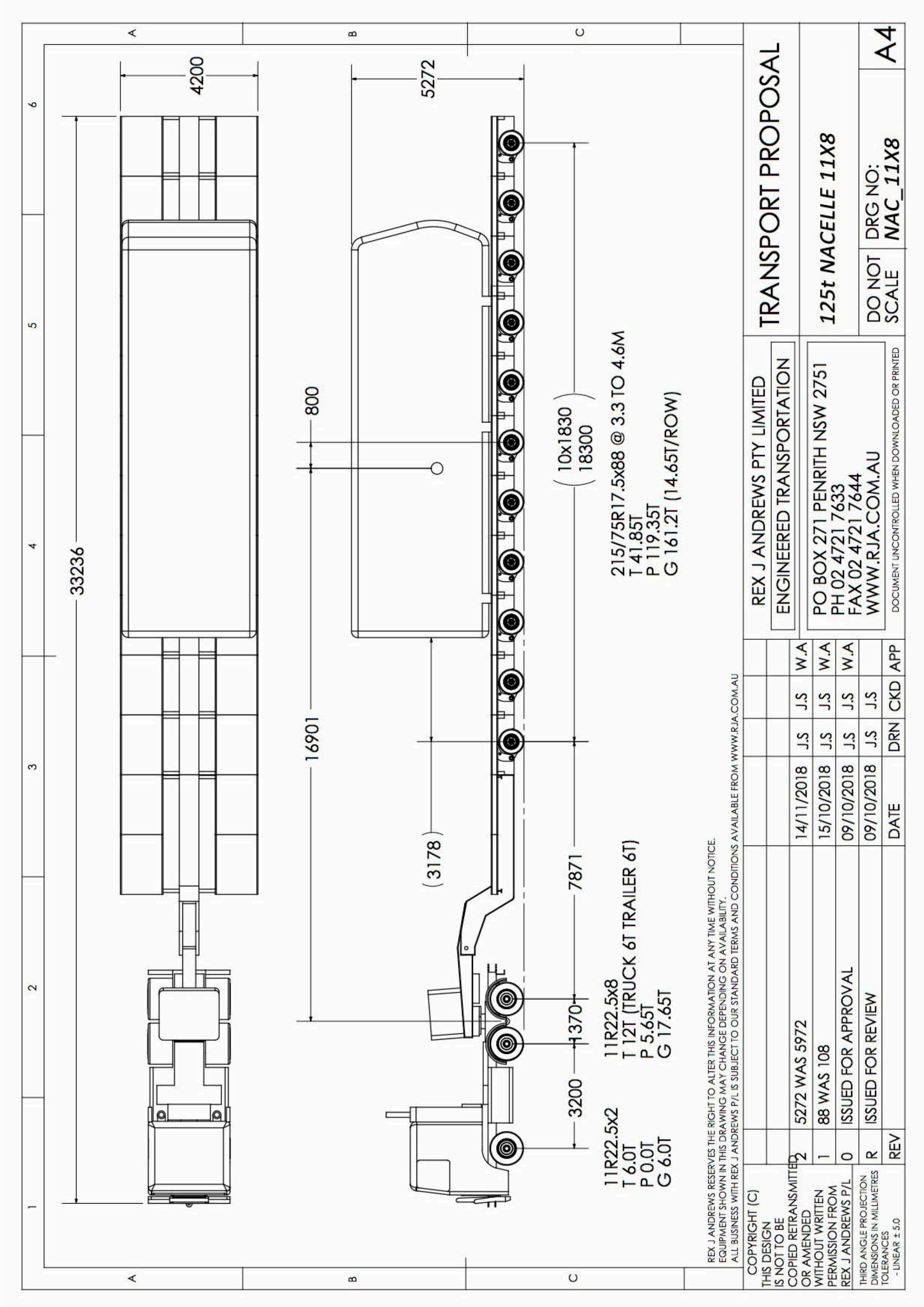

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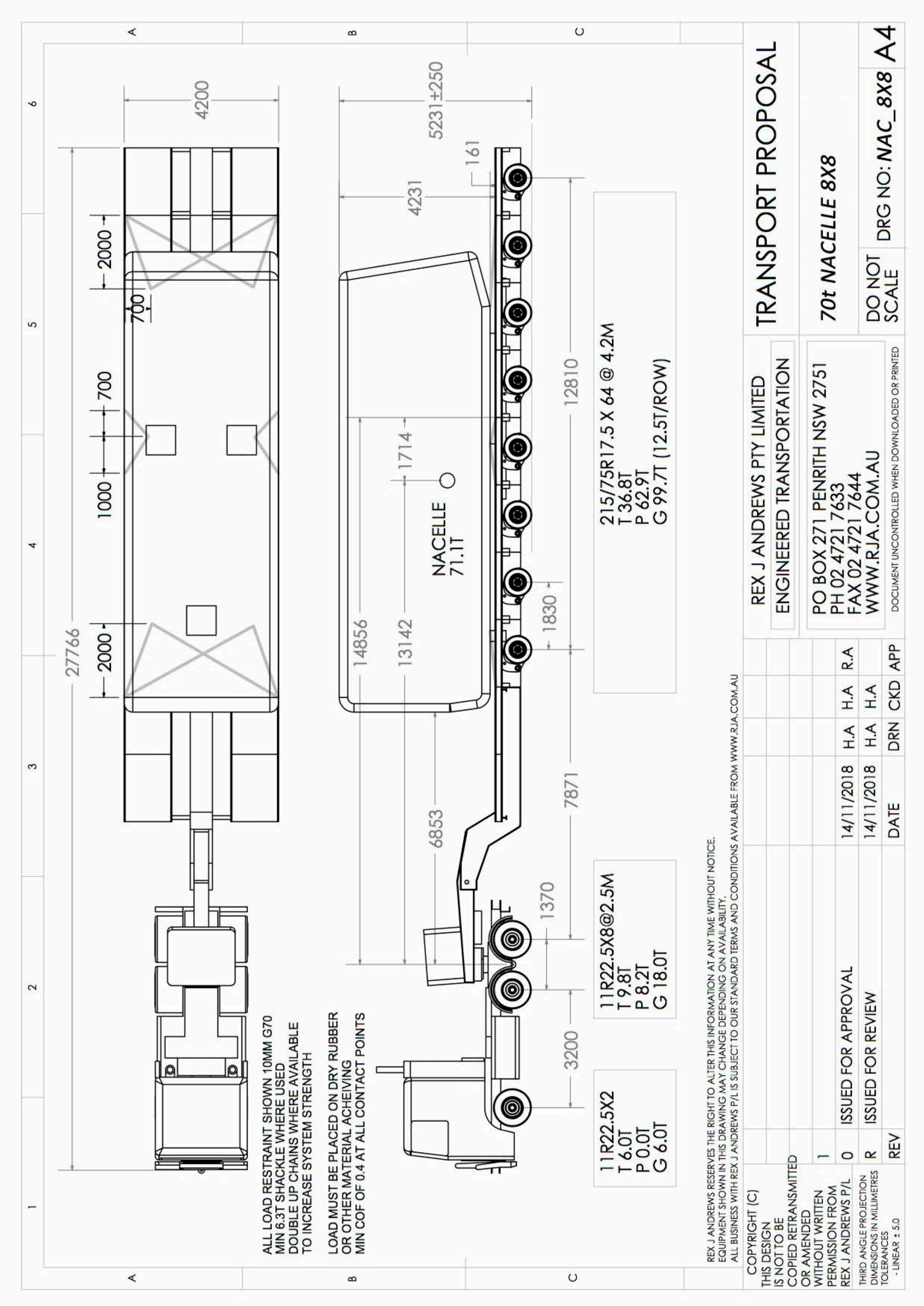

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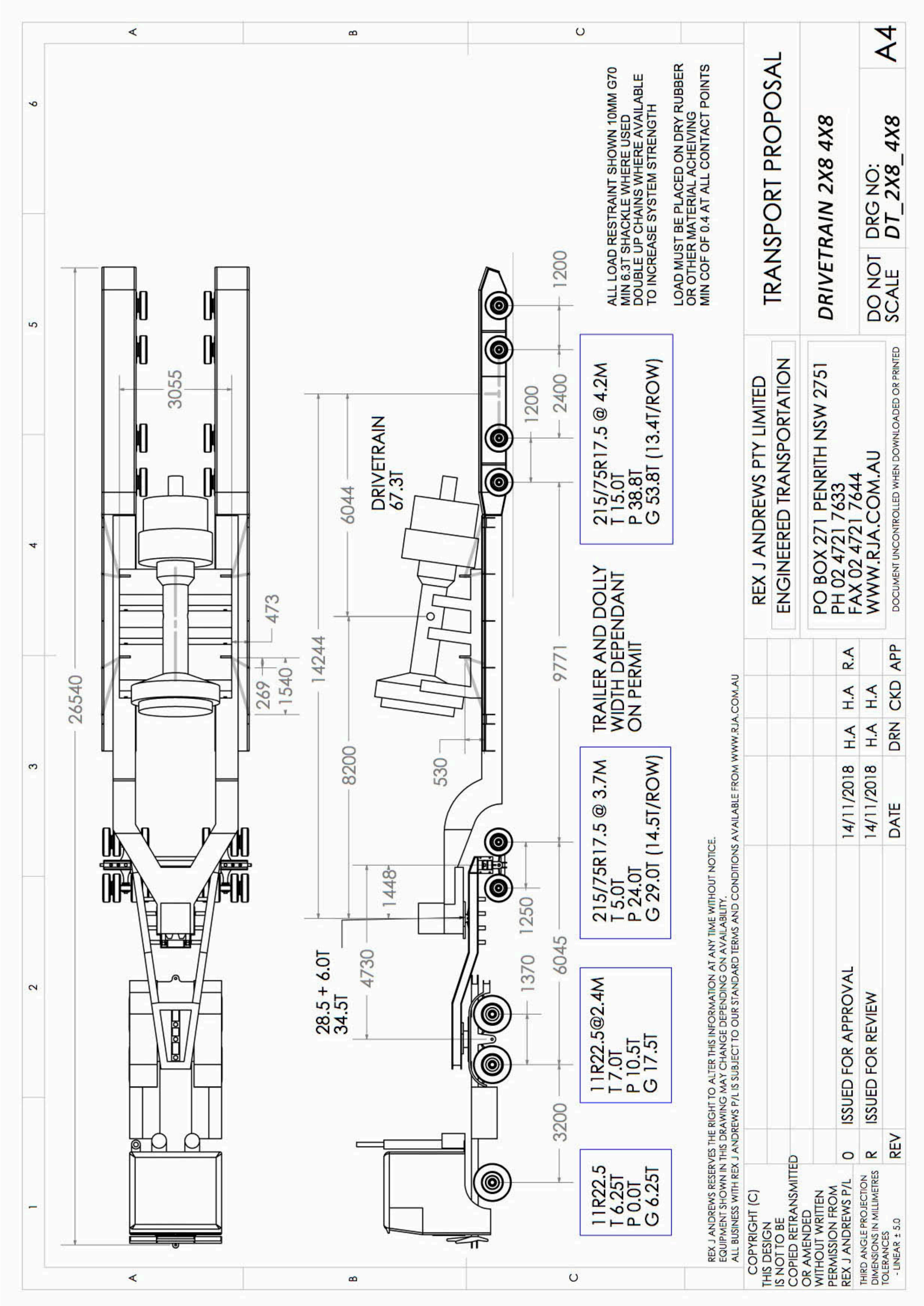
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TO INCREASE SYSTEM STRENGTH
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OR OTHER MATERIAL ACHEIVING
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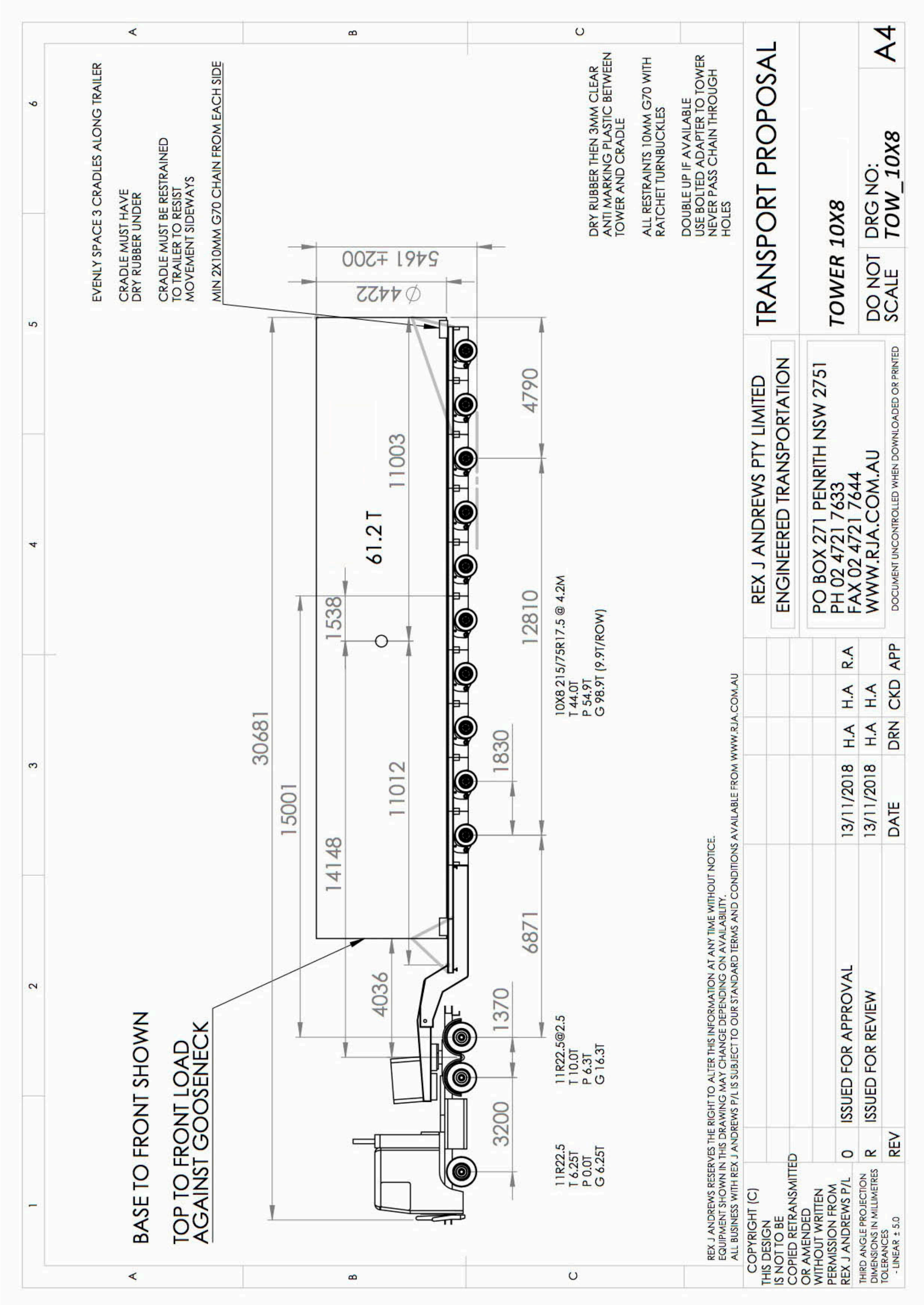
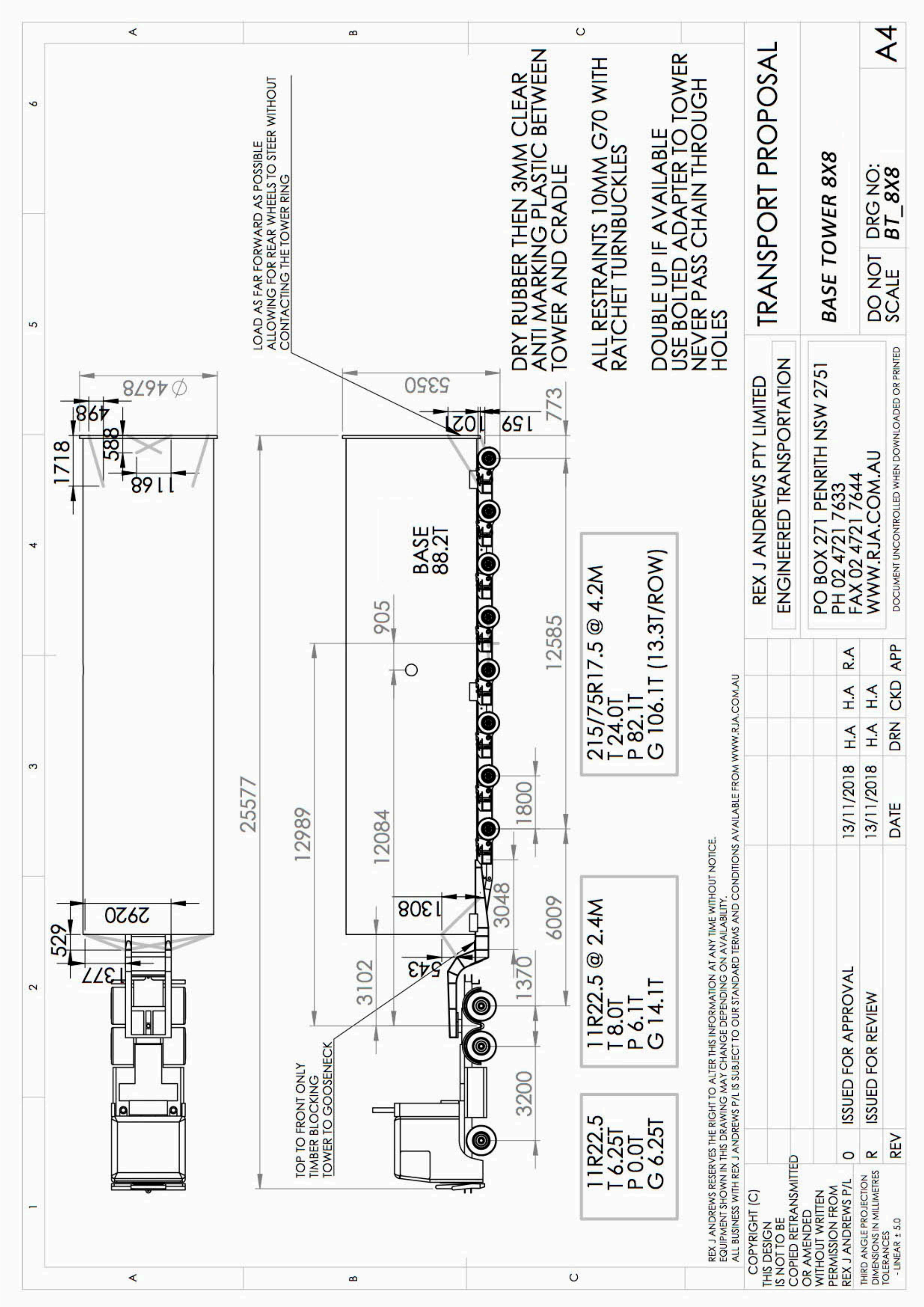
REV DATE DRN CKD APP

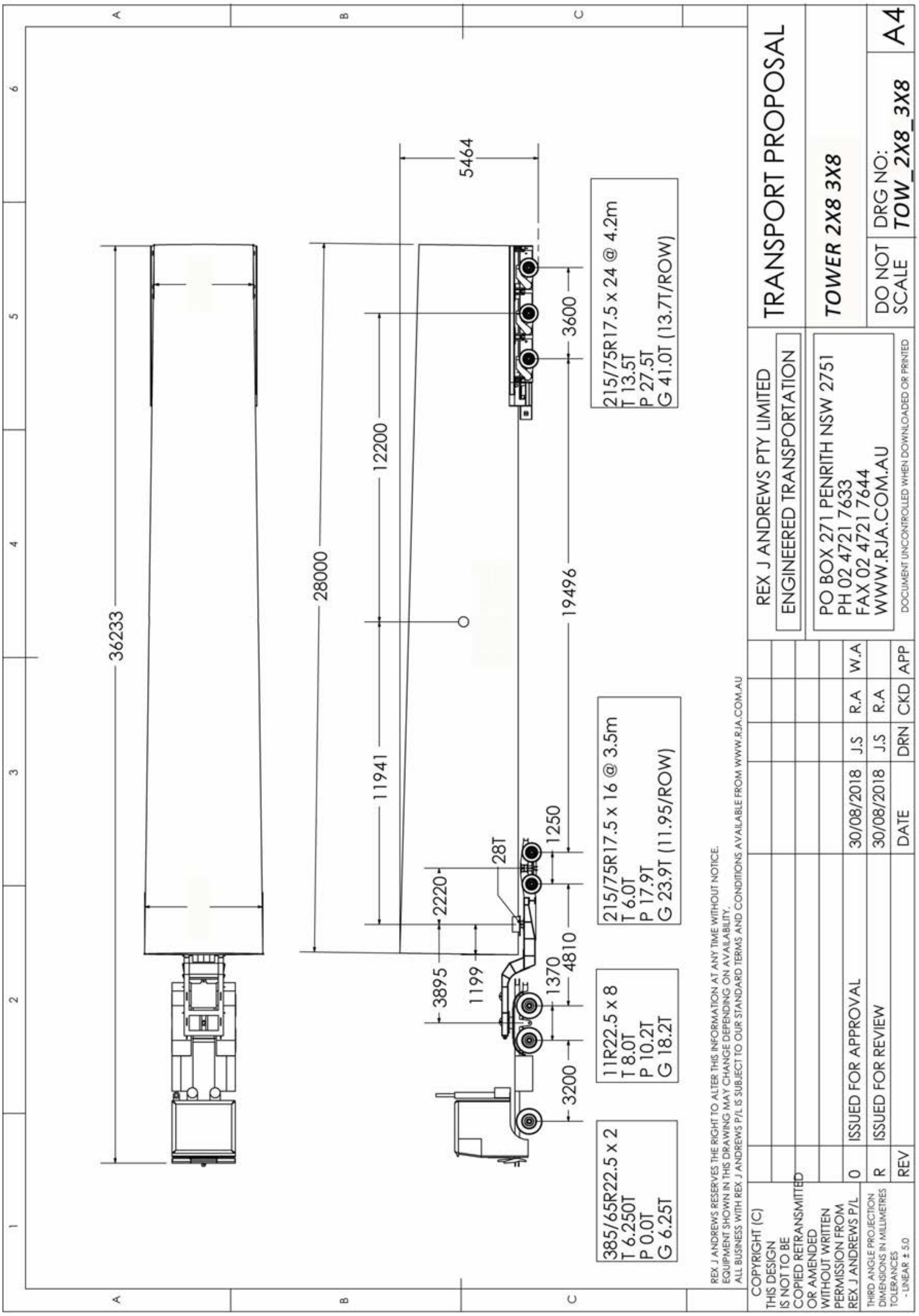
Tower trailer 10x8:



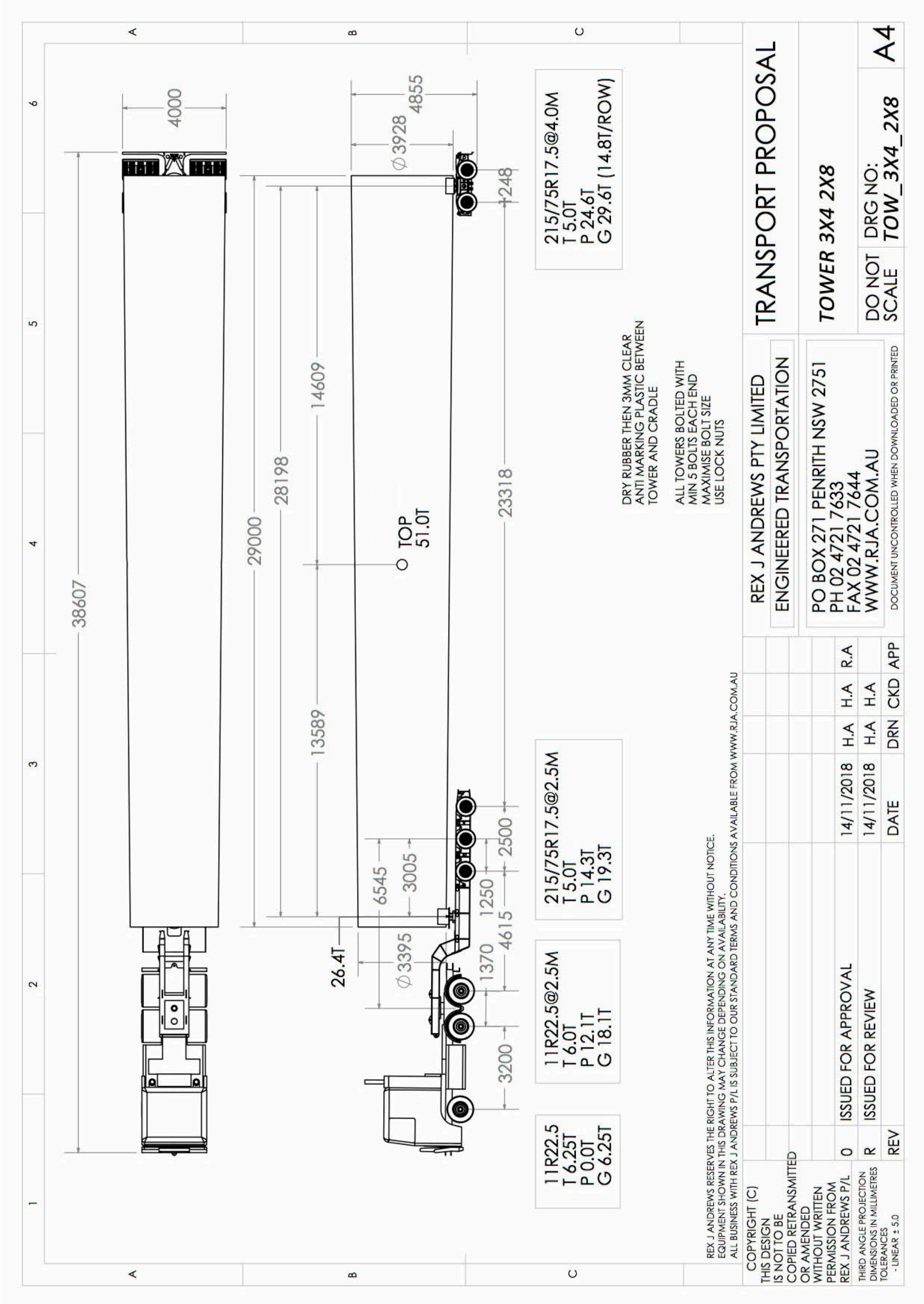
Tower trailer 8x8:



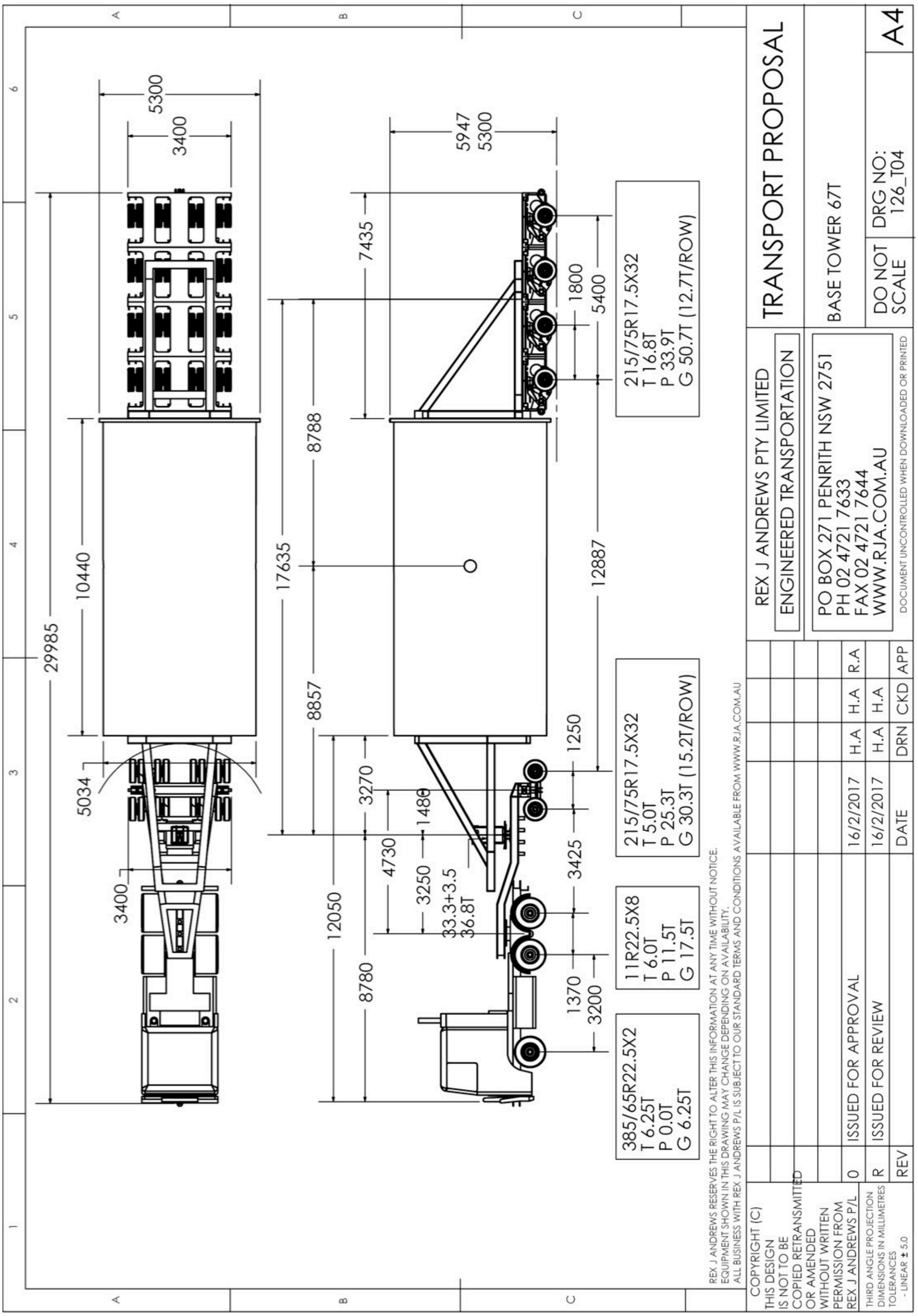
Mid tower trailer 10x8:



Top tower trailer:

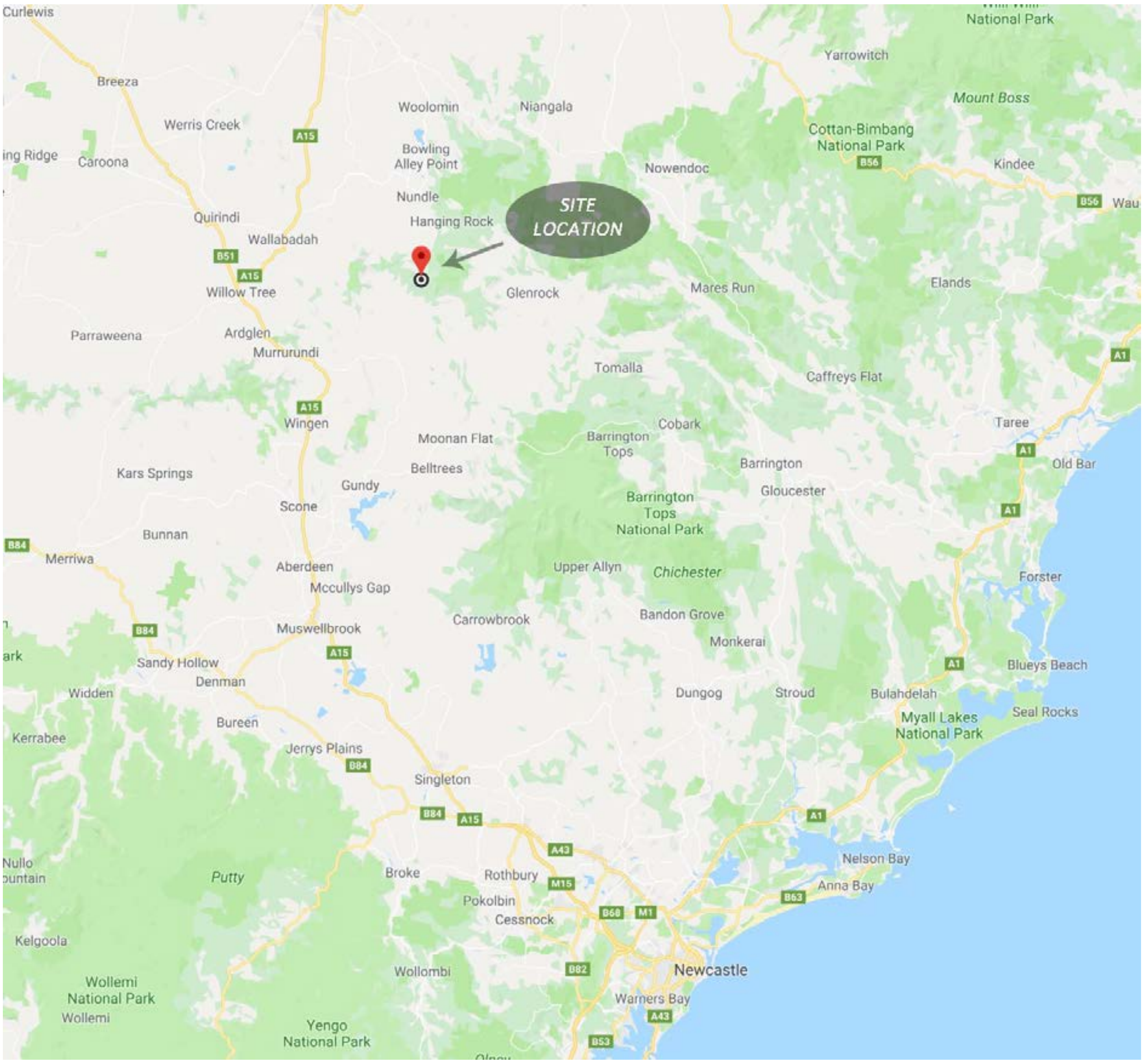


Bookend tower trailer:

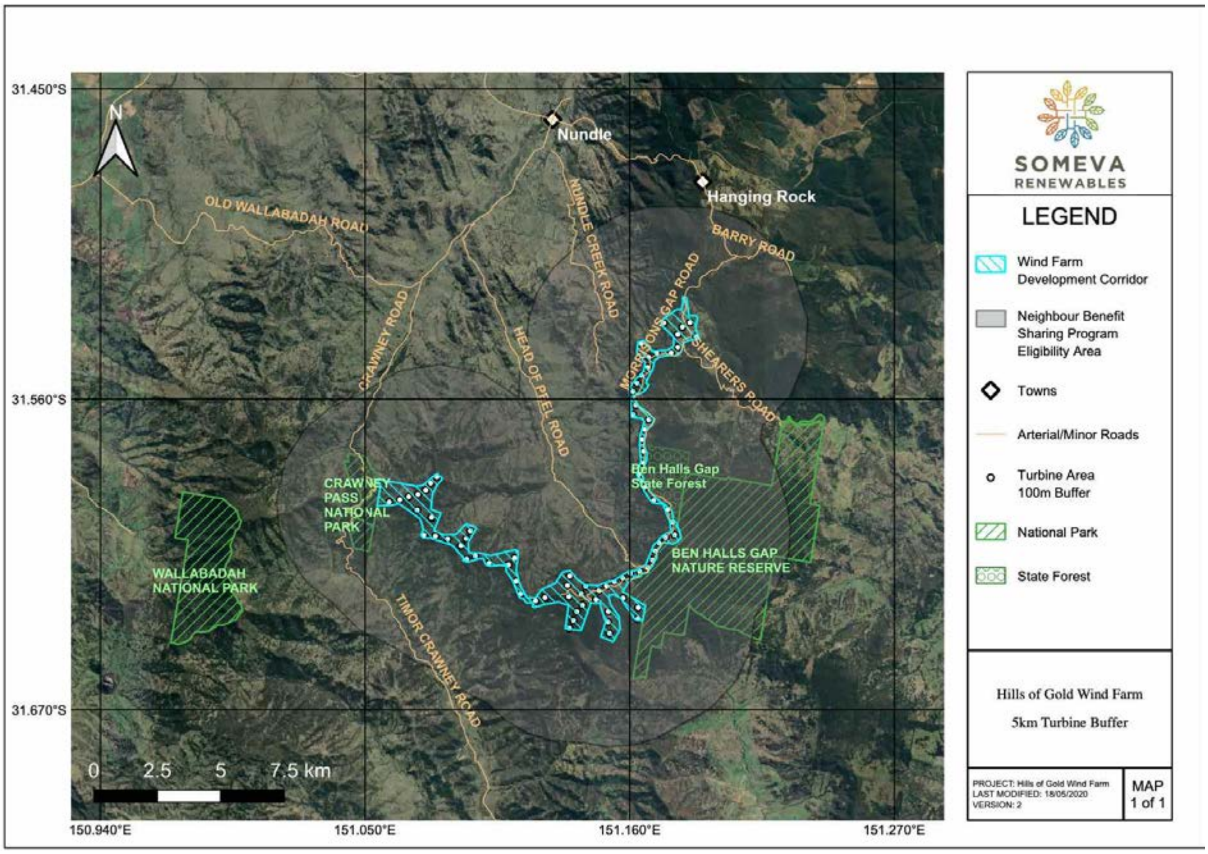


6.0 Site Location.

The Hill of Gold wind farm is located 8 Km's south of Nundle NSW and 300 Kilometres by road from the Port of Newcastle.



7.0 Windfarm site map.



8.0 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.

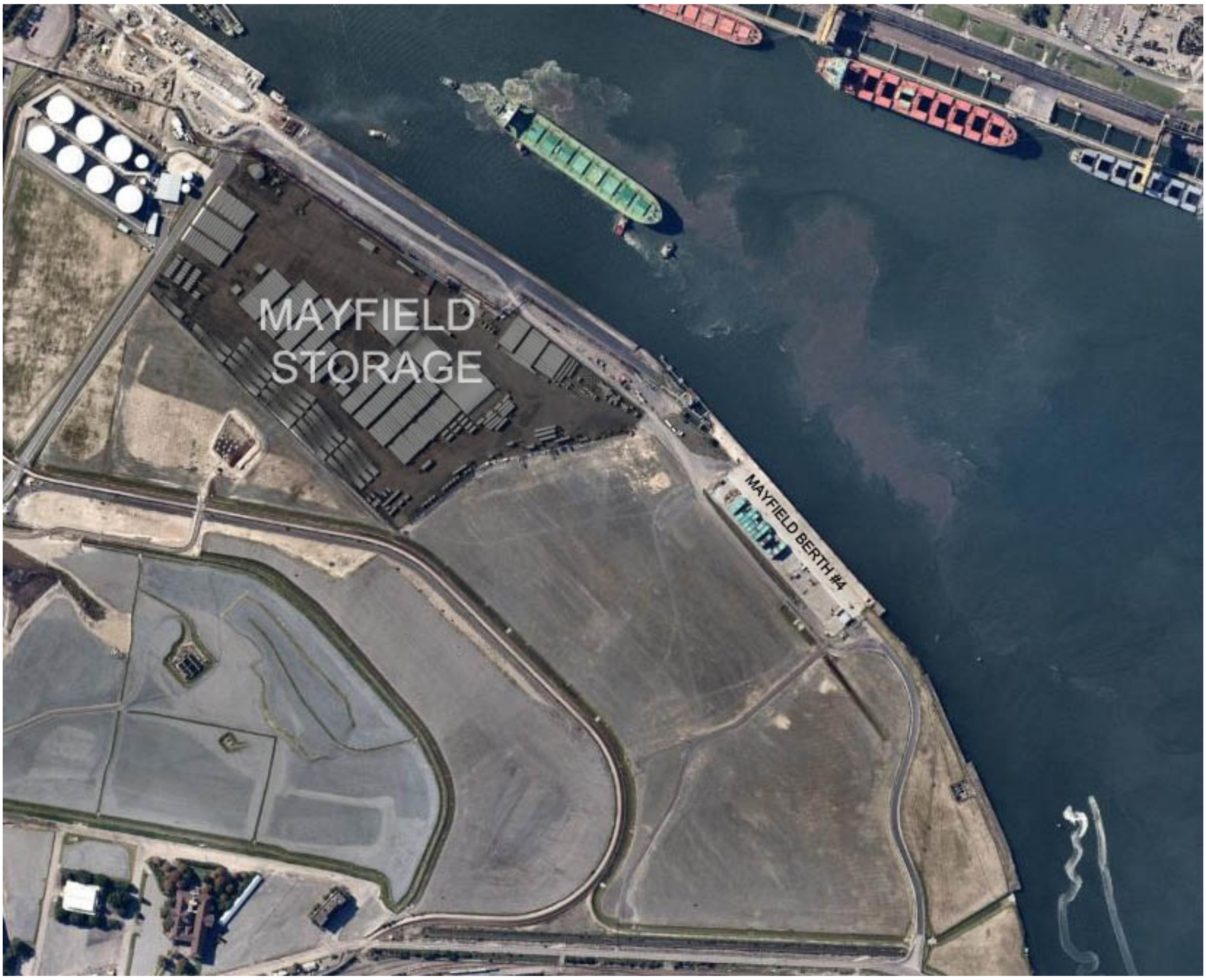


Image 2: Mayfield #4 Berth

Image 3: Mayfield #4 Port storage area.

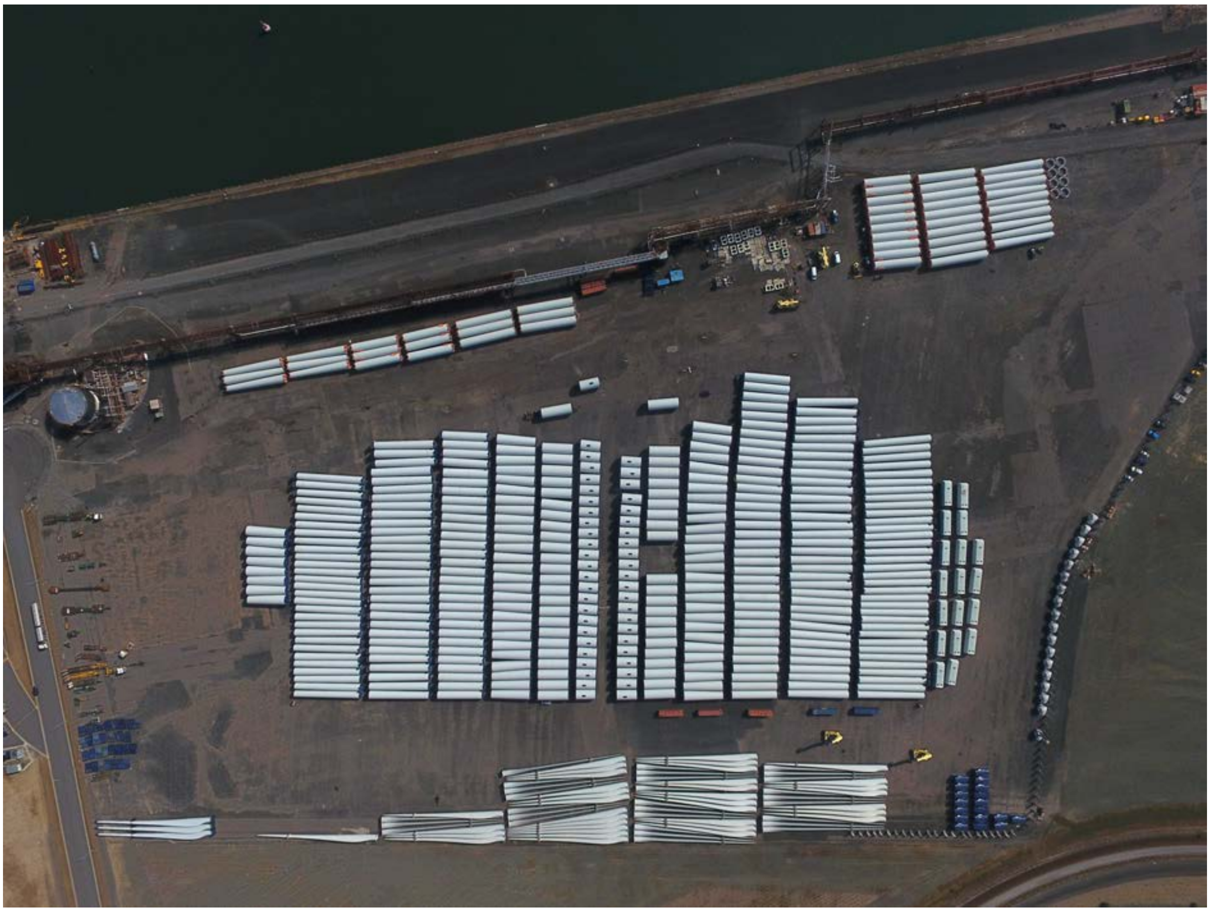


Image 4: Mayfield #4 Port storage area.

9.0 Transport Summary.

We have based this study on the turbine components, and towers entering Australia via the Port of Newcastle. The following shows the blade route and 3 additional routes depending on the size of the load.

ROUTE A: PORT OF NEWCASTLE TO HILLS OF GOLD WF, BLADE ROUTE: (326.0 kilometres): After completing this route survey, we believe the following is the most suitable option for the blades, and possibly the towers and motors.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, (Muswellbrook bypass via Bengalla Road, Wybong Road, Kayuga Road, Ivermein Street, Dartbrook mine access Road), New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/NrA7rYBLwoV6PE7n7

ROUTE B: PORT OF NEWCASTLE TO HILLS OF GOLD WF, LOADS UP TO 5.2 METRES HIGH: (284.0 kilometres): After completing this route survey, we believe the following is the most suitable option for loads up to 5.2 metres in height, except the blades.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/rouAWyxLZ53pMB3v7

ROUTE C: PORT OF NEWCASTLE TO HILLS OF GOLD WF, LOADS OVER 5.2 METRES HIGH: (328.0 kilometres): After completing this route survey, we believe the following is the most suitable option for loads over 5.2 metres in height, except the blades.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Thomas Mitchell Drive, New England Highway, Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/tMkKEEQKNL7azUDi7

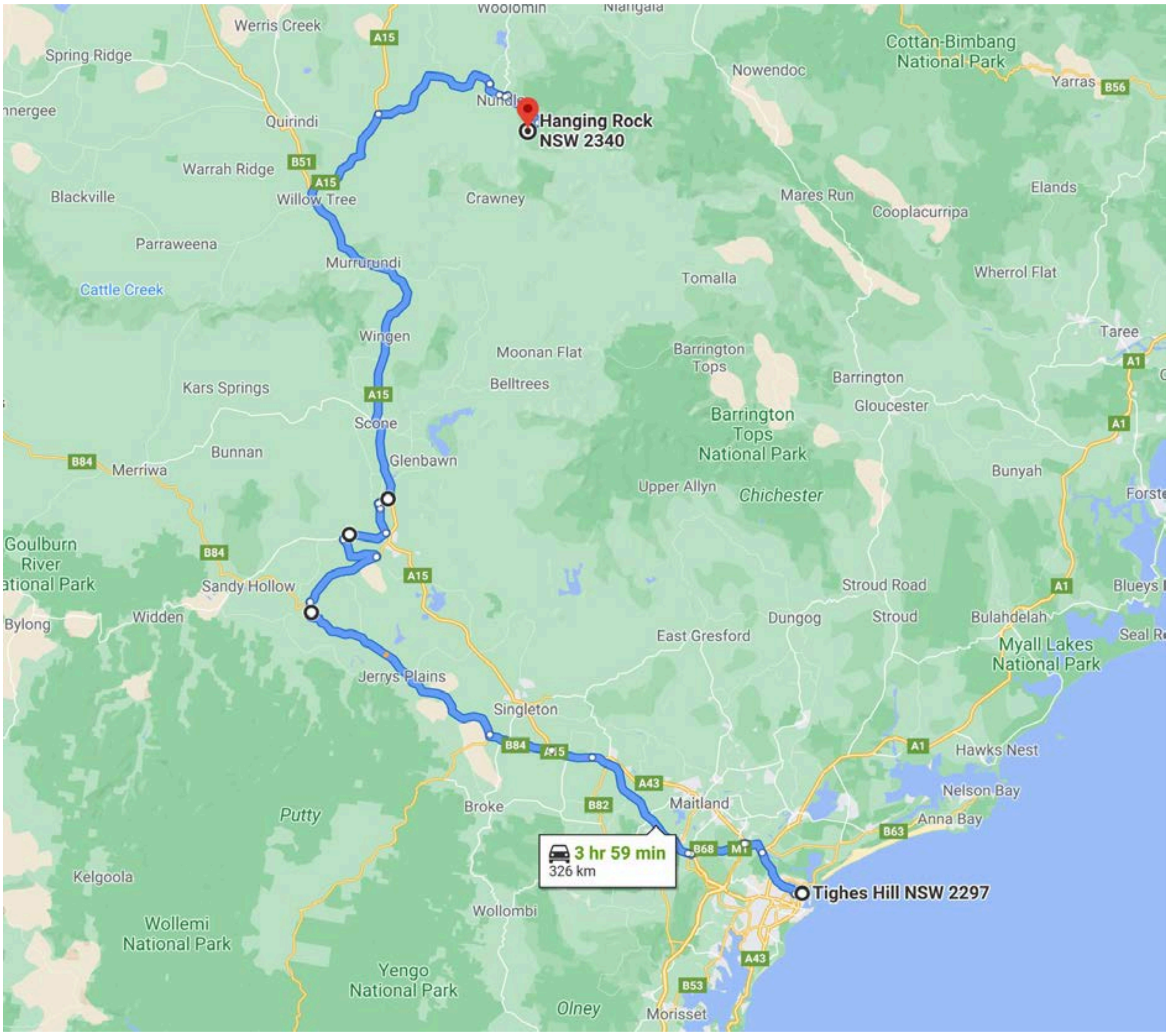
ROUTE D: PORT OF NEWCASTLE TO HILLS OF GOLD WF, STANDARD LOADS: (284.0 kilometres): After completing this route survey, we believe the following is the most suitable option for standard loads up to 3.5 metres wide, and 5.2 metres in height.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/rd4SwBkQqnga1RjY7

10.0 Route Survey A: Newcastle port to Hills of Gold WF Via the Golden Hwy. (Blade route)

Distance: (326.0 Kilometres).
Via: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, (Muswellbrook bypass via Bengalla Road, Wybong Road, Kayuga Road, Ivermein Street, Dartbrook mine access Road), New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.
GPS Link: https://goo.gl/maps/NrA7rYBLwoV6PE7n7



KEY	
MODIFICATIONS REQUIRED	(red)
MINOR WORKS OR CAUTION	(yellow)
PARKING	(green)

KM index	Location	Section of road	Critical Measurement	Procedure	Comments 170.0m rotor	Comments 158.0m rotor
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	Clearance: Length: 70.0 metres	Right hand turn	Both options will require the fence to be relocated on the left-hand side. Some hardstand will need to be added to the left side entering the corner and while exiting the corner.	Fence may need to be modified.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	Clearance: 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.	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	Clearance: Length: 70.0 metres	Right hand turn	The sign on the inside of the corner will need to be made removable.	No problem with this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Clearance: Length: 70.0 metres	Moderate right-hand turn	Load to travel across to the correct side to the correct side. The traffic signal in the middle of the intersection will need to be relocated. Additionally, hardstand will need to be placed on the south side of the intersection.	Load to travel across to the correct side to the correct side. Hardstand will need to be placed on the south side of the intersection.

4.9	Mayfield	Industrial Drive under traffic signals GPS link: https://goo.gl/maps/YmqhiS2iR582	Clearance: Height: 5.4 Metres	Travel directly ahead	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 meters will need to travel in the right-hand lane.	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 meters will need to travel in the right hand lane.
5.5	Mayfield West	Industrial Drive onto Maitland Road GPS link: https://goo.gl/maps/Kn49dhWG2qG2	Clearance: Length: 70.0 metres	Moderate right hand turn	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. No road modifications required.	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. No road modifications required.
13.9	Hexham	New England Highway under gantry GPS link: https://goo.gl/maps/YTMoFe7Aick	Clearance: Height: 5.95 Metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDr5JigkBp	Clearance: Width: 12.0 metres	Left hand merge	No problems with this section of road.	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive through M1 intersection GPS link: https://goo.gl/maps/N19vJih1Fgr	Clearance: Width: 9.0 metres Height: 5.9 metres	Travel directly ahead	No problems with this section of road.	No problems with this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/FH5DqHBXwSkntAmz9	Clearance: Length: 65.0 metres	Right hand turn	The blades will need to 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, this may require additional hardstand. Traffic control and or police will be required to perform this procedure.	Travel around the roundabout and take the third exit onto the Hunter Expressway onramp. A sign will need to be made removable. Spotter to guide load through this pinchpoint.

58.9	Branxton	The Hunter Expressway onto New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjq	Clearance: Width: 9.0 metres	Travel directly ahead	No problems with this section of road.	No problems with this section of road.
67.3	Whittingham	The New England Highway onto the Golden Highway GPS link: https://goo.gl/maps/nAnfkYfeUn42	Clearance: Width: 12.0 metres	Left Hand turn	The NSW Government is currently upgrading this intersection. The intersection in its current form has a number of 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 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.	The NSW Government is currently upgrading this intersection. The intersection in its current form has a number of 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 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	Clearance: 115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.
77.3	Whittingham	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/7hQdEmK1EgE2	Clearance: Length: 85.0 metres	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable.	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable.
77.4	Mount Thorley	Golden Highway GPS link: https://goo.gl/maps/zGvdupDuixx	Clearance: 100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.
80.8	Mount Thorley	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/VyA42n1CqZx	Clearance: Length: 85.0 metres	Right hand turn	Blades to cross from the incorrect side and cross back to the correct side approx. 500 metres west of the intersection.	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/Y6V6EXaCwxq	Clearance: 100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village GPS link: https://goo.gl/maps/AiuT8MMVTh5crs348	Clearance: Length: 70.0 metres	Dogleg	Blades to cross from the incorrect side to the incorrect side. Some hardstand will need to be added to the outside of the right hand corner. The swept path will stay within the road reserve.	No problems with this section of road.
126.0	Ogilvy	Golden Highway GPS link: https://goo.gl/maps/ShT4hrj8WQeMcris7	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. 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.	This section of road has a steep mountain range that will require additional pull trucks to assists 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.
141.9	Denman	Golden Highway onto Denman Road GPS link: https://goo.gl/maps/sf4PNnycxB32	Clearance: Length: 60.0 metres	Right hand turn	The blades will travel around the corner from correct side onto the correct side. The existing corner will require hardstand to be added and signs made removable. The swept path will stay within the road reserve.	The blades will travel around the corner from correct side onto the correct side. The existing corner will require hardstand to be added and signs made removable.
149.0	Muswellbrook	Denman Road onto Bengalla Road GPS link: https://goo.gl/maps/CJYMtSMTtJ2	Clearance: Length: 65.0 metres	Left 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 to the inside and outside of the corner. The swept path will enter a landowner's boundaries on the inside of the corner.	Blades to cross from the incorrect side to the incorrect side. No works required on this intersection.

158.5	Muswellbrook	Bengalla Road onto Wybong Road GPS link: https://goo.gl/maps/vibQtvHkxXE2	Clearance: Length: 70.0 metres	Right hand turn	Blades to cross from the correct side to the correct side. Some signs will need to be made removable.	Blades to cross from the correct side to the correct side. Some signs will need to be made removable.
168.1	Muswellbrook	Wybong Road onto Kayuga Road OPTION 1: GPS link: https://goo.gl/maps/xVscKUT1isJ2	Clearance: Length: 40.0 metres	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be relocated or made removable. Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence, and adding hardstand.	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be relocated or made removable. Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence, and adding hardstand.
173.3	Muswellbrook	Kayuga Road onto Ivermein Street GPS link: https://goo.gl/maps/JpTfmcsZ6Sk	Clearance: Length: 85.0 metres	Travel directly ahead	No problems with this section of road.	No problems with this section of road.
174.0	Muswellbrook	Ivermein Street onto Dartbrook mine access Road GPS link: https://goo.gl/maps/ddMHa4CmXK32	Clearance: Length: 50.0 metres	Right hand turn	Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally, a drainage pipe will need to be extended on the inside of the corner.	Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally, a drainage pipe will need to be extended on the inside of the corner.
174.8	Muswellbrook	Dartbrook Road GPS link: https://goo.gl/maps/u9vSXiSV7Jt	Clearance: Length: 60.0 metres	Right hand turn	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner.	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner.
177.0	Muswellbrook	Dartbrook Road onto New England Highway GPS link: https://goo.gl/maps/twTsmUKaED82	Clearance: Length: 60.0 metres	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added.	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added.
240.8	Murrurundi	New England highway (Township) GPS link: https://goo.gl/maps/Sj3ixAkhujt	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.

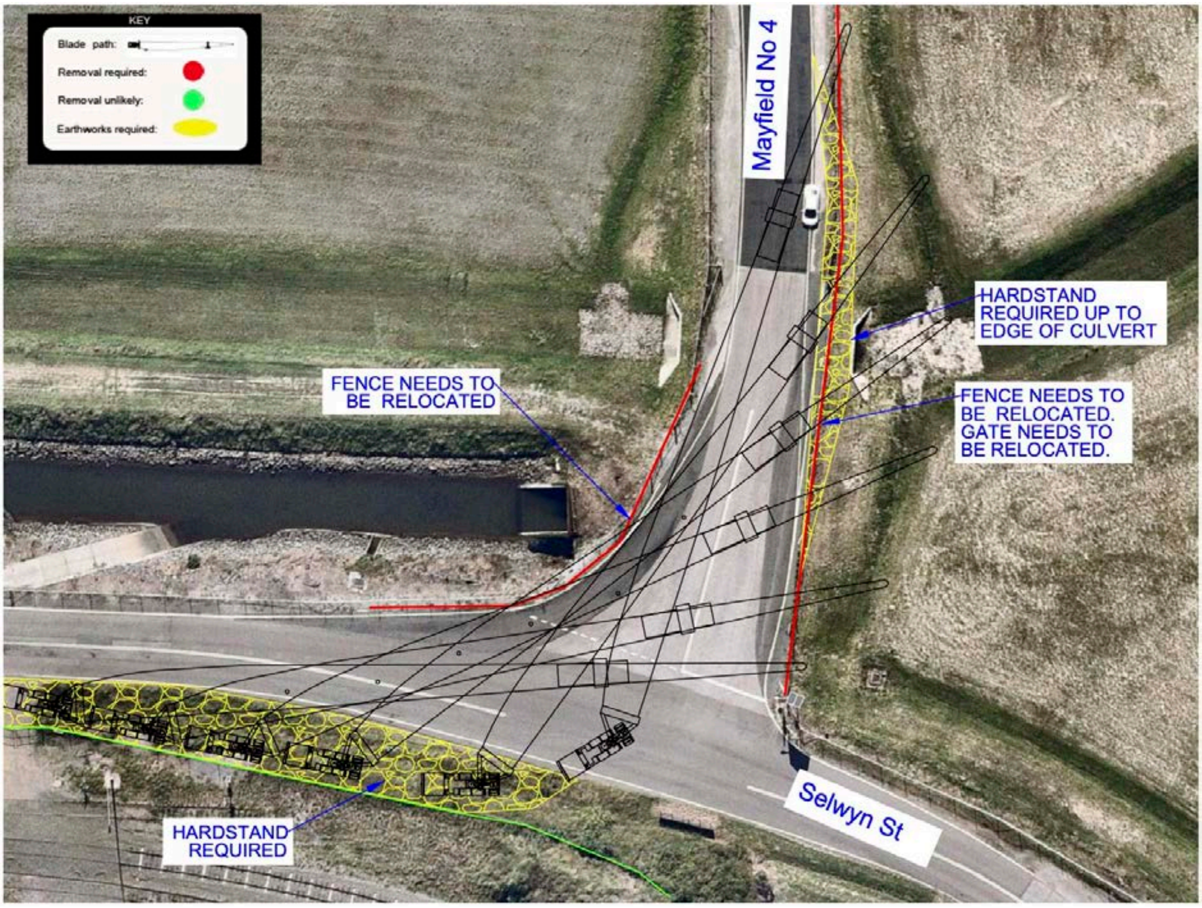
245.4	Murrurundi Hill	New England highway Nowlands Gap GPS link: https://goo.gl/maps/R5yufobPeMG2	Clearance: 120.0 x 12.0 metres	Parking Bay	Emergency parking only.	Emergency parking only.
251.3	Willow Tree	New England highway GPS link: https://goo.gl/maps/XLTg7CRV7EU2	Clearance: Width: 7.0m Length: 35m Height: 5.2m	Kankool weighbridge	It is likely that the towers and defiantly the blades will not fit into this facility. Engineered documentation showing correct weights for all loads will be required.	It is likely that the towers and defiantly the blades will not fit into this facility. Engineered documentation showing correct weights for all loads will be required.
257.9	Willow Tree Township	New England highway GPS link: https://goo.gl/maps/gw38qmvVfTC2	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.
259.5	Willow Tree Truck Stop N	New England highway GPS link: https://goo.gl/maps/RRdPVHupGCs	Clearance: 120.0 x 12.0 metres	Parking Bay	Suitable parking for Fatigue breaks for small loads only.	Suitable parking for Fatigue breaks for small loads only.
269.0	Wallabadah	New England highway GPS link: https://goo.gl/maps/QWCyeHQSohS2	Clearance: 80.0 x 5.0 metres	Parking Bay (side of road)	Suitable parking for Fatigue breaks.	Suitable parking for Fatigue breaks.
276.0	Wallabadah	New England highway onto Lindsay's Gap Road GPS link: https://goo.gl/maps/ePbYctjJootkBZiM9	Clearance: Length: 50.0 metres	Right hand turn	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner.	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable on the inside of the corner.
287.7	Garoo	Lindsay's Gap Road over Goonoo Goonoo Creek GPS link: https://goo.gl/maps/9ELSk5ZLRWnf14tm7	Clearance: Axle width: 3.60m Overall width: 6.20m Guard rail height: 850mm	Travel directly ahead over bridge in the centre of the road.	The blades will fit over the structure in its current condition. Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 meters is required for these heavier loads.	The blades will fit over the structure in its current condition. Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route.

						A trafficable deck width of at least 4.6 meters is required for these heavier loads.
295.7	Garoo	Lindsay's Gap Road over Middlebrook Creek GPS link: https://goo.gl/maps/DyxGUid9JucoAHhHA	Clearance: Axle width: 4.50m Overall width: 6.10m Guard rail height: 750mm	Travel directly ahead over bridge in the centre of the road.	The blades will fit over the structure in its current condition. This bridge will need to be modified or replaced before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 meters is required for these heavier loads.	The blades will fit over the structure in its current condition. This bridge will need to be modified or replaced before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 meters is required for these heavier loads.
301.2	Garoo	Lindsay's Gap Road through Lindsay's Gap GPS link: https://goo.gl/maps/GGKmqemziKdth8wH9	Clearance: Length: 90.0 metres	Travel directly ahead	Load to travel in the centre of the road, escorts to warn traffic 500 metres to the east of the gap.	Load to travel in the centre of the road, escorts to warn traffic 500 metres to the east of the gap.
306.8	Nundle	Lindsay's Gap Road onto Nundle Road GPS link: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA	Clearance: Length: 50.0 metres	Right hand turn	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. A power pole will also need to be relocated.	Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable.
310.3	Nundle	Nundle Road onto Crosby Street GPS link: https://goo.gl/maps/uVvcN9QkPyTDP1YR6	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.	No problems with this section of road.
310.6	Nundle	Crosby Street onto Oakenville Street GPS link: https://goo.gl/maps/aZNDKURdSBERedMr9	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.	No problems with this section of road.
311.0	Nundle	Oakenville Street and Jenkins Street intersection GPS link: https://goo.gl/maps/7YM56hQq8bnCSoZy8	5.0 metres width clearance		Blades to travel directly ahead on the correct side of the road. A no parking exclusion zone will need to be placed on the left-hand side while travelling through this intersection. Two signs will also need to be made removable.	Blades to travel directly ahead on the correct side of the road. A no parking exclusion zone will need to be placed on the left-hand side while travelling through this intersection. Two signs will also need to be made removable.

312.0	Nundle	Oakenville Street onto Old Hanging Rock GPS link: https://goo.gl/maps/1UMr2EwZetiE76Ey9	35.0 metres length clearance	Left hand turn	Blades to turn left from the incorrect side to the incorrect side of the road. The swept path will have the blades travel through a landowner's boundaries. This will require a fence to be relocated and hardstand added. Additionally, while travelling over the bridge some signs will need to be relocated and some sections of guardrail relocated.	Blades to turn left from the incorrect side to the incorrect side of the road. The swept path will have the blades travel through a landowner's boundaries. This will require a fence to be relocated and hardstand added. Additionally, while travelling over the bridge some signs will need to be relocated.
313.0	Nundle	Old Hanging Rock Road onto Barry Road GPS link: https://goo.gl/maps/ve9zvmdJnLBYtQSz5	90.0 metres clearance	Right hand bend	No problems with this section of road.	No problems with this section of road.
313.0 to 323.0 Km's	Nundle to Hanging Rock	Barrys Road https://goo.gl/maps/BUBe2MCfoQ215qKE6	25.0 metres length clearance	Travel directly ahead through multiple tight turns and steep terrain	Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow has been looked at and will likely be the best solution for all loads. To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would include hardstand and tree removal.	Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow has been looked at and will likely be the best solution for all loads. To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would include hardstand and tree removal.
323.0	Hanging Rock	Barrys Road onto Morrisons Gap Road GPS link: https://goo.gl/maps/CLZDJSjENx8rjfAg7	35.0 metres length clearance	Right hand turn	Blades to turn right from the correct side to the correct side of the road. The swept path will have the blades travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.	Blades to turn right from the correct side to the correct side of the road. The swept path will have the blades travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.

323.0 to 326.0 Km's	Hanging Rock	Morrisons Gap Road GPS link: https://goo.gl/maps/kLtYYnmhTgvE6ZPFA	25.0 metres length clearance	Travel around several sweeping bends on a gravel road	This section of road is gravel for the entirety. The road will need to be widened for the majority of the road. Typically, the road will need to be widened to 5.5 meters in all straight sections and made wider on the corners depending on the radius. A swept path analysis of this section of road, shows that the corridor would be able to stay within the road reserve. Additionally, there will need to be trees removed. The vertical curve will also need to be checked for the entirety of this road.	This section of road is gravel for the entirety. The road will need to be widened for the majority of the road. Typically, the road will need to be widened to 5.5 meters in all straight sections and made wider on the corners depending on the radius. A swept path analysis of this section of road, shows that the corridor would be able to stay within the road reserve. Additionally, there will need to be trees removed. The vertical curve will also need to be checked for the entirety of this road.
326.0 Km's	Hanging Rock	Morrisons Gap Road into Hills of Gold windfarm GPS link: https://goo.gl/maps/5VFMQCB3drgXcjyU8		Travel directly ahead into site entrance	Windfarm to supply suitable access for the dimensions and swept path of all loads.	Windfarm to supply suitable access for the dimensions and swept path of all loads.

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



PROCEDURE: Right hand turn.

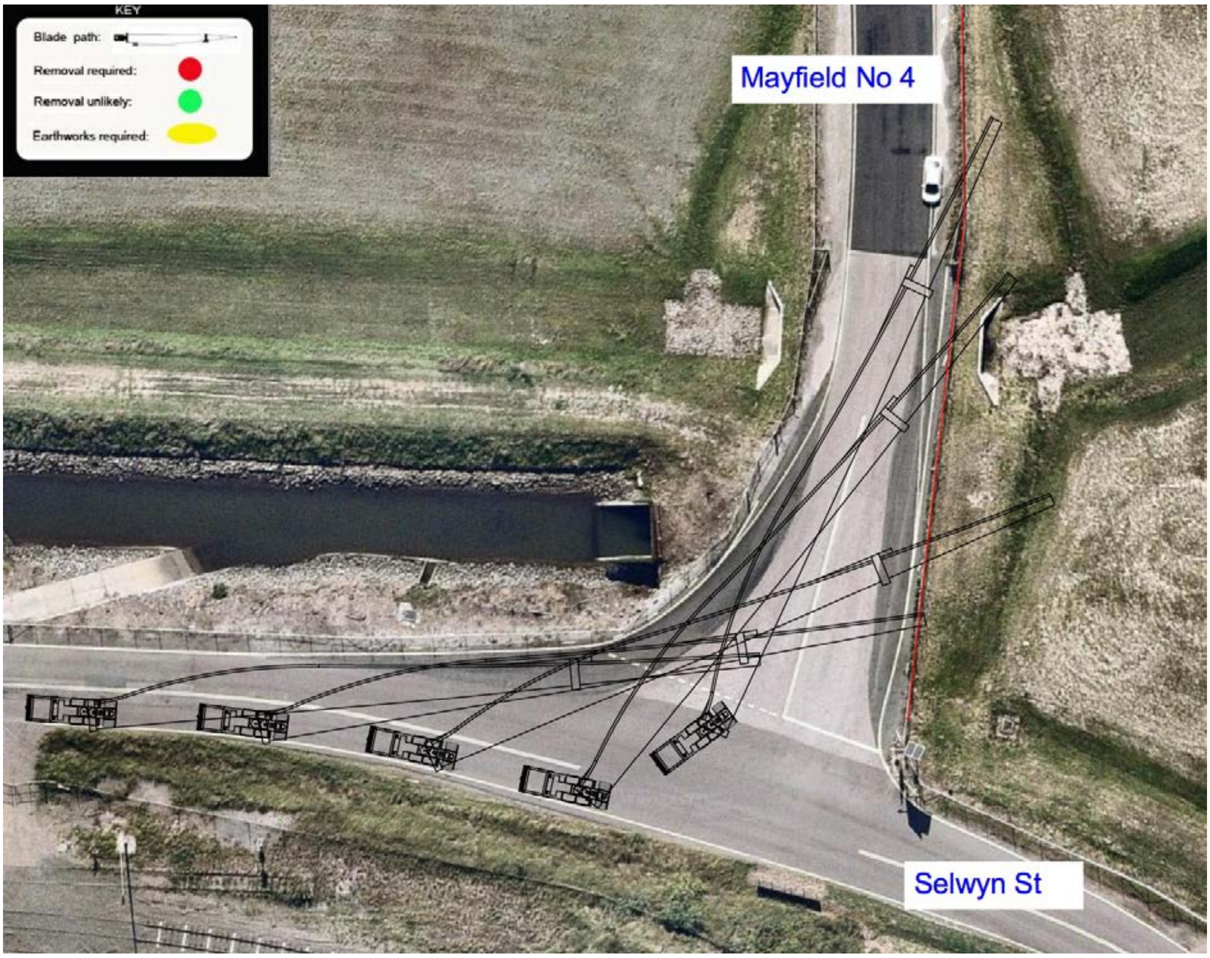
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/afLwPYKuNdm

COMMENTS: Some hardstand will need to be added to the left entry up to but not past the culvert and also the exit of the corner. 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. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes, moderate amounts of work are required.

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



PROCEDURE: Right hand turn.

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

COMMENTS: Fence may need to be modified.

A spotter will need to keep the driver informed throughout the procedure. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes small amounts of work are 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

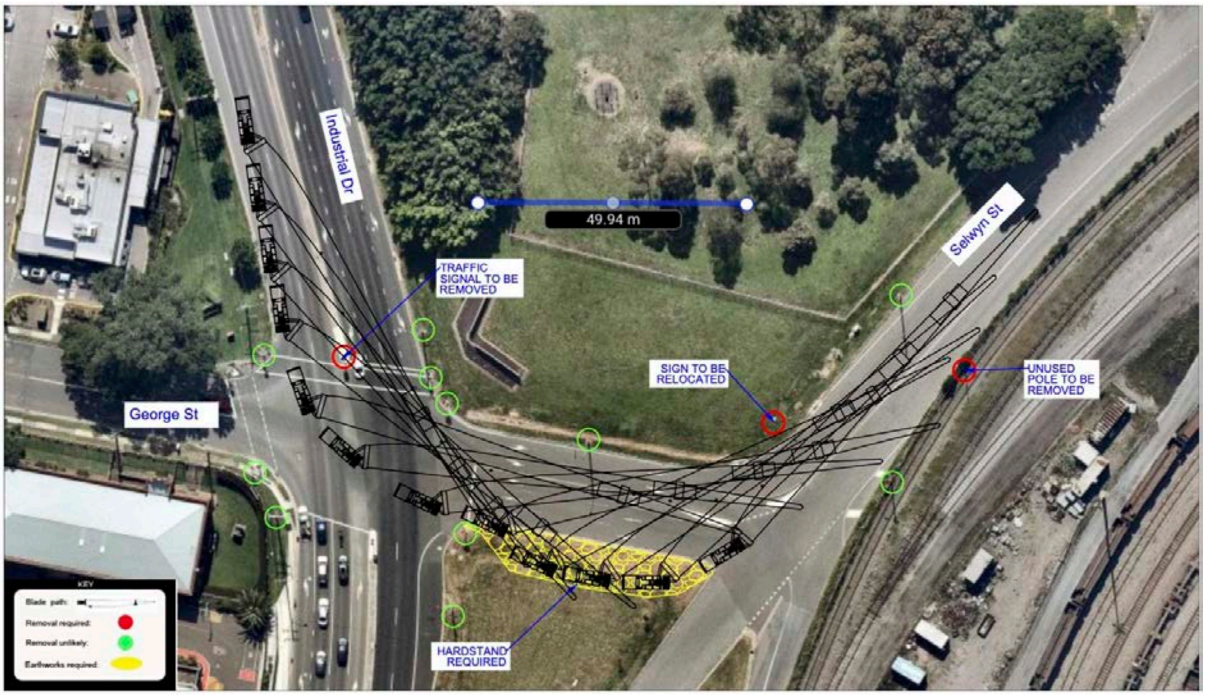
COMMENTS: Large width clearance and good ground clearance over this crossing.

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.

170 Metre rotor:



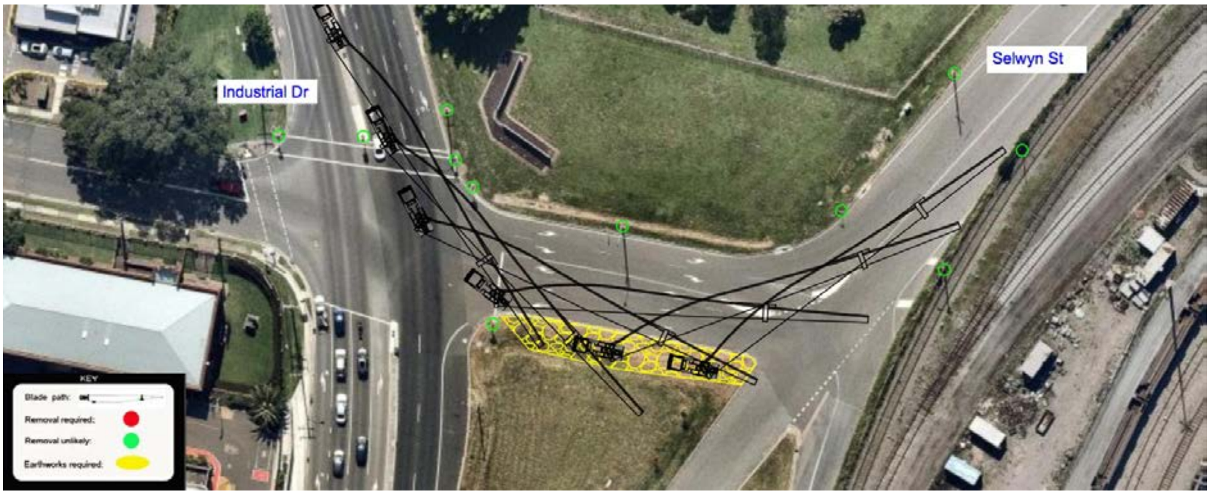
PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive.

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

COMMENTS: The first right hand turn through George Street will need a sign made removable. Entering Industrial Drive the loads will cross from the correct side to the correct side. The traffic signal in the centre median will need to be relocated. Some hardstand will need to be placed on the south side of the intersection. spotter would need to help the load through this intersection.

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

158 Metre rotor:



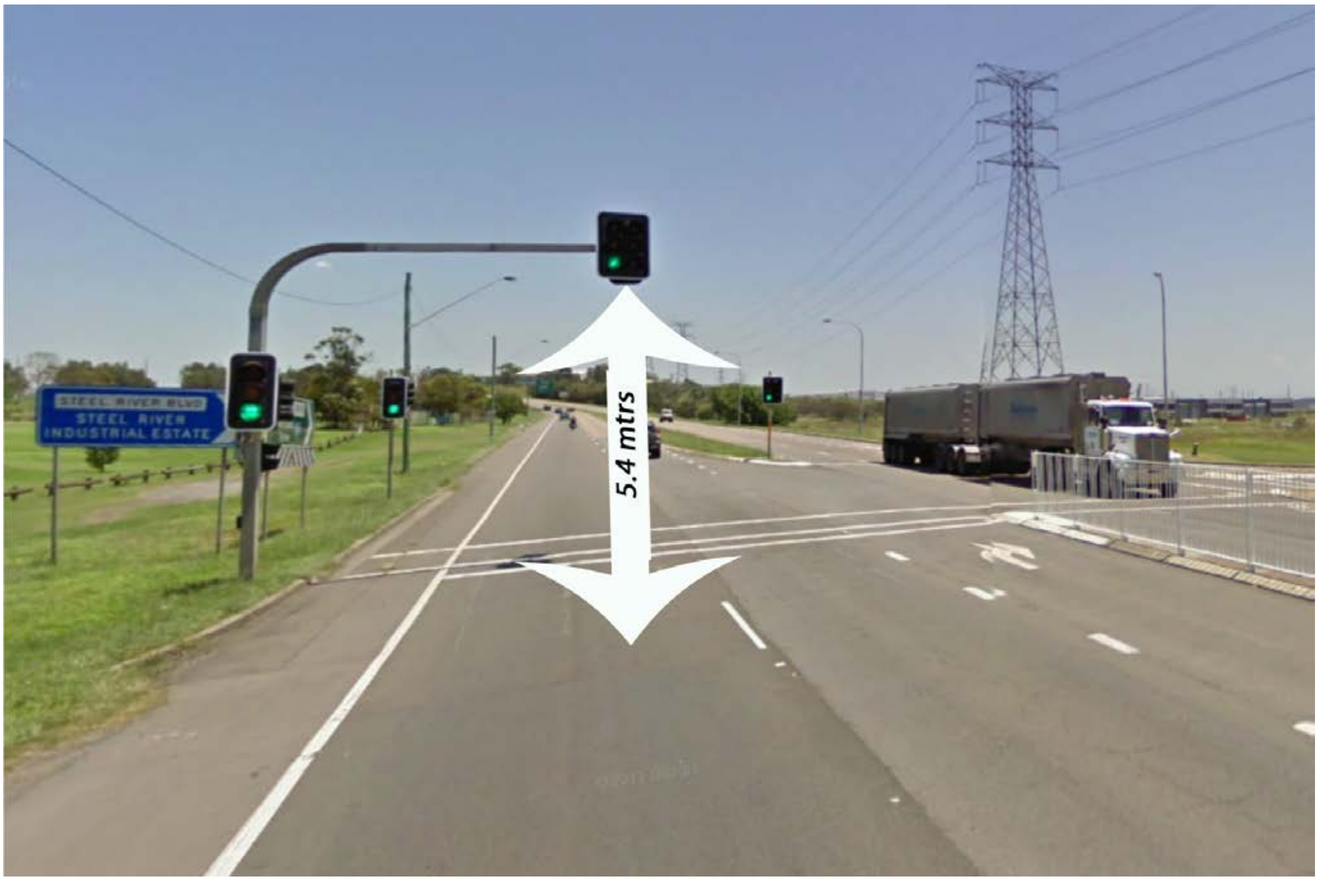
PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive.

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

COMMENTS: Entering Industrial Drive the loads will cross from the correct side to the correct side. Some hardstand will need to be placed on the south side of the intersection. A spotter would need to help the load through this intersection.

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

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



PROCEDURE: Overhanging signals while travelling through the intersection.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/5DpD3b7KnT72

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.

170 Metre rotor:

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

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/Kn49dhWG2qG2

COMMENTS: The loads will need to cross to the incorrect side of the intersection, before crossing back over 200 metres to the north.

Spotter to keep the driver informed throughout the procedure.

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

ROAD MODIFICATIONS: Nil.

158 Metre rotor:

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

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/Kn49dhWG2qG2

COMMENTS: The loads will need to cross to the incorrect side of the intersection, before crossing back over 200 metres to the north. The centre median strip will need to be modified so the trucks can cross over safely.

Spotter to keep the driver informed throughout the procedure.

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

ROAD MODIFICATIONS: Nil.

13.9 Km's: Lowest structure (Bridge or Sign) between Mayfield and the Hunter Expressway.

Image 1:

PROCEDURE: Travel directly ahead in the centre lane.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/YTMoFe7Aick

COMMENTS: This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.

ROAD MODIFICATIONS: No works are required.

18.4 Km's: Intersection of John Renshaw Drive and M1 at Beresfield.

170 Metre rotor and 158 Metre rotor:

PROCEDURE: Travel directly ahead in the centre lane.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/MYSBciVvcwB2

COMMENTS: The roundabout has been demolished. The new intersection has 2 lanes directly ahead with a width clearance of 9.0 metres.

ROAD MODIFICATIONS: No works are required.

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

170 Metre rotor:

170 Metre rotor:

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/FH5DqHBXwSkntAmz9

COMMENTS: 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.

ROAD MODIFICATIONS: No works required.

158 Metre rotor:

PROCEDURE: Travel around the roundabout and take the third exit onto the Hunter Expressway onramp.

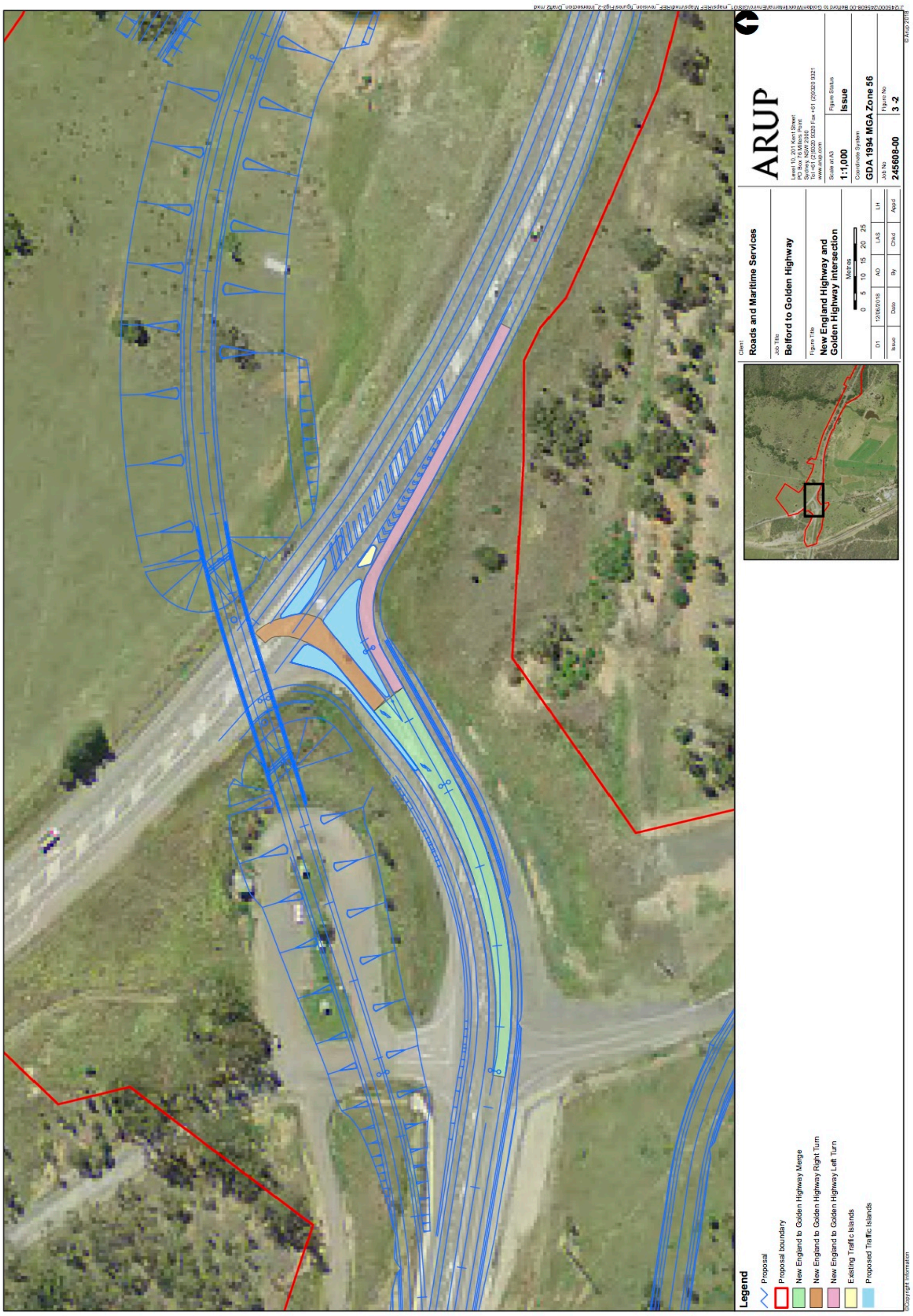
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/cEnuC5th1p52

COMMENTS: A sign will need to be made removable. Spotter to guide load through this pinchpoint.

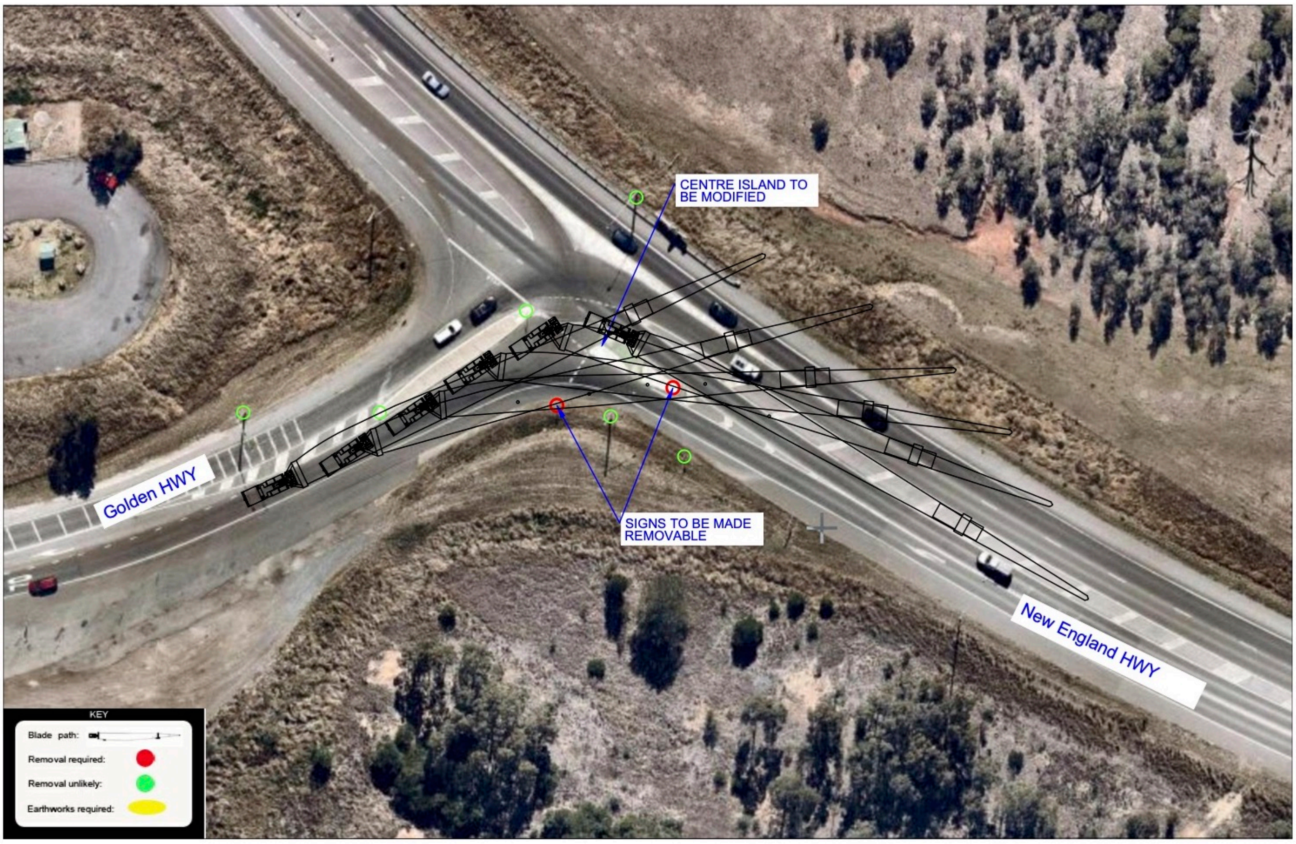
ROAD MODIFICATIONS: No works required.

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

Image 1: Proposed upgrades



170 Metre rotor:



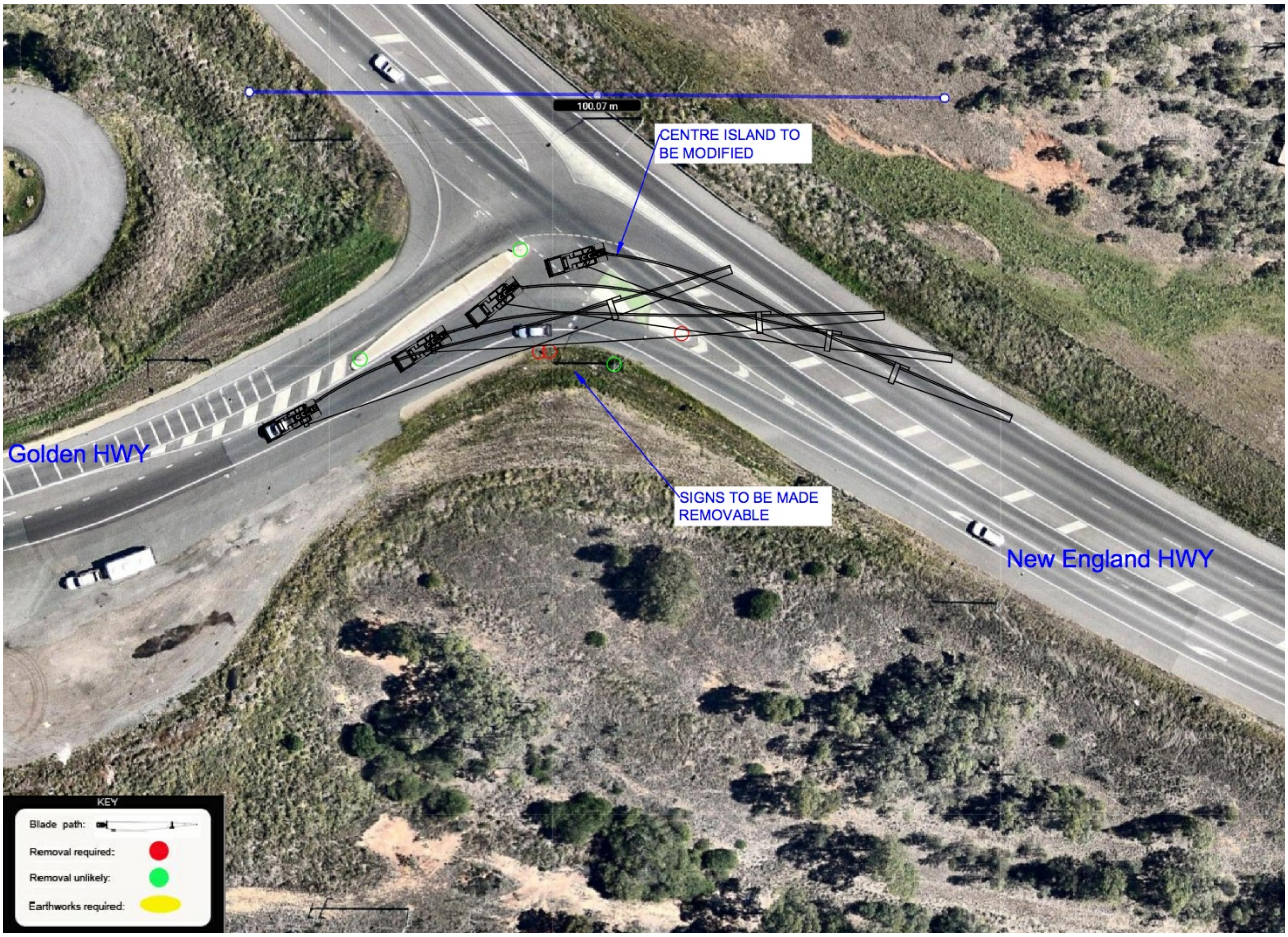
PROCEDURE: Left hand turn from the New England Highway onto the Golden Highway.

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.

ROAD MODIFICATIONS: NOTE: This intersection is currently in line to be upgraded. The details on image 1 shows that the changes should not affect the swept path, however it is recommended that this is monitored.

158 Metre rotor:



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

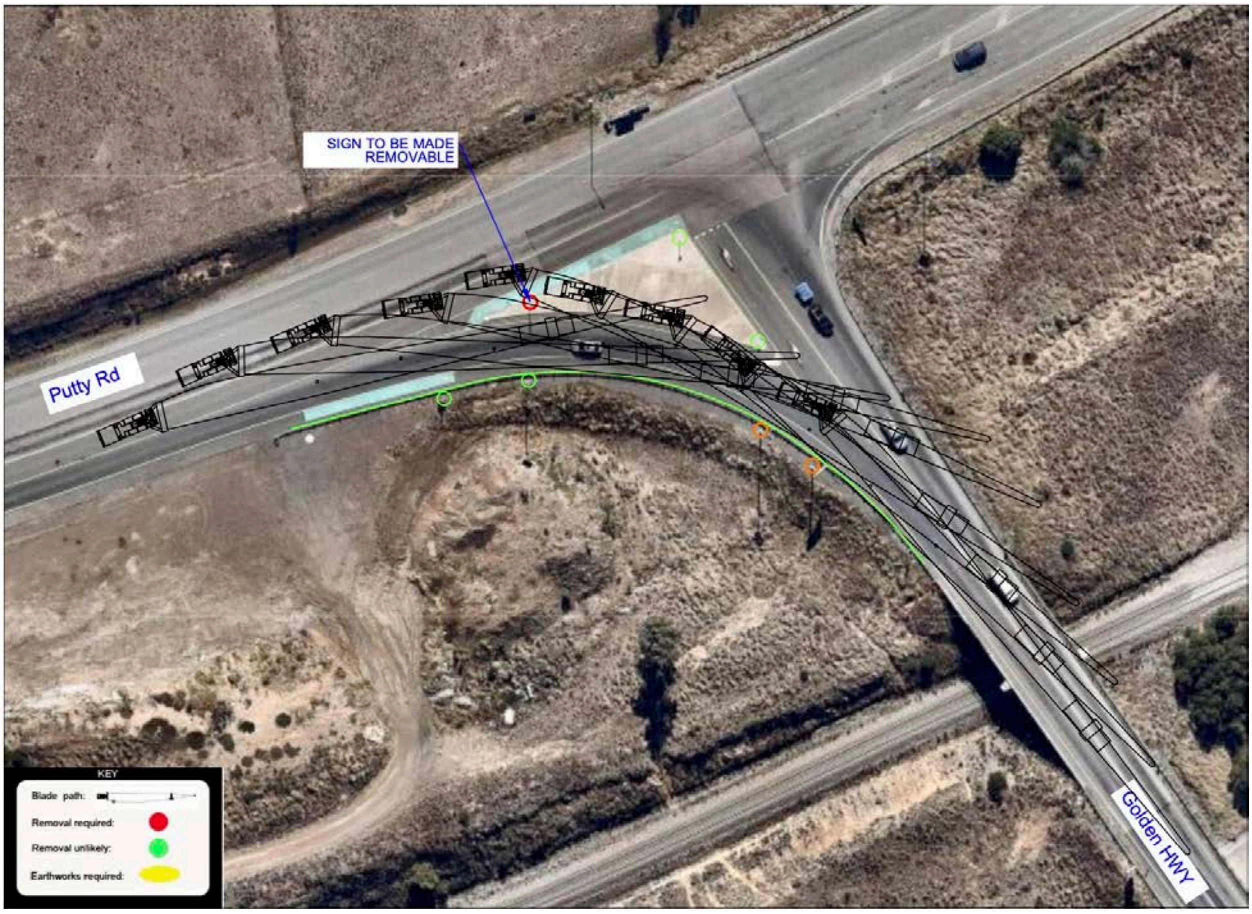
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/GZ3VbkLrKf42

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

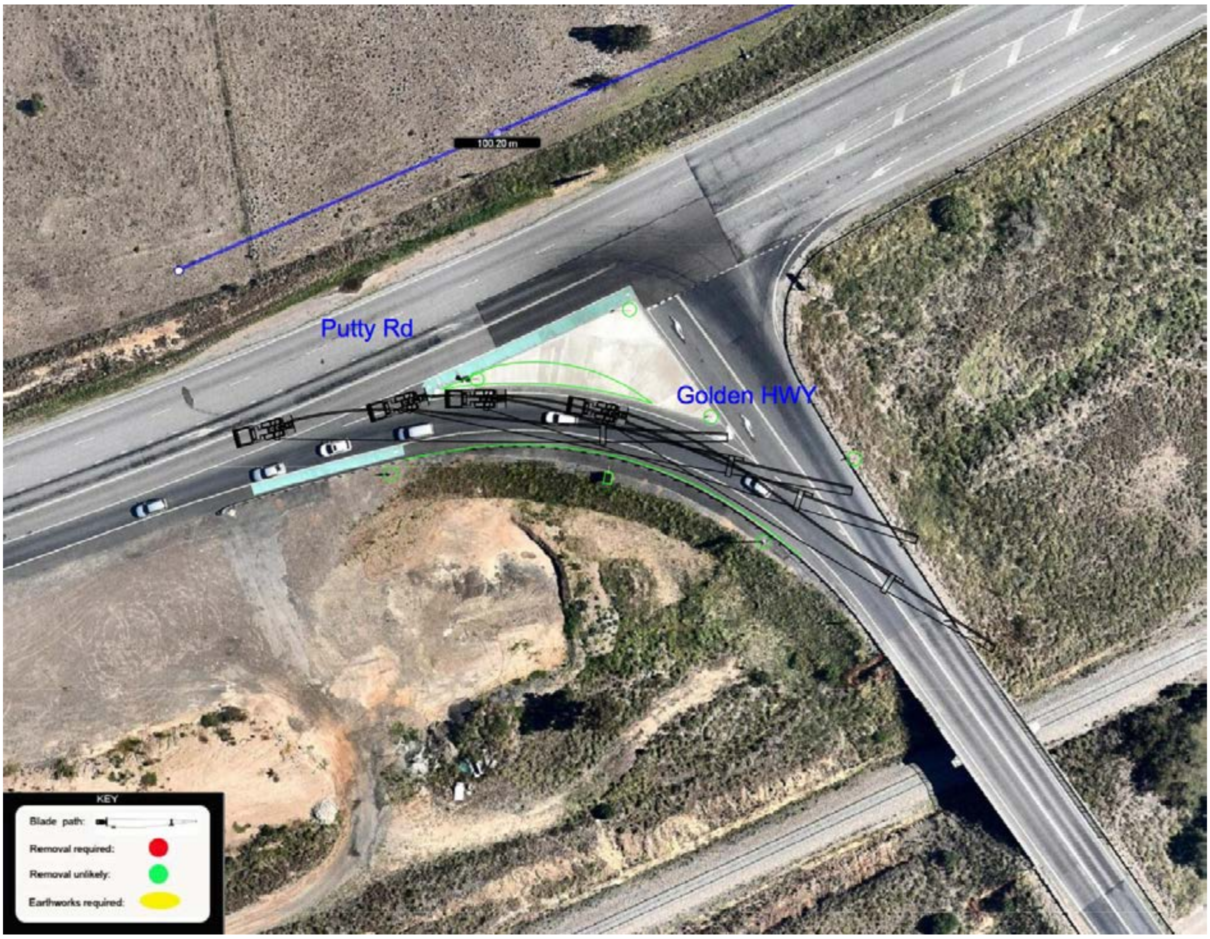
ROAD MODIFICATIONS: NOTE: This intersection is currently in line to be upgraded. The details on image 1 shows that the changes should not affect the swept path, however it is recommended that this is monitored.

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

170 Metre rotor:



158 Metre rotor:



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.

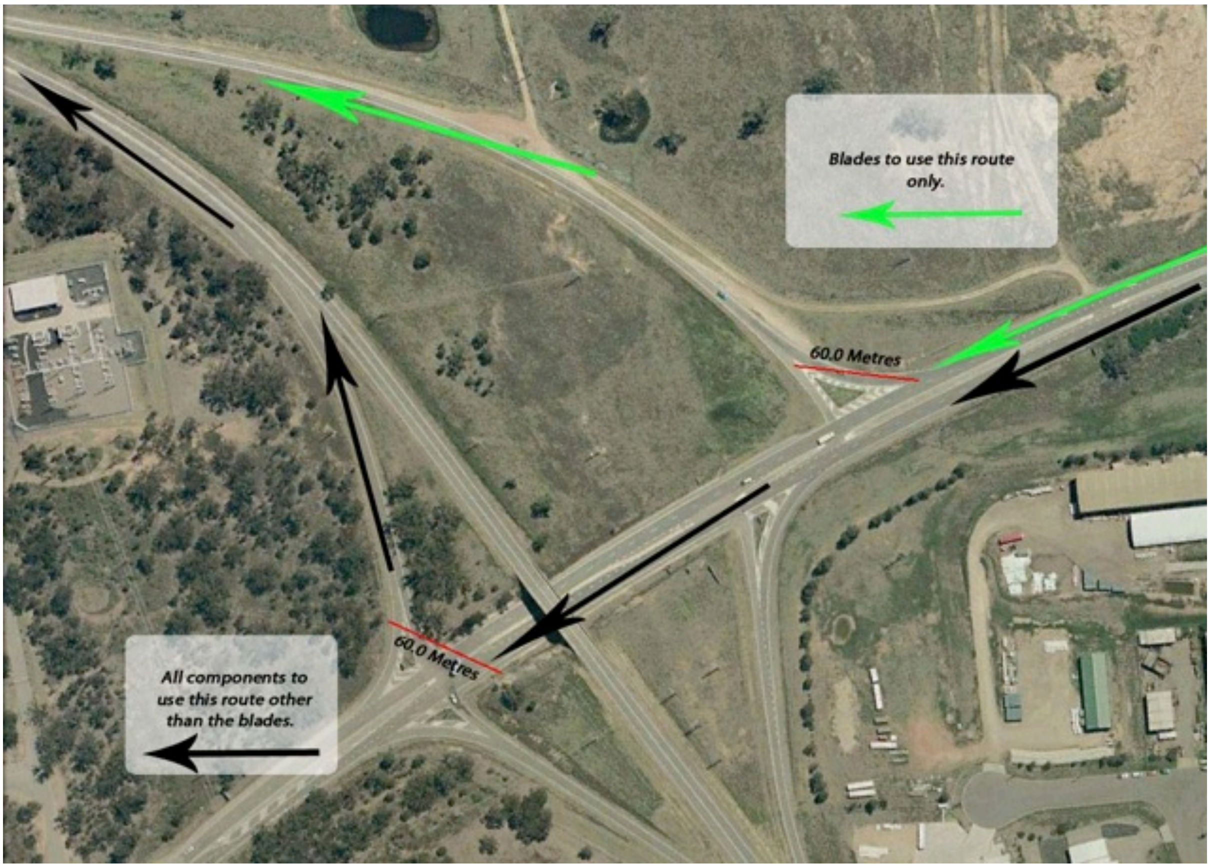
Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

80.8 Km's: Golden Highway intersection with Putty Road at Mount Thorley.

170 Metre rotor:

Image 2:



PROCEDURE: Right hand turn from the Putty Road onto the Golden Highway.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/Qj4tjSSjN932

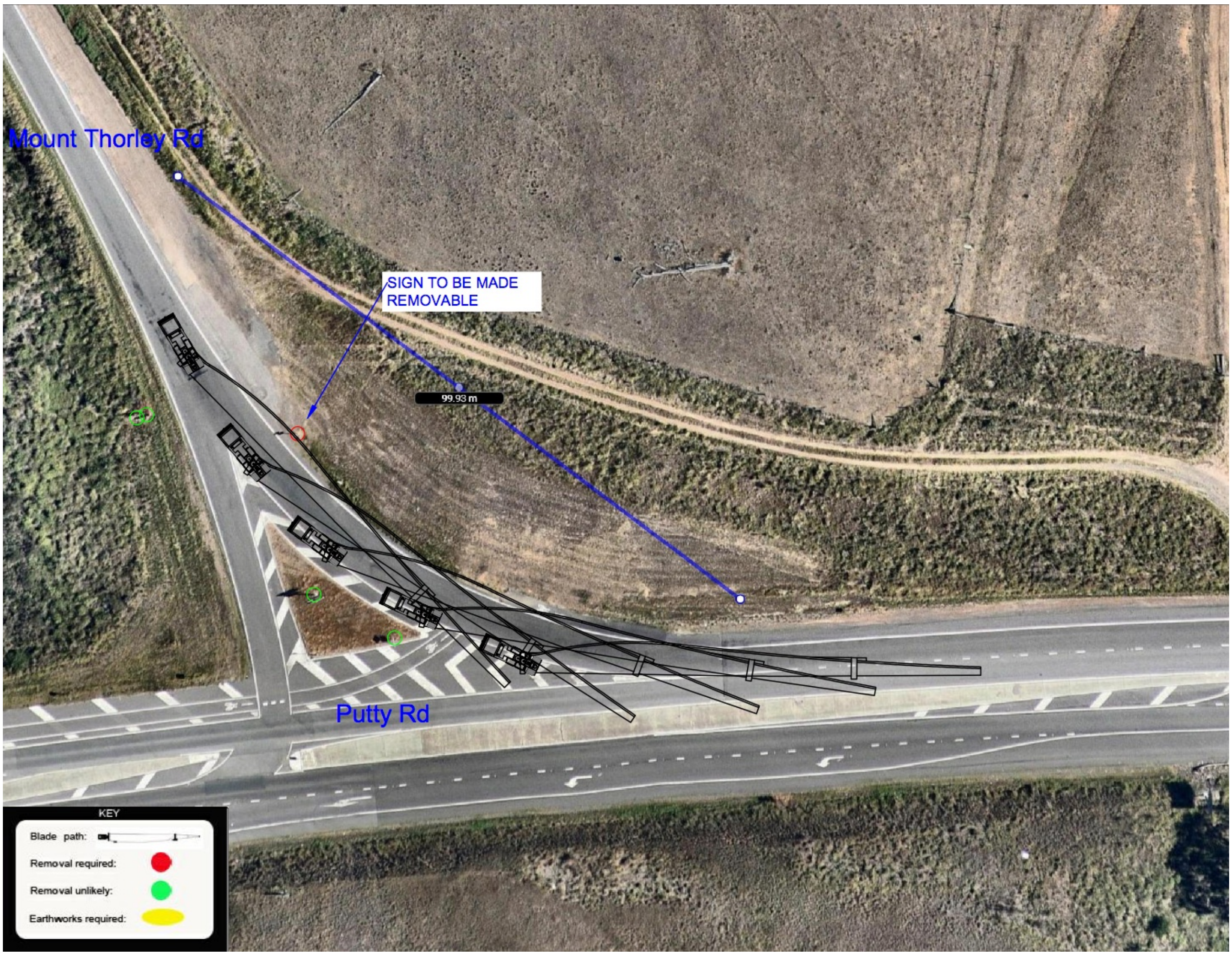
COMMENTS: Loads to turn from the incorrect side to the incorrect side. Blades to cross to the incorrect side prior to the intersection, and return to the correct side when the lanes remerge. Spotter to keep the driver informed throughout the procedure.

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

NOTE: Towers and general loads will travel under the overpass and stay on the correct side of the road. 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.

158 Metre rotor



PROCEDURE: Right hand turn from the Putty Road onto the Golden Highway.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/Qj4tjSSjN932

COMMENTS: Loads to turn from the incorrect side to the incorrect side. Blades 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 will travel under the overpass and stay on the correct side of the road. 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.

170 Metre rotor:

170 Metre rotor:

PROCEDURE: Right and left hand turn through the village.

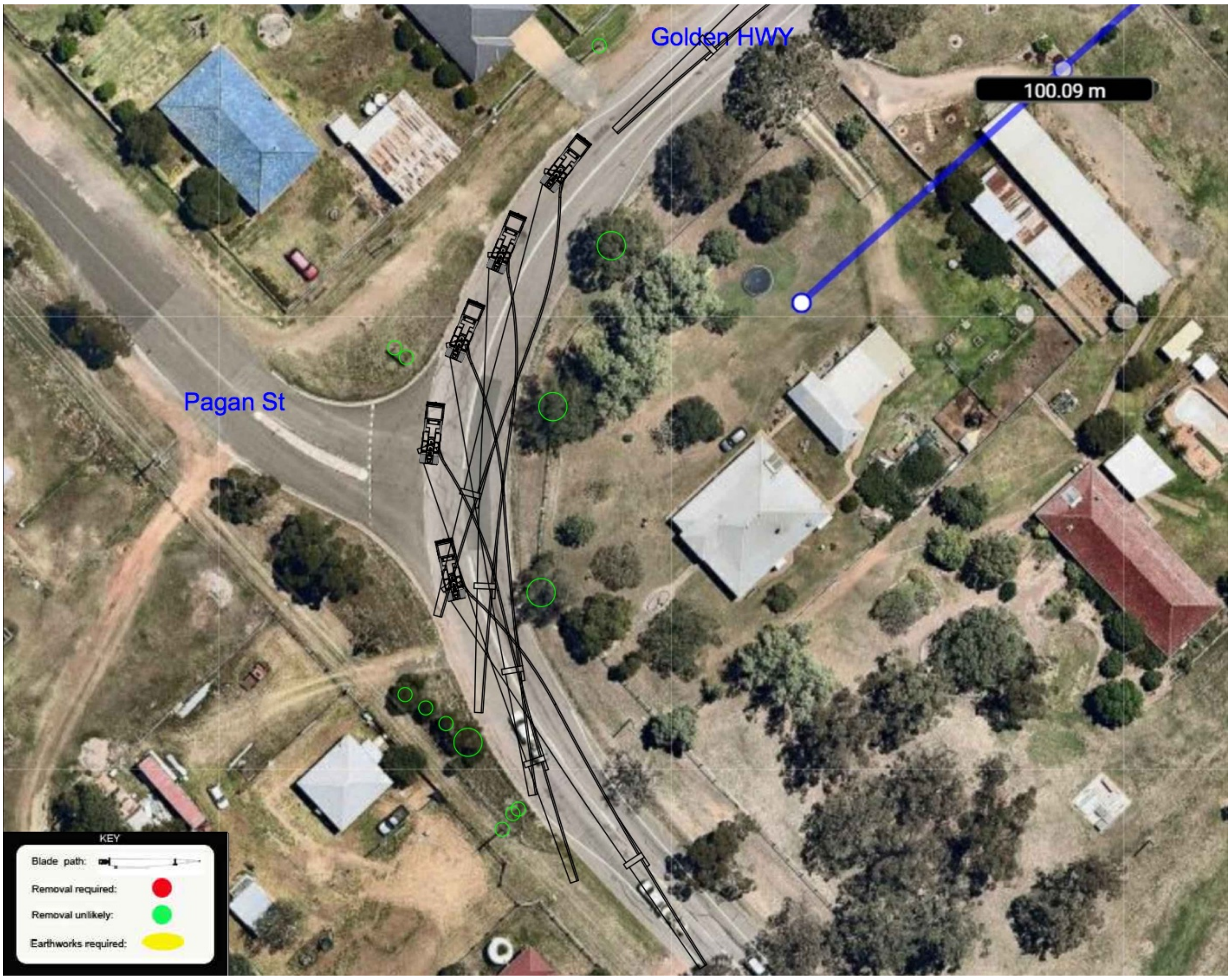
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/AiuT8MMVTh5crs348

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some hardstand needs to be added to the outside of the corner for the right-hand turn. The swept path will stay within the existing road reserve.

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

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:



158 Metre rotor:

PROCEDURE: Right and left hand turn through the village.

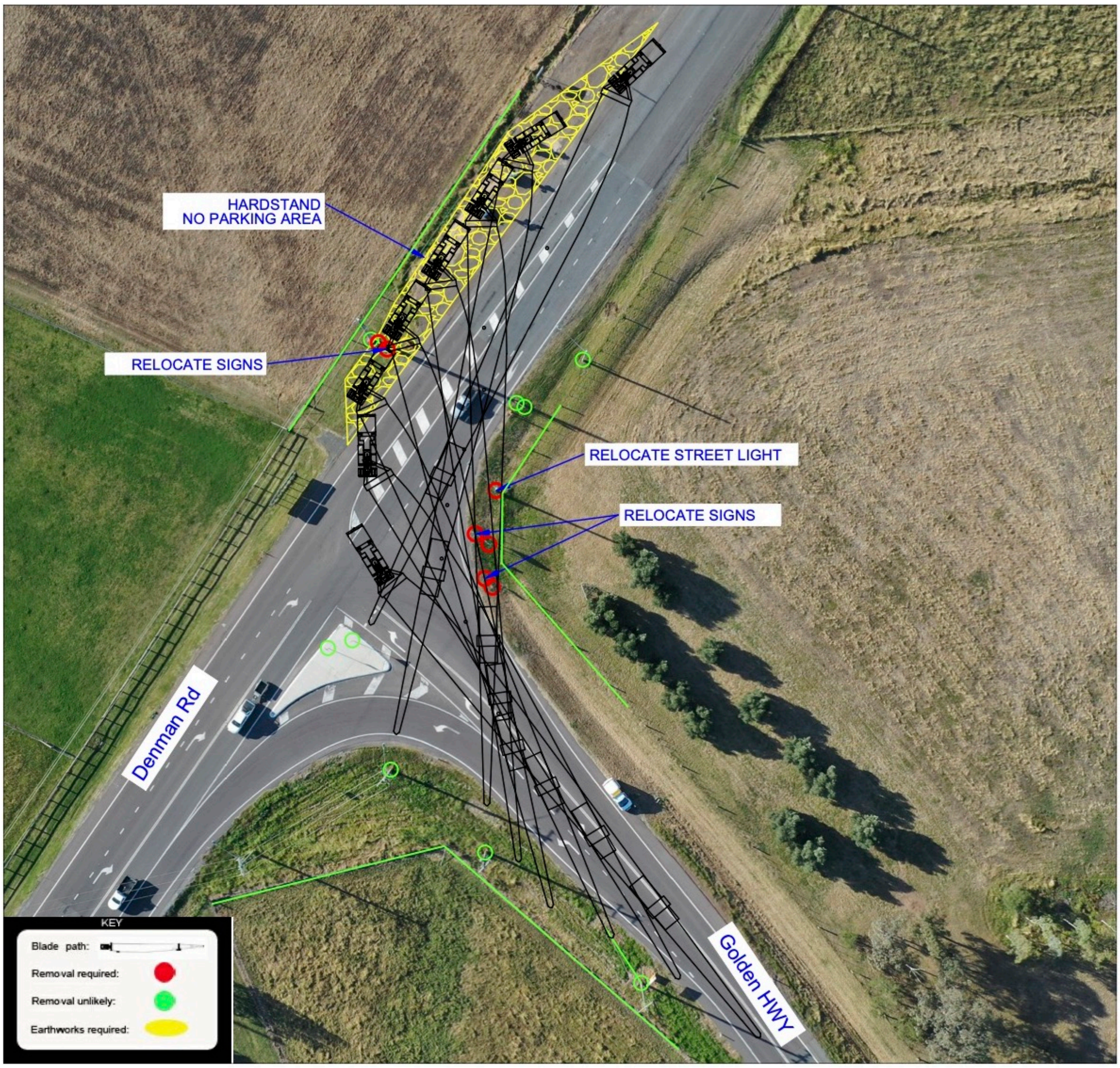
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/AiuT8MMVTh5crs348

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

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

170 Metre rotor:



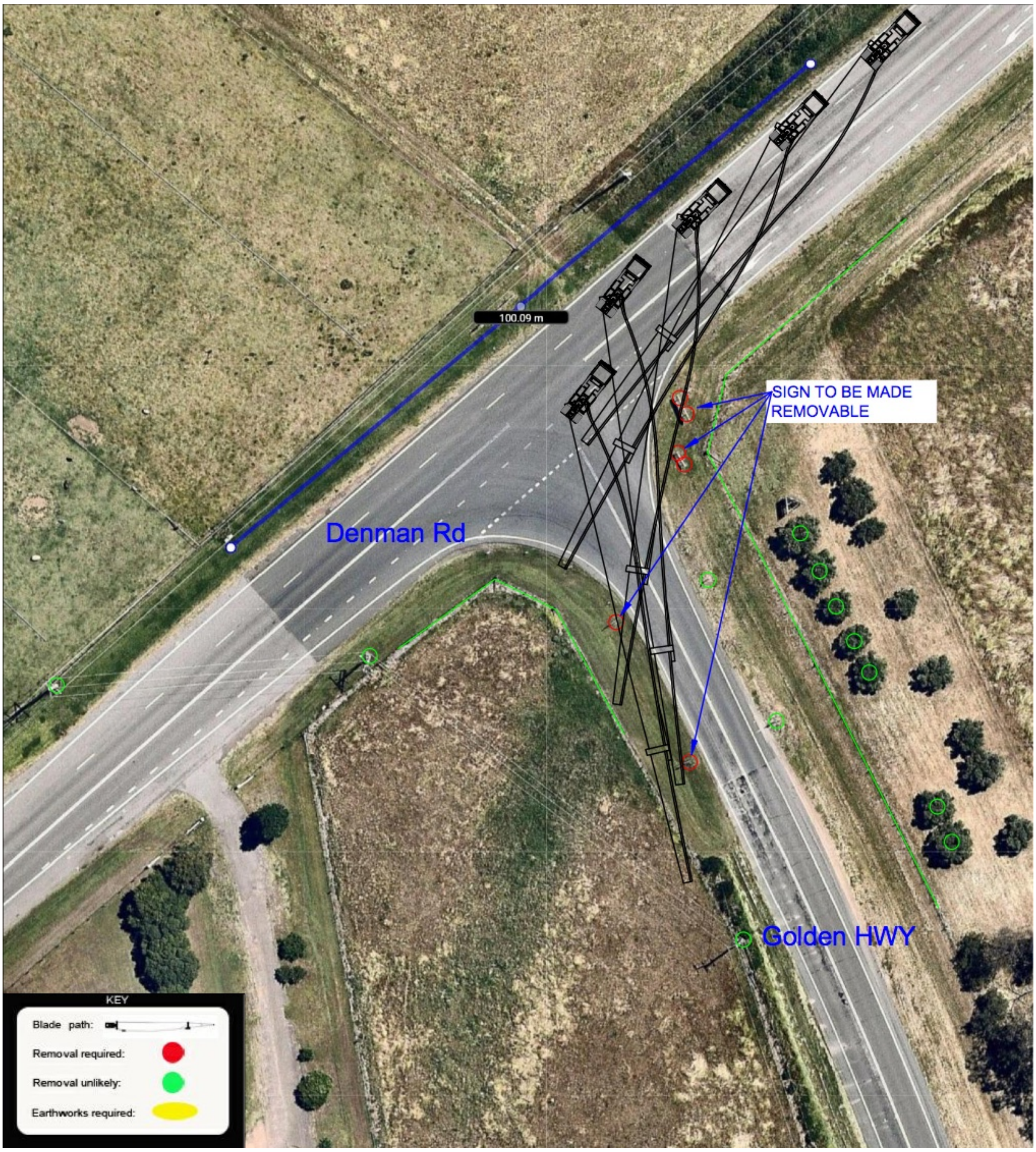
PROCEDURE: Right hand turn from the Golden Highway at the intersection of Denman Road.

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

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the outside exit of the turn. Police and escorts to control local traffic either side of the intersection. Loads swept path will stay within the road reserve.

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:



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

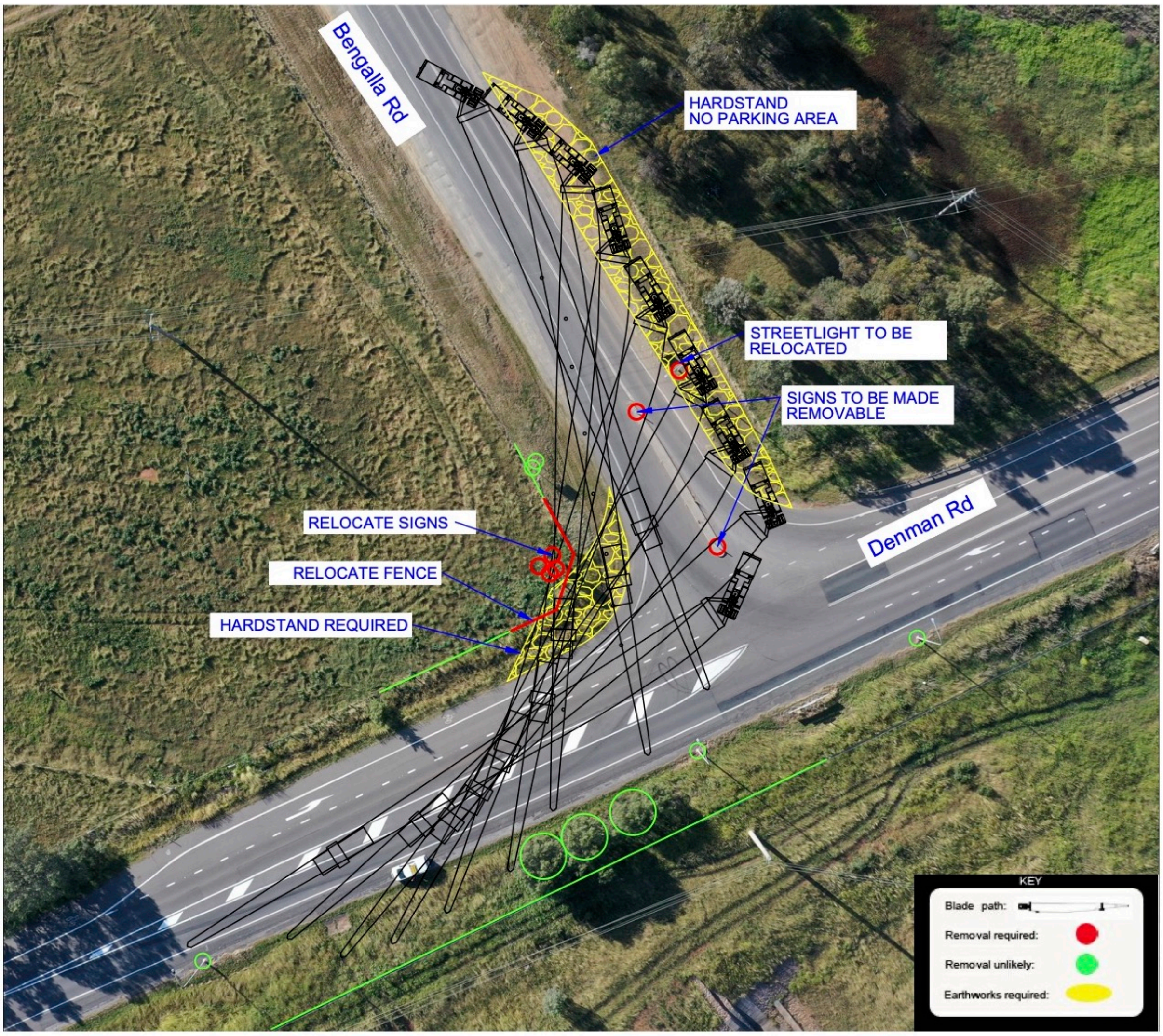
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/T4m46bBNuro

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

149.0 Km's: Denman Road onto Bengalla Road at Muswellbrook.

170 Metre rotor:



PROCEDURE: Left hand turn from Denman Road onto Bengalla Road.

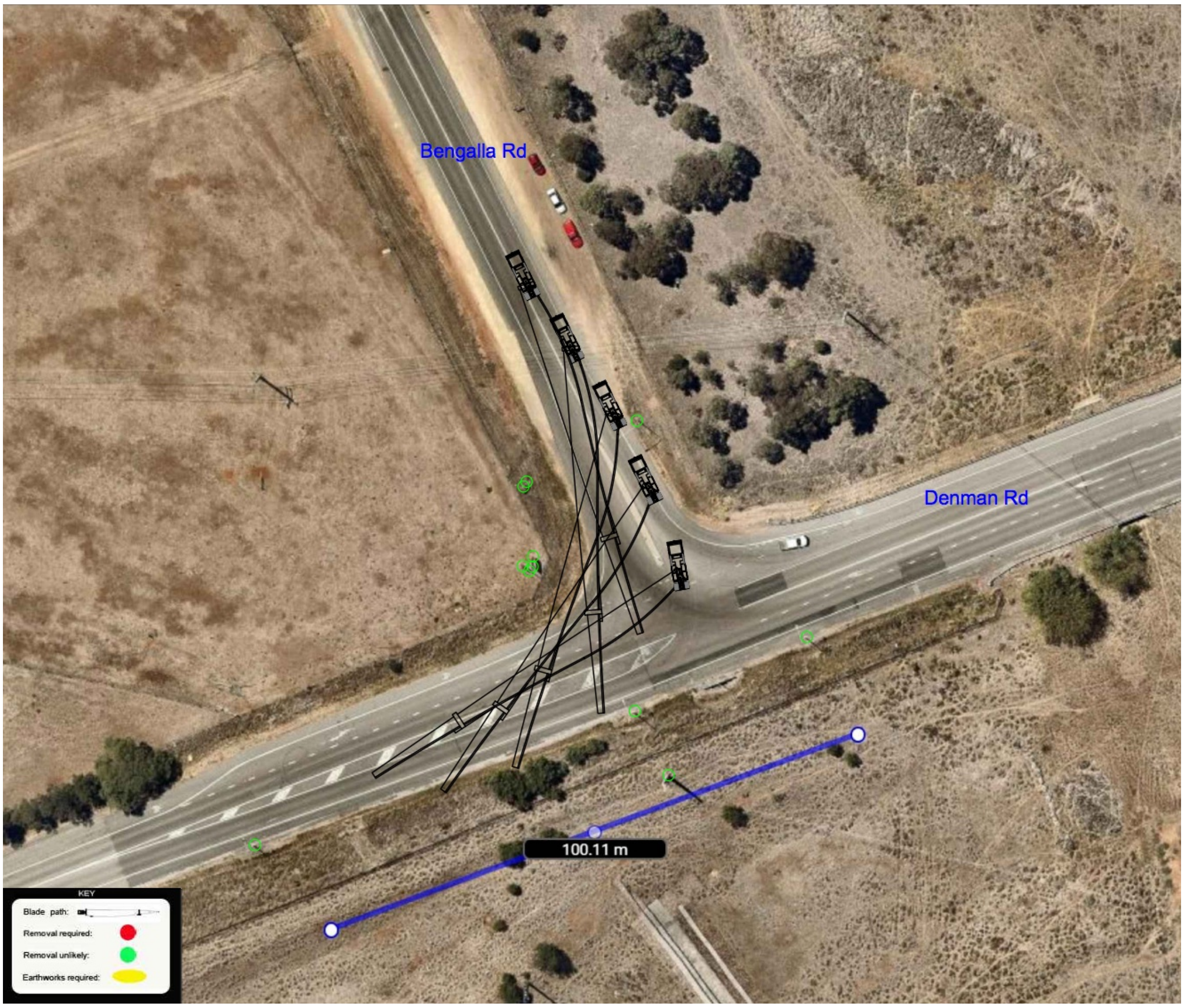
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/CJYMtSMTttJ2

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 inside of the corner as well as a fence removed. Loads swept path will enter a landowner's boundaries on the inside of the corner.

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

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:

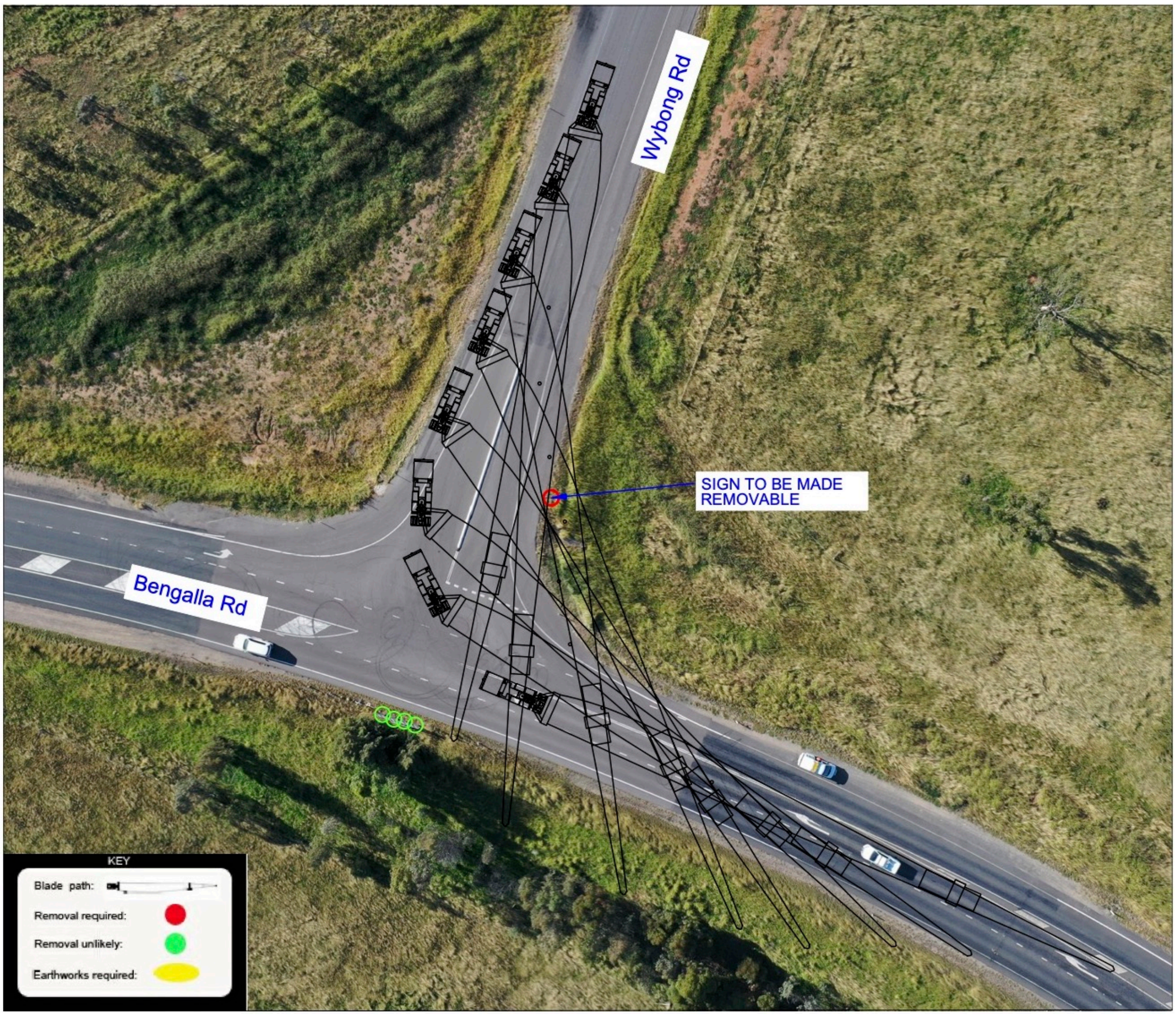


PROCEDURE: Left hand turn from Denman Road onto Bengalla Road.
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/CJYMtSMTttJ2
COMMENTS: Blades to cross from the incorrect side to the incorrect side. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: No works required.

158.5 Km's: Bengalla Road onto Wybong Road at Muswellbrook.

170 Metre rotor:



PROCEDURE: Right hand turn from Bengalla Road onto Wybong Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/vibQtvHkxXE2

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

158 Metre rotor:

PROCEDURE: Right hand turn from Bengalla Road onto Wybong Road.

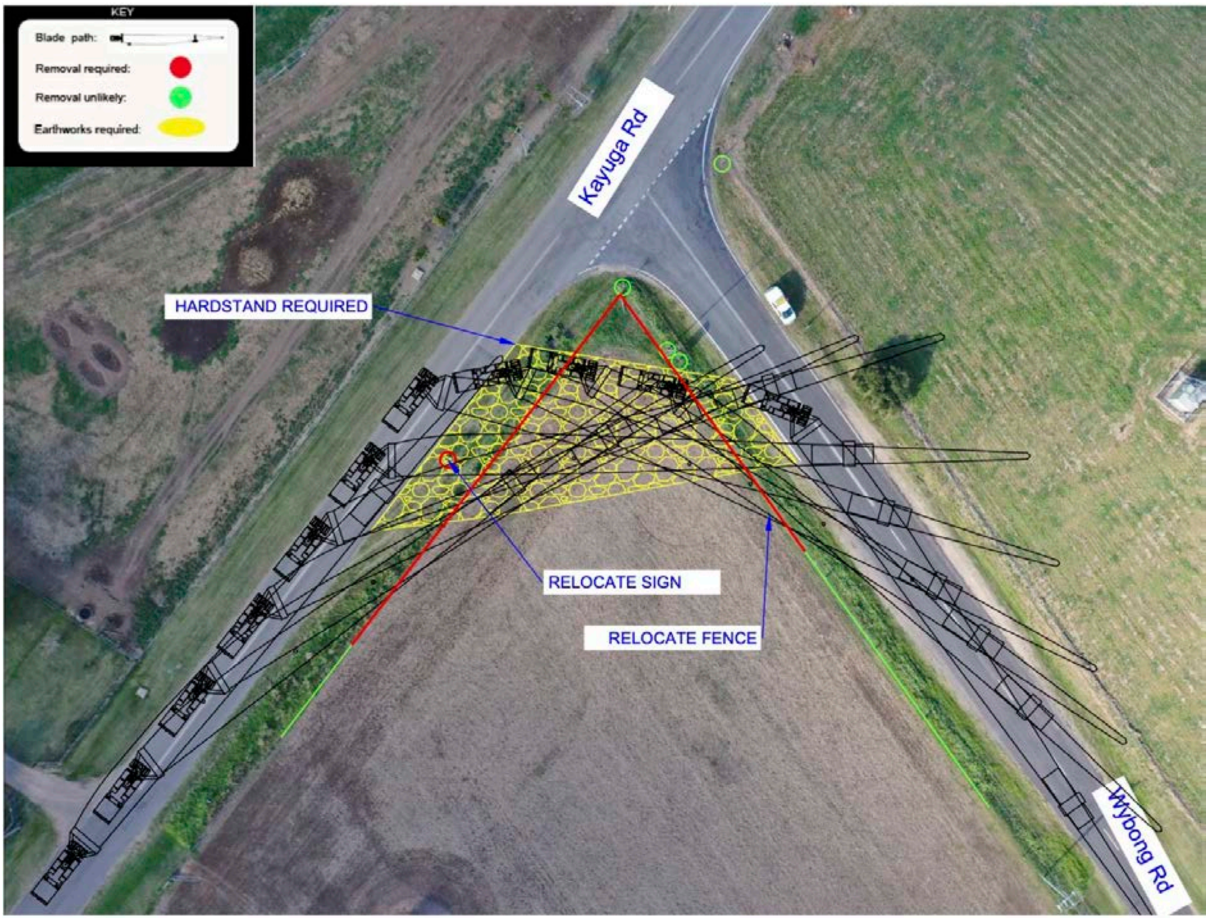
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/vibQtvHkxXE2

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

168.1 Km's: Wybong Road onto Kayuga Road at Muswellbrook. OPTION 1

170 Metre rotor:



PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/xVscKUT1isJ2

COMMENTS: Blades to cross from the incorrect side to the incorrect side with the load travelling across the inside of the telegraph pole and through private land.
Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence and adding hardstand.
Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

158 Metre rotor:

PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

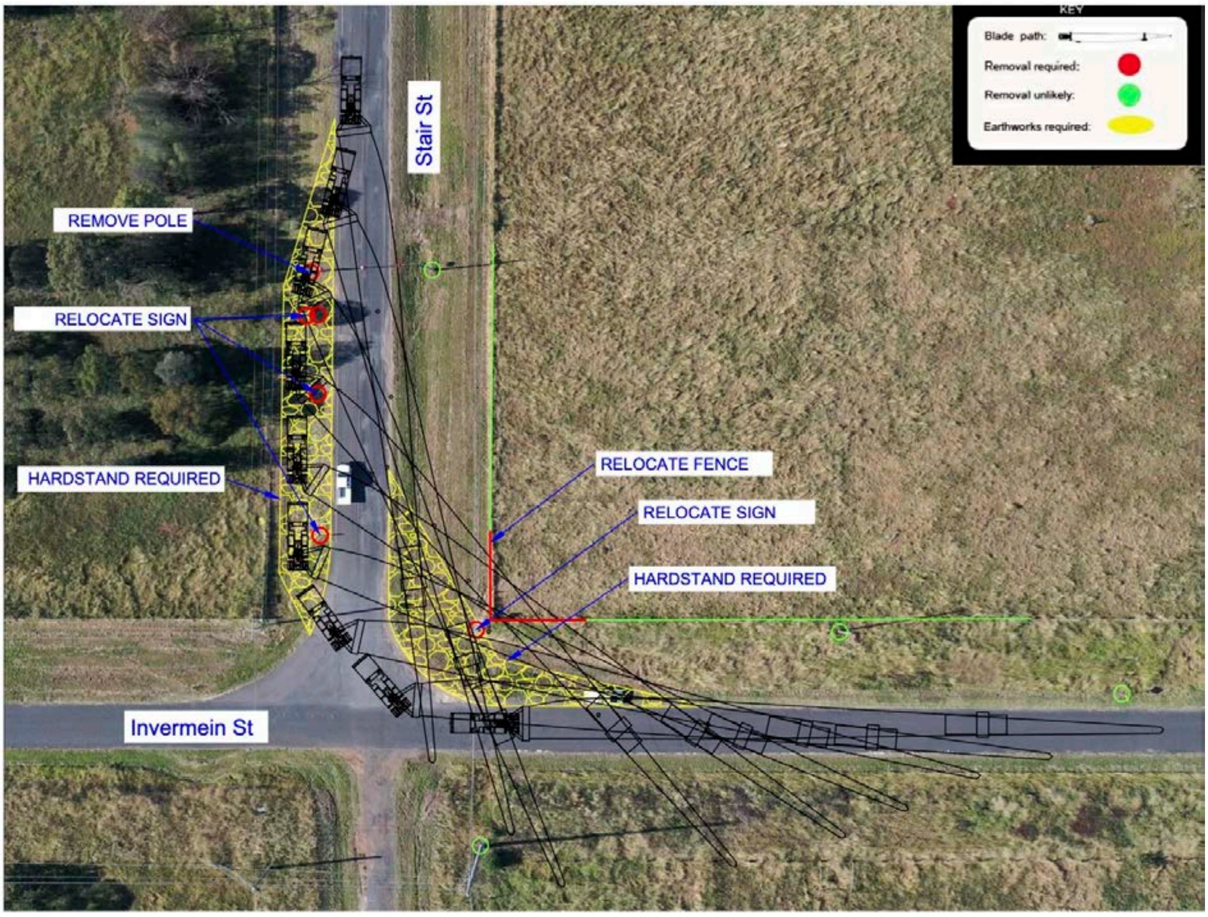
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/xVscKUT1isJ2

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence and adding hardstand. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

174.0 Km's: Ivermein Street onto Dartbrook access Road at Muswellbrook.

170 Metre rotor:



PROCEDURE: Right hand turn from Ivermain Street onto the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/ddMHa4CmXK32

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally, a drainage pipe will need to be extended on the inside of the corner.

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

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:

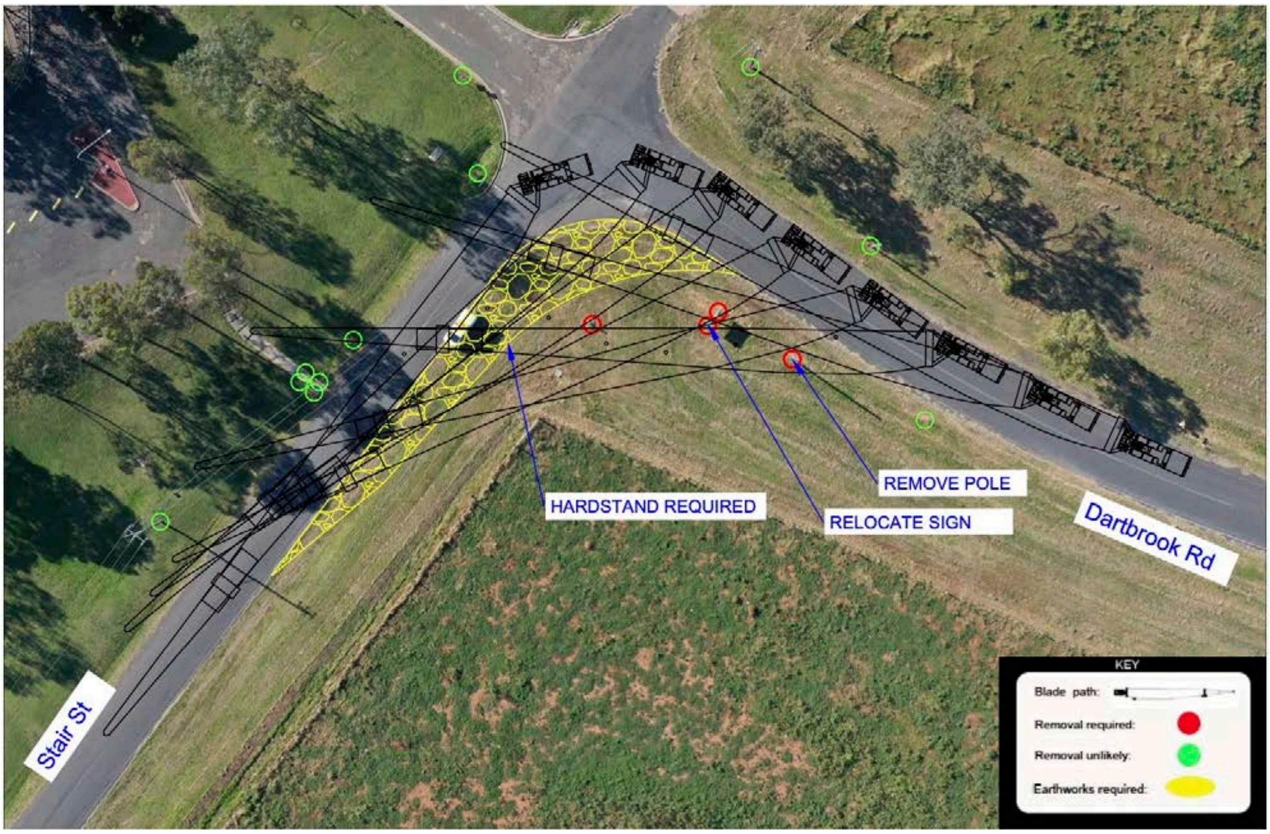
PROCEDURE: Right hand turn from Ivermain Street onto the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/ddMHa4CmXK32

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally, a drainage pipe will need to be extended on the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

174.8 Km's: Dartbrook access Road at Muswellbrook.
170 Metre rotor:



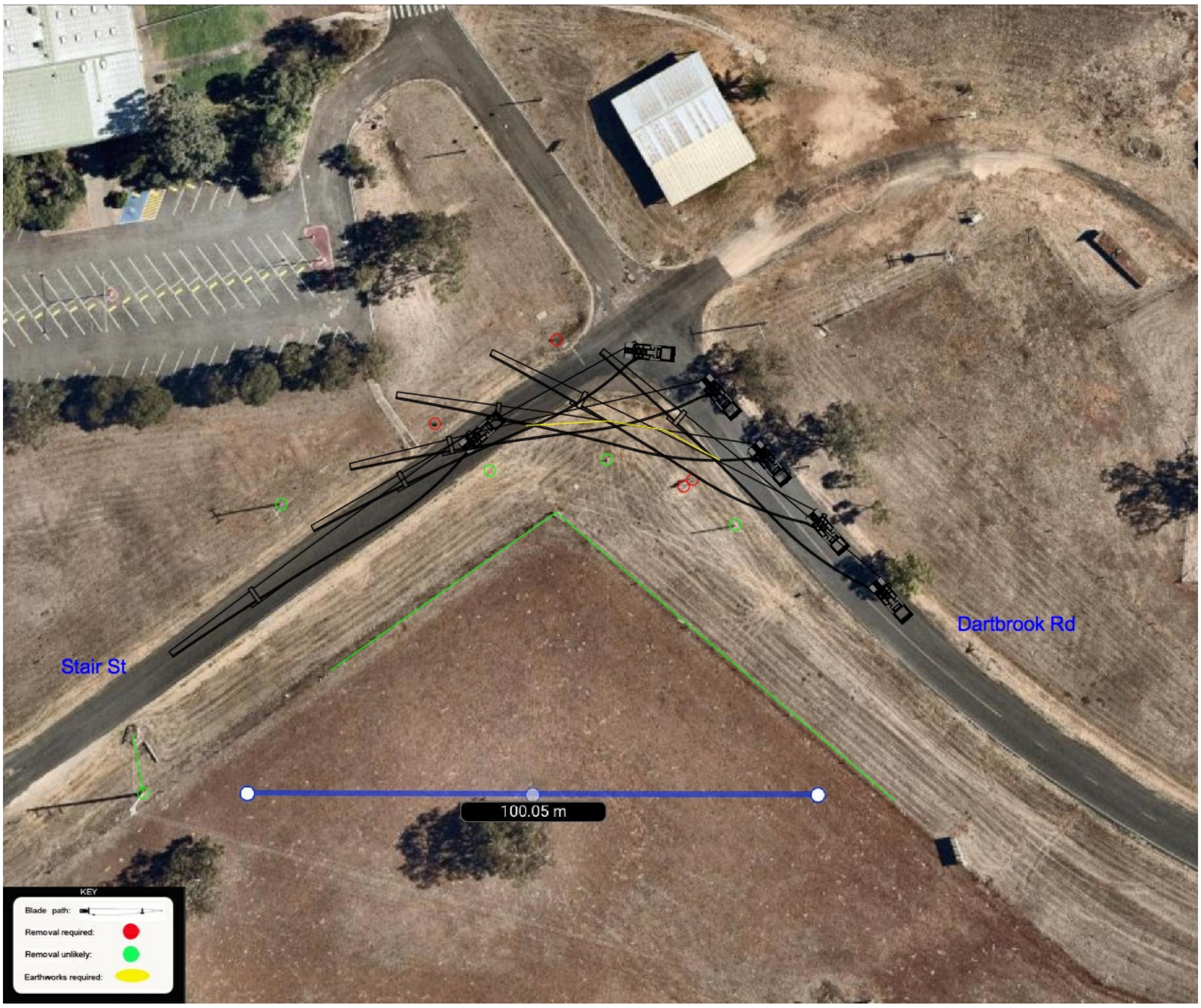
PROCEDURE: Right hand turn on the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/u9vSXiSV7Jt

COMMENTS: Blades to cross from the correct side to the correct side, but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:



PROCEDURE: Right hand turn on the Dartbrook mine access Road.

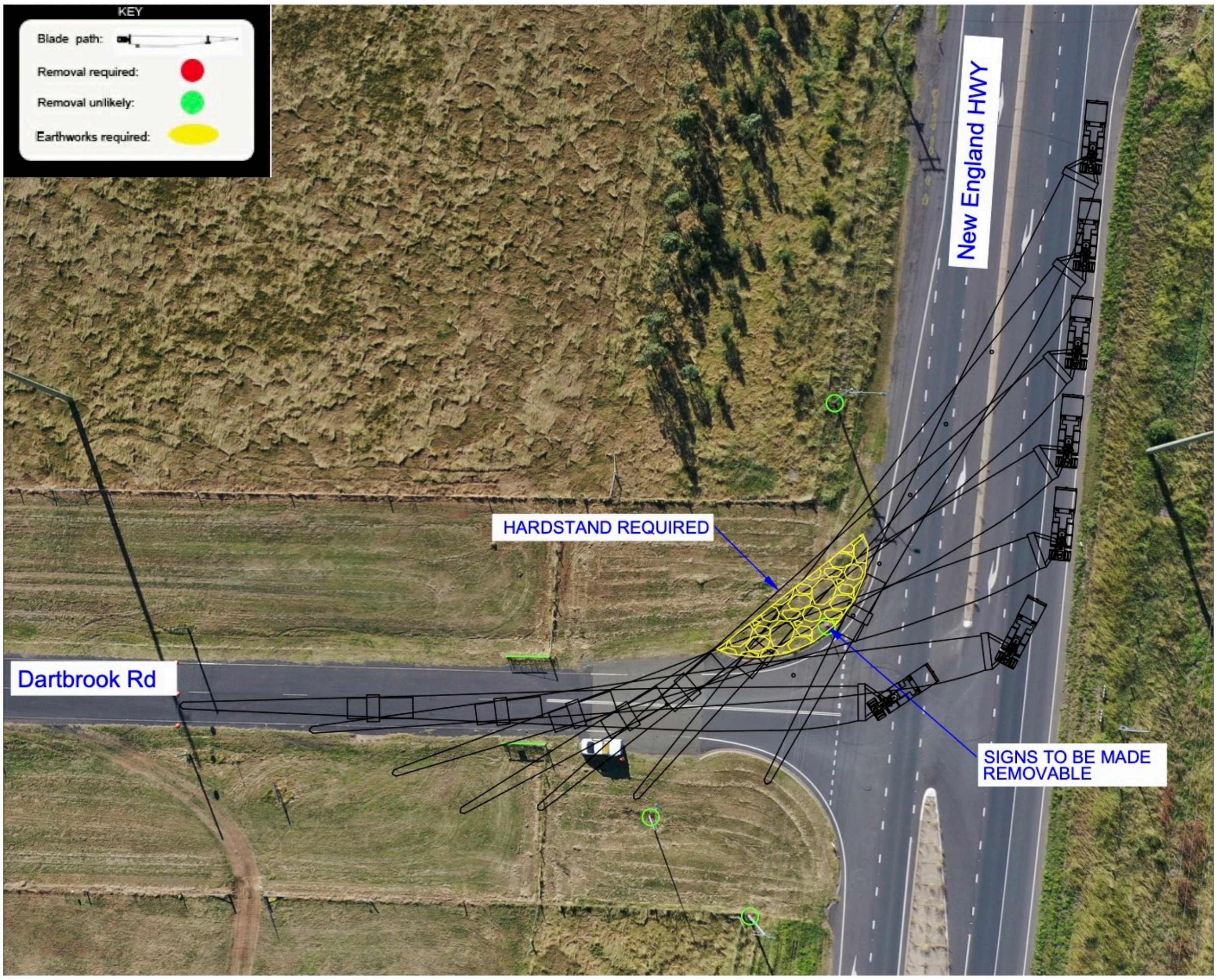
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/u9vSXiSV7Jt

COMMENTS: Blades to cross from the correct side to the correct side, but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

177.0 Km's: Dartbrook access Road onto the New England Highway at Muswellbrook.

170 Metre rotor:



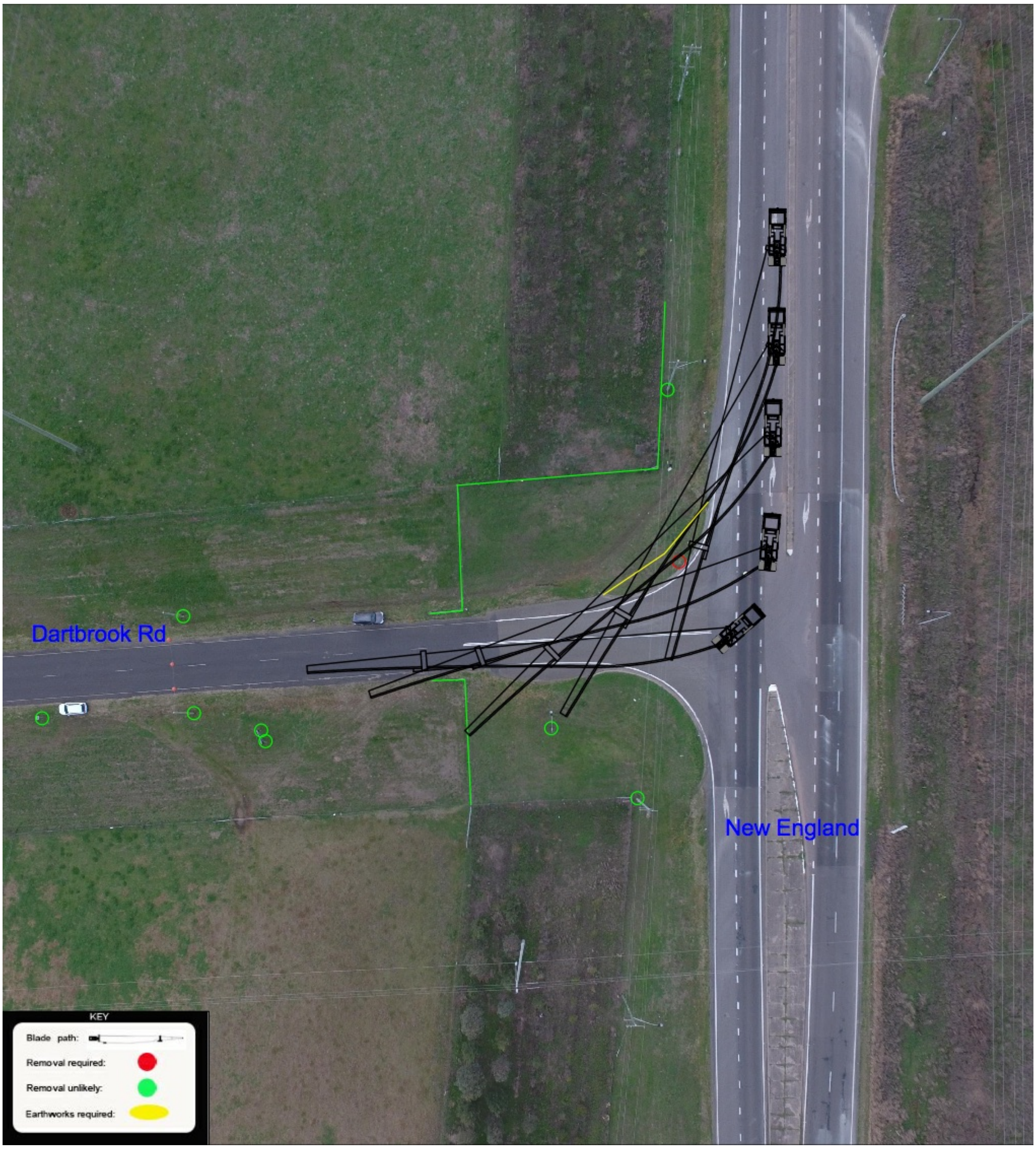
PROCEDURE: Left hand turn from the Dartbrook mine access Road onto the New England Highway.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/twTsmUKaED82

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:



PROCEDURE: Left hand turn from the Dartbrook mine access Road onto the New England Highway.

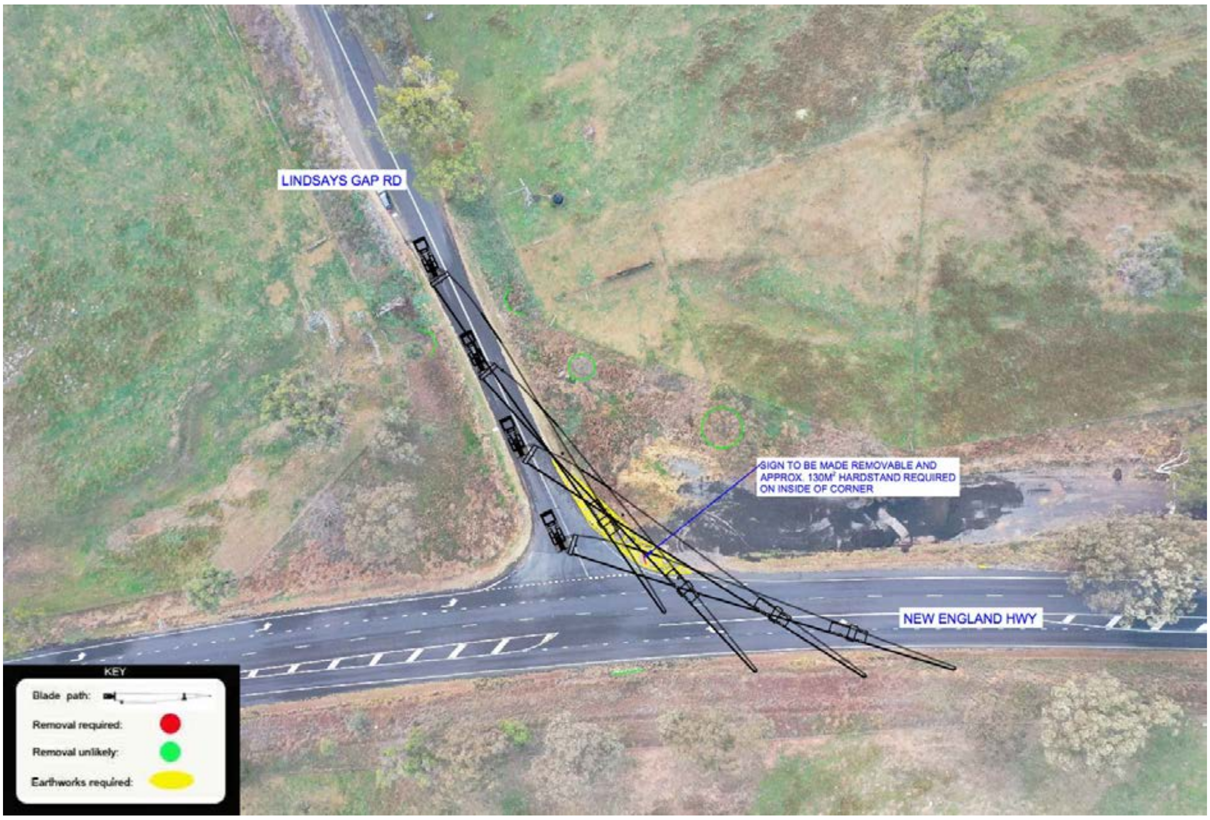
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/twTsmUKaED82

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

276.0 Km’s: New England Highway onto Lindsay’s Gap Road at Wallabadah.

170 Metre rotor:



PROCEDURE: Right hand turn from the New England Highway onto Lindsay’s Gap Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/ePbYctjJootkBZiM9

COMMENTS: Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner.

ROAD MODIFICATIONS: Moderate amounts of work are required.

158 Metre rotor:

PROCEDURE: Right hand turn from the New England Highway onto Lindsay's Gap Road.
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/ePbYctjJootkBZiM9
COMMENTS: Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable.
ROAD MODIFICATIONS: Small amounts of work are required.

287.7 Km's: Lindsay's Gap Road over Goonoo Goonoo Creek at Garoo.

Image 1:

PROCEDURE: Travel directly ahead in the centre of the bridge.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/9ELSk5ZLRWnf14tm7

COMMENTS: The blades will fit over the structure in its current condition.

Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form.

This bridge will need to be replaced or modified before the towers or motors can be delivered on this route.

A trafficable deck width of at least 4.6 meters is required for these heavier loads. And possibly turn the bridge into dual lane.

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

295.7 Km's: Lindsay's Gap Road over Middlebrook Creek at Garoo.

Image 1:

Image 2:

PROCEDURE: Travel directly ahead in the centre of the bridge before entering a right-hand bend.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/DyxGUid9JucoAHhHA

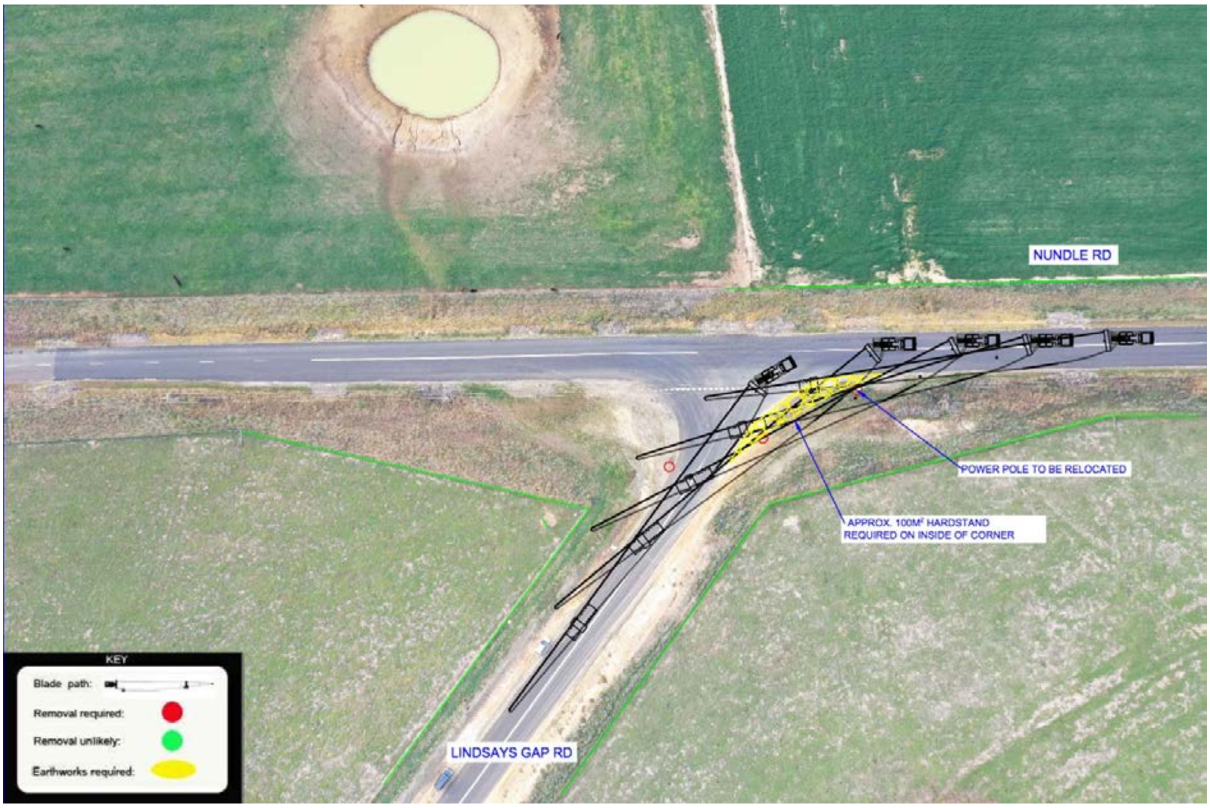
COMMENTS: The blades will fit over the structure in its current condition.

Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form.

This bridge will need to be replaced or modified before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 meters is required for these heavier loads. And possibly turn the bridge into dual lane.

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

306.8 Km's: Lindsay's Gap Road onto Nundle Road at Nundle. 170 Metre rotor:



PROCEDURE: Right hand turn from Lindsay's Gap Road onto Nundle Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA

COMMENTS: Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. A power pole will also need to be relocated.

ROAD MODIFICATIONS: Large amounts of work are required.

158 Metre rotor:

PROCEDURE: Right hand turn from Lindsay's Gap Road onto Nundle Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA

COMMENTS: Blades to cross from the correct side to the correct side but cut across the inside of the corner. Some signs will need to be made removable.

ROAD MODIFICATIONS: Small amounts of work are required.

311.0 Km's: Oakenville Street at Nundle.
170 Metre rotor and 158 Metre rotor:

PROCEDURE: Travel directly ahead on Oakenville Street.

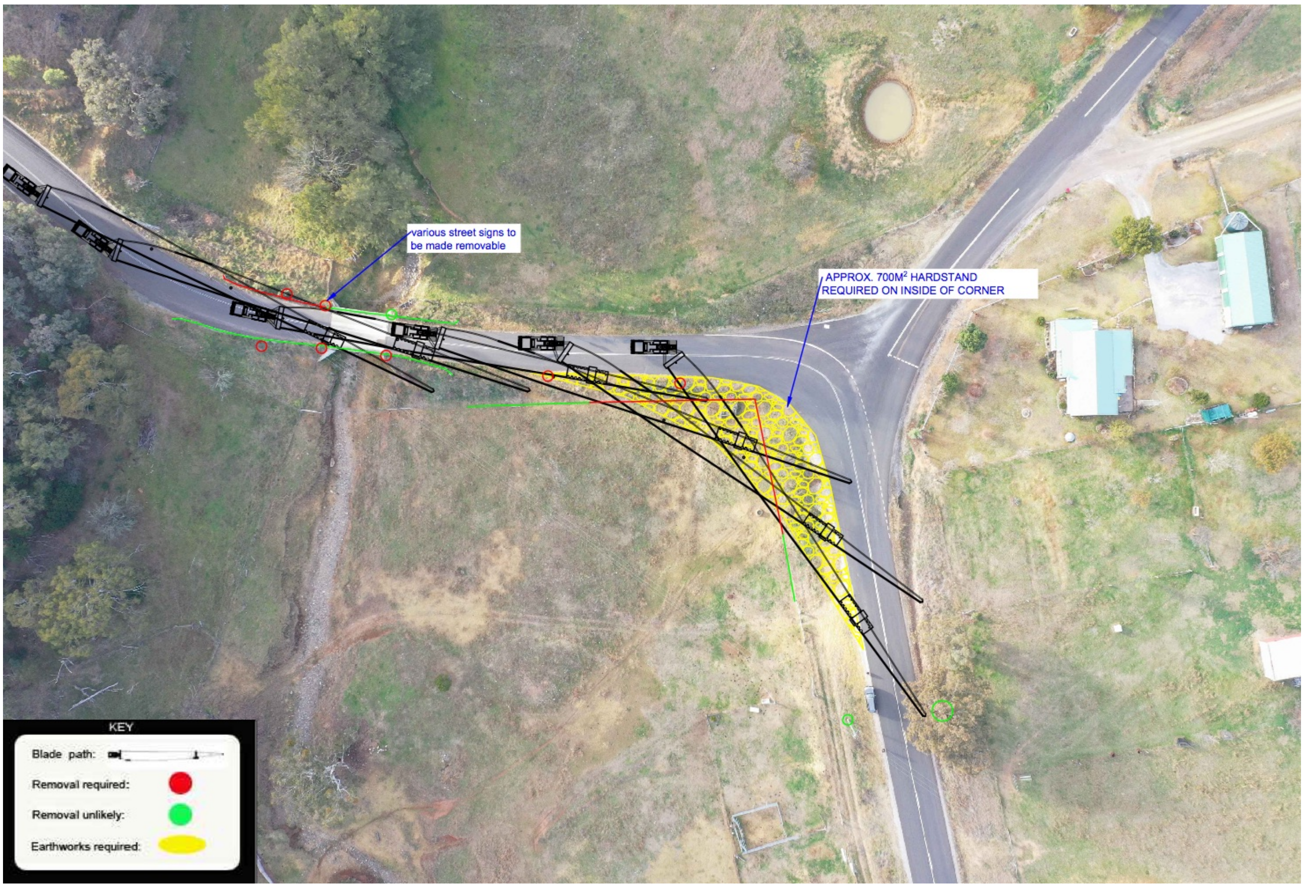
GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/7YM56hQq8bnCSoZy8

COMMENTS: Blades to travel directly ahead on the correct side of the road. A no parking exclusion zone will need to be placed on the left-hand side while travelling through this intersection. Two signs will also need to be made removable.

ROAD MODIFICATIONS: Small amounts of work are required.

312.0 Km's: Oakenville Street onto Hanging Rock Road at Nundle.

170 Metre rotor:



PROCEDURE: Left hand turn from Oakenville Street onto Old Hanging Rock Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/dTVzsVzuaY1qvLHd7

COMMENTS: Blades to turn left from the incorrect side to the incorrect side of the road. The swept path will have the blades travel through a landowner's boundaries. This will require a fence to be relocated and hardstand added. Additionally, while travelling over the bridge some signs will need to be relocated and some sections of guardrail relocated.

ROAD MODIFICATIONS: Large amounts of work are required.

313.0 to 323.0 Km's: Barry's Gap Road from Nundle to Hanging Rock.

170 Metre rotor:

Image 1: Looking east towards Devils Elbow.

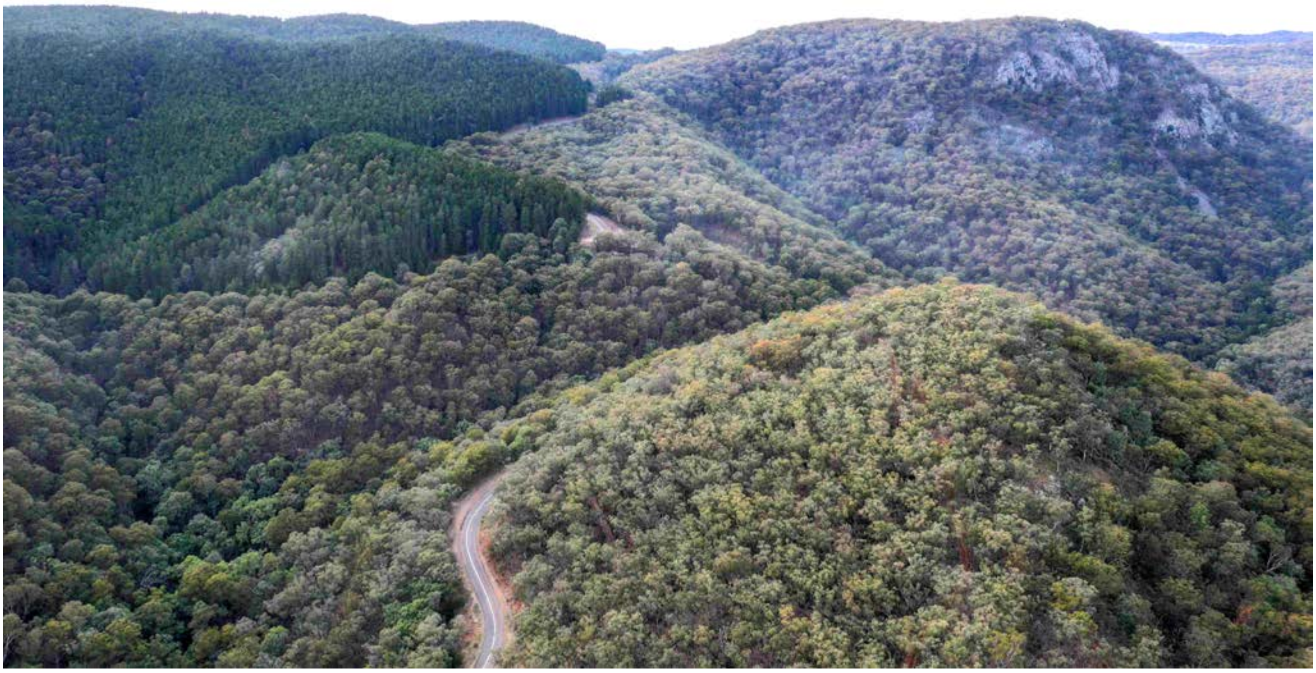


Image 2: (Proposed bypass of Devils Elbow).

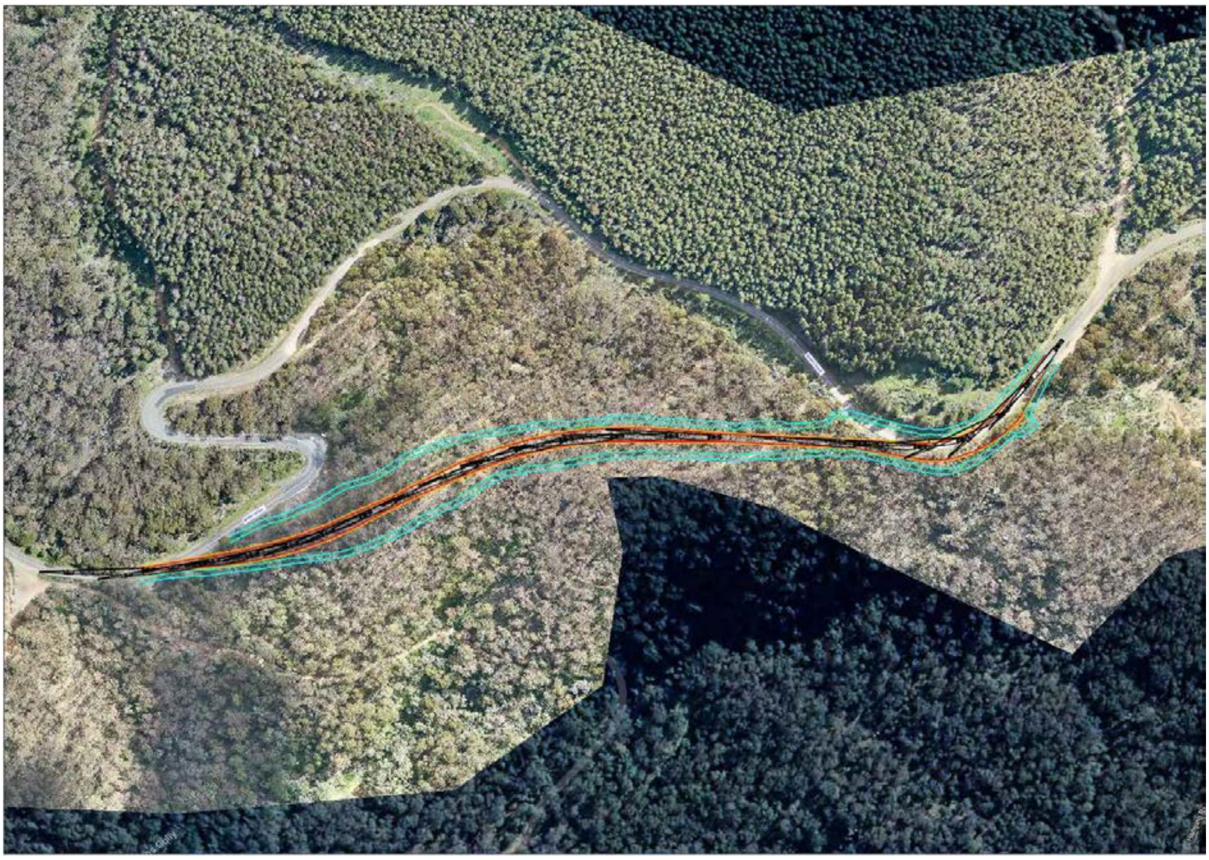


Image 3: (Upgrades on Barrys Road).

PROCEDURE: Travel directly ahead on Barrys Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/BUBe2MCfoQ215qKE6

COMMENTS: Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow as per Image 3 has been looked at and will likely be the best solution for all loads.

If the gradient of this new detour exceeds 14% than it will need to be sealed.

To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would include hardstand and tree removal.

ROAD MODIFICATIONS: Large amounts of work are required.

323.0 Km's: Barrys Road onto Morrisons Gap Road.
170 Metre rotor:

PROCEDURE: Right hand turn from Barrys Road onto Morrisons Gap Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/CLZDJSjENx8rjfAg7

COMMENTS: Blades to turn left from the correct side to the correct side of the road. The swept path will have the blades travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.

ROAD MODIFICATIONS: Large amounts of work are required.

158 Metre rotor:

PROCEDURE: Right hand turn from Barrys Road onto Morrisons Gap Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/CLZDJSjENx8rjfAg7

COMMENTS: Blades to turn left from the correct side to the correct side of the road. The swept path will have the blades travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.

ROAD MODIFICATIONS: Large amounts of work are required.

323.0 to 326.0 Km's: Morrisons Gap Road at Hanging Rock.
170 Metre rotor and 158 Metre rotor:
Image 1: (Looking along Morrisons Gap Road from Barry Road)

Image 2: (Swept path staying within the road reserve)

Image 3: (Swept path staying within the road reserve)

Image 4: (Swept path staying within the road reserve)

Image 5: (Swept path staying on existing road).

Image 6: (Swept path staying on existing road).

Image 7: (Swept path staying on existing road).

PROCEDURE: Travel directly ahead on Morrisons Gap Road.

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/kLtYYnmhTgvE6ZPFA

COMMENTS: This section of road is gravel for the entirety. The road will need to be widened for the majority of the road. Typically, the road will need to be widened to 5.5 meters in all straight sections and made wider on the corners depending on the radius. A swept path analysis of this section of road, shows that the corridor would be able to stay within the road reserve. Additionally, there will need to be trees removed. The vertical curve will also need to be checked for the entirety of this road.

ROAD MODIFICATIONS: Large amounts of work are required.

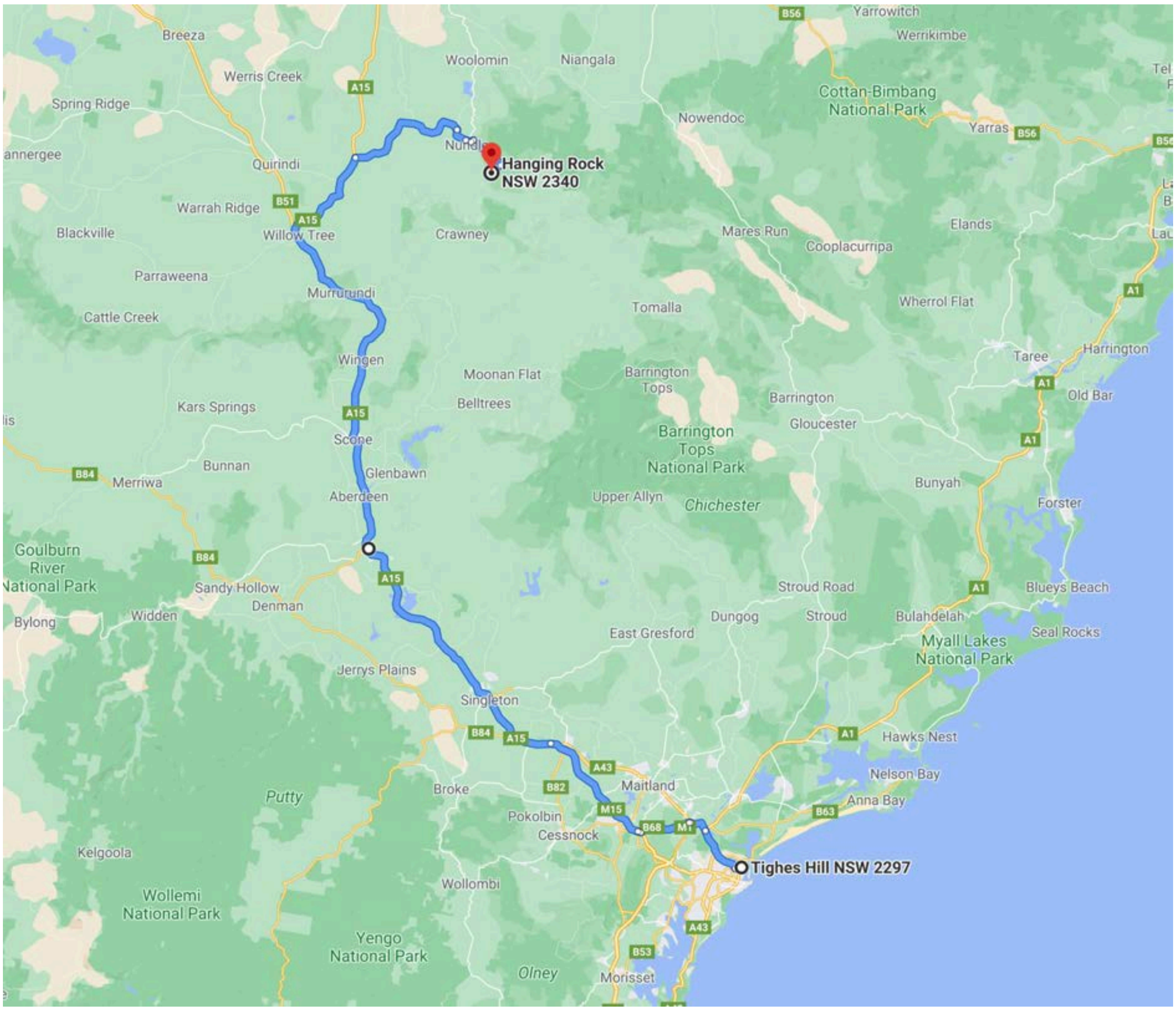
NOTE: From this point on all access roads through to final delivery points will need to be made suitable for the swept path of the largest items. These access roads will also need to be made with suitable gradients and vertical curves.

11.0 Route Survey B: Newcastle port to Hills of Gold WF for loads up to 5.2 metres in height.

Distance: (284.0 Kilometres).

Via: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/rouAWyxLZ53pMB3v7



KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
Route Index					
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	Clearance: 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	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Clearance: Length: 70.0 metres Width: 8.0 metres	Moderate right hand turn	No problems with this section of road.
4.9	Mayfield	Industrial Drive under traffic signals GPS link: https://goo.gl/maps/YmqhiS2iR582	Clearance: Height: 5.4 Metres	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 GPS link: https://goo.gl/maps/Kn49dhWG2qG2	Clearance: Length: 50.0 metres Width: 10.0 metres	Right hand turn	No problems with this section of road.
13.9	Hexham	New England Highway under gantry GPS link: https://goo.gl/maps/YTMoFe7Aick	Clearance: Height: 5.95 Metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDr5JigkBp	Clearance: Width: 12.0 metres	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive GPS link: https://goo.gl/maps/N19vJih1Fgr	Clearance: Width: 9.0 metres Height: 5.9 metres	Travel directly ahead	No problems with this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQt9E2	Clearance: Length: 65.0 metres Width: 7.0 metres	Right hand turn	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
59.0	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjq	Clearance: Width: 9.0 metres	Travel directly ahead	No problems with this section of road.
124.5	Muswellbrook	New England Highway onto Bell Street GPS link: https://goo.gl/maps/H94bMYQMeSHay7918	Clearance: Length: 40.0 metres Width: 6.0 metres	Right hand turn	No problems with this section of road.
125.0	Muswellbrook	Bell Street onto Victoria Street GPS link: https://goo.gl/maps/aHhW27teZy9y3WNq9	Clearance: Length: 40.0 metres Width: 7.0 metres	Left hand corners	Tight left-hand bend over a rail bridge before another tight left hand bend. Spotter to guide loads through this section of road, and approval from rail required to cross this structure.
125.5	Muswellbrook	Victoria Street onto Market Street GPS link: https://goo.gl/maps/pyiTUH25bANG3m9n9	Clearance: Width: 7.0 metres	Travel directly ahead	No problems with this section of road.
126.0	Muswellbrook	Market Street onto New England Highway GPS link: https://goo.gl/maps/3kpU6XdCBmCW75gM7	Clearance: Length: 30.0 metres Width: 7.0 metres	Right hand turn at roundabout	Loads may need to cross to the incorrect side of the roundabout if they exceed 30.0 meters in length, and do not exceed 42 meters in length.
201.8	Murrurundi	New England highway (Township) GPS link: https://goo.gl/maps/Sj3ixAkhujt	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
206.4	Murrurundi Hill	New England highway Nowlands Gap GPS link: https://goo.gl/maps/R5yufobPeMG2	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Emergency parking only.
203.0	Willow Tree	New England highway GPS link: https://goo.gl/maps/XLTg7CRV7EU2	Clearance: Width: 7.0 metres Length: 35 metres Height: 5.2 metres	Kankool weighbridge	It is likely that the towers and defiantly the blades will not fit into this facility. We have engineered documentation showing correct weights for all loads.
208.9	Willow Tree Township	New England highway GPS link: https://goo.gl/maps/gw38qmvVfTC2	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
210.5	Willow Tree Truck Stop N	New England highway GPS link: https://goo.gl/maps/RRdPVHupGCs	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Suitable parking for Fatigue breaks for small loads only.
230.0	Wallabadah	New England highway GPS link: https://goo.gl/maps/QWCyeHQSohS2	Clearance: 80.0 x 5.0 metres	Parking Bay (side of road)	Suitable parking for Fatigue breaks.
235.0	Wallabadah	New England highway onto Lindsay's Gap Road GPS link: https://goo.gl/maps/ePbYctjJootkBZiM9	Clearance: Length: 50.0 metres	Right hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
245.7	Garoo	Lindsay's Gap Road over Goonoo Goonoo Creek GPS link: https://goo.gl/maps/9ELSk5ZLRWnf14tm7	Clearance: Axle width: 3.60m Overall width: 6.20m Guard rail height: 850mm	Travel directly ahead over bridge in the centre of the road.	Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 meters is required for these heavier loads.
253.7	Garoo	Lindsay's Gap Road over Middlebrook Creek GPS link: https://goo.gl/maps/DyxGUid9JucoAHhHA	Clearance: Axle width: 4.50m Overall width: 6.10m Guard rail height: 750mm	Travel directly ahead over bridge in the centre of the road.	Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route.
259.2	Garoo	Lindsay's Gap Road through Lindsay's Gap GPS link: https://goo.gl/maps/GGKmqemziKdth8wH9	Clearance: Length: 90.0 metres	Travel directly ahead	Load to travel in the centre of the road, escorts to warn traffic 500 metres to the east of the gap.
264.8	Nundle	Lindsay's Gap Road onto Nundle Road GPS link: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA	Clearance: Length: 50.0 metres	Right hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.
268.3	Nundle	Nundle Road onto Crosby Street GPS link: https://goo.gl/maps/uVvcN9QkPyTDP1YR6	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
268.6	Nundle	Crosby Street onto Oakenville Street GPS link: https://goo.gl/maps/aZNDKURdSBERedMr9	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
269.0	Nundle	Oakenville Street and Jenkins Street intersection GPS link: https://goo.gl/maps/7YM56hQq8bnCSoZy8	5.0 metres width clearance		A no parking exclusion zone will need to be placed on the left-hand side while travelling through this intersection. Two signs will also need to be made removable.
270.0	Nundle	Oakenville Street onto Old Hanging Rock GPS link: https://goo.gl/maps/1UMr2EwZetiE76Ey9	35.0 metres length clearance	Left hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.
271.0	Nundle	Old Hanging Rock Road onto Barry Road GPS link: https://goo.gl/maps/ve9zvmdJnLBYtQSz5	90.0 metres clearance	Right hand bend	No problems with this section of road.

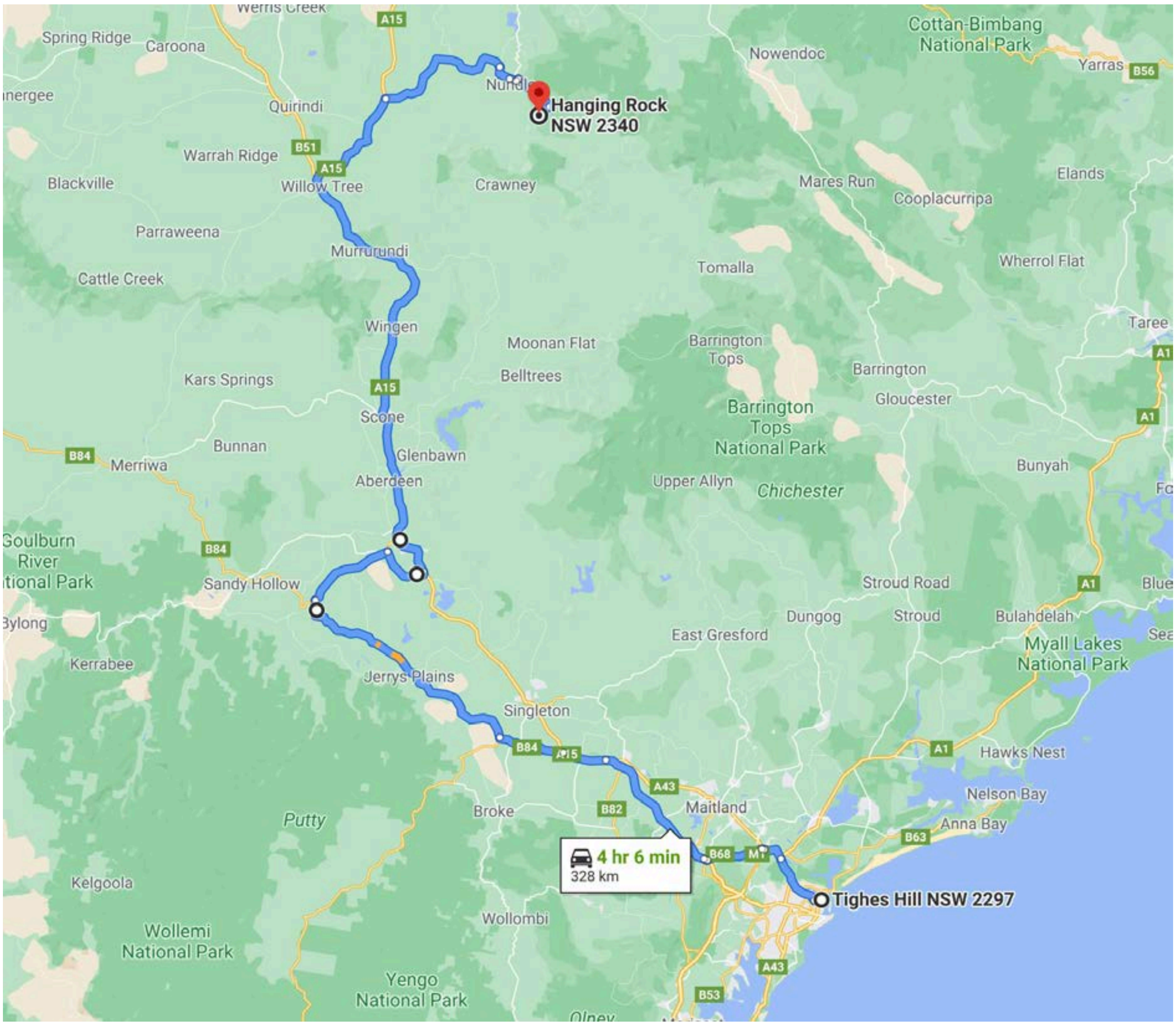
KM index	Location	Section of road	Critical Measurement	Procedure	Notes
271.0 to 281.0 Km's	Nundle to Hanging Rock	Barrys Road https://goo.gl/maps/BUBe2MCfoQ215qKE6	25.0 metres length clearance	Travel directly ahead through multiple tight turns and steep terrain	As per the blades Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow has been looked at and will likely be the best solution for all loads. To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would include hardstand and tree removal.
281.0	Hanging Rock	Barrys Road onto Morrisons Gap Road GPS link: https://goo.gl/maps/CLZDJSjENx8rjfAg7	35.0 metres length clearance	Right hand turn	Blades to turn right from the correct side to the correct side of the road. The swept path will have the blades travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.
281.0 to 284.0 Km's	Hanging Rock	Morrisons Gap Road GPS link: https://goo.gl/maps/kLtYYnmhTgvE6ZPFA	25.0 metres length clearance	Travel around several sweeping bends on a gravel road	This section of road is gravel for the entirety. The road will need to be widened for the majority of the road. Typically, the road will need to be widened to 5.5 meters in all straight sections and made wider on the corners depending on the radius. A swept path analysis of this section of road, shows that the corridor would be able to stay within the road reserve. Additionally, there will need to be trees removed. The vertical curve will also need to be checked for the entirety of this road.
284.0 Km's	Hanging Rock	Morrisons Gap Road into Hills of Gold windfarm GPS link: https://goo.gl/maps/5VFMQCB3drgXcjyU8		Travel directly ahead into site entrance	Windfarm to supply suitable access for the dimensions and swept path of all loads.

12.0 Route Survey C: Newcastle port to Hills of Gold WF for loads over 5.2 metres in height.

Distance: (328.0 Kilometres).

Via: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Thomas Mitchell Drive, New England Highway, Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/tMkKEEQKNL7azUDi7



KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
		Route Index			
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	Clearance: 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	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Clearance: Length: 70.0 metres Width: 8.0 metres	Moderate right hand turn	No problems with this section of road.
4.9	Mayfield	Industrial Drive under traffic signals GPS link: https://goo.gl/maps/YmqhiS2iR582	Clearance: Height: 5.4 Metres	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 GPS link: https://goo.gl/maps/Kn49dhWG2qG2	Clearance: Length: 50.0 metres Width: 10.0 metres	Right hand turn	No problems with this section of road.
13.9	Hexham	New England Highway under gantry GPS link: https://goo.gl/maps/YTMoFe7Aick	Clearance: Height: 5.95 Metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDr5JigkBp	Clearance: Width: 12.0 metres	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive GPS link: https://goo.gl/maps/N19vJih1Fgr	Clearance: Width: 9.0 metres Height: 5.9 metres	Travel directly ahead	No problems with this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQt9E2	Clearance: Length: 65.0 metres Width: 7.0 metres	Right hand turn	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
59.0	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjq	Clearance: Width: 9.0 metres	Travel directly ahead	No problems with this section of road.
67.3	Whittingham	The New England Highway onto the Golden Highway GPS link: https://goo.gl/maps/nAnfkYfeUn42	Clearance: Width: 12.0 metres	Left Hand turn	No problems with this section of road.
67.4	Whittingham	Golden Highway GPS link: https://goo.gl/maps/R86RFuPnmFU2	Clearance: 115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
77.3	Whittingham	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/7hQdEmK1EgE2	Clearance: Length: 85.0 metres Width: 12.0 metres	Left hand turn	No problems with this section of road.
77.4	Mount Thorley	Golden Highway GPS link: https://goo.gl/maps/zGvdupDuixx	Clearance: 100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
80.8	Mount Thorley	Golden Highway intersection with Mt Thorley Road. GPS link: https://goo.gl/maps/VyA42n1CqZx	Clearance: Length: 45.0 metres Width: 8.0 metres Height: 5.6 metres	Right hand turn	Loads over the listed clearances will need to travel along the incorrect side of the road. Loads will need to cross to the incorrect side 100 metres prior to the Mt Thorley Road underpass.
98.0	Warkworth	Golden Highway GPS link: https://goo.gl/maps/Y6V6EXaCwxq	Clearance: 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	Clearance: Length: 70.0 metres Width: 9.0 metres	Dogleg	No problems with this section of road.
126.0	Ogilvy	Golden Highway GPS link: https://goo.gl/maps/ShT4hrj8WQeMcris7	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. 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.
141.9	Denman	Golden Highway onto Denman Road GPS link: https://goo.gl/maps/sf4PNnycxB32	Clearance: Length: 60.0 metres Width: 10.0 metres	Right hand turn	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
150.0	Muswellbrook	Denman Road onto Thomas Mitchell Drive GPS link: https://goo.gl/maps/XxZcg2MKqAgURuGu8	Clearance: Length: 65.0 metres Width: 12.0 metres	Right hand turn	No problems with this section of road.
160.6	Muswellbrook	Thomas Mitchell onto New England Highway GPS link: https://goo.gl/maps/3SyWufXF3gXqxaAt5	Clearance: Length: 70.0 metres Width: 10.0 metres	Left hand turn	No problems with this section of road.
169.5	Muswellbrook	New England Highway onto Bell Street GPS link: https://goo.gl/maps/H94bMYQMeSHay7918	Clearance: Length: 40.0 metres Width: 6.0 metres	Right hand turn	No problems with this section of road.
170.0	Muswellbrook	Bell Street onto Victoria Street GPS link: https://goo.gl/maps/aHhW27teZy9y3WNq9	Clearance: Length: 40.0 metres Width: 7.0 metres	Left hand corners	Tight left-hand bend over a rail bridge before another tight left hand bend. Spotter to guide loads through this section of road, and approval from rail required to cross this structure.
170.5	Muswellbrook	Victoria Street onto Market Street GPS link: https://goo.gl/maps/pyiTUH25bANG3m9n9	Clearance: Width: 7.0 metres	Travel directly ahead	No problems with this section of road.
171.0	Muswellbrook	Market Street onto New England Highway GPS link: https://goo.gl/maps/3kpU6XdCBmCW75gM7	Clearance: Length: 30.0 metres Width: 7.0 metres	Right hand turn at roundabout	Loads may need to cross to the incorrect side of the roundabout if they exceed 30.0 meters in length, and do not exceed 42 meters in length.
246.8	Murrurundi	New England highway (Township) GPS link: https://goo.gl/maps/Sj3ixAkhujt	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
251.4	Murrurundi Hill	New England highway Nowlands Gap GPS link: https://goo.gl/maps/R5yufobPeMG2	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Emergency parking only.
248.0	Willow Tree	New England highway GPS link: https://goo.gl/maps/XLTg7CRV7EU2	Clearance: Width: 7.0 metres Length: 35 metres Height: 5.2 metres	Kankool weighbridge	It is likely that the towers and defiantly the blades will not fit into this facility. We have engineered documentation showing correct weights for all loads.
253.9	Willow Tree Township	New England highway GPS link: https://goo.gl/maps/gw38qmvVfTC2	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
255.5	Willow Tree Truck Stop N	New England highway GPS link: https://goo.gl/maps/RRdPVHupGCs	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Suitable parking for Fatigue breaks for small loads only.
275.0	Wallabadah	New England highway GPS link: https://goo.gl/maps/QWCyeHQSohS2	Clearance: 80.0 x 5.0 metres	Parking Bay (side of road)	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
282.0	Wallabadah	New England highway onto Lindsay's Gap Road GPS link: https://goo.gl/maps/ePbYctjJootkBZiM9	Clearance: Length: 50.0 metres	Right hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.
289.7	Garoo	Lindsay's Gap Road over Goonoo Goonoo Creek GPS link: https://goo.gl/maps/9ELSk5ZLRWnf14tm7	Clearance: Axle width: 3.60m Overall width: 6.20m Guard rail height: 850mm	Travel directly ahead over bridge in the centre of the road.	Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route. A trafficable deck width of at least 4.6 metres is required.
297.7	Garoo	Lindsay's Gap Road over Middlebrook Creek GPS link: https://goo.gl/maps/DyxGUid9JucoAHhHA	Clearance: Axle width: 4.50m Overall width: 6.10m Guard rail height: 750mm	Travel directly ahead over bridge in the centre of the road.	Loads that are been carried on trailers with an axle width exceeding 3.5 meters will not fit over this structure in its current form. This bridge will need to be replaced or modified before the towers or motors can be delivered on this route.
303.2	Garoo	Lindsay's Gap Road through Lindsay's Gap GPS link: https://goo.gl/maps/GGKmqemziKdth8wH9	Clearance: Length: 90.0 metres	Travel directly ahead	Load to travel in the centre of the road, escorts to warn traffic 500 metres to the east of the gap.
308.8	Nundle	Lindsay's Gap Road onto Nundle Road GPS link: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA	Clearance: Length: 50.0 metres	Right hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.
311.3	Nundle	Nundle Road onto Crosby Street GPS link: https://goo.gl/maps/uVvcN9QkPyTDP1YR6	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
312.6	Nundle	Crosby Street onto Oakenville Street GPS link: https://goo.gl/maps/aZNDKURdSBERedMr9	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
313.0	Nundle	Oakenville Street and Jenkins Street intersection GPS link: https://goo.gl/maps/7YM56hQq8bnCSoZy8	5.0 metres width clearance		A no parking exclusion zone will need to be placed on the left-hand side while travelling through this intersection. Two signs will also need to be made removable.
314.0	Nundle	Oakenville Street onto Old Hanging Rock GPS link: https://goo.gl/maps/1UMr2EwZetiE76Ey9	35.0 metres length clearance	Left hand turn	If the upgrades are completed for the blades than this corner will be suitable for the remaining components.

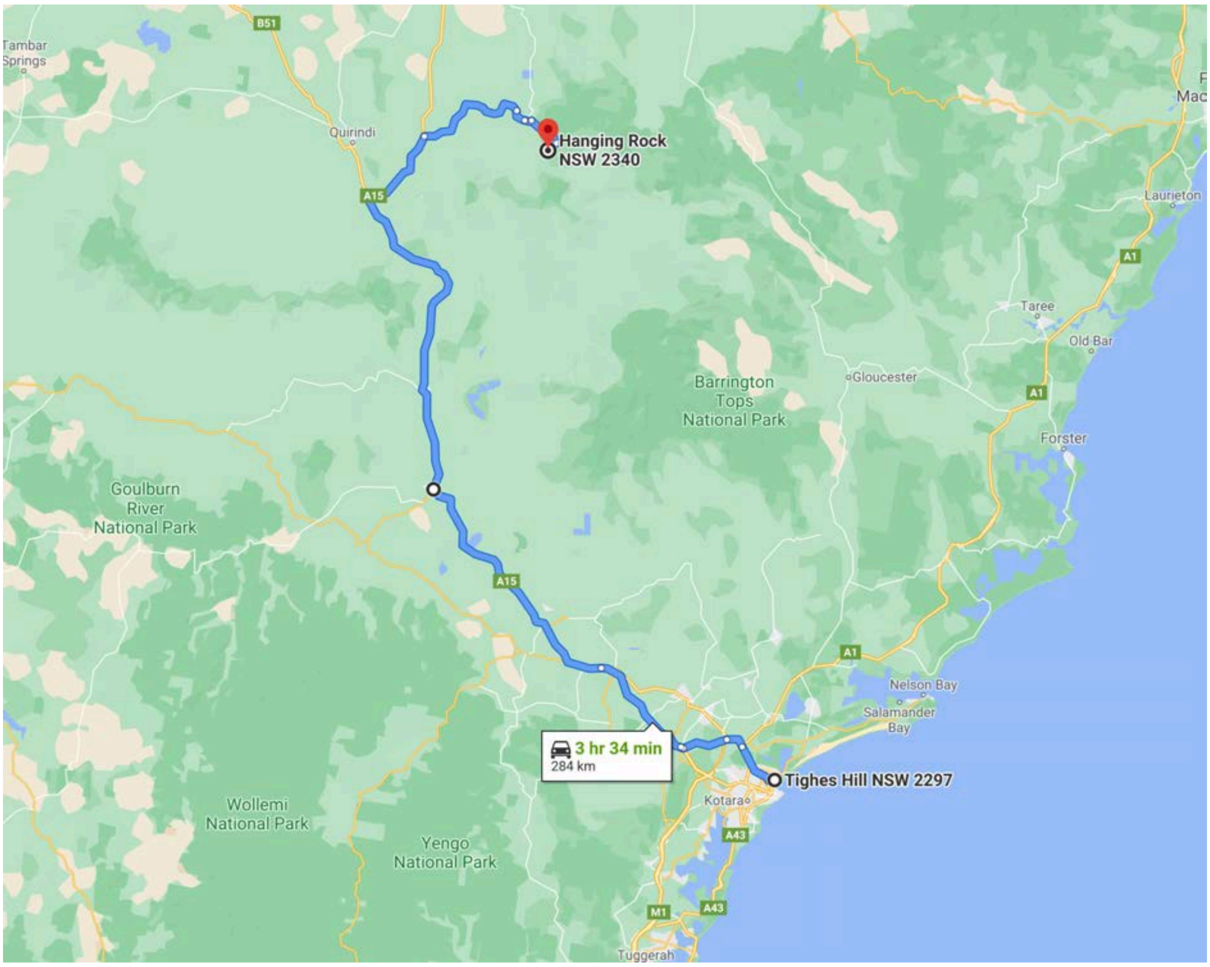
KM index	Location	Section of road	Critical Measurement	Procedure	Notes
315.0	Nundle	Old Hanging Rock Road onto Barry Road GPS link: https://goo.gl/maps/ve9zvmdJnLBYtQSz5	90.0 metres clearance	Right hand bend	No problems with this section of road.
315.0 to 325.0 Km's	Nundle to Hanging Rock	Barrys Road https://goo.gl/maps/BUBe2MCfoQ215qKE6	25.0 metres length clearance	Travel directly ahead through multiple tight turns and steep terrain	As per the blades Barrys Road has a section of road known as the Devils Elbows. The existing hairpin corners are impassable for the blades, towers and motors. A detour of the Devils Elbow has been looked at and will likely be the best solution for all loads. To the west and east of the Devils Elbows the road will need to be widened on a few corners, this would include hardstand and tree removal.
325.0	Hanging Rock	Barrys Road onto Morrisons Gap Road GPS link: https://goo.gl/maps/CLZDJSjENx8rjfAg7	35.0 metres length clearance	Right hand turn	Loads to turn right from the correct side to the correct side of the road. The swept path will have the longer loads travel through a landowner's boundaries on the inside of the corner. This will require a fence to be relocated and hardstand added. Additionally, some trees will need to be removed.
325.0 to 328.0 Km's	Hanging Rock	Morrisons Gap Road GPS link: https://goo.gl/maps/kLtYYnmhTgvE6ZPFA	25.0 metres length clearance	Travel around several sweeping bends on a gravel road	This section of road is gravel for the entirety. The road will need to be widened for the majority of the road. Typically, the road will need to be widened to 5.5 meters in all straight sections and made wider on the corners depending on the radius. A swept path analysis of this section of road, shows that the corridor would be able to stay within the road reserve. Additionally, there will need to be trees removed. The vertical curve will also need to be checked for the entirety of this road.
328.0 Km's	Hanging Rock	Morrisons Gap Road into Hills of Gold windfarm GPS link: https://goo.gl/maps/5VFMQCB3drgXcjyU8		Travel directly ahead into site entrance	Windfarm to supply suitable access for the dimensions and swept path of all loads.

13.0 Route Survey D: Newcastle port to Hills of Gold WF for standard loads.

Distance: (284.0 Kilometres).

Via: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Lindsays Gap Road, Nundle Road, Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road.

GPS Link: https://goo.gl/maps/rouAWyxLZ53pMB3v7



KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
Route Index					
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/afLwPYKuNdm	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	Clearance: 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	Clearance: Length: 70.0 metres Width: 8.0 metres	Right hand turn	No problems with this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Clearance: Length: 70.0 metres Width: 8.0 metres	Moderate right-hand turn	No problems with this section of road.
4.9	Mayfield	Industrial Drive under traffic signals GPS link: https://goo.gl/maps/YmqhiS2iR582	Clearance: Height: 5.4 Metres	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 GPS link: https://goo.gl/maps/Kn49dhWG2qG2	Clearance: Length: 50.0 metres Width: 10.0 metres	Right hand turn	No problems with this section of road.
13.9	Hexham	New England Highway under gantry GPS link: https://goo.gl/maps/YTMoFe7Aick	Clearance: Height: 5.95 Metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDr5JigkBp	Clearance: Width: 12.0 metres	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive GPS link: https://goo.gl/maps/N19vJih1Fgr	Clearance: Width: 9.0 metres Height: 5.9 metres	Travel directly ahead	No problems with this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQt9E2	Clearance: Length: 65.0 metres Width: 7.0 metres	Right hand turn	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
59.0	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjq	Clearance: Width: 9.0 metres	Travel directly ahead	No problems with this section of road.
125.0	Muswellbrook	New England Highway intersection of Sydney Road GPS link: https://goo.gl/maps/HMs11pkPQWqQbJny7	Clearance: Length: 40.0 metres Width: 6.0 metres	Right hand turn	No problems with this section of road.
125.3	Muswellbrook	New England Highway under rail overpass GPS link: https://goo.gl/maps/2kU2zsFJrJamDe2a7	Clearance: Height: 5.1 metres Width: 4.0 metres	Travel directly ahead	Loads over the listed critical measurement are not to travel under this structure.
201.8	Murrurundi	New England highway (Township) GPS link: https://goo.gl/maps/Sj3ixAkhujt	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
206.4	Murrurundi Hill	New England highway Nowlands Gap GPS link: https://goo.gl/maps/R5yufobPeMG2	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Emergency parking only.
203.0	Willow Tree	New England highway GPS link: https://goo.gl/maps/XLTg7CRV7EU2	Clearance: Width: 7.0 metres Length: 35 metres Height: 5.2 metres	Kankool weighbridge	No problems with this section of road.
208.9	Willow Tree Township	New England highway GPS link: https://goo.gl/maps/gw38qmvVfTC2	Clearance: 60.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
210.5	Willow Tree Truck Stop N	New England highway GPS link: https://goo.gl/maps/RRdPVHupGCs	Clearance: 120.0 x 12.0 metres	Parking Bay (small)	Suitable parking for Fatigue breaks for small loads only.
230.0	Wallabadah	New England highway GPS link: https://goo.gl/maps/QWCyeHQSohS2	Clearance: 80.0 x 5.0 metres	Parking Bay (side of road)	Suitable parking for Fatigue breaks.
235.0	Wallabadah	New England highway onto Lindsay's Gap Road GPS link: https://goo.gl/maps/ePbYctjJootkBZiM9	Clearance: Length: 50.0 metres	Right hand turn	No problems with this section of road.
245.7	Garoo	Lindsay's Gap Road over Goonoo Goonoo Creek GPS link: https://goo.gl/maps/9ELSk5ZLRWnf14tm7	Clearance: Axle width: 3.60m Overall width: 6.20m Guard rail height: 850mm	Travel directly ahead over bridge in the centre of the road.	No problems with this section of road.
253.7	Garoo	Lindsay's Gap Road over Middlebrook Creek GPS link: https://goo.gl/maps/DyxGUid9JucoAHhHA	Clearance: Axle width: 4.50m Overall width: 6.10m Guard rail height: 750mm	Travel directly ahead over bridge in the centre of the road.	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
259.2	Garoo	Lindsay's Gap Road through Lindsay's Gap GPS link: https://goo.gl/maps/GGKmqemziKdth8wH9	Clearance: Length: 90.0 metres	Travel directly ahead	No problems with this section of road.
264.8	Nundle	Lindsay's Gap Road onto Nundle Road GPS link: https://goo.gl/maps/FX4ZRx2YG9i2BsXMA	Clearance: Length: 50.0 metres	Right hand turn	No problems with this section of road.
268.3	Nundle	Nundle Road onto Crosby Street GPS link: https://goo.gl/maps/uVvcN9QkPyTDP1YR6	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
268.6	Nundle	Crosby Street onto Oakenville Street GPS link: https://goo.gl/maps/aZNDKURdSBERedMr9	Clearance: Width: 8.0 metres	Travel directly ahead	No problems with this section of road.
269.0	Nundle	Oakenville Street and Jenkins Street intersection GPS link: https://goo.gl/maps/7YM56hQq8bnCSoZy8	5.0 metres width clearance		No problems with this section of road.
270.0	Nundle	Oakenville Street onto Old Hanging Rock GPS link: https://goo.gl/maps/1UMr2EwZetiE76Ey9	35.0 metres length clearance	Left hand turn	No problems with this section of road.
271.0	Nundle	Old Hanging Rock Road onto Barry Road GPS link: https://goo.gl/maps/ve9zvmdJnLBYtQSz5	90.0 metres clearance	Right hand bend	No problems with this section of road.
271.0 to 281.0 Km's	Nundle to Hanging Rock	Barrys Road https://goo.gl/maps/BUBe2MCfoQ215qKE6	25.0 metres length clearance	Travel directly ahead through multiple tight turns and steep terrain	No problems with this section of road.
281.0	Hanging Rock	Barrys Road onto Morrisons Gap Road GPS link: https://goo.gl/maps/CLZDJSjENx8rjfAg7	35.0 metres length clearance	Right hand turn	No problems with this section of road.
281.0 to 284.0 Km's	Hanging Rock	Morrisons Gap Road GPS link: https://goo.gl/maps/kLtYYnmhTgvE6ZPFA	25.0 metres length clearance	Travel around several sweeping bends on a gravel road	This section of road is gravel for the entirety. The road will need upgrades for standard loads to pass through.
284.0 Km's	Hanging Rock	Morrisons Gap Road into Hills of Gold windfarm GPS link: https://goo.gl/maps/5VFMQCB3drgXcjyU8		Travel directly ahead into site entrance	Windfarm to supply suitable access for the dimensions and swept path of all loads.

14.0 Conclusion:

ROUTE SELECTION:

After studying all options and undertaking a route survey, it was observed that the components would need to be transported on several different routes through to the Hill of Gold project as listed in the report.

Route A: Suitable for all loads if modifications are undertaken.

Route B: Suitable for Towers and motors up to 5.2 metres in height, but not blades.

Route C: Suitable for Towers and motors over 5.2 metres in height, but not blades.

Route D: Suitable for standard loads up to 3.5 metres wide, and no higher than 5.2 metres in overall height.

NEWCASTLE:

The intersection 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 83-metre blade to traverse the bend. The 65 Metre blade will not require traffic signals to be removed. However, both blades will require some hardstand to be added to the outside of the corner.

The corner from Industrial Drive onto Maitland Road will require the centre median strips to be lowered while the blades traverse the corner on the incorrect side of the road for both blade options.

HUNTER EXPRESSWAY:

The 83-metre blades will not make it around the roundabout from John Renshaw Drive onto the Hunter Expressway. The 65 Metre blade can travel around the roundabout.

For the 83-metre blade traffic control/Police would be required to block the eastbound lanes of the Hunter expressway while the blades travel down the incorrect side before crossing over at the centre crossover point.

NEW ENGLAND HIGHWAY ONTO THE GOLDEN HIGHWAY:

This corner is currently in the design stage of modifications. The existing corner would need only a small amount of works to allow the blades a suitable swept path. It is recommended that the project keep a close eye on any potential changes that may affect the blades swept path around the corner.

THE GOLDEN HIGHWAY:

Several corners would need to have a moderate number of modifications. Additionally, the blades will need to travel onto the incorrect side of the Golden Highway for approx. 400 metres. This will require the police escorts to hold all eastbound traffic on the Golden Highway. Roadwork's are programmed to take place on this route over the next year, so it is recommended that the client discuss any upcoming road projects with Transport NSW.

MUSWELLBROOK:

Several different routes are required to travel through Muswellbrook, listed below is a summary of these routes.

- ROUTE A VIA: New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Kayuga Road, Ivermein Street, Dartbrook Mine access Road, New England Highway.

  This route will require a large number of upgrades; these include large amounts of hard standing, relocating of power poles and approvals from Muswellbrook Shire Council, Private landowners and Dartbrook Mine. The 65 metre blade requires around 50% of the upgrades that the 83 metre blade would require.
- ROUTE B & C VIA: New England Highway, Golden Highway, Denman Road, Thomas Mitchell Drive, New England Highway, Bell Street, Victoria street, Market Street, New England Highway.

  This route is suitable in its current form for loads up to 40 metres long and 5.6 metres in height. Approval required from Muswellbrook Shire Council and rail.
- ROUTE D VIA: New England Highway.

LINDSAY'S GAP ROAD THROUGH TO NUNDLE:

Loads to turn right from the New England Highway onto Lindsay's Gap Road, travelling across to Nundle Road before entering Nundle via Crosby Street and Oakenville Road.

- The section of Lindsay's Gap Road between the New England Highway and Nundle Road has several bridges that will need to be checked for axle loadings.

  The bridge over Goonoo Goonoo creek has a maximum axle width of 3.5 metres. The bridge over Middlebrook Creek also has axle width restrictions. These bridges will require replacement or upgrades before the towers or motors could be delivered to the project. A deck width of at least 4.6 metres is required for the heavier loads.
- Upgrades required on the turn off from the New England Highway onto Lindsay's Gap Road, and also from Lindsay's Gap Road onto Nundle Road.

The 85 metre blade will require a large amount of upgrades on this section of road, whereas the 65 metre blades only have a moderate amount of works.

- Oakenville Street would require no parking areas put in place throughout the deliveries, these locations are listed in the survey.

BARRY ROAD:

- Barry Road will not accommodate either size blade or the towers and motors. The section of road through the Devils elbows will need to be detoured via a new alignment to the south of Devil's Elbow. This new alignment will need to be sealed if the gradient exceeds 14%.
- Either side of the Devil's Elbow the road has tight sections that would need upgrades, these would include tree removal and hardstand.

MORRISON GAP ROAD:

- Barry Road onto Morrison's Gap Road would require extensive modifications with the swept path currently entering a landowner's boundaries on the inside of the corner.
- Morrison's Gap Road is gravel for the entirety and would need to be made suitable for all weather travel.
  The swept path of this road is tight in several sections and would need to be widened to at least 5.5 metres of road width and wider on the corners.
  A swept path analysis has been undertaken on Morrison's Gap Road, and the blades would stay within the existing road reserve with some modifications required to the existing alignment.
- Morrison's Gap Road also has several Crests that would also need to be surveyed. This will allow us to determine if the largest trailers have adequate clearance to pass through them without the need for additional road works.
- Morrison's Gap Road has a number of trees that will need to be removed and or trimmed to allow a suitable swept path for the largest loads.

GENERAL ROAD ACCESS:

BRIDGE CROSSINGS:

This route from Newcastle to Tamworth has been used in the past for items up to 100T. Further investigations would be required if item mass exceeds this. Additionally, once the loads turn off the New England Highway all structures that require the loads to travel over them, will need to be assessed for axle loads.

OVERHEAD STRUCTURES:

The lowest structure on this route is the Liddell overpass. This bridge is 5.2 metres in the centre carriageway and 5.3 metres in the far-right lane. Loads that exceed 5.2 metres in overall height will need to bypass the bridge via the Golden Highway. A maximum height of 5.8 metres than would be the lowest structure that cannot be avoided. This structure is on the New England Highway at Hexham.

OVERHEAD WIRES:

This route would need to be assessed to handle a loaded height of up to 5.8 metres. It is likely that there are wires that will need to be raised.

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.

FLOODWAYS:

There are a number of floodway’s on the access roads that will need to be raised and widened. These floodway’s vary considerably, and some would need moderate to large amount of works, where others would only need minor upgrades. Each floodway should be assessed on its own merit.

CRESTS:

There are number of crests on Morrison’s Gap Road that will need to be surveyed. Hydraulic lift trailers could overcome these obstacles without the need for additional road works.

PAVEMENT:

The Pavement up to Morrison's Gap Road is of suitable highway grade. Morrison's Gap Road is gravel and would need widening as well as upgrading to an all-weather surface.

ROADWORKS:

Roadworks are likely to be continuous on any route within NSW, as this is common practice. Some roads will just have general maintenance, and resealing, while other sections will have complete realignment. It is recommended that the project discuss any major works well in advance with the authorities.

PORT:

The port has an excellent Break bulk berth that runs at approximately 60% berth occupancy.

The berth has axle and crane loadings well above what is required for this project.

The storage area is asphalt hardstand with a current area of 100,000 s/q metres available, all level. It is adjacent to the port, and within 300 metres of the berth, all within the Port grounds. No local roads need to be used during the discharge.

Access to the local roads from the port is while require some upgrades, including adding hardstand and relocating fences.

APPROVALS:

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

- NHVR
- RMS
- Newcastle Council
- Muswellbrook Council
- Tamworth Regional Council
- NSW Police
- Ausgrid
- Essential Energy
- Telstra
- CRN JHG (Rail)
- ARTC (Rail)

SUMMARY OF ROUTES:

After reviewing all routes, we are under the opinion that the loads could be delivered through to the Hill of Gold windfarm project with a large number of upgrades.

The 83 metre and the 65 metre blades would require a detour around Muswellbrook via Route A and approvals would still need to be sought to confirm that this is possible. The Towers and motors could use Route A if the upgrades are completed, and if the bridges have the capacity on the detour.

Access to the Hill of Gold windfarm once the loads arrive at Nundle has considerable road modifications that would need to take place before it could become a reality for both blade types.

The additional routes based on the height, allows the project to source larger towers if required. We recommend however that a loaded height of 5.8 metres is not exceeded. In saying that we believe a 5.6 metre flange could be delivered to site but would require bookends to keep the height under 5.8 metres.

We also recommend that a Blade dry run is undertaken once all road modifications have been completed, and prior to the first blade movement.

15.0 References:

Rex Andrews Engineered Transportation Pty. Ltd.
Someva Renewables
Engie
Rex J Andrews P/L Route Survey LL273 REV02.
Google Earth/Maps
Nearmaps
Sixmaps
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.

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.

Appendix B

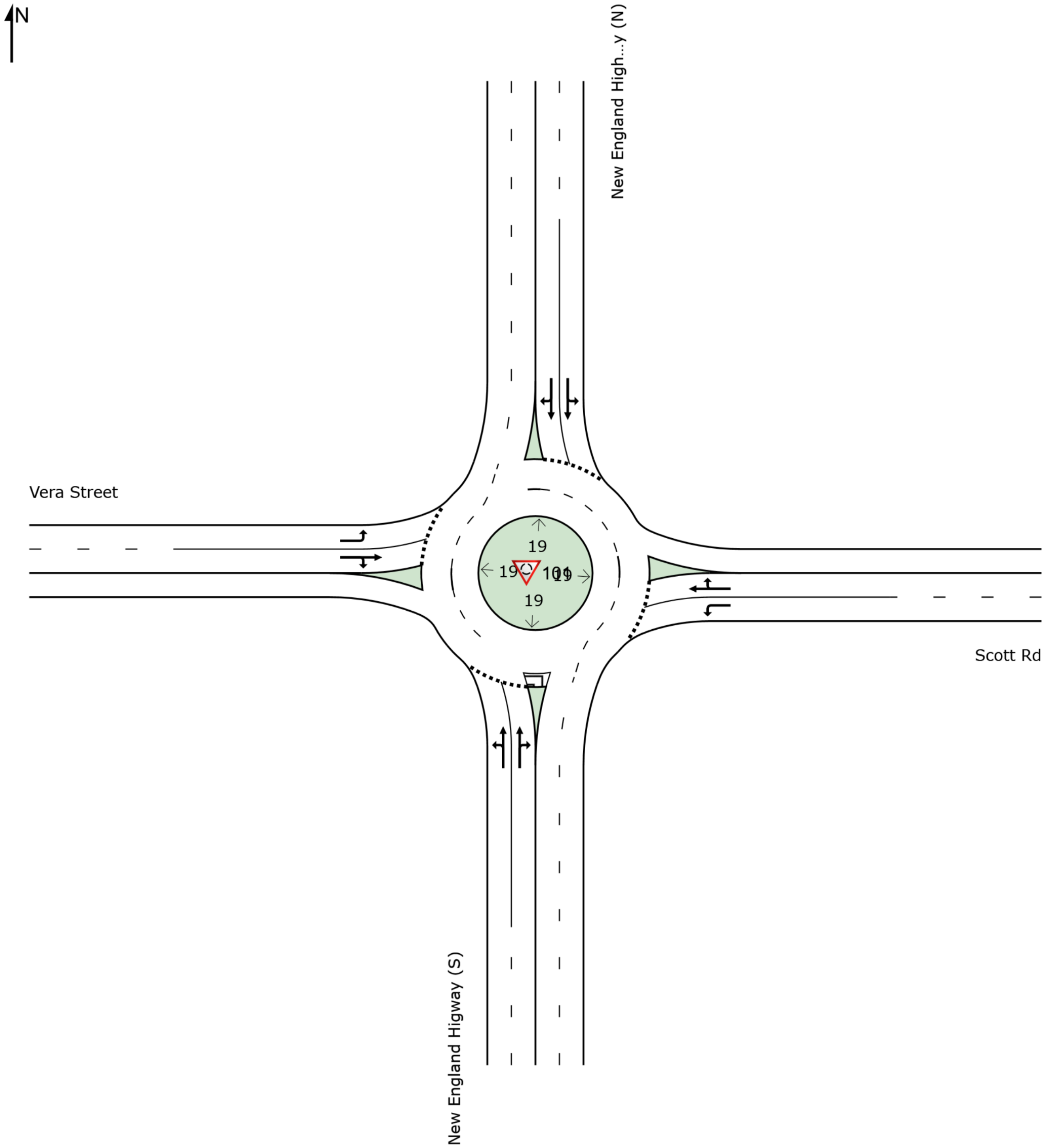
Sidra Modelling Outputs

SITE LAYOUT

Site: 101 [2021 AM Scott St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2021 AM Scott St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Higway (S)														
1	L2	19	0	20	0.0	0.226	4.4	LOS A	1.3	9.4	0.17	0.41	0.17	54.6
2	T1	642	31	676	4.8	0.226	4.5	LOS A	1.3	9.4	0.18	0.41	0.18	55.9
3	R2	2	0	2	0.0	0.226	9.0	LOS A	1.3	9.4	0.18	0.41	0.18	55.9
Approach		663	31	698	4.7	0.226	4.5	LOS A	1.3	9.4	0.18	0.41	0.18	55.9
East: Scott Rd														
4	L2	1	0	1	0.0	0.002	6.4	LOS A	0.0	0.0	0.44	0.53	0.44	53.5
5	T1	4	0	4	0.0	0.015	5.3	LOS A	0.1	0.4	0.38	0.62	0.38	53.0
6	R2	12	0	13	0.0	0.015	9.8	LOS A	0.1	0.4	0.38	0.62	0.38	52.9
Approach		17	0	18	0.0	0.015	8.5	LOS A	0.1	0.4	0.38	0.62	0.38	52.9
North: New England Highway (N)														
7	L2	1	0	1	0.0	0.143	4.3	LOS A	0.7	5.3	0.14	0.40	0.14	54.7
8	T1	349	28	367	8.0	0.143	4.4	LOS A	0.7	5.3	0.14	0.42	0.14	55.8
9	R2	30	0	32	0.0	0.143	8.9	LOS A	0.7	5.2	0.14	0.45	0.14	55.6
Approach		380	28	400	7.4	0.143	4.8	LOS A	0.7	5.3	0.14	0.43	0.14	55.8
West: Vera Street														
10	L2	126	3	133	2.4	0.130	6.0	LOS A	0.5	3.6	0.49	0.68	0.49	53.5
11	T1	1	0	1	0.0	0.060	7.6	LOS A	0.2	1.6	0.53	0.80	0.53	50.8
12	R2	31	3	33	9.7	0.060	12.6	LOS A	0.2	1.6	0.53	0.80	0.53	50.4
Approach		158	6	166	3.8	0.130	7.3	LOS A	0.5	3.6	0.50	0.70	0.50	52.8
All Vehicles		1218	65	1282	5.3	0.226	5.0	LOS A	1.3	9.4	0.21	0.45	0.21	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM Scott St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Higway (S)														
1	L2	86	0	91	0.0	0.347	5.7	LOS A	2.4	17.4	0.57	0.58	0.57	52.8
2	T1	389	13	409	3.3	0.347	5.9	LOS A	2.4	17.4	0.57	0.59	0.57	53.9
3	R2	302	8	318	2.6	0.347	10.7	LOS A	2.3	16.6	0.59	0.71	0.59	51.8
Approach		777	21	818	2.7	0.347	7.8	LOS A	2.4	17.4	0.58	0.64	0.58	53.0
East: Scott Rd														
4	L2	374	23	394	6.1	0.474	7.9	LOS A	3.0	21.8	0.75	0.91	0.84	52.3
5	T1	153	1	161	0.7	0.340	7.6	LOS A	1.7	12.0	0.70	0.80	0.71	52.7
6	R2	68	1	72	1.5	0.340	12.2	LOS A	1.7	12.0	0.70	0.80	0.71	52.6
Approach		595	25	626	4.2	0.474	8.3	LOS A	3.0	21.8	0.73	0.87	0.79	52.4
North: New England Highway (N)														
7	L2	174	3	183	1.7	0.521	9.5	LOS A	4.2	29.7	0.80	0.89	0.93	51.2
8	T1	545	13	574	2.4	0.521	9.9	LOS A	4.2	29.7	0.80	0.91	0.94	51.9
9	R2	95	2	100	2.1	0.521	14.8	LOS B	4.0	28.7	0.80	0.93	0.95	51.3
Approach		814	18	857	2.2	0.521	10.4	LOS A	4.2	29.7	0.80	0.91	0.93	51.7
West: Vera Street														
10	L2	69	1	73	1.4	0.138	8.3	LOS A	0.5	3.8	0.61	0.81	0.61	52.0
11	T1	209	8	220	3.8	0.401	7.0	LOS A	2.1	15.3	0.67	0.78	0.71	52.7
12	R2	132	4	139	3.0	0.401	11.5	LOS A	2.1	15.3	0.67	0.78	0.71	52.6
Approach		410	13	432	3.2	0.401	8.7	LOS A	2.1	15.3	0.66	0.79	0.69	52.5
All Vehicles		2596	77	2733	3.0	0.521	8.9	LOS A	4.2	29.7	0.69	0.80	0.76	52.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: X:\18289 Hills of Gold Wind Farm Nundle\07 Modelling Files\18289-Hills of Gold model-210603.sip9

MOVEMENT SUMMARY

Site: 101 [2021 AM + Cons. Scott St-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Higway (S)														
1	L2	22	0	23	0.0	0.240	4.4	LOS A	1.4	10.1	0.17	0.41	0.17	54.5
2	T1	679	31	715	4.6	0.240	4.5	LOS A	1.4	10.1	0.18	0.41	0.18	55.9
3	R2	2	0	2	0.0	0.240	9.0	LOS A	1.4	10.1	0.19	0.41	0.19	55.9
Approach		703	31	740	4.4	0.240	4.5	LOS A	1.4	10.1	0.18	0.41	0.18	55.9
East: Scott Rd														
4	L2	1	0	1	0.0	0.002	6.6	LOS A	0.0	0.0	0.46	0.53	0.46	53.4
5	T1	4	0	4	0.0	0.015	5.4	LOS A	0.1	0.4	0.39	0.63	0.39	52.9
6	R2	12	0	13	0.0	0.015	9.9	LOS A	0.1	0.4	0.39	0.63	0.39	52.8
Approach		17	0	18	0.0	0.015	8.6	LOS A	0.1	0.4	0.40	0.62	0.40	52.9
North: New England Highway (N)														
7	L2	1	0	1	0.0	0.156	4.4	LOS A	0.8	5.8	0.16	0.40	0.16	54.6
8	T1	377	28	397	7.4	0.156	4.5	LOS A	0.8	5.8	0.16	0.43	0.16	55.7
9	R2	32	0	34	0.0	0.156	8.9	LOS A	0.8	5.7	0.16	0.45	0.16	55.5
Approach		410	28	432	6.8	0.156	4.8	LOS A	0.8	5.8	0.16	0.43	0.16	55.7
West: Vera Street														
10	L2	133	3	140	2.3	0.139	6.1	LOS A	0.5	3.9	0.50	0.69	0.50	53.5
11	T1	1	0	1	0.0	0.069	7.4	LOS A	0.2	1.8	0.54	0.80	0.54	51.0
12	R2	39	3	41	7.7	0.069	12.2	LOS A	0.2	1.8	0.54	0.80	0.54	50.7
Approach		173	6	182	3.5	0.139	7.5	LOS A	0.5	3.9	0.51	0.72	0.51	52.8
All Vehicles		1303	65	1372	5.0	0.240	5.0	LOS A	1.4	10.1	0.22	0.46	0.22	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM + Cons. Scott St-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Higway (S)														
1	L2	97	0	102	0.0	0.377	5.9	LOS A	2.7	19.6	0.60	0.59	0.60	52.7
2	T1	419	13	441	3.1	0.377	6.0	LOS A	2.7	19.6	0.60	0.61	0.60	53.8
3	R2	318	8	335	2.5	0.377	10.9	LOS A	2.6	18.6	0.62	0.72	0.62	51.8
Approach		834	21	878	2.5	0.377	7.9	LOS A	2.7	19.6	0.61	0.65	0.61	52.9
East: Scott Rd														
4	L2	394	23	415	5.8	0.518	8.4	LOS A	3.4	25.3	0.78	0.94	0.91	51.9
5	T1	161	1	169	0.6	0.373	8.1	LOS A	2.0	13.9	0.73	0.85	0.77	52.5
6	R2	72	1	76	1.4	0.373	12.7	LOS A	2.0	13.9	0.73	0.85	0.77	52.4
Approach		627	25	660	4.0	0.518	8.8	LOS A	3.4	25.3	0.76	0.91	0.86	52.1
North: New England Highway (N)														
7	L2	183	3	193	1.6	0.572	10.8	LOS A	5.1	36.3	0.85	0.96	1.05	50.3
8	T1	576	13	606	2.3	0.572	11.3	LOS A	5.1	36.3	0.84	0.98	1.06	51.0
9	R2	100	2	105	2.0	0.572	16.2	LOS B	4.9	34.7	0.84	1.00	1.07	50.3
Approach		859	18	904	2.1	0.572	11.7	LOS A	5.1	36.3	0.85	0.98	1.06	50.8
West: Vera Street														
10	L2	73	1	77	1.4	0.150	8.5	LOS A	0.6	4.2	0.63	0.81	0.63	51.9
11	T1	220	8	232	3.6	0.439	7.4	LOS A	2.5	17.7	0.70	0.82	0.77	52.5
12	R2	142	4	149	2.8	0.439	11.9	LOS A	2.5	17.7	0.70	0.82	0.77	52.4
Approach		435	13	458	3.0	0.439	9.0	LOS A	2.5	17.7	0.69	0.82	0.75	52.3
All Vehicles		2755	77	2900	2.8	0.572	9.5	LOS A	5.1	36.3	0.73	0.84	0.83	51.9

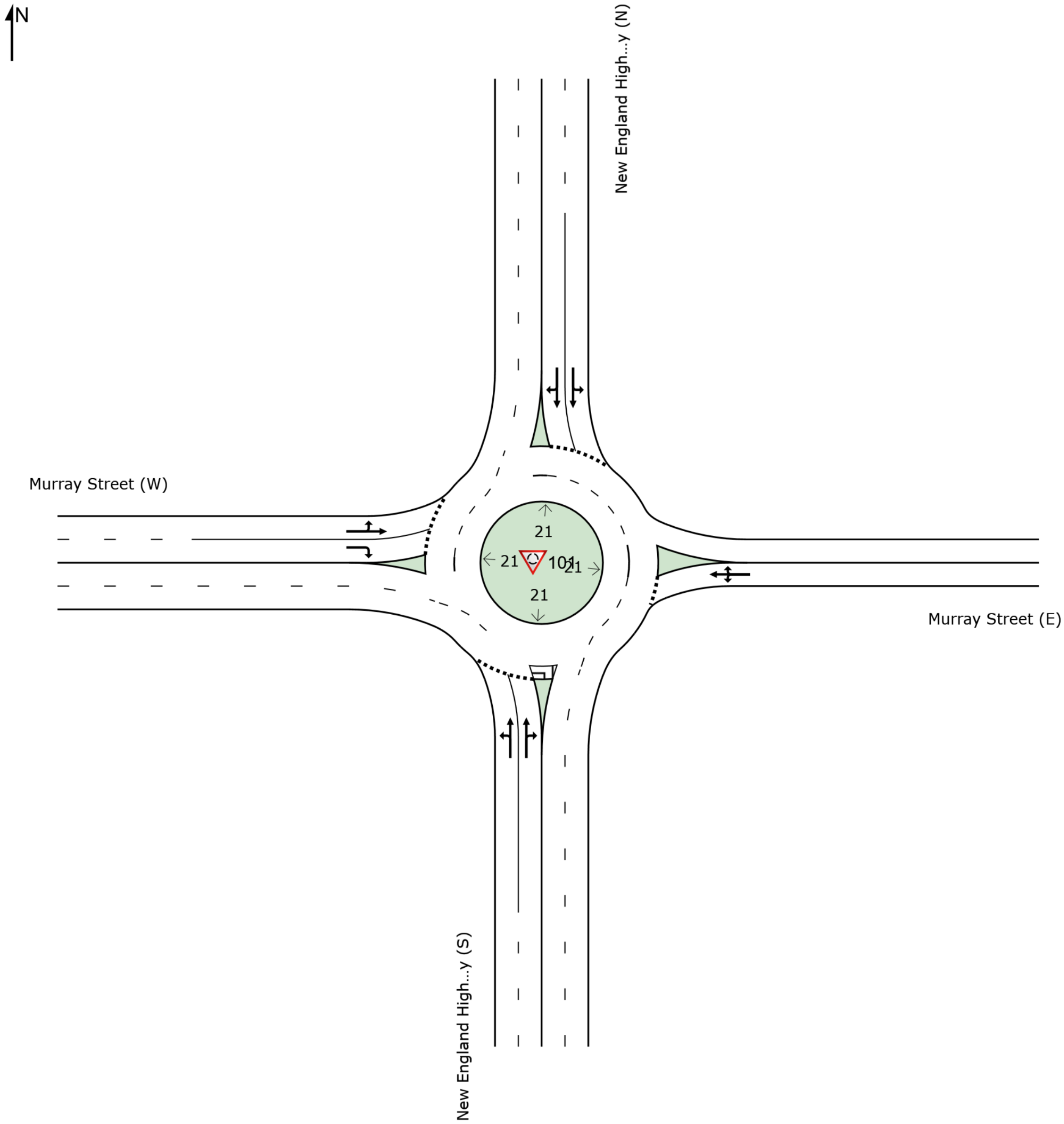
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [2021 AM Murray St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2021 AM Murray St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Highway (S)														
1	L2	88	0	93	0.0	0.141	4.3	LOS A	0.8	5.6	0.21	0.43	0.21	54.7
2	T1	301	14	317	4.7	0.141	4.4	LOS A	0.8	5.6	0.22	0.42	0.22	56.0
3	R2	13	5	14	38.5	0.141	9.7	LOS A	0.8	5.7	0.22	0.42	0.22	54.4
Approach		402	19	423	4.7	0.141	4.6	LOS A	0.8	5.7	0.22	0.42	0.22	55.6
East: Murray Street (E)														
4	L2	7	0	7	0.0	0.060	4.9	LOS A	0.2	1.6	0.35	0.57	0.35	53.2
5	T1	33	0	35	0.0	0.060	5.1	LOS A	0.2	1.6	0.35	0.57	0.35	54.6
6	R2	19	0	20	0.0	0.060	9.9	LOS A	0.2	1.6	0.35	0.57	0.35	54.6
Approach		59	0	62	0.0	0.060	6.6	LOS A	0.2	1.6	0.35	0.57	0.35	54.4
North: New England Highway (N)														
7	L2	9	0	9	0.0	0.095	4.3	LOS A	0.4	3.1	0.17	0.41	0.17	54.8
8	T1	206	30	217	14.6	0.095	4.5	LOS A	0.4	3.1	0.17	0.43	0.17	55.8
9	R2	19	0	20	0.0	0.095	9.1	LOS A	0.4	3.1	0.18	0.45	0.18	55.7
Approach		234	30	246	12.8	0.095	4.8	LOS A	0.4	3.1	0.17	0.43	0.17	55.7
West: Murray Street (W)														
10	L2	3	0	3	0.0	0.017	5.6	LOS A	0.1	0.4	0.39	0.51	0.39	53.8
11	T1	11	0	12	0.0	0.017	5.6	LOS A	0.1	0.4	0.39	0.51	0.39	55.3
12	R2	38	1	40	2.6	0.034	9.8	LOS A	0.1	0.9	0.36	0.65	0.36	52.2
Approach		52	1	55	1.9	0.034	8.7	LOS A	0.1	0.9	0.37	0.61	0.37	52.9
All Vehicles		747	50	786	6.7	0.141	5.1	LOS A	0.8	5.7	0.22	0.45	0.22	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM Murray St-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Highway (S)														
1	L2	181	25	191	13.8	0.197	5.2	LOS A	1.1	9.0	0.41	0.52	0.41	53.5
2	T1	269	36	283	13.4	0.197	5.4	LOS A	1.1	9.0	0.43	0.52	0.43	54.7
3	R2	13	0	14	0.0	0.197	9.9	LOS A	1.1	8.7	0.43	0.52	0.43	54.9
Approach		463	61	487	13.2	0.197	5.4	LOS A	1.1	9.0	0.42	0.52	0.42	54.2
East: Murray Street (E)														
4	L2	24	0	25	0.0	0.183	6.6	LOS A	0.8	5.6	0.59	0.72	0.59	52.5
5	T1	85	0	89	0.0	0.183	6.8	LOS A	0.8	5.6	0.59	0.72	0.59	53.8
6	R2	26	0	27	0.0	0.183	11.6	LOS A	0.8	5.6	0.59	0.72	0.59	53.8
Approach		135	0	142	0.0	0.183	7.7	LOS A	0.8	5.6	0.59	0.72	0.59	53.6
North: New England Highway (N)														
7	L2	47	1	49	2.1	0.299	6.1	LOS A	1.4	10.5	0.59	0.62	0.59	52.8
8	T1	369	17	388	4.6	0.299	6.3	LOS A	1.4	10.5	0.59	0.67	0.59	53.8
9	R2	109	0	115	0.0	0.299	11.2	LOS A	1.4	10.0	0.60	0.73	0.60	53.1
Approach		525	18	553	3.4	0.299	7.3	LOS A	1.4	10.5	0.59	0.68	0.59	53.5
West: Murray Street (W)														
10	L2	38	4	40	10.5	0.378	5.7	LOS A	2.0	14.4	0.49	0.54	0.49	53.0
11	T1	379	4	399	1.1	0.378	5.5	LOS A	2.0	14.4	0.49	0.54	0.49	54.8
12	R2	222	17	234	7.7	0.257	10.6	LOS A	1.2	8.9	0.47	0.73	0.47	51.6
Approach		639	25	673	3.9	0.378	7.3	LOS A	2.0	14.4	0.49	0.61	0.49	53.5
All Vehicles		1762	104	1855	5.9	0.378	6.8	LOS A	2.0	14.4	0.51	0.61	0.51	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 AM + Cons. Murray St-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Highway (S)														
1	L2	93	0	98	0.0	0.156	4.4	LOS A	0.9	6.3	0.22	0.43	0.22	54.6
2	T1	329	14	346	4.3	0.156	4.5	LOS A	0.9	6.3	0.23	0.43	0.23	55.8
3	R2	19	5	20	26.3	0.156	9.6	LOS A	0.9	6.4	0.24	0.43	0.24	54.7
Approach		441	19	464	4.3	0.156	4.7	LOS A	0.9	6.4	0.23	0.43	0.23	55.5
East: Murray Street (E)														
4	L2	21	0	22	0.0	0.082	5.1	LOS A	0.3	2.2	0.38	0.59	0.38	53.3
5	T1	37	0	39	0.0	0.082	5.3	LOS A	0.3	2.2	0.38	0.59	0.38	54.7
6	R2	20	0	21	0.0	0.082	10.1	LOS A	0.3	2.2	0.38	0.59	0.38	54.7
Approach		78	0	82	0.0	0.082	6.5	LOS A	0.3	2.2	0.38	0.59	0.38	54.3
North: New England Highway (N)														
7	L2	9	0	9	0.0	0.115	4.3	LOS A	0.5	3.8	0.19	0.41	0.19	54.7
8	T1	257	30	271	11.7	0.115	4.5	LOS A	0.5	3.8	0.19	0.43	0.19	55.8
9	R2	20	0	21	0.0	0.115	9.1	LOS A	0.5	3.7	0.19	0.45	0.19	55.7
Approach		286	30	301	10.5	0.115	4.8	LOS A	0.5	3.8	0.19	0.43	0.19	55.8
West: Murray Street (W)														
10	L2	3	0	3	0.0	0.019	5.7	LOS A	0.1	0.5	0.41	0.52	0.41	53.7
11	T1	12	0	13	0.0	0.019	5.7	LOS A	0.1	0.5	0.41	0.52	0.41	55.2
12	R2	40	1	42	2.5	0.036	9.9	LOS A	0.1	1.0	0.38	0.66	0.38	52.1
Approach		55	1	58	1.8	0.036	8.7	LOS A	0.1	1.0	0.39	0.62	0.39	52.9
All Vehicles		860	50	905	5.8	0.156	5.1	LOS A	0.9	6.4	0.24	0.46	0.24	55.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM + Cons. Murray St-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: New England Highway (S)														
1	L2	191	25	201	13.1	0.229	5.3	LOS A	1.4	10.6	0.43	0.53	0.43	53.4
2	T1	323	36	340	11.1	0.229	5.4	LOS A	1.4	10.6	0.45	0.54	0.45	54.6
3	R2	23	0	24	0.0	0.229	10.0	LOS A	1.3	10.1	0.45	0.54	0.45	54.7
Approach		537	61	565	11.4	0.229	5.6	LOS A	1.4	10.6	0.44	0.53	0.44	54.2
East: Murray Street (E)														
4	L2	32	0	34	0.0	0.207	6.8	LOS A	0.9	6.5	0.62	0.74	0.62	52.4
5	T1	89	0	94	0.0	0.207	7.0	LOS A	0.9	6.5	0.62	0.74	0.62	53.8
6	R2	27	0	28	0.0	0.207	11.8	LOS A	0.9	6.5	0.62	0.74	0.62	53.8
Approach		148	0	156	0.0	0.207	7.8	LOS A	0.9	6.5	0.62	0.74	0.62	53.5
North: New England Highway (N)														
7	L2	49	1	52	2.0	0.329	6.3	LOS A	1.6	11.9	0.62	0.64	0.62	52.7
8	T1	398	17	419	4.3	0.329	6.5	LOS A	1.6	11.9	0.62	0.68	0.62	53.6
9	R2	115	0	121	0.0	0.329	11.4	LOS A	1.6	11.4	0.63	0.76	0.63	52.9
Approach		562	18	592	3.2	0.329	7.5	LOS A	1.6	11.9	0.62	0.69	0.62	53.4
West: Murray Street (W)														
10	L2	44	4	46	9.1	0.417	5.9	LOS A	2.3	16.3	0.54	0.57	0.54	52.8
11	T1	399	4	420	1.0	0.417	5.7	LOS A	2.3	16.3	0.54	0.57	0.54	54.5
12	R2	234	17	246	7.3	0.283	10.9	LOS A	1.3	9.8	0.52	0.76	0.52	51.5
Approach		677	25	713	3.7	0.417	7.5	LOS A	2.3	16.3	0.53	0.64	0.53	53.3
All Vehicles		1924	104	2025	5.4	0.417	7.0	LOS A	2.3	16.3	0.54	0.63	0.54	53.6

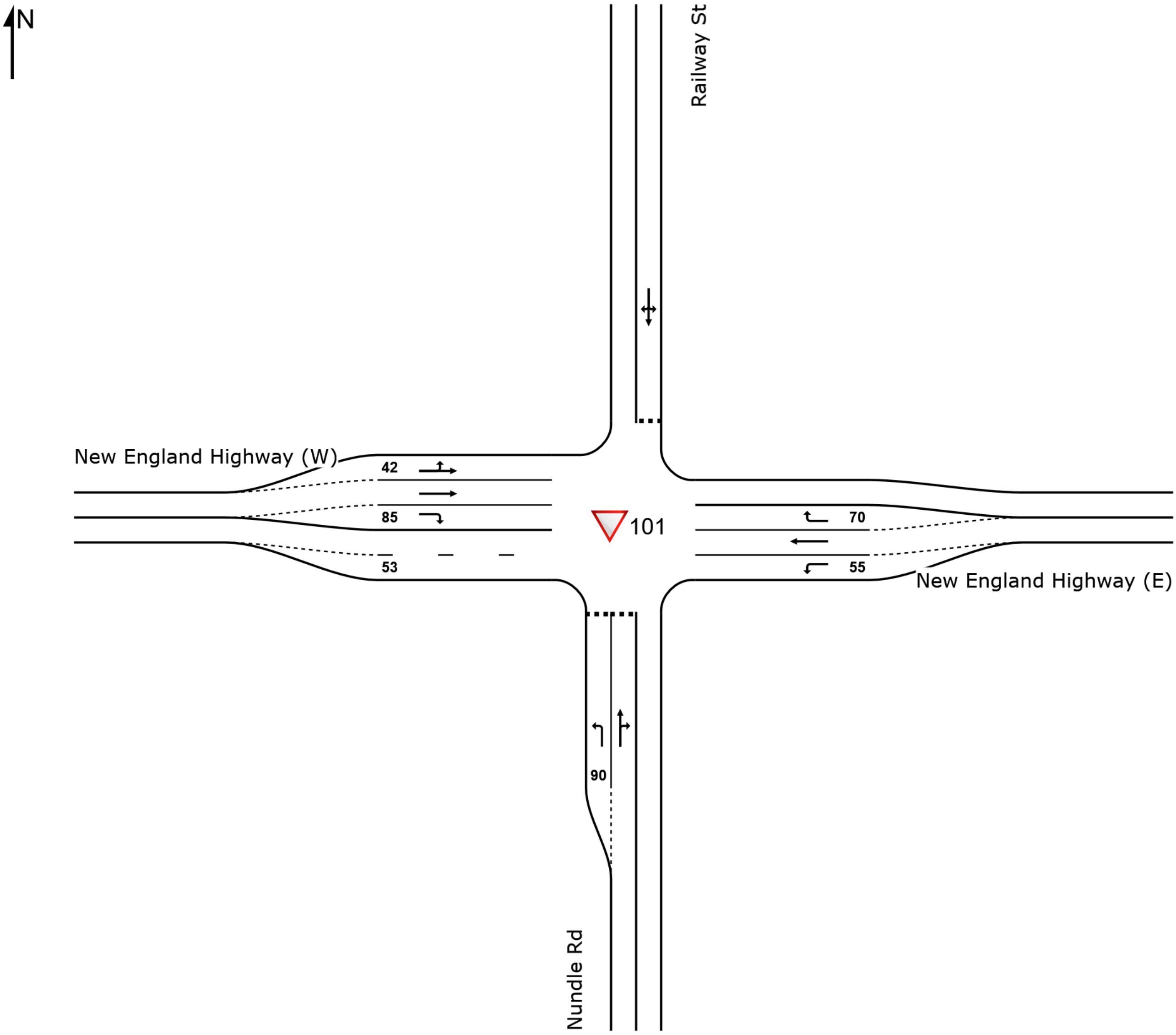
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [2021 AM Nundle Rd-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2021 AM Nundle Rd-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Rd														
1	L2	105	1	111	1.0	0.102	6.5	LOS A	0.4	2.7	0.31	0.59	0.31	52.6
2	T1	1	0	1	0.0	0.021	9.7	LOS A	0.1	0.5	0.53	0.70	0.53	49.6
3	R2	6	1	6	16.7	0.021	12.4	LOS A	0.1	0.5	0.53	0.70	0.53	48.6
Approach		112	2	118	1.8	0.102	6.8	LOS A	0.4	2.7	0.32	0.60	0.32	52.4
East: New England Highway (E)														
4	L2	33	2	35	6.1	0.020	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
5	T1	189	20	199	10.6	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	1	0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.25	0.53	0.25	52.5
Approach		223	22	235	9.9	0.109	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.8
North: Railway St														
7	L2	4	1	4	25.0	0.032	6.5	LOS A	0.1	0.8	0.44	0.66	0.44	48.6
8	T1	1	0	1	0.0	0.032	10.0	LOS A	0.1	0.8	0.44	0.66	0.44	50.0
9	R2	7	1	7	14.3	0.032	14.5	LOS B	0.1	0.8	0.44	0.66	0.44	49.0
Approach		12	2	13	16.7	0.032	11.5	LOS A	0.1	0.8	0.44	0.66	0.44	49.0
West: New England Highway (W)														
10	L2	8	0	8	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.21	0.00	56.2
11	T1	121	29	127	24.0	0.067	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
12	R2	34	3	36	8.8	0.033	6.7	LOS A	0.1	1.0	0.34	0.58	0.34	52.5
Approach		163	32	172	19.6	0.067	1.7	NA	0.1	1.0	0.07	0.15	0.07	57.9
All Vehicles		510	58	537	11.4	0.109	2.7	NA	0.4	2.7	0.10	0.23	0.10	56.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM Nundle Rd-New England Hwy (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Rd														
1	L2	93	9	98	9.7	0.101	6.9	LOS A	0.4	2.8	0.36	0.62	0.36	52.1
2	T1	5	1	5	20.0	0.164	27.2	LOS B	0.5	4.1	0.84	0.93	0.85	39.1
3	R2	16	3	17	18.8	0.164	32.1	LOS C	0.5	4.1	0.84	0.93	0.85	38.8
Approach		114	13	120	11.4	0.164	11.4	LOS A	0.5	4.1	0.45	0.68	0.45	49.0
East: New England Highway (E)														
4	L2	31	3	33	9.7	0.019	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	53.2
5	T1	219	63	231	28.8	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	3	0	3	0.0	0.003	7.2	LOS A	0.0	0.1	0.44	0.59	0.44	51.8
Approach		253	66	266	26.1	0.140	0.8	NA	0.0	0.1	0.01	0.08	0.01	58.9
North: Railway St														
7	L2	5	0	5	0.0	0.069	7.4	LOS A	0.2	1.7	0.75	0.81	0.75	42.7
8	T1	4	2	4	50.0	0.069	37.6	LOS C	0.2	1.7	0.75	0.81	0.75	42.0
9	R2	3	0	3	0.0	0.069	29.8	LOS C	0.2	1.7	0.75	0.81	0.75	42.8
Approach		12	2	13	16.7	0.069	23.0	LOS B	0.2	1.7	0.75	0.81	0.75	42.5
West: New England Highway (W)														
10	L2	13	0	14	0.0	0.037	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	57.3
11	T1	382	22	402	5.8	0.185	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
12	R2	133	5	140	3.8	0.134	7.0	LOS A	0.6	4.0	0.40	0.63	0.40	52.2
Approach		528	27	556	5.1	0.185	1.9	NA	0.6	4.0	0.10	0.17	0.10	57.6
All Vehicles		907	108	955	11.9	0.185	3.1	NA	0.6	4.1	0.13	0.22	0.13	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 AM + Cons. Nundle Rd-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Rd														
1	L2	128	5	135	3.9	0.128	6.6	LOS A	0.5	3.5	0.32	0.60	0.32	52.4
2	T1	1	0	1	0.0	0.025	11.1	LOS A	0.1	0.6	0.59	0.76	0.59	48.3
3	R2	6	1	6	16.7	0.025	14.6	LOS B	0.1	0.6	0.59	0.76	0.59	47.3
Approach		135	6	142	4.4	0.128	7.0	LOS A	0.5	3.5	0.34	0.61	0.34	52.2
East: New England Highway (E)														
4	L2	35	2	37	5.7	0.021	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
5	T1	199	20	209	10.1	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	1	0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.25	0.53	0.25	52.4
Approach		235	22	247	9.4	0.114	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.8
North: Railway St														
7	L2	4	1	4	25.0	0.039	6.5	LOS A	0.1	1.0	0.49	0.70	0.49	47.2
8	T1	1	0	1	0.0	0.039	11.5	LOS A	0.1	1.0	0.49	0.70	0.49	48.5
9	R2	7	1	7	14.3	0.039	18.1	LOS B	0.1	1.0	0.49	0.70	0.49	47.6
Approach		12	2	13	16.7	0.039	13.7	LOS A	0.1	1.0	0.49	0.70	0.49	47.5
West: New England Highway (W)														
10	L2	8	0	8	0.0	0.014	5.5	LOS A	0.0	0.0	0.00	0.20	0.00	56.3
11	T1	127	29	134	22.8	0.070	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
12	R2	92	23	97	25.0	0.101	7.2	LOS A	0.4	3.5	0.38	0.62	0.38	52.2
Approach		227	52	239	22.9	0.101	3.1	NA	0.4	3.5	0.16	0.27	0.16	56.3
All Vehicles		609	82	641	13.5	0.128	3.3	NA	0.5	3.5	0.14	0.28	0.14	56.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM + Cons. Nundle Rd-New England Hwy (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Rd														
1	L2	152	9	160	5.9	0.165	7.1	LOS A	0.6	4.6	0.39	0.64	0.39	52.2
2	T1	5	1	5	20.0	0.200	32.4	LOS C	0.6	5.0	0.87	0.95	0.91	36.9
3	R2	17	3	18	17.6	0.200	37.9	LOS C	0.6	5.0	0.87	0.95	0.91	36.6
Approach		174	13	183	7.5	0.200	10.8	LOS A	0.6	5.0	0.45	0.68	0.45	49.5
East: New England Highway (E)														
4	L2	33	3	35	9.1	0.020	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	53.2
5	T1	239	63	252	26.4	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	3	0	3	0.0	0.004	7.4	LOS A	0.0	0.1	0.45	0.59	0.45	51.7
Approach		275	66	289	24.0	0.151	0.8	NA	0.0	0.1	0.00	0.08	0.00	58.9
North: Railway St														
7	L2	5	0	5	0.0	0.085	7.5	LOS A	0.3	2.0	0.79	0.84	0.79	40.5
8	T1	4	2	4	50.0	0.085	44.3	LOS D	0.3	2.0	0.79	0.84	0.79	39.9
9	R2	3	0	3	0.0	0.085	39.0	LOS C	0.3	2.0	0.79	0.84	0.79	40.6
Approach		12	2	13	16.7	0.085	27.7	LOS B	0.3	2.0	0.79	0.84	0.79	40.3
West: New England Highway (W)														
10	L2	14	0	15	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	57.3
11	T1	402	22	423	5.5	0.195	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
12	R2	157	5	165	3.2	0.162	7.2	LOS A	0.7	4.9	0.43	0.65	0.43	52.2
Approach		573	27	603	4.7	0.195	2.1	NA	0.7	4.9	0.12	0.19	0.12	57.4
All Vehicles		1034	108	1088	10.4	0.200	3.5	NA	0.7	5.0	0.15	0.25	0.15	56.0

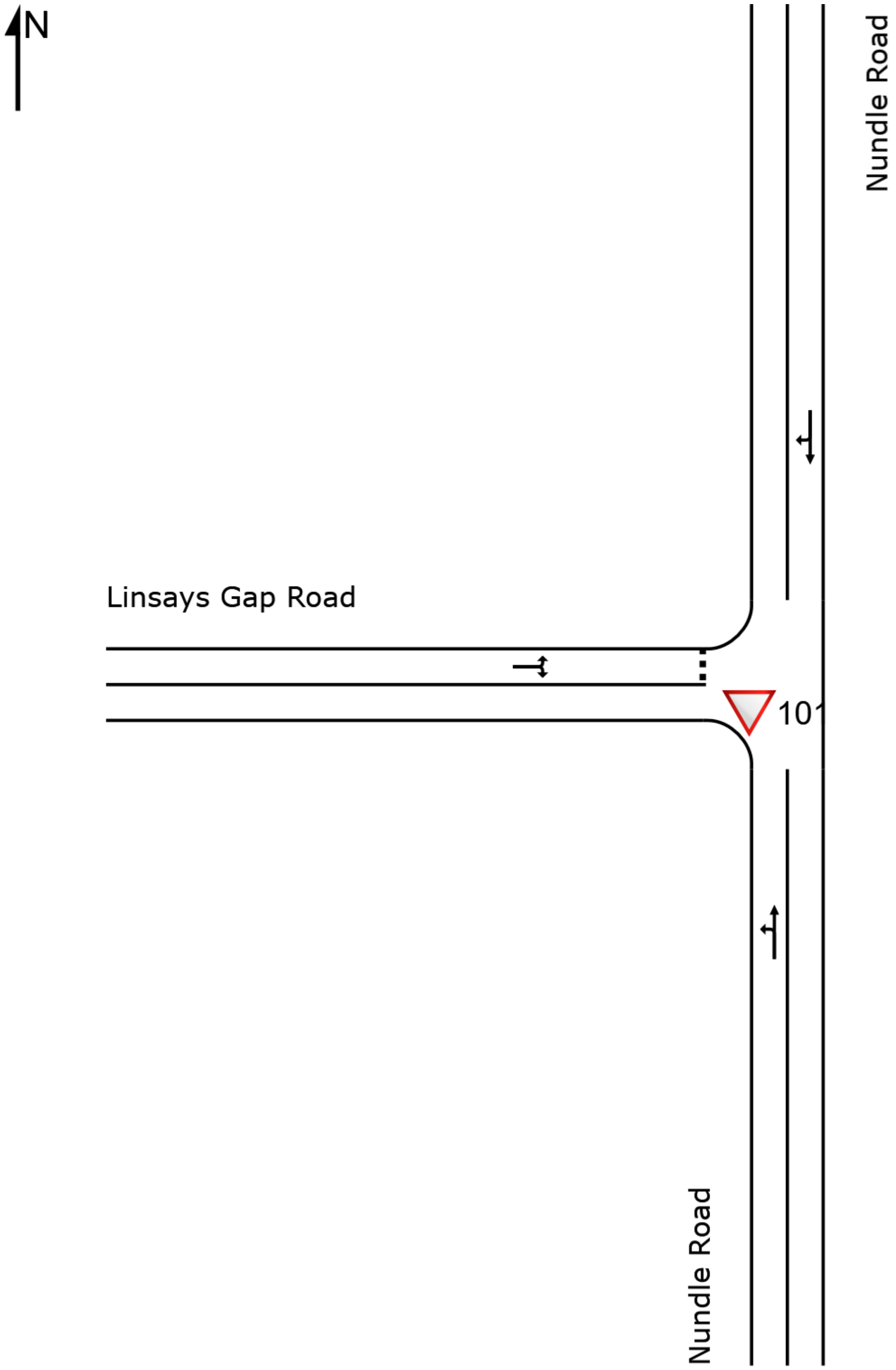
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

▽ Site: 101 [2021 AM Nundle Rd - Lindsays Gap Rd (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

▽ Site: 101 [2021 AM Nundle Rd - Lindsays Gap Rd (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Road															
1	L2	15	15.0	16	15.0	0.018	7.2	LOS A	0.0	0.0	0.00	0.32	0.00	64.3
2	T1	15	15.0	16	15.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	74.3
Approach		30	15.0	32	15.0	0.018	3.6	NA	0.0	0.0	0.00	0.32	0.00	68.9
North: Nundle Road															
8	T1	8	15.0	8	15.0	0.008	0.1	LOS A	0.0	0.2	0.08	0.24	0.08	75.2
9	R2	5	15.0	5	15.0	0.008	7.0	LOS A	0.0	0.2	0.08	0.24	0.08	64.2
Approach		13	15.0	14	15.0	0.008	2.7	NA	0.0	0.2	0.08	0.24	0.08	70.6
West: Linsays Gap Road															
10	L2	6	15.0	6	15.0	0.008	7.3	LOS A	0.0	0.2	0.07	0.61	0.07	60.4
12	R2	4	15.0	4	15.0	0.008	7.0	LOS A	0.0	0.2	0.07	0.61	0.07	59.8
Approach		10	15.0	11	15.0	0.008	7.2	LOS A	0.0	0.2	0.07	0.61	0.07	60.2
All Vehicles		53	15.0	56	15.0	0.018	4.1	NA	0.0	0.2	0.03	0.36	0.03	67.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [2021 PM Nundle Rd - Lindsays Gap Rd (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Road														
1	L2	3	15.0	3	15.0	0.010	7.2	LOS A	0.0	0.0	0.00	0.11	0.00	66.9
2	T1	14	15.0	15	15.0	0.010	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	77.9
Approach		17	15.0	18	15.0	0.010	1.3	NA	0.0	0.0	0.00	0.11	0.00	75.7
North: Nundle Road														
8	T1	6	15.0	6	15.0	0.005	0.0	LOS A	0.0	0.1	0.04	0.16	0.04	76.9
9	R2	2	15.0	2	15.0	0.005	7.0	LOS A	0.0	0.1	0.04	0.16	0.04	65.4
Approach		8	15.0	8	15.0	0.005	1.8	NA	0.0	0.1	0.04	0.16	0.04	73.7
West: Linsays Gap Road														
10	L2	1	15.0	1	15.0	0.012	7.3	LOS A	0.0	0.3	0.08	0.62	0.08	60.6
12	R2	13	15.0	14	15.0	0.012	7.0	LOS A	0.0	0.3	0.08	0.62	0.08	60.0
Approach		14	15.0	15	15.0	0.012	7.0	LOS A	0.0	0.3	0.08	0.62	0.08	60.0
All Vehicles		39	15.0	41	15.0	0.012	3.4	NA	0.0	0.3	0.04	0.30	0.04	68.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [2021 AM Nundle Rd - Lindsays Gap Rd (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Road														
1	L2	23	15.0	24	15.0	0.033	7.2	LOS A	0.0	0.0	0.00	0.27	0.00	64.9
2	T1	32	15.0	34	15.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	75.2
Approach		55	15.0	58	15.0	0.033	3.0	NA	0.0	0.0	0.00	0.27	0.00	70.5
North: Nundle Road														
8	T1	62	15.0	65	15.0	0.040	0.0	LOS A	0.0	0.3	0.03	0.05	0.03	78.9
9	R2	5	15.0	5	15.0	0.040	7.1	LOS A	0.0	0.3	0.03	0.05	0.03	66.9
Approach		67	15.0	71	15.0	0.040	0.5	NA	0.0	0.3	0.03	0.05	0.03	77.9
West: Linsays Gap Road														
10	L2	6	15.0	6	15.0	0.032	7.3	LOS A	0.1	0.8	0.16	0.61	0.16	60.2
12	R2	28	15.0	29	15.0	0.032	7.4	LOS A	0.1	0.8	0.16	0.61	0.16	59.6
Approach		34	15.0	36	15.0	0.032	7.4	LOS A	0.1	0.8	0.16	0.61	0.16	59.8
All Vehicles		156	15.0	164	15.0	0.040	2.9	NA	0.1	0.8	0.05	0.25	0.05	70.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [2021 PM Nundle Rd - Lindsays Gap Rd (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nundle Road														
1	L2	27	15.0	28	15.0	0.057	7.2	LOS A	0.0	0.0	0.00	0.18	0.00	66.0
2	T1	68	15.0	72	15.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	76.6
Approach		95	15.0	100	15.0	0.057	2.1	NA	0.0	0.0	0.00	0.18	0.00	73.3
North: Nundle Road														
8	T1	23	15.0	24	15.0	0.015	0.0	LOS A	0.0	0.1	0.04	0.05	0.04	78.8
9	R2	2	15.0	2	15.0	0.015	7.2	LOS A	0.0	0.1	0.04	0.05	0.04	66.8
Approach		25	15.0	26	15.0	0.015	0.6	NA	0.0	0.1	0.04	0.05	0.04	77.6
West: Linsays Gap Road														
10	L2	1	15.0	1	15.0	0.021	7.5	LOS A	0.1	0.5	0.20	0.61	0.20	60.1
12	R2	21	15.0	22	15.0	0.021	7.4	LOS A	0.1	0.5	0.20	0.61	0.20	59.5
Approach		22	15.0	23	15.0	0.021	7.4	LOS A	0.1	0.5	0.20	0.61	0.20	59.6
All Vehicles		142	15.0	149	15.0	0.057	2.6	NA	0.1	0.5	0.04	0.23	0.04	71.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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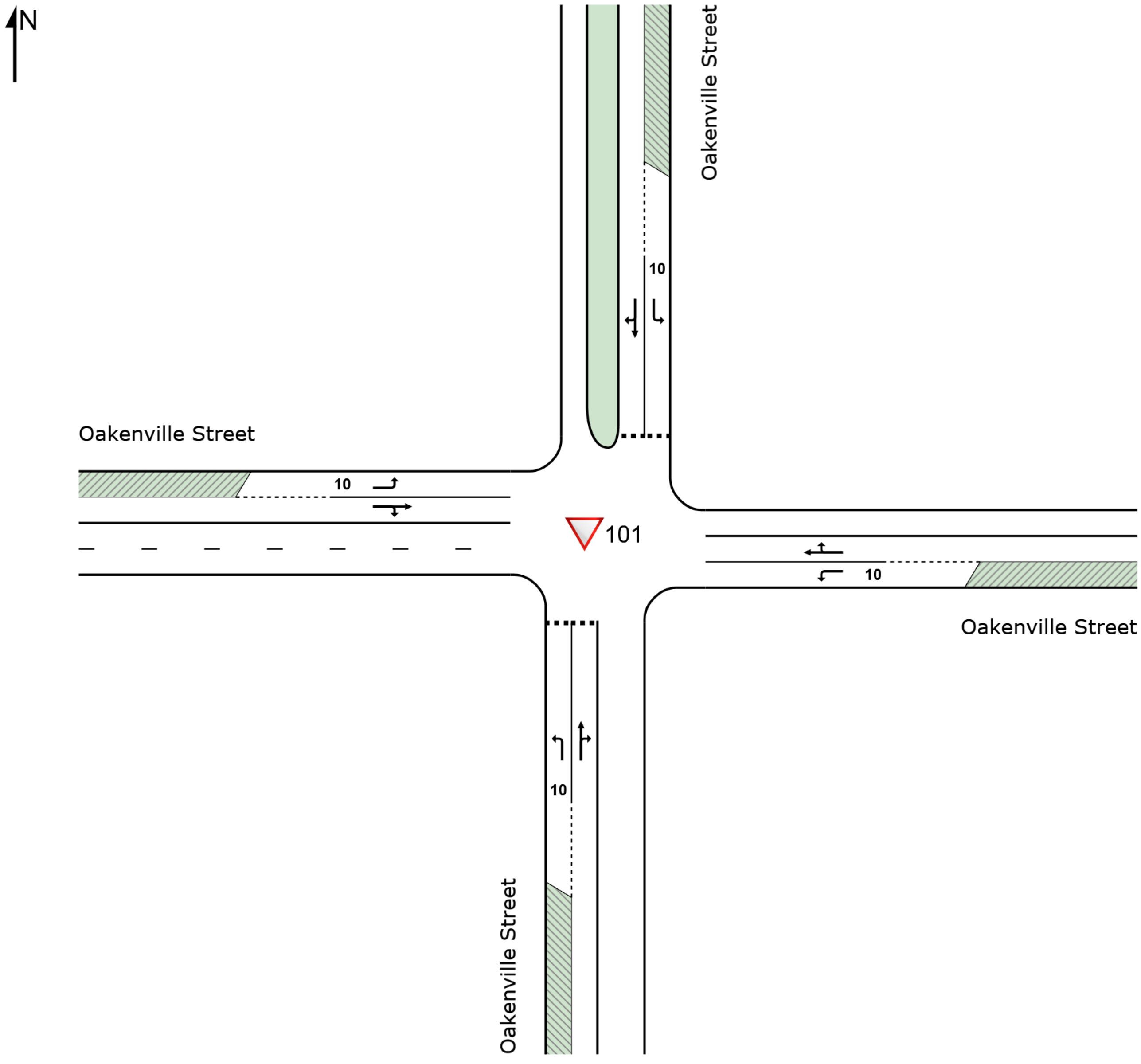
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [2021 AM Oakenville Rd - Jenkins St (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

▽ Site: 101 [2021 AM Oakenville Rd - Jenkins St (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Oakenville Street														
1	L2	11	2.0	12	2.0	0.009	5.6	LOS A	0.0	0.2	0.05	0.55	0.05	53.4
2	T1	13	2.0	14	2.0	0.022	4.9	LOS A	0.1	0.6	0.15	0.50	0.15	53.9
3	R2	8	2.0	8	2.0	0.022	5.9	LOS A	0.1	0.6	0.15	0.50	0.15	53.6
Approach		32	2.0	34	2.0	0.022	5.4	LOS A	0.1	0.6	0.11	0.52	0.11	53.7
East: Oakenville Street														
4	L2	3	2.0	3	2.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	10	15.0	11	15.0	0.010	0.0	LOS A	0.0	0.3	0.04	0.22	0.04	57.7
6	R2	6	2.0	6	2.0	0.010	5.6	LOS A	0.0	0.3	0.04	0.22	0.04	55.8
Approach		19	8.8	20	8.8	0.010	2.7	NA	0.0	0.3	0.04	0.28	0.04	56.4
North: Oakenville Street														
7	L2	9	2.0	9	2.0	0.007	5.6	LOS A	0.0	0.2	0.03	0.56	0.03	53.4
8	T1	7	2.0	7	2.0	0.018	4.9	LOS A	0.1	0.5	0.15	0.52	0.15	53.8
9	R2	9	2.0	9	2.0	0.018	6.0	LOS A	0.1	0.5	0.15	0.52	0.15	53.1
Approach		25	2.0	26	2.0	0.018	5.5	LOS A	0.1	0.5	0.11	0.53	0.11	53.4
West: Oakenville Street														
10	L2	8	2.0	8	2.0	0.005	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	4	15.0	4	15.0	0.008	0.0	LOS A	0.0	0.2	0.06	0.37	0.06	56.2
12	R2	8	2.0	8	2.0	0.008	5.6	LOS A	0.0	0.2	0.06	0.37	0.06	54.9
Approach		20	4.6	21	4.6	0.008	4.5	NA	0.0	0.2	0.04	0.45	0.04	54.6
All Vehicles		96	3.9	101	3.9	0.022	4.7	NA	0.1	0.6	0.08	0.46	0.08	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM Oakenville Rd - Jenkins St (Site Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Oakenville Street														
1	L2	11	2.0	12	2.0	0.009	5.6	LOS A	0.0	0.2	0.05	0.55	0.05	53.4
2	T1	13	2.0	14	2.0	0.022	4.9	LOS A	0.1	0.6	0.15	0.50	0.15	53.9
3	R2	8	2.0	8	2.0	0.022	5.9	LOS A	0.1	0.6	0.15	0.50	0.15	53.6
Approach		32	2.0	34	2.0	0.022	5.4	LOS A	0.1	0.6	0.11	0.52	0.11	53.7
East: Oakenville Street														
4	L2	3	2.0	3	2.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	10	15.0	11	15.0	0.010	0.0	LOS A	0.0	0.3	0.04	0.22	0.04	57.7
6	R2	6	2.0	6	2.0	0.010	5.6	LOS A	0.0	0.3	0.04	0.22	0.04	55.8
Approach		19	8.8	20	8.8	0.010	2.7	NA	0.0	0.3	0.04	0.28	0.04	56.4
North: Oakenville Street														
7	L2	9	2.0	9	2.0	0.007	5.6	LOS A	0.0	0.2	0.03	0.56	0.03	53.4
8	T1	7	2.0	7	2.0	0.018	4.9	LOS A	0.1	0.5	0.15	0.52	0.15	53.8
9	R2	9	2.0	9	2.0	0.018	6.0	LOS A	0.1	0.5	0.15	0.52	0.15	53.1
Approach		25	2.0	26	2.0	0.018	5.5	LOS A	0.1	0.5	0.11	0.53	0.11	53.4
West: Oakenville Street														
10	L2	8	2.0	8	2.0	0.005	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	4	15.0	4	15.0	0.008	0.0	LOS A	0.0	0.2	0.06	0.37	0.06	56.2
12	R2	8	2.0	8	2.0	0.008	5.6	LOS A	0.0	0.2	0.06	0.37	0.06	54.9
Approach		20	4.6	21	4.6	0.008	4.5	NA	0.0	0.2	0.04	0.45	0.04	54.6
All Vehicles		96	3.9	101	3.9	0.022	4.7	NA	0.1	0.6	0.08	0.46	0.08	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 AM Oakenville Rd - Jenkins St (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Oakenville Street														
1	L2	11	2.0	12	2.0	0.009	5.7	LOS A	0.0	0.2	0.11	0.54	0.11	53.2
2	T1	13	2.0	14	2.0	0.026	5.8	LOS A	0.1	0.7	0.31	0.53	0.31	53.4
3	R2	8	2.0	8	2.0	0.026	6.9	LOS A	0.1	0.7	0.31	0.53	0.31	53.0
Approach		32	2.0	34	2.0	0.026	6.0	LOS A	0.1	0.7	0.24	0.54	0.24	53.2
East: Oakenville Street														
4	L2	3	2.0	3	2.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	35	15.0	37	15.0	0.026	0.1	LOS A	0.0	0.3	0.07	0.09	0.07	58.8
6	R2	6	2.0	6	2.0	0.026	5.9	LOS A	0.0	0.3	0.07	0.09	0.07	56.9
Approach		44	12.3	46	12.3	0.026	1.2	NA	0.0	0.3	0.06	0.12	0.06	58.2
North: Oakenville Street														
7	L2	9	2.0	9	2.0	0.008	5.9	LOS A	0.0	0.2	0.18	0.54	0.18	53.0
8	T1	7	2.0	7	2.0	0.021	5.7	LOS A	0.1	0.6	0.32	0.55	0.32	53.3
9	R2	9	2.0	9	2.0	0.021	6.9	LOS A	0.1	0.6	0.32	0.55	0.32	52.6
Approach		25	2.0	26	2.0	0.021	6.2	LOS A	0.1	0.6	0.27	0.54	0.27	52.9
West: Oakenville Street														
10	L2	8	2.0	8	2.0	0.005	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	82	15.0	86	15.0	0.055	0.0	LOS A	0.1	0.4	0.02	0.05	0.02	59.3
12	R2	8	2.0	8	2.0	0.055	5.7	LOS A	0.1	0.4	0.02	0.05	0.02	57.9
Approach		98	12.9	103	12.9	0.055	0.9	NA	0.1	0.4	0.02	0.09	0.02	58.7
All Vehicles		199	9.6	209	9.6	0.055	2.5	NA	0.1	0.7	0.10	0.23	0.10	56.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2021 PM Oakenville Rd - Jenkins St (Site Folder: Project Scenario)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Oakenville Street														
1	L2	11	2.0	12	2.0	0.009	5.7	LOS A	0.0	0.2	0.11	0.54	0.11	53.2
2	T1	13	2.0	14	2.0	0.029	5.8	LOS A	0.1	0.8	0.32	0.54	0.32	53.3
3	R2	10	2.0	11	2.0	0.029	6.9	LOS A	0.1	0.8	0.32	0.54	0.32	53.0
Approach		34	2.0	36	2.0	0.029	6.1	LOS A	0.1	0.8	0.25	0.54	0.25	53.2
East: Oakenville Street														
4	L2	4	2.0	4	2.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	35	15.0	37	15.0	0.026	0.1	LOS A	0.0	0.3	0.07	0.09	0.07	58.8
6	R2	6	2.0	6	2.0	0.026	5.9	LOS A	0.0	0.3	0.07	0.09	0.07	56.9
Approach		45	12.1	47	12.1	0.026	1.3	NA	0.0	0.3	0.06	0.13	0.06	58.1
North: Oakenville Street														
7	L2	9	2.0	9	2.0	0.008	5.9	LOS A	0.0	0.2	0.18	0.54	0.18	53.0
8	T1	7	2.0	7	2.0	0.021	5.7	LOS A	0.1	0.6	0.32	0.55	0.32	53.3
9	R2	9	2.0	9	2.0	0.021	6.9	LOS A	0.1	0.6	0.32	0.55	0.32	52.6
Approach		25	2.0	26	2.0	0.021	6.2	LOS A	0.1	0.6	0.27	0.54	0.27	52.9
West: Oakenville Street														
10	L2	8	2.0	8	2.0	0.005	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	82	15.0	86	15.0	0.055	0.0	LOS A	0.1	0.4	0.03	0.05	0.03	59.3
12	R2	8	2.0	8	2.0	0.055	5.7	LOS A	0.1	0.4	0.03	0.05	0.03	57.9
Approach		98	12.9	103	12.9	0.055	0.9	NA	0.1	0.4	0.02	0.09	0.02	58.7
All Vehicles		202	9.5	213	9.5	0.055	2.5	NA	0.1	0.8	0.10	0.23	0.10	56.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix C

Muswellbrook Council Meeting Minutes

Muswellbrook Shire Council - Hills Of Gold Wind Farm

Meeting to discuss key points from Council Submission

Date	31/03/2021
Time	11am AET
Meeting Subject	Hills Of Gold Wind Farm – Key Council Concerns
Venue	Council Offices - Muswellbrook

Attendees (✓) / **Apologies** (×)

In attendance	Name	Company	Initial
	Jamie Chivers	Someva	JC
	Alex Henderson	Someva	AH
	Liam Edgeworth	Someva	LE
	Aref Taleb	Someva	AT
	Fiona Plesman	MSC	FP
	Sharon Pope	MSC	SP
	Derek Finnegan	MSC	DF
	Peter Chambers	MSC	PC
	Kellie Scholes	MSC	KS
	Meredith Andrews	Engie	MA
	Jody Doran	Engie	JD
	Warrick Andrews	RJA	WA
	Stephen Read	TTPP	SR
	Amanda Antcliff	ERM	AA

Item	Subject	Action By Who	Due Date
1	**Traffic and Transport**		
1.1	The Projects proposal of a road usage fee was deemed acceptable following proposal review. Someva to issue		
1.2	The project offered to include a statement to commit to structural assessment being carried out on a list of council assets to determine integrity and impact on design life. If the project is approved this would need to be undertaken as part of S138 approvals with council.		
1.3	Council confirmed that as a requirement, structural assessments and bridge load analysis would need to be conducted on all affected/used structures along the proposed project route – Council to issue asset list	**MSC**	**20/04/21**
1.4	Council also confirmed that not all these assets are council owned, and that individual landowners would need to be approached to carry out the assessments as well. It estimated that approx. 20 structures in total may need to be assessed		

Muswellbrook Shire Council - Hills Of Gold Wind Farm

Meeting to discuss key points from Council Submission

Item	Subject	Action By Who	Due Date
1.5	Council noted that the box culvert on Wybong road would need to be replaced		
1.6	Council requires that the project must demonstrate diligently the full measures being taken to ensure that safety is not impacted along the proposed transport route		
1.7	There was deemed to be not enough information on traffic volumes and movements with the EIS. Data and information required for both the construction and operational phases	**Someva**	**May 2021**
1.8	Traffic data should include areas out with the immediate project area		
1.9	Blade movements and blade volumes to be included in updated reports and issued to council for review		
1.10	Council expressed concern over the proposed use of Bell St Rd, citing the presence of the school at the top of the hill accommodating over 1500 students.		
1.11	The project confirmed that road usage outside of restricted times such as School bus hours would all be included in the Traffic and Transport Management Management Plan (TTMP)		
1.12	The Muswellbrook bypass was signalled as a possible preferred option to avoid local roads however the timing of this was raised as not viable for the projects timelines		
1.13	Council expressed an initial preference that a single route option would be preferable for both blades and tower components		
1.14	The project discussed investigating splitting traffic to reduce impact on Bell St, Victoria St and Market St.		
1.15	The project confirmed that traffic management plans for the Kyuga/Wybong intersection, Bollards would be used to restrict non project use and that the project would intend to retain a right to use over the intersection upgrade throughout the projects operational phases		
1.16	Council noted that ARTC also intend on building 3 new bridges over rail line in a similar timescale creating potential works conflicts		
1.17	Council suggested that the Mt Pleasant mine traffic data, recently published, would be a useful resource for the project as it is the most up to date data collated on traffic movements and volumes		
1.18	Council expressed a desire to arrange a further meeting once new route options have been finalised and issued.		

Item	Subject	Action By Who	Due Date
1.19	Council noted that MACH energy also intend on carrying out road upgrades at a similar time to the projects proposed upgrades creating the possibility of works conflicts.		
2	**Community Engagement**		
2.1	The Project issued a stakeholder engagement list in hard copy to all attendees that detailed all engagements to date with the local community. This included local businesses, studs and landowners		
2.2	The project confirmed that local Mines had also been approached and received a generally positive response		
2.3	The project confirmed that we are committed to working with the mines and to continue to consult as part of the TTMP.		
3	**General**		
3.1	Council confirmed that they would like to see a proposed Term Sheet on road usage as well as a statement of commitments provided by the project for review		
3.2	Council believed it unlikely that they would be ready to offer an audience with councillors before the May Councillors meeting		
4	**Key Actions**		
4.1	Someva to issue Term Sheet on road usage to Council for review by the next Council meeting at the end of April.	**Someva**	**31/04/21**
4.2	Council to Issue asset list for inclusion into the structural assessments to be committed by the project for structural assessment and design life impact	**MSC**	**20/04/21**
4.3	Council to confirm whether the project is to meet with Councillors at the April or May meeting	**MSC**	**16/04/21**
4.4	Someva to issue Road Usage Contribution Voluntary Planning Agreement proposal for review	**Someva**	**31/04/21**
4.5	Someva to provide greater detail on traffic types, volumes and movements, including beyond the immediate project area	**Someva**	**May 2021**
4.6	Someva to contact MACH energy and ARTC to confirm their programme of proposed upgrades and ensure no works conflicts exist	**Someva**	**31/04/21**

Someva Presentation

Someva presented a powerpoint presentation to address the points as detailed above. This is provided separately.

Appendix D

Summary of Consultation and Commitments

6.1 DRAFT VOLUNTARY PLANNING AGREEMENT BETWEEN HILLS OF GOLD WIND FARM PTY LTD AND MUSWELLBROOK SHIRE COUNCIL

Attachments:	**A. Hills of Gold - Council submission** **B. Hills of Gold - Letter of Offer**
Responsible Officer:	**Derek Finnigan - Deputy General Manager**
Author:	**Michelle Sandell-Hay - PA to the General Manager**
Community Plan Issue:	***A Council that is well managed, efficient and properly resourced and that is responsive to its communities and stakeholders***
Community Plan Goal:	***Maintain a strong focus on financial discipline to enable Council to properly respond to the needs of the communities it serves.***
Community Plan Strategy:	***Appropriate matters are reported to Council in a timely manner in accordance with the Financial Control and Reporting Policy.***

PURPOSE

To consider the Letter of Offer from Hills of Gold to Muswellbrook Shire Council for use of local roads in the Shire.

OFFICER'S RECOMMENDATION

The Committee:

1. **Notes the Letter of Offer from Hills of Gold Wind Farm Pty Ltd and concerns of staff;**
2. **Resolves that the preferred option for transport of long, heavy and otherwise oversize components is Option 1 as outlined in the Letter of Offer from Hills of Gold Wind Farm Pty Ltd;**
3. **Authorises staff to continue to negotiate with Hills of Gold Wind Farm Pty Ltd on a road usage fee, Indemnity Deed and Bond for asset failure that exceeds general dilapidation, and the need for dilapidation surveys; and**
4. **Authorises staff to remove Council's objection to SSD 9679 staff are satisfied with the results of negotiations with Hills of Gold Wind Farm Pty Ltd.**

Moved: ______________________________ Seconded: ________________________________

REPORT

Hills of Gold Wind Farm Pty Ltd (Hills of Gold) lodged a State Significant Development Application for a wind farm and associated infrastructure located 50 km south-east of Tamworth and 8km south of Nundle, comprising up to 70 wind turbines, battery storage and grid connection with the Department of Planning, Industry and Environment in 2019. Council made a submission objecting to the proposed use of local roads in the Shire for the transportation of the over-size elements of the towers. A copy of the submission is provided in Attachment A.

Hills of Gold has offered a package of infrastructure works and funding to enable them to use the Shire's local road network (subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters on terms acceptable to each party and to the approval of the Development Application). A copy of the offer is provided in Attachment B. A summary is provided below:

1. Route Assessment and Upgrade Works:

(a) Hills of Gold will consult with MSC to determine those Council Assets which require a detailed structural assessment to be undertaken to assess their structural suitability for use by Project OSOM traffic and will engage a suitably qualified, independent expert acceptable to MSC to undertake that structural assessment. Such engagement would be at Hills of Gold cost, however, may require assistance from MSC to facilitate the assessment, in particular the provision of any existing data on, or previously completed assessment of, those Council Assets.

(b) If any Council Asset is found to be structurally inadequate for the transport of the expected equipment loads, Hills of Gold will, at its cost:

(1) upgrade each such Council Asset to the extent reasonably required to ensure it is structurally adequate and suitable for the expected Project loads and consult with MSC to incorporate any reasonable requirements of MSC in respect of such upgrade, and

(2) provide, or have its contractor provide, a performance bond in favour of MSC in the form of a letter of credit or bank guarantee to secure its performance of such upgrade works, with such bond to be for a reasonable amount having regard to the cost of the upgrade works and to be provided prior to the commencement of the upgrade works. Any such performance bond would be released upon completion of the upgrade works.

<u>Council staff comment</u>

This aspect of the offer is generally acceptable; however, the performance bond should also cover key assets that were assessed to not require upgrade to cover the potential for the assessment to have been incorrect and subsequent failure of the assets.

2. Road Usage Fee

Hills of Gold will pay a one-off, road usage fee of $70,000 to MSC upon the commencement of construction of the Project to compensate MSC for any dilapidation which may be caused by the general use of roads within the MSC by traffic associated with the Project. Due to the volume of traffic which already uses roads within the MSC, it will likely be impractical to commission a dilapidation survey which can identify only that dilapidation attributable to Project traffic. Accordingly, the one-off, road usage fee is proposed as an alternative to a dilapidation survey to provide greater certainty to MSC.

<u>Council staff comment</u>

The less adequate sections of road identified as part of Option 1 for the transport of long, heavy and otherwise oversize components are primarily Wybong Road and Kayuga Road. These roads are not subject to high volumes of truck traffic and Council has conditions limiting the use of these roads by traffic related to Mt Pleasant, Bengalla and Mangoola mines. Historical information on approvals for OSOM vehicles to use these roads supports this position. As a result, it will be likely that any dilapidation observed during the 9 months that components are transported along this road can be attributed to the Hills of Gold project.

Staff consider that having a dilapidation survey completed at the beginning of the project and every 3 months to the end of the project will be an objective assessment of dilapidation. The $70,000 offered for general dilapidation is low and would only really cover cost of staff time involved in monitoring impacts of traffic movements on the road network.

Finally, Hills of Gold have nominated three options for routes to transport the long, heavy or otherwise oversize components. Option 1 relies on the local roads to the west of the Hunter River and the New England Highway. Option 2 and Option 3 include some loads using Bell Street. Option 1 is the preference of staff.

CONCLUSION

Council staff do not consider that the Letter of Offer is acceptable, however it does demonstrate a willingness by Hills of Gold to discuss a way forward.

It is recommended that Hills of Gold be advised that the preferred option for transport of long, heavy and otherwise oversize components is Option 1 but that the current Offer is inadequate. Council staff should be authorised to negotiate with Hills of Gold Wind Farm Pty Ltd on a road usage fee, Indemnity Deed and Bond for asset failure that exceeds general dilapidation, and the need for dilapidation surveys.

If staff are satisfied with the results of negotiations with Gold Wind Farm Pty Ltd there is no need for Council to maintain an objection to SSD 9679.

FINANCIAL IMPLICATIONS

The VPA proposes a one-off payment of $70,000 for road usage fees in lieu of attempting to assess road dilapidation. This is considered inadequate.

RISK MANAGEMENT IMPLICATIONS

The VPA proposes a one-off payment of $70,000 for road usage fees in lieu of attempting to assess road dilapidation. Once the Asset structural assessment is completed it may be easier to determine the likely risk to Council.

Appendix E

Muswellbrook Shire Council Asset List for Assessment

Measurements start at Denman Road and finish at the end of the shire marker
Distances are calculated from a desk top exercise as Wybong Road east is currently closed due to road works.

Road	Chainage m	Pipe Info		Size mm	Comments
		Pipe/ RCBC	No		
Bengalla Road	350	RCBC	5	2100 x 400	Major Culvert
	695	Pipe	1	300	
	1470-1670	Keys Bridge			Bridge
	2340	RCBC	1	3400 x1800	
	3000	Pipe	1	400	
	3420	Pipe	1	400	
	3830	RCBC	5	3400x1800	Major Culvert
	4260	Rail Overpass			
	4820	Pipe	1	900	
	5131	RCBC	1	800 x 500	
	5440	RCBC	1	2100 x 500	
	5830	Pipe	2	500 x 500	
	6200	RCBC	1	1200 x 770	
	6410	Pipe	4	1650 x 1650	Major Culvert
	6650	Rail Bridge			Bridge - Mt Pleasant loop
	6770	Pipe	1	670	
	8550	Pipe	1	600	
	8900	Pipe	1	600	
	9421	Pipe	1	300	
					Intersection Bengalla Road and Wybong Road
Wybong Road East	9910	Pipe	1	450	
	10140	Pipe	1	450	
	11145	Pipe	1	450	
	11375	Pipe	1	900	
	11869	Pipe	1	450	
	12035	Pipe	1	450	
	12315	RCBC	2	600	
	12955	Pipe	1	1500	
	13120	Pipe	3	1500	
	13440	Pipe	1	450	
	13820	Pipe	1	450	
	14515	Pipe	1	450	
	15045	Pipe	1	600	
	15245	Pipe	1	600	
	15580	Pipe	1	450	
	15905	Pipe	1	450	
	16365	RCBC	3	2400 x 1200	Major Culvert
	16525	RCBC	1	1200 x 350	
	16683	RCBC	4	1200 x 350	
	16905				Rosebrook Bridge
	17090	RCBC	4	1200 x 350	
	17965				Floodway
	18570	Pipe	1	450	
					Intersection Wybong Road and Kayuga Road
Kayuga Road	19085	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system across intersection
	19085	Pipe	1	375	Gully pit system
	19145	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system
	19255	Pipe	1	450	pipe back flow valve - gully pit system
	19265	RCBC	8	300	Major Culvert
	19545	RCBC	2	300	
	20790	RCBC	2	300	
	20995	RCBC	3	1200 x 600	
	21005	RCBC	1	1200 x 600	
	21745	Pipe	1	450	
	21855	Pipe	2	1200	
	22460	Pipe	1	450	
	22950	Pipe	1	450	
	23135	RCBC	2	600	
	23475	Pipe	1	450	
	23655	Pipe	1	450	
	24395	RCBC	2	300	
	24710	RCBC	7	2400	Major Culvert
	25210	Pipe	1	450	
	25445	Pipe	1	450	
					Dartbrook Mine Entrance Road
	25565	Pipe	1	450	
	25700	Pipe	1	450	
	25815	Pipe	4	1200	
	26230	Pipe	1	450	
					end of shire

Appendix F

Muswellbrook Shire Council Letter of Offer

Fiona Plesman
General Manager
Muswellbrook Shire Council
Via email

2 June 2021

Dear Fiona,

Voluntary Contribution from Hills of Gold Wind Farm Pty Ltd

Thank you for your and your team's time on 31 March 2021 to discuss Muswellbrook Shire Council's (MSC) concerns regarding the proposed use of council roads and assets by traffic associated with the Hills of Gold Wind Farm (the "Project") which is the subject of Development Application Number SSD-9679 (the "Development Application").

We appreciated the constructive suggestion of your team to progress an agreement with MSC to address those concerns, specifically those in respect of the proposed use of those council roads and council-owned assets set out in the subsequently provided list in Annexure A (Council Assets).

We confirm we have undertaken further assessment on the alternate route options available based on feedback from MSC. The Project, via its Response to Submission Report, will propose new route options for heavy, oversize / overmass (OSOM) vehicles which will reduce impacts on existing traffic volumes as compared to the initial route proposed. To provide some further detail in this respect, Annexure B provides a summary of estimated OSOM traffic type and volumes by route, as well as a map showing the additional route options. We will continue to engage with MSC as we progress final turbine selection, selection of a logistics contractor and assess the Council Assets to determine the most suitable route option(s).

In the meantime and further to our recent discussions, we confirm that the Project proponent, Hills of Gold Wind Farm Pty Ltd (ACN 145 173 324) ("HOGWFPL"), is also willing to make the following offer to MSC in respect of the proposed use of any Council Assets as part of the final route selection (subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters on terms acceptable to each party and to the approval of the Development Application):

1. **Route Assessment and Upgrade Works:**

   (a) HOGWFPL will consult with MSC to determine those Council Assets which require a detailed structural assessment to be undertaken to assess their structural suitability for use by Project OSOM traffic and will engage a suitably qualified, independent expert acceptable to MSC to undertake that structural assessment. Such engagement would be at HOGWFPL's cost, however, we may require reasonable assistance from MSC to facilitate the assessment, in particular, the provision of any existing data on, or previously completed assessment of, those Council Assets.

   (b) If any Council Asset is found by the independent expert to be structurally inadequate for the transport of the expected equipment loads for the Project and that Council Asset is proposed to be used as part of the final transport route for the Project, HOGWFPL will, at its cost (1) upgrade each such Council Asset to the extent reasonably required to ensure it is structurally adequate and suitable for the expected Project loads and consult with MSC to incorporate any reasonable requirements of MSC in respect of such upgrade, and (2) provide, or have its contractor provide, a performance bond in favour of MSC in the form of a letter of credit or bank guarantee to secure its performance of such upgrade works, with such bond to be for a reasonable amount having regard to the cost of the upgrade works and to be provided prior to the commencement of the upgrade works. Any such performance bond would be released upon completion of the upgrade works.

2. **Road Usage Fee:** In addition, HOGWFPL will pay a one-off, road usage fee of $70,000 to MSC upon the commencement of construction of the Project to compensate MSC for any dilapidation which may be caused by the general use of roads within the MSC by traffic associated with the Project. Due to the volume of traffic which already uses roads within the MSC, it will likely be impractical to commission a dilapidation survey which can identify only that dilapidation attributable to Project traffic. Accordingly, the one-off, road usage fee is proposed as an alternative to a dilapidation survey to provide greater certainty to MSC.

If the above offer is acceptable to MSC, please sign where indicated below to confirm such acceptance. Once signed, a copy will be provided to the Department of Planning for inclusion of the relevant commitments by HOGWFPL in the Project's Statement of Commitments.

We look forward to hearing from you and would welcome any further discussion in respect of any remaining queries.

Yours sincerely,

DocuSigned by:

F4F7614AB906441...

Andrew Kerley
General Manager – Asset Development

ACCEPTANCE BY MUSWELLBROOK SHIRE COUNCIL:

Subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters (and to the approval of the Development Application), Muswellbrook Shire Council hereby confirms its acceptance of the terms contained in this letter.

Signed for and on behalf of **Muswellbrook Shire Council** by:

Signature

Name (please print)

Position (please print)

APPENDIX A – List of Council Assets

Road	Chainage m	Pipe Info		Size mm	Comments
		Pipe/ RCBC	No		
Bengalla Road	350	RCBC	5	2100 x 400	Major Culvert
	695	Pipe	1	300	
	1470-1670	Keys Bridge			Bridge
	2340	RCBC	1	3400 x1800	
	3000	Pipe	1	400	
	3420	Pipe	1	400	
	3830	RCBC	5	3400x1800	Major Culvert
	4260	Rail Overpass			
	4820	Pipe	1	900	
	5131	RCBC	1	800 x 500	
	5440	RCBC	1	2100 x 500	
	5830	Pipe	2	500 x 500	
	6200	RCBC	1	1200 x 770	
	6410	Pipe	4	1650 x 1650	Major Culvert
	6650	Rail Bridge			Bridge - Mt Pleasant loop
	6770	Pipe	1	670	
	8550	Pipe	1	600	
	8900	Pipe	1	600	
	9421	Pipe	1	300	
					Intersection Bengalla Road and Wybong Road
Wybong Road East	9910	Pipe	1	450	
	10140	Pipe	1	450	
	11145	Pipe	1	450	
	11375	Pipe	1	900	
	11869	Pipe	1	450	
	12035	Pipe	1	450	
	12315	RCBC	2	600	
	12955	Pipe	1	1500	
	13120	Pipe	3	1500	
	13440	Pipe	1	450	
	13820	Pipe	1	450	
	14515	Pipe	1	450	
	15045	Pipe	1	600	
	15245	Pipe	1	600	
	15580	Pipe	1	450	

	15905	Pipe	1	450	
	16365	RCBC	3	2400 x 1200	Major Culvert
	16525	RCBC	1	1200 x 350	
	16683	RCBC	4	1200 x 350	
	16905				Rosebrook Bridge
	17090	RCBC	4	1200 x 350	
	17965				Floodway
	18570	Pipe	1	450	
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	19255	Pipe	1	450	pipe back flow valve - gully pit system
	19265	RCBC	8	300	Major Culvert
	19545	RCBC	2	300	
	20790	RCBC	2	300	
	20995	RCBC	3	1200 x 600	
	21005	RCBC	1	1200 x 600	
	21745	Pipe	1	450	
	21855	Pipe	2	1200	
	22460	Pipe	1	450	
	22950	Pipe	1	450	
	23135	RCBC	2	600	
	23475	Pipe	1	450	
	23655	Pipe	1	450	
	24395	RCBC	2	300	
	24710	RCBC	7	2400	Major Culvert
	25210	Pipe	1	450	
	25445	Pipe	1	450	
					Dartbrook Mine Entrance Road
	25565	Pipe	1	450	
	25700	Pipe	1	450	
	25815	Pipe	4	1200	
	26230	Pipe	1	450	
					end of shire

Road Name	Chainage m	Pipe Info		Size mm	Comments
		Pipe/ RCBC	No		
Bengalla Road	350	RCBC	5	2100 x 400	Major Culvert
	695	Pipe	1	300	
	1470-1670	Keys Bridge			Bridge
	2340	RCBC	1	3400 x1800	
	3000	Pipe	1	400	
	3420	Pipe	1	400	
	3830	RCBC	5	3400x1800	Major Culvert
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	6200	RCBC	1	1200 x 770	
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	11145	Pipe	1	450	
	11375	Pipe	1	900	
	11869	Pipe	1	450	
	12035	Pipe	1	450	
	12315	RCBC	2	600	
	12955	Pipe	1	1500	
	13120	Pipe	3	1500	
	13440	Pipe	1	450	
	13820	Pipe	1	450	
	14515	Pipe	1	450	
	15045	Pipe	1	600	
	15245	Pipe	1	600	
	15580	Pipe	1	450	
	15905	Pipe	1	450	

	16365	RCBC	3	2400 x 1200	Major Culvert
	16525	RCBC	1	1200 x 350	
	16683	RCBC	4	1200 x 350	
	16905				Rosebrook Bridge
	17090	RCBC	4	1200 x 350	
	17965				Floodway
	18570	Pipe	1	450	
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	19265	RCBC	8	300	Major Culvert
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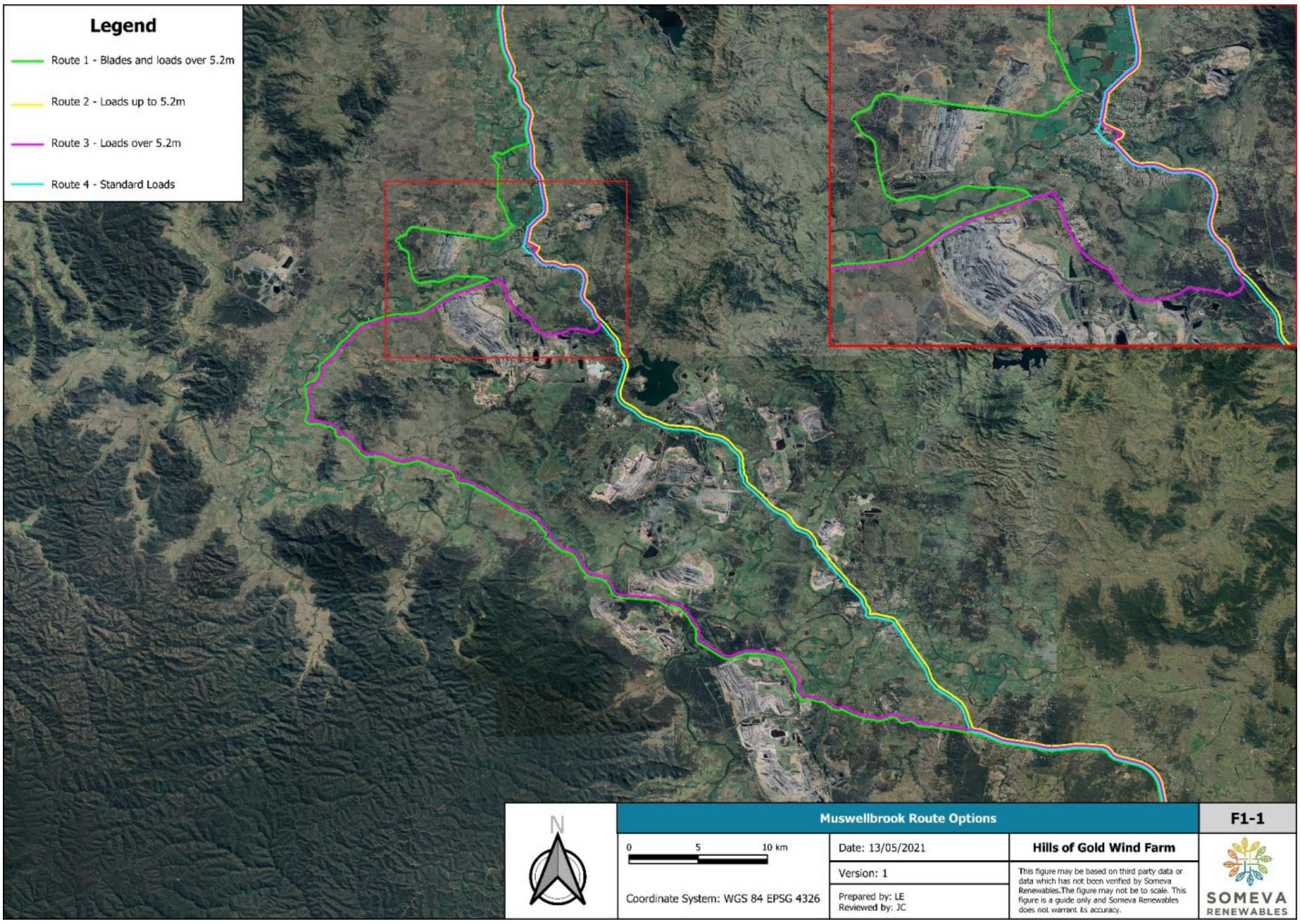
	20995	RCBC	3	1200 x 600	
	21005	RCBC	1	1200 x 600	
	21745	Pipe	1	450	
	21855	Pipe	2	1200	
	22460	Pipe	1	450	
	22950	Pipe	1	450	
	23135	RCBC	2	600	
	23475	Pipe	1	450	
	23655	Pipe	1	450	
	24395	RCBC	2	300	
	24710	RCBC	7	2400	Major Culvert
	25210	Pipe	1	450	
	25445	Pipe	1	450	
					Dartbrook Mine Entrance Road
	25565	Pipe	1	450	
	25700	Pipe	1	450	
	25815	Pipe	4	1200	
	26230	Pipe	1	450	
					end of shire

APPENDIX B – Updated OSOM Route Through Muswellbrook Shire Council

Map of Updated Route Option



Traffic By Type and Total Volume to be Transported

	Turbine Blades	Heavy Loads over 5.2m in height	2 Heavy Loads under 5.2m in height	Standard loads up to 3.5m wide and 5.2m in height
Example of Equipment	• Blades (root section) • Blades (tip section)	• Hubs • Tower Sections • Transformers • Nacelles with Drivetrain in	• Nacelle with Drivetrain Out • Drivetrain	• Other (2 x 40ft Shipping Container per WTG) • Sub station • Switching Station • Overhead cabling • Underground cabling • Battery System • Mobile concrete Batch Plant
Total Trips	**280 (210)** [1]	**650 (580)**[2]	**140**[3]	**320**
Weekly Trips	**8 (6)**	**18 (16)**	**4**	**9**

The final traffic volumes generated on these routes will be subject to the structural load assessment of Council Assets and further consultation with MSC on required upgrades. This will be based on the final turbine equipment and the transport logistics operators' proposed vehicles and associated weights.

The estimated worst-case traffic predictions are presented based on a range of possible scenarios including a scenario which reduces impacts to Bell St/Victoria St and Market St by splitting the volumes between routes.

Comparison of Traffic Generated by Routes Options

Scenario (all blades always travel on route 1)	**Route 1**	**Route 2 (includes Bell St)**	**Route 3 (includes Bell St)**	**Route 4**	**Totals**
Previous EIS Scenario	280		1110	0	1390
Average Weekly	**8**	**0**	**32**	**0**	
Option 1 - All Heavy Loads on Route 1 with normal loads on Route 4	1070[1]			320	1390
Average Weekly	**31**	**0**	**0**	**9**	
Option 2 - 100% Heavy Loads on Route 2 and 3	280[1]	650[2]	140[3]	320	1390
Average Weekly	**8[1]**	**19[2]**	**4[3]**	**9**	
Example of Option 3 - 50% Heavy between Route 1 and Routes 2 and 3	605[1]	325[2]	140[3]	320	1390
Average Weekly	**17[1]**	**9[2]**	**4[3]**	**9**	

Notes:
1. Reduced numbers if blades are transported as a single unit.
2. This will be reduced if nacelles and drivetrains are transported separately as presented in the next column with both nacelle and drivetrains being under 5.2m and able to use Route 3.
3. This will not be required if nacelles and drivetrains are transported together

The transportation period for the turbine components has been forecast to occur over approximately a 9-month period, or 35 weeks.

All route options reduce traffic proposed on the Bells St Heavy Vehicle Alternate route (Route 2 and 3) by taking advantage of the updated Route 4 option for vehicles under 3.5m wide and 5.2m high and options to use Route 1 for some or all of the heavy vehicles. The range in reduced volume is between 11 and 32 movements per week from the previously submitted EIS.

The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

02 8437 7800

info@ttpp.net.au

www.ttpp.net.au

APPENDIX H.2 LETTERS OF OFFER

Gina Vereker
Tamworth Regional Council
Ray Walsh House, 437 Peel Street
Tamworth NSW 2340
Via email

14 July 2021

Dear Gina

Revised Offer – Voluntary Contributions from Hills of Gold Wind Farm Pty Ltd for Annual Community Enhancement Funds

Thank you to you and your colleagues for your time on 30 June 2021 to discuss our letter dated 19 May 2021 regarding a voluntary contribution to a proposed community enhancement fund in respect of the Hills of Gold Wind Farm (the "**Project**"), which is the subject of Development Application Number SSD-9679 (the "**Development Application**") .

Further to our discussions, we confirm that the Project proponent, Hills of Gold Wind Farm Pty Ltd (ACN 145 173 324) ("**HOGWFPL**"), is willing to accept the suggested amendments to the community enhancement fund and to make the following revised offer to Tamworth Regional Council in respect of the Project (subject only to the execution of a voluntary planning agreement or similar agreement acceptable to the parties to formalise these matters, on terms acceptable to each party, and to the approval of the Development Application):

1. **Community Enhancement Fund:**
   (a) HOGWFPL will establish a dedicated community enhancement fund to be administered by the Tamworth Regional Council for the benefit of members of the community who may be impacted by the Project ("**Community Enhancement Fund**").

   (b) HOGWFPL will maintain its previous offer to increase the amount of funds per turbine to be provided to the Community Enhancement Fund administered by, and shared on a merit basis to applicants within, the Tamworth Regional Council by contributing AUD$3,000 per turbine, per annum, in respect of those Project turbines within the Tamworth Regional Council Local Government Area, with such amounts to be payable to the Community Enhancement Fund on an annual basis on and from the date on which the first wind turbine commissioned on the Project site becomes commercially operational and continue each year thereafter for the life of the Project.

For indicative purposes only, the current list of proposed turbines is set forth in Annexure A and includes the coordinates and the LGA in respect of the location of each proposed turbine.

(c) Following consultation with the Tamworth Regional Council, the funds to be contributed to the Community Enhancement Fund by HOGWFPL will be administered in accordance with the following principles:

(i) Tamworth Regional Council will nominate a respected local person with neutral views on the Project to act as the independent chairperson of the Community Enhancement Fund for the first 5 years of the administration of the Community Enhancement Fund;

(ii) a suitable governance framework will be primarily adapted from existing Section 355 Community Committee guidelines and the operating manual (where relevant), or other appropriate guidelines as agreed between the parties. The framework will otherwise be consistent with the Tamworth Regional Council's Community Committee Operating Manual 2020 and will utilise its existing administrative and finance templates already in use in respect of other community committees;

(iii) HOGWFPL will provide all reasonable assistance to the Tamworth Regional Council in respect of the establishment and early operation of the Community Enhancement Fund to ensure committee roles and responsibilities, committee establishment and voting rules are customised to ensure the simple and effective operation of the Community Enhancement Fund;

(iv) a Community Enhancement Fund Committee will be established prior to the first wind turbine commissioned on the Project site becoming commercially operational to ensure a committee consisting of Tamworth Regional Council, HOGWFPL and volunteer community representatives can be formed that meets the Tamworth Regional Council's requirements for transparency, accountability and probity in respect of the use and dissemination of the funds;

(v) the community representatives of the Community Enhancement Fund will be elected volunteers from the community;

(vi) HOGWFPL will provide an additional, fixed contribution of (i) $10,000 for the first year upon establishing the Community Enhancement Fund, and thereafter (ii) $5,000 per annum, to cover the costs incurred in respect of the appointment of an independent chairperson, annual auditing and administration of the Community Engagement Fund (the "**Administrative Funds**"), with such Administrative Funds to be payable at the same time as the other HOGWFPL contributions to the Community Engagement Fund; and

(vii) the Community Enhancement Fund Committee will determine the finer details of project eligibility, community representation and other mechanics following the approval of the Development

Application, however, it will be acknowledged that consideration must be given to both the cost of any long-term obligations on Tamworth Regional Council and the opportunity to fund long-term strategic initiatives brought forward by the community.

(d) The amount of the contributions by HOGWFPL to the Community Enhancement Fund and the additional Administrative Funds will be adjusted on an annual basis to reflect any change in the Consumer Price Index from the Consumer Price Index in effect as at the date of approval of the Development Application.

2. **Construction Community Funding:** HOGWFPL commits to establishing a one-off fund of $150,000 upon the commencement of construction of the Project to provide funds to communities who may be impacted by the construction activities of the Project (including the Upper Hunter Shire Council and Tamworth Regional Council communities) to put towards HOGWFPL-initiated community projects, including support for sports and academic scholarships to local schools to support interstate trips and competitions and community engagement days associated with Project construction milestones (for example, upon delivery of the first turbine blade), with the application of such funds to be applied by HOGWFPL in its direction during the construction phase of the Project.

3. **External Legal Fees:** HOGWFPL will cover the cost of external legal fees that are incurred by Tamworth Regional Council in negotiating the voluntary planning or similar agreement (as contemplated by this letter of offer), up to a maximum of $10,000 (excluding GST).

We look forward to hearing from you and would welcome any further discussion in respect of any remaining queries.

Yours sincerely

DocuSigned by:

AF16F5455796434...

Andrew Kerley
General Manager – Asset Development

ACCEPTANCE BY TAMWORTH REGIONAL COUNCIL:

Subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters and to the approval of the Development Application, Tamworth Regional Council hereby confirms its acceptance of the terms contained in this letter.

Signed for and on behalf of **Tamworth Regional Council** by:

Signature

Name (please print)

Position (please print)

Contact Name: [redacted]
Contact No: [redacted]
Our Ref: OUT-3764/21

UPPER HUNTER SHIRE COUNCIL

1 July 2021

Engie
Level 33, Rialto South Tower
525 Collins Street
MELBOURNE VIC 3000

Attention: Andrew Kerley

Dear Andrew,

Hills of Gold Wind Farm – Offer to enter into Voluntary Planning Agreement

We refer to your letter dated 19 May 2021 regarding your revised offer to enter into a Voluntary Planning Agreement (VPA) with Upper Hunter Shire Council.

Council, at its meeting held on 28 June 2021, considered your revised offer and resolved the following:

That Council accept the offer from Hills of Gold Wind Farm Pty Ltd to enter into a Voluntary Planning Agreement (VPA) based on an annual contribution of $3,000 per turbine (indexed to CPI) towards a Community Enhancement Fund and a fixed contribution of $5,000 per annum (indexed to CPI) to cover administrative costs.

Please find attached, the signed acceptance of your offer.

Should you have any questions, or wish to discuss this matter further, please contact Council's Director Environmental & Community Services, Mathew Pringle, on [redacted]

Yours faithfully

Mathew Pringle
DIRECTOR ENVIRONMENTAL & COMMUNITY SERVICES

All correspondence to:
General Manager | Upper Hunter Shire Council | PO Box 208, Scone NSW 2337
Phone: Scone Office 6540 1100 | **Merriwa Office** 6521 7000 | **Murrurundi Office** 6540 1350
Email: council@upperhunter.nsw.gov.au
UPPERHUNTER.NSW.GOV.AU

Enquiries
Please ask for Peter Chambers
Direct [redacted]
Our reference
Your reference

29 August 2021

Alex Henderson
Team Leader Energy Assessments
Hills of Gold

Dear Mr Henderson,

Hills of Gold Windfarm Project – Muswellbrook Shire Council Route requirements

Further to our recent discussions I confirm that the preferred route for all proposed OSOM loads is via **Thomas Mitchell Drive, Bengalla Link Road, Wybong Road East and Kayuga Road**.

Given Wybong Road East and Kayuga Road were not constructed to contemplate these types of loads and vehicles Council will require the applicant for the Hills of Gold wind farm to complete the following:

1. *Route Assessment*

A portion of the requested proposed route along Wybong Road East is currently load limited to 12 tonnes and is not currently part of the Shire's Mine Affected Road Network. A Detailed Route Analysis considering road furniture, geometry, load limits, safe sight distance, private property and Council road impacts, turning circles by a suitably experienced and practicing consultant is to be provided to Council, including:

- Written consent of the private property owners along the route in the case where their land will be impacted, including any written correspondence between parties and contact information;
- A joint dilapidation survey with Council is to be conducted in accordance with the requirements detailed on Annexure A (below) and submitted for Council's acceptance, for the route including inspection of all drainage structures and road surfaces; and
- Structural assessment of all drainage structures along the proposed route that has not had a recent condition assessment with proposed design loads exceeding existing load compliant traffic along the proposed road route.

2. *Transport Management Plan*

In order to assess the proposal, Council requires further details relating to the timing, frequency and proposed size and loading of vehicles, and the overall time frame for completion of movements. Council also requires the proposed starting date for transport movements through the Shire.

A Transport Management Plan is to be submitted to Council for the route by a suitably experienced and practicing consultant showing:

i. Distribution and number of loads, including frequency per week, expected time of travel, standard axle design loads, total vehicle widths and lengths, proposed route;
ii. Traffic Management Plan for the route, including use of wide swept paths across private property, movement and replacement of identified road

furniture to prevent short-cuts by the community, pull-over bays for road furniture interchanging;

iii. Proposals for any details of any intersection upgrades through private property;

iv. Consider and determine any impacts to existing school bus routes;

v. The current plans for replacement of Rosebrook Bridge and how timing of this re-construction may coincide with the wind farm, and the ability of OSOM vehicles to utilize the intended side-track that will be in place during construction;

vi. Vertical geometry for clearances of long loads to be considered, including any side-track;

vii. Details of the pilots to be provided as part of the S138 permit stage; and

viii. Applicant to fund the cost of hiring a Council Traffic Observer for the duration of the project to follow OSOM transport through Council's municipality during operations.

3. Road Improvements

Wybong Road East from the intersection of Overton Rd to the intersection with Kayuga Rd is currently unsuitable for OSOM loads and requires upgrades to the road and structures along the route to support the proposed movements. This portion of road is to be upgraded to the below standard:

i. Road widths – RS2M Standard requirement, which means 2 x 3.5m lanes, 2 x 1.0m sealed shoulder and 2 x 2.0m unsealed shoulder (3.12km length), pavement design to be provided and accepted to Council's satisfaction.

ii. Under the S138, road pavement design to be provided based on 22.32 x 10^6 axle, CBR min 4%

Any works or maintenance on Council Public Roads is subject to application for an S138 of the Roads Act permit and will be required to be prepared and delivered in accordance with the conditions of the S138 permit.

Any works or maintenance on State or Federal Public Roads to be prepared and delivered in accordance with an ROL permit with TfNSW.

4. Road Maintenance

The applicant will need to enter a formal maintenance management plan as part of the S138 permit for Council roads along the route for the entire duration of the project, to Council's written satisfaction including:

1. The maintenance management plan will be based on TfNSW M3 Maintenance Plan (see proforma example attached);
2. Maintenance work will be coordinated to Council's satisfaction including timing and day/night work;
3. Dilapidation survey of the route to be undertaken every twelve weeks of the project and provided to Council;
4. A Bank Guarantee will be required for the period of the project plus six months to cover any damage determined by Council's reasonable opinion, and dilapidation surveys, to have occurred as a result of the OSOM transported loads for the project; and
5. An Indemnity Deed Poll to be provided for emergency works to any assets that may suffer damage during the project.

5. Communication

The applicant will need to enter a formal community consultation management plan for the entire duration of the project, to Council's written satisfaction including:

The community consultation management plan is to be developed in consultation with Council including but not limited to:

i. Monthly meetings with Council staff to discuss progress, issues and community feedback;
ii. Complaints and incident handling procedure including contact details of the applicant;
   Identifying residents, businesses, emergency services, school bus and mines (shift change times) and key contacts in these operations and necessary liaising with these road users;
iii. Details of the Transport Management Plan and progress to be included and updated on both the applicant's website as well as Council's website;
iv. Applicant to provide updates to Council with regards to any planned maintenance works and/or upgrades and replacements.

Council staff would be pleased to provide additional information if requested.

I also advise that staff have recently held a meeting with another wind farm proponent who wishes to use the same route for their OSOM vehicles, and that there be further projects in the period up to the opening of the Muswellbrook Bypass. Council staff consider that there would be benefits in a more strategic approach to managing this construction traffic. You may be contacted by another wind farm proponent soon to compile information that Council would put before a number of State Government agencies to initiate discussion this strategic approach.

Yours faithfully

Sharon Pope
Executive Manager Environment and Planning.

Annexure A

Road Dilapidation Survey Requirements

Liaison is to occur with MSC Staff as to what is to be included in the dilapidation survey. This will require a s.138 *Roads Act 1993* approval through MSC. The following matters (at a minimum) need to be addressed in the pre dilapidation survey:
Minimum requirement

1. Visual Condition Assessment (Automated Road Analyser – ARAN) - The visual pavement assessment is to be undertaken by an experienced pavement engineer who will:
   a) Record video of the relevant road section using a GPS camera to document the condition of the existing pavement;
   b) Use the footage to record the location, type and extent of pavement defects and other environmental factors (e.g. drainage) that may be impacting the existing pavement.

The results of the visual assessment will be provided in a section of the pavement assessment report and summarised in table format and to include the following factors:

- Roughness
- Rutting
- Structural Cracking
- Environmental Cracking
- Pot holes
- Pot Patch
- Heavy Patching
- Ravelling
- California Bearing Ratio (CBR)
- Deflection
- Curvature
- AC overlay (mm)
- Granular Overlay (mm)
- Structural Deficiency (mm)
- Pavement Condition Index (PCI)
- Surface Curvature Index (SCI)

The assessment of the existing pavement is to be conducted in accordance with the following design standards and guidelines:

- Austroad Guide to Pavement Technology (AGPT)- Part 2: Pavement Structural Design (2017)
- Austroad Guide to Pavement Technology (AGPT) -Part 5 Pavement Evaluation and Treatment Design (2011)
- Applicable AUSPEC and TfNSW specifications
- Other applicable design standards.

2. Falling Weight Deflectometer (FWD) – Specifically loading 40kN and 70kN need to be applied to the existing pavement at 20m intervals in alternating wheel paths. Subsurface investigations -sufficient number of 300mm (at a minimum) diameter pavement holes would be required to sufficiently assess the pavement and underlying subgrade. Dynamic cone penetrometer (DCP) testing to be performed at each test pit location to assess in-situ density or consistency of subsurface material. The test locations are to be recorded by a GPS unit with typical accuracy

of +/- 10m) in MGA format, together with description of locations relative to the pavement.

Samples of pavement and subgrade are to be tested at a NATA registered laboratory for the following geotechnical testing:

- Subgrade
    i) 3 No. Standard compaction and CBR
- 3 No. moisture content pavement
    i) 6 No. Modified compaction and CBR
    ii) 6 No. PSD
    iii) 6 No. moisture content
    iv) 6 No. Atterberg Limits

The above 2 methods are standard investigations to determine the current surface and pavement condition prior to use of the road by construction traffic.

Fiona Plesman
General Manager
Muswellbrook Shire Council
Via email

2 June 2021

Dear Fiona,

Voluntary Contribution from Hills of Gold Wind Farm Pty Ltd

Thank you for your and your team's time on 31 March 2021 to discuss Muswellbrook Shire Council's (MSC) concerns regarding the proposed use of council roads and assets by traffic associated with the Hills of Gold Wind Farm (the "Project") which is the subject of Development Application Number SSD-9679 (the "Development Application").

We appreciated the constructive suggestion of your team to progress an agreement with MSC to address those concerns, specifically those in respect of the proposed use of those council roads and council-owned assets set out in the subsequently provided list in Annexure A (Council Assets).

We confirm we have undertaken further assessment on the alternate route options available based on feedback from MSC. The Project, via its Response to Submission Report, will propose new route options for heavy, oversize / overmass (OSOM) vehicles which will reduce impacts on existing traffic volumes as compared to the initial route proposed. To provide some further detail in this respect, Annexure B provides a summary of estimated OSOM traffic type and volumes by route, as well as a map showing the additional route options. We will continue to engage with MSC as we progress final turbine selection, selection of a logistics contractor and assess the Council Assets to determine the most suitable route option(s).

In the meantime and further to our recent discussions, we confirm that the Project proponent, Hills of Gold Wind Farm Pty Ltd (ACN 145 173 324) ("HOGWFPL"), is also willing to make the following offer to MSC in respect of the proposed use of any Council Assets as part of the final route selection (subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters on terms acceptable to each party and to the approval of the Development Application):

1. **Route Assessment and Upgrade Works:**

   (a) HOGWFPL will consult with MSC to determine those Council Assets which require a detailed structural assessment to be undertaken to assess their structural suitability for use by Project OSOM traffic and will engage a suitably qualified, independent expert acceptable to MSC to undertake that structural assessment. Such engagement would be at HOGWFPL's cost, however, we may require reasonable assistance from MSC to facilitate the assessment, in particular, the provision of any existing data on, or previously completed assessment of, those Council Assets.

   (b) If any Council Asset is found by the independent expert to be structurally inadequate for the transport of the expected equipment loads for the Project and that Council Asset is proposed to be used as part of the final transport route for the Project, HOGWFPL will, at its cost (1) upgrade each such Council Asset to the extent reasonably required to ensure it is structurally adequate and suitable for the expected Project loads and consult with MSC to incorporate any reasonable requirements of MSC in respect of such upgrade, and (2) provide, or have its contractor provide, a performance bond in favour of MSC in the form of a letter of credit or bank guarantee to secure its performance of such upgrade works, with such bond to be for a reasonable amount having regard to the cost of the upgrade works and to be provided prior to the commencement of the upgrade works. Any such performance bond would be released upon completion of the upgrade works.

2. **Road Usage Fee:** In addition, HOGWFPL will pay a one-off, road usage fee of $70,000 to MSC upon the commencement of construction of the Project to compensate MSC for any dilapidation which may be caused by the general use of roads within the MSC by traffic associated with the Project. Due to the volume of traffic which already uses roads within the MSC, it will likely be impractical to commission a dilapidation survey which can identify only that dilapidation attributable to Project traffic. Accordingly, the one-off, road usage fee is proposed as an alternative to a dilapidation survey to provide greater certainty to MSC.

If the above offer is acceptable to MSC, please sign where indicated below to confirm such acceptance. Once signed, a copy will be provided to the Department of Planning for inclusion of the relevant commitments by HOGWFPL in the Project's Statement of Commitments.

We look forward to hearing from you and would welcome any further discussion in respect of any remaining queries.

Yours sincerely,

DocuSigned by:

F4F7614AB90641...

Andrew Kerley
General Manager – Asset Development

ACCEPTANCE BY MUSWELLBROOK SHIRE COUNCIL:

Subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters (and to the approval of the Development Application), Muswellbrook Shire Council hereby confirms its acceptance of the terms contained in this letter.

Signed for and on behalf of **Muswellbrook Shire Council** by:

Signature

Name (please print)

Position (please print)

APPENDIX A – List of Council Assets

Road	Chainage m	Pipe Info		Size mm	Comments
		Pipe/ RCBC	No		
Bengalla Road	350	RCBC	5	2100 x 400	Major Culvert
	695	Pipe	1	300	
	1470-1670	Keys Bridge			Bridge
	2340	RCBC	1	3400 x1800	
	3000	Pipe	1	400	
	3420	Pipe	1	400	
	3830	RCBC	5	3400x1800	Major Culvert
	4260	Rail Overpass			
	4820	Pipe	1	900	
	5131	RCBC	1	800 x 500	
	5440	RCBC	1	2100 x 500	
	5830	Pipe	2	500 x 500	
	6200	RCBC	1	1200 x 770	
	6410	Pipe	4	1650 x 1650	Major Culvert
	6650	Rail Bridge			Bridge - Mt Pleasant loop
	6770	Pipe	1	670	
	8550	Pipe	1	600	
	8900	Pipe	1	600	
	9421	Pipe	1	300	
					Intersection Bengalla Road and Wybong Road
Wybong Road East	9910	Pipe	1	450	
	10140	Pipe	1	450	
	11145	Pipe	1	450	
	11375	Pipe	1	900	
	11869	Pipe	1	450	
	12035	Pipe	1	450	
	12315	RCBC	2	600	
	12955	Pipe	1	1500	
	13120	Pipe	3	1500	
	13440	Pipe	1	450	
	13820	Pipe	1	450	
	14515	Pipe	1	450	
	15045	Pipe	1	600	
	15245	Pipe	1	600	
	15580	Pipe	1	450	

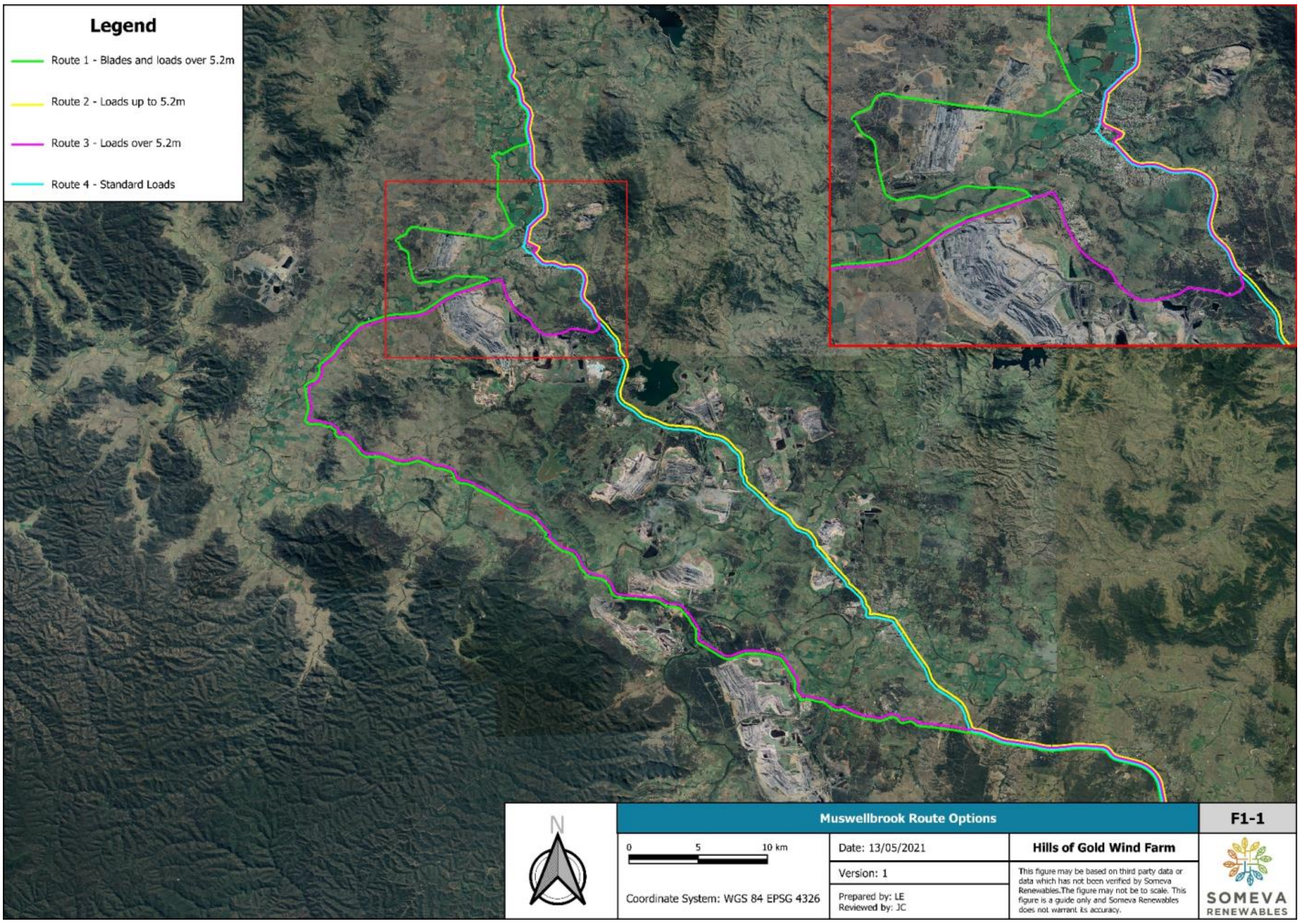
	15905	Pipe	1	450	
	16365	RCBC	3	2400 x 1200	Major Culvert
	16525	RCBC	1	1200 x 350	
	16683	RCBC	4	1200 x 350	
	16905				Rosebrook Bridge
	17090	RCBC	4	1200 x 350	
	17965				Floodway
	18570	Pipe	1	450	
					Intersection Wybong Road and Kayuga Road
Kayuga Road	19085	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system across intersection
	19085	Pipe	1	375	Gully pit system
	19145	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system
	19255	Pipe	1	450	pipe back flow valve - gully pit system
	19265	RCBC	8	300	Major Culvert
	19545	RCBC	2	300	
	20790	RCBC	2	300	
	20995	RCBC	3	1200 x 600	
	21005	RCBC	1	1200 x 600	
	21745	Pipe	1	450	
	21855	Pipe	2	1200	
	22460	Pipe	1	450	
	22950	Pipe	1	450	
	23135	RCBC	2	600	
	23475	Pipe	1	450	
	23655	Pipe	1	450	
	24395	RCBC	2	300	
	24710	RCBC	7	2400	Major Culvert
	25210	Pipe	1	450	
	25445	Pipe	1	450	
					Dartbrook Mine Entrance Road
	25565	Pipe	1	450	
	25700	Pipe	1	450	
	25815	Pipe	4	1200	
	26230	Pipe	1	450	
					end of shire

Road Name	Chainage m	Pipe Info		Size mm	Comments
		Pipe/ RCBC	No		
Bengalla Road	350	RCBC	5	2100 x 400	Major Culvert
	695	Pipe	1	300	
	1470-1670	Keys Bridge			Bridge
	2340	RCBC	1	3400 x1800	
	3000	Pipe	1	400	
	3420	Pipe	1	400	
	3830	RCBC	5	3400x1800	Major Culvert
	4260	Rail Overpass			
	4820	Pipe	1	900	
	5131	RCBC	1	800 x 500	
	5440	RCBC	1	2100 x 500	
	5830	Pipe	2	500 x 500	
	6200	RCBC	1	1200 x 770	
	6410	Pipe	4	1650 x 1650	Major Culvert
	6650	Rail Bridge			Bridge - Mt Pleasant loop
	6770	Pipe	1	670	
	8550	Pipe	1	600	
	8900	Pipe	1	600	
	9421	Pipe	1	300	
					Intersection Bengalla Road and Wybong Road
Wybong Road East	9910	Pipe	1	450	
	10140	Pipe	1	450	
	11145	Pipe	1	450	
	11375	Pipe	1	900	
	11869	Pipe	1	450	
	12035	Pipe	1	450	
	12315	RCBC	2	600	
	12955	Pipe	1	1500	
	13120	Pipe	3	1500	
	13440	Pipe	1	450	
	13820	Pipe	1	450	
	14515	Pipe	1	450	
	15045	Pipe	1	600	
	15245	Pipe	1	600	
	15580	Pipe	1	450	
	15905	Pipe	1	450	

	16365	RCBC	3	2400 x 1200	Major Culvert
	16525	RCBC	1	1200 x 350	
	16683	RCBC	4	1200 x 350	
	16905				Rosebrook Bridge
	17090	RCBC	4	1200 x 350	
	17965				Floodway
	18570	Pipe	1	450	
					Intersection Wybong Road and Kayuga Road
Kayuga Road	19085	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system across intersection
	19085	Pipe	1	375	Gully pit system
	19145	Pipe	1	450	Pipe (only) runs parallel to pavement - gully pit system
	19255	Pipe	1	450	pipe back flow valve - gully pit system
	19265	RCBC	8	300	Major Culvert
	19545	RCBC	2	300	
	20790	RCBC	2	300	
	20995	RCBC	3	1200 x 600	
	21005	RCBC	1	1200 x 600	
	21745	Pipe	1	450	
	21855	Pipe	2	1200	
	22460	Pipe	1	450	
	22950	Pipe	1	450	
	23135	RCBC	2	600	
	23475	Pipe	1	450	
	23655	Pipe	1	450	
	24395	RCBC	2	300	
	24710	RCBC	7	2400	Major Culvert
	25210	Pipe	1	450	
	25445	Pipe	1	450	
					Dartbrook Mine Entrance Road
	25565	Pipe	1	450	
	25700	Pipe	1	450	
	25815	Pipe	4	1200	
	26230	Pipe	1	450	
					end of shire

APPENDIX B – Updated OSOM Route Through Muswellbrook Shire Council

Map of Updated Route Option



Traffic By Type and Total Volume to be Transported

	Turbine Blades	Heavy Loads over 5.2m in height	2 Heavy Loads under 5.2m in height	Standard loads up to 3.5m wide and 5.2m in height
Example of Equipment	• Blades (root section) • Blades (tip section)	• Hubs • Tower Sections • Transformers • Nacelles with Drivetrain in	• Nacelle with Drivetrain Out • Drivetrain	• Other (2 x 40ft Shipping Container per WTG) • Sub station • Switching Station • Overhead cabling • Underground cabling • Battery System • Mobile concrete Batch Plant
Total Trips	**280 (210)** [1]	**650 (580)**[2]	**140**[3]	**320**
Weekly Trips	**8 (6)**	**18 (16)**	**4**	**9**

The final traffic volumes generated on these routes will be subject to the structural load assessment of Council Assets and further consultation with MSC on required upgrades. This will be based on the final turbine equipment and the transport logistics operators' proposed vehicles and associated weights.

The estimated worst-case traffic predictions are presented based on a range of possible scenarios including a scenario which reduces impacts to Bell St/Victoria St and Market St by splitting the volumes between routes.

Comparison of Traffic Generated by Routes Options

Scenario (all blades always travel on route 1)	Route 1	Route 2 (includes Bell St)	Route 3 (includes Bell St)	Route 4	Totals
Previous EIS Scenario	280		1110	0	1390
Average Weekly	**8**	**0**	**32**	**0**	
Option 1 - All Heavy Loads on Route 1 with normal loads on Route 4	1070[1]			320	1390
Average Weekly	**31**	**0**	**0**	**9**	
Option 2 - 100% Heavy Loads on Route 2 and 3	280[1]	650[2]	140[3]	320	1390
Average Weekly	**8[1]**	**19[2]**	**4[3]**	**9**	
Example of Option 3 - 50% Heavy between Route 1 and Routes 2 and 3	605[1]	325[2]	140[3]	320	1390
Average Weekly	**17[1]**	**9[2]**	**4[3]**	**9**	

Notes:
1. Reduced numbers if blades are transported as a single unit.
2. This will be reduced if nacelles and drivetrains are transported separately as presented in the next column with both nacelle and drivetrains being under 5.2m and able to use Route 3.
3. This will not be required if nacelles and drivetrains are transported together

The transportation period for the turbine components has been forecast to occur over approximately a 9-month period, or 35 weeks.

All route options reduce traffic proposed on the Bells St Heavy Vehicle Alternate route (Route 2 and 3) by taking advantage of the updated Route 4 option for vehicles under 3.5m wide and 5.2m high and options to use Route 1 for some or all of the heavy vehicles. The range in reduced volume is between 11 and 32 movements per week from the previously submitted EIS.

Sharon Pope
Executive Manager Environment and Planning
Muswellbrook Shire Council
Via email

18 October 2021

Dear Sharon,

Hills of Gold Wind Farm Project – Revised Letter of Offer to Muswellbrook Shire Council

Thank you for your time in the meeting on 16 July 2021 to further discuss the Hills of Gold Wind Farm (the "Project"), and your subsequent letter of 29 August 2021 detailing the Council's route requirements. We appreciate the time taken by your team and the constructive discussions regarding the use of Council roads and assets for the Project.

We acknowledge the need to preserve the condition of Council's roads and assets through transport of turbine components to the Project site, and believe this can be achieved through a combination of best practise industry mechanisms outlined in this letter. On this basis the Project proponent, Hills of Gold Wind Farm Pty Ltd (ACN 145 173 324) ("HOGWFPL"), makes the following revised counteroffer to Muswellbrook Shire Council (MSC) in respect of the use of proposed Council managed roads (subject only to the execution of a voluntary planning agreement or similar agreement by the parties to formalise these matters on terms acceptable to each party and to the approval of the Development Application SSD 9679).

This offer supersedes the previous offer to Council set out in the Letter of Offer dated 2 June 2021.

Council's letter 29 August 2021	Proponent response and revised offer
General Comment Further to our recent discussions I confirm that the preferred route for all proposed OSOM loads is via **Thomas Mitchell Drive, Bengalla Link Road, Wybong Road East and Kayuga Road.**	We note that this is Council's preferred route option for OSOM project traffic. HOGWFPL would like to retain flexibility in the proposed OSOM routes through Muswellbrook Shire, detailed in Annexure B of our 2 June 2021 letter, in order to select the most suitable route option for each load type subject to final turbine selection,

	engagement of final logistics contractor, and structural assessment of Council assets. HOGWFPL will continue to engage with MSC throughout this process and in preparation of the Project's traffic management plan.
1. Route Assessment Detailed Route Analysis considering road furniture, geometry, load limits, safe sight distance, private property and Council road impacts, turning circles by a suitably experienced and practicing consultant is to be provided to Council, including: • Written consent of the private property owners along the route in the case where their land will be impacted, including any written correspondence between parties and contact information; • A joint dilapidation survey with Council is to be conducted in accordance with the requirements detailed on Annexure A (below) and submitted for Council's acceptance, for the route including inspection of all drainage structures and road surfaces; and • Structural assessment of all drainage structures along the proposed route that has not had a recent condition assessment with proposed design loads exceeding existing load compliant traffic along the proposed road route.	A Route Survey has been completed by Rex Andrews for the Project and can be found in Annexure C. A Traffic and Transport Addendum has been prepared for the Project is available in Annexure D. Further route analysis will be completed for the final transport routes and be detailed in the Project's Traffic Management Plan, in consultation with MSC. Written consent will be provided from all private property owners along the Project transport routes whose private land requires modifications for the Project transport. This has been achieved with all landowners on the transport route in MSC LGA with the exception of Mach Energy. As discussed further below, a Road Usage Fee has been offered to MSC as an alternative to road dilapidation surveys and remains HOGWFPL's strong preference to provide both parties with greater certainty. However, should road dilapidation surveys ultimately be conditioned for the Project, an independent dilapidation survey will be undertaken in consultation with MSC to assess the existing condition of road pavement and drainage structures along the final transport routes within Muswellbrook Shire. Note the dilapidation survey would not include item 2 of Annexure A in Council's letter, *Falling Weight Deflectometer.* Suitable QA testing will be agreed in consultation with Council for any pavement modifications required on the transport route. We request that Council provide all recent condition assessments for drainage structures undertaken along the proposed Project transport routes. Following this, HOGWFPL will consult with MSC to determine those Council Assets (listed in Annexure A of our 2 June 2021 letter) which require a detailed structural assessment to be undertaken to assess their structural suitability for use by Project OSOM traffic. HOGWFPL will then engage a suitably qualified, independent expert acceptable to MSC to undertake that structural assessment. If any Council Asset is found by the independent expert to be structurally inadequate for the transport of the expected equipment loads for the Project and that Council Asset is

	proposed to be used as part of the final transport route for the Project, HOGWFPL will, at its cost, upgrade each Council Asset to the extent reasonably required to ensure it is structurally adequate and suitable for the expected Project loads and consult with MSC to incorporate any reasonable requirements of MSC in respect of such upgrade.
2. Transport Management Plan	A number of these items have been assessed in the *Traffic and Transport Addendum* or *Route Survey*. HOGWFPL will prepare a Traffic Management Plan post approval in consultation with MSC which will assess the requirements set out in Council's letter. All OSOM traffic will be transported in accordance with Heavy Vehicle National Law and Regulations, and will be permitted in consultation with local road authorities. These permits will include details for requirements of OSOM escort/pilot vehicles (including Police escorts) as applicable to each load to ensure safe transport. This approach is common for all wind farms of this scale in NSW. For this reason, HOGWFPL does not agree to funding the cost of hiring a Council Traffic Observer for the duration of the project to follow OSOM transport through Council's municipality during operations.
3. Road Improvements Wybong Road East from the intersection of Overton Rd to the intersection with Kayuga Rd is currently unsuitable for OSOM loads and requires upgrades to the road and structures along the route to support the proposed movements.	Rex Andrew's did not identify any required pavement upgrades along this section of road in the Route Survey. HOGWFPL is of the view that the existing condition of this section of road is suitable for the relatively low volume and duration of Project OSOM loads, subject to removal of some traffic signage, minor widening of intersections onto private land as described, and structural assessment of relevant Council Assets as discussed above. We understood from our meeting on 16 July 2021 that Council's view was also consistent with no road pavement upgrades being required within Muswellbrook Shire for the Project. Noting Council's comments that that this section of road is "*currently unsuitable for OSOM loads and requires upgrades*" we request any further technical details that Council may have on this road. If as-built drawings or pavement designs are available for this section of road that would be appreciated. HOGWFPL further notes that dilapidation of this section of road attributable to Project OSOM traffic will be protected by

Any works or maintenance on Council Public Roads is subject to application for an S138 of the Roads Act permit and will be required to be prepared and delivered in accordance with the conditions of the S138 permit. Any works or maintenance on State or Federal Public Roads to be prepared and delivered in accordance with an ROL permit with TfNSW.	either a Road Usage Fee or dilapidation surveys,, and a Bank Guarantee. Noted. HOGWFPL will consult with MSC to obtain S138 permits for any works or maintenance performed on Council roads. Noted. HOGWFPL will consult with TfNSW for any requirements when performing works or maintenance on State or Federal Public Roads.
4. Road Maintenance The applicant will need to enter a formal maintenance management plan as part of the S138 permit for Council roads along the route for the entire duration of the project, to Council's written satisfaction including: 1. The maintenance management plan will be based on TfNSW M3 Maintenance Plan (see proforma example attached); 2. Maintenance work will be coordinated to Council's satisfaction including timing and day/night work; 3. Dilapidation survey of the route to be undertaken every twelve weeks of the project and provided to Council; 4. A Bank Guarantee will be required for the period of the project plus six months to cover any damage determined by Council's reasonable opinion, and dilapidation surveys, to have occurred as a result of the OSOM transported loads for the project; and 5. An Indemnity Deed Poll to be provided for emergency works to any assets that may suffer damage during the project.	The Projects Traffic Management Plan will detail requirements for any emergency repair or maintenance on Council roads along the final transport routes. This plan will be prepared in consultation with MSC. If road dilapidation surveys are ultimately conditioned for the Project within Muswellbrook Shire, HOGWFPL will undertake a dilapidation survey along the final transport routes **prior to commencement** and **following the completion** of the OSOM delivery phase for construction. This survey will be provided to Council. If dilapidation surveys identify that any Council roads have been damaged during as a result of Project usage, HOGWFPL will repair this damage. However we note a one-off Road Usage Fee of $70,000 upon the commencement of construction was previously offered to MSC in our letter dated 2 June 2021 as an alternative to performing road dilapidation surveys and to provide greater certainty to MSC. The fee is proposed to compensate MSC for any dilapidation which may be caused by the general use of roads within the Muswellbrook Shire by traffic associated with the Project. Due to the volume of traffic which already uses roads within the Muswellbrook Shire, it will likely be impractical to commission a dilapidation survey which can identify only that dilapidation attributable to Project traffic, noting that OSOM loads for the Project are estimated to be less than 6 trips per day on average. To further support this, TTPP assessed the impact of estimated Project vehicles using Thomas Mitchell Drive and concluded that the Project impact is deemed negligible in comparison to other road users (Section 8.5.3 – Hills of Gold Wind Farm – Traffic and Transport Addendum). Accordingly, this proposed approach of a Road Usage Fee as an alternative to road dilapidation surveys remains HOGWFPL's strong

	preference to provide both parties with greater certainty, and we ask that MSC further considers this and reverts on the offer. This offer is not intended to avoid HOGWFPL's obligation for repair if damage was made to roads by the Project that is not consistent with standard wear and tear. HOGWFPL is accepting of providing a performance bond in favour of MSC in the form of a letter of credit or bank guarantee to secure its performance of any Council Asset upgrade works or general maintenance and repair of roads. HOGWFPL will negotiate these terms with MSC in good faith following selection of the final transport routes, with such bond to be for a reasonable amount having regard to the cost of any required modification works. The bond would be provided prior to the earlier of: (1) commencement of any modification works, or (2) commencement of OSOM deliveries. Any such performance bond would be released upon completion of Project OSOM deliveries plus 6 months. On the basis of HOGWFPL offering: • a performance bond throughout the duration of Project OSOM deliveries to protect MSC road assets; • a Road Usage Fee (in lieu of road dilapidation surveys); • a structural assessment of all drainage structures along the proposed route; and • emergency repair or maintenance commitments in the TMP, it is HOGWFPL's view that the risk to damage and repair of Council's assets during construction of the Project is well mitigated and therefore we do not agree to the request to also provide MSC an Indemnity Deed Poll.
5. Communication The applicant will need to enter a formal community consultation management plan for the entire duration of the project, to Council's written satisfaction including: The community consultation management plan is to be developed in consultation with Council including but not limited to: i. Monthly meetings with Council staff to discuss progress, issues and community feedback; ii. Complaints and incident handling procedure including contact details of the applicant;	HOGWFPL commits to consulting with MSC on all these requests.

iii. Identifying residents, businesses, emergency services, school bus and mines (shift change times) and key contacts in these operations and necessary liaising with these road users; iv. Details of the Transport Management Plan and progress to be included and updated on both the applicant's website as well as Council's website; v. Applicant to provide updates to Council with regards to any planned maintenance works and/or upgrades and replacements.	
I also advise that staff have recently held a meeting with another wind farm proponent who wishes to use the same route for their OSOM vehicles, and that there be further projects in the period up to the opening of the Muswellbrook Bypass. Council staff consider that there would be benefits in a more strategic approach to managing this construction traffic. You may be contacted by another wind farm proponent soon to compile information that Council would put before a number of State Government agencies to initiate discussion this strategic approach.	HOGWFPL acknowledges the benefits in taking a strategic approach to managing road impacts through Muswellbrook Shire as more wind farm projects enter development in the region. However we note that wind farm projects of this scale undergo a long and thorough planning assessment process prior to determination and are therefore all at various different stages of development maturity. For this reason and given HOGWF is at a late stage of planning assessment we are only able to consider reasonable commitments for this project alone rather than taking a broader industry approach. We have not yet been contacted by any other wind farm proponent to compile strategic transport route information within Muswellbrook Shire.

HOGWFPL welcomes any feedback or further discussions with Muswellbrook Shire Council on the revised offer above or any further matters relating to the Project. If the above revised offer is acceptable to Muswellbrook Shire Council, we would greatly appreciate written confirmation of this from Council. A copy of this letter will be provided to the Department of Planning for inclusion of the relevant commitments by HOGWFPL in the Project's Statement of Commitments.

We respectfully request Council withdraw their objection to the project and confirm in writing by 3 November 2021.

Yours sincerely,

Andrew Kerley
General Manager – Asset Development

APPENDIX A – Hills of Gold Windfarm Project – Muswellbrook Shire Council Route requirements – Letter 29 August 2021

APPENDIX B – Voluntary Contribution from Hills of Gold Wind Farm Pty Ltd – Letter 2 June 2021

APPENDIX C – Hills of Gold Wind Farm Route Survey v7 – Rex J Andrews