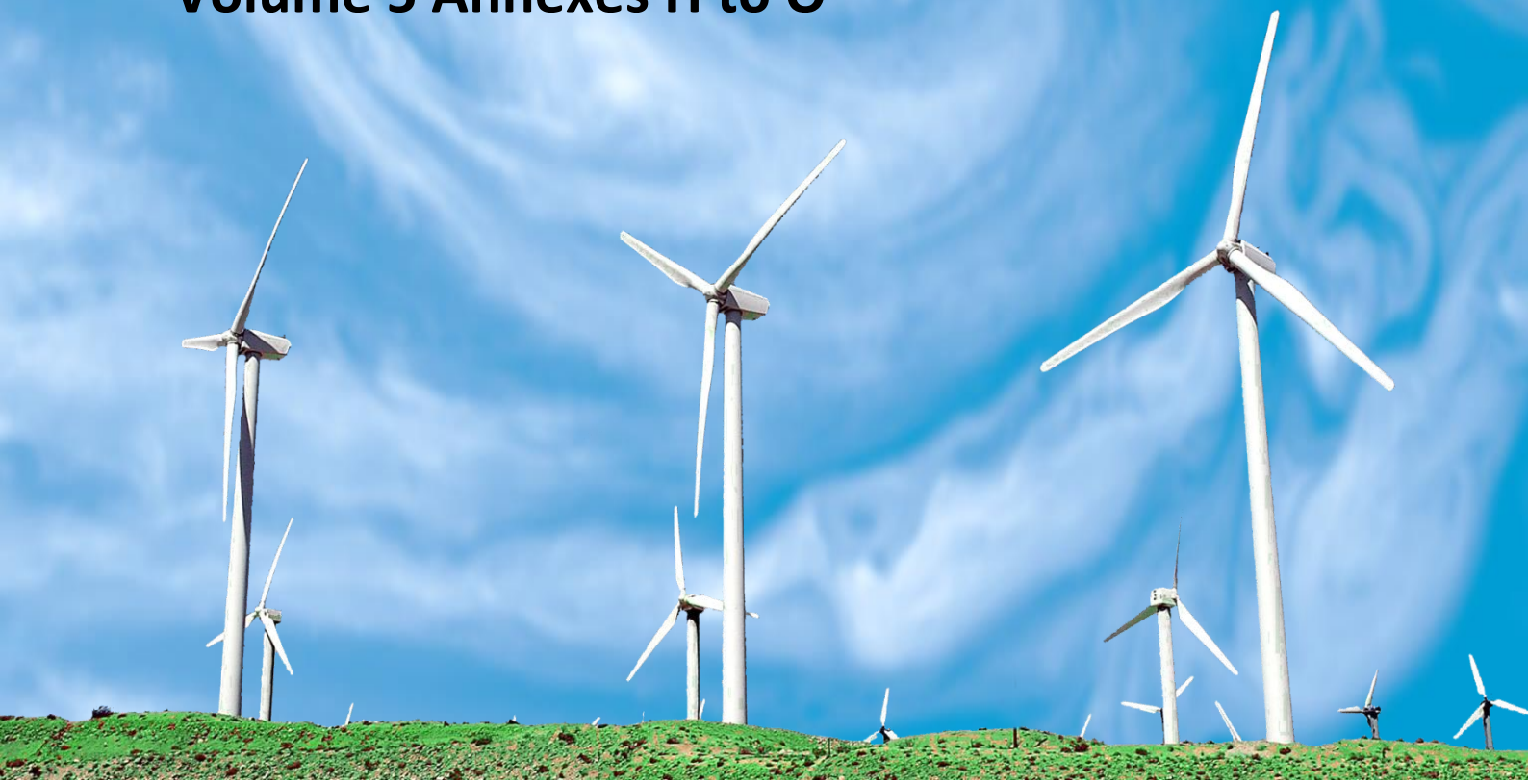
Jupiter Wind Farm

ENVIRONMENTAL IMPACT STATEMENT

October 2016

Volume 5 Annexes H to O



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ERM REFERENCE
0223522 RPT1 ENVIRONMENTAL IMPACT STATEMENT

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Annex H

Transport Impact Assessment Report

Jupiter Wind Farm
State Significant Development
Transport Impact Assessment

Client //	Environmental Resources Management Australia Pty Ltd
Office //	NSW
Reference //	14S1361000
Date //	19/10/16

Jupiter Wind Farm

State Significant Development

Transport Impact Assessment

Issue: D 19/10/16

Client: Environmental Resources Management Australia Pty Ltd
Reference: 14S1361000
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	09/09/15	Final	Jay Baththana	Andrew Farran	Jason Rudd	Jason Rudd
B	23/09/15	Final	Jay Baththana	Andrew Farran	Jason Rudd / Ken Hollyoak	Ken Hollyoak
C	28/07/16	Final	Andrew Farran	Andrew Farran	Brett Maynard	Brett Maynard
D	19/10/16	Revised Final	Andrew Farran	Andrew Farran	Brett Maynard	

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Executive Summary

ERM on behalf of EPYC Pty Ltd commissioned GTA Consultants to undertake a traffic and transport impact assessment for a proposed wind farm development in Jupiter, NSW. The Jupiter Wind Farm site is located approximately 5km southeast of the township of Tarago and approximately 18 km east of Bungendore. The purpose of the traffic and transport assessment is to determine if the surrounding road network has the operational capacity and geometric layout to physically and safely accommodate the likely traffic generation of the proposal in an acceptable manner or with appropriate mitigation measures and controls.

An assessment of the existing conditions determined that the surrounding road network, which consists of mainly two way two lane rural roads operate with good levels of service with ample capacity. As a result of previous wind farm developments in the area, a number of roads and intersections have been retrofitted to accommodate Restricted Access Vehicles (RAV's). RAV's would be used to transport wind turbine components from port to site, with Port Kembla the preferred delivery point.

The proposal is to construct 88 wind turbines on 4,999 hectares of land spanning across multiple properties. The wind turbines will be serviced by a network of access roads within the project area and will be connected to the existing road network via three priority controlled access points located along Goulburn-Braidwood Road (x2) and Kings Highway (x1). Adequate sight distance is provided at each of the proposed access points. Appropriate signage warning motorist of heavy vehicle traffic should be erected, especially during the construction period.

The development is expected to generate more traffic during construction than during the operational phase. The total construction timeframe is expected to be in the order of 21 months, with works to be undertaken in three stages. It is anticipated that the Jupiter Wind Farm site could generate up to some 308 vehicle trips (308 in and 308 out) per day and some 20,000 vehicle trips (20,000 in and 20,000 out) over the construction period of the project and up to 123 vehicle trips per hour during peak construction periods. Traffic generation during the operational phase will be minimal given the low employee activity within the site. Road capacity assessments suggest that the surrounding road network would continue to operate with a Level of Service (LOS) C or better during the construction and operational phases.

The RAV route between Port Kembla and the site via the Hume Highway, Goulburn Township, Goulburn-Braidwood Road and Kings Highway has been identified as the preferred route. The identified route is consistent with the route identified for the nearby Capital 2 Wind Farm which is proposed to utilise similar sized blades. Swept path assessments indicate that the existing road network infrastructure requires minor modifications in order to accommodate the swept path requirements of the design vehicle.

The final RAV route would be dependent on further consultation and approval from private property owners along the route, Council, RMS and subject to approval to remove vegetation. This further consultation will be undertaken following the EIS submission.

A detailed construction traffic management plan would be prepared for the haulage of the over dimensioned and/or over massed components. The plan would detail how the turbine components would be transported safely from port to site, including details of any pilot vehicle and signage requirements.

Finally, it is concluded that the Jupiter Wind Farm development would not have any significant adverse impacts on the surrounding road network operations and safety of its users.

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1. Introduction

1.1 Background

It is understood that a State Significant Development Application (SSDA) is to be lodged with the Department of Planning and Environment for a proposed wind farm referred to herein as the Jupiter Wind Farm.

GTA Consultants was commissioned by Environmental Resources Management Australia Pty Ltd (ERM) on behalf of EPYC Pty Ltd (Proponent) in November 2014 to undertake a transport impact assessment for the proposed development. This assessment considers the transport impacts during the construction and operational phases of the project.

1.2 Project Description

The proposed development involves the construction and operation of the Jupiter Wind Farm (the Project) within the Southern Tablelands Region of New South Wales (NSW). The Project Area (PA) covers an area of approximately 4,999 hectares (ha) spanning across the Goulburn Mulwaree Local Government Area (LGA) and the former Palerang LGA[1], and is situated approximately 5 kilometres (km) south east of the township of Tarago and approximately 18 km east of Bungendore. The Project locality is shown in Figure 1.1.

The Project will involve construction of up to 88 wind turbine generators (WTGs) within two distinct precincts. The northern precinct will consist of up to 75 WTGs, and the southern precinct up to 13 WTGs, with a maximum height of 173 m above ground level (AGL). The Project will also involve construction of a series of internal access roads and 33 kV reticulation network connecting the WTGs; an on-site electrical substation and 330 kV transmission line connection to the existing TransGrid 330 kV transmission line that passes through the PA; along with other associated buildings (such as substation control room and amenities) and ancillary structures and equipment.

The 33 kV transmission line alignment connecting the 33 kV electrical reticulation networks within each precinct will extend from the southern precinct to the on-site substation site. It will be aligned along the proposed southern access road, then via the road reserves of Goulburn-Braidwood Road and the Kings Highway, and in parallel with the existing 330 kV transmission line through the northern precinct to the on-site substation site. The 33 kV transmission line will be built as either an above ground line consisting of poles and wires, or a buried underground cable (or a combination of both) with underground being the preferred option. The overall construction type will be determined during detailed Project design in consultation with relevant electrical suppliers and regulatory authorities.

[1] On 12 May 2016, the NSW Government announced the merger of the Palerang Regional Council and the adjacent Queanbeyan City Council to become the Queanbeyan-Palerang Regional Council. For the purposes of this assessment, reference has been made to the former Palerang Council and LGA throughout.

1.3 Director General's Requirements/ Secretary's Environmental Assessment Requirements

ERM prepared a request for Director General's Requirements (DGRs) for the proposed Jupiter Wind Farm development in December 2013. The DGRs were provided by the Department of Planning and Environment (the Department) in January 2014. In March 2016, updated Secretary's Environmental Assessment Requirements (SEARs) were provided by the Department, with the key issues pertaining to traffic and transport reproduced below. With the exception of Item 8 (new requirement), the updated SEARs were unchanged from the original DGRs.

Table 1.1: Summary of DGRs/ SEARs

Item	EIS Requirement	Section of Report
1	details of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation	Section 4 and 5
2	assess the potential traffic impacts of the project on road network function (including intersection level of service) and safety, and including impact on existing transport including school bus routes and freight operations as well as implications for other road users	Section 4
3	assess the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-mass /over dimensional traffic) during construction and operation, differentiating between various raw material deliveries and staff and contractors, including full details of any required upgrades to roads, bridges, site access provisions (for safe access to the public road network) or other road features	Section 4 and 5
4	details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control soil erosion and dust generated by traffic volumes	Section 5
5	details of access roads within the site including how these would connect to the existing public road network (i.e. site access) and ongoing operational maintenance requirements for on-site roads	Section 4.5
6	indicative details of the location of works in the road reserve	Section 5.4
7	consideration of relevant RMS and Council traffic/road policies	Section 4 and 5
8	consideration of necessary road upgrade and/or maintenance contributions to the relevant Council to address impacts on the local road network	Section 5.2
Other	Details of stakeholder consultation	Section 5.6

1.4 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

i existing transport conditions surrounding the site
ii identify appropriate construction vehicle routes to the site for general construction vehicle and over dimensioned / over massed construction vehicle
iii the traffic generating characteristics of the proposed development during construction and operation phases
iv suitability of the proposed access arrangements for the site
v the transport impact of the development proposal on the surrounding road network.

This report does not include an assessment of the structural integrity of roads and bridges surrounding the site nor does it include a dilapidation survey of the existing roads. These assessment features are beyond the scope of this report. It is expected that they will be considered and addressed during the detailed design phase of the wind farm. During the detailed design, suitable project information and data should be available to reliably assess the

structural integrity of any applicable roads and bridges, and define the need to conduct any dilapidation survey of existing roads.

1.5 Study Area

The study area for this report incorporates the Project Area as well as the local and State road networks utilised to access the Project Area.

1.6 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds (undertaken on the 3 and 4 of December 2014)
- Goulburn Mulwaree Council Development Control Plan (DCP) 2009 and Tallaganda Development Control Plan No. 4 for Rural 1(A) Zoning 1996
- Transportation Research Board's *'Highway Capacity Manual'*, 2000 (HCM)
- Austroads 'Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections', 2009
- plans for the proposed development prepared by ERM
- various traffic reports prepared for surrounding wind farm developments:
  - Gullen Range Wind Farm – Bega Duo Designs (March 2008)
  - Rye Park Wind Farm – Epuron (April 2013)
  - Crookwell 3 Wind Farm – URS (September 2010)
  - Paling Yards Wind Farm – URS (April 2012)
  - Flyers Creek Wind Farm – Aurecon (May 2011)
  - Capital II Wind farm – TPK & Associates (October 2010)
- other documents and data as referenced in this report.

2. Existing Conditions

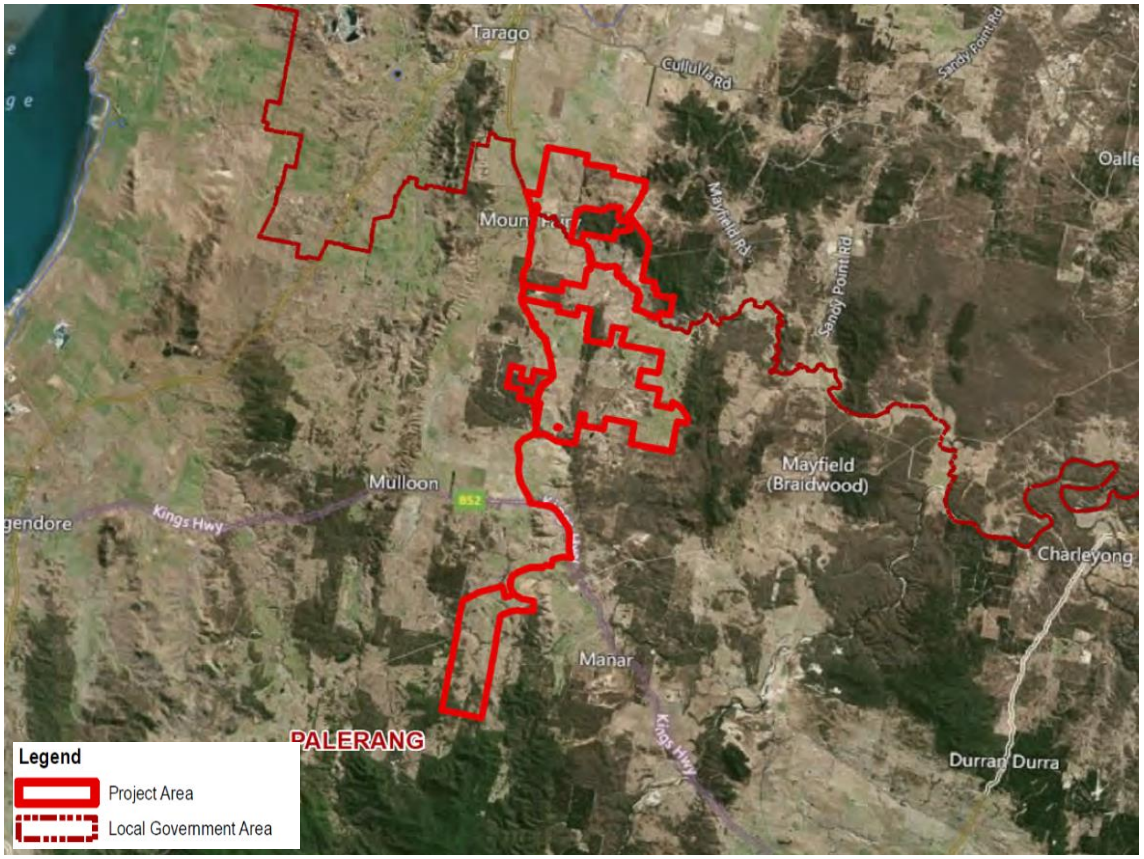
2.1 Project Area

The proposed Jupiter Wind Farm site is located approximately 5km southeast of the township of Tarago and approximately 18 km east of Bungendore (approx. 45 km east of Canberra and approximately 35 km south of Goulburn). The proposed development covers an area of 4,999 hectares and spans across the Goulburn Mulwaree and former Palerang Council LGAs.

The surrounding properties are predominantly used for grazing.

The location of the Project Area and its surrounding environs is shown in Figure 2.1. The broader surrounds are shown in Figure 2.2.

Figure 2.1: Project Area and Its Environs



(Source: ERM Australia)

Figure 2.2: Project Area Context

(Source: Google Maps)

2.2 Road Network

2.2.1 Adjoining Roads

Braidwood-Goulburn Road

Braidwood-Goulburn Road connects Goulburn to the north with the Kings Highway to the south. The road is an RMS State Road and is classified 2R in the RTA Road Network Management Hierarchy. Class 2R roads provide inter-regional and intra-regional connectivity and for the strategic needs of freight.

It is generally configured with a 7-8m wide carriageway with one traffic lane provided in each direction. Braidwood-Goulburn Road carries approximately 1,800 vehicles per day (vpd) at its northern end and approximately 1,000vpd at its southern end and is shown in Figure 2.3 and Figure 2.4[2].

2 Based on observed traffic volume estimates during GTA site inspection (3 and 4 December 2014).

Figure 2.3: Braidwood-Goulburn Road (northern end)

Figure 2.4: Braidwood- Goulburn Road (southern end)

Kings Highway

Kings Highway connects Canberra to the west and Batemans Bay to the east. The road is an RMS State Road and is classified 3R in the RTA Road Network Management Hierarchy. Class 3R roads are not part of the National Land Transport Network however they do provide a strategic freight function.

It is generally configured with an 8-9m wide carriageway with one traffic lane provided in each direction. In the vicinity of the site Kings Highway carries approximately 4,500vpd[3] and is shown in Figure 2.5 and Figure 2.6.

Figure 2.5: Kings Highway – Looking South

Figure 2.6: Kings Highway/ Goulburn Road Intersection

Lower Boro Road

Lower Boro Road is a local road (controlled by (the former) Palerang Regional Council) and provides vehicle access to properties located to the east of Braidwood Road. It is configured with a two-way unsealed carriageway.

Lower Boro Road carries low traffic volumes (anticipated to be less than 500vpd based on site observations) and is shown in Figure 2.7 and Figure 2.8.

[3] Based on RMS traffic volume data (Average Daily Traffic) for Kings Highway at Bungendore in 2014.

Figure 2.7: Lower Boro Road – Looking East

Figure 2.8: Lower Boro Road – Looking West

2.2.2 Surrounding Intersections

The following key intersections currently exist in the vicinity of the site:

- Kings Highway/ Goulburn Road (unsignalised)
- Braidwood Road/ Lower Boro Road (unsignalised).

In addition, the following intersections provided in Goulburn are significant to the development during the construction stages:

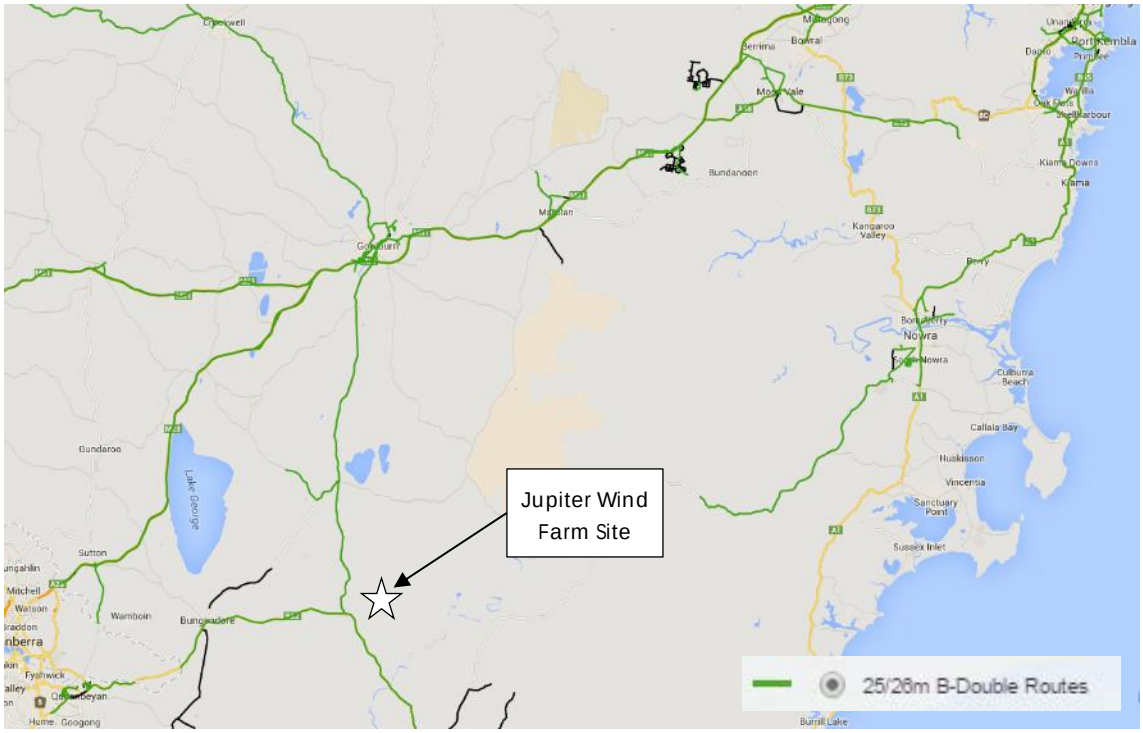
- Hume Highway/ Hume Street (unsignalised)
- Hume Street/ Clinton Street (unsignalised)
- Clinton Street/ Bourke Street (roundabout)
- Clinton Street/ Sloane Street (unsignalised)
- Sloane Street/ Braidwood Road (unsignalised).

2.2.3 Restricted Access Vehicle Map

The existing B-double (26m) approved routes in the broader vicinity of the site are detailed on the RMS website[4] and are reproduced in Figure 2.9. Braidwood-Goulburn Road and Kings Highway in the vicinity of the site are approved B-double (26m) routes.

[4] RMS website - http://www.rms.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/index.html

Figure 2.9: Existing 26m B-Double Approved Routes



2.2.4 Traffic Volumes

In order to determine the existing daily traffic volumes sample traffic counts were recorded at key locations in the vicinity of the site. Utilising these sample counts peak hour and daily traffic volumes have been estimated. A summary of the results is presented in Table 2.1.

Table 2.1: Traffic Volume Estimates

Location	Time of Sample Count	Estimated Daily Traffic Volume Forecast [1]	Estimated Peak Hour Flow
Braidwood-Goulburn Road at Ready Creek (3.5km north of Kings Highway)	Wednesday 3 December 2014 PM Peak Hour	1,000vpd	100vph
Braidwood-Goulburn Road (at Mulwaree River)	Wednesday 3 December 2014 PM Peak Hour	1,800vpd	180vph
Kings Highway at Braidwood-Goulburn Road	RMS Average Daily Traffic Volume Data (2014)	4,500vpd	450vph
Lower Boro Road	Wednesday 3 December 2014 PM Peak Hour	<500vpd	<50vph

[1] Adopting a peak to daily ratio of 10% (an adopted industry practice).

2.3 Road Network Capacity

2.3.1 Preamble

In order to determine the existing operation of the road network reference has been made to the 'RTA (now RMS) Guide to Traffic Generating Developments' document (October 2002). In regards to sites in rural areas the Guide recommends the following:

"Developers should consider the following points when designing developments near rural roads:

- *As intersections are less frequent in rural areas, they are less of a determinant of rural road capacity.*
- *The need for overtaking opportunities on two-lane roads is greater, as the level of service is determined by average travel speeds and the percentage of time spent delayed.*
- *Determine if the volume threshold from one lane to two lanes per direction may be reached."*

Given the above, rather than assess the operation of intersections the midblock capacity of each of the key roads has been assessed. As suggested in the RMS Guide reference has been made to the Highway Capacity Manual (2010) to determine the existing Level of Service of each of the roads.

2.3.2 Level of Service

As mentioned previously, both Braidwood-Goulburn Road and Kings Highway are configured with one traffic lane in each direction. As a result, passing a slower vehicle requires the use of the opposing lane when suitable sight distance and gaps are present.

"As traffic volumes increase, and as roadway, terrain and traffic conditions become less than ideal, drivers are increasingly affected by the presence of other vehicles on the road, and bunches form in the traffic stream. Vehicles in these bunches are subjected to delay because of the inability to overtake slower moving vehicles" (HCM 2000).

An example level of service volume table for roads with one traffic lane in each direction is provided in Table 2.2. From the table the hourly volume that can be accommodated at a given LOS, terrain and Free Flow Speed can be determined under specific conditions.

Table 2.2: Example LOS volumes for a Class 1 Two-lane Rural Highway

FFS (km/h)	Terrain	LOS A	LOS B	LOS C	LOS D	LOS E
110	Level	260	490	900	1570	2680
	Rolling	130	260	710	1490	2500
	Mountainous	40	160	310	610	1410
100	Level	260	490	900	1570	2680
	Rolling	130	260	710	1490	2500
	Mountainous	40	160	310	510	1410
90	Level	NA	490	900	1570	2680
	Rolling	NA	260	710	1490	2500
	Mountainous	NA	160	310	510	1410

The RMS Guide recommends that a weekday level of service of C or better should be achieved during weekday peak periods.

2.3.3 Existing Road Network Performance

An assessment of the existing operation of the key roads in the vicinity of the site is presented in Table 2.3.

Table 2.3: Midblock Operation of the Existing Roadway

Location	Speed Limit	Terrain [1]	Existing Peak Hour Traffic Volumes	Level of Service
Braidwood-Goulburn Road (at Mulwaree Creek)	100km/h	Rolling	180vph	B
Braidwood-Goulburn Road (at Kings Highway)	100km/h	Mountainous	100vph	B
Kings Highway (at Braidwood-Goulburn Road)	100km/h	Rolling	450vph	C

[2] Terrain: Level = 20% no overtaking, Rolling = 40% no overtaking, Mountainous = 60% no overtaking.

Table 2.3 indicates that Braidwood-Goulburn Road currently operates with a LOS B and Kings Highway with a LOS C.

2.4 Public Transport / School Bus Routes

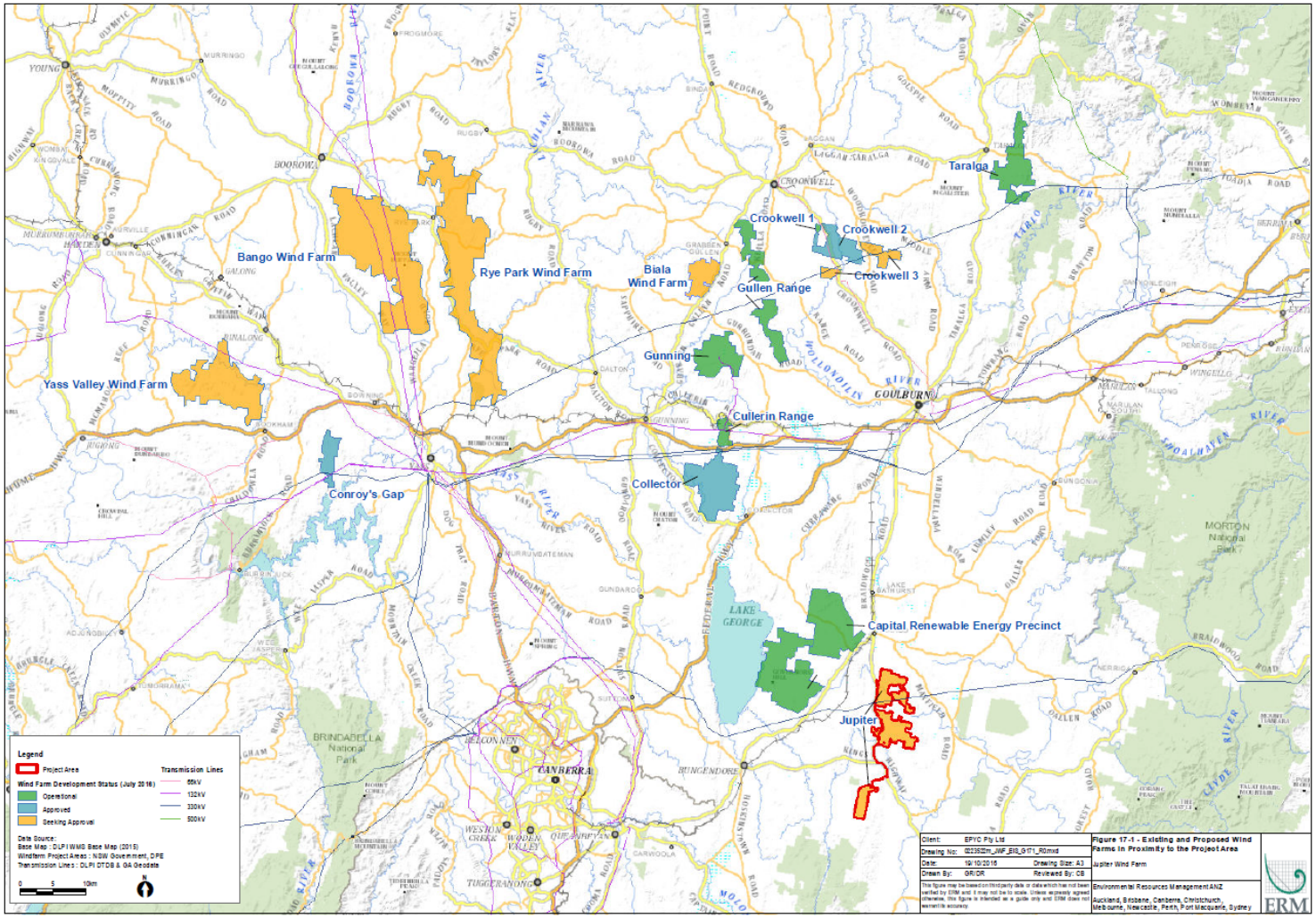
A review of the public transport available in the vicinity of the site indicates that no public bus services run along Braidwood-Goulburn Road. However, a school bus service operates between Goulburn and Lake Bathurst. It is understood that the school bus routes in the vicinity of the site are reviewed on an annual basis (dependent on the distribution of student households) and are subject to change.

2.5 Surrounding Wind Farm Developments

Due to excellent wind resources by international standards, the Southern Tablelands is a popular region for wind farms. Currently a number of wind farms are either operational, under construction or proposed for the region. Figure 2.10 shows a map of the wind speeds in the area and existing/approved/proposed wind farms in the area.

The Woodlawn and Capital wind farms are located to the west of the Project Area and are currently operational, Capital 2 wind farm is proposed to the west of the site.

Figure 2.10: Wind Farms in the Goulburn Area



(Source: NSW Planning and Infrastructure 2011) / Jupiter Wind Farm is highlighted RED

3. Development Proposal and Construction Arrangements

3.1 Overview

The proposal is to construct 88 WTG with an approximate capacity of up to 350MW of electricity generation and a substation within the 5,000 hectare Project Area.

The wind turbines are proposed to be provided in two precincts, as follows:

- Southern Precinct: 13 turbines
- Northern Precinct: 75 turbines.

An overview of the wind turbine and access road locations is provided in Figure 3.2 on the following page.

3.2 Vehicle Access

The wind turbines will be accessed by a network of service roads within the study area and will be connected to the existing road network via three new access points, summarised as follows and shown in Figure 3.2:

- Kings Highway (Southern Precinct)
- Braidwood-Goulburn Road x 2 (Northern Precinct).

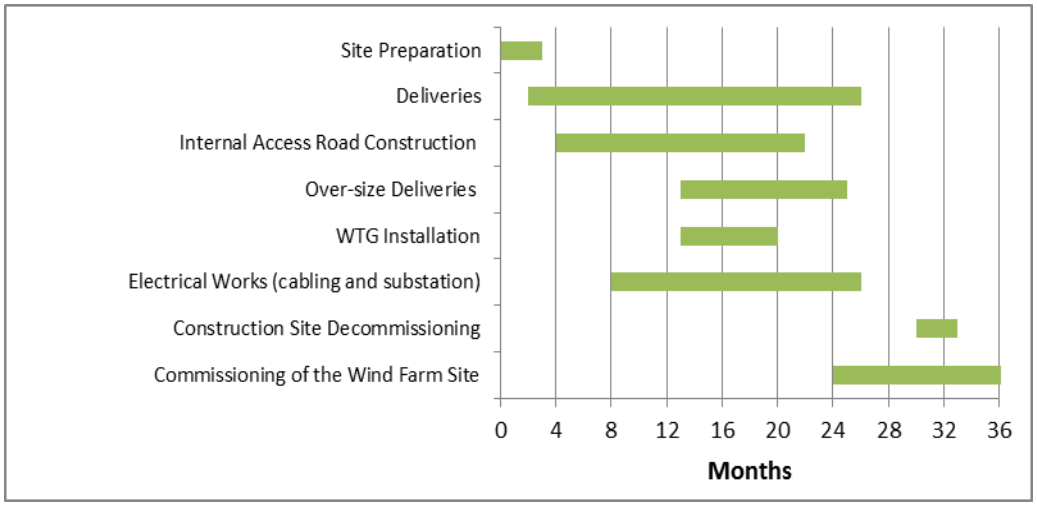
The proposed vehicle access points will be used for the construction and operational phases.

It is noted that the access roads servicing the Northern Precinct cross Lower Boro Road, however, vehicles will not use Lower Boro Road to access the site.

3.3 Construction Program

The indicative construction timeframe is expected to be in the order of 36 months, with works to be undertaken in three stages. The construction stages and their expected duration are summarised in Figure 3.1.

Figure 3.1: Indicative Construction Timeframe



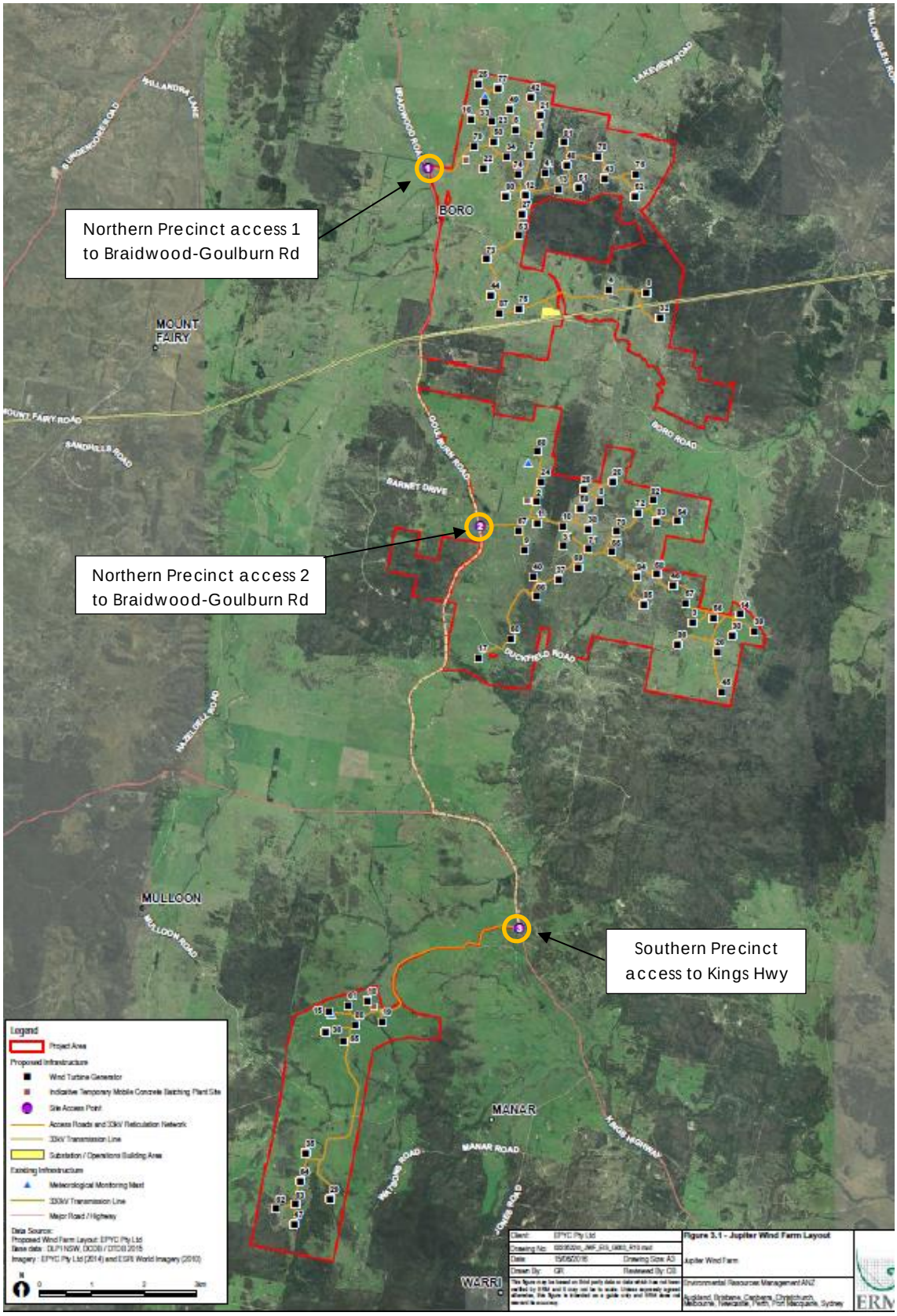
3.3.1 Location of Mobile Concrete Batch Plants

It is understood that a temporary mobile concrete batching plant will be utilised across three locations within the Project Area. Water and other materials for making the concrete will be sourced external to the site, most likely from Goulburn.

3.4 Project Personnel Car Parking

It is envisaged that car parking for construction workers will be provided within an on-site compound. In the event that car parking is not to be provided within a compound, it will be provided within the Project Area boundaries and in areas adjacent to the nominated key vehicle access locations.

Figure 3.2: Project Area Layout and Vehicle Access Locations



(Source: ERM, dated 25/08/15)

4. Traffic Impact

4.1 Type of Vehicles Accessing the Site

4.1.1 Restricted Access Vehicles (RAV's)

RAV's (i.e. over-dimensional and over massed vehicles) will be used to deliver the turbine components to the Project Area.

Whilst RAV's will contribute the smallest percentage of trips to the Project Area (refer to Section 4.2) during the construction period, they will be the most critical from a vehicle access perspective, and will require some road and intersection upgrades to the existing network. This is discussed further in Section 5 of this report.

The typical over-dimensional vehicles to be used to transport the tower sections, hub and nacelle and the blades are illustrated in Figure 4.1, Figure 4.2 and Figure 4.3.

Figure 4.1: Typical Over Dimensional Load (Tower Section)

Figure 4.2: Typical Over Dimensional Load (Nacelle Section)

Figure 4.3: Typical Over Dimensional Load (Blade Section)

4.1.2 Other Heavy Vehicles

Beyond the RAV's, there are a number of other heavy vehicles that will be required to access the Project Area and surrounding areas during the construction period. These other heavy vehicle movements can be attributed to the following works:

- existing road upgrades
- wind turbine footing construction
- substation construction
- underground cabling
- office and maintenance facility construction.

The heavy vehicles will consist of vehicles up to and including 19.0m long semi-trailers and B-Doubles (standard vehicles) and concrete trucks. As noted in Section 3, a mobile concrete batching plant will be provided within the Project Area, which could be expected to reduce the number of external concrete truck movements to and from the Project Area.

4.1.3 Light Vehicles

The majority of trips to the Project Area will be light vehicle movements (attributed to project personnel) comprising of cars, 4x4's and utility vehicles.

4.2 Traffic Generation

4.2.1 Construction Phase

At this stage the detailed construction programme is not known (i.e. volume of concrete, number of employees, material and plant requirements, etc.) and as such, in order to quantify the likely traffic generation from the site reference has been made to a number of traffic impact assessment reports prepared for previous wind farm applications.

Maximum Daily Traffic Generation

The maximum daily traffic volumes, sourced from other wind farm applications, are presented in Table 4.1. The traffic generation is for the most intensive phases of construction and are not necessarily representative of the average or typical daily traffic generation.

Table 4.1: Maximum Daily Trips (One-Way Movements Only)

Site [1]	No. of Turbines [2]	Construction Period [3]	Maximum Daily Trips During Construction	Maximum Daily Trips per Turbine
Gullen Range, NSW	84	12 – 24 months	298vpd	3.5
Rye Park, NSW	119	18-24 months	296vpd	2.5
Crookwell 3, NSW	30	NA	77vpd	2.6
Paling Yards, NSW	59	18 months	120vpd	2.0

[1] Sourced from sites with available traffic data that are representative of the site.
[2] The number of turbines refers to the number of turbines assessed in the traffic impact assessment report for each site; the number of turbines assessed may differ from the number of turbines constructed.
[3] Excludes commissioning of the wind farm.

Table 4.1 indicates that the maximum traffic generation per turbine for each of the sites varies between 2.0 and 3.5 movements per turbine per day.

In order to present a conservative assessment, the maximum peak hour and daily traffic volume estimates have been adopted (i.e. those associated with Gullen Range), noting also that Gullen Range has a similar number of turbines and construction period as the proposed Project.

Overall Traffic Generation

The overall traffic volumes, sourced from other wind farm applications, are presented in Table 4.2.

Table 4.2: Maximum Overall Trips (One-Way Movements Only)

Site [1]	No. of Turbines [2]	Construction Period [3]	Overall Trips During Construction	Overall Trips per Turbine
Flyers Creek, NSW	44	12 – 18 months	10,002	227
Capital II, NSW	53	NA	11,190	211

[1] Sourced from sites with available traffic data that are representative of the site.
[2] The number of turbines refers to the number of turbines assessed in the traffic impact assessment report for each site; the number of turbines assessed may differ from the number of turbines constructed.
[3] Excludes commissioning of the wind farm.

For assessment purposes, the maximum overall traffic generation rate has been adopted (i.e. those associated with Flyers Creek).

Vehicle Type

Using data contained in the above reports the following typical vehicle proportions have been adopted for assessment purposes:

- Restricted Articulated Vehicles: 5%
- Other Heavy Vehicles: 15%
- Cars / utes / 4wd's, etc.: 80%

Summary

Utilising the above traffic generation rates estimates of the maximum daily trips and overall trips for the various vehicle types are presented in Table 4.3. Please note, similar to previous wind farm assessments, the traffic generation estimates conservatively assume sand, gravel and water deliveries to the site (i.e. sourced externally).

Table 4.3: Traffic Generation Estimates (Based on Previous Wind Farm Assessments)

Vehicle Type	Proportion of Vehicles	No. of Turbines	Maximum Daily Trips		Overall Trips	
			Movements per Wind Turbine	Total	Movements per Wind Turbine	Total
RAV's	5%	88 turbines	3.5	15	227	999
Heavy Vehicles	15%			47		2,996
Cars	80%			246		15,981
Total	100%			308		19,976

Table 4.3 indicates that the Jupiter Wind Farm site could be expected to generate up to some 308 vehicle trips (308 in and 308 out) per day and some 20,000 vehicle trips (20,000 in and 20,000 out) over the construction period of the project.

For assessment purposes it is assumed that up to 20% of the daily traffic generation occurs during the peak period. This equates to 123 peak hour movements during each of the morning and afternoon peak periods and incorporates two-way movements (i.e. in and out movements). The majority of peak hour movements are expected to be car movements (associated with staff arriving and leaving the Project Area) rather than heavy vehicle movements which would typically occur during the day.

The average daily traffic generation will be significantly less than the maximum rate presented above.

The above assessment is considered conservative given that it is based on the upper traffic generation rates from the data sourced. As such, in reality the actual traffic generation from the site may be less than that estimated.

4.2.2 Operation Phase

For the most part the Jupiter Wind Farm will be designed to operate automatically, however ongoing monitoring and maintenance of the wind farm will be required. Once constructed, it is anticipated that there would be of the order of 32 full-time equivalent positions associated with the operation of the wind farm, consisting of an onsite full-time workforce of approximately 14, and the remainder likely to consist of external contractors and service providers as required.

4.3 Traffic Distribution

4.3.1 Broader Road Network

It is anticipated that traffic generated by the Project Area would be distributed to the surrounding residential and employment areas. Based on information provided by the proponent (in terms of material and employment distribution and excluding the RAV movements) it is anticipated that the majority of traffic (light vehicles and heavy vehicles) would be generated to and from the north to Goulburn (75% via Braidwood-Goulburn Road) with the remaining traffic distributed to Canberra (25% via Kings Highway).

4.3.2 Access Points

Furthermore, it is anticipated that traffic would be distributed proportionately (to the number of turbines) between each of the vehicle access points as summarised in Table 4.4.

Table 4.4: Distribution of Vehicle Trips

Plant	Access Location	No. of Turbines	Total No. of Trips	Trips per Access Point
Southern Precinct	Via Kings Highway	13 (15%)	19,976	2,951
Northern Precinct Access 1	Via Braidwood-Goulburn Road	36 (41%)		8,172
Northern Precinct Access 2	Via Braidwood-Goulburn Road	39 (44%)		8,853

During the construction phase, the RAV's would travel along the specified route detailed in Section 5 (i.e. from Goulburn along Braidwood-Goulburn Road).

4.4 Traffic Impact Assessment

4.4.1 Construction Phase

An assessment of the operation of the surrounding road network during the construction phase is provided in Table 4.5. The existing and additional traffic volumes are illustrated in Figure 4.4 on the following page.

Table 4.5: Distribution of Vehicle Trips

Location	Peak Hour Traffic Volumes (vph)			Level of Service [1]
	Existing	Additional	Future	
Braidwood-Goulburn Road (at Mulwaree Creek)	180	92 (=123 x 0.75)	272	C
Braidwood-Goulburn Road (at Kings Highway)	100	92 (=123 x 0.75)	192	B
Kings Highway (at Braidwood-Goulburn Road)	450	31 (=123 x 0.25)	481	C

[1] Refer to Table 2.2 for Level of Service definitions.

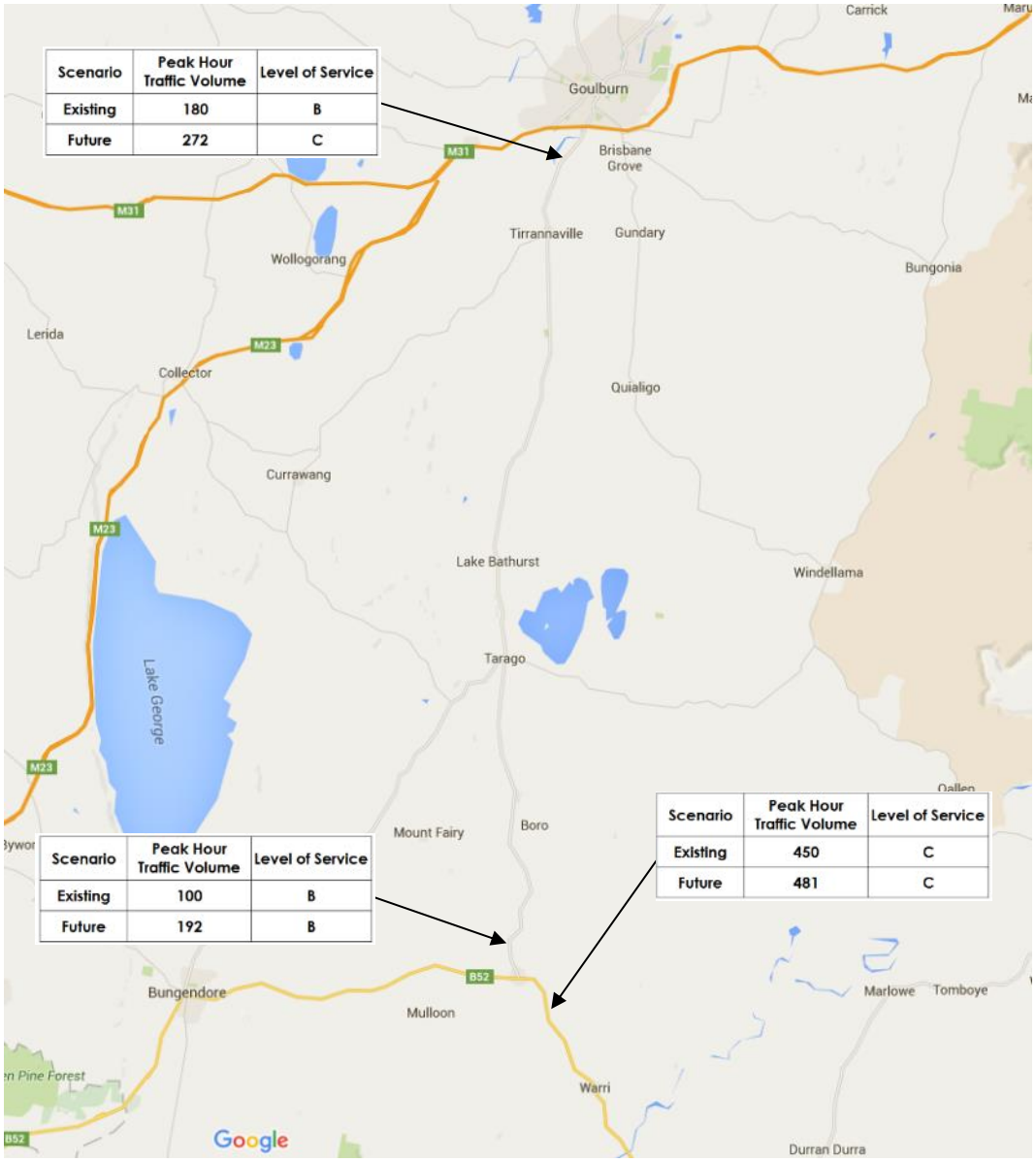
Table 4.5 indicates that during the peak construction vehicle activity along each of the surrounding roads is anticipated to operate with a LOS of C or better. It is noted that Braidwood-Goulburn Road (at Mulwaree Creek) is anticipated to change from a LOS B to LOS C as a result of the additional development traffic. The post-development operation of the surrounding roads is consistent with the expectations set out in the RMS Guide for rural roads.

It is anticipated that during the peak construction period, large and heavy vehicle movements would occur outside the 'typical' peak times, whilst general construction vehicle movements (i.e. construction personnel) could be expected to coincide with the road network peak period.

In order to minimise impact on school bus routes it is recommended that RAV movements be minimised during the peak morning and afternoon pick up and drop off periods.

Notwithstanding the above, it is noted that the presence of the slow moving RAV's on Braidwood-Goulburn Road may further reduce the capacity of the corridor, noting that these movements would typically occur outside peak periods when traffic volumes are lower. As RAV volumes increase, the ability to pass decreases and platoons form. Motorists in platoons are subject to delay because they are unable to pass. Further investigations on traffic management would be conducted as part of the Construction Traffic Management Plan.

Figure 4.4: Overview of Existing and Future Traffic Volumes



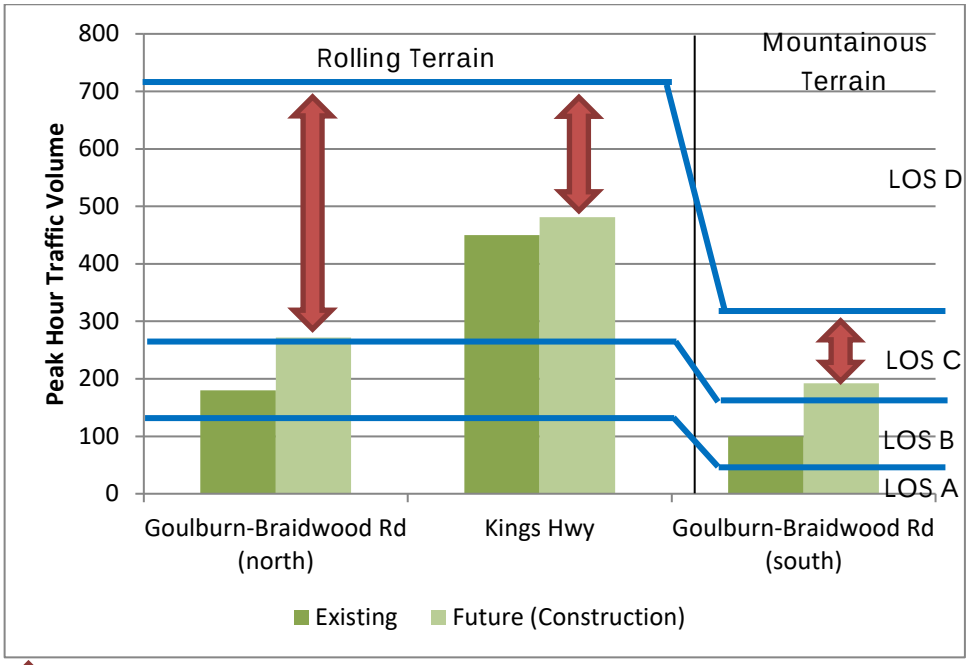
4.4.2 Operational Phase

Against existing traffic volumes in the vicinity of the site, the additional traffic generated during the operational phase could not be expected to compromise the safety or function of the surrounding road network.

4.4.3 Cumulative Impacts

The existing and anticipated peak hour traffic volumes during the construction phase are summarised in Figure 4.5. The spare capacity (i.e. difference between future traffic volume and the LOS D horizon) is also shown on the graph and indicates that there is ample spare capacity to accommodate any additional traffic on the surrounding road network.

Figure 4.5: Road Network Spare Capacity



(= future spare capacity)

There are a number of potential developments in the vicinity of the site that may be constructed or operational concurrently with the construction of the proposed wind farm. These developments include other potential wind farms and other rural land uses such as poultry farms. In addition, the nearby Capital 2 Wind Farm may be under construction or operational by the time construction commences on the Jupiter Wind Farm.

In this regard Figure 4.5 indicates that there is ample spare capacity to accommodate the likely cumulative traffic generation of any nearby future developments whilst maintaining a LOS C or better.

4.5 Vehicle Access & Internal Site Layout

As mentioned in Section 3, the WTG's and the substation would be accessed by a network of service roads within the project area and would be connected to the existing road network via three T- intersections on Goulburn-Braidwood and Kings Highway.

It is presumed that the specific design elements of these intersections would be assessed at the detailed design stage. However, a review of the following design considerations against the relevant design standards is provided below:

- temporary speed limits
- sight distances and sight lines
- turn lane warrants
- indicative signage provisions

4.5.1 Temporary Speed Limit Reductions

Reducing the speed limit on the frontage roads would likely reduce the risk of accidents occurring at the access points. The current speed limit on Goulburn-Braidwood Road and Kings Highway is 100kmh. There would be an opportunity, if supported by RMS, to introduce a

temporary 80km/h speed limit at each of the site access locations on Goulburn-Braidwood Road and Kings Highway throughout the construction phase.

The proponent would support any potential speed reductions at the site access points.

4.5.2 Sight Distance Requirements

Reference to the Austroads Guide indicates that a minimum sight distance of 248m should be provided for a 100km/h road as currently signposted (or 181m for an 80km/h road should the lower speed limit be adopted). The Australian Standards have less stringent sight distance requirements than Austroads, however, in this instance the Austroads requirements are considered more appropriate, noting the number and type of vehicles generated by the site access points.

Northern Precinct Access 1

The sight distance provided at the northern access point 1 to Goulburn-Braidwood Road is shown in Figure 4.6 and Figure 4.7, and exceeds the minimum requirements presented above.

Figure 4.6: Goulburn-Braidwood Road (Northern Access 1) – Looking North

Figure 4.7: Goulburn-Braidwood Road (Northern Access 1) – Looking South

Northern Precinct Access 2

The sight distance provided at the northern access point 2 to Goulburn-Braidwood Road is shown in Figure 4.8 and Figure 4.9, and exceeds the minimum requirements presented above.

Figure 4.8: Goulburn-Braidwood Road (Northern Access 2) – Looking North

(Source: Google Street View)

Figure 4.9: Goulburn-Braidwood Road (Northern Access 2) – Looking South

(Source: Google Street View)

Southern Precinct Access

The sight distance provided at the access point to Kings Highway is shown in Figure 4.10 and Figure 4.11, and exceeds the minimum requirements presented above.

Figure 4.10: Kings Highway – Looking North

Figure 4.11: Kings Highway – Looking South

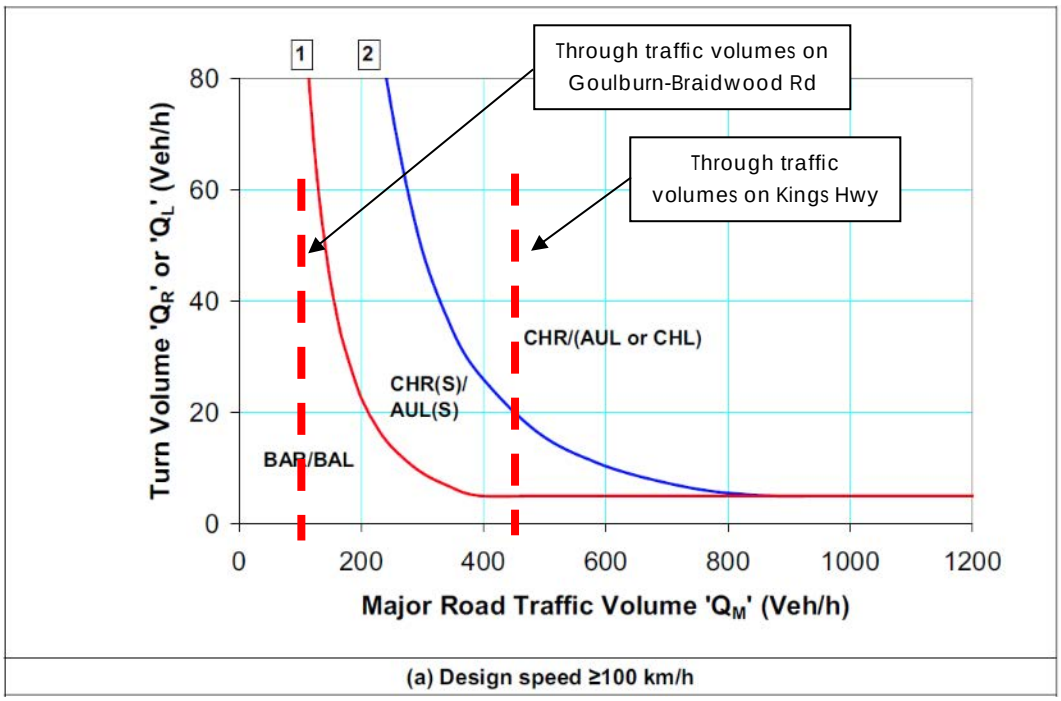
4.5.3 Turn Lane Warrants

The warrants for the various type of turn lane treatments at unsignalised intersections is provided in Austroads 'Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections'. The warrants are based on the level of through and turning traffic volumes at an unsignalised intersection.

In this instance Goulburn-Braidwood Road (through traffic) carries approximately 100vph and Kings Highway (through traffic) carries approximately 450vph.

The turn lane warrants from the Austroads Guide are reproduced in Figure 4.12.

Figure 4.12: Warrants for Turn Treatments on Major Road

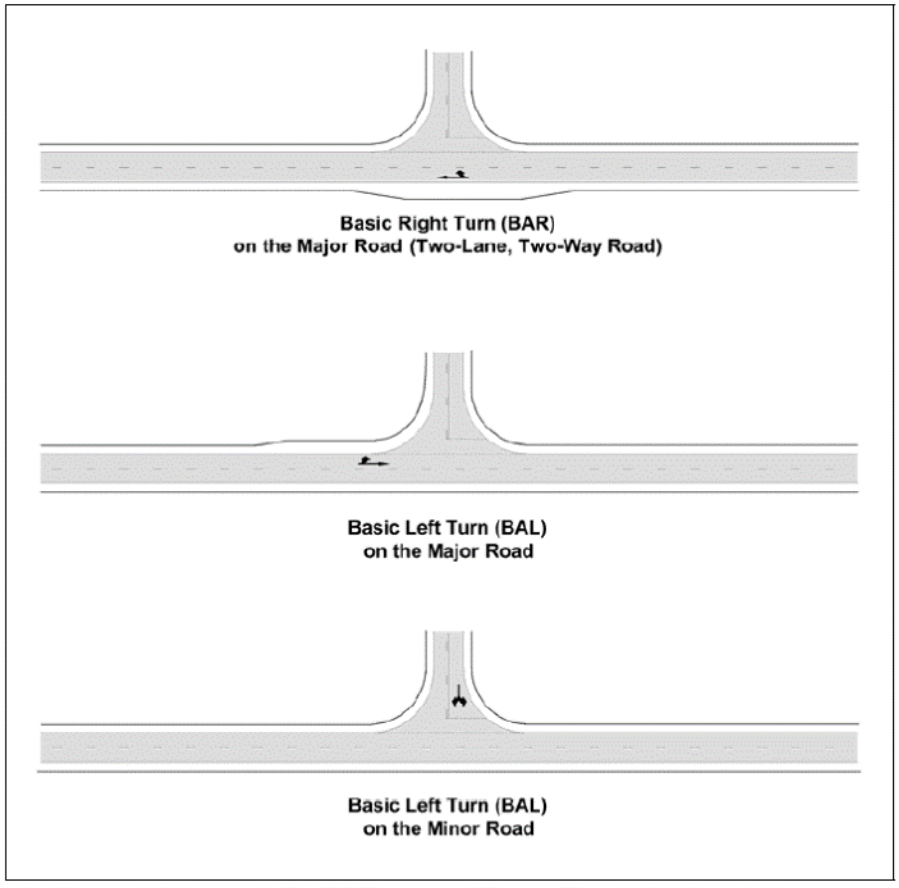


(Source: Reproduced from Figure 4.9 of the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections)

Applying the existing through traffic volumes and predicted turning volumes indicates that BAR/BAL (basic) turn treatments should be provided for each of the access points to Goulburn-Braidwood Road and a CHR (chanellised) turn treatment at the Kings Highway access.

Typically a BAR/BAL turn treatment involves the widening of the road shoulder to allow a through vehicle to pass a turning vehicle. The indicative layout of a BAR/BAL turn treatment is set out in the Austroads Guide and reproduced in Figure 4.13. The CHR turn treatment would require the provision of a dedicated right turn lane on Kings Highway into the site. The indicative layout of a CHR turn treatment is set out in the Austroads Guide and reproduced in Figure 4.14.

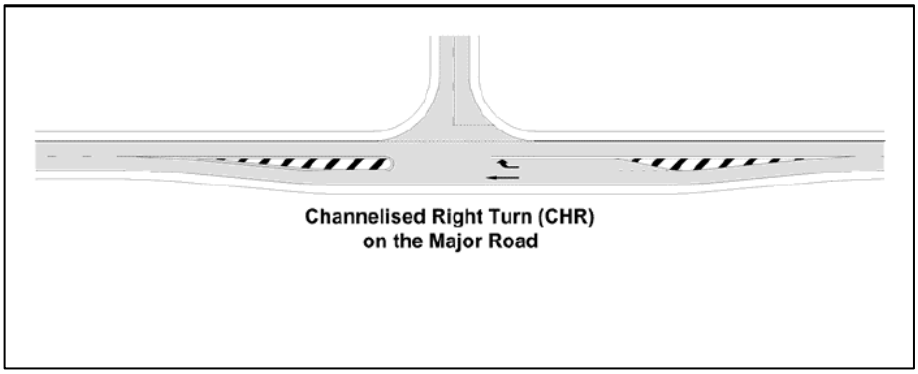
Figure 4.13: Rural Basic BA Turn Treatments



Note: Arrows indicate movements relevant to the turn type. They do not represent actual pavement markings.
Source: QDMR (2006).

(Source: Reproduced from Figure 4.1 of the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections)

Figure 4.14: Channelised Right Turn (CHR) Treatment on Major Road



(Source: Reproduced from Figure 4.7 of the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections)

4.5.4 Temporary Signage

As detailed above there is predicted to be up to approximately 308 heavy vehicle movements (308 in and 308 out) accessing the site per day during the peak construction periods. As per the requirements of the RMS 'Traffic Control at Worksites' document temporary truck signage should be provided throughout the construction period on Goulburn-Braidwood Road and Kings Highway.

Specifically signage should be provided in accordance with Traffic Control Plan 195 provided in the RMS 'Traffic Control at Worksites' document.

4.5.5 Upgrades to Site Access Pavement

The internal access roads will be generally made up of unsealed carriageways. In order to limit loose gravel being transferred to Goulburn-Braidwood Road and Kings Highway carriageways it is recommended that the first 50m of the site access carriageway be sealed.

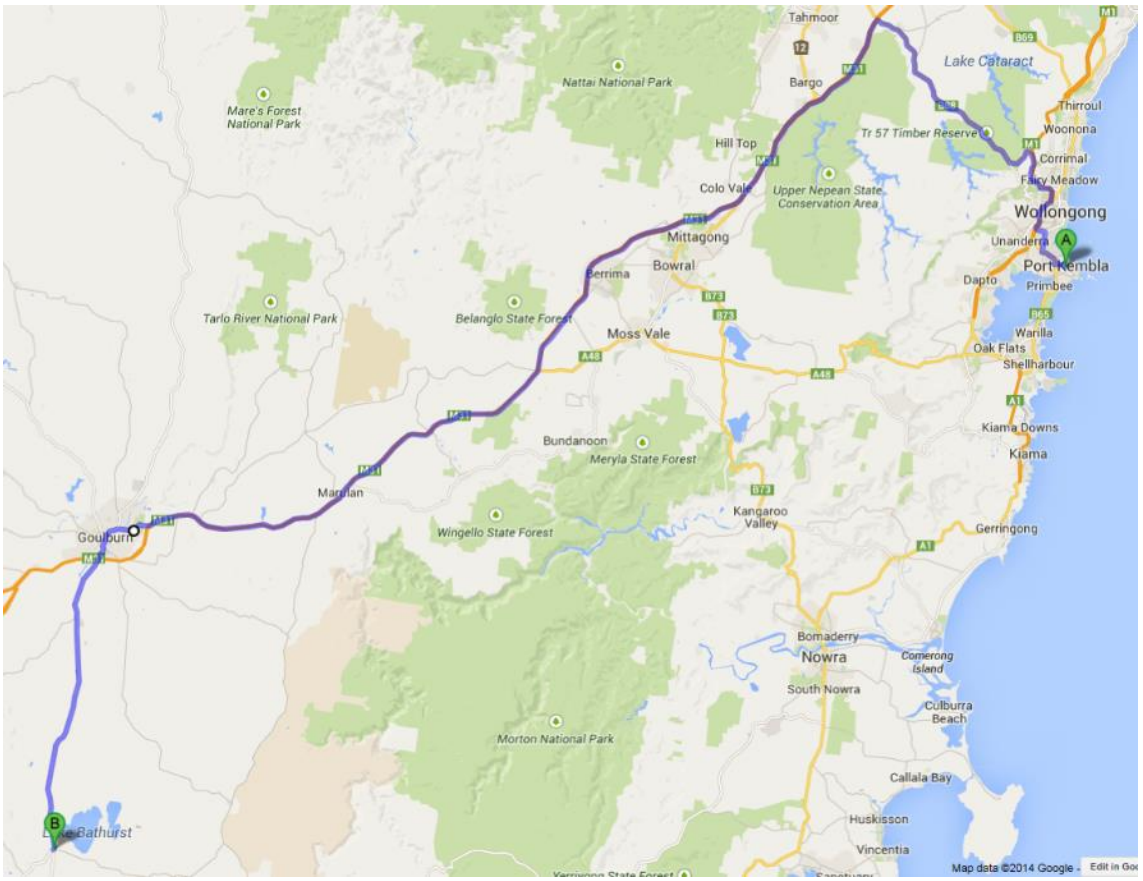
It is also recommended that "Stop" linemarking and signage be provided on each of the vehicle access points to reinforce the priority of the major road.

5. Over Dimensioned / Over Massed Vehicle Route Identification

5.1 Preamble

It is understood that the turbines will be delivered from either Port Kembla or Port Botany, with a preference for Port Kembla to minimise transportation distance. An indicative overview of the route (approximately 200km) between Port Kembla and the site is provided in Figure 5.1.

Figure 5.1: Route from Port Kembla to Site



The route from Port Kembla via Wollongong and Picton Road to the Hume Highway has been adopted for many over dimensioned vehicle routes previously and as such, has not been assessed as part of this review. Braidwood Road between the site and Goulburn is relatively flat and straight and as such should be able to cater for the manoeuvring requirements of the over dimensioned vehicles. This will be confirmed during detailed design in consultation with the relevant road authorities.

5.2 Options Assessed

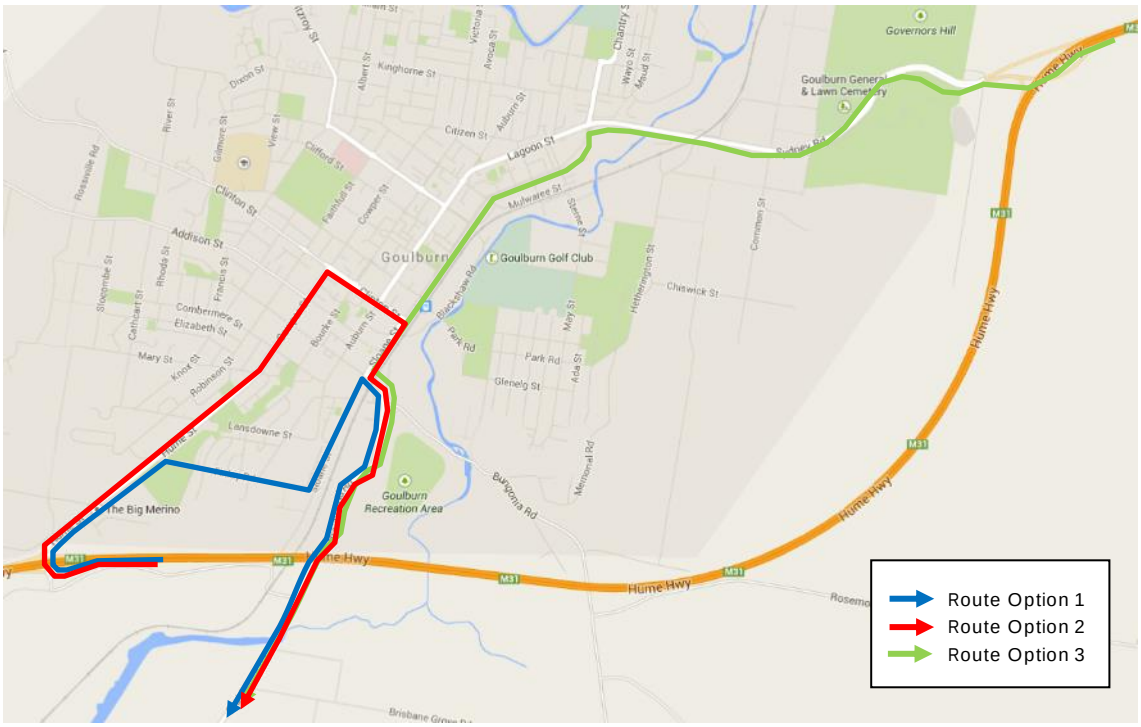
Correspondence with RMS, Goulburn-Mulwaree Council and the former Palerang Regional Council indicated that their preference for RAV access to the site is via the Hume Highway and Braidwood-Goulburn Road.

The key route issue is how the oversized vehicles pass through Goulburn moving from the Hume Highway to Braidwood Road. In this regard three route options were considered:

- Route Option 1
  via Hume Highway southern interchange, Hume Street, Finlay Road, Sloane Street and Braidwood Road
- Route Option 2
  via Hume Highway southern interchange, Hume Street, Clinton Street, Sloane Street and Braidwood Road
- Route Option 3
  via Hume Highway eastern interchange, Sydney Road, Reynolds Street, Grafton Street, Sloane Street and Braidwood Road

Each of the routes assessed is illustrated in Figure 5.2.

Figure 5.2: Potential Routes through Goulburn to Jupiter



Each of the proposed routes was assessed against the following criteria:

i Minimise impact on sensitive land uses (schools, town centre, highly pedestrianized areas, etc.)
ii Minimise the need for temporary intersection works and/or property acquisition to accommodate the RAV swept path requirements
iii Quality of existing road pavement
iv Where possible utilise the RMS road network.

Based on the above criteria Route Option 2 was identified as the preferred vehicle route for the RAV's. It is noted that this route was used for RAV's accessing the nearby wind farm sites at Capital and Woodlawn. A number of modifications such as mountable kerbs have already been made to this route to accommodate the vehicles associated with these previous developments.

Furthermore, it is understood that the Applicants for Capital 2 have recently requested the use of a 62m long blade (consistent with the 62m blade proposed for the Jupiter site). As part of this

application they have undertaken a swept path assessment of this design vehicle along the route through town (consistent with the preferred route identified above for the Jupiter site). The assessment indicates that some minor additional intersection works may be required within Goulburn to accommodate the larger vehicle, as follows[5]:

- Hume Highway / Hume Street roundabout
- Cowper Street / Clinton Street intersection
- Clinton Street / Sloane Street intersection
- Sloane Street / Braidwood Road intersection

The assessment undertaken by Aurecon is generally consistent with the findings from the GTA assessment presented below.

It is noted that the vehicles accessing the site will do so directly from Braidwood Road and will not be required to travel along the lower order local road network (i.e. Lower Boro Road and Duckfield Road)[6]. Given that construction vehicles are not required to travel along these lower order local roads, no upgrades or maintenance will be required (noting the proponent will be required to maintain the crossing points of the local roads to an appropriate standard).

5.3 Swept Path Assessment

5.3.1 Vehicle Type

It is understood that a number of potential models of WTG are currently under consideration, however the WTG model this assessment is based on is the V126 – 3.3 MW 50/60 Hz, which represents the maximum physical dimensions of the models under consideration.

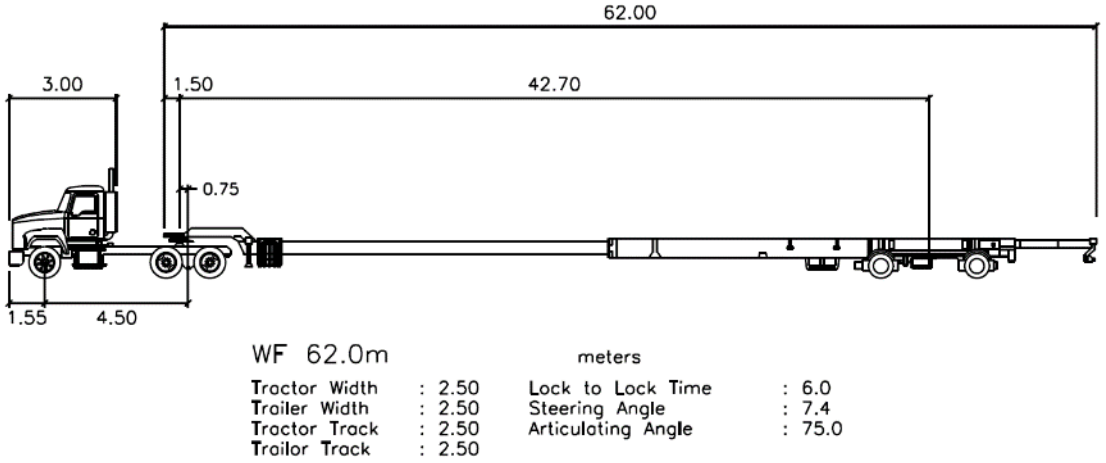
This wind turbine has a blade length of approximately 61.7m (rounded to 62m for assessment purposes). From our experience, the most difficult part of the turbines to transport are the blades which are typically transported in one piece, the other components such as tower and the turbine itself can typically be assembled on site.

Swept path assessments (using AutoTURN) for each of the key intersections along the route have been assessed using the vehicle dimensions depicted in Figure 5.3.

[5] 'Capital II Wind Farm: Swept Path Analysis for 65m Blade Transport' prepared by Aurecon for Capital Wind Farm II Pty Ltd dated October 2014.

[6] It is noted that some construction vehicles will be required to travel across (but not along) Lower Boro Road and Duckfield Road to access the substation and wind turbine generators.

Figure 5.3: Proposed Design Vehicle (Total Vehicle Length = 65.8m)



5.3.2 AutoTURN Results

GTA has undertaken swept path assessments using AutoTURN of the key intersections accessing the preferred route identified above. It is noted that the route from Port Kembla to the Hume Highway has previously catered for RAV's (of similar and larger size to the proposed vehicle) and as such, has not been reassessed as part of this study.

Table 5.1 on the following page provides an overview of the swept path assessments undertaken along the route through Goulburn and on Braidwood-Goulburn Road. The swept path assessments are provided in Appendix A.

Given the amount of road space that the RAV's require to pass through the intersections (including the opposite side of the road) they will be accompanied by pilot vehicles with affected intersections to include appropriate traffic management measures.

5.4 Road Upgrades

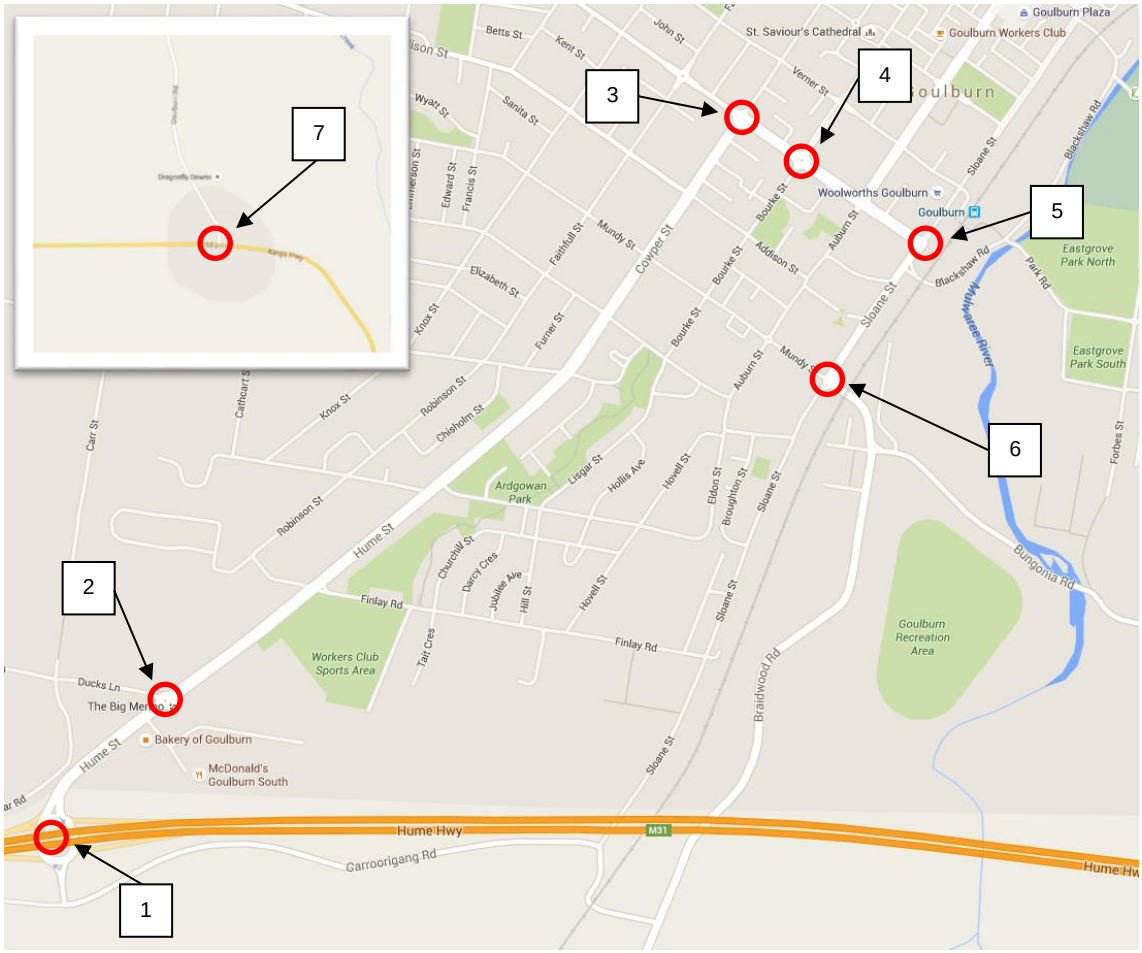
The swept path assessment indicates that site specific intersection upgrades are required to accommodate the RAV's. Light poles, safety barriers, vegetation, on-street car parking or kerbs would need modification, removal or replacement at some intersections in order to accommodate the RAV's. It should be noted that road widening works would not necessarily require a sealed road shoulder.

An overview of the anticipated road and intersection upgrade works are provided in Table 5.1 and Figure 5.4. The site specific upgrades would be assessed in greater detail once the dimensions of the RAV's are confirmed and as part of the future Construction Traffic Management Plan. In this regard it is noted that the Construction Traffic Management Plan that will be prepared for the Project post approval and prior to commencement of construction.

Table 5.1: Summary of Temporary Road Network Improvement Works – Jupiter Wind Farm

Location	GTA Drawing No. (Refer App A)	Works Required to Accommodate Design Vehicle (65.8m)				
		Vegetation or Signage Removal / Trimming	Pavement Widening	Temporary Property Acquisition	Upgrade Pavement Composition	General Comments
1. Hume Hwy / Hume St Interchange	14S136100-01-01P5	✓	×	×	×	Temporary removal of signs
2. Hume St / Ducks Ln Roundabout	14S136100-01-02P5	✓	×	×	×	Temporary removal of signs, note roundabout is not mountable
3. Cowper St / Clinton St Intersection	14S136100-01-03P5	✓	×	×	×	Temporary removal of signs
4. Clinton St / Bourke St Roundabout	14S136100-01-04P5	×	×	×	×	Mountable roundabout currently provided
5. Clinton St / Sloane St Intersection	14S136100-01-05P5	✓	×	×	×	Temporary No Stopping Areas to be implemented and vegetation removal
6. Sloane St / Braidwood Rd Intersection	14S136100-01-06P5	✓	×	×	×	Note vehicle clearance to power poles and light poles at intersection
7. Braidwood Rd / Kings Hwy Intersection	14S136100-01-07P5	✓	×	×	×	Remove vegetation and widen carriageway

Figure 5.4: Location of Temporary Works



(Source: Google Maps)

The final route will be dependent on further consultation and approval from the private property owners along the route (relating to any temporary property acquisition), Council, RMS, and subject to approval to remove vegetation (this will be undertaken following the EIS submission).

Each of the vehicle access points and internal access road network will be designed to accommodate the swept path requirements of the largest vehicles.

5.5 Monitoring and Maintenance of Roads

5.5.1 Monitoring of Roads

To ensure that the roads utilised by traffic associated with the construction of the project are maintained to a suitable standard commensurate with their function, it is recommended that a joint inspection of the road surfaces be undertaken by representative of RMS, both Councils and the Proponent prior to the commencement of construction works on the Project Area. The findings of this inspection would be presented in a report.

Upon completion of the construction works, a final joint inspection will be undertaken by representatives of RMS, both Councils and the Proponent. This purpose of this inspection will be to identify those works that will ultimately be necessary to return the roads to their pre-development condition or better.

5.5.2 Maintenance of Roads

Should any significant defects be identified during the inspections which restrict the road network from operating at its intended level, wherever possible and practical, such defects will be rectified within a reasonable timeframe as agreed prior by Council, RMS and the Proponent, to the satisfaction of, and at no cost to, the relevant Road Authority. The anticipated works to rectify any issues could range from the filling in of potholes, to the more intensive regrading of road surfaces.

5.6 Summary of Stakeholder Consultation

In preparing this transport impact assessment report GTA has liaised with the various road authorities. An overview of the key correspondence with authorities is provided in Table 5.2.

Table 5.2: Summary of Stakeholder Correspondence

Authority	Contact	Correspondence	Date
Goulburn-Mulwaree Council	Andrew Palmer	GTA phone discussion with Council to confirm over dimensioned vehicle access routes through Goulburn and identify any access issues from previous wind farm applications	16 December 2014
	Ian Aldridge	GTA phone discussion with Council to confirm impacts on the local road network (updated SEARs). It was acknowledged that the proposed vehicle access route utilises RMS roads within the Goulburn-Mulwaree Council area	20 June 2016
(former) Palerang Regional Council	Gordon Cunningham and Bill Allison	GTA phone discussion with Council to discuss the preferred over dimensioned vehicle access route and impacts to school bus routes through the Council area	9 January 2015
	Gordon Cunningham	GTA phone discussion with Council to confirm impacts on the local road network (updated SEARs). It was acknowledged that the proposed vehicle access route will not utilise Lower Boro Road and Duckfield Road and as such, no upgrades or maintenance will be required to these roads	6 May 2016 and 19 July 2016
Roads and Maritime Service	Ann-Louise Chaffey	GTA phone discussion with RMS Special Permits Unit to identify RMS preferred over dimensioned vehicle route to the site and through Goulburn	27 November 2014

5.7 Construction Traffic Management Plan

5.7.1 Overview

The purpose of a Construction Traffic Management Plan (CTMP) is to ensure that the impacts of the construction works on the public domain, in particular with respect to temporary interruptions to vehicular and pedestrian traffic are limited and acceptable.

The construction phase of the project is scheduled to be carried out in three phases with the overall works estimated to take approximately 21 months.

The preparation of the construction traffic management plan would focus on the following topics described below:

- overall principles of construction traffic management
- staging schedule
- works zone
- hours of operation
- construction traffic volumes
- construction vehicle routes
- pedestrian management

- traffic and parking effects
- Traffic Control Plan (TCP).

5.7.2 Overall Principles of Construction Traffic Management

The overall principles of traffic management during construction activity include:

- minimising the impact on pedestrian movements
- maintaining appropriate public transport access
- minimising the impact to existing traffic on adjacent roads and intersections
- minimising the loss of on-street parking
- maintaining access to/ from any adjacent properties
- maintain emergency vehicle access
- restricting construction vehicle movements to designated routes to/ from the site
- managing and controlling construction vehicle activity in the vicinity of the site
- ensuring construction activity is carried out in accordance with Council's approved hours of works.

6. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i It is proposed to construct 88 wind turbines across a Project Area of approximately 4,999 ha. This assessment has considered a study area of approximately 6,000 ha, incorporating all local and State road networks proposed to be utilised to access the Project Area.

ii The surrounding road network currently operates with a Level of Service C or better.

iii The site is anticipated to generate up to a maximum of 308 daily trips (308 in / 308 out) during the construction period, with an overall construction traffic generation of approximately 20,000 trips (20,000 in / 20,000 out).

iv Traffic generation during the operational phase will be minimal.

v The surrounding road network is anticipated to continue to operate with a Level of Service C or better during the construction and operational phases.

vi A preferred RAV route between Port Kembla and the site via the Hume Highway and Braidwood-Goulburn Road via Goulburn has been identified.

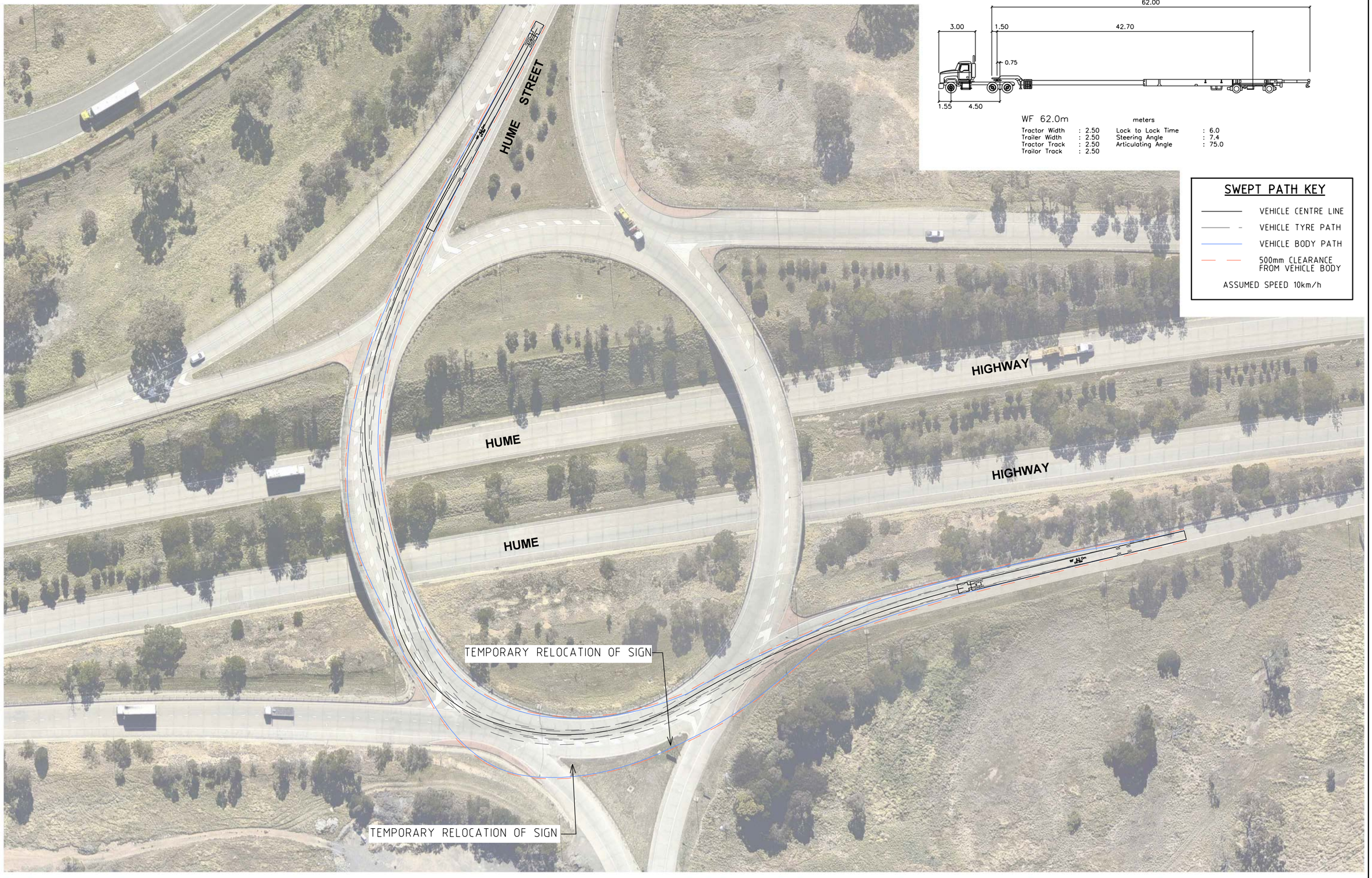
vii A swept path assessment indicates that the existing road network infrastructure, with the incorporation of minor modifications, can accommodate the swept path requirements of the largest design vehicle.

viii The final RAV route will be dependent on further consultation and approval from private property owners along the route, Council and RMS, and subject to approval to remove vegetation (this will be undertaken following the EIS submission).

ix A detailed construction traffic management plan would be prepared for the haulage of the over dimensioned and/or over massed components.

Appendix A

Swept Path Assessment



WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

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Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:1000@A3 (0 10 20 30)
APPROVED: ADF
DRAWING NO. 14S1361000-01-01-P6
SHEET: 01 OF 07

WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
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ASSUMED SPEED 10km/h

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:1000@A3 (0 10 20 30)
APPROVED: ADF
DRAWING NO. 14S1361000-01-02-P6
SHEET: 02 OF 07

PLOTTED BY: - drafting.hotdesk ON 23/09/2015 AT 3:42:12 PM 14S1361000-01-P6.dgn

WF 62.0m meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailer Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600

GTAconsultants
www.gta.com.au

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:1000@A3 (0 10 20 30)
APPROVED: ADF
DRAWING NO.: 14S1361000-01-03-P6
SHEET: 03 OF 07

PLOTTED BY: brendan.klinko ON 17/11/2016 AT 11:00:52 AM 14S1361000-01-P6.dgn

WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

PLOTTED BY : drafting.hotdesk ON 23/09/2015 AT 3:43:29 PM 14S1361000-01-P6.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
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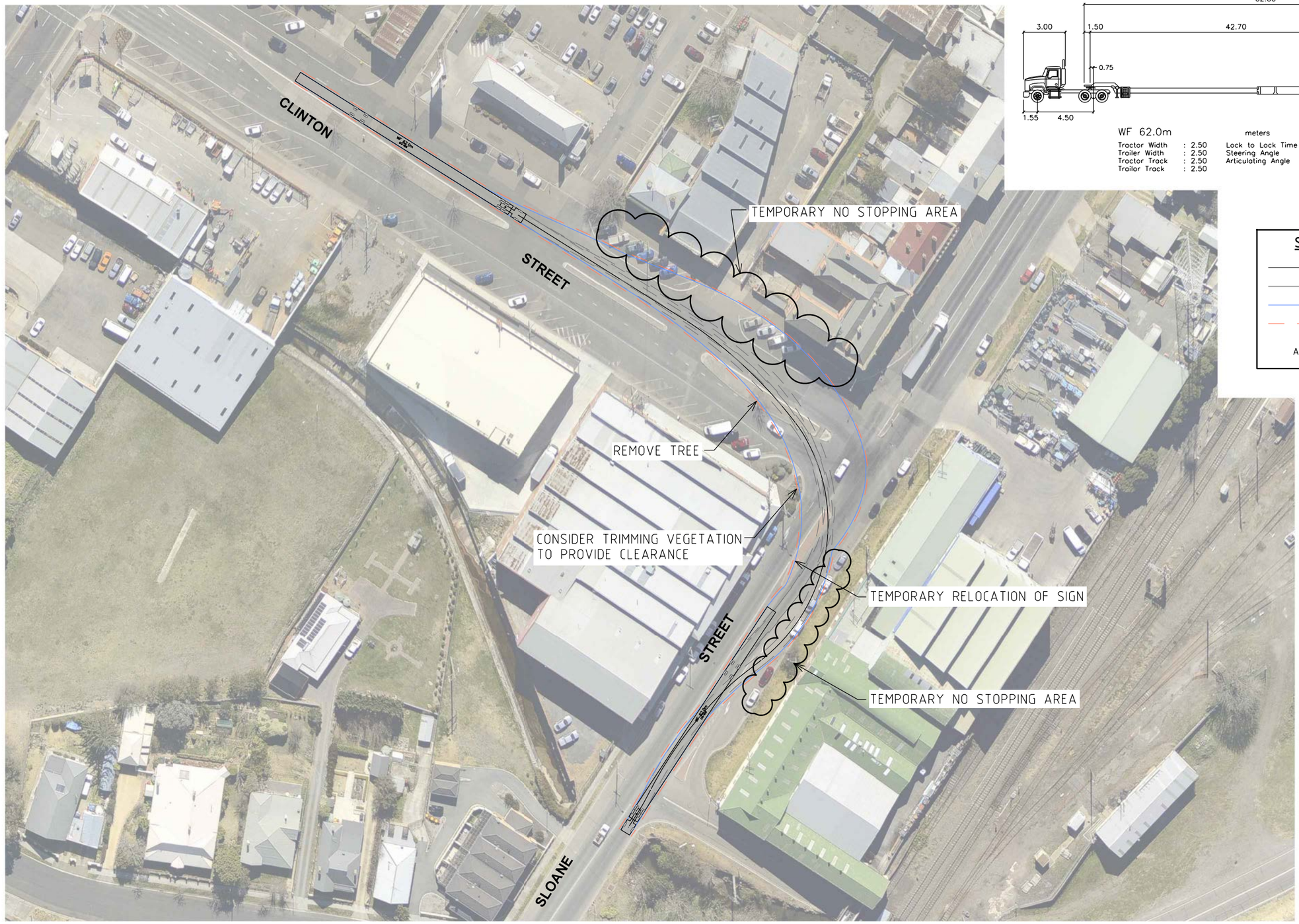
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:750@A3
0 7.5 15 22.5
APPROVED: ADF
DRAWING NO. 14S1361000-01-04-P6
SHEET: 04 OF 07



WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

PLOTTED BY: drafting.holdesk ON 23/09/2015 AT 3:43:48 PM 14S1361000-01-P6.dgn

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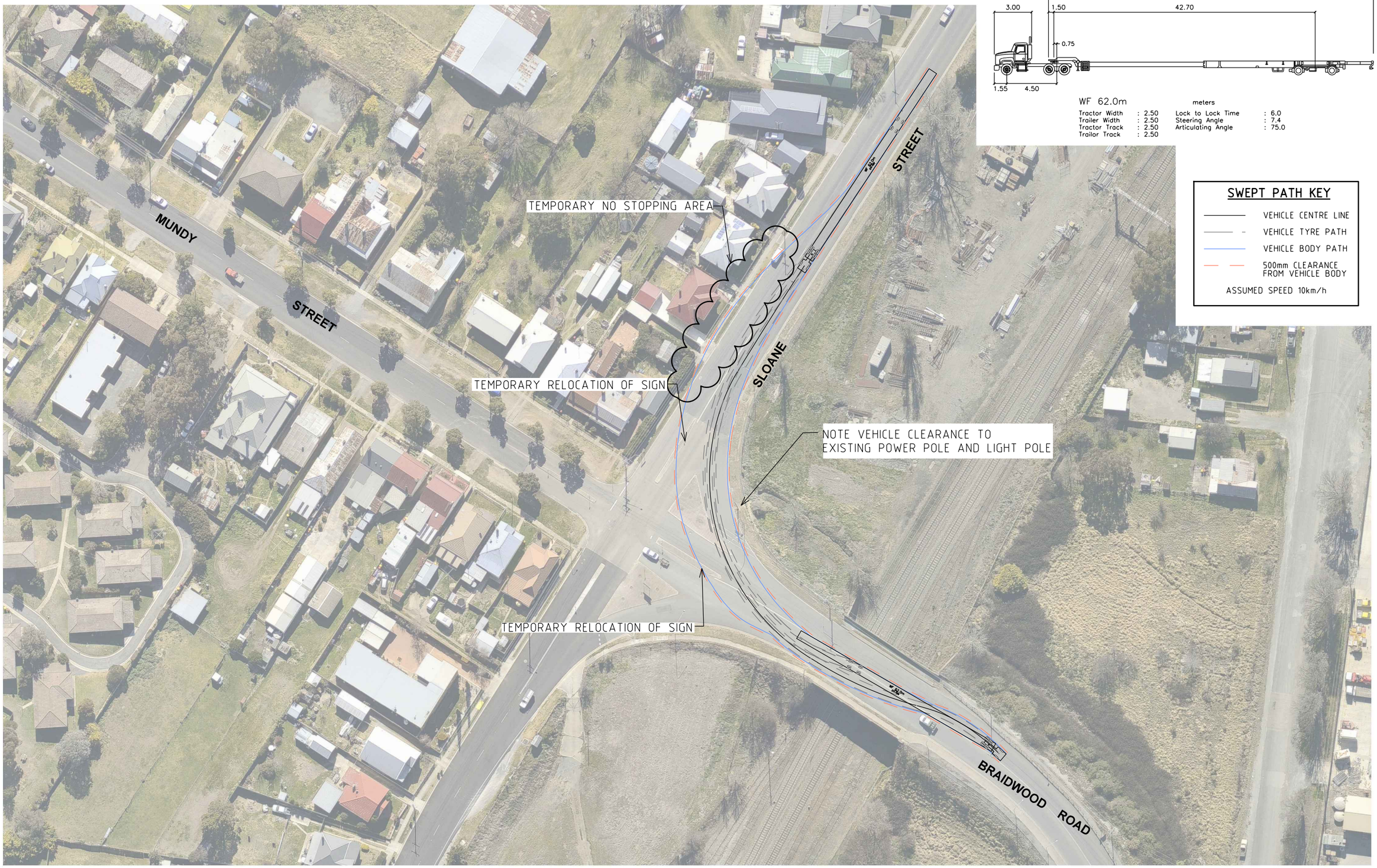
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:1000@A3 (0 10 20 30)
APPROVED: ADF
DRAWING NO. 14S1361000-01-05-P6
SHEET: 05 OF 07



WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

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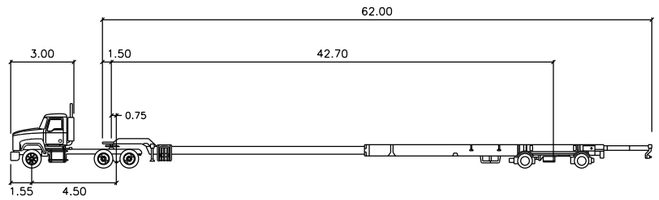
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:750@A3
0 10 20 30
APPROVED: ADF
DRAWING NO. 14S1361000-01-06-P6
SHEET: 06 OF 07

PLOTTED BY: brendan.klinko ON 17/11/2016 AT 10:58:42 AM 14S1361000-01-P6.dgn



WF 62.0m

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 7.4
Tractor Track	: 2.50	Articulating Angle	: 75.0
Trailor Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

JUPITER WIND FARM
SWEPT PATH ASSESSMENT
62m SPECIAL WIND BLADE TRAILER

DATE: 04.09.2015
SCALE: 1:750@A3
0 10 20 30
APPROVED: ADF
DRAWING NO. 14S1361000-01-07-P6
SHEET: 07 OF 07

PLOTTED BY: drafting.hotdesk ON 23/09/2015 AT 3:45:57 PM 14S1361000-01-P6.dgn

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