

Rye Park *Wind Farm*

Traffic and Transport Assessment | April 2013

EPURON

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1 Introduction

This report provides an assessment of the traffic and transport issues relevant to the construction and operation of the proposed Rye Park Wind Farm. It forms an appendix to the Environmental Assessment for the project.

The report, which was prepared considering relevant local council traffic road policies, considers the relevant traffic and transport implications for the project, assesses the potential impacts arising from the project and proposes mitigation measures to be incorporated in the environmental management plan to minimise traffic related impacts. The relevant councils were consulted during preparation of the plan and their feedback was incorporated into the plan where required. The relevant local council traffic and road polices considered are;

- ▶ Yass Valley
 - Property Vehicular Access
 - Roadside Clearing and Trees Planting
 - Road Naming
 - Unsealed Rural Roads
 - Road Standards
 - Stock Grazing and Movement on Council Roads
- ▶ Boorowa
 - Road Naming
 - Approved B Double Route for Boorowa LGA
 - Road Closure
 - Road and Street Planting
- ▶ Upper Lachlan
 - Road Management
 - Roads – Permission to Use
 - Street and Road Naming

The maximum traffic impacts will occur during the construction phase which generates the maximum traffic volumes including heavy and oversized vehicles. This report focuses on the construction impacts on the public road network in the immediate surrounds of the project considering the likely wind farm components and construction schedule.

1.1 Project Location

The proposed Rye Park Wind Farm is located on the border of the Southern Tablelands and the South West Slopes, about 2-3 km east of Rye Park. The wind farm is located on a number of elevated ridges which run in a north-south direction. The closest main road to the wind farm site is the Rye Park Dalton Road which borders on the western side of the wind farm site.

The wind farm is partly located in Boorowa Shire, Upper Lachlan Shire and Yass Valley Shire and is subject to two Local Environment Plans and one Interim Development Order which show the wind farm site and its immediate surrounds as being within Zone 1(a) Rural, RU1 and RU2 rural zones. Rye Park Wind Farm will be located on private properties that are primarily used for sheep and cattle grazing. The development will be assessed by the NSW Department of Planning and Infrastructure as a Major Project under Part 3A of the EPA Act 1979.

The Rye Park Wind Farm is adjacent to the proposed Bango and Rugby Wind Farms which have both received Director-General's Requirements from the Department of Planning and infrastructure on 31 March 2011 and 26 November 2010 respectively.

1.2 Project Description

The Project Application seeks approval for around 120 wind turbines and associated infrastructure including access tracks and overhead powerline. A new 330kV electrical substation will be located on the proposed wind farm adjacent to the existing TransGrid 330 kV transmission line (Yass – Bannaby) which crosses the southern end of the site.

This assessment is based on wind turbine models with a generating capacity of between 1.5 and 3.4 MW, a hub height of approximately 80 to 100m with a rotor diameter of up to 112m. Table 1-1 below provides the number and approximate weight of the major components of a typical wind turbine.

Table 1-1 Wind turbine major components

Wind Turbine Component	No. of parts per turbine	Total number of parts for 119 turbines	Approximate component weight (tonnes)
Towers	3	357	Up to 60
Nacelle	1	119	Up to 80
Hub	1	119	Up to 23
Blades	3	357	Up to 12

The construction phase of the project will involve the establishment of temporary construction facilities, compounds, access tracks, crane hardstand areas and foundations at each turbine location, underground electrical cabling, erection of wind turbines and the construction of the electrical substations and associated switchgear and control room buildings.

The construction of the wind farm will take between 18 – 24 months and will involve vehicle movements undertaking the following key activities:

- ▶ Initial site establishment, including installing temporary site facilities, construction compounds, access tracks and excavation of the foundations.
- ▶ Installation of the foundations for the wind turbines, including reinforced concrete gravity foundations and potentially rock anchors depending on the geological conditions and final engineering design. Concrete batching plants are proposed on-site and raw materials will be trucked in and stockpiled in certain areas as required.
- ▶ Construction of the electrical infrastructure including the substations and facilities buildings.
- ▶ Delivery of turbine components, their erection and commissioning.

2 Key Issues and their Assessment

2.1 Key Issues

The key traffic and transport implications from the proposal arise from additional vehicle volumes and over-dimensioned vehicles accessing the wind farm site from the public road network during the project's construction and operation phase.

These issues include:

- ▶ The suitability of the existing roads for the type of vehicles that will need to access the site. Aspects affecting suitability include overall width of roads, radius and clearance at bends in the road and the nature of existing traffic use.
- ▶ The structural capacity of existing roads and structures to handle the heavy vehicles for the delivery of turbine and transformer components.
- ▶ Disturbance to the local community as a result of increased vehicle movements.
- ▶ Management of traffic on and off the site including traffic safety, minimising disturbance to any environmentally sensitive areas, minimising erosion and dust.

The potential environmental impacts associated with the traffic and transport arising from the project is discussed in other parts of the Environmental Assessment dealing with specific environmental issues.

3 Predicted Traffic and Equipment Transport Requirements

The proposed development will generate significant additional traffic movement during the construction phase and a minimal increase over the operational phase of the project. The anticipated additional traffic type and volume is described in the following section.

3.1 Construction Traffic

Construction traffic will be generated by the delivery of equipment and materials to site including the construction work force travelling to and from the site on a daily basis.

The vehicles delivering the main crane, wind turbine components and transformer components will be oversize, over-mass or both. These vehicles will require special operating permits to allow them to travel on public roads and the appropriately licensed haulage contractor will complete a detailed assessment for approval by the Roads and Maritime Services (RMS, formally the Roads and Traffic Authority) and Councils prior to construction. As the surrounding local access roads are generally of a high quality, it is expected there will be no difficulty in obtaining the necessary approval.

Oversize vehicles are those over 19 m in length, 2.5 m in width and 4.3 m high and may require one or more escort vehicles to accompany them.

Over-mass vehicles are those with a gross mass in excess of 42.5 tonnes and will require a permit to use public roads.

On-site access tracks will generally be around 5-6 m wide, but will need to be wider at bends and intersections for turning. The longest vehicles will be those delivering blades. Typically two blades are delivered in one load, and oversized vehicles used to deliver turbine blades can be up to 41m long.

There are no turning bays required on public roads, though turning bays may be required within the project site. Placement of turning bays, if needed, will likely be at the end of dead-end on site access roads, and will be organised in consultation with the relevant landowner.

Table 3-1 Estimate of peak daily traffic volume

Construction Activities (Many occur concurrently)	Approximate Duration (Months)	Maximum number of trips per day	Comments
Construction staff and management	24	60	Assumes 3 employees per vehicle
Site establishment	1	10	
Internal access track construction	10	22	
Foundation excavation and construction	12	102	Based on off-site concrete delivery
Dust suppression	16	12	
Substation construction and commissioning	4	26	Includes up to 4 over-mass vehicles
Cabling	10	6	
Turbine erection	12	58	Includes up to 50 over-dimensioned vehicles
Maximum Construction Duration	24		
	Total maximum trips per day	296	

Table 3-1 presents a prediction of the maximum daily traffic volumes, expressed as one way vehicle movements, of approximately 300 vehicles per day. In reality this overstates the likely trip numbers as these activities will be spread across the construction schedule and are unlikely to occur simultaneously. It also conservatively assumes that the concrete for the turbine foundations will be delivered to site rather than sourced from on-site batching plants.

3.2 Operational Traffic

A modern wind farm is designed to operate automatically and unmanned, but a small crew of technicians are based on the site during normal working hours Monday to Friday to carry out scheduled and non-scheduled maintenance on the wind turbines. Operational staff will regularly visit all of the wind turbine locations on site using light weight service vans or utes. It is anticipated that operational requirements including scheduled and un-scheduled maintenance will generate approximately 8 trips per day on the nearby road network.

On-site access roads would only require minimal operational maintenance as only light vehicles would require access during the operational phase. Significant maintenance of on-site tracks would only be required for major wind turbine maintenance or decommissioning.

4 Transport Alternatives and Assessment

4.1 Road Transport from Port to Yass

The wind turbine components will be manufactured overseas and delivered to a major Australian port. Yass is 180 km from Port Kembla and 380 km from Newcastle. Both of these ports are suitable for receiving wind turbine components.



Figure 4-1 Major road transport routes to Yass

In both cases the major delivery route to site would be via the Hume Highway to Yass and then along either:

- ▶ the Yass Valley Way and Faulder Avenue for the northern section and Jerrawa Road and Coolalie Road for the southern section (primary route);
- ▶ through Yass on Pollux Street to Coolalie Road for the southern turbines (secondary route); or
- ▶ Continue along the Hume Highway for an additional 2.5 km to the Lachlan Valley Way for over-height loads (alternative route).

The RMS has approved heavy vehicle routes to and around Yass and includes roads such as the Hume Highway, Lachlan Valley Way, Rye Park Dalton Roads and Yass Valley Way (with some conditions). A project specific Traffic Management Plan will need to be developed in consultation with local stakeholders (including the Council) and in accordance with the regulations and to identify any specific timing and physical constraints on the route through Yass and on to Rye Park.

It is possible that the tower sections for the turbines will be manufactured in Australia. The tower sections would be delivered by road transport following the same route via the Hume Highway to Yass and then along the previously mentioned routes, depending on their site location and dimensions.

The route from Port Kembla to Yass via the Hume Highway is a viable option for heavy vehicles as it is wide and is in good condition. There are several sections of the highway which will need more detailed assessment by a transport contractor for the largest oversize loads:

- ▶ in Wollongong there is a requirement to pass below the Northern Distributor overpass from the Southern Highway; and
- ▶ a steep ascent at Mount Ousley Rd;

The route from Newcastle Port onto the Pacific Highway is regularly used by B-double vehicles and oversized vehicles transporting their goods away from the port. This route is considered a secondary route but is generally suitable for carriage of oversized wind farm components to the Hume Highway south-west of Sydney. The road sections that may require more detailed assessment by the transport contractor immediately prior to construction are:

- ▶ a number of roundabouts between Newcastle Port and the Pacific Highway; and
- ▶ the M2 and M7 link surrounding Sydney.

4.2 Road Transport from Yass to Site

The township of Yass is located off the Hume Highway and is accessible for vehicles travelling from Sydney, Canberra or Melbourne. It is a significant regional centre with many commercial businesses, residences, schools, elements of tourism and varying levels of local traffic. General considerations for transport of components through the outskirts of Yass include:

- ▶ timing of the vehicle movements to minimise disruption to local Yass traffic and night time noise at residences along the route;
- ▶ access past roundabouts, specifically on the Yass Valley Way near the 24 hour service centre;
- ▶ avoiding the main street in the town centre; and
- ▶ utilising streets and intersections that are sufficient width to allow the transit of the large and heavy vehicles involved.

4.3 Primary Route

The primary route will be divided into a northern and southern section to prevent construction traffic passing through residential areas of Yass.

4.3.1 Primary Route – Northern Section

Yass Valley Way

The Yass Valley Way is the exit road from the Hume Highway heading in the direction of Yass. It is in good condition and very wide, yet has a large roundabout which may require modification, including relocation of signage and removal of a tree for passage of oversize vehicles (Figure 4-2). Any modifications would be proposed following advice from the haulage contractor would be incorporated into the Transport Management Plan and would require approval from the RMS and the Yass Valley Shire Council.



Figure 4-2 Roundabout on Yass Valley Way after Hume Highway exit

Faulder Avenue

The intersection of the Yass Valley Way and Faulder Avenue does not present any fundamental difficulties to the transport of oversized components to the wind farm site. Approximately 1.45 km from the Yass Valley Way and Faulder Avenue intersection there is an 'S' shaped curve over disused railway tracks that may require modification. This could possibly include straightening the corner, utilising the cleared, vacant land on either side of the corner and the relocation of signage and old railway equipment as seen in Figure 4-3.



Figure 4-3 'S' shaped curve on Faulder Avenue

2.8 km from the intersection, Faulder Avenue passes below the Hume Highway with a minimum bridge clearance of 5.3 m (Figure 4-4). This clearance will be ample for the vast majority of construction and operational traffic of the wind farm yet there remains a possibility that some components will not be able to fit below this clearance. In these cases it is recommended that the vehicle use the alternative option as described in Section 4.5.



Figure 4-4 Hume Highway underpass on Faulder Avenue

The intersection of Faulder Avenue and Cooks Hill Road does not present any fundamental difficulties to the transport of oversized components to the wind farm site. Some street signage may need to be relocated for either the duration of construction or at specific times when access is required.

Cooks Hill Road

Around 2.8 km from the intersection of Faulder Avenue and Cooks Hill Road there is a railway overpass. The bridge is approximately 25 m long and 7.65 m wide which would be sufficient for transporting large wind farm components (Figure 4-5). The condition of the bridge would be examined prior to and after construction by an appropriately qualified consultant. Consultation with John Holland Rail, who is responsible for railway owned rail bridges will, occur prior to any development. A similar inspection would be carried out for a second bridge crossing a creek, 400 m from the first bridge.



Figure 4-5 Railway overpass on Cooks Hill Road

Rye Park Dalton Road

The intersection of Cooks Hill Road and Rye Park Dalton Road does not present any fundamental difficulties to the transport of oversized components to the wind farm site. Some street signage may need to be relocated for either the duration of construction or at specific times when access is required.

Rye Park Rugby Road

The Rye Park Rugby Roads travels north of Rye Park, cutting through the centre of the north most section of the site. It is a well maintained sealed road that presents no issue to transport. After a short distance from the Blakney Creek South Road turnoff there is a concrete causeway across Blakney Creek (Figure 4-6) that will require an inspection before and after construction to ensure its condition. Furthermore, some signage and a creek depth indicator may need to be removed or relocated during the construction period.

Maryvale Road

Maryvale Road extends past the extreme north of the project boundary and it required for delivery of turbines to the eastern side of the project. It is an unsealed road that will require monitoring during the construction period to ensure the quality of the road is maintained. Whilst there are some slight inclines on the route, these should not cause any concern.

Blakney Creek South Road

Blakney Creek South Road turns right off Cooks Hill Road approximately 7.5 km from the Faulder Avenue intersection. It has a wide entry and will pose no issue during construction and operation of the wind farm



Figure 4-6 Causeway on Rye Park Dalton Road

Flakney Creek Road

Flakney Creek Road is an unsealed road that heads east off Rye Park – Dalton Road. While it may be unsuitable for larger loads due to a sharp entry corner, it is still appropriate for other vehicular movements related to the construction and operation of the wind farm.

4.3.2 Primary Route – Southern Section

Jerrawa Road

Vehicles would access the southern section of the site by leaving the Hume Highway at Jerrawa Road. Jerrawa Road is a well maintained, sealed rural road that travels from the Hume Highway in the south to Coolalie Road in the north. The exit from the Hume Highway is suited for oversize loads with its large exit lane and sufficiently wide entry into Jerrawa Road. Some signage may be temporarily removed or relocated and traffic management control may be required while crossing the Hume Highway.

Coolalie Road

Coolalie Road west of Jerrawa Road is a mixture of sealed and unsealed road that continues to the site access point at Bush's Road. As the majority of the road is unsealed, a study will be conducted before and after construction to ensure the quality of the road is maintained once the delivery of over-dimension vehicles has stopped.

The Australian Rail Track Corporation has been consulted with in regards to the railway level crossing found on Bush's Road within the site boundary. A Rail Safety Management Plan will be developed in further consultation with the Australian Rail Track Corporation to establish safe crossing times and procedures prior to any construction or use of this railway crossing.

4.4 Secondary Route

If vehicles are unable to exit the Hume Highway at Jerrawa Road, a secondary route through the outskirts of Yass will be used to access the southern section of the wind farm site, heading east along Coolalie Road. The secondary route will use the same highway exit and road at the primary route until it reaches Faulder Avenue, where it will continue along the Yass Valley Way instead of turning onto Faulder Avenue. The route will turn left at Pollux Street and continue for 1.1 km before swinging left and becoming Coolalie Road. This route will travel through residential areas and council approval will be sought on the time, dimensions and number of vehicles that will be able to use this route per day.



Figure 4-7 Exit from Yass Valley Way onto Pollux Street



Figure 4-8 Sweeping bend on Pollux Street into Coolalie Road

4.5 Alternative Route

Lachlan Valley Way

The alternative route will be used for vehicles that are unable to fit below the minimum clearance of the Hume Highway underpass on the primary route. Vehicles would exit the Hume Highway at the Lachlan Valley Way, 2.5 km west of the turn of used by the primary and secondary routes. The Lachlan Valley Way is a well maintained road that is able to accommodate over-dimension or over-mass vehicles. The exit from the Hume Highway can be seen in Figure 4-9 and is suited for large loads with its sweeping angle and ample lane size. Some signage may be temporarily removed or relocated and traffic management control may be required while crossing the Hume Highway.



Figure 4-9 Exit from Hume Highway to Lachlan Valley Way

Trucking Yards Road & Long Street

After consulting with Boorowa Council, the preferred route to avoid the main streets of Boorowa is to turn right off the Lachlan Valley Way before the town and along Trucking Yards Road. Trucking Yards Road continues along the outskirts of town before turning left into Long Street and then right into Boorowa Road. Boorowa Road continues east to Rye Park for 21 km. The roads are sealed and in good condition and considered capable of holding large vehicles and will pose no issue during construction and operation of the wind farm. Some street signage and temporary alterations may be required when entering Boorowa Road at the corner of Brial Street for the duration of construction or at specific times when access is required through this route.



Figure 4-10 Turn into Trucking Yards Road from Lachlan Valley Way

Rye Park & Rye Park Dalton Road

Yass Street passes through the town of Rye Park and is sealed and in good condition. The roads do not have fixed kerbs and can accommodate oversized vehicles. Yass Street turns into Rye Park Dalton Road on the southern edge of town. Some street signage may need to be relocated for either the duration of construction or at specific times when access is required through this route.

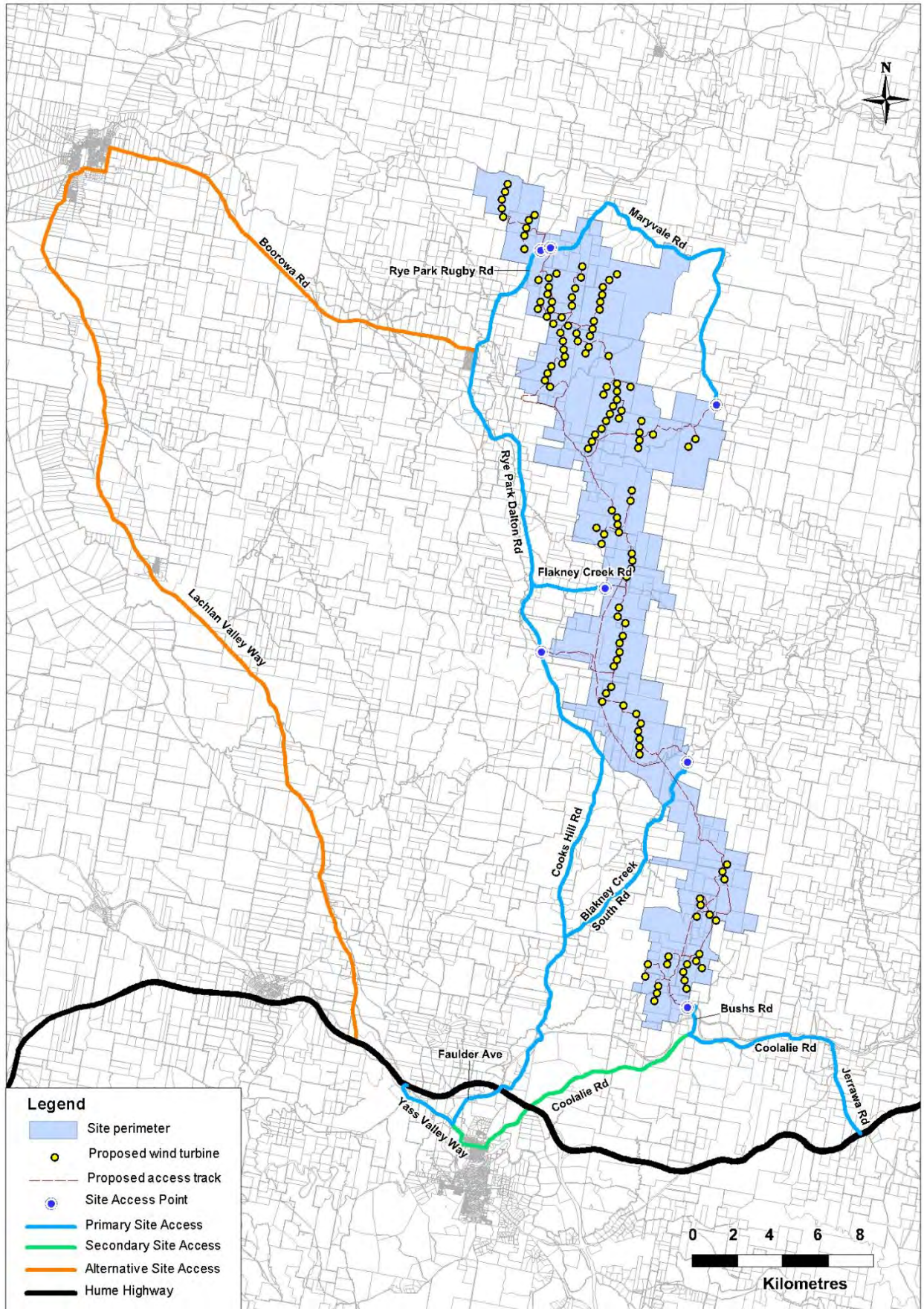


Figure 4-11 Access to the site

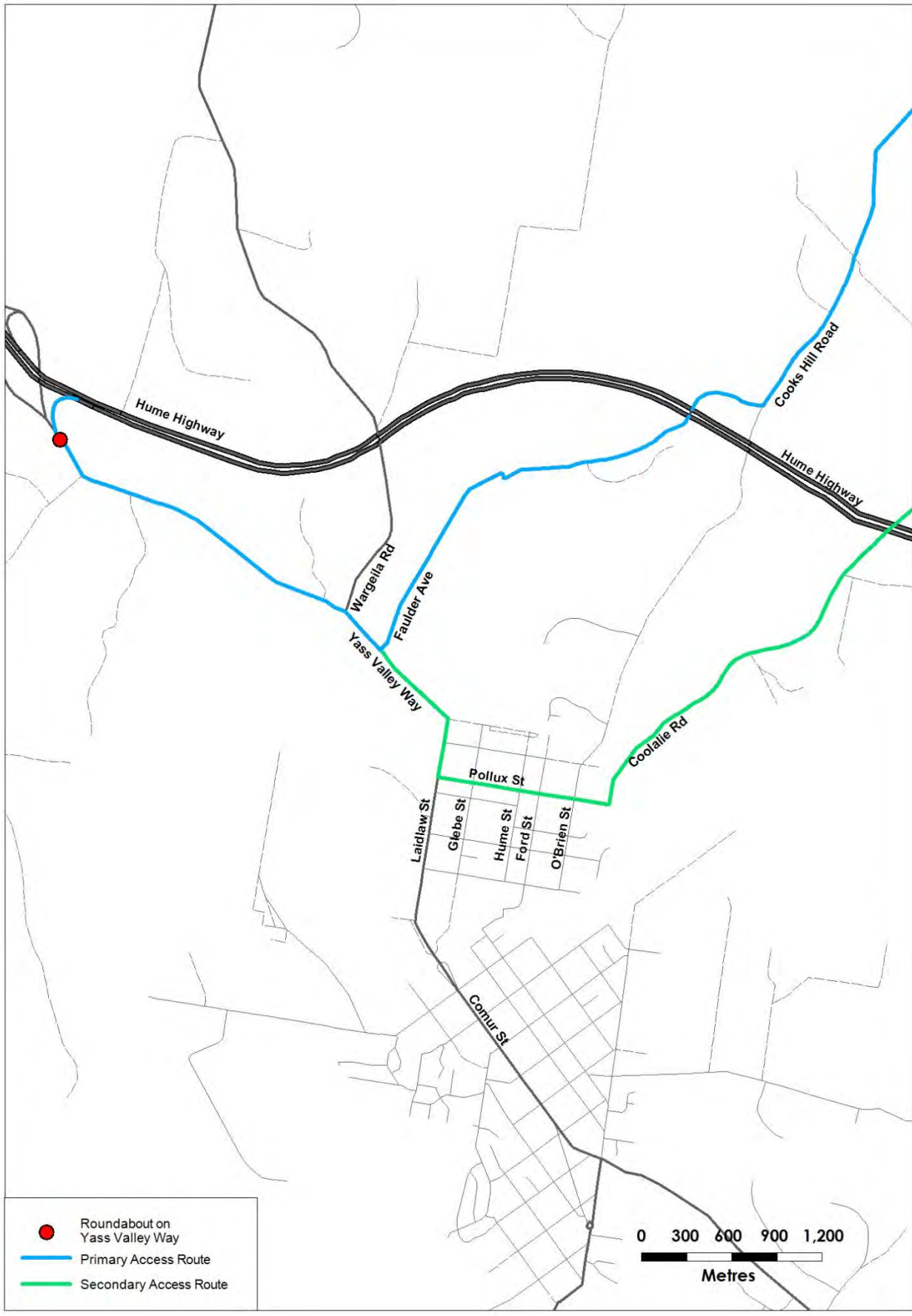


Figure 4-12 Proposed transport route through Yass

4.6 Access onto the site

The majority primary access points to the project site will be from the west via upgraded access points off the Rye Park – Dalton Road. These access points will cross involved landowners property and provide access to various points around the site. Most of these locations are existing gateways and may require some upgrades; however, some additional access points may need to be created off the main roads.

Other locations of site access include Blakney Creek North Road, Bush's Road, Maryvale Road and the Rye Park – Rugby Road. The proposed site access points can be seen in Figure 4-13 through Figure 4-17



Figure 4-13 Access via Blakney Creek North Road



Figure 4-14 Access via Rye Park - Dalton Road



Figure 4-15 Access to Bush's Road via Coolalie Road



Figure 4-16 Access via Rye Park - Rugby Road



Figure 4-17 Access via Maryvale Road

4.7 Access within the site

Access tracks to each of the wind turbine locations will generally be across open paddocks and be along the ridgelines that the turbines are located on. The location of the access tracks has been selected with consideration for existing environmental constraints and to minimise the overall length of tracks on the site.

The internal site access tracks are generally private roads and there will be no traffic impacts to the general public from vehicle movements within the site.

Empty delivery vehicles will exit the site via the same entry point. The Traffic Management Plan will address and avoid potential scheduling conflicts of vehicles entering and leaving the site. Provision will be made on site for an area that will allow for the turning of semi-trailers and oversized vehicles so no vehicles would need to reverse onto the public road network.

Figure 4-18 shows access points for local roads to connect to on-site access tracks.

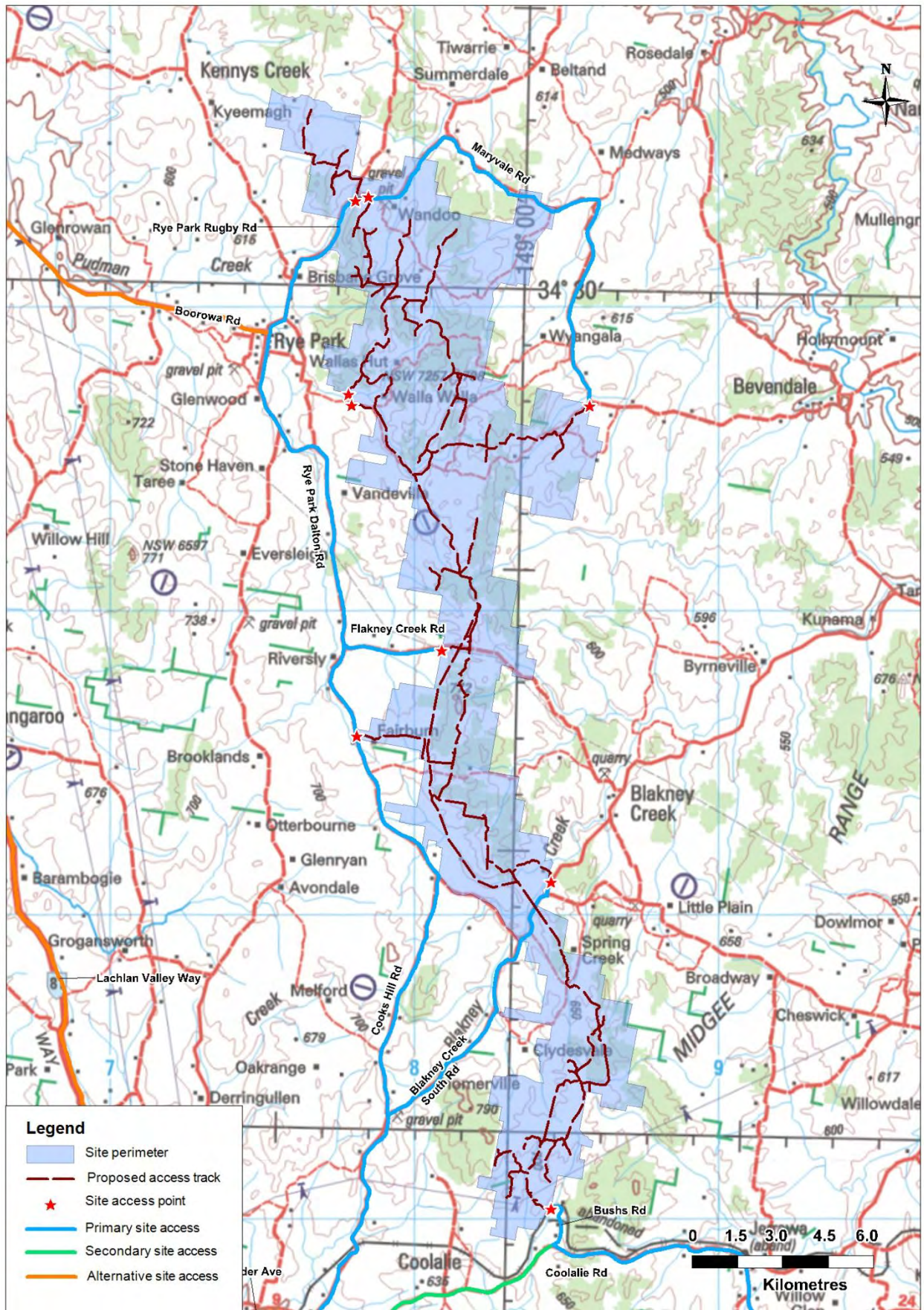


Figure 4-18 Access points and access tracks on site

5 Existing Traffic Flows

5.1 Access via Main Highways

Both ports Kembla and Newcastle are within large cities and the surrounding roads have significant peak traffic flows. Deliveries from these locations will need to be timed to avoid the peak periods. The Hume Highway which will provide the main access route has been constructed to a high standard and is expected to be suitable for the over-mass and oversized vehicles needed for the construction of the wind farm.

The RMS is responsible for the main highways in NSW. The highways running to Yass are included in the RMS's asset register; however the Yass Valley Council is retained to carry out the maintenance on the highways in the vicinity of Yass.

The highways are used by local traffic and commercial vehicles to access or pass the town centre. They have moderate levels of use during peak periods. The RMS count in 2006 (which is the most recent reported traffic data available) recorded the annual average daily traffic (AADT) the following traffic volumes on sections of the proposed transport route (RTA, 2006):

- ▶ 11,681 vehicles per day on the Hume Highway, east of Yass Valley Way;
- ▶ 7,999 axle pairs per day on the Yass Valley Way at the river crossing; and
- ▶ 3,400 axle pairs per day on the corner of Marsden and Pudman Streets in Boorowa.

As indicated by this data there is a drop off in vehicle volumes further away from the Hume Highway. This number is expected to be significantly lower along the primary routes chosen for wind farm construction as they are local roads compared to the more major thoroughfares monitored by the RMS. No traffic flow records were available for Rye Park.

Assuming all wind farm construction traffic enters the site along the primary routes described in Section 4.3, a daily increase of around 300 trips would be attributed to wind farm traffic. During the operation phase, the predicted 8 vehicle movements per day are not significant.

6 Transport Impacts

6.1 General

The main impact of the proposed wind farm with regard to traffic and transport is the additional number of vehicles on the roads during the construction period and the size of some of the loads.

The amount of additional traffic generated by the wind farm will be negligible relative to the significant daily traffic volumes on the Hume Highway. Some minor disruptions may be caused by the passage of the oversize vehicles on the highway.

The additional traffic through Yass and the surrounding regions has the potential to cause minor disturbance to local users. Discussion with the Boorowa, Upper Lachlan and Yass Valley Councils and the RMS will be required to finalise the preferred route through Yass and identify any particular issues to be address in the project Traffic and Transport Plan.



Figure 6-1 Transport of turbine blades with escort vehicle



Figure 6-2 Transport of tower section on steep site access track

6.2 Suitability of Existing Road Layout

Prior to the commencement of the project a detailed route survey will be carried out by the transport contractor to ensure safe access and minimise potential impacts to other road users. If there is a need for any temporary modification of any road structures or furniture, then it will need to be discussed and agreed with the Councils or the RMS as relevant.

Multiple access points to the wind farm site have been selected to achieve safe access and minimise community disruption during the construction stage. Further planning and consultation with Councils and the RMS will be undertaken to ensure the safe passage of vehicles entering and leaving the site.

6.3 Structural Capacity of Existing Roads and Structures

The existing roads that provide the feasible access to the site are generally in good condition; however the increased traffic during construction has the potential to exacerbate any areas that are showing signs of deterioration. Increased inspection and maintenance will need to be discussed and agreed with the Council.

The major roads have been designed to cater for large over-mass vehicles, but some structures on local roads such as cattle grids may be impacted by the passage of the large construction vehicles. These structures may require monitoring and repair or replacement during the construction period to maintain serviceability for local users and construction traffic. A road dilapidation report will be prepared prior to the commencement of construction so any road damage attributable to the construction of the wind farm can be identified and repaired.

6.4 Disturbance to Local Community

The main impacts of wind farm construction traffic on the local communities will involve:

- ▶ movements of vehicles through Yass and along the Hume Highway and to and from the site entry;
- ▶ increased frequency of vehicle movements on the surrounding roads to the wind farms that would otherwise have low traffic volumes; and
- ▶ potential safety risks arising from increased traffic movements.

The volume of construction traffic indicated in Table 3-1 Estimate of peak daily traffic volume will be spread over the construction period but on a daily basis the frequency of vehicle movements would fluctuate depending on the construction activities occurring at the time. Deliveries of long loads such as the wind turbine blades may involve up to 6 oversize vehicles per day. Pouring concrete for a turbine foundation can involve around 50 one-way truck movements in a day.

The general increase in daily traffic has the potential to increase the short-term traffic noise levels along the proposed access route. The level of disturbance to residents will be directly related to the proximity of the existing premises to the access roads. During construction the timing of vehicle movements will be mostly within the normal site working hours. Night time deliveries will be avoided wherever possible.

The oversize and over-mass vehicles are likely to travel at lower speeds than those normally used by local residents. Some delays may be experienced by local residents due to the nature of the vehicles being used to deliver materials to the site. Special consideration will be provided to routes that pass residential areas, schools, school bus routes and intersections in the transport Management Plan to schedule deliveries outside of peak or important times. Consultation with local stakeholders will be undertaken prior to the finalisation and implementation of the Traffic Management Plan.

6.5 Road Safety

The Boorowa and Yass townships and the Hume Highway (locally) generally have low accident rates; however, have recorded fatalities in recent years. The 2010 statistics for the Yass and Boorowa townships relative to the entire South Eastern Region can be seen in Table 6-1 and the statistics for the Hume Highway in the local vicinity of the project relative to the entire South Eastern Region can be seen in Table 6-2 (RTA, 2010).

Table 6-1 Accident rates in the South Eastern Region

<i>Roadway</i>	<i>Fatal Crashes</i>	<i>Injury Crashes</i>	<i>Non Casualty Crashes</i>	<i>Total Crashes</i>	<i>Killed</i>	<i>Injured</i>
Boorowa	0	12	8	20	0	14
Yass	5	48	81	134	5	77
Local subtotal	5	60	89	154	5	91
Other areas in the region	23	601	750	1,374	24	868
Entire South Eastern Region Total	28	661	839	1,528	29	959

Table 6-2 Accident rates on the Hume Highway

<i>Roadway</i>	<i>Fatal Crashes</i>	<i>Injury Crashes</i>	<i>Non Casualty Crashes</i>	<i>Total Crashes</i>	<i>Killed</i>	<i>Injured</i>
Gunning	0	7	14	21	0	10
Yass	2	20	24	46	2	34
Harden	0	6	6	12	0	9
Local subtotal	2	33	44	79	2	53
Other areas in the region	7	415	509	931	8	588
Entire South Eastern Region Total	9	448	553	1,010	10	641

The transport of large items of equipment on oversize and over-mass vehicles as well as an increase in traffic using a road network has the potential to have some impact on road safety. Such potential safety impacts may result from:

- ▶ other road users becoming frustrated by delays behind slow moving vehicles;
- ▶ normal traffic expectation by local road users not allowing for the presence of large vehicles; and
- ▶ an increase in traffic numbers on the roads.

These potential safety impacts will be minimised by the use of escort vehicles that will accompany the oversize and over-mass vehicles. The Traffic Management Plan will be used to control the movement of vehicles between Yass and the site.

7 Recommendations and Mitigation Measures

A number of measures will be incorporated during the construction and operation of the proposed wind farm to ensure that traffic and transport impacts arising from the development are managed and minimised. These measures will be incorporated into a Traffic Management Plan for the project and developed in consultation with the RMS and Boorowa, Upper Lachlan and Yass Valley Councils to ensure that applicable safety standards are achieved and disruption to local traffic is minimised.

An important mitigation measure during the construction period will be the implementation of a community information and awareness program. This will ensure that the local residents are fully aware of the planned construction activities and construction traffic. The program will include notices in the local newspapers and newsletters to local residents.

Temporary signage will be erected during the construction period in consultation with the RMS and Councils to provide specific warning of construction traffic. Other mitigation measures will include:

- ▶ Use of a licensed and experienced haulage contractor, to be responsible for obtaining all necessary permits and approvals from the RMS and Councils and for complying with conditions of consents.
- ▶ Escorts for oversize and over-mass vehicles will be provided in accordance with RMS requirements.
- ▶ Development of a Traffic Management Plan that will identify detail actions such as scheduling of deliveries, managing timing of transport through major centres (Yass) to avoid peak times (beginning / end of school), consultation activities during haulage activities, designing and implementing modifications to intersections and street furniture and managing the haulage process.
- ▶ The Traffic Management Plan will establish a procedure to monitor traffic impacts during construction such as noise, dust nuisance and travel timings so adjustments can be made to minimise impacts.
- ▶ Improvements to any public roads impacted by the project in consultation with the RMS & Councils. The improvements may include upgrades to the intersection at the site entrance, provision of entry/exit lanes and upgrades to gates and cattle grids.
- ▶ Re-instating pre-existing conditions after temporary modifications, if required.
- ▶ Providing a 24hr telephone contact during construction to enable any issue or concern to be rapidly identified and addressed.
- ▶ Prepare a road dilapidation report prior to the commencement of construction and following completion of construction to determine any damage attributable to the project. Any damage would be repaired by the Proponent.
- ▶ Should deterioration of roads occur during construction activities, an inspection and maintenance program would be established, if required by the Council.
- ▶ Implementation of appropriate erosion and sediment control measures for new access tracks within the site.
- ▶ Implementation of appropriate dust control measures for unsealed tracks within the site.

8 Conclusion

The operational phase of the wind farm will require low levels of vehicle access to the site via local roads and will have correspondingly little impact on local traffic.

During the construction phase there is potential for temporary impacts on the local traffic. The construction phase is expected to last for 18 – 24 months. In particular the delivery of the over-mass and oversize wind turbine equipment components may at times affect the flow of local traffic. Traffic management procedures will be implemented to ensure that the impacts of the oversize vehicles are minimised and safety and protection measures will be implemented to reduce the risks of accidents to an acceptable level.

The proposed access route to site via the Hume Highway, Yass Valley Way, Faulder Avenue, Cooks Hill Road and Rye Park Rugby Road, together with the mitigation measures proposed in this report will minimise the impact of traffic impacts during the construction phase and ensure that the road network can be maintained to a satisfactory standard. Considering the high quality of the access roads to the site and the mitigation proposed, likely traffic impacts are considered acceptable and manageable.

A Traffic Management Plan developed and implemented in consultation with the RMS and Councils will ensure that any traffic and transport issues arising as a result of the project are appropriately addressed and have minimal impact on the local community and the local environment.



9 References

RTA (2006) "*Annual Average Daily Traffic data.*" Roads and Traffic Authority. Retrieved July, 2012, from http://www.rta.nsw.gov.au/trafficinformation/downloads/aadtdata_dl1.html

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