

SAMSA CONSULTING

TRANSPORT PLANNING & TRAFFIC ENGINEERING

18th January 2016

CWP Renewables Pty Ltd
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NEWCASTLE NSW 2300

Our Ref: *Sapphire WF modification*
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SAPPHIRE WIND FARM PROJECT MODIFICATION **Update of Traffic & Transport Study**

Background

The proposed Sapphire Wind Farm (SWF) is to be located in Northern NSW approximately mid-way between the Glen Innes and Inverell townships and some 100 km north of Armidale. In June 2013, NSW State planning consent was achieved for 159 wind turbines with a capacity of 319 MW.

Subsequent to this project consent, modifications are proposed to the Project as follows:

- Overall reduction in wind turbine numbers from 159 to approximately 109 wind turbines.
- Increase to the maximum tip height from 157 m to 200 m with a rotor diameter increase from 126 m to 140 m.
- Consolidation of two project layouts into one.

CWP Renewables are proposing to amend the SWF Project through submission of a modification to the NSW Department of Planning and Environment (DPE). This modification assessment has been prepared by *Samsa Consulting Pty Ltd*, Transport Planning & Traffic Engineering Consultants, and aims to update the previously prepared traffic and transport study prepared by Bega Duo Designs (BDD Study)¹ for the SWP Project.

Previous Assessment

The previous BDD Study assessment concluded that the impacts during the operational phase of the SWF Project would be minimal provided that all recommended management strategies (outlined in the BDD Study report) to address the traffic impacts of the proposal are adopted. The pertinent transport-related management strategies included:

- Road and bridge improvements to allow for the passage of Project haulage vehicles.
- Upgrades to intersections to permit the turning of steerable trailers.
- Sufficient width of road pavement and trafficable shoulder to remain at most locations to permit an opposing vehicle to park off the road travel lanes.
- Road surfaces to be improved to permit safe passage in all weather conditions.
- Road signposting and guideposts to be upgraded to provide increased guidance for all road users.
- Implementation of a Construction Traffic Management Plan (CTMP) with flexibility to adapt to changing conditions.

¹ Bega Duo Designs "Traffic and Transport Study: Proposed Sapphire Wind Farm", February 2011

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- Regular monitoring of the traffic volumes, travel speeds and accidents.
- Commitment to carry out road repair works at short notice to ensure the continued safety of the access routes during the construction phase.

All of the above transport-related management strategies are still relevant and are proposed to be maintained as part of this modification. There is no intention to seek amendments to any of the previously approved Conditions of Consent, Statement of Commitments and other protocols related to traffic and transport management in the planning modification.

Proposed Modifications

Reduction in Wind Turbines

The modification proposes a significant reduction of wind turbines from 159 to approximately 109 wind turbines. The reduction in wind turbine numbers will result in a considerable decrease in traffic movements. This decrease would be a total decrease over the course of the construction period. Peak traffic movements during peak activity periods and daily traffic generation would remain the same as (or less than) the original proposal.

Increase in Wind Turbine Dimensions

A minor increase in wind turbine component dimensions will mean (potentially) additional tower sections per wind turbine (up to five) and an increased truck-trailer length to accommodate blades up to 68.5 m in length². The previous traffic management strategy to adjust intersections to permit the turning of a steerable trailer carrying blades 63 m long would therefore need to accommodate vehicles carrying blades up to 68.5 m long.

For the original assessment, the transport of tower sections required a total of approximately 650 oversize vehicle loads (four sections per turbine). Even with a potential additional tower section per wind turbine (total of five sections per tower) for the modification, the oversize vehicle delivery would reduce by approximately 100 loads over the course of the construction period due to the decrease in wind turbine numbers.

Project Layout & Access Routes

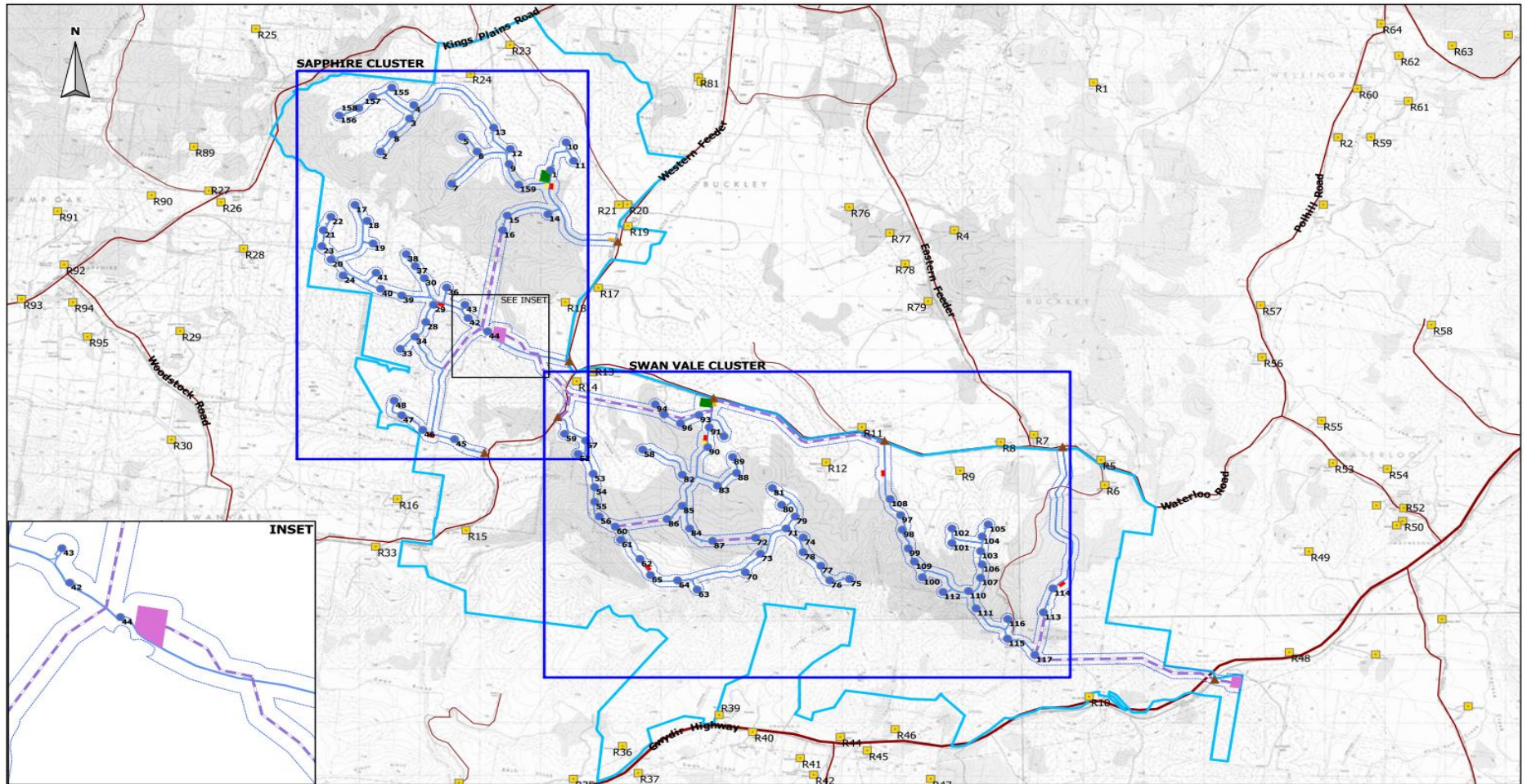
The modified Project layout would likely result in reduced access impacts due to the consolidation of the turbine locations into two clusters as follows (refer to the modified layout figure below):

- Sapphire Cluster consisting of 47 wind turbines.
- Swan Vale Cluster consisting of 62 wind turbines.

The previously assessed access points to the Project site were via Waterloo Road, Western Feeder Road and Polhill Road, making use of the connecting Council and State roads in the vicinity. There is proposed to be minimal change in this regard, although the proposed entry point to the site from Polhill Road will no longer be required. Therefore, the modified Project layout would also consolidate access points off the public road network thus reducing transport-related impacts during the construction period. The consolidated access points are proposed as follows (refer to the modified layout figure below):

- Three (3) off the southern side of Waterloo Road, at its western end.
- Four (4) off the western side of Western Feeder Road, in the vicinity of Waterloo Road.
- One (1) additional access point off the southern side of Gwydir Highway for access to a potential 132 kV substation (if required).

² Length of individual blade associated with a 140 m rotor diameter wind turbine.



LEGEND	
● Turbine (109)	■ Substation
— Access Tracks	■ Concrete Batching
▲ Project Access Points	■ Construction Compound
— Easement Options	■ Rock Crusher
	■ Site Office
 Development Corridor	 Project Site
	■ Building

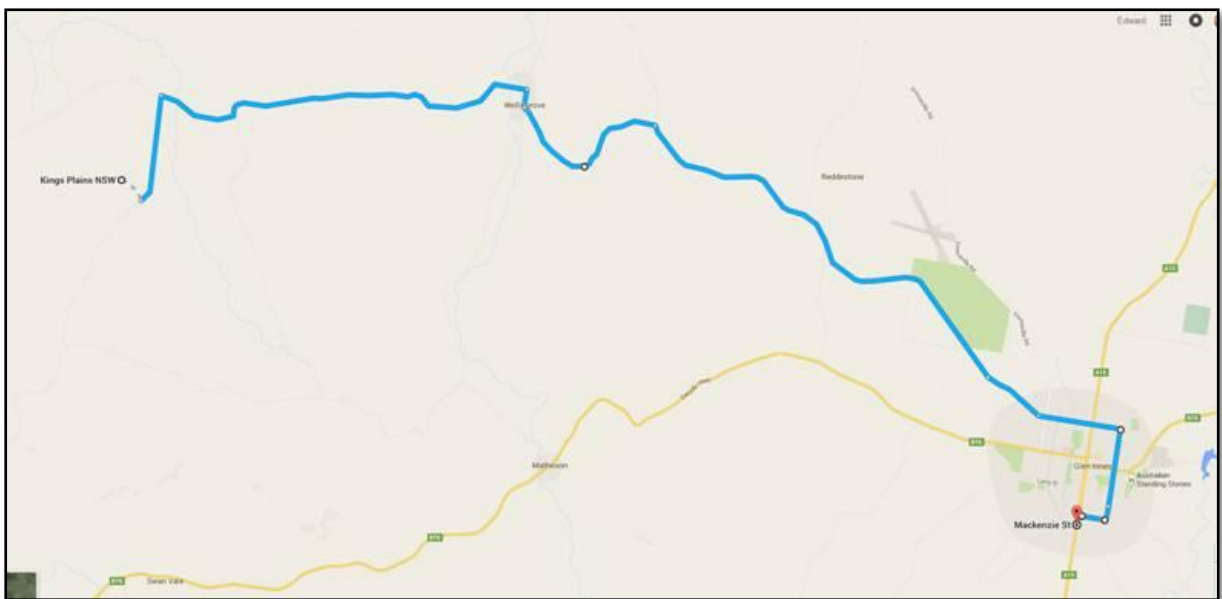


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OVERVIEW MAP					
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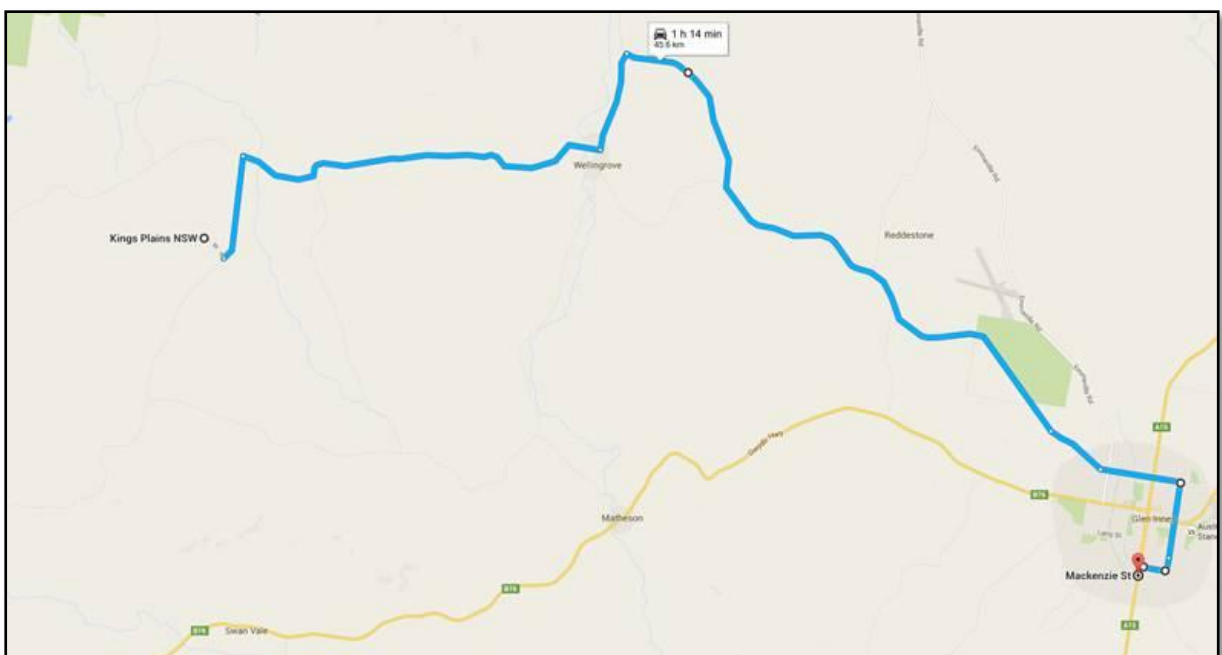
It is likely that the seaport of entry will be Newcastle and therefore, major components and other equipment will travel to Glen Innes via New England Highway. In relation to transport for the White Rock wind farm project (located immediately south of SWF), haulage contractors Rex Andrews have advised a preferred bypass route of the Glen Innes urban centre is via Heron, Hunter, Grafton and Martin Streets. Therefore, the access route from Newcastle to the north-western side of Glen Innes is proposed via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Heron Street, Hunter Street, Grafton Street and Martin Street.

From Martin Street, there are two (2) route options to the Project access points off Western Feeder Road; either via Strathbogie Road, Wellingrove Road, Polhill Road and Kings Plains Road (refer to *Route Option 1* below) or via Strathbogie Road, Polhill Road and Kings Plains Road (refer to *Route Option 2* below).

Route Option 1

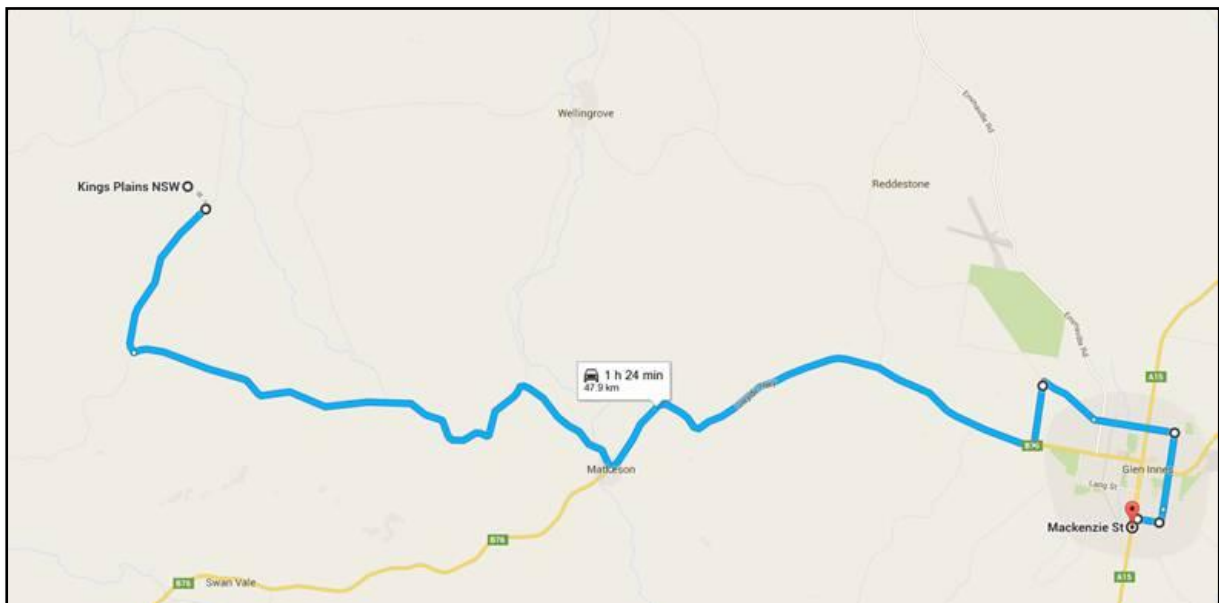


Route Option 2



For access from Martin Street to Waterloo Road and Gwydir Highway, the route proposed would travel via Tuttle Lane to Gwydir Highway and continue west (refer to *Route Option 3* below).

Route Option 3



Modification Assessment

Reduction in Wind Turbines

The proposed reduction in wind turbine numbers will result in a considerable decrease in traffic movements over the course of the construction period. Peak traffic movements during peak activity periods and daily traffic generation would remain the same as (or less than) the original proposal.

Increase in Wind Turbine Dimensions

An increased truck-trailer length carrying loads of up to 68.5 m long would be required to accommodate the proposed longer blades. The previous traffic management strategy to adjust intersections to permit the turning of a steerable trailer carrying blades 63 m long needs to accommodate vehicles carrying blades up to 68.5 m long.

Mitigation measures proposed in the previous (original) assessment (refer to *Section 5.5* of the BDD Study report) would be applicable and a preliminary desktop review indicates that the routes described above are feasible and that significant constraints should not be encountered.

Road furniture relocation and other required intersection amendments have already been approved at a number of locations and these would need to be confirmed and/or amended in detail by the designated haulage contractor, in addition to any other locations along the approved transport route. Component weights (loads) will remain essentially the same as per the existing approval and thus, any load issues on existing bridges and other structures would remain similar.

For the transport of tower sections, oversize vehicle delivery would reduce by approximately 100 loads over the course of the construction period due to the decrease in wind turbine numbers, even though there may potentially be an additional tower section per wind turbine (total of five sections per tower) for the modification. This would reduce traffic movement impacts over the course of the construction period.

Transport Access Routes

The modified Project layout would consolidate access points off the public road network by removing the need for an entry point to the site from Polhill Road, thus reducing transport-related impacts during the construction period. The previously assessed access points to the Project site via Waterloo Road and Western Feeder Road make use of the connecting Council and State roads in the vicinity.

Consultation with Councils

Prior to consolidating the SWF Project modification, the Proponent both met with and wrote to Glen Innes Severn Council and Inverell Shire Council in the period from November 2015 to January 2016 to advise of the Project modifications. Both Councils were advised that there would be no intention to seek amendments to the current Conditions of Consent or Statement of Commitments with respect to traffic and transport related controls in the modification. No concerns were raised by the Councils, and in-principle support was provided in regard to the road route clarifications.

Conclusions

With respect to potential amended traffic and transport impacts for the proposed modified Project, it is noted that there is significant spare capacity on the major and minor road networks that would serve the Project during construction and operation. Therefore, there would not be a capacity issue with respect to material deliveries, staff travel and transportation of wind turbine components. Indeed, with the reduced number of turbines proposed, the impacts on traffic operations and road safety would generally reduce in line with the reduction of wind turbine numbers.

For the transportation of the over-length blade components, there would need to be confirmation by the designated haulage contractor of the road network adequacy for slightly wider swept paths, due to the proposed longer blades. It is considered that the proposed transport access routes are feasible and that significant constraints should not be encountered.

The transport-related management strategies proposed in the previous (original) assessment (refer to BDD Study report) are relevant and are proposed to be maintained as part of this modification. There is no intention to seek amendments to any of the previously approved Conditions of Consent, Statement of Commitments and other protocols related to traffic and transport management in this planning modification.

It is considered that traffic and transport impacts would not be any greater than the previous (original) Project assessment and that over-size component and equipment transportation is considered to be feasible and relatively straight-forward.

If you have any queries with respect to the above, please do not hesitate to contact the undersigned.

Yours faithfully,



ALAN SAMSA

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