



Taralga Wind Farm

Principals Project Requirements

Annexure 10

Construction Environmental Management Plan

CBD Energy Limited
53 Cross Street
Double Bay
NSW 2028 Australia

Principals Project Requirements to Schedule 14 of EPC Contract



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Construction Environmental Management Plan

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30 January 2012

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Taralga Wind Farm

RE: CEMP Stage-based Approach Cover Letter

Dear Mr Glenn Snow,

I write with regard to the Construction Environmental Management Plan (CEMP) and the stage-based approach CBD wishes to conduct on the Taralga Wind Farm.

As described by the DIPNR "Guideline for the Preparation of Environmental Management Plans", CBD is looking to gain approval of the CEMP and Pre-Construction Compliance Report for a Stage-based approach described below, upon approval of all outstanding issues for each stage. The objective of this letter is to outline how CBD is staging the project and how this is to impact the approval of the CEMP and the Pre-Construction Compliance Report. Due to the amount of detail design inputs that a complete CEMP for the entire project requires, and with the current timeframe that the project faces, CBD wishes to submit the CEMP as a document for the entire project, but with detail defined in accordance with the stage-based approach.

As such, the objective is to submit the CEMP with all issues concerning Stage 1 addressed. CBD then commits to amending the CEMP to include the remaining detail for Stage 2, and submitting to DoP for approval before any works for the second stage commence.

Submission of the Pre-Construction Compliance Report is to follow the same logic. As such, most of the road upgrades required for construction of the wind farm (turbine component transport, main transformer transport, etc), will not be required in Stage 1 as the traffic generated in this stage will be no greater in mass or size than what currently travels on the access route. The Compliance report will therefore only contemplate conditions, licences and permits strictly necessary for the Stage 1 works.

As you are aware, we are facing very tight time constraints. A contract for Stage 1 works has been awarded and CBD is currently in negotiations with a contractor to provide a "turn-key" solution for the entire project.

Stage 1 will comprise the detailed design and construction of the access track from the intersection between Taralga Road and Old Showground Road, through the site up to the location of the main construction compound. The works done at this point are restricted to those necessary for the access tracks alone, which entails land clearing, levelling, laying of road base, as well as necessary upgrade works on the paved area of Old Showground Road. On the location of the Construction Compound, land

will be cleared for a hardstand area. While this happens, surveyors will also be on site doing site investigation work required for detailed design of Stage 2.

In this initial stage no turbines will be transported to site, nor will any trucks transport heavy loads to site be it cement or other trucks, with machinery confined to:

- generators;
- transport trucks;
- excavators;
- low loaders;
- mobile crushing and screening plant;
- dozers;
- rollers;
- tipper trucks; and
- scrapers.

Maps of the areas to be used in Stage 1 are provided below. Figure 2 sets out the overall area of the site that will be part of Stage 1, while Figure 3 provides a closer view with the areas that are not part of this stage shaded. Based on these figures, it is visible that no tree removal will be required at this point, and so the detail regarding the area of tree compensation will only come out in the detail design for the second phase. This will also apply to any modifications necessary to accommodate the Tableland Basalt Forest on locations other than the initial access track.

The second stage of the project will consist of the detailed design of the remaining access tracks and culverts, of the electrical reticulation, turbine hardstands, turbine foundations and site substation, followed by the construction of the wind farm components, as detailed in the CEMP. During this phase, detailed information on tree removal and compensation as well as permits and approvals necessary for the remainder of the project will be delivered prior to any works outside what has been described as Stage 1.

The timing of these phases is reflected in the figure below:



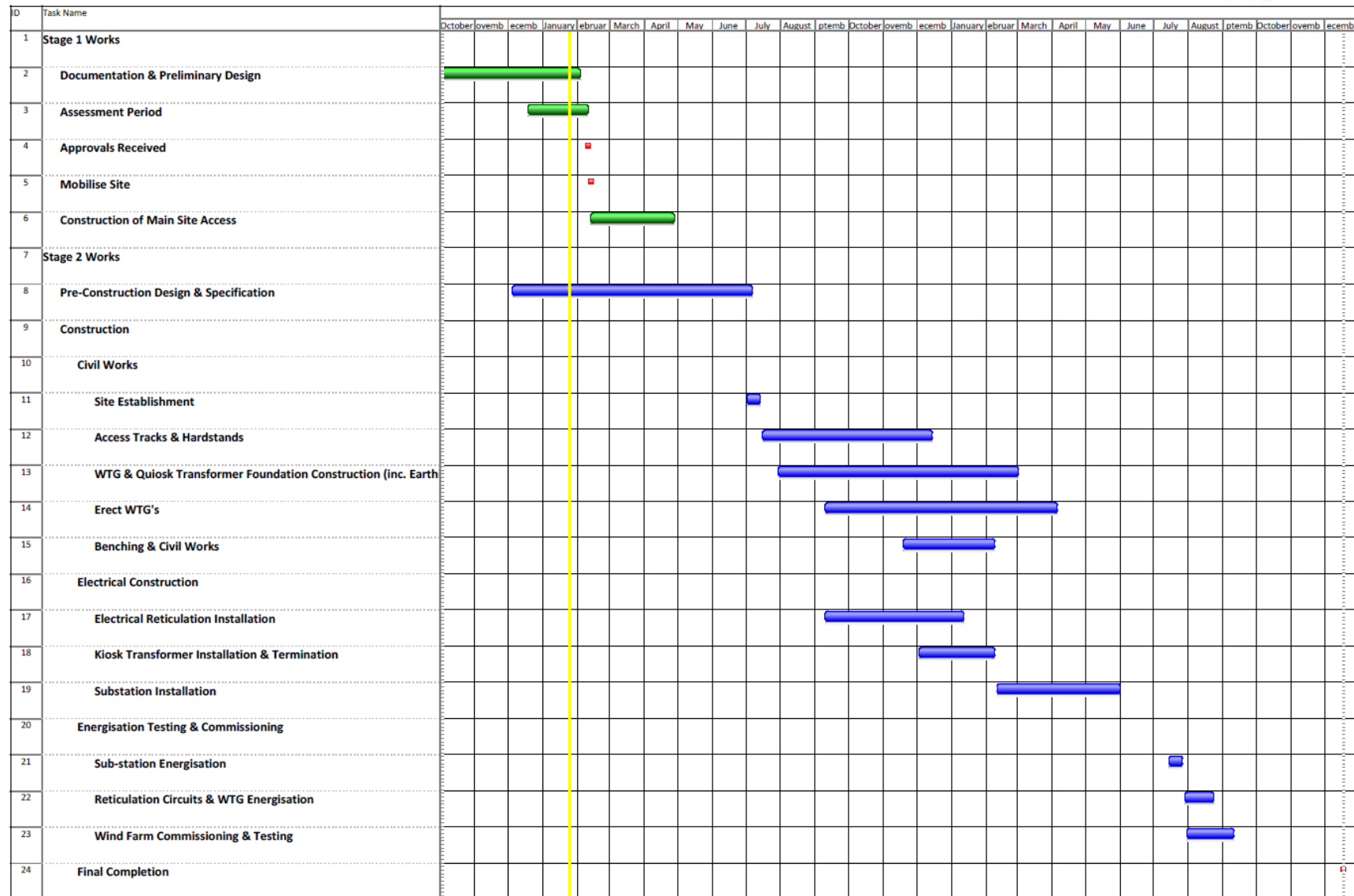


Figure 1 - Construction Stages Program

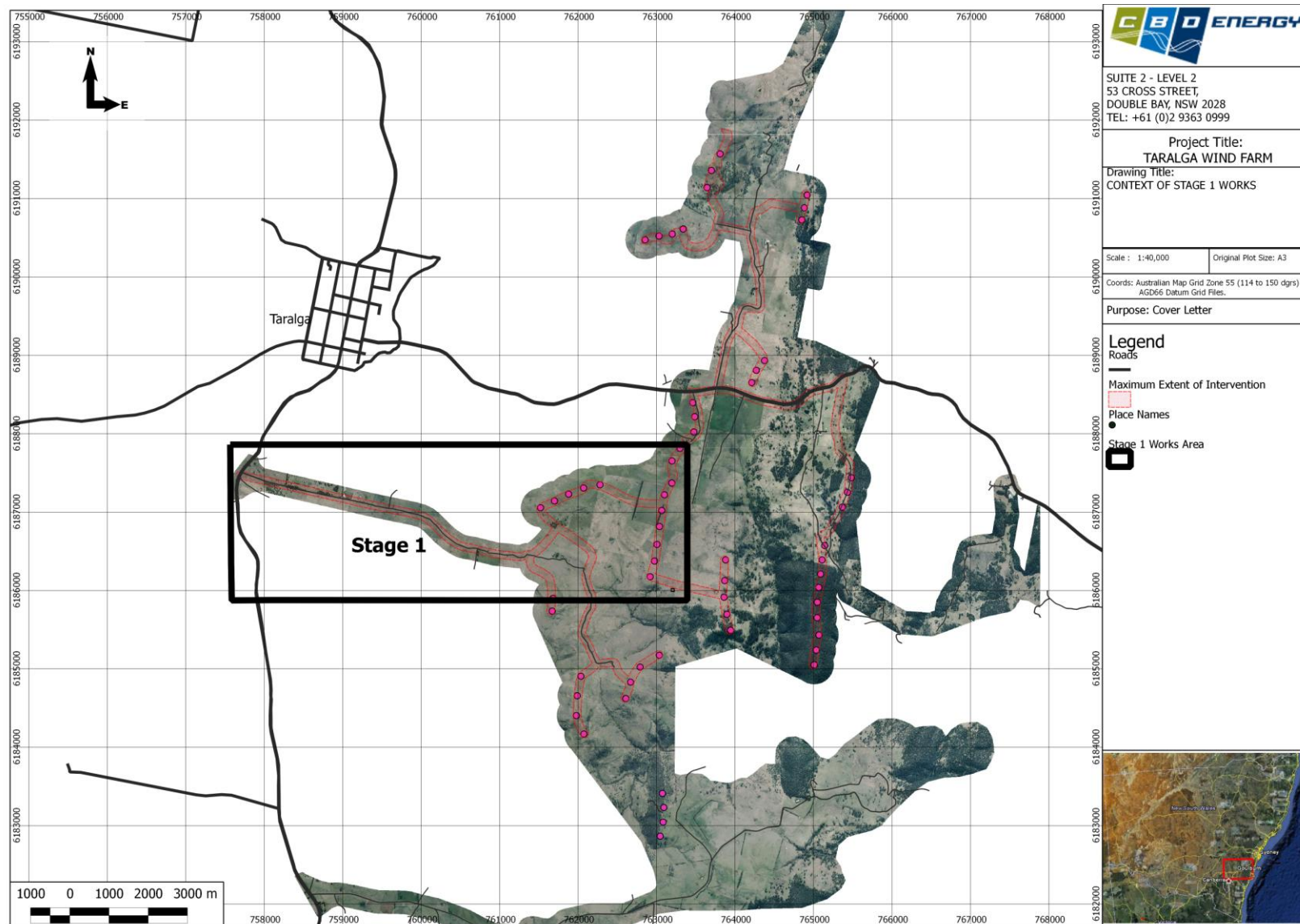


Figure 2 - Context of Stage 1 works

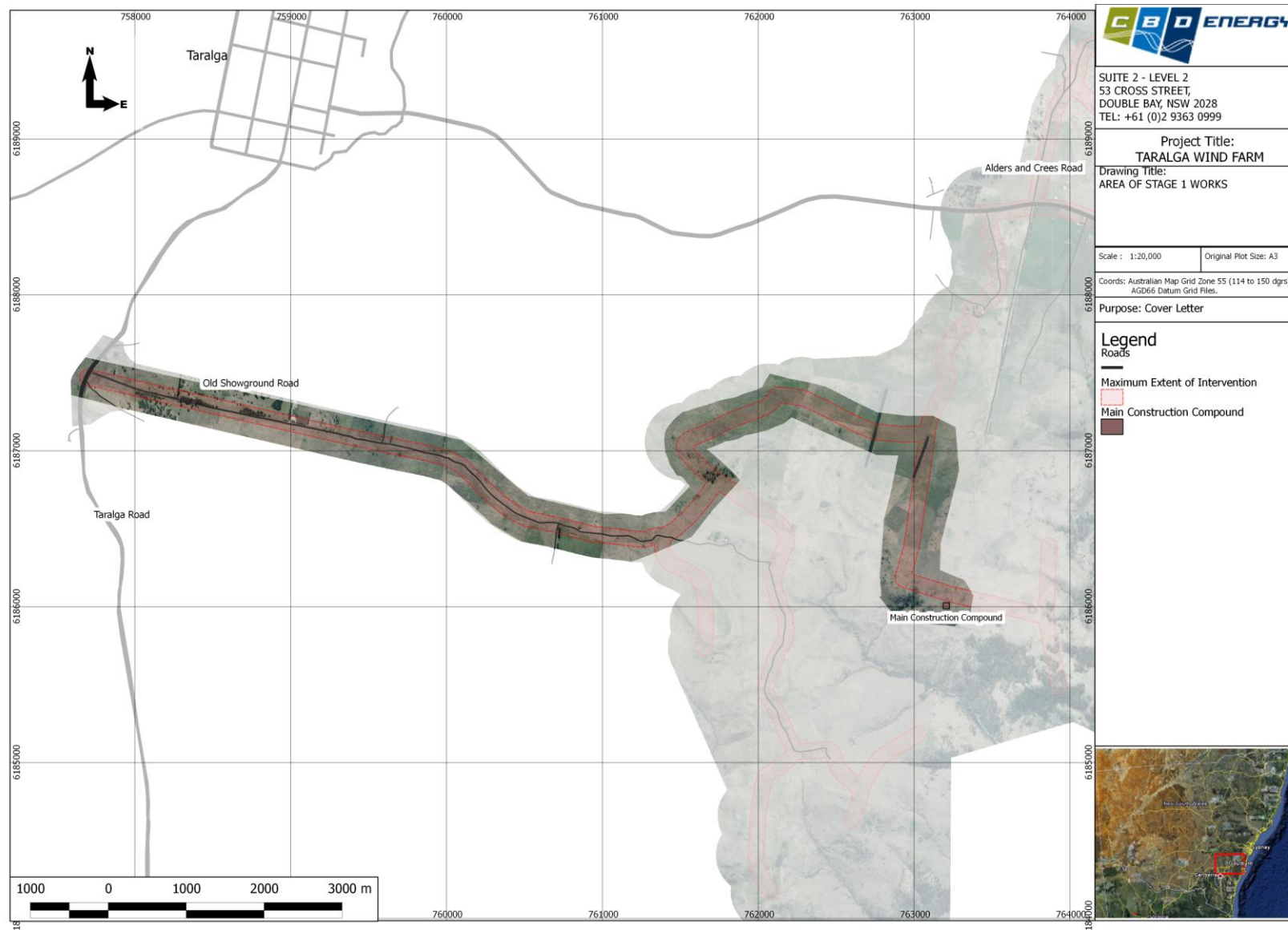


Figure 3 - Area of Stage 1 works

As the objective is to obtain approval for the CEMP and Pre-Construction Compliance Report for Stage 1 only, we envision the conditions applicable would be reduced in scope reflecting the decrease of works involved.

The tables below reflect CBD's views of the controls necessary for this stage. Table 1 reflects the requirements on the CEMP:

Table 1 - Conditions applicable to CEMP

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
Construction Noise and Vibration Management Sub Plan			
38	<p>As part of the CEMP for the development, the Applicant must prepare and implement a Construction Noise and Vibration Management Sub Plan. The Plan must include, but not be limited to:</p> <ul style="list-style-type: none"> (a) details of construction activities, including timing, duration and predicted noise levels (including likely consistency with the EPA's Environmental Noise Control Manual goals); (b) best management practices to minimise noise resulting from construction activities; (c) reasonable and feasible noise mitigation measures including consideration of the need for structural measures such as acoustic shielding; (d) compliance monitoring methods program; (e) examination of construction traffic noise impacts to dwellings situated close to local roads east of Taralga including reasonable and feasible methods of mitigating any adverse impacts; (f) community consultation and a community information program to inform residents when they are likely to [sic, be] affected by construction noise. This must include consideration of traffic noise impacts. In particular, residences adjoining site access routes east of Taralga Road must be notified in writing at least two weeks in advance of concrete pour activities and the details of such activities; 	Limited to Activities to do with the main access track to the main site compound	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
55	<p>The overpressure level from blasting operations associated with the development must not:</p> <ul style="list-style-type: none"> (a) exceed 115dB (Lin Peak) for more than five per cent of the total number of blasts over the 	Limited to Activities to do with the main access track to the main site compound	Detailed plans for remainder of the site to be prepared and approved before Stage 2

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<p>period of any relevant DEC licence; and</p> <p>(b) exceed 120dB (Lin Peak) at any time.</p> <p>The above values apply when the measurements are performed with equipment of a lower cut-off frequency of 2Hz or less. If the instrumentation has a higher cut-off frequency, then a correction of 5dB should be added to the measured value. Equipment with a lower cut-off frequency exceeding 10 Hz should not be used for the purpose of measuring overpressure.</p>		works begin.
56	<p>Ground vibration (peak vector sum) from the blasting operations associated with the development must not:</p> <p>(a) exceed 5mm/s for more than five percent of the total number of blasts during construction; and</p> <p>(b) exceed 10 mm/s at any time.</p> <p>when measured at any point within 1 metre of any affected residential boundary or any other noise sensitive location such as a school or hospital.</p>	Limited to Activities to do with the main access track to the main site compound	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
57	<p>Blasting operations associated with the development may only take place:</p> <p>(a) between 9.00am and 5.00pm Monday to Friday;</p> <p>(b) between 9.00am to 12.00pm Saturday; and</p> <p>(c) at such other times or frequency as may be approved by the DEC.</p>	Limited to Activities to do with the main access track to the main site compound	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
Construction Traffic Management Plan			
58	As part of the CEMP, a Construction Traffic Management Plan must be prepared in consultation with Upper Lachlan Council, the RTA and NSW Police, to manage traffic related issues associated with the	Limited to traffic of size and weight equivalent to that	Detailed plans for remainder of the site to be prepared and

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<p>development during Construction. The Plan must identify:</p> <ul style="list-style-type: none"> (a) designated transport routes for heavy vehicles to the site associated with the development; (b) heavy vehicle movements at the junction of Lagoon Street (MR676) and Union Street (MR256), including demonstration that junction accommodates turning movements in accordance with AUSTROADS standards; (c) details of procedures to minimise traffic disruption; (d) procedures to minimise disturbance from traffic noise, particularly during night periods; (e) procedures to manage construction traffic to ensure the safety of: <ul style="list-style-type: none"> i. livestock and limit disruption to livestock movement; ii. school children and limit disruption to school bus timetables; (f) a community informatin program to inform the community of traffic disruptions resulting from the construction program; and (g) details of complaints mangement procedures for traffic impacts. 	currently circulating. Lagoon and Union Street junction does not require changes.	approved before Stage 2 works begin.
59	Should any vehicle accessing the site during Construction or Operation of the development exceed the road limit for length or mass on any road, the applicant must apply for Specific Oversized/Over Mass Permit from the RTA.	Vehicles will not exceed length or mass limits on Stage 1	Permit to be obtained before any Oversized/Overmass vehicles circulate
61	A Section 138 Approval from Council with RTA concurrence within the Classified Road Reserve must be obtained.	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
62	All large construction vehicles associated with the development must only utilise the transport routes identified in Figure 5.16 of the EIS.	Applicable to all stages	Applicable to all stages
Construction Flora and Fauna Management Sub Plan			
85	<p>A Construction Flora and Fauna Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Department and must include but not be limited to:</p> <ul style="list-style-type: none"> (a) detailed plans identifying: <ul style="list-style-type: none"> i. terrestrial vegetation communities; important flora and fauna habitat areas; habitat trees, locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the development where this contains important habitat areas and/or threatened species, populations or ecological communities; (b) methods to manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the development. These must include: <ul style="list-style-type: none"> i. terrestrial vegetation communities; important flora and fauna habitat areas; habitat trees, locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the development where this contains important habitat areas and/or threatened species, populations or ecological communities; (c) detailed plans identifying: <ul style="list-style-type: none"> i. terrestrial vegetation communities; important flora and fauna habitat areas; habitat trees, locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the development where this contains important habitat areas and/or 	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<p>threatened species, populations or ecological communities;</p> <p>ii. methods to protect vegetation both retained within, and also adjoining, the development from damage during construction;</p> <p>iii. methods to protect rocky outcrops and other potential reptile habitat both retained within, and also adjoining, turbines and ancillary development from damage during construction;</p> <p>iv. a habitat tree management program including fauna recovery procedures and habitat maintenance (e.g. relocating hollows or installing nesting boxes); and</p> <p>v. performance criteria against which to measure the success of the methods;</p> <p>(d) details of how structures associated with the development will be designed to reduce the risk of bird and bat strike;</p> <p>(e) rehabilitation details including:</p> <p>i. identification of locally native species to be used in rehabilitation and landscaping works, including flora species suitable as a food resource for threatened fauna species;</p> <p>ii. the source of all seed or tube stock to be used in rehabilitation and landscaping works including the identification of seed sources within the site. Seed of locally native species should be collected before construction commences; and</p> <p>iii. methods to re-use topsoil (and where relevant, subsoils), surface rocks and cleared vegetation;</p> <p>(f) a Weed Management Strategy including:</p>		

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<ul style="list-style-type: none"> i. identification of weeds within the site and adjoining areas; ii. weed eradication methods and protocols for the use of herbicides; iii. strategies to control the spread of weeds during construction, including ensuring that machinery brought on site is weed and pathogen free; <p>(g) a program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures against the identified performance criteria. Management methods must be reviewed and revised where found to be ineffective; and</p> <p>a program to ensure that all staff and contractors associated with the development are aware of the location of all protected areas.</p>		
90A	Turbines at row 6 and any turbines located within the vicinity of any Tableland Basalt Forest EEC that have the potential to impact upon this community, must be constructed using the modified technique described in section 2.5.5 of the EIS to minimise disturbance or damage to vegetation. Details of the modified technique are to be described in the CEMP.		
Bird and Bat Adaptive Management Program			
93	<p>Prior to the commencement of Construction, the Applicant must prepare and submit for the approval of the Director-General, a Bird and Bat Adaptive Management Program must be prepared and undertaken, which takes account of bird/bat monitoring methods identified in the current editions of <i>AusWEA Wind Farms and Birds: Interim Standards for Risk Assessment (July 2005)</i>. The Program must be undertaken by a suitably qualified expert, approved by the Director-General.</p> <p>The Program must incorporate Monitoring, and a Decision Matrix that clearly sets out how the Applicant will respond to the outcomes of monitoring. It must:</p> <ul style="list-style-type: none"> (a) incorporate an ongoing role for the suitably qualified expert; (b) set out monitoring requirements. The requirements must account for natural and human 	Applicable to this stage	Applicable to this stage

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<p>changes to the surrounding environment that might influence bird and/or bat behaviour such as changes in land use practices, and significant changes in water levels in nearby water bodies;</p> <p>(c) incorporate a decision making framework that sets out specific actions and when it may be required to reduce identified impacts on birds and bats;</p> <p>(d) set out available mitigation measures;</p> <p>(e) incorporate reporting requirements on the outcomes of monitoring, including details on all mortalities, on the application of the decision making framework, the need for mitigation measures, progress with implementation of such measures, and their success and details of all payments to WIRES (as required under condition 92) that have been made during each reporting period. Reports must be prepared on an annual basis, from the commencement of operation, and must be prepared within 2 months of the end of the reporting period and be provided to the Director-General. The Director-General may vary the reporting requirement or period by notice in writing to the Applicant; and</p> <p>(f) identify any necessary mitigation measures and implementation strategy including, but not limited to, those referred in condition 91.</p> <p>The Applicant is required to implement reasonable and feasible measures, to the satisfaction of the Director-General, where the need for further action is identified through the Bird and Bat Adaptive Management Program.</p>		
Riparian Vegetation Management Sub Plan			
95	<p>As part of the CEMP, a Riparian Vegetation Management Sub Plan must be prepared and developed in consultation with DNR. This Sub Plan is to outline details of the protected riparian zones(s) including but not limited to:</p> <p>(a) requirements of the Permit under Part 3A of the Rivers & Foreshores Improvement Act,</p>	Extent of revegetation in (e) only calculated in Stage 2 as Stage 1 will not require any clearing	Extent of revegetation in (e) to be calculated before any Stage 2 works

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	<p>1948;</p> <p>(NOTE: This Act has been replaced by the water management Act 2000)</p> <p>(b) drawings demonstrating the locations and extent of the zone(s), remnant vegetation, and wherer areas will be revegetated/regenerated;</p> <p>(c) plant species list to be utilised for revegetation; and</p> <p>(d) maintenance and performance monitoring.</p>		
Soil and Water Management Sub Plan			
96	<p>As part of the CEMP and OEMP, Soil and Water Management Sub Plans must be prepared in consultation with the relevant government agencies. The Sub Plans must:</p> <p>(a) be prepared by a person with the experience, skills and training in the development and implementation of such plans;</p> <p>(b) where relevant, be in accordance with Landcom's "Managing Urban Stormwater" (2004), and other relevant guidelines including the RTA's "Guidelines for the Control of Erosion and Sedimentation in Roadworks" and the Department's "Constructed Wetlands Manual";</p> <p>(c) identify the activities that could cause soil erosion or discharge sediment or water pollutants from the site associated with the development;</p> <p>(d) describe management methods to minimise soil erosion or discharge of sediment or water pollutants from the site associated with the development including strategies to minimise the area of bare surfaces and to achieve nil or minimal harm to aquatic and riparian environments;</p> <p>(e) describe the location and capacity of erosion and sediment control measures;</p>	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.

Planning Condition	Environmental Management Controls	Stage 1	Stage 2
Stage1: Construction of Main Access Track to Main Construction Compound			
Construction Environmental Management Plan			
	(f) identify the timing and conditions under which controls will be decommissioned; (g) include contingency plans to be implemented for events such as fuel spills; and (h) identify how the effectiveness of the sediment and erosion control system will be monitored, reviewed and updated.		
98	Design and construction of any crossings over protected waters and riparian zones must be consistent with the Department's <i>Draft Guidelines – Watercourse Crossing Design & Construction</i> and NSW Fisheries' <i>Why do Fish need to cross the Road – Fish Passage requirements for Waterway Crossings (2003)</i> and <i>Policy Guidelines Fish Friendly Waterway Crossings (2004)</i> .	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
99	Except as may be expressly provided by a licence under the POEO Act in relation to the development, the Applicant must comply with Section 120 of the POEO Act (prohibition of the pollution of waters), which prohibits pollution of waters.	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
Bush Fire Fighting			
105	As part of CEMP, the Applicant must provide details of measures to prevent fires igniting during construction activities. These measures must include, but not be limited to: (a) prohibition of work involving risk of ignition during total fire bans; (b) availability of fire suppression equipment; and storage and maintenance of fuels and other flammable materials.	Applicable to all stages	Applicable to all stages

Table 2 reflects CBD's views on the requirements for the Pre-Construction Compliance Report. Before any Stage 2 works are undertaken, a second Pre-Construction Compliance Report will be submitted demonstrating compliance with all pre-construction activities:

Table 2 - Conditions applicable to Pre-Construction Compliance Report

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
13	<p>The Applicant must submit a Pre-Construction Compliance Report to the Director-General at least two weeks prior to the commencement of construction (or within a time agreed to by the Director-General) certifying, to the satisfaction of the Director-General, that it has complied with all conditions of this consent applicable prior to construction. The Pre-Construction Compliance Report must include:</p> <ul style="list-style-type: none"> a) details of how the conditions of consent required to be addressed prior to construction have been complied with; b) details of when each relevant condition of consent was complied with, including submission dates of any required report and/or approval dates; and c) details of any approvals or licences required to be issued by Relevant Government Agencies prior to the commencement of construction. 	Applicable only to activities and locations undertaken in Stage 1.	Will have all Pre-Construction related conditions approved before any Stage 2 works commence.
18	<p>Prior to the commencement of construction associated with the development, the Applicant must erect at least one sign in a prominent position on the site, including in the vicinity of turbine 43. The sign(s) must indicate:</p> <ul style="list-style-type: none"> a) the name, address and telephone number of the Principal Certifying Authority; b) the name of the person in charge of the construction site and telephone number at which the person may be contacted outside working hours; and c) a statement that unauthorised entry to the construction site is prohibited. <p>The sign(s) must be maintained for the duration of construction works, and must be removed as soon as practicable after the conclusion of the construction works,</p>	Applicable to all stages	Applicable to all stages

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
Construction Environmental Management Plan			
25	<p>The applicant must prepare and implement a Construction Environmental Management Plan (CEMP) in accordance with the Department's publication entitled <i>Guideline for the Preparation of Environmental Management Plans</i> (2004) or its latest revision. The Applicant must ensure that the mitigation and monitoring measures identified in the EIS and in these conditions of consent are incorporated into the CEMP.</p> <p>The CEMP must be prepared in consultation with the Relevant Government Agencies and certified by the Environmental Representative, required under condition 27, as being in accordance with the conditions of consent.</p> <p>The CEMP must be submitted for the approval of the Director-General at least one month prior to the commencement of Construction, or within such a period otherwise agreed by the Director-General. Site preparation and construction associated with the development must not commence until written approval for the CEMP has been received from the Director-General. Upon receipt of the Director-General's approval, the Applicant must supply a copy of the OEMP [sic, CEMP] to the DEC and Council as soon as practicable.</p> <p>The CEMP is to be made Publicly Available following its approval.</p>	CEMP prepared with details regarding Stage 1 complete.	CEMP prepared with remaining details complete before works begin in Stage 2
Environmental Representative			
27	<p>Prior to the commencement of Construction, and in consultation with Council, the Applicant must nominate a suitably qualified and experienced Environmental Representative(s) whose appointment requires the approval of the Director-General. The Applicant must employ the Environmental Representative(s) on a full-time basis, or as otherwise agreed by the Director-General, throughout the life of the development. The proponent must make the identity of the approved Environmental Representative publicly available. The Environmental Representative must be:</p> <ul style="list-style-type: none"> (a) The primary contact point in relation to the environmental performance of the development; (b) Responsible for all management plans and monitoring programs required under this consent; (c) Responsible for considering and advising on matters specified in the conditions of this 	Applicable	Applicable

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
	<p>consent, and all other licences and approvals related to the environmental performance and impacts of the development;</p> <p>(d) Responsible for receiving and responding to complaints in accordance with this consent; and</p> <p>(e) Given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.</p> <p>The Applicant must obtain approval from the Director-General for any changes to the appointment of the Environmental representative that may occur from time to time over the life of the development. Any changes to the appointment or responsibilities of the Environmental Representative approved by the Director General are to be made publicly available.</p>		
Complaints Management System			
28	<p>Prior to the commencement of construction of the development, the Applicant must ensure that the following are available for the community for the life of the development:</p> <p>a) a telephone number on which complaints about operations associated with the development on the site may be registered;</p> <p>b) a postal address to which written complaints may be sent; and</p> <p>c) an email address to which electronic complaints may be transmitted.</p> <p>The telephone number, the postal address and the email address must be advertised in a newspaper circulating in the locality prior to the commencement of construction and at quarterly intervals thereafter until construction is completed. This information must also be published on the Applicant's internet site, should one exist, and on a permanent notice board at an appropriately visible location in Taralga Village.</p>	Applicable to all stages	Applicable to all stages
Community Information Plan			

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
30	<p>A Community Information Plan (CIP) must be prepared prior to the commencement of Construction. The CIP must set out the community communications and consultation processes to be undertaken during the construction period of the development. The Plan must include but not be limited to:</p> <p>procedures to inform the local community of planned investigations and construction activities, including planned construction activities outside standard construction hours;</p> <ul style="list-style-type: none"> a) procedures to inform the relevant community of construction traffic routes and any likely disruptions to traffic flows and amenity impacts; b) procedures to consult with local landowners in regards to construction traffic to ensure safety of livestock and limited disruption to livestock movements; c) procedures to inform and consult with impacted residences subject to the Off-Site Landscape Plan; and d) procedures to notify relevant properties of the processes available to review potential impacts on television and radio transmission. <p>The CIP must be made publicly available prior to commencement of construction</p>	Applicable to all stages	Applicable to all stages
Background Monitoring Report			
41	<p>Prior to the commencement of construction, the Applicant must implement a monitoring program to determine the pre-existing background noise level (LA90, 10 minute) at each relevant receiver location specified in condition 42. The monitoring program is to be undertaken in accordance with the requirements of the SA Guidelines.</p> <p>A report prepared by a qualified acoustic consultant, who is to receive the prior approval of the Director-General, must be submitted to the Director-General and EPA and contain the results of the survey and analysis.</p>	Applicable to all stages	Applicable to all stages

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
Road Occupancy			
63	The Applicant must apply for a Road Occupancy Licence (ROL) from the RTA Traffic Operations Unit (TOU) before commencing work within the classified road reserve. Should the Traffic Management Plan, identified in condition 58, require a reduction of the speed limit, a Direction to Restrict must be obtained from the TOU at least two weeks prior to using the road reserve.	Limited to the areas of intervention designated in Figure 3.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
64	Prior to the commencement of Construction, the Applicant must undertake a 'before' road dilapidation report utilising the ARRB (Australian Road Research Board Limited) 'laser car', to assess the existing condition of Taralga Road (MR256), Bannaby Road and Old Showground Road. The Report is required for the respective lengths of road that are to be utilised for heavy vehicle access. It must be undertaken in consultation with Council's Director of Works.	Stage 1 does not include Bannaby Road.	To be undertaken on Banaby Road before Stage 2 works commence
Road Upgrades			
67	in the event that the turning movements of heavy vehicles at the junction of Lagoon Street (MR676) and Union Street (MR256) cannot be achieved, the Applicant must upgrade the junction in accordance with the RTA Road Design Guide.	Stage 1 is limited to traffic of size and weight equivalent to that currently circulating. Lagoon and Union Street junction does not require changes.	Detailed plans for remainder of the site to be prepared and approved before Stage 2 works begin.
68	Prior to the commencement of any transport to the site associated with the development from Taralga Road involving heavy vehicles, the Applicant must construct site access points along Taralga Road to a minimum 'BAL', 'BAR' treatment, to the satisfaction of Council and RTA. Detailed drawings of the access points along Taralga Road must be approved by the RTA prior to the commencement of these works.	Vehicles will not exceed length or mass limits on Stage 1	Permit to be obtained before any Oversized/Overmass vehicles circulate
69	Prior to heavy vehicle movements to and from the site associated with the development, the Applicant must complete the following works along the designated route, to the satisfaction of Council: (a) a condition survey of all bridges and drainage structures along the proposed access roads for	Vehicles will not exceed length or mass limits on Stage 1, and so will not require reinforcements at this time.	Works to be completed before any Oversized/Overmass vehicles circulate in Stage 2

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
	<p>construction heavy vehicles by a competent and qualified person, to determine the adequacy of the bridges and drainage structures to withstand the proposed loads;</p> <p>(b) implement a program of works as necessary to reinforce and strengthen bridges and drainage structures identified in (a) above to permit heavy vehicles to pass without causing damage;</p> <p>(c) construction of site access points and turning bay along the Bannaby Road with a minimum of 180m stopping sight distance for approaching traffic;</p> <p>(d) construction of site access points and turning bay along the Alders and Crees Road with a minimum of 160m stopping sight distance for approaching traffic;</p> <p>(e) road improvements and realignment of roads as identified by Council to permit the safe passage of over length and overweight vehicles;</p> <p>(f) strengthening of a major twin cell culvert at Bannaby Road (chainage 0.87km) by additional temporary supports for the duration of the construction period, if this culvert is identified to be on the route used by Construction vehicles.</p>		
70	All roadwork is to be designed and constructed to Upper Lachlan Council's version of AUS-SPEC Design and Construction specification or alternative specifications that meet the minimum requirements of AUS-SPEC. Detailed drawings of the access points along Bannaby Road must be approved by the Council prior to the commencement of these road works.	Vehicles will not exceed length or mass limits on Stage 1, and so will not require reinforcements at this time.	Works to be completed before any Oversized/Overmass vehicles circulate in Stage 2
71	Prior to the commencement of Construction, site road work design and specifications shall be completed and certified by an appropriately qualified person that all roads within the site associated with the development are of an acceptable standard for traffic generating requirements of the development.	Vehicles will not exceed length or mass limits on Stage 1, and so will not require reinforcements at this time.	Works to be completed before any Oversized/Overmass vehicles circulate in Stage 2
Flora and Fauna			

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
86	<p>The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and loss of suitable habitat for Natural Temperate Grassland and the orchid <i>Diurus aequalis</i>.</p> <p>To ensure compliance with this condition, the applicant must engage a suitably qualified person(s) who is to receive the prior approval of the Director-General, to undertake a detailed botanical survey, prior to the commencement of construction, of:</p> <ul style="list-style-type: none"> • Turbine rows 4, 5, 6, 7 and 10; and • All access roads requiring construction or upgrading during the appropriate season (that is, November to December) <p>Where Natural Temperate Grassland or <i>Diurus aequalis</i> is found to occur, either on or adjacent to these locations, the area must be fenced during construction and that component of the development (including construction components) must be relocated at least 50 metres from the grassland or orchid population but no more than 250 metres from the original location of that component.</p> <p>A report detailing the results of this survey, including details of any proposed relocation of infrastructure associated with the development is to be submitted to the Director-General within one month of completion of completion of the survey. Construction must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated infrastructure (inclusive of any construction on related components).</p> <p>Note: The Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory Endangered Ecological Community “Natural temperate Grassland” is defined under the Commonwealth Environmental Protection and Biodiversity Conservation Act, 1999. The location of the turbine rows and the access tracks is as described in the EIS.</p> <p>Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the grant of consent, modification of the consent or further consent under the Act will be required.</p>	Limited to the areas of intervention designated in Figure 3. Excludes Turbine rows 4, 5, 6, 7 and 10.	Proposed relocation of infrastructure to be detailed before Stage 2 works commence.
	The Applicant must design, construct, operate and maintain the development in a manner that either avoids damage to and/or loss of the Tablelands Basalt Forest Endangered Ecological Community or provides suitable compensation for its loss.	Limited to the areas of intervention designated in Figure 3. Excludes Turbine rows	Proposed relocation of infrastructure and habitat compensation to be detailed before Stage

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
	<p>To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) who must receive prior approval of the Director-General, to undertake a detailed survey of:</p> <ul style="list-style-type: none"> all turbine rows other than row 8; and all access roads required during construction or upgrading, <p>to determine the presence of this community so as to enable the Applicant, in consultation with the DEC and the Department, to:</p> <p>(a) relocate that component of the development (including construction components) at least 50 metres from important stands of this community, but no more than 250 metres from the original location of that component; or</p> <p>(b) provide suitable compensation for the loss of the community where the Applicant is unable to avoid damage to and/or loss of the community.</p> <p>Construction of the relevant component(s) of the development must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated development component or compensation works, as relevant.</p> <p>Note: The Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions Endangered Ecological Community "Tableland Basalt Forest" is defined under the Threatened Species Conservation Act, 1995.</p>	4, 5, 6, 7 and 10.	2 works commence.
87	<p>The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and/ or loss of suitable habitat for the Striped Legless Lizard and the Grassland Earless Dragon. To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) that is to receive the prior approval of the Department, to undertake a detailed survey of the site to determine the presence of such suitable habitat, so as to enable the Applicant, in consultation with the DEC and the Department, to locate infrastructure (including turbines, underground cables and power poles) and other elements associated with the development (such</p>	Limited to the areas of intervention designated in Figure 3.	Proposed relocation of infrastructure to be detailed before Stage 2 works commence.

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
	<p>as access tracks and construction lay-down areas) at least 50 metres from these areas, but no more than 250 metres from the original location of the infrastructure or element.</p> <p>Note: Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the on the grant of consent, modification of the consent or further consent under the Act will be required."</p>		
88	Notwithstanding condition 87, where the Applicant is unable to avoid damage to and/ or loss of such suitable habitat in respect of the Striped Legless Lizard, the applicant may seek the approval of the Director General to damage and/ or destroy this habitat however, this loss must be suitably compensated. Any such compensatory works are to be implemented, in consultation with and to the satisfaction of the Department and the DEC.	Limited to the areas of intervention designated in Figure 3.	Proposed relocation of infrastructure to be detailed before Stage 2 works commence.
89	Prior to the commencement of construction, all vegetation and fauna habitat to be protected under this consent is to be fenced off with clearly visible, durable and appropriately sign posted exclusion fencing to prevent uncontrolled or inadvertent access by vehicles or construction personnel.	Limited to the areas of intervention designated in Figure 3.	Proposed relocation of infrastructure to detailed before Stage 2 works commence.
90	<p>To compensate for the loss of the existing forest/ woodland resulting from the construction of the wind turbine generators and access tracks on Row 6, the Applicant must reforest a similar-sized area to that which is lost, at a location not immediately adjacent to any turbine.</p> <p>To ensure compliance with this condition, the Applicant must prepare and submit for the approval of the Director General, details of the habitat compensation plan. Construction activities at Row 6 must not commence until the Director-General has approved the plan. Following approval by the Director-General, the Applicant must implement the compensatory measures within such period as the Director-General may direct.</p>	Row 6 not constructed during Stage 1	Proposed relocation of infrastructure and habitat compensation to be detailed before Stage 2 works commence.

Planning Condition	Environmental Management Controls	Person Responsible	Reference / Notes
Stage 1: Construction of Main Access Track to Main Construction Compound			
Pre-Construction Compliance Report			
111	The human wastewater management system is to be designed in consultation with the SCA, in accordance with the principles contained within the guidelines <i>On-site Sewage Management for Single Households</i> , and the <i>AS/NZS 1547-2000 On-site Domestic Wastewater Management</i> . The system, including any effluent management areas, is to be located at least 100 metres from watercourses and 40 metres from drainage depressions.	Will not be designed for Stage 1	Will be included in Stage 2 design
112	AAA-rated water conservation devices are to be installed in the site control room/facilities building to minimise the volume of wastewater produced.	Will not be designed for Stage 1	Will be included in Stage 2 design
113	All stormwater is to be diverted away from any effluent management area associated with the development.	Will not be designed for Stage 1	Will be included in Stage 2 design
Decommissioning			
114	Prior to the commencement of Construction, the Applicant must provide written evidence to the satisfaction of the Director-General, that the lease agreements with the site landowners have adequate provisions to require that decommissioning occurs in accordance with this Consent.	Applies to all Stages	Applies to all Stages

Should you have any issues with the above please contact me in person to discuss.

Yours sincerely



30/01/2012

Pedro Vozzone
Renewable Energy Engineer – Taralga
CBD Energy

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0.0 DOCUMENT CONTROL

0.1 *Revision Status*

The Issue Number of the Construction Environmental Management Plan (CEMP) should be stated in the Status Table below and on each page of the CEMP.

Table 1: Environmental Representative Review

Authorised Environmental Representative Certification			
Issue No.	Date	Prepared By	Reviewed By Environmental Representative Molino Stewart Pty Ltd Name & Signature
01	November 2011	Pedro Vozone	Reviewed by Mr Richard Mason
02	December 2011	Pedro Vozone	Reviewed by Mr Richard Mason
03	January 2012	Jamie Lind	Reviewed by Mr Richard Mason
04	February 2012	Pedro Vozone	Reviewed by Mr Richard Mason



0.2 Environmental Representative Certification



Thursday, 16 February 2012

Subject: Taralga Wind Farm Construction Environmental Management Plan (CEMP)

I certify that this CEMP and all associated sub-plans meet all the requirements to meet condition of consent number 25. This condition contained in the formal approval of the Taralga Wind farm project sets out the legally-binding requirements for the CEMP.

A handwritten signature in black ink, appearing to read 'RM', is placed above the printed name of the signatory.

Richard Mason

For Molino Stewart Pty Ltd

Nominated Environmental Representative

MOLINO STEWART PTY LTD ABN 95 571 253 092 ACN 067 774 332
PO Box 614, PARRAMATTA CBD BC, PARRAMATTA NSW 2124 TEL: (02) 9354 0300 FAX: (02) 9893 9806
www.molinostewart.com.au



0.3 Document Revision

The Revision History as well as the current revision status is defined in the Revision Status Table above (Table 2). Upon revision the CEMP shall be forwarded to the ER for Certification. The Certified copy shall be forwarded to all nominated and still applicable controlled copy holders. Recipients shall be responsible for marking “superseded” on the previous version.

The procedure and process defined herein shall not be amended without the approval of the Development Project Manager. Where review and revision is warranted, or where necessary to reflect changes in contractual or Project requirements, proposed revisions shall be reviewed by the Development Project Manager and approved by the Construction Project Manager.

Table 2: Distribution

CEMP Copy Holders			
Copy No.	Name / Position	Organisation	Controlled Copy
1.	Project Director	CBD Energy Limited	✓
2.	Enviro Rep	Molino Stewart	✓
3.	Kate Masters	NSW Department of Planning	✓
4.	Julian Thompson	Environmental Protection Agency	
5.	John Bell	Upper Lachlan Shire Council	
6.	Ian Aldridge	Goulburn Mulwaree Shire Council	
7.	Philip Downes	NSW Police	
8.	Andrew Lewis	Department of Primary Industries	
9.	Susie Mackay	NSW Transport – Roads and Maritime	
10.	Tim Smith	NSW Office of Water	
11.	Robert Banens	Sydney Catchment Authority	



0.4 Relevant Conditions of Consent

The following table outlines all relevant conditions of consent associated with the project.

Table 3: Relevant Conditions of Consent

Condition No.	Condition	CEMP Reference
Construction Environmental Management Plan		
25	<p>The applicant must prepare and implement a Construction Environmental Management Plan (CEMP) in accordance with the Department's publication entitled <i>Guideline for the Preparation of Environmental Management Plans</i> (2004) or its latest revision. The Applicant must ensure that the mitigation and monitoring measures identified in the EIS and in these conditions of consent are incorporated into the CEMP.</p> <p>The CEMP must be prepared in consultation with the Relevant Government Agencies and certified by the Environmental Representative, required under condition 27, as being in accordance with the conditions of consent.</p> <p>The CEMP must be submitted for the approval of the Director-General at least one month prior to the commencement of Construction, or within such a period otherwise agreed by the Director-General. Site preparation and construction associated with the development must not commence until written approval for the CEMP has been received from the Director-General. Upon receipt of the Director-General's approval, the Applicant must supply a copy of the OEMP [sic, CEMP] to the DEC and Council as soon as practicable.</p> <p>The CEMP is to be made Publicly Available following its approval.</p>	CEMP Document
Environmental Representative		
27	<p>Prior to the commencement of Construction, and in consultation with Council, the Applicant must nominate a suitably qualified and experienced Environmental Representative(s) whose appointment requires the approval of the Director-General. The Applicant must employ the Environmental Representative(s) on a full-time basis, or as otherwise agreed by the Director-General, throughout the life of the development. The proponent must make the identity of the approved Environmental Representative publicly available. The Environmental Representative must be:</p> <p>(a) The primary contact point in relation to the environmental</p>	Refer to APPENDIX 2, pg. 75 of CEMP



	<p>performance of the development;</p> <p>(b) Responsible for all management plans and monitoring programs required under this consent;</p> <p>(c) Responsible for considering and advising on matters specified in the conditions of this consent, and all other licences and approvals related to the environmental performance and impacts of the development;</p> <p>(d) Responsible for receiving and responding to complaints in accordance with this consent; and</p> <p>(e) Given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.</p> <p>The Applicant must obtain approval from the Director-General for any changes to the appointment of the Environmental representative that may occur from time to time over the life of the development. Any changes to the appointment or responsibilities of the Environmental Representative approved by the Director General are to be made publicly available.</p>	
Community Information Plan (CIP)		
30	A Community Information Plan (CIP) must be prepared prior to the commencement of Construction. The CIP must set out the community communications and consultation processes to be undertaken during the construction period of the development. The Plan must include but not be limited to:	Refer to Appendix 9
	(a) procedures to inform the local community of planned investigations and construction activities, including planned construction activities outside standard construction hours;	APP 9 - Sections 8.1 and 8.2 on pages 20 and 21
	(b) procedures to inform the relevant community of construction traffic routes and any likely disruptions to traffic flows and amenity impacts;	APP 9 - Sections 8.4 and 8.10 on pages 21 and 23
	(c) procedures to consult with local landowners in regards to construction traffic to ensure safety of livestock and limited disruption to livestock movements;	APP 9 - Sections 8.3 and 8.10 on pages 21 and 23
	(d) procedures to inform and consult with impacted residences subject to the Off-Site Landscape Plan; and	APP 9 - Section 8.14 on page 24
	(e) procedures to notify relevant properties of the processes available to review potential impacts on television and radio	APP 9 - Section 8.14 on page 24



	transmission. The CIP must be made publicly available prior to commencement of construction.	
Construction Noise and Vibration Management Sub Plan		
38	As part of the CEMP for the development, the Applicant must prepare and implement a Construction Noise and Vibration Management Sub Plan. The Plan must include, but not be limited to:	Refer to APPENDIX 3
	(a) details of construction activities, including timing, duration and predicted noise levels (including likely consistency with the EPA's Environmental Noise Control Manual goals);	APP 3 - pg. 16 & 18
	(b) best management practices to minimise noise resulting from construction activities;	APP 3 - pg. 22 to 26
	(c) reasonable and feasible noise mitigation measures including consideration of the need for structural measures such as acoustic shielding;	APP 3 - pg. 22 to 26 Page 23 (acoustic shielding)
	(d) compliance monitoring methods program;	APP 3 - pg. 28 & 30
	(e) examination of construction traffic noise impacts to dwellings situated close to local roads east of Taralga including reasonable and feasible methods of mitigating any adverse impacts;	APP 3 - pg. 18 & 19
	(f) community consultation and a community information program to inform residents when they are likely to [sic, be] affected by construction noise. This must include consideration of traffic noise impacts. In particular, residences adjoining site access routes east of Taralga Road must be notified in writing at least two weeks in advance of concrete pour activities and the details of such activities;	APP 3 - pg. 27 APP 9 - CCP
	(g) a complaints handling and complaints monitoring program, including details of a contact person to follow up complaints; and	APP 3 - pg. 31 APP 9 - CCP
	(h) contingency measures to deal with incidents when noise complaints have been received, including feedback on appropriate noise amelioration processes put in place in response to complaints and the timeframe for the introduction of these measures. The feedback must be provided to the complainant.	APP 3 - pg. 31 APP 9 - CCP
Construction Traffic Management Plan		



58	As part of the CEMP, a Construction Traffic Management Plan must be prepared in consultation with Upper Lachlan Council, the RTA and NSW Police, to manage traffic related issues associated with the development during Construction. The Plan must identify:	Refer to APPENDIX 4 APP 4 - Sect. 1.3 pg. 1 APP 4 - Sect. 4.5 pg. 24
	(a) designated transport routes for heavy vehicles to the site associated with the development;	APP 4 - Fig 3-3, pg. 17
	(b) heavy vehicle movements at the junction of Lagoon Street (MR676) and Union Street (MR256), including demonstration that junction accommodates turning movements in accordance with AUSTRROADS standards;	APP 4 - Section 3.4.2, pg. 18, APP 4 - APP A, pg. 31
	(c) details of procedures to minimise traffic disruption;	APP 4 - Sect. 3.3.2 to 3.3.6, pg. 14 & 15
	(d) procedures to minimise disturbance from traffic noise, particularly during night periods;	APP 4 - Sect. 4.3, pg. 22 & 23, APP 4 – Sect. 5.5, pg. 27 & 28
	(e) procedures to manage construction traffic to ensure the safety of:	
	i. livestock and limit disruption to livestock movement;	APP 4 - Sect. 4.4.2, pg. 23 APP 4 – Sect. 5.6, pg.28
	ii. school children and limit disruption to school bus timetables;	APP 4 - Sect. 4.4.1, p 23
	(f) a community information program to inform the community of traffic disruptions resulting from the construction program; and	APP 9 - Sections 8.4 and 8.10 on pages 21 and 23
	(g) details of complaints management procedures for traffic impacts.	APP 4 - Sect. 5.7, pg. 29
Indigenous Heritage Management		
83	In the event that an Aboriginal object (as described in the National Parks and Wildlife Act, 1974) or a relic is uncovered during the Construction, all work in the vicinity of the object must cease and the Applicant must contact the DEC as soon as practicable. The Applicant must meet the requirements of the DEC with respect to the treatment, management, and/or preservation of any such object.	Refer to APPENDIX 8 APP 8 – Sect. 1.4 Pg. 1
Historical relics		
84	In the event that a non-indigenous heritage item is uncovered during Construction, all work in the vicinity of the object must cease	Refer to APPENDIX 8



	and the Applicant must contact the NSW Heritage Council to determine an appropriate course of action prior to the recommencement of work in the vicinity of the item.	APP 8 – Sect. 1.4 Pg. 1
Construction Flora and Fauna Management Sub Plan		
85	A Construction Flora and Fauna Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Department and must include but not be limited to:	Refer to APPENDIX 5
	(a) detailed plans identifying: <ul style="list-style-type: none"> i. terrestrial vegetation communities; important flora and fauna habitat areas; habitat trees, locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the development where this contains important habitat areas and/or threatened species, populations or ecological communities; 	APP 5 - Fig. 1, pg. 12 APP 5 – Fig. 7, pg. 27
	(b) methods to manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the development. These must include:	APP 5 – Tab. 5, pg. 18 to 26 APP 5 – Tab. 6, pg. 30 to 33
	i. procedures for vegetation clearing, soil management and managing other habitat damage (terrestrial and aquatic) during construction;	APP 5 – Tab. 5, pg. 18 to 26 APP 5 – Tab. 6, pg. 30 to 33
	ii. methods to protect vegetation both retained within, and also adjoining, the development from damage during construction;	APP 5 – Tab. 5, pg. 18 to 26
	iii. methods to protect rocky outcrops and other potential reptile habitat both retained within, and also adjoining, turbines and ancillary development from damage during construction;	APP 5 – Tab. 6, pg. 30 to 33
	iv. a habitat tree management program including fauna recovery procedures and habitat maintenance (e.g. relocating hollows or installing nesting boxes); and	APP 5 – Tab. 5, pg. 18 to 26 APP 5 – Tab. 10, pg. 54 & 55
	v. performance criteria against which to measure the success of the methods;	APP 5 – Tab. 5, pg. 18 to 26 APP 5 – Tab. 6, pg. 30 to 33



	(c) details of how structures associated with the development will be designed to reduce the risk of bird and bat strike;	APP 5 – Tab. 10, pg. 54 & 55
	(d) rehabilitation details including: <ul style="list-style-type: none"> i. identification of locally native species to be used in rehabilitation and landscaping works, including flora species suitable as a food resource for threatened fauna species; 	APP 5 – App. 1, pg. 66 to 75
	<ul style="list-style-type: none"> ii. the source of all seed or tube stock to be used in rehabilitation and landscaping works including the identification of seed sources within the site. Seed of locally native species should be collected before construction commences; and 	APP 5 - Sect. 2.4.1, pg. 27
	<ul style="list-style-type: none"> iii. methods to re-use topsoil (and where relevant, subsoils), surface rocks and cleared vegetation; 	APP 5 – Tab. 5, pg. 18 to 26
	(e) a Weed Management Strategy including: <ul style="list-style-type: none"> i. identification of weeds within the site and adjoining areas; 	APP 5 – Tab. 6, pg. 30 to 33
	<ul style="list-style-type: none"> ii. weed eradication methods and protocols for the use of herbicides; 	APP 5 – Tab. 6, pg. 30 to 33 APP 5 - Sect 2.4.1 pg. 27 to 29
	<ul style="list-style-type: none"> iii. strategies to control the spread of weeds during construction, including ensuring that machinery brought on site is weed and pathogen free; 	APP 5 – Tab. 5, pg. 18 to 26, APP 5 – Tab. 6, pg. 30 to 33
	(f) a program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures against the identified performance criteria. Management methods must be reviewed and revised where found to be ineffective; and	CEMP - Sect. 13.2, pg. 68 to 70
	(g) a program to ensure that all staff and contractors associated with the development are aware of the location of all protected areas.	CEMP - Section 7.0, pg. 40, CBD EMS
86	<p>The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and loss of suitable habitat for Natural Temperate Grassland and the orchid <i>Diurus aequalis</i>.</p> <p>To ensure compliance with this condition, the applicant must engage a suitably qualified person(s) who is to receive the prior approval of the Director-General, to undertake a detailed botanical survey, prior to the commencement of construction, of:</p>	<p>Refer to APPENDIX 5</p> <p>APP 5 - Tab. 5, Procedures 1 and 2, pg. 18 to 21,</p> <p>APP 5 – APP. 8, pg. 82 to 83</p>



	<ul style="list-style-type: none"> • Turbine rows 4, 5, 6, 7 and 10; and • All access roads requiring construction or upgrading during the appropriate season (that is, November to December) <p>Where Natural Temperate Grassland or <i>Diurus aequalis</i> is found to occur, either on or adjacent to these locations, the area must be fenced during construction and that component of the development (including construction components) must be relocated at least 50 metres from the grassland or orchid population but no more than 250 metres from the original location of that component.</p> <p>A report detailing the results of this survey, including details of any proposed relocation of infrastructure associated with the development is to be submitted to the Director-General within one month of completion of completion of the survey. Construction must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated infrastructure (inclusive of any construction on related components).</p> <p>Note: The Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory Endangered Ecological Community "Natural temperate Grassland" is defined under the Commonwealth Environmental Protection and Biodiversity Conservation Act, 1999. The location of the turbine rows and the access tracks is as described in the EIS.</p> <p>Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the grant of consent, modification of the consent or further consent under the Act will be required.</p>	
87	<p>The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and/ or loss of suitable habitat for the Striped Legless Lizard and the Grassland Earless Dragon. To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) that is to receive the prior approval of the Department, to undertake a detailed survey of the site to determine the presence of such suitable habitat, so as to enable the Applicant, in consultation with the DEC and the Department, to locate infrastructure (including turbines, underground cables and power poles) and other elements associated with the development (such as access tracks and construction lay-down areas) at least 50 metres from these areas, but no more than 250 metres from the original location of the infrastructure or element.</p> <p>Note: Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the on the grant of consent, modification of the consent or further consent under the Act will be required."</p>	<p>Refer to APPENDIX 5.</p> <p>APP 5 - Tab. 5, Procedures 1 and 2, pg. 18 to 21,</p> <p>APP 5 – APP. 8, pg. 82 to 83</p>
88	<p>Notwithstanding condition 87, where the Applicant is unable to avoid damage to and/ or loss of such suitable habitat in respect of the Striped Legless Lizard, the applicant may seek the approval of the Director General to damage and/ or destroy this habitat</p>	<p>Refer to APPENDIX 5.</p> <p>APP 5 - Tab. 5, Procedures 1</p>



	however, this loss must be suitably compensated. Any such compensatory works are to be implemented, in consultation with and to the satisfaction of the Department and the DEC.	and 2, pg. 18 to 21, APP 5 – APP. 8, pg. 82 to 83
89	Prior to the commencement of construction, all vegetation and fauna habitat to be protected under this consent is to be fenced off with clearly visible, durable and appropriately sign posted exclusion fencing to prevent uncontrolled or inadvertent access by vehicles or construction personnel.	Refer to APPENDIX 5. APP 5 - Tab. 5, Procedures 1 and 2, pg. 18 to 21,
90	To compensate for the loss of the existing forest/ woodland resulting from the construction of the wind turbine generators and access tracks on Row 6, the Applicant must reforest a similar-sized area to that which is lost, at a location not immediately adjacent to any turbine. To ensure compliance with this condition, the Applicant must prepare and submit for the approval of the Director General, details of the habitat compensation plan. Construction activities at Row 6 must not commence until the Director-General has approved the plan. Following approval by the Director-General, the Applicant must implement the compensatory measures within such periods as the Director-General may direct.	Refer to APPENDIX 5. APP 5 - Sect. 2.4.1, pg. 27 APP 5 – Fig. 7, pg. 28
Bird and Bat Adaptive Management Program		
93	Prior to the commencement of Construction, the Applicant must prepare and submit for the approval of the Director-General, a Bird and Bat Adaptive Management Program must be prepared and undertaken, which takes account of bird/bat monitoring methods identified in the current editions of AusWEA <i>Wind Farms and Birds: Interim Standards for Risk Assessment (July 2005)</i> . The Program must be undertaken by a suitably qualified expert, approved by the Director-General. The Program must incorporate Monitoring, and a Decision Matrix that clearly sets out how the Applicant will respond to the outcomes of monitoring. It must:	Refer to APPENDIX 5 APP 5 - Tab. 9, pg. 39 to 41
	(a) incorporate an ongoing role for the suitably qualified expert;	APP 5 - Sect 3.4, pg. 42
	(b) set out monitoring requirements. The requirements must account for natural and human changes to the surrounding environment that might influence bird and/or bat behaviour such as changes in land use practices, and significant changes in water levels in nearby water bodies;	APP 5 - Sect. 3.5.1, pg. 51
	(c) incorporate a decision making framework that sets out specific actions and when it may be required to reduce	APP 5 - Sect. 3.5.1, pg. 51



	identified impacts on birds and bats;	
	(d) set out available mitigation measures;	APP 5 - Sect 3.4.2, pg. 47 to 50
	(e) incorporate reporting requirements on the outcomes of monitoring, including details on all mortalities, on the application of the decision making framework, the need for mitigation measures, progress with implementation of such measures, and their success and details of all payments to WIRES (as required under condition 92) that have been made during each reporting period. Reports must be prepared on an annual basis, from the commencement of operation, and must be prepared within 2 months of the end of the reporting period and be provided to the Director-General. The Director-General may vary the reporting requirement or period by notice in writing to the Applicant; and	APP 5 - Sect 3.5.2, pg. 51 to 52
	(f) identify any necessary mitigation measures and implementation strategy including, but not limited to, those referred in condition 91. The Applicant is required to implement reasonable and feasible measures, to the satisfaction of the Director-General, where the need for further action is identified through the Bird and Bat Adaptive Management Program.	APP 5 - Sect. 3.4.2, pg. 47 to 50
Riparian Vegetation Management Sub Plan		
95	As part of the CEMP, a Riparian Vegetation Management Sub Plan must be prepared and developed in consultation with DNR. This Sub Plan is to outline details of the protected riparian zones(s) including but not limited to:	Refer to APPENDIX 5
	(a) requirements of the Permit under Part 3A of the Rivers & Foreshores Improvement Act, 1948; (NOTE: This Act has been replaced by the water management Act 2000)	APP 5 – App. 2, pg. 76
	(b) drawings demonstrating the locations and extent of the zone(s), remnant vegetation, and wherer areas will be revegetated/regenerated;	APP 5 – Appendix Fig. 1 to 5, pg. 87 & 91
	(c) plant species list to be utilised for revegetation; and	APP 5 – App. 1, pg. 66 to 75
	(d) maintenance and performance monitoring.	APP 5 – Sect. 4.4.1 & 4.4.2, pg. 64 APP 5 – Tab. 14, pg. 61 to 63



Soil and Water Management Sub Plan		
94	The Applicant must not commence any works within 40 metres of a watercourse until a Permit under Part 3A of the Rivers & Foreshores Improvement Act is obtained from DNR.	Refer to APPENDIX 6 APP 6 - Sect. 2.2, pg. 4 APP 6 - Drawings EV05 to EV08, pg. 33 tp 36
96	As part of the CEMP and OEMP, Soil and Water Management Sub Plans must be prepared in consultation with the relevant government agencies. The Sub Plans must:	APP 6 - App B, pg. B1
	(a) be prepared by a person with the experience, skills and training in the development and implementation of such plans;	APP 6 - Sect. 1.5, pg. 3
	(b) where relevant, be in accordance with Landcom's "Managing Urban Stormwater" (2004), and other relevant guidelines including the RTA's "Guidelines for the Control of Erosion and Sedimentation in Roadworks" and the Department's "Constructed Wetlands Manual";	APP 6 - Sect. 2.3, pg. 4 & 5
	(c) identify the activities that could cause soil erosion or discharge sediment or water pollutants from the site associated with the development;	APP 6 - Sect. 3.8, pg. 12 & 13
	(d) describe management methods to minimise soil erosion or discharge of sediment or water pollutants from the site associated with the development including strategies to minimise the area of bare surfaces and to achieve nil or minimal harm to aquatic and riparian environments;	APP 6 - Sect. 5, pg. 16 to 23
	(e) describe the location and capacity of erosion and sediment control measures;	APP 6 - Sect. 5, pg. 16 to 23
	(f) identify the timing and conditions under which controls will be decommissioned;	APP 6 - Sect. 5.4, pg. 22
	(g) include contingency plans to be implemented for events such as fuel spills; and	APP 6 - Sect. 7, pg. 25 & 26
	(h) identify how the effectiveness of the sediment and erosion control system will be monitored, reviewed and updated.	APP 6 - Sect. 6, pg. 24
97	The turbines, substation and access track in high erosion hazard areas must be fenced off from livestock. The location of fencing and high erosion hazard areas must be identified in the OEMP.	APP 6 - Drawings EV05 to EV08, pg. 33 to 36
98	Design and construction of any crossings over protected waters and riparian zones must be consistent with the Department's <i>Draft</i>	APP 6 - Sect 2.3.2, pg. 5



	<i>Guidelines – Watercourse Crossing Design & Construction</i> and NSW Fisheries' <i>Why do Fish need to cross the Road – Fish Passage requirements for Waterway Crossings (2003)</i> and <i>Policy Guidelines Fish Friendly Waterway Crossings (2004)</i> .	APP 6 - Drawings EV05 to EV08, pg. 33 to 36
99	Except as may be expressly provided by a licence under the POEO Act in relation to the development, the Applicant must comply with Section 120 of the POEO Act (prohibition of the pollution of waters), which prohibits pollution of waters.	APP 6 - Sect. 2.1, pg. 4
111	The human wastewater management system is to be designed in consultation with the SCA, in accordance with the principles contained within the guidelines <i>On-site Sewage Management for Single Households</i> , and the <i>AS/NZS 1547-2000 On-site Domestic Wastewater Management</i> . The system, including any effluent management areas, is to be located at least 100 metres from watercourses and 40 metres from drainage depressions.	APP 6 - Sect 5.6.2, pg. 23
112	AAA-rated water conservation devices are to be installed in the site control room/facilities building to minimise the volume of wastewater produced.	APP 6 - Sect 5.6.2, pg. 23
113	All stormwater is to be diverted away from any effluent management area associated with the development.	APP 6 - Sect 5.6.2, pg. 23
Bush Fire Fighting		
105	As part of CEMP, the Applicant must provide details of measures to prevent fires igniting during construction activities. These measures must include, but not be limited to:	CEMP Document Section 8 APPENDIX 7
	(a) prohibition of work involving risk of ignition during total fire bans;	CEMP - Sect. 8.3, p. 42 to 43. APP 7 – Sect 4.1-4.2 pg. 6
	(b) availability of fire suppression equipment; and	CEMP - Sect. 8.4, p. 44. APP 7 – Sect 4.4, pg. 8
	(c) storage and maintenance of fuels and other flammable materials.	APP 7 – Sect 4.3, pg. 8



1.0 INTRODUCTION & HISTORY

1.1 Introduction

The modified layout for the project has approval for the construction of up to 61 wind energy turbines and associated wind farm infrastructure. An earlier layout included approval for the construction of up to 62 turbines. However, turbine no. 62 has been deleted during the hearing of Matter No. 11216 of 2007, and no longer forms part of the Taralga Wind Farm project.

The site is located in the Southern Tablelands of NSW, approximately 140km southwest of Sydney, 35km north of Goulburn and between 3km - 7km east of the village of Taralga. The wind farm is to be built along ridgelines that comprise an area of approximately 9km (north-south) by 4km (east-west).

1.2 History of the Taralga Wind Farm

On 10 November, 2004, development application no. 214/04 for the construction and operation of a wind farm was lodged with the Upper Lachlan Shire Council by RES Southern Cross Pty Ltd. This application consisted of 69 x 1.5 - 2MW wind energy turbines with a maximum blade tip height of 110 metres above ground level and associated infrastructure.

On 15 December, 2004 the Minister issued a Direction under Section 88A of the EP&A Act, 1979 to Upper Lachlan Shire Council, to refer the development application made to it to be determined by the Minister for Infrastructure and Planning.

On 1 March, 2005 the northermost property called "Omaru" was removed from the DA and the 7 turbines proposed to be erected on Omaru were subsequently removed from the development application. The application now comprised 62 turbines.

On 17 January, 2006 the NSW Minister for Planning issued a Notice of Determination that granted Deferred Commencement Consent for 50 turbines, required further approvals for 4 turbines and deleted 8 turbines.

On 23 February, 2006 the Taralga Landscape Guardians Incorporated lodged an appeal against the Minister's decision with the NSW Land and Environment Court (Matter No. 10196 of 2006).

On 23 February, 2007 the NSW Land and Environment Court issued an Order that confirmed, on an amended basis, the ministerial consent granted for the wind farm. This Order granted consent to all 62 turbines.

On 30 November, 2007 RES Southern Cross Pty Ltd, lodged a Modification Application with the NSW Land and Environment Court, pursuant to Section 96(8) of the EP&A Act, 1979 (Matter No. 11216 of 2007). This modification application sought to increase the blade tip height of the approved turbines from 110m to 131.5m.

On 21 August, 2008 the NSW Land and Environment Court handed down its Judgment approving the modification application (Matter No. 11216 of 2007), subject to a Direction that the parties involved in the proceedings agree to drafting certain additional / modified conditions of consent.

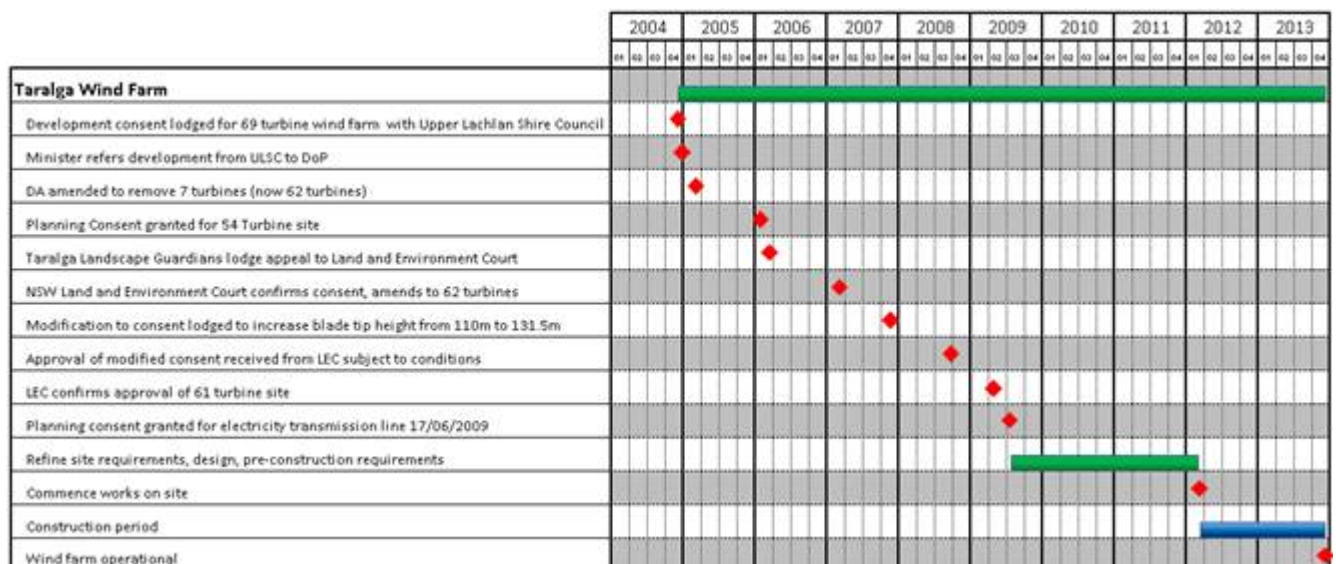


On 27 April, 2009 the NSW Land and Environment Court made final Orders attaching the consolidated modified Conditions of Consent for Matter No. 11216 of 2007. This Order modified the consent to permit 61 x 1.5-3 megawatt turbines up to a maximum of 131.5 metres.

In January, 2012 CBD Energy Limited took the lead on the project with the objective of commencing construction in aid to RES. Steps to ensure the project complies with the consent were being taken, as well as consultation with the relevant agencies. Due to time constraints CBD has opted to go forth with the project in a stage-based approach, which is explained in detail in the Cover Letter accompanying this document.

This document will thus be continually updated until all detailed design is completed to the satisfaction of the Director-General and the Consent Conditions.

Below is a summary schedule of events up the current status as well as the plan for construction works through to operation.



2.0 PURPOSE

The purpose of the Construction Environmental Management Plan (CEMP) is to ensure that the mitigation and monitoring measures identified in the EIS and the conditions of consent are adhered to during the construction phase of the project. This will ensure the project is constructed in accordance with relevantly applicable planning conditions; legal requirements, environmental standards and with the CBD Environmental Management System Manual. The CEMP defines and codifies the management procedures to be employed on during the construction phase of the Project, in order to minimise the potential for any adverse impact on the environment occurring as a result of the construction works.

This document aims to:

- assist contractors with the development of Method Statements that minimise the potential for any adverse impact on the environment occurring as a result of the approved works;
- provide all contractors with details of the subject site and environs;
- include a reference to any environmentally sensitive areas onsite that require particular controls;
- provide evidence of understanding of and compliance with relevant environmental legislation and the conditions of consent;
- provide practical and specific management actions to be employed during the construction of the Taralga Wind Farm;
- apply best practice environmental management at Taralga Wind Farm site; and
- set out how the recommendations of the EIS are to be implemented on-site.

3.0 OBJECTIVES AND TARGETS

3.1 *The objectives of this CEMP are to:*

- ensure environmental safeguards are implemented correctly;
- ensure compliance with the requirements of relevantly applicable environmental legislation, conditions of any applicable licence, approval or permit;
- ensure that works are managed to reduce the potential for adverse impacts on the environment;
- ensure there are no breaches of environmental laws;

3.2 *The targets of this CEMP are to:*

- to design and construct the Taralga Wind Farm in an environmentally sustainable manner and to mitigate against any adverse environmental impact caused by construction activities; and



- to achieve best practice environmental management on the project, as measured by internal and external audit results.

4.0 CEMP CONTEXT

4.1 Background

The Taralga Wind Farm EIS, prepared by Geolyse Pty Ltd, dated November, 2004 proposed the production of a CEMP and states at Page 6.7:

“The Construction Environmental Management Plan (CEMP) would be prepared to cover all environmental requirements relevant to the construction phase of the development. The CEMP would document best management procedures to be followed and allocate responsibilities to ensure that all obligations are met, and that mitigation measures are being adhered to and are effective in minimising impacts. The CEMP would also include protocols and procedures for monitoring the impacts of all construction activities.

The CEMP would specify environmental goals, clarify legal and other obligations, document best management procedures and, through its implementation, ensure that the impacts associated with construction are appropriately monitored and reported.

The CEMP would cover both management protocols and specific work method statements.”

Condition No. 25 of the Consent (quoted above in Section 1.0) requires the preparation and implementation of a CEMP. The CEMP is required to be certified by an Environmental Representative (ER) as having been prepared in accordance with the conditions of consent. Following this certification, the CEMP is to be submitted for the approval of the Director-General (DG) of the NSW Department of Planning (DOP) at least one month prior to the commencement of construction.

4.2 Agency and Community Consultation

Production of the original EIS and subsequent CEMP involved consultation with the officers of the following bodies, groups and departments:

- Dept. Infrastructure, Planning and Natural resources
- NSW Dept. of Planning
- Major Infrastructure Assessments branch of the NSW DoP
- Department of Environment and Conservation
- Australian Government Dept. of Defense
- Australian Government Civil Aviation Safety Authority
- Sydney Catchment Authority
- Local Community Bodies
- the Major Infrastructure Assessments branch of the NSW DoP.
- NSW Police;
- NSW Roads and Traffic Authority;
- Upper Lachlan Shire Council;
- Goulburn Mulwaree Council



- NSW National parks and wildlife service
- Gundungurra Tribal Council Aboriginal Corporation
- Pejar Local Aboriginal Land Council
- NSW Rural Fire service

Consistent with Condition No. 25, initial consultation was carried out with the officers of the NSW DoP (Mr N. Osborne and Ms J. Bakopannos) to seek guidance on preparation of the the CEMP and its sub plans and to gain an understanding of the level of detail that would be considered acceptable. The advice received from the Department's officers was then incorporated into the scope of each specialist consultant's commission that prepared sub-plans within the CEMP. This included incorporating a table at the front of each sub-plan identifying the relevantly applicable conditions and their sub-clauses and then cross-referencing these with a note as to where in the sub-plan that condition or sub-clause was addressed. Further advice from the Department of Planning confirmed the extent and timing of flora and fauna surveys, which then informed preparation of the Biodiversity sub-plans. In the process of obtaining Approval for the CEMP, a review log for the CEMP was drawn up and sent back and forth between the DoP and CBD while issues were corrected, maps updated, and the plans generally improved.

From the 25th of January, the Sub-plans and full CEMP body were sent to the relevant agencies for updated comments and feedback as per the DoP's request. As of the 15th of February 2012, some replies were received from the Goulburn Council and the RMS (former RTA) and amendments were made to that effect. Of the latter, the majority of the feedback pertained to issues relating to Stage 2 (as described in the CEMP Cover Letter) of this development and will be timely addressed once the design for that stage is under way. However, the Sydney Catchment Authority, the Department of Primary Industries, the NSW Police and the Department of Natural Resources have not replied to the emails in the 4 weeks following the delivery of the sub plans and CEMP.

Consistent with Condition 30, a Communication and Consultation Plan was prepared in consultation with the DoP and amended until their satisfaction.

Consistent with Condition No. 58, the Construction Traffic Management Plan was prepared in consultation with Upper Lachlan Shire Council, Goulburn Mulwaree Shire Council, The NSW RTA and NSW Police. The comments from these agencies were incorporated into the CTMP as noted in Appendix 4 (S. 1.3 and S. 4.5).

Additionally, Appendices 3 & 4 to this CEMP relating to Noise & Vibration Management Sub Plan and Construction Traffic Management Sub Plan provide detailed community consultation procedures that will be implemented.

This document should be read in conjunction with the Taralga Wind Farm Health and Safety and Environmental documents related documentation.



A summary of the consultation requirements of the Conditions of Consent is below:

Table 4: Consultation Requirements of the Conditions of Consent

Consultation Requirement	Condition Number	Reference Notes
The CEMP must be prepared in consultation with the Relevant Government Agencies.	Condition 25	See CEMP 4.2 Agency & Community Consultation above, also see entries below.
As part of the CEMP, a Construction Traffic Management Plan must be prepared in consultation with Upper Lachlan Council, the RTA and NSW Police, to manage traffic related issues associated with the development during Construction.	Condition 58	See CEMP 4.2 Agency & Community Consultation above, also Appendix 4 (S. 1.3 & S. 4.5) confirms consultation has been carried out.
Prior to the commencement of Construction, the Applicant must undertake a 'before' road dilapidation report utilising the ARRB (Australian Road Research Board Limited) 'laser car', to assess the existing condition of Taralga Road (MR256), Bannaby Road and Old Showground Road. The report is required for the respective lengths of road that are to be utilised for heavy vehicle access. It must be undertaken in consultation with Council's Director of Works.	Condition 64	This is noted in Appendix 4 (S. 5.4) and was undertaken by the Principal Contractor with consultation with the Upper Lachlan Shire Council's Director of Works on the 11 th of January 2012.
Following completion of Construction, and prior to the commencement of Operation, an 'after' road dilapidation report utilising the ARRB 'laser car' and road video images (i.e. RTA "gypsy" cam car) must be prepared in consultation with Council to determine the works required by the Applicant to restore the road to at least its pre-development condition.	Condition 65	This is referred to in Appendix 4 (S. 5.4) and is required to be carried out after construction.
A Construction Flora and Fauna Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Department.	Condition 85	Project representatives met with officers of NSW DoP as noted above in Agency & Community Consultation section of CEMP. Appendix 4 (S. 1) also lists additional consultees approached by Ecologist.



Consultation Requirement	Condition Number	Reference Notes
<p>The Applicant must design, construct, operate and maintain the development in a manner that avoids damage to or loss of suitable habitat for Natural Temperate Grassland and the orchid, <i>Diurus aequalis</i>.</p> <p>To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) who is to receive the prior approval of the Director-General, to undertake a detailed botanical survey, prior to the commencement of construction, of:</p> <p>turbine rows 4,5,6, 7 and 10; and all access roads requiring construction or upgrading, during the appropriate season (that is, November to December).</p> <p>Where Natural Temperate Grassland or <i>Diurus aequalis</i> is found to occur either on, or adjacent to these locations, the area must be fenced during construction and that component of the development (including construction components) must be relocated at least 50 metres from the grassland or orchid population but no more than 250 metres from the original location of that component.</p> <p>A report detailing the results of this survey, including details of any proposed relocation of infrastructure associated with the development is to be submitted to the Director-General within one month of completion of the survey. Construction must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated infrastructure (inclusive of any construction-related components).</p> <p>Note: The Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory Endangered Ecological Community “Natural Temperate Grassland” is defined under the Commonwealth Environment Protection and Biodiversity Conservation Act, 1999. The location of the turbine rows and the</p>	Condition 86	Director General has confirmed the results of the survey



Consultation Requirement	Condition Number	Reference Notes
<p>access tracks is as described in the EIS. Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the grant of consent, modification of the consent or further consent under the Act will be required.</p>		
<p>The Applicant must design, construct, operate and maintain the development in a manner that either avoids damage to and/or loss of the Tablelands Basalt Forest Endangered Ecological Community or provides suitable compensation for its loss.</p> <p>To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) who must receive prior approval of the Director-General, to undertake a detailed survey of:</p> <ul style="list-style-type: none"> · all turbine rows other than row 8; and · all access roads required during construction or upgrading, <p>to determine the presence of this community so as to enable the Applicant, in consultation with the DEC and the Department, to:</p> <p>(a) relocate that component of the development (including construction components) at least 50 metres from important stands of this community, but no more than 250 metres from the original location of that component; or</p> <p>(b) provide suitable compensation for the loss of the community where the Applicant is unable to avoid damage to and/or loss of the community.</p> <p>Construction of the relevant component(s) of the development must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated development component or compensation works, as relevant.</p> <p>Note: The Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions Endangered Ecological Community "Tableland Basalt Forest" is defined under the Threatened</p>	<p>Condition 86A</p>	<p>Director General has confirmed the results of the survey</p>



Consultation Requirement	Condition Number	Reference Notes
Species Conservation Act, 1995.		
<p>The Applicant must design, construct, operate and maintain the development in a manner that avoids damage to and/ or loss of suitable habitat for the Striped Legless Lizard and the Grassland Earless Dragon.</p> <p>To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) that is to receive the prior approval of the Department, to undertake a detailed survey of the site to determine the presence of such suitable habitat, so as to enable the Applicant, in consultation with the DEC and the Department, to locate infrastructure (including turbines, underground cables and power poles) and other elements associated with the development (such as access tracks and construction lay-down areas) at least 50 metres from these areas, but no more than 250 metres from the original location of that infrastructure or element.</p>	Condition 87	Appendix 5 (Table 5, Appendix 8).
Notwithstanding condition 86, where the Applicant is unable to avoid damage to and/ or loss of such suitable habitat in respect of the Striped Legless Lizard, the Applicant may seek the approval of the Director-General to damage and/ or destroy this habitat however, this loss must be suitably compensated. Any such compensatory works are to be implemented, in consultation with and to the satisfaction of the Department and DEC.	Condition 88	Appendix 5 (Table 5, Appendix 8).
As part of the CEMP, a Riparian Vegetation Management Sub Plan must be prepared and developed in consultation with DNR.	Condition 94	Appendix 5 (S. 1). DECC listed as being consulted. Former DNR now in DECC.
As part of the CEMP and OEMP, Soil and Water Management Sub Plans must be prepared in consultation with relevant government agencies.	Condition 95	Appendix 6, Table 1.1



4.3 Environmental Policy

The CBD Environmental Management Policy is included in **Appendix 1**. CBD undertakes its work under the CBD Environmental Management System, which has been developed in line with the requirements of ISO 14001:2004 .

It is mandatory that all contractors, subcontractors and suppliers comply with the environmental requirements outlined in this CEMP.

4.4 Scope

This CEMP is valid for all on-site works where the site infrastructure is defined by **Drawing No. 01439D1002-01, Consented Infrastructure Layout, dated 04/03/2009** Figure 4, in this document. It is also relevant to the delivery of materials to the site from their point of origin.

This revision of the CEMP is effective for the duration of the construction works.

4.5 Legislative Requirements

As stated above, this CEMP aims to outline procedures and practices to direct all works which will ensure all works are undertaken in compliance with the relevant State and Federal environmental legislation, all requirements identified in project proposal, the approvals, and current best practice.

The project works shall be undertaken in compliance with the following National Legislation, not in order of significance:

- Civil Aviation Safety Regulations, 1988;
- Environment Protection and Biodiversity Conservation Act, 1999;
- Native Title Act, 1993; and
- Radio Communications Act, 1992.
- National Greenhouse and Energy Reporting Act 2007
- Energy Efficiency Opportunities Act 2006
- Industrial Chemicals (Notification and Assessment) Act 1989
- Public Health Act 1991

The project works shall be undertaken in accordance with the following NSW legislation, in alphabetical order:



- Community Land Development Act, 1989
- Contaminated Land Management Act 1997
- Energy and Utilities Administration Act 1987
- Energy Savings Order 2005
- Environmental Hazardous Chemicals Act, 1985;
- Environmental Planning and Assessment Act, 1979;
- Environmental Planning and Assessment Regulation, 2000;
- Environmentally Hazardous Chemicals Act 1985
- Environmentally Hazardous Chemicals Regulation 1999
- Fisheries Management Act 1994
- Heritage Act 1977 and Heritage Amendment Act 2009
- National Environment Protection Council (New South Wales) Act, 1995;
- National Parks and Wildlife Act 1974
- Native Vegetation Act, 2003;
- Natural Resources Commission Act, 2003;
- Noxious Weeds Act 1993
- Occupational Health and Safety Act 2000
- Occupational Health and Safety Regulation 2001
- Ozone Protection Act 1989
- Pesticides Act 1999
- Pesticides Regulation 2009
- Protection of the Environment Administration Act, 1991;
- Protection of the Environment Operations (Clean Air) Regulation 2002
- Protection of the Environment Operations (General) Regulation 2009
- Protection of the Environment Operations (Waste) Regulation 2005



- Protection of the Environment Operations Act 1997
- Rural Fires Act 1997
- Rural Fires Act, 1997;
- State Environmental Planning Policy No 55—Remediation of Land
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Major Projects) 2005
- Surveying Act, 2002;
- Threatened Species Conservation Act 1995
- Threatened Species Conservation Act, 1995;
- Traffic Act, 1909; and
- Waste Minimisation and Management Act, 1995.
- Water Management Act 2000
- Water Savings Order 2005

The project works shall will also need to be undertaken in accordance with any applicable local Government requirements including;

- Upper Lachlan Shire Development Conditions of Consent
- Upper Lachlan Shire Community Heritage Study 2007 – 2008
- Upper Lachlan Shire Development Control Plan 2010
- Upper Lachlan Shire Council Biodiversity Planning Framework
- Upper Lachlan Shire Development Conditions of Consent
- Upper Lachlan Strategy Plan – 2020 Vision

4.6 Approvals, Permits and Licences

In addition to securing Development Consent under the Environmental Planning and Assessment Act 1979 the Taralga Wind farm requires various approvals, permits and licences under other relevant legislation. These requirements trigger the integrated development status of the proposed development. Identification of these approvals permits and licences is outlined below.



4.6.1 Environment Protection Licence

The Taralga windfarm would not require an Environment Protection Licence (EPL) issued under the Protection of the Environment Operations Act, 1997 from the Office of Environment and Heritage and/or EPA. Under the Act an EPL is required if an “electricity generating works” development intends to supply more than 30 megawatts of power, however Section 17, Clause 1 states, that this is applicable to any energy source other than wind power or solar power. Therefore as the development is a "wind power" site an EPL would not be required for either construction and or operational phases of the development.

4.6.2 Dredging/Reclamation/ Culvert Permit

The primary Act governing the management of fish and their habitat in NSW is the Fisheries Management Act 1994 ('FM Act'). Section 201 of the Act requires a permit to carry out works of dredging or reclamation, creating bridges, culverts, causeways (both piped and un-piped) or other road crossing of waterways (temporary or permanent) which require placing material on the bed of the waterway (i.e. reclamation) and/or which may obstruct the free passage of fish. Installation of culverts associated with access tracks across drainage lines would require a permit. The permit should be sought from the Department of Primary Industries Fisheries and aquaculture section.

This permit is will be further outlined in the Soil and water management plan.

4.6.3 Controlled Activity Approval

Installation of culverts associated with access tracks across drainage lines would previously have required a permit issued under Part3A of the Rivers and Foreshores Improvement Act, 1948 from the Department of Infrastructure Planning and Natural Resources. On 4 February 2008, the Rivers and Foreshores Improvement Act 1948 was repealed and the controlled activity provisions are now contained within the Water Management Act 2000 (WM Act). Unless an exemption from Section 91E(1) of the WM Act operates, a controlled activity approval under the WM Act is now required for controlled activities carried out in, on or under waterfront land. An application for a Controlled Activity Approval for works on waterfront land must be submitted to the Department of Primary industries Office of Water. This approval is will be further outlined in the Soil and water management plan.

4.6.4 Roadworks

Works would be required on public roads, Crown Roads and a main road and therefore need consent from the Roads and Traffic Authority, Department of Infrastructure Planning and Natural Resources, Upper Lachlan Council and (possibly) Greater Argyle Council under s138 of the Roads Act, 1993. This consent is further outlined in the construction traffic management plan.



5.0 THE PROJECT

5.1 Location

Taralga is located in the Southern Tablelands of NSW, approximately 140km south west of Sydney and 35km north of Goulburn. The wind farm will be built along ridgelines that span approximately 11km north to south and approximately 4km east to west. The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks.

The Taralga Wind Farm is located wholly within the Local Government Area of the Upper Lachlan Shire Council (ULSC).

5.2 Existing Environment

The existing environment at the Taralga Wind Farm site is described in the *Environmental Impact Statement: Taralga Wind Farm, November 2004 Volumes 1 and 2*.

The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks. Site elevation varies between 830mAHD and 960mAHD. The highest point is located centrally in the project area, north of Bannaby Road.

The Site is underlain by three geological units:

- Tertiary Basalt; basalt flows and sheets, extruded over the eroded Tertiary peneplain and resulting in capping ranging in thickness from a few metres to 50m.
- Tarlo Formation; the uppermost unit of the Lambie Group of Upper Devonian age dominated by red, purple and green shales, with lutite predominating in the upper part of the section, while in the lower part sandstone layers and a few quartzite sandstones, and
- Cookbundoon Sandstone; white, fine to medium grained orthoquartzite, quartzite sandstone, pebbly sandstone, pebbly quartzite, sandstone and conglomerate.

The site is currently used for primary production.

5.3 Description of the Works

With reference to the Wind Farm Layout shown in **Drawing No. 01439D1002-01, Consented Infrastructure Layout, dated 04/03/2009**, Figure 4 in this document, the Taralga Wind Farm involves the construction of up to 61 x wind turbine generators (WTG) consisting of 1.5 – 3 megawatt turbines and associated infrastructure. Each WTG will reach a blade tip height of up to 131.5 metres above ground level. Section 2.4 of the EIS details the infrastructure works to be constructed, including:

- Wind Turbine Generators (as amended by NSW Land and Environment Court Order in Matter No. 11216 of 2007);



- An on-site substation;
- A control building for use by maintenance personnel;
- Upgrading of certain public roads;
- Construction of on-site access tracks;
- Installation of an on-site electrical collection system.

As stated at Section 2.4.1 of the EIS, turbine locations as shown are within 50m of their final location, with exact locations to be determined by detailed design and micro-siting for ground conditions.

As stated at Section 2.5.5 of the EIS relating to Turbine Erection, the standard erection practice is for the turbine blades to be attached to the hub while it is on the ground (to form the rotor). This rotor is then lifted as a single unit and attached to the nacelle. This would be the technique of construction for most of the turbines located on the site. However, as required by Condition 90A, at vegetated locations where sufficient open, flat working space is not available, such as Row 6, the turbine hub would be lifted and secured to the nacelle and then the blades would be lifted individually and secured to the hub, one at a time.

The construction works include civil and electrical works, the delivery of the WTG components to the site from Port Kembla, the construction of temporary construction compounds, offloading and temporary site storage of WTG components, assembly and fixing of the tower sections, a nacelle, hub and three blades per turbine.



5.4 Timing and Scheduling

As per condition No. 40 of the Consent, construction activities are restricted to certain days and hours. Condition No. 40 states:

“Construction activities associated with the development, including heavy vehicles entering and exiting the site, may only be carried out between 7.00 am and 6.00 pm, Monday to Friday inclusive, and between 8.00 am and 1.00 pm on Saturdays. No work is to be carried out on Sundays and public holidays. The following activities may be carried out in association with construction outside of these hours:

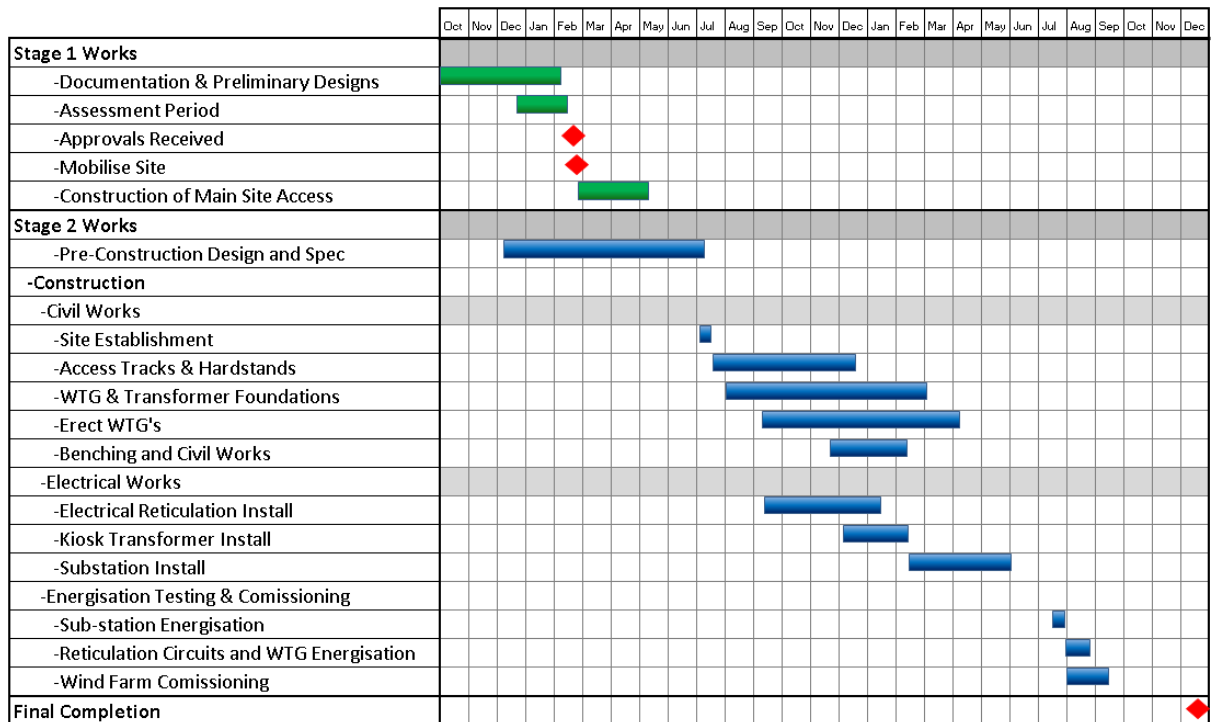
- a) any works that do not cause noise emissions to be audible at any nearby residences not located on the site;*
- b) the delivery of materials as requested by Police or other authorities for safety reasons; and*
- c) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.*

Any work undertaken outside the specified construction hours, other than those specified in (a) – (c) of this condition, must not be undertaken without prior consent of the DEC.

On-site civil construction works and assembly of turbine components is expected to last for 17 months once commenced.

Figure 2.7 of the EIS details the 17 month construction schedule, however it is now envisaged that the process will take around 24 months, as detailed below:

Figure 1 - Construction Schedule



6.0 KEY PERSONNEL

6.1 Responsibilities

The responsibility for the environmental performance at the Tarlaga Wind Farm site lies with the proponent, CBD (as stated in Table 5 below). The implementation of the CEMP at the site is therefore the responsibility of CBD.

In accordance with the consent an Environmental Representative has been appointed who is responsible for the following duties as specified in condition No. 27 which states:

“Prior to the commencement of Construction, and in consultation with Council, the Applicant must nominate a suitably qualified and experienced Environmental Representative(s) whose appointment requires the approval for the Director-General. The Applicant must employ the Environmental Representative(s) on a full-time basis, or as otherwise agreed by the Director-General, throughout the life of the development. The proponent must make the identity of the approved Environmental Representative publicly available. The Environmental Representative must be:

- (a) The primary contact point in relation to the environmental performance of the development;***
- (b) Responsible for all management plans and monitoring programs required under this consent;***
- (c) Responsible for considering and advising on matters specified in the conditions of this consent, and all other licences and approvals related to the environmental performance and impacts of the development;***
- (d) Responsible for receiving and responding to complaints in accordance with this consent; and***
- (e) Given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.***

The Applicant must obtain approval from the Director-General for any changes to the appointment of the Environmental representative that may occur from time to time over the life of the development. Any changes to the appointment or responsibilities of the Environmental Representative approved by the Director General are to be made publicly available.”



Table 5: Key Personnel

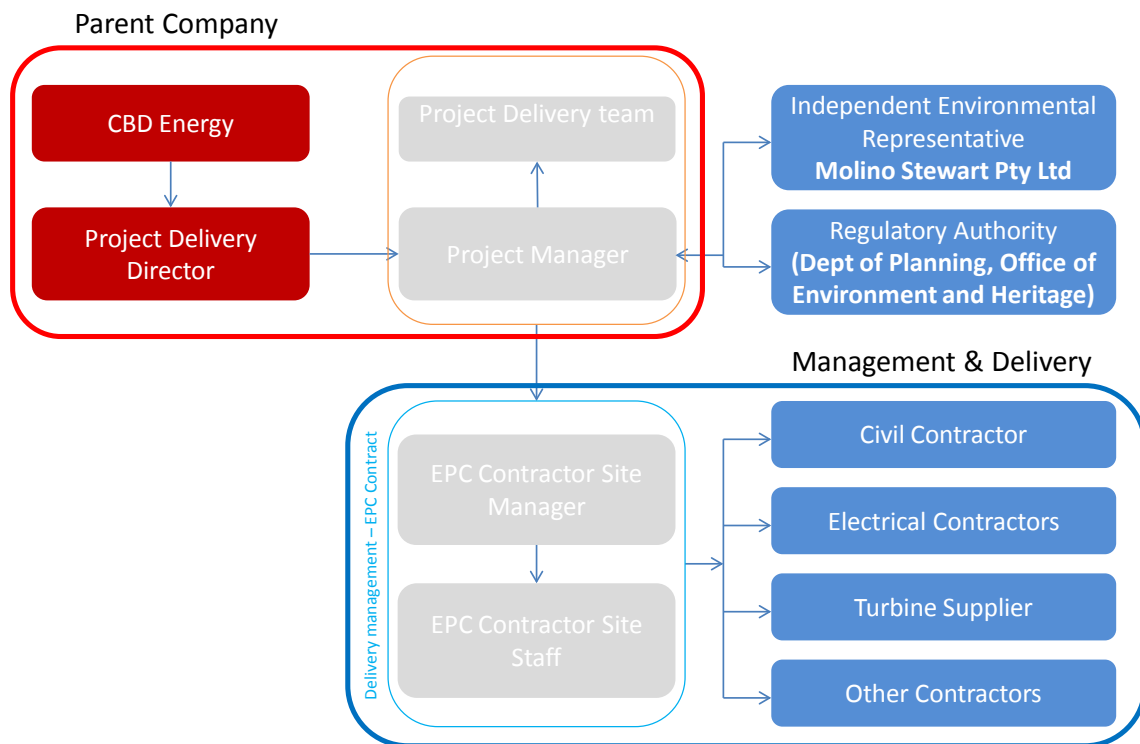
Responsibilities	Responsible Position
Prepare, revise and distribute controlled copies of CEMP	<ul style="list-style-type: none"> • CBD Development Project Manager. • Environmental Representative. (Molino Stewart Pty Ltd), as approved or modified by the Director-General of the NSW Department of Planning.
Site induction of staff and sub-contractors	<ul style="list-style-type: none"> • CBD Construction Project Manager; and • CBD Site Manager.
Implementation and monitoring of all mitigation measures identified in the CEMP	<ul style="list-style-type: none"> • CBD Site Manager; and • Environmental Representative. (Molino Stewart Pty Ltd), as approved or modified by the Director-General of the NSW Department of Planning.
Internal inspections for safety, monitoring and environmental performance	<ul style="list-style-type: none"> • CBD Site Manager.
External inspections and monitoring of environmental performance	<ul style="list-style-type: none"> • Environmental Representative. (Molino Stewart Pty Ltd), as approved or modified by the Director-General of the NSW Department of Planning..
Reporting and documentation of monitoring in accordance with CBD Quality Management Systems	<ul style="list-style-type: none"> • CBD Site Manager.
Auditing of systems and documentation	<ul style="list-style-type: none"> • CBD Construction Project Manager.
Independent Environmental Representative responsibilities (as per condition No. 27 of Consent)	<ul style="list-style-type: none"> • Environmental Representative (Molino Stewart Pty Ltd), as approved or modified by the Director-General of the NSW Department of Planning.



6.2 Organisation Structure & Reporting Protocol

The Organisation Structure & Reporting Protocol for the project is presented below:

Figure 2 - Reporting Protocol



Internal and external reporting requirements will be as shown above in the organisation Structure & Reporting Protocol for the project. The Project Manager is to be informed of all communications. It is noted that the Independent Environmental Representative also has the ability to directly report to the Regulating Authority.



6.3 Environmental Representative Contact Details

The nominated Environmental Representative (ER) for the Taralga Wind Farm project is responsible for being the primary contact point in relation to the environmental performance of the development. The ER is also responsible for receiving and responding to complaints in accordance with the consent. The contact details for the nominated ER are shown below. The contact details of the ER are to be made publicly available and shall also be clearly displayed on-site.

Table 6: Environmental Representative Contact Details

Position	Name	Details
Environmental Representative	<u>Molino Stewart Pty Ltd</u> Mr Richard Mason	<u>Molino Stewart Pty Ltd</u> 38 Cowper St, Parramatta, NSW 2150 PO Box 614, Parramatta CBD BC, 2124 Phone: 02 9354 0300 Fax: 02 9893 9806 rmason@molinostewart.com.au



6.4 Emergency Contact Details

Table 7: Emergency Contact Details

Position	Contact Details
All emergencies	000
Hospital (Goulburn)	02 4827 3111
NSW Rural Fire Service	000
Taralga Police	02 4840 2044
OEH/EPA Environmental Incident Hotline	131 555
NSW State Emergency Service	000
WIRES	1300 094 737 or 02 4822 3888



6.5 Environmental Emergency Contact Details

Table 8: Environmental Emergency Contact Details

Incident	Response	Emergency Contact Person	Contact Number
Waste spill	Waste from spills to be bundled.	Site Manager	0417 584 506
Oil or other contaminant spill	Bund off immediate area. Soak up contaminant with sand or Spill kit and dispose of contaminated material to an approved disposal site.	Site Manager	0417 584 506
Contaminated land exposed during rainfall	Bund off contaminated area, if required, during rainfall event.	Site Manager	0417 584 506
Heritage item discovered	Once a discovery is made works will cease in the immediate vicinity and the area will be barricaded off. The appropriate corrective action steps will be initiated. A toolbox meeting will be conducted informing workers of any cultural heritage issues.	Site Manager	0417 584 506
Flood imminent	Remove all machinery and soil stockpiles from below 1% AEP flood level when forecasts/flood warnings indicate a potential flood.	Site Manager	0417 584 506



7.0 TRAINING AND INDUCTIONS

In addition to the training requirements of NSW legislation and individual contractors onsite, CBD require all contractors and subcontractors working onsite to undergo a site specific induction prior to commencement of work. This induction will address not only the relevant sections of the Environmental Management System for the site but also health and safety on-site and any sensitive environmental or heritage aspects of the site. All contractors are required to complete the training, sign off that they have understood the content and will be branded with a sticker to show that they have undergone the training. No contractor or subcontractor will be able to work onsite without the relevant sticker.

8.0 BUSHFIRE MANAGEMENT

8.1 *Relevant Conditions of Consent*

Conditions 105, 106 and 107 of the Consent state:

- 105 *As part of the CEMP, the Applicant must provide details of measures to prevent fires igniting during construction activities. These measures must include, but not be limited to:*
- (a) Prohibition of work involving risk of ignition during total fire bans;*
 - (b) Availability of fire suppression equipment; and*
 - (c) Storage and maintenance of fuels and other flammable materials.*
- 106 *During Construction, the Applicant is to consult with the local RFS in periods of high fire danger, to verify that proposed activities to be undertaken during this period, will not adversely increase the risk of bushfire. The Applicant must comply with any reasonable request for the local RFS.*
- 107 *The Applicant must consult with the RFS after the commencement of operation and any other time thereafter as required by the RFS, to ensure that the local RFS is familiar with the development, including location and identification of wind turbines for the purpose of fast access in emergencies.*

8.2 *Bushfire management plan*

Despite the low fire risk that sophisticated modern day wind farms present, planning for fire prevention and having an effective and informed response is necessary to give the Rural Fire Service the knowledge and confidence required to plan and execute an effective response. It provides wind farm proponents confidence that minimum damage will occur as a result of any incident, and it reassures the local community that appropriate measures have been adopted regarding fire prevention and response.

In accordance with good management practice and our obligations under the development consent, a bushfire management plan has been developed to address issues relating to fire management. This plan is included in section 24 – Appendix 7.



9.0 ENVIRONMENTAL MANAGEMENT MEASURES

Table 9: Environmental Management Measures

Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
Community Consultation	A community consultation program will be established as an integral component of the CEMP. This program will be initiated prior to works commencing and be maintained for the duration of the works.	See Section 5.2 of CEMP and also Appendices 3 & 4.	Prior to works commencing and during all works	Contractor
Soil & Water	A Soil and Water Management Plan (SWMP) has been prepared for the project in consultation with landowners, Sydney Catchment Authority, the Department of Infrastructure Planning and Natural Resources (sic) and the Department of Environment and Conservation (Now OEH) (sic). The SWMP forms part of the CEMP.	Appendix 6	Completed	Geolyse Pty Ltd
Soil & Water	Contractors undertaking site works will be required to formulate site specific erosion and sediment control plans addressing their contract component prior to any works commencing on site.	Appendix 6 (5.2.1)	Upon appointment of Contractor	Principal Contractor
Soil & Water	A detailed geotechnical investigation has been undertaken as part of the detailed design. This investigation identifies any areas requiring special attention for earthworks to control erosion and sediment control	Appendix 6 Soil & Water Management Plan was informed by the Douglas Partners (2009) Report on Geotechnical Investigation, Taralga Wind Farm. (see References)	Completed	Douglas Partners Pty Ltd



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
Soil & Water	A range of erosion and sediment control measures such as diversion drains, banks, sediment traps, sediment filters, fencing and batter stabilisation will be used where appropriate. The details of these controls are included in the SWMP.	Appendix 6	During construction works	Principal Contractor
Soil & Water	Where disturbed sites are to be reinstated and revegetated, follow up maintenance will be undertaken until the areas are satisfactorily stabilised and restored.	Appendix 6	Post-construction	Principal Contractor
Soil & Water	Excavations will be left open for as short a time as possible and sites will be stabilised and restored promptly after works are undertaken.	Appendix 6	During construction	Principal Contractor
Soil & Water	Sufficient containment will be provided to contain any spillage that may occur from oil or fuel stored on site. These sites will be monitored periodically for integrity of containment and adequacy of handling procedures.	Appendix 6	During construction and the event of any spillage	Principal Contractor
Waste Management	All packaging, general construction debris and domestic waste will be removed off-site and not be disposed of at Council's waste transfer station in Old Showground Road. Wastes will be disposed in accordance with waste regulations.	All wastes shall be removed from site and disposed of in accordance with waste regulations.	During and post-construction	Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
Licences & Permits	Works will be undertaken in compliance with the Development Consent Conditions and all relevant licences and permits.	The CEMP addresses these legal aspects	During construction	Principal Contractor
Licences & Permits	All necessary approvals and permits, including and (sic) Environment Protection Licence for the construction and operational stages of the wind farm, will be obtained prior to commencement of those stages.	Wind farms are not listed as being a 'Scheduled Activity' listed in Schedule 1 of the Protection of the Environment Operations Act, 1997. Other permits for crossing riparian zones and for traffic and transport purposes will be obtained	Prior to construction	Principal Contractor
Traffic Management	Preparation of and compliance with a Traffic Management Plan (TMP), as part of the CEMP, for the management of all traffic related issues. This TMP has been prepared in consultation with Councils' Traffic Management Committee.	Appendix 4.	Completed	SKM
Traffic Management	For delivery of equipment with over dimensional loads (size and/or mass) an experienced transport contractor will be used. The contractor will be responsible for all aspects of equipment haulage to site, including liaison with authorities for overmass and oversize permits, haulage routes, modes of operation and timetable, and modifications to infrastructure.	The principal contractor will be required to engage a suitably experienced transport contractor.	During construction	Principal Contractor
Traffic Management	The transport contractor will be required to submit a transport plan to the Roads and Traffic Authority (RTA) (including route details, time of travel, etc) as part of	See Appendix 4, Section 4.5. Further consultations will occur during the permit	During Plan preparation and prior to	SKM & Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
	the permits process.	application process. See also Conditions 58 – 82 relating to Traffic Management.	construction	
Traffic Management	Agreements will be entered into with the relevant road authorities on responsibilities for maintaining public roads in a safe condition, including Section 94 Contributions for rectification of any impacts on the road infrastructure.	See Conditions 58 – 82 relating to Traffic Management.	Prior construction to	Principal Contractor
Traffic Management	A road inspection will be undertaken with the relevant road authorities prior to works commencing, and ongoing monitoring will be undertaken during construction to ensure routes and surfaces are maintained in a safe condition.	See Appendix 4 (5.4). See also Conditions 58 – 82 relating to Traffic Management.	Prior construction to	Principal Contractor
Traffic Management	Access treatment to public roads will be designed and constructed to the satisfaction of the road authority to ensure safe access/egress.	See Conditions 58 – 82 relating to Traffic Management.	Prior construction to	Principal Contractor
Traffic Management	Implementation of specified controls in the TMP to manage traffic on and off-site to minimise impacts on local traffic and the level of road service. These controls will include measures such as designated routes, speed limits, scheduling, consultation, signage, wheel cleaning grates and road maintenance.	See Conditions 58 – 82 relating to Traffic Management. See also Appendix 4 (S5)	Prior construction to	Principal Contractor
Traffic Management	A key component of the TMP is that the process of consultation is to be maintained with users of the public roads impacted during construction. This is particularly the case for Hillcrest Road, which is used to access properties not associated with the development, contains a number of stock ramps, is not	See Conditions 58 – 82 relating to Traffic Management. See Consultation section of	Prior construction to	Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
	fenced, and is consistently used for grazing and stock movement. A similar situation applies at Alders and Crees Road, where this public road provides access to a residence (Crees Cottage) not associated with the development, as well as access to a farming block off Riparosso Road.	CEMP and Appendix 4 (5.6)		
Traffic Management	Broader consultation will also be undertaken with stakeholder groups to ensure that scheduled periods for busy traffic movements can be appropriately programmed (i.e. school and public holiday periods when the Wombeyan Caves experienced their greatest visitation and the long weekend for the Taralga Rodeo).	See Conditions 58 – 82 relating to Traffic Management. See Consultation section of CEMP and Appendix 4 (5.6)	Prior construction to	Principal Contractor
Traffic Management	Signposting will be provided in consultation with local authorities to advise of construction traffic.	See Conditions 58 – 82 relating to Traffic Management. See Consultation section of CEMP and Appendix 4 (5.6)	Prior construction to	Principal Contractor
Biodiversity	Clearing of native trees will be undertaken under the supervision of an ecologist. Trees will always be lopped or trimmed in preference to removal wherever possible.	See Conditions 85 – 90A relating to Flora & Fauna. See also Appendix 5, Table 5	During construction	Principal Contractor
Biodiversity	Vegetation pre-clearance surveys will be conducted and, if necessary, relocate suitable tree hollows to mitigate roost loss.	See Conditions 85 – 90A relating to Flora & Fauna. See also Appendix 5, Table 5	Prior to and during construction	Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
Biodiversity	All trees to be removed will be inspected for nesting and sheltering mammals/birds/reptiles prior to felling.	See Conditions 85 – 90A relating to Flora & Fauna. See also Appendix 5, Table 5	Prior to and during construction	Principal Contractor
Biodiversity	Conduct a spring field survey with time-based echolocation call monitoring equipment to monitor any threatened bat species nocturnal activity patterns.	See Conditions 85 – 90A relating to Flora & Fauna. See also Bird & Bat Management Program within Appendix 5	Prior to and during construction	Principal Contractor
Biodiversity	In the micro-siting of exact turbine locations, avoid positioning of turbines in the vicinity of stock dams, or in consultation with the landowner, consider stock dam relocation, to negate their attraction as drinking and foraging sites for bats during hot weather.	See Conditions 85 – 90A relating to Flora & Fauna. See also Bird & Bat Management Program within Appendix 5	Prior to and during construction	Principal Contractor
Biodiversity	Areas to be avoided during construction due to environmental sensitivity will be clearly delineated with flagging or barrier fencing.	Appendix 5, Table 5	Prior to and during construction	Principal Contractor
Biodiversity	Measures will be adopted to prevent the introduction of invasive species. Weeds will be monitored on disturbed sites and controlled as necessary.	Appendix 5, Table 5	Prior to and during construction	Principal Contractor
Biodiversity	Clearing of native trees will be undertaken under the supervision of an ecologist. Trees will always be lopped or trimmed in preference to removal wherever possible.	Appendix 5, Table 5	Prior to and during construction	Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
Heritage	At Turbine Row 10 a 30m buffer will be fenced around the open site (OS1) from the beginning of the eucalyptus copse and the southern most turbine (T49).	Protective fencing is to be erected in accordance with EIS	Prior to and during construction	Principal Contractor
Heritage	At Turbine Row 11 a protective fence will be installed 25m from the fenceline and extended north of the dam for at least 100m; providing a 30m buffer around the open site (OS2).	Protective fencing is to be erected in accordance with EIS	Prior to and during construction	Principal Contractor
Heritage	Access to Turbine Row 12 will be routed at least 100m south of the site complex (OS3 and OS4) and construction techniques ensure no stripping of the ground for 100m either side of the dammed drainage line (Crees Creek).	Additional measures to be implemented during construction	During construction	Principal Contractor
Heritage	Access along Turbine Row 14 will be routed as far east as possible of the site (OS6) and construction techniques ensure no stripping of the ground for 100m either side of the site.	Additional measures to be implemented during construction	During construction	Principal Contractor
Heritage	All construction personnel will undertake site induction concerning cultural heritage issues (locations and legislative obligations not to disturb).	All construction personnel must receive site induction regarding cultural heritage issues	Prior to and during construction	Principal Contractor
Heritage	In the event any Aboriginal site is identified during construction, work in that area will cease and the Department of Environment and Conservation's Regional Archaeologist, the Pejar Local Aboriginal Land Council and the Gundungurra	See conditions 83 and 84.	During construction	Principal Contractor



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
	Tribal Council Aboriginal Corporation will be contacted to discuss how to proceed.			
Heritage	CBD will finalise consultation with the Gundungurra Tribal Council Aboriginal Corporation (GTCAC), the registered Native Title Claimant (NC97/7), for an Indigenous Landuse Agreement (ILUA) to permit use of portions of the vacant Crown Land for 4 turbines. An ILUA is a voluntary agreement between a native title group and others about the use and management of land. These discussions include the Department of Lands and are consistent with the requirements of the Commonwealth's <i>Native Title Act, 1993</i> .	ILUA Agreement Signed by Minister for Lands 1/3/2007	Completed	CBD
Noise Management	<p>A Noise Management Plan (NMP) has been prepared as part of the Construction Environmental Management Plan (CEMP). This NMP includes procedures and responsibilities for:</p> <ul style="list-style-type: none"> consultation with property owners and the local community before works commence and during the construction phase, investigating any complaints and implementing ameliorative measures, and ensuring mitigative measures are effective and consistently implemented. <p>Specific mitigation techniques will include measures such as restricting construction activity to approved hours, construction staff awareness of noise management responsibilities; the use of approved access routes that avoid the need for heavy vehicle movements through the village; use of equipment that is maintained in good working order and fitted with the appropriate silencers, mufflers or acoustic covers; siting stationary noise sources as far away as</p>	Appendix 3 of CEMP	Completed	Sonus Pty Ltd



Environmental Issue & Management Measures		Reference Notes	Timing	Responsibility
	<p>possible from residences and, if necessary, providing acoustic barriers to shield them.</p> <p>Prior to and throughout the construction phase CBD will provide a forum for monitoring noise impacts with the local community and investigating all practicable options for ensuring construction noise is not disruptive to the community.</p>			
Bushfire	<p>A bushfire management plan will be prepared for the project in consultation with the local Rural Fire Service. Mitigation measures will include liaison with the local Bushfire Brigade and provision of appropriate fire fighting equipment on site. In the event of welding, flame cutting or grinding being carried out in the open during periods of fire danger, an observer holding a knapsack spray will be on hand. All exhaust systems on vehicles will be maintained and checks on dry vegetation under vehicles will be conducted periodically.</p>	<p>See Conditions 105-107 relating to Bush Fire Fighting. Section 8 of the CEMP provides bushfire management measures. Further consultation with the Rural Fire Service is required to occur during construction.</p>	<p>Completed (Approval from RFS received)</p>	<p>Principal Contractor and Owner</p>
Air Quality	<p>Measures to control dust will include wetting, stabilising topsoil stockpiles; restoration of disturbed areas as soon as possible; and where practical, placement of stockpiles in sheltered locations to minimise dispersal by high winds.</p>	<p>Appendix 6 of CEMP provides soil and water management measures to minimise dust emissions and conditions 100 & 101 relating to Air Quality require measures to be implemented to control dust emissions.</p>	<p>During construction</p>	<p>Principal Contractor</p>



Table 10: Waste Management Table

Environmental Issue & Impact Assessment		Reference Notes	Timing	Responsibility
Waste Management	All site personnel and subcontractors to minimise generation and disposal of waste. Construction material will be ordered and used to minimise the generation of materials excess to that required.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	Recyclable and non-recyclable rubbish will be disposed separately, with recycling facilities provided by construction Contractor at construction sites.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	All domestic garbage and industrial waste is to be disposed of into proper industrial bins for collection. No open or ground rubbish is permitted.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	Appropriate waste contractors shall be used to remove waste from site.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	Maintenance and repair of plant conducted off site where possible.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	Any weed species cleared will be stored separately and disposed of appropriately at Council's landfill.	EIS Section 6.3.1, Appendix 5 S. 2.4 & Table 6 and Work Method Statement required	During construction	Principal Contractor



Environmental Issue & Impact Assessment		Reference Notes	Timing	Responsibility
		to be prepared by Principal Contractor		
	Debris from the removal of vegetation shall not be left in any watercourse, drainage line or native vegetation adjacent to the work area.	Section 6.3.1 and Work Method Statement required to be prepared by Principal Contractor	During construction	Principal Contractor
	Portable toilets are required to be provided for construction employees. The portable toilets are to be emptied by a licensed contractor as required.	Condition 111	During construction	Principal Contractor

Table 11: Residual Conditions Table

Environmental Issue & Impact Assessment		Reference Notes	Timing	Responsibility
Environmental Monitoring	<p><i>General Monitoring Requirements</i></p> <p>The Applicant must undertake all monitoring, including recording and reporting of monitoring results, as required under this consent and as may be specified in an Environment Protection Licence for the development.</p> <p>The results of any monitoring required under this consent must be recorded and maintained, as set out below. All records kept must be:</p> <ul style="list-style-type: none"> (b) in a legible form, or in a form which can be readily reduced to a legible form; (c) kept for at least 4 years after the monitoring or event to 	CEMP Section 14.0 and Conditions 19, 20 & 21	Ongoing	Construction Project Manager shall ensure compliance with General Monitoring Requirements



Environmental Issue & Impact Assessment		Reference Notes	Timing	Responsibility
	<p>which they relate took place; and</p> <p>(d) produced in a legible form to any authorised officer of the DEC or the Department who asks to see them.</p> <p>The following records must be kept in respect of any samples required to be collected:</p> <p>(a) the date(s) on which the sample was taken;</p> <p>(b) the time(s) at which the sample was collected;</p> <p>(c) the location at which the sample was taken (including a description of the DEC identification point); and</p> <p>(d) the name of the person who collected the sample.</p>			
Lighting	The Applicant must take all practicable means to ensure that all external lighting associated with the development during construction is mounted, screened and directed in such a manner so as not to create a nuisance to surrounding residential dwellings or roadways.	Condition 36	During Construction	Principal Contractor shall monitor direction of night lighting
Air Quality	<p>The Applicant must design, construct, operate and maintain the development in a manner that minimises dust emissions from the site associated with the development.</p> <p>The Applicant must take all practicable measures to ensure that all vehicles associated with the development entering or leaving the site and carrying a load that may generate dust, are covered at all times, except during loading and unloading. Any such vehicles must be covered or enclosed in a manner</p>	Conditions 100 and 101	During Construction	Principal Contractor shall implement these conditions



Environmental Issue & Impact Assessment		Reference Notes	Timing	Responsibility
	that prevents emissions from the vehicle at all times.			
Spoil and Fill Management	For the purposes of the development, imported fill must be Virgin Excavated Natural Material as defined in the EPA's publication <i>Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes</i> .	Condition 102	During Construction	Principal Contractor
Hazards	<p>Bush Fire Fighting</p> <p>As part of the CEMP, the Applicant must provide details of measures to prevent fires igniting during construction activities. These measures must include, but not be limited to:</p> <ul style="list-style-type: none"> (a) prohibition of work involving risk of ignition during total fire bans; (b) availability of fire suppression equipment; and (c) storage and maintenance of fuels and other flammable materials <p>During Construction, the Applicant is to consult with the local RFS in periods of high fire danger, to verify that proposed activities to be undertaken during this period, will not adversely increase the risk of bushfire. The Applicant must comply with any reasonable request of the local RFS.</p>	CEMP Section 9.0 and Conditions 105 and 106	Complete (pending approval from RFS)	Principal Contractor



10.0 RISK ASSESSMENT

A risk assessment for each phase of the project shall be undertaken by the main contractor and relevant subcontractors prior to commencement. The results of this risk assessment shall update this document.

Table 12: Recommendations from the Risk Assessment

Recommendations	Place(s) Used	Responsibility
1. The Environmental Impact Study highlights sensitive environmental areas based on significant ecological studies.	Hazards: 2.1.2, 6.1.1	Proponent
2. Site supervisor to monitor for dust, and introduce controls where required.	Hazards: 2.2.1, 3.1.1	Principal Contractor
3. Consultation to occur with landowners in conjunction with Industry Standards for Construction.	Hazards: 2.2.2	Principal Contractor
4. Ensure that a central Site Emergency Response Plan is developed, communicated and understood by all parties at the work site.	Hazards: 2.3.1	Principal Contractor
5. Ensure that the local emergency services are consulted during the development of the Site Emergency Response Plan.	Hazards: 2.3.2	Principal Contractor
6. Invite the local emergency services to conduct routine site familiarisation of the wind farm.	Hazards: 2.3.2	Principal Contractor
7. Site Supervisor to monitor waterways for discolouration and introduce controls where required.	Hazards: 3.1.2	Principal Contractor
8. Ensure all hydraulic equipment is regularly serviced with copies of maintenance certificates held on site.	Hazards: 5.1.1	Principal Contractor
9. Ensure that the set-up of site amenities includes adequate stores of water for washing.	Hazards: 4.1.1	Principal Contractor
10. Ensure that an inspection of site rehabilitation is completed prior to site handover.	Hazards: 6.1.1, 6.2.1	Principal Contractor



The Risk Assessment Worksheet below identifies the potential risk for certain aspects of the development and the mitigation and safeguard measures to be undertaken to minimise the impacts associated with the works proposed. The selected control measures for issues impacting on the environment may also be associated with or included in a Work Method Statement (WMS), other procedure that the Principal Contractor will be required to have in place, or Supplementary Environmental Management Plans. Additional impacts may be identified during the works and will be added to the Risk Assessment Worksheet, and, if necessary environmental controls developed.



Risk Assessment Worksheet

System	Subsystem	Hazards	Consequences	Current Safeguards	Current Environmental Risk			Recommendations	Responsibility
					C	L	Risk		
Greenfield Site Inspection	Micrositing	Inadequate vehicle access tracks	Vehicle bogging down	wheel drive vehicles to be used where off-road travel is required	Negligible	Occasional	Insignificant		
Site Establishment	Mobilisation	Inadequate vehicle access tracks	Vehicle bogging down	4wheel drive vehicles to be used where off-road travel is required	Negligible	Occasional	Insignificant		
Site Establishment	Mobilisation	Damage to flora and fauna	Penalties imposed by the EPA	Wind farm site located on farm grazing land	Marginal	Remote	Significant	The Environmental Impact Study highlights sensitive environmental areas based on significant ecological studies.	Proponent
Site Establishment	Earthworks	Excessive dust generation from earthworks	Complaints From landowners	Wetting down excavation area to reduce dust	Negligible	Occasional	Insignificant	Site supervisor to monitor for dust, and introduce controls where required	Principal Contractor



Site Establishment	Earthworks	Noise generation from earthworks	Complaints from landowners		Negligible	Occasional	Insignificant	Consultation to occur with landowners in conjunction with Industry Standards for Construction	Principal Contractor
Site Establishment	Emergency preparedness and response	Inadequate communication between contracting parties	1. Delay in responding to emergencies	1. Principal contractor has overall control of the site	Critical	Remote	Significant	Ensure that a central Site Emergency Response Plan is developed, communicated and accepted by all parties at the work site	Principal Contractor
Site Establishment	3 Emergency preparedness and response	Lack of communication to external emergency services	Delay in responding to emergencies		Critical	Remote	Significant	Ensure that the local emergency services are consulted during the development of the Site Emergency Response Plan	Principal Contractor
Foundation	Excavation	Dust generation from earthworks	Complaints from landowners	Wetting down excavation area to reduce dust	Negligible	Occasional	Insignificant	Site supervisor to monitor for dust, and introduce controls where required	Principal Contractor
Foundation	Excavation	Soil runoff into waterways	Pollution of waterways	Soil runoff mitigation including drainage and water retention.	Negligible	Occasional	Insignificant	Site Supervisor to monitor waterways for discolouration and introduce controls where required.	Principal Contractor



Component Preparation	Cleaning	Hydraulic leaks	Contamination of surrounding land		Negligible	Remote	Insignificant	Ensure all hydraulic equipment is regularly serviced with copies of maintenance certificates held on site.	Principal Contractor
Commissioning	Mechanical	1Hydraulic leaks	Contamination of surrounding land		Negligible	Remote	Insignificant	8. Ensure all hydraulic equipment is regularly serviced with copies of maintenance certificates held on site.	Principal Contractor
Site demobilization	Movement of vehicles	Damage to flora and fauna	Penalties imposed by the EPA	Wind farm site located on grazing land	Marginal	Remote	Significant	Ensure that the Environmental Impact Study highlights sensitive environmental areas based on significant ecological studies. Ensure that an inspection of site rehabilitation is completed prior to site handover	Principal Contractor
6. Site demobilization	2. Disposal of waste material	Contamination of land	1. Penalties imposed by the EPA		Marginal	Remote	Significant	Ensure that an inspection of site rehabilitation is completed prior to site handover	Principal Contractor

C = Consequence; L = Likelihood



11.0 ENVIRONMENTAL MANAGEMENT DOCUMENTATION

This CEMP, along with relevant industry standards, guidelines and legislation forms part of the site Environmental Management System (EMS) and documentation.

The documentation framework for the project.

Level 1: Legislation

Level 2: The CBD Energy Limited Environmental Management System Manual

Level 3: This CEMP

Level 4: EMS Procedures

Level 5: Work Instructions

Level 6: Supplementary Documentation

The following EMS procedures, work instructions and templates are applicable to the Project.

There are several procedures that are shared with the Quality Management System (QMS) and are filed with QMS documentation i.e the Audit Procedure.

The principal references for this document as listed In the Land and Environment Court of New South Wales Conditions of Consent 10196 OF 2006 23 February 2006 Consent Condition no. 3 are:

- (a) Development Application No. DA-241/04; lodged with Upper Lachlan Council on 10 November 2004;
- (b) *Taralga Wind Farm Environmental Impact Statement* (two volumes) prepared by Geolyse, dated November 2004;
- (c) *Proposed Taralga Wind Farm: Response to the Department Questions*, CBD , dated 28 January 2005, 4 February 2005, 28 February 2005, 11 March 2005;
- (d) *Proposed Taralga Wind Farm: Response to RTA Questions*, CBD , dated 31 January 2005;
- (e) *Proposed Taralga Wind Farm: Response to Questions from Department of Lands*, CBD , dated 25 January 2005;
- (f) *Proposed Taralga Wind Farm: Response to DEC Questions*, CBD , dated 24 January 2005, 17 February 2005, 3 March 2005, 15 March 2005;
- (g) *Proposed Taralga Wind Farm: Amendment to Development Application*, CBD , dated 1 March 2005;



- (h) *Proposed Taralga Wind Farm: Additional Information on Amendment to Development Application*, CBD , dated 15 March 2005, 21 March 2005; and
- (i) NSW Land and Environment Court Order with Consolidated Modified Conditions of Consent dated 27 April, 2009.

If there is any inconsistency between the Conditions of Consent and a document listed above, the Conditions of Consent must prevail to the extent of the inconsistency. If there is any inconsistency between documents listed above (other than the Conditions of Consent) then the most recent document must prevail to the extent of the inconsistency.

11.1 EMS procedures

1	CBD-EMS-IP-0007	Operational Control Procedure
2	CBD-EMS-IP-0010	Environmental Emergency Preparedness and Response Plan
3	CBD-EMS-IP-0012	Preparing the Planning and Environmental Requirements Handover Document
4	CBD-EMS-IP-0016	Environmental Requirements of Sub-contractors

11.2 EMS work instructions

CBD will prepare Work Instructions where appropriate.

1	CBD-EMS-WI-0002	Reporting and Recording
2	CBD-EMS-WI-0001	Emergency Procedure in the Event of an Contaminant Spill

11.3 EMS templates

1	CBD-EMS-PT-0006	Planning and Environmental Requirements Handover Document (Project Specific Version should be filed)
2	CBD-EMS-PT-0010	Wind Farm Commissioning and De-commissioning Method Statement
3	CBD-EMS-PT-0002	Incident Summary Record Sheet
4	CBD-EMS-PT-0014	Environmental Complaint Form
5	CBD-EMS-PT-0017	Environmental Checklist
6	CBD-EMS-PT-0016	Wind Turbine Transformer Oil Spill Risk Assessment
7	CBD-EMS-PT-0163	Construction Site Waste Management Plan



12.0 WORK METHOD STATEMENTS

As stated in Section 6.3.1 of the E.I.S. Work Method Statements are required to be prepared. Specific Work Method Statements will be required to be prepared by the successful contractor, prior to construction. These Statements are to cover:

- community consultation;
- complaints investigation and reporting;
- construction hours;
- erosion and sedimentation controls;
- clearing controls and habitat protection;
- spoil management;
- pest and weed control;
- heritage protection;
- noise management;
- traffic management;
- fuel and oil handling procedures;
- waste management;
- emergency response and spill management;
- procedures for managing impacts and instigating corrective actions;
- dust management; and
- site rehabilitation and restoration.



13.0 INSPECTING, AUDITING AND MONITORING

Conditions 19, 20 & 21 of the Consent stipulate the General Monitoring Requirements of the Environmental Monitoring that is to be undertaken. These conditions state:

- "19 The Applicant must undertake all monitoring, including recording and reporting of monitoring results, as required under this consent and as may be specified in an Environment Protection Licence for the development.*
- 20 The results of any monitoring required under this consent must be recorded and maintained, as set out below. All records kept must be:*
- (a) in a legible form, or in a form which can be readily reduced to a legible form;*
 - (b) kept for at least 4 years after the monitoring or event to which they relate took place; and*
 - (c) produced in a legible form to any authorised officer of the DEC or the Department who asks to see them.*
- 21 The following records must be kept in respect of any samples required to be collected:*
- (a) the date(s) on which the sample was taken;*
 - (b) the time(s) at which the sample was collected;*
 - (c) the location at which the sample was taken (including a description of the DEC identification point); and*
 - (d) the name of the person who collected the sample."*

The Construction Project Manager will ensure that environmental monitoring will occur in accordance with the requirements of Conditions 19 to 21 of the Consent, as a minimum. This will include a system of regular inspections, monitoring, auditing and reporting by the Site Manager and the independent Environmental Representative (ER). The Environmental Representative shall be required to undertake the roles and responsibilities outlined in Condition 27 of the Consent. The ER shall also have the authority and independence to require reasonable steps be undertaken to avoid or minimise unintended or adverse environmental impacts required to undertake periodic inspections and auditing of the project and the Site Manager will undertake inspections on a weekly basis.

13.1 Auditing

The project will be subject to an audit process during construction. The Environmental Representative will be responsible for undertaking periodic audits. The Environmental Representative shall be required to undertake the roles and responsibilities outlined in Condition 27 of the Consent. In accordance with the 'Authority to Act' Agreement between CBD and the ER, the ER shall also have the authority and independence to require reasonable steps be undertaken to avoid or minimise unintended or adverse environmental impacts required to undertake periodic inspections and auditing of the project. Under the terms of the Authority to Act Agreement:

- The ER shall have right of access to the site, subject to reasonable notice in advance to ensure compliance with Health and Safety laws;



- The ER has the power to require the Proponent to take reasonable steps to avoid or minimise unintended or adverse environmental impacts at the site;
- The ER has the power to direct the cessation of a specific activity, with its geographical application limited to the location where the activity poses a threat. Should an agreement not be reached, the ER has the power to inform the Director-General;
- The Proponent must ensure that all staff and subcontractors are made aware of the ER's authority to be on site and authority to issue a Direction;
- The ER shall not be held responsible for any delay;
- The Proponent must make public the identity of the ER;

The project construction works will be subject to compliance and quality control auditing in accordance with relevantly applicable legislation, this CEMP document and industry best practice. Where non-compliance is found, a system of corrective action and additional monitoring will be implemented. In addition the ER will conduct regular visits to site and audit the works.

13.2 Inspection Reports

All inspection results are to be documented and kept in a register within **Appendix 10 (Environmental Representative's Inspection Reports)** and **Appendix 11 (Site Manager's Inspection Reports)** of this CEMP. The effectiveness of the inspections will be reviewed on an ongoing basis. Where necessary, the level, scope and frequency of inspections will be altered throughout the construction phase to ensure that the highest environmental performance is maintained.

Weekly inspections will be carried out by the Site Manager to achieve a fine scale monitoring of the construction work. An indication of the environmental aspects requiring monitoring, the frequency of inspections and compliance criteria is presented in Table 8 below. This Table is not exhaustive and may be expanded as specific environmental issues arise.

Table 13: Inspection Frequency and Compliance Criteria

Aspect	Potential Issue	Inspection Frequency	Compliance Criteria
Native Flora & Fauna Habitat impacts	<ul style="list-style-type: none"> • Significant disturbance to flora and fauna habitat areas and riparian zones; • Root compaction by stockpiles; • Disturbance from dust emissions. 	Weekly / fortnightly	<ul style="list-style-type: none"> • No significant disturbance; • No unacceptable impacts identified from monitoring programme; • Works to be consistent with the Biodiversity Sub Plans.



Aspect	Potential Issue	Inspection Frequency	Compliance Criteria
Transportation of Weeds to/from the site.	<ul style="list-style-type: none"> Spread of weeds to non-affected areas. 	Monthly	<ul style="list-style-type: none"> No new weed infestations within construction footprint; Inspect / wash down all vehicles entering and exiting the site.
Soil & Water impacts of Excavation & Stockpiled Materials	<ul style="list-style-type: none"> Dust emissions, water pollution & soil erosion; 	Weekly	<ul style="list-style-type: none"> Excavations and stockpiled materials comply with SWMP of this CEMP; Erosion and sediment control measures installed and maintained as per SWMP.
Hazardous Materials and Waste	<ul style="list-style-type: none"> Site Contamination 	Daily	<ul style="list-style-type: none"> All hazardous materials and waste stored and handled in accordance with legislative requirements and the SWMP of this CEMP. Contingency plans for fuel spills as per SWMP.
Construction Traffic, Construction Works, Vehicles and Machinery	<ul style="list-style-type: none"> Excess noise or vibration emissions; 	Daily	<ul style="list-style-type: none"> All noise and vibration emissions to be consistent with NVMP of this CEMP; All heavy vehicle traffic to be in accordance with the CTMP
Fire Management	<ul style="list-style-type: none"> Risk of fire from hot work, vehicles, excavations or hazardous materials storage. 	Daily	<ul style="list-style-type: none"> Site works are consistent with the Bushfire Management section of the CEMP. Develop and implement a FHMP and an ERP in accordance with the RFS; Ensure FHMP & ERP is communicated to accessible by all staff and RFS.



Aspect	Potential Issue	Inspection Frequency	Compliance Criteria
Site remediation	<ul style="list-style-type: none"> • Replace vegetation losses with additional plantings; • Site restoration of land surrounding each turbine location. 	Post-construction as each turbine is commissioned.	<ul style="list-style-type: none"> • Additional native vegetation plantings within proposed revegetation zones in Biodiversity Sub Plans; • Site restoration in accordance with Figure 2.8 of the EIS.



13.3 Monitoring

Table 14: Monitoring requirements stated in E.I.S. and CEMP reference

E.I.S. Monitoring Requirement		Responsibility	Frequency	Reference
Community Engagement	Site log book for recording commitments and any complaints from landowners and the community, including detail of response procedures to ensure they are dealt with in a timely and effective manner.	Site Manager & Environmental Representative	Continual	CEMP main document, Appendix 3 & 4 and Condition No. 27
Erosion and Sedimentation Control	Inspections of work areas prior to activity commencing to ensure appropriate erosion and sedimentation control structures are in place.	Site Manager	Continual	Appendix 6, S6.1
Surface Water Quality	Inspect controls weekly, and following significant rainfall events to ensure structures are effective. Undertake follow up inspections if required.	Site Manager	Weekly and following significant rainfall events.	Appendix 6, S6.1 and EIS Table 6.1
Surface Water Quality	Inspect excavated areas for collected rainwater and implement appropriate controls for discharge.	Site Manager	After significant rainfall events.	Appendix 6, S6.1 and EIS Table 6.1
Surface Water Quality	Inspect integrity of bunded areas and adoption of best practice during fuelling.	Principal Contractor	Continual	Appendix 6, S5.3.6 and EIS Table 6.1
Surface Water Quality	Inspect condition of machinery and plant to ensure no fuel and/or oil leaks.	Principal Contractor	Weekly	Appendix 6, S5.3.6 and EIS Table 6.1



E.I.S. Monitoring Requirement		Responsibility	Frequency	Reference
Vegetation and Soils	Inspect vehicles prior to leaving the site to ensure no spillage onto public roads.	Principal Contractor	Continual	Condition 100 & 101 and EIS Table 6.1
Vegetation and Soils	Inspect construction zones to ensure vegetation disturbance is restricted to specified clearing zones and that erosion is not occurring.	Site Manager	Continual	EIS Table 6.1, Condition 96 (erosion), Appendix 6 References P.28 (incorporates Landcom's standards)
Vegetation and Soils	Inspect disturbance areas for weeds and pests.	Site Manager / Ecologist	Continual	EIS Table 6.1, Condition 85 and Appendix 5 Table 6
Habitat	Inspect vegetation prior to clearing to ensure fauna would not be displaced.	Site Manager / Ecologist	Prior to clearing	Appendix 5, Table 5
Habitat	Monitor rehabilitation of finished works areas and inspect for weeds.	Site Manager / Ecologist	Continual	Appendix 5 Table 5
Habitat	Monitor for nocturnal activity patterns of threatened bat species to provide baseline data.	Ecologist	Spring	Appendix 5, S3.4
Noise	Conduct investigative noise monitoring in response to specific complaints.	Acoustic Consultant	As required.	Appendix 3
Air Quality	Visually monitor dust generation from work zones.	Site Manager/ Principal Contractor	Continual	Condition 100 & 101 and EIS Table 6.1
Traffic Management	Check construction plant and equipment work within approved zones.	Principal Contractor	Continual	All construction traffic shall be limited to the civil construction zones specified in Appendix 4



E.I.S. Monitoring Requirement		Responsibility	Frequency	Reference
				S.3.2.2, electrical zones 3.2.4 and turbine zones 3.2.4
Traffic Management	Check speed limits are adhered to and loads are covered.	Principal Contractor	Continual	Condition 101. All vehicles shall adhere to speed limits at all times.
Heritage	Check all sites are adequately flag protected prior to works commencing in these areas.	Site Manager	Prior to works near recorded sites commencing.	Condition 83 – 84 and EIS S.6.2.3.8 and Table 6.1
Heritage	Monitor construction works in these areas to ensure disturbances are restricted to zones that do not compromise heritage sites.	Site Manager	During works near recorded heritage sites.	All works shall be monitored to protect heritage sites identified in EIS S.6.2.3.8 and Heritage Management Plan
Waste	Inspect waste receptacles to ensure they are being emptied as required.	Principal Contractor	Weekly	Table 11 above and EMS Template ACE-EMS-PT-0163 (Construction Site Waste Management Plan)
Waste	Inspect construction zones to ensure no on-site waste disposal.	Principal Contractor	Continual	Continual waste removal inspections of construction zones shall be carried out
TV Reception	Conduct a benchmark survey of television reception quality in the area.	Technical Analyst	Prior to construction	Condition 30. TV reception survey shall form part of a Community Information Plan.



E.I.S. Monitoring Requirement		Responsibility	Frequency	Reference
Reporting	Review quantitative monitoring requirements specified in conditions of consent and licenses/permits (sic).	Construction Project Manager	As required.	All quantitative monitoring requirements shall be reviewed by Principal Contractor and reported to the Construction Project Manager



14.0 NON COMPLIANCE

If a significant impact on the environment occurs during the construction phase, works in the immediate area shall temporarily cease while the CBD Project Manager and the ER are advised and an action plan is devised. Where required, the relevant authorities will be contacted.

Where non-compliance is determined, works may be ceased at a geographically specific location under direction of the Environmental Representative until the non-compliance is rectified or resolved.

In the event that agreement cannot be reached, the ER shall inform the D-G.

15.0 STAKE HOLDER MANAGEMENT AND COMMUNICATIONS

The planning consent details a number of areas where the proponent has an obligation to provide information and communicate to the public. Of particular interest are the following conditions within the consent:

- Condition 9 – Provision of documents
- Condition 28 – Communications
- Condition 29 – Complaint management system
- Condition 30 – Community information plan
- Schedule 3 – Public documents

As required by the planning consent and in accordance with our best practice objectives CBD will have a project consultation and communications plan.

The plan shall address the following:

- Community information announcements and planning
- Updates on progress and activities
- Public display of documentation
- Information and complaints management process
- Project contact details

This plan details the process and procedures paramount to the successful communications of project information and stakeholder management. Details of advertising, website, phone and email contacts.

A copy of the plan is included in section 26 – Appendix 9 – Communication and Consultation management plan.



16.0 GLOSSARY OF TERMS

BSP	Biodiversity Sub Plans (Flora & Fauna; Bird & Bat; and Riparian Vegetation).
CEMP:	Construction Environmental Management Plan.
Consent:	NSW Land and Environment Court Order in Matter No. 10196 of 2006, dated 23 February, 2007.
Council:	Upper Lachlan Shire Council.
EIS:	<i>Taralga Wind Farm Environmental Impact Statement</i> (two volumes) prepared by Geolyse Pty Ltd, dated November, 2004.
EMS	CBD Australia Environmental Management Systems.
ERP	Emergency Response Plan.
FHMP	Fire Hazard Management Plan.
D-G	Director General, NSW Department of Planning.
DoP	NSW Department of Planning.
NVMP	Noise and Vibration Management Plan.
CBD:	CBD Energy Limited
RFS:	NSW Rural Fire Service.
RTA:	NSW Roads & Traffic Authority.
SCA:	Sydney Catchment Authority.
SWMP	Soil & Water Management Plan.
QMS	CBD Group Quality Management Systems
CCP	Communications and Consultation Plan (including CIP)
CIP	Community information plan (incorporated in CCP)



17.0 FIGURES

- Taralga Wind Farm 61 Turbine layout and Landowner Boundaries
- Consented Infrastructure Layout



Figure 3 - Landowner Boundaries

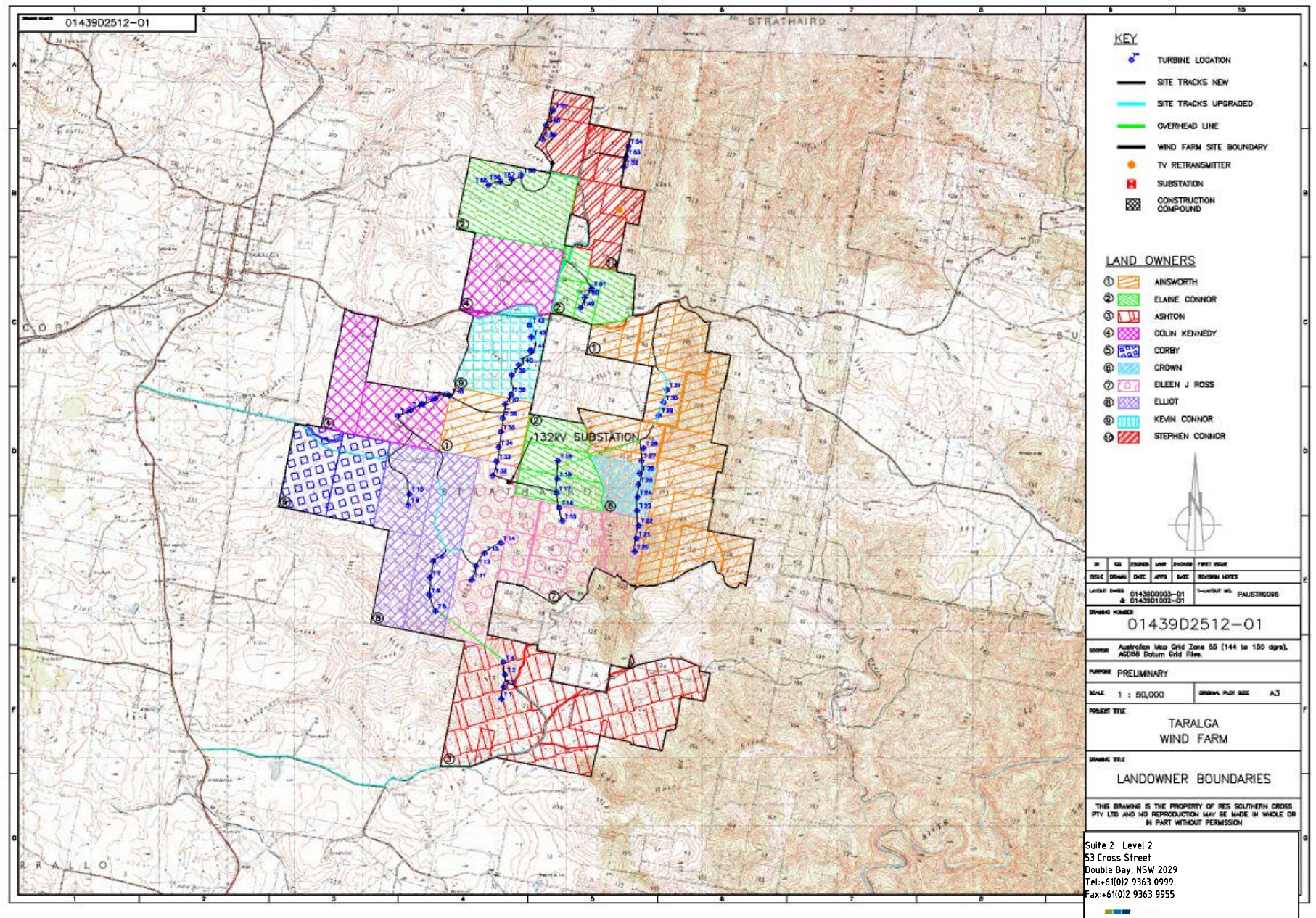
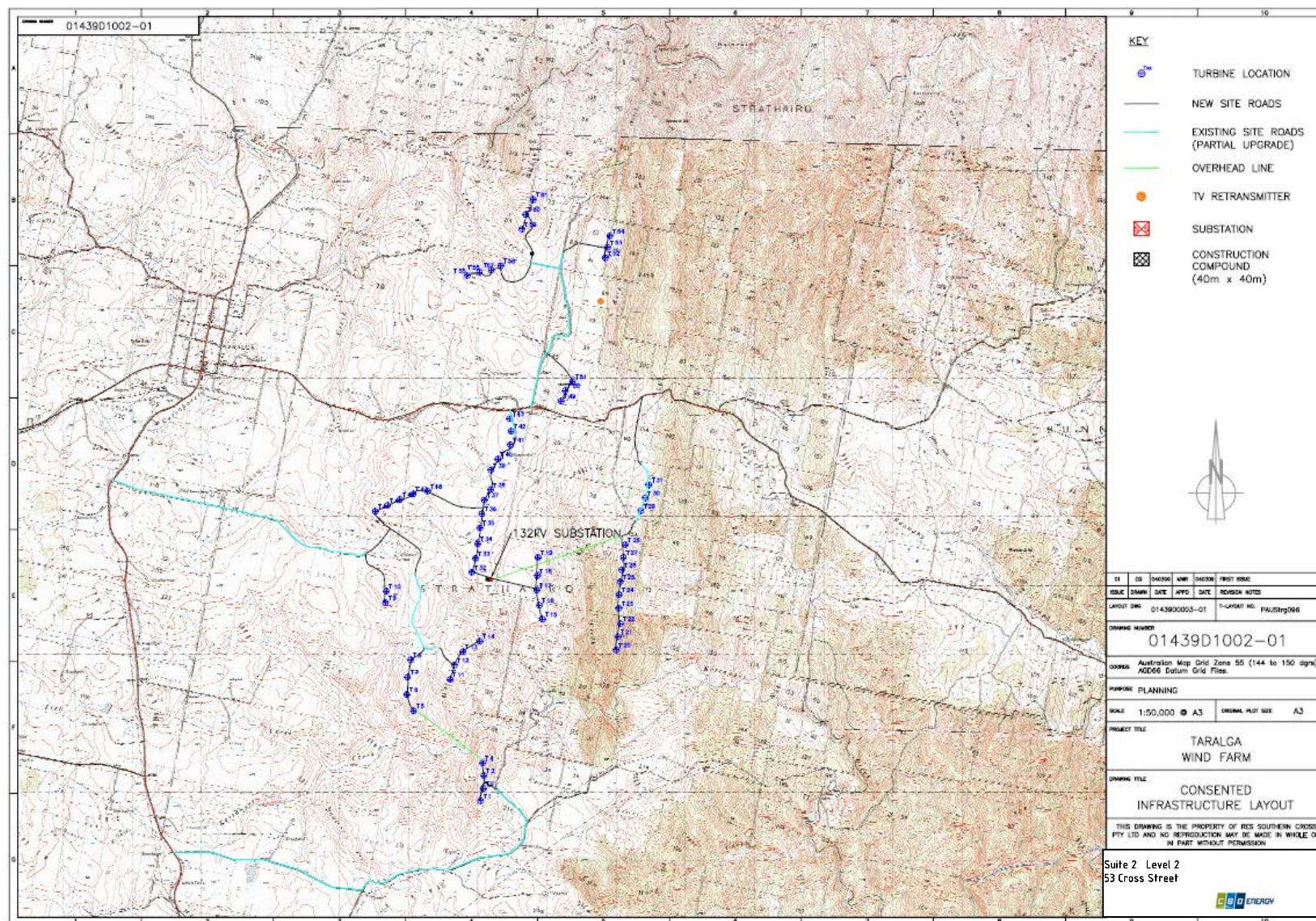


Figure 4 - Consented Infrastructure Layout





18.0 APPENDIX 1 – CBD AUSTRALIA ENVIRONMENTAL MANAGEMENT SYSTEM POLICY



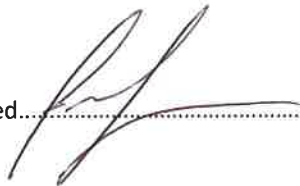
ENVIRONMENT POLICY

CBD recognise the importance of reducing human impact on the environment. Various aspects of wind farm development, construction and operation business can impact on the environment. To minimise the effects of our activities on the environment and prevent pollution we will, utilise our Environmental Management Plan and System to apply a hierarchy of environmental controls to eliminate, substitute and mitigate environmental impacts and ensure continual improvement in our environmental performance.

CBD are committed to:

- Establishing and maintaining an EMS.
- Ensuring compliance with applicable environmental legislation and recognised good practice.
- Maintaining and continually improving our environmental management system to prevent pollution and minimize any adverse impacts on the environment and local community
- Setting annual targets and long term objectives against which continuous improvements and progress can be reported.
- Monitoring our working practices and operations to reduce their environmental impact and to manage the effective use of natural resources.
- Engage with stakeholders wherever possible through consultation with staff and interested parties to identify innovative solutions and appropriate alternatives to meet environmental challenges
- Encouraging our staff, sub-contractors and suppliers to be environmentally aware, utilise resources sustainably and employ best practice within our procurement processes.
- Reducing, re-using and recycling waste produced in all parts of our business as far as is practicable.
- Ensuring employees and management understand and are accountable for the achievement of these policy goals through communication and training.
- Integrating the EMS with our Health and Safety and Quality systems.
- Communicating the policy, as appropriate, to customers, suppliers, interest groups and the public.

Signed.....



Date.....

15/02/2012



19.0 APPENDIX 2 – ENVIRONMENTAL REPRESENTATIVE APPROVAL





ABN 81 011 241 552

Upper Lachlan Shire Council

RECEIVED

10 JAN 2012

All correspondence addressed to the General Manager, PO Box 42, Gunning NSW 2581

Crookwell Office: 44 Spring Street, Crookwell NSW 2583

p: 02 4830 1000 | f: 02 4832 2066 | e: council@upperlachlan.nsw.gov.au | www.upperlachlan.local-e.nsw.gov.au

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Taralga Office: Taralga Community Service Centre, Orchard Street, Taralga NSW 2580

p: 02 4840 2099 | f: 4840 2296 | e: taralgacsc@ceinternet.com.au

Environment and Planning Department

Reference: F10/67-02

17 January 2012

CBD Energy Limited
Suite 2 Level 2
53 Cross Street
DOUBLE BAY NSW 2028

ATTENTION: Pedro Vozone

Dear Mr Vozone

TARALGA WIND FARM (DA 241/104); NOMINATION OF ENVIRONMENTAL REPRESENTATIVE IN ACCORDANCE WITH CONSENT CONDITION 27

Thank you for your letter of 11 January 2012.

Council has reviewed Richard Mason's Curriculum Vitae as submitted by CBD Energy, and notes the NSW Department of Planning & Infrastructure's letter of 28 Nov 2011 confirming the Director-General's approval for Mr Mason to undertake the role of Environmental Representative for the Taralga Wind Farm in accordance with condition 27 of the development consent.

Council raises no objection to CBD Energy's nomination of Mr Mason as the Environmental Representative, and reiterates the Department of Planning & Infrastructure's reminder of your obligation under condition 27 of the development consent to publicise the identity of the Environmental Representative.

A copy of this letter has been forwarded to the Department of Planning & Infrastructure for information. Please contact Council's Environment and Planning Section on (02) 4830 1000 during office hours if you need more information.

Yours faithfully


John Bell
General Manager
Upper Lachlan Shire Council

CC: NSW Department of Planning & Infrastructure
GPO Box 39
SYDNEY NSW 2001
(Attention Kate Masters)



Contact: Kate Masters
Phone: (02) 9228 6378
Fax: (02) 9228 6366
Email: kate.masters@planning.nsw.gov.au

Mr Pedro Vozone
Renewable Engineer
AusChina Energy Group
50 Bay St
DOUBLE BAY NSW 2028

Dear Mr Vozone

Subject: Taralga Wind Farm (DA 241/104) - Environmental Representative - Condition 27

I refer to your correspondence dated 24 November 2011 nominating Mr Richard Mason to replace Mr Peter Stewart as one of the Environmental Representatives for the Taralga Wind Farm in accordance with Condition 27 of the development consent for the above project.

The Department has reviewed the curriculum vitae of Mr Richard Mason and considers that he has the necessary skills, expertise and experience to act as an Environmental Representative for the development. As such, the Director-General's approval is given to Mr Richard Mason to undertake this role.

You are reminded of your obligation under Condition 27 that you must make the identity of the Environmental Representatives public.

Your contact officer for this proposal, Kate Masters, can be contacted on 9228 6378 or via email at kate.masters@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely

Glenn Snow
A/Director
Infrastructure Projects
as delegate for the Director-General

20.0 APPENDIX 3 – NOISE & VIBRATION MANAGEMENT SUB-PLAN





Taralga Wind Farm

Construction Noise and Vibration Management Sub-Plan

Prepared for
CBD Energy
Level 2 – Suite 2, 53 Cross Street
Double Bay NSW 2028

S2570C9B
February 2012



EXECUTIVE SUMMARY

The construction of a wind farm comprises activities that generate short term and transient noise. Management of construction noise requires appropriate programming, community consultation and the use of the best available and practical work practices and mitigation measures balanced against the requirement to expedite completion of the project.

The construction of the Taralga wind farm will occur at significant separation distances to the dwellings in the vicinity. The separation distances will result in appreciable attenuation of the noise and vibration generated by the activity.

Sonus Pty Ltd has previously prepared a Noise and Vibration Management Sub-Plan (NVMSP) prepared, which is summarised in the Sonus Report "S25709A", dated March 2009 . The NVMSP is a specific part of the broader Taralga Wind Farm Construction and Environmental Management Plan (CEMP), and provides a framework document that the Construction Manager can use to develop and implement action plans for each individual activity.

The NVMSP has been submitted to the NSW Department of Planning (DoP), and feedback from DoP has been received. This document is the modified NVMSP which incorporates the feedback and recommendations from DoP

The requirements for the NVMSP are generally provided by the Land and Environment Court of New South Wales Judgment No. 10196 Condition 38 (refer Table 1). Based on this condition, the Department of Planning "Guideline for the Preparation of Environment Management Plans" and the recommendations of the DoP, the core elements of the NVMSP comprise:

- Identification and details of the construction activities including timing, duration and predicted noise levels;
- Identification of the best management practices and the reasonable and feasible measures to minimise the construction noise activities;
- Recommendations for specific community consultation and notification methods;
- Recommendations for specific compliance monitoring plans;
- Recommendations for specific complaints handling procedures including corrective actions to be taken and feedback methods; and



- Comparison of the NVMSP against the relevant provisions of the NSW Department of Environment & Climate Change *Interim Construction Noise Guideline*.

To achieve the above objectives, the NVMSP provides:

- the results of measurements of existing background and ambient noise levels taken at a number of noise-sensitive land uses in the vicinity of the site;
- the relevant assessment methodology and criteria for noise and vibration from the proposed construction activities;
- a summary of the proposed construction stages and associated activities and their duration;
- predicted noise levels for the proposed construction activities;
- comparison of the predicted noise levels with relevant criteria and the ambient noise level results;
- the noise mitigation measures for the project;
- a community consultation process;
- a complaints resolution process; and
- a compliance monitoring process.



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BACKGROUND

Sonus Pty Ltd has previously been engaged to prepare a Noise and Vibration Management Sub-Plan (NVMSP) for the Taralga Wind Farm, which is summarised in the Sonus Report "S25709A", dated March 2009 (the 2009 NVMSP).

The NVMSP is a specific part of the broader Taralga Wind Farm Construction and Environmental Management Plan (CEMP). It provides a framework document that the Construction Manager can use to develop and implement action plans for each individual activity.

The 2009 NVMSP has since been submitted to the NSW Department of Planning (DoP), and feedback from DoP has been received. Therefore, the 2009 NVMSP has been modified to incorporate the feedback and recommendations from DoP, as provided in this document.

DOCUMENT REFERENCE TABLE

Table 1 provides the sections within the Construction Noise and Vibration Management Sub-Plan relating to the relevant Land and Environment Court of New South Wales Judgment No. 10196 of 2006 Conditions of Consent.

Table 1: Relevant sections of the management sub-plan to address the Conditions of Consent.

Condition of Consent	Section of Management Sub-Plan
38 As part of the CEMP for the development, the Applicant must prepare and implement a Construction Noise and vibration Management Sub Plan. The Plan must include, but not be limited to:	
(a) details of construction activities, including timing, duration and predicted noise levels (including likely consistency with the EPA's Environmental Noise Control Manual goals);	Construction Activities Construction Noise Pages 16 - 18
(b) best management practices to minimise noise resulting from construction activities;	Project Mitigation Measures Pages 22- 26
(c) reasonable and feasible noise mitigation measures including consideration of the need for structural measures such as acoustic shielding;	Project Mitigation Measures Pages 22 – 26 Page 23 (acoustic shielding)
(d) compliance monitoring methods and program;	Monitoring Page 28 and 30
(e) examination of construction traffic noise impacts to dwellings situated close to local roads east of Taralga including reasonable and feasible methods of mitigating any adverse impacts;	Construction Activities Traffic Noise on Public Roads Page 18 and 19
(f) community consultation and a community information program to inform residents when they are likely to (be) affected by construction noise. In particular, residences adjoining site access routes east of Taralga Road must be notified in writing at least two weeks in advance of concrete pour activities and the details of such activities;	Community Consultation Page 27
(g) a complaints handling and complaints monitoring program, including details of a contact person to follow up complaints; and	Complaints Resolution Page 31
(h) contingency measures to deal with incidents when noise complaints have been received, including feedback on appropriate noise amelioration processes put in place in response to complaints and the timeframe for the introduction of these measures. The feedback must be provided to the complainant.	Complaints Resolution Page 31

Table 1: Relevant sections of the management sub-plan to address the Conditions of Consent (continued).

Condition of Consent	Section of Management Sub-Plan
40 Construction activities associated with the development, including heavy vehicles entering and exiting the site, may only be carried out between 7.00am and 6.00pm, Monday to Friday inclusive, and between 8.00am and 1.00pm on Saturdays. No work is to be carried out on Sundays and public holidays. The following activities may be carried out in association with construction outside of these hours:	Project Mitigation Measures Page 22
(a) any works that do not cause noise emissions to be audible at any nearby residences not located on the site;	Project Mitigation Measures Page 22
(b) the delivery of materials as requested by Police or other authorities for safety reasons; and	Project Mitigation Measures Page 22
(c) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.	Project Mitigation Measures Page 22
Any work undertaken outside the specified construction hours, other than those specified in (a)-(c) of this condition, must not be undertaken without prior consent of the DEC.	Construction Activity Criteria Construction Noise Page 12
55 The overpressure level from blasting operations associated with the development must not:	
(a) exceed 115 dB(LinPeak) for more than five per cent of the total number of blasts over the period of any relevant DEC licence; and	Construction Activities Blasting Noise and Vibration Page 20 Monitoring Pages 28 - 30
(b) exceed 120 dB(LinPeak) at any time.	Construction Activities Blasting Noise and Vibration Pages 20 Monitoring Pages 28 - 30
The above values apply when the measurements are performed with equipment of a lower cut-off frequency of 2 Hz or less. If the instrumentation has a higher cut-off frequency, then a correction of 5 dB should be added to the measured value. Equipment with a lower cut-off frequency exceeding 10 Hz should not be used for the purpose of measuring overpressure.	Monitoring Pages 28 - 30



Table 1: Relevant sections of the management sub-plan to address the Conditions of Consent (continued).

Conditions of Consent	Section of Management Sub-Plan
56 Ground vibration (peak vector sum) from the blasting operations associated with the development must not:	
(a) exceed 5mm/s for more than five percent of the total number of blasts during construction; and	Construction Activities Blasting Noise and Vibration Pages 20 Monitoring Pages 28 - 30
(b) exceed 10mm/s at any time.	Construction Activities Blasting Noise and Vibration Pages 20 Monitoring Pages 28 - 30
57 Blasting operations associated with the development may only take place:	
(a) between 9.00am and 5.00pm Monday to Friday;	Project Mitigation Measures Scheduling Page 22
(b) between 9.00am to 12.00pm Saturday; and	Project Mitigation Measures Scheduling Page 22
(c) at such other times or frequency as may be approved by the DEC.	Project Mitigation Measures Scheduling Page 22



INTRODUCTION

The construction of a wind farm comprises activities such as road construction, civil works, excavation and foundation construction, electrical infrastructure works and turbine erection requiring processes such as heavy vehicle movements, crushing and screening, concrete batching, rock trenchers, loaders, excavators, generators, cranes and blasting.

The most significant impacts from general construction will occur from activity at night which results in sleep disturbance effects. This aspect is addressed for this site by the Land and Environment Court of New South Wales No. 10196 of 2006 Condition 40, which restricts the standard construction hours to between 7am and 6pm Monday to Friday, and between 8am and 1pm on Saturdays. Blasting activity is further restricted to between 9am and 5pm Monday to Friday, and 9am and 12pm on Saturdays.

Therefore, with only day time activity occurring at significant separation distances, the construction of the Taralga wind farm is not expected to generate any significant impacts, subject to implementation of the feasible and practicable noise mitigation measures recommended in this NVMSP.

In developing the NVMSP, the relevant provisions of the following guidelines and legislations have been considered:

- *Interim Construction Noise Guideline* (the ICNG) – for construction noise;
- *Assessing Vibration: A Technical Guideline* (the Vibration Guideline) – for construction vibration;
- *NSW Road Noise Policy* (the RNP) – for noise from road traffic associated with the construction of the project;
- *Australian Standard AS2187.2-2006 “Explosives – Storage, Transport and Use – Pt 2: Use of Explosives”* (the Standard) – for blasting noise and vibration.



AMBIENT AND BACKGROUND NOISE MONITORING

Extensive noise monitoring has been carried out at an indicative range of noise-sensitive locations, shown as H1 (“Omaru”), H5, H7, H12 (“Rosvale”) and “The Farm” as shown in Appendix A, to determine the ambient and background noise environment in the vicinity of the construction activity.

The noise monitoring was carried out at each of the locations for a period of three weeks as part of the background noise monitoring regime required by the Land and Environment Court of New South Wales No. 10196 of 2006 Condition 41.

Specifically, the monitoring at locations H1, H5 and H7 was carried out between the 24th of September and the 14th of October 2008, “The Farm” was carried out between the 15th of October and the 5th of November, 2008, and H12 was carried out between the 5th and the 25th of November, 2008.

The most relevant descriptors of the ambient and background noise environment to provide comparison with the ICNG are the ambient equivalent (L_{Aeq}) noise level and the Rating Background Level (RBL), respectively.

The ambient equivalent (L_{Aeq}) noise level is the average noise environment at the monitoring locations, while the RBL is the indicative background noise level at the monitoring locations, determined in accordance with the *NSW Industrial Noise Policy* (the INP). The RBL is calculated as the monitoring period median of the daily tenth percentiles of the measured background noise levels (L_{A90}) during the day¹ period, and represents the “lulls” in the acoustic environment at the monitoring locations.

The RBL and the ambient equivalent (L_{Aeq}) noise level for each monitoring location corresponding to the standard construction hours have been derived from the monitoring data collected and are provided in Table 2.

¹ Only the day period has been considered, since the construction activity is restricted to standard construction hours (i.e. the daytime period).



Table 2: The RBL and ambient equivalent noise level at each monitoring location.

Monitoring Location	Rating Background Level, RBL (dB(A))	Ambient Equivalent Noise Level, L_{Aeq} (dB(A))
H1	31	50
H5	31	57
H7	32	52
H12	35	51
The Farm	31	53



CONSTRUCTION ACTIVITY CRITERIA

Construction Noise

The appropriate assessment methodology for noise from on-site construction activities is provided by the Interim Construction Noise Guideline (the ICNG)), released by the NSW Department of Environment and Climate Change in July 2009.

The ICNG provides an emphasis on implementing feasible and practicable noise reduction measures and does not set mandatory standards or objective criteria. This approach is consistent with other interstate approaches to construction noise.

The ICNG does establish a quantitative approach, whereby a goal level is based on the existing rating background level (RBL) at noise-sensitive locations. The RBL is determined based on the monitored background noise level (L_{A90}) in the environment. The goal level is used by the ICNG as a “trigger” for the construction site to implement all feasible and practicable work practices and measures.

Condition 40 of the Land and Environment Court of New South Wales Order establishes the following restrictions for construction activity:

40 Construction activities associated with the development, including heavy vehicles entering and exiting the site, may only be carried out between 7am and 6pm, Monday to Friday inclusive, and between 8am and 1pm on Saturdays. No work is to be carried out on Sundays and public holidays. The following activities may be carried out in association with construction outside of these hours:

- (a) any works that do not cause noise emissions to be audible at any nearby residences not located on the site;*
- (b) the delivery of materials as requested by Police or other authorities for safety reasons; and*
- (c) emergency work to avoid the loss of lives, property, and/or to prevent environmental harm.*

Any work undertaken outside the specified construction hours, they will only be carried out with the prior consent of the New South Wales Department of Environment and Climate Change (DEC).

For construction activity occurring within the hours specified by Condition 40, Table 2 in Section 4.1 of the ICNG provides a goal noise level for construction activity of 10 dB(A) above the RBL. The table also recommends an upper limit, or maximum criterion, of 75 dB(A), which should only be exceeded “in exceptional circumstances and for short periods of time (for example up to two days)”, acknowledging that construction activity is intermittent and for some processes, the application of noise reduction measures may not be reasonable or feasible.

Based on the RBL results, the goal noise level at each of the monitoring locations have been determined and provided in Table 3.

Table 3: Construction noise goal noise levels.

Monitoring Location	Rating Background Level, RBL (dB(A))	Ambient Equivalent Noise Level, L_{Aeq} (dB(A))	Goal Noise Level, L_{Aeq} (dB(A))
H1	31	50	41
H5	31	57	41
H7	32	52	42
H12	35	51	45
The Farm	31	53	41

It is noted that the goal noise levels are extremely conservative (low) for construction noise activity in that they are significantly less than the average noise level already in the environment and significantly less than the *NSW Road Noise Policy* requirements for activity with a similar character.

Where the goal noise levels are achieved, no specific noise mitigation measure is required. Where the goal noise levels are exceeded, then the noise mitigation measures in this NVMSP should be implemented.

Construction Vibration

The appropriate assessment methodology for vibration from on-site construction activities is provided by the New South Wales Department of Environment and Climate Change document, *Assessing Vibration: A Technical Guideline* (the Vibration Guideline), released in February 2006.

The Vibration Guideline provides an emphasis on construction activity implementing feasible and practicable vibration reduction measures and does not set mandatory standards or objective criteria.

The Vibration Guideline does establish a quantitative approach, whereby goal vibrations levels are established based on human response to continuous, intermittent and impulsive vibration. Continuous vibration is uninterrupted and constant vibration for an extended period of time. Intermittent vibration is an interrupted form of continuous vibration, and impulsive vibration is a sudden event or events.

The Vibration Guideline does not address vibration associated with blasting activities.

For construction activity occurring within the hours specified by Condition 40, the Vibration Guideline can be interpreted to recommend criteria at the dwellings as provided in Table 3, which are based on the core document used as the technical basis for the Guideline, the *British Standard BS 6472-1992 "Evaluation of human exposure to vibration in buildings (1-80Hz)"*.

Table 4: Vibration criteria.

Continuous mm/s² Vertical (rms)	Impulsive mm/s² Vertical (rms)	Intermittent m/s^{1.75} Vibration Dose Value
10-20	30-60	0.2-0.4

Continuous vibration is vibration associated with regular and constant activity on the site. Impulsive activity is related to activity that generates a single burst, or series of single bursts, of vibration. Intermittent vibration is continuous vibration activity that occurs for limited periods of time. Continuous and impulsive vibration criteria are provided as "rms" values for acceleration. The term "rms" relates to a mathematical process that is regularly performed on varying noise and vibration signals to assist in their expression, quantification and comparison. The "rms" value for acceleration is expressed in millimeters per second per second (mm/s²). The intermittent vibration criterion is derived from a prescribed mathematical process performed on the results and therefore its quantity and units (m/s^{1.75}) differ from those for continuous and intermittent vibration.

Traffic Noise on Public Roads

The appropriate assessment methodology for traffic noise on public roads associated with the construction activity is provided by the NSW Road Noise Policy (the RNP), released by the Department of Environment, Climate Change and Water in March 2011.

The RNP provides traffic noise criteria for a range of scenarios. The most appropriate classification for the residences in the vicinity of the Taralga wind farm construction site and its associated traffic is considered to be “existing residences affected by additional traffic on existing local roads generated by land use developments”.

Based on this classification, the recommended criterion to be achieved by the additional construction traffic movements is equivalent ($L_{Aeq,1hour}$) noise level of no greater than 55 dB(A) during the daytime (7am to 10pm). This noise level is to be achieved outside, at a distance of 1.5m from the facade of a dwelling.

Blasting Noise and Vibration

The appropriate assessment methodology for noise from on-site blasting activities is provided by the *Australian Standard AS2187.2-2006 “Explosives – Storage, Transport and Use – Pt 2: Use of Explosives”* (the Standard). The Standard provides the following “human comfort limits” for sensitive sites for operations lasting longer than 12 months or more than 20 blasts:

- Peak component particle velocity of 5 mm/s for 95% blasts per year and 10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply.
- Peak sound pressure level of 115 dBL for 95% blasts per year and 120 dBL maximum unless agreement is reached with the occupier that a higher limit may apply.

Conditions 55 and 56 of the Land and Environment Court Order reinforce the above objective limits and Condition 57 establishes the following time restrictions for blasting activity:

57 Blasting operations associated with the development may only take place:

- (a) between 9.00am and 5.00pm Monday to Friday;*
- (b) between 9.00am to 12.00pm Saturday; and*
- (c) at such other times or frequency as may be approved by the DEC.*



CONSTRUCTION ACTIVITIES

Construction Noise

The equipment and activities that are present at the site will vary throughout the project, depending on the construction phase. The envisaged phase, associated plant and equipment, duration and the predicted noise levels at representative dwellings, including of closest non-associated dwelling to the construction site, are provided in Table 5.

The predicted noise levels from construction plant and equipment are based on the simultaneous and continuous operation of each piece of equipment under weather conditions that are most conducive to the propagation of noise, comprising an overcast day with wind from the construction activity to the nearest dwelling. The predicted noise levels are also based on the closest possible separation distances between the noise sources and the noise receiver, taking into account the 50m buffer radius for the final location of turbines and access roads. These inputs represent the worst-case (highest predicted) noise scenario.

It is expected that the actual construction noise levels will be less than the predicted noise levels below, when accounting for other weather conditions, separation distances that are greater than the worst-case scenario (e.g., construction site of turbines located further away), and operating scenarios other than the combined and continuous operation of all envisaged plant and equipment.



Table 5: Predicted noise level from construction activity.

Construction Phase	Main Plant and Equipment	Start (Month)	Duration (Months)	Predicted Noise Level at Representative Dwelling					
				H1	H5	H7	H12	The Farm	CNAD*
Separation distance (taking into account the 50m buffer radius) to the closest: <ul style="list-style-type: none">turbine construction site;new access road construction site.				570m 520m	1190m 1160m	1130m 220m	770m 770m	780m 790m	800m 220m
Construction goal noise level				41 dB(A)	41 dB(A)	42 dB(A)	45 dB(A)	41 dB(A)	41dB(A)
Upper noise limit				75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)
Site Set-Up and Civil Works	Generator Transport truck Excavator Low loader	1	3	54 dB(A) at 520m	45 dB(A) at 1160m	63 dB(A) at 220m	49 dB(A) at 770m	49 dB(A) at 790m	63 dB(A) at 220m
Road and Hard Stand Construction	Mobile crushing and screening plant Dozer Roller Low loader Tipper truck Excavator Scraper Transport truck	4	7	60 dB(A) at 520m	51 dB(A) at 1160m	69 dB(A) at 220m	55 dB(A) at 770m	55 dB(A) at 790m	69 dB(A) at 220m
Excavation and Foundation Construction	Concrete batching plant Mobile crushing and screening plant Truck-mounted concrete pump Concrete mixer truck Excavator Front End Loader Mobile crane Transport truck Tipper truck	6	5	60 dB(A) at 520m	51 dB(A) at 1160m	69 dB(A) at 220m	55 dB(A) at 770m	55 dB(A) at 790m	69 dB(A) at 220m
Earthing	Percussion drilling rig	7	8	57 dB(A) at 570m	48 dB(A) at 1190m	49 dB(A) at 1130m	53 dB(A) at 770m	53 dB(A) at 780m	53 dB(A) at 800m
Electrical Installation	Rock trencher Concrete mixer truck Low loader Tipper truck Mobile crane	10	14	59 dB(A) at 570m	50 dB(A) at 1190m	51 dB(A) at 1130m	55 dB(A) at 770m	55 dB(A) at 780m	55 dB(A) at 800m
Turbine Delivery and Erection	Extendable trailer truck Low loader Mobile crane	14	4.5	54 dB(A) at 570m	45 dB(A) at 1190m	46 dB(A) at 1130m	50 dB(A) at 770m	50 dB(A) at 780m	50 dB(A) at 800m
All phases, plant and equipment combined				66 dB(A)	57 dB(A)	73 dB(A)	61 dB(A)	61 dB(A)	73 dB(A)

* Closest non-associated dwelling to construction site.

Based on the worst-case predicted noise level with all construction phases, plant and equipment occurring continuously and simultaneously under worst-case meteorological conditions, the noise from construction activity is expected to be less than 75 dB(A) at all dwellings.



It is noted that the scenario of all construction phases, plant and equipment occurring continuously and simultaneously at the location closest to the dwellings will likely not occur. The scenario has been considered in the prediction to demonstrate the ability to achieve a noise level of less than 75 dB(A) at all dwellings from construction activity.

Construction Vibration

It is expected that the main sources of vibration will be the percussion drilling rig, rock trenching equipment and roller operation during the road and hard stand construction. The level of vibration at a distance will be subject to the energy input of the equipment and the local ground conditions. Typically, the distances required to achieve the construction vibration criteria are in the order of 20m to 100m. The 100m is a conservative estimate, with vibration from these activities unlikely to be detectable to humans at such a distance.

Based on the separation distances between the construction activities and the nearest dwellings being well in excess of the conservative distance of 100m, vibration levels are expected to easily achieve the criteria.

Traffic Noise on Public Roads

In addition to the on-site works, the construction activities will also incorporate passenger vehicle and heavy vehicle movements to and from the site along local roads east of the Taralga township, for the duration of the construction period. These vehicles will include semi-trailers, low loaders, haulage trucks, mobile cranes, water tankers, four-wheel-drive vehicles and passenger vehicles.

The approved heavy vehicle transport routes are shown on Figure 5.16 in the Environmental Impact Statement (EIS) for the Taralga wind farm. The heavy vehicle access routes into the site will be via Goulburn and along the Taralga Road to Hillcrest Road and Old Showground Road. Heavy vehicles accessing the northern and eastern part of the wind farm will traverse the wind farm via Old Showground Road to access Bannaby Road and Alders & Crees Road. The routes have been established so that heavy vehicles do not enter the Taralga Village to access the site. Other vehicles will use the public road network.

Delivery journeys will be coordinated with school bus timetables to and from Goulburn, and will also recognise the annual Taralga Rodeo and local livestock market days.

For comparison with the traffic noise criterion, predictions of the noise from traffic at a various distances from the roadside have been made based on the estimated maximum number of heavy and passenger vehicle movements in an hour, as provided in Table 6.

Table 6: Estimated maximum number of vehicles movements in an hour.

Construction Phase	Number of Vehicles Entering the Construction Site from Public Roads	
	Light	Heavy
Site set-up	1	1
Road construction	1	4
Foundation works	2	15

Based on the worst-case number of vehicles movements in an hour period, that is two light vehicles and 15 heavy vehicles during foundation works, the predicted noise levels at various setback distances from the roadside are provided in Table 7. The predictions indicate that the traffic noise criterion of 55 dB(A) will be achieved at a distance of 20m or greater from the roadside.

Table 7: Predicted noise level from traffic.

Setback Distance from Roadside	Predicted Noise Level
10m	59 dB(A)
15m	57 dB(A)
20m	55 dB(A)
25m	53 dB(A)
30m	52 dB(A)
40m	50 dB(A)
50m	49 dB(A)

To achieve 55 dB(A) at distances less than 20m, the number of vehicle movements will need to be reduced by half for every halving of the distance (starting at 20m) from the roadside. For example, one light vehicle movement and eight heavy vehicle movements could be accommodated in an hour at a dwelling that is 10m from the roadside.



Blasting Noise and Vibration

The levels of airblast and ground vibration experienced at residences from blasting operations are generally dependent on a number of factors, including:

- the distance between the blast site and the residence;
- the type, size and number of charges used, and
- the depth and manner in which the charge is installed.

The separation distances between the potential blasting activity and the nearest dwellings are of the order of magnitude for which ground vibration and airblast levels have been adequately controlled at other sites. Given the range of factors associated with both the generation and control of blasting noise and vibration, it is recommended that a monitoring regime in accordance with this NVMSP is implemented to ensure the objective criteria provided by the *Australian Standard AS2187.2-2006* and Conditions of Consent 55 and 56 of the Land and Environment Court Order are achieved.

Comparison with assessment criteria

Vibration and blasting activity associated with the proposed construction methodology are expected to achieve the relevant assessment criteria and, with the exception of the implementation of a monitoring regime for blasting activity, no further noise or vibration measures need to be considered for these aspects of the construction.

Traffic and general construction activity have the potential to trigger the adoption of “all feasible and reasonable” noise mitigation measures. These measures are provided in this NVMSP.

Context

The predicted noise levels for the various stages of construction activity are based on a worst case (highest noise level) scenario.

The weather conditions used for the predictions comprise an overcast day with a breeze from the construction activity to the receiver that is greater than 3 m/s. Any other weather conditions during the daytime operations will result in lower noise levels than those presented in Table 5.



The approximate separation distances presented are the distances to the closest construction site from the representative dwellings and the closest non-associated dwelling, taking into account the 50m “buffer” radius. Greater separation distances will result in lower noise levels than those presented in Table 5.

The operating scenario used for the predictions is the combined operation of all envisaged plant and equipment. The predicted noise easily achieves the maximum criterion of 75 dB(A) required by the ICNG. Any operations for which only some of the equipment is operating or for when some of the equipment is operating away from the core construction site, will result in lower noise levels than those presented in Table 5.

Based on the above, it is expected that the construction noise levels will be less than those presented in Table 5. In addition, even under the presented worst-case scenario, the predicted level of construction noise can be of a similar order to the measured existing ambient noise environment. Notwithstanding, a range of feasible and practicable noise mitigation measures will be implemented as part of this NVMSP.

Construction noise impacts are not expected to be significant taking into account the above factors.

PROJECT MITIGATION MEASURES

Pro-active noise control strategies to minimise noise during construction may include engineering measures such as the construction of temporary acoustic barriers, the use of proprietary enclosures around machines, the use of silencers, the substitution of alternative construction processes and the fitting of broadband reversing signals. It may also include administrative measures such as inspections, scheduling and providing training to establish a noise minimisation culture for the works.

The following mitigation measures are recommended to be implemented for the construction works:

Scheduling

Construction works, including heavy vehicle movements into and out of the site, will be restricted to between 7am and 6pm Monday to Friday, and between 8am and 1pm on Saturdays. Works carried out outside of the hours will only entail:

- works that do not cause noise emissions to be audible at any nearby residences not located on the site;
- the delivery of materials as requested by Police or other authorities for safety reasons; and
- emergency work to avoid the loss of lives, property, and/or to prevent environmental harm.

If any other works are required outside of the specified hours, they will only be carried out with the prior consent of the NSW Department of Environment and Climate Change (DEC).

Blasting operations associated with the development may only take place:

- Between 9.00am and 5.00pm Monday to Friday;
- Between 9.00am to 12.00pm Saturday; and
- At such other time or frequency as may be approved by the DEC.

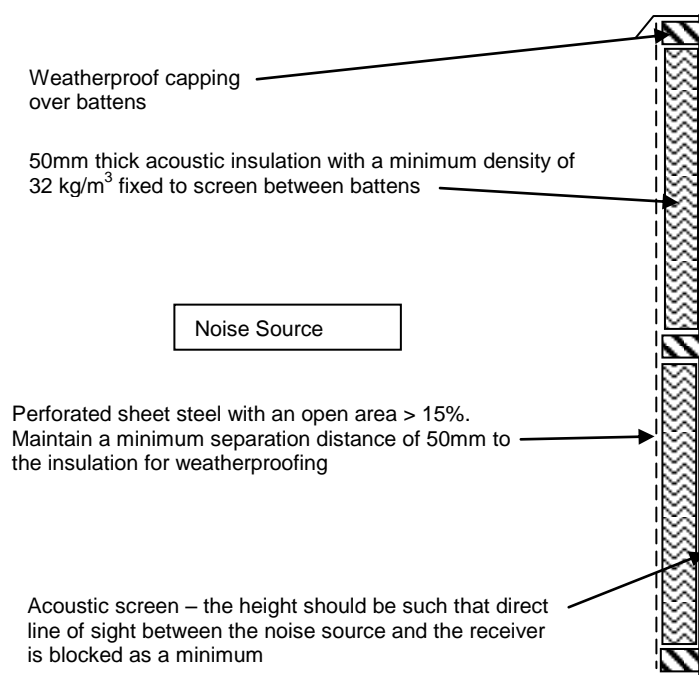
Location of Fixed Noise Sources

Locate fixed noise sources such as crushing and screening plant, concrete batching plant, percussion drilling rigs and generators and compressors at the maximum practicable distance to the nearest dwellings.

Provide Acoustic Screens around Fixed Noise Sources

Provide acoustic screens or mounding for fixed crushing and screening plant, concrete batching plant and percussion drilling rigs wherever these noise sources are located within 1000m of a non-associated dwelling and do not have direct line of sight blocked to that dwelling, in accordance with the following requirements:

- Locate as close as practicable to the noise source;
- Construct from mounding using excavated soil from the site, or a material with a minimum surface density of 10 kg/m^2 , such as 1.2mm thick sheet steel or 9mm thick compressed fibre cement sheeting. Alternatively, proprietary portable noise barriers, such as "PeaceSOUNDBARRIERS" may be utilised;
- Construct to a minimum height that blocks direct line of sight between the noise source and any receiver within the 1000m limit;
- Construct such that there are no air gaps or openings at joints;
- Extend such that the length is at least 5 times greater than its height or so that it is bent around the noise source;
- If barriers (rather than mounding from excavated soil) are constructed, then include acoustic insulation facing into the noise source in accordance with the following detail.



In addition, the site topography, and other shielding features (e.g. large stationary machines, mounds of topsoil and piles of materials) should be used to an advantage in terms of increased shielding when locating fixed noise sources within the 1000m distance.

With acoustic screens installed around a noise source to block line of sight to dwelling, a minimum noise reduction of 5 dB can be achieved, which subjectively will result in a clearly noticeable reduction.

Enclose Generators and Compressors

Provide proprietary acoustic enclosures for site compressors and generators.

Alternative Processes

Investigate and implement alternative processes where feasible and practicable, such as hydraulic or chemical splitters as an alternative to impact rock breaking, or the use of broadband reversing alarms in lieu of the high pitched devices. A broadband reversing alarm emits a unique sound which addresses the annoyance from the high pitched devices. The fitting of a broadband alarm should be subject to an appropriate risk assessment, with the construction team being responsible for ensuring the alarms are installed and operated in accordance with all relevant occupational, health and safety legislative requirements.

Site Management

- Select and locate centralised site activities and material stores as far from noise-sensitive receiver as possible;
- Care should be taken not to drop materials such as rock, to cause peak noise events, including materials from a height into a truck. Site personnel should be directed as part of an off-site training regime to place material rather than drop it;
- Plant known to emit noise strongly in one direction, such as the exhaust outlet of an attenuated generator set, shall be orientated so that the noise is directed away from noise sensitive areas if practicable;
- Machines that are used intermittently shall be shut down in the intervening periods between works or throttled down to a minimum;
- Implement worksite induction training, educating staff on the requirements of the NVMS.



Equipment and Vehicle Management

- Ensure equipment has Original Equipment Manufacturer (OEM) mufflers installed;
- Ensure equipment is well maintained and fitted with adequately maintained silencers which meet the OEM design specifications. This inspection should be part of the monitoring regime;
- Ensure silencers and enclosures are intact, rotating parts are balanced, loose bolts are tightened, frictional noise is reduced through lubrication and cutting noise reduced by keeping equipment sharp. These items should be part of the monitoring regime;
- Use only necessary power to complete the task;
- Inspect, as part of the monitoring regime, plant and equipment to determine if it is noisier than other similar machines, and replace or rectify as required.

Construction Traffic

- Operate in accordance with the Construction Traffic Management Plan;
- Establish and maintain a route into the site so that heavy vehicles do not enter the Taralga Village for access;
- Incorporate information regarding the route to all drivers prior to accessing the site;
- Schedule deliveries to coordinate with school bus timetables to and from Goulburn, and the 2009 and 2010 Taralga Rodeo and local livestock market days;
- Schedule construction traffic deliveries such that it is as evenly dispersed as practicable.

Community Consultation

Establish and implement a community consultation program in accordance with the requirements in this NVMS. Refer to page 26 for the detailed requirements of a community consultation program.

Monitoring

Establish and implement a monitoring process in accordance with the requirements in this NVMS. Refer to page 27 for the detailed requirements of a monitoring process.



Complaints Resolution

Establish and implement a complaints resolution process in accordance with the requirements in this NVMS. Refer to page 30 for the detailed requirements of a complaints resolution process.

Project Mitigation Measures in Context

It is unlikely that the above measures will result in meeting the construction noise goals at all times due to the stringency of these goals, and the variable nature of construction activity. However, they will serve to reduce the impacts and are considered to represent the extent of feasible and practicable noise reduction measures. These measures will result in levels that are lower than traffic noise levels and lower than the existing ambient noise levels.



COMMUNITY CONSULTATION

The CEMP should implement the following noise and vibration elements into the overall community consultation process. The aim of the consultation is to ensure adequate community awareness and notice of expected construction noise.

The minimum elements should include:

- Regular Community Information newsletters, providing details of the construction plan and duration of the construction phases, distributed through the site notice board and email;
- A site notice board in a community location providing copies of the newsletters, updated construction program details, and contact details of relevant project team members and an ability to register for email updates of the newsletter;
- A feedback mechanism for the community to submit questions to the construction team, and for the construction team to respond;
- Regular updates on the construction activities to Local Council and the local Police to assist in complaint management.
- Contact details of the project manager and / or site “Environmental Representative”;

In addition, prior to any blasting activity, or construction activity occurring within 1000m of a non-associated dwelling, or significant construction traffic periods or impacts on local road conditions:

- Contact the local community potentially affected by the proposed works and inform them by letter of the proposed work, the location of the work, the day(s) and date(s) of the work and the hours involved².
- This contact shall be made a reasonable time before the proposed commencement of the work; and
- The letter should provide the contact details of the project manager and / or site “Environmental Representative”.

² It is preferable to over estimate the hours of work, rather than extending the work hours for longer than anticipated.



MONITORING

The CEMP should implement the following noise and vibration elements into the overall monitoring procedure. The aim of the monitoring procedure is to ensure the works are being carried out in accordance with the NVMSP.

Plant and Equipment

The minimum elements should include:

- Regular on site inspections by the “Environmental Representative” to identify:
 - Equipment has quality OEM mufflers installed;
 - Equipment is well maintained and fitted with adequately maintained silencers which meet the OEM design specifications;
 - Silencers and enclosures are intact and closed, rotating plants are balanced, loose bolts are tightened, frictional noise is reduced through lubrication and cutting noise reduced by keeping equipment sharp;
 - Site personnel are using only necessary power to complete the task;
 - Plant and equipment that is noisier than other similar machines;
 - Care is being taken to place material in trucks rather than being dropped;
 - Plant emitting noise strongly in one direction is orientated so that the noise is directed away from noise sensitive areas if practicable;
 - Machines that are used intermittently are being shut down in the intervening periods between works or throttled down to a minimum.

Blasting Activity

- Prior to the first blasting activity:
 - Measure the peak component particle velocity and sound pressure levels at a distance similar to the closest expected separation distance to enable comparison and confirmation of compliance with the requirements AS2187.2-2006 and Conditions of Consent 55 and 56 of the Land and Environment Court Order;
 - The measurements should be made by an acoustic engineer, defined for the purposes of the NVMSP as an engineer eligible for Membership of the Australian Acoustical Society and the Institution of Engineers Australia.
 - Adjust the blasting procedure to ensure compliance with the requirements.



- Prior to any blasting activity that differs from that tested :
 - Repeat the procedure above.

Compliance

Given that construction noise levels are expected to be of the order of the existing ambient noise environment and therefore difficult to identify and measure at an unattended monitoring site, long term monitoring of construction activity, other than blasting, will not be effective for this site. Noise or vibration measurements should be carried out in accordance with the Complaints Resolution Process and at the beginning of the first stage of the construction process.

To ensure that the construction activity does not exceed the maximum allowable noise level of 75 dB(A), the following is recommended at the start of the different phases of the construction stage:

- Measure the sound pressure levels at a distance/location representative of the closest dwelling. The measurements should include noise from the range of plant and equipment that are being use;
- Adjust the predicted noise levels for the construction activity based on the above measurements.
- For future phases, previous measurements of similar equipment or activity may be used to provide an indication of the expected noise levels at residence. Repeat measurements will not be required if the previous measurements indicate that the noise from the equipment or activity is well below the maximum limit of 75 dB(A).

The measurements and adjustments recommended above should be made by an acoustic engineer.

If the measured noise level at the closest residence (or at a location representative of) exceeds the goal noise level provided by the ICGN (refer Table 3) but less than the maximum limit of 75 dB(A), then all feasible and reasonable mitigation measures will be implemented to reduce the noise at the dwellings. These mitigation measures are provided in the Project Mitigation Measures section on page 21.

Where the measured noise level exceeds the maximum limit of 75 dB(A), then all feasible and reasonable mitigation measures will be implemented and the testing repeated to confirm compliance with the 75 dB(A) requirement. Based on the predicted noise levels summarised on page 16, this outcome is very unlikely considering the worst-case scenario that has been considered and shown to be less than 75 dB(A).

COMPLAINTS RESOLUTION

The CEMP should implement the following noise and vibration elements into the overall complaints resolution process. The aim of the complaints resolution process is to identify any feasible and reasonable measures that may further reduce impacts following a complaint, and to provide feedback to the community on the above process within a reasonable timeframe.

The minimum elements should include:

- Establishment of a complaints mechanism for the community via either telephone or email;
- Notification of the relevant contact details through the community consultation process;
- Provision of an Environmental Representative dealing with any complaints who is appropriately trained in the NVMSP requirements and in community consultation, and has the ability to action the complaint;
- Establishment of a complaints handling procedure that:
 - Assesses whether the issue can be resolved easily and take immediate action if possible;
 - If not, ensures that the appropriate consultation has been undertaken for the activity;
 - Ensures the on-site inspections of the NVMSP have been carried out regularly for the activity;
 - Assesses the construction site and activities to determine whether there is any reason to believe the noise exposure of receivers is higher than anticipated;
 - Undertakes monitoring of noise or vibration levels where this cannot be confirmed, with the aim of establishing if the exposure of receivers is higher than anticipated by the NVMSP;
 - Takes remedial action if any of the above cannot be confirmed;
 - Advises complainant of action taken;
 - Maintains a record of the above to enable review by an independent authority such as DEC.



CONCLUSION

The construction of the Taralga wind farm will occur at significant separation distances to the dwellings in the vicinity, resulting in appreciable attenuation of the noise and vibration generated by the activity. In addition, the activity will be restricted to standard daytime construction hours, addressing the most significant impacts from general construction which occur from activity at night which results in sleep disturbance effects. Blasting activity is even further restricted to between 9am and 5pm Monday to Friday, and 9am and 12pm on Saturdays.

Therefore, with only day time activity occurring at significant separation distances, the construction of the Taralga wind farm is not expected to generate any significant impacts, subject to implementation of the feasible and practicable noise mitigation measures recommended in this Noise and Vibration Management Sub-Plan (NVMSP).

The NVMSP, which forms a specific of the broader Taralga Wind Farm Construction and Environmental Management Plan (CEMP), incorporates the following core elements:

- Identification and details of the construction activities including timing, duration and predicted noise levels;
- Identification of the best management practices and the reasonable and feasible measures to minimise the construction noise activities;
- Recommendations for specific community consultation and notification methods;
- Recommendations for specific compliance monitoring plans;
- Recommendations for specific complaints handling procedures including corrective actions to be taken and feedback methods; and
- Comparison of the NVMSP against the relevant provisions of the NSW Department of Environment & Climate Change *Interim Construction Noise Guideline*.

The NVMSP provides a framework document that the Construction Manager can use to develop and implement action plans for each individual activity.

REFERENCES

The following documents have been referred to in the development of this Noise and Vibration Management Sub-Plan (NVMSP):

AS2187.2-2006 Explosives – Storage, Transport and Use – Pt 2: Use of Explosives.

BS 6472-1992 Evaluation of human exposure to vibration in buildings (1-80Hz).

DEC. 2009. Assessing Vibration: A Technical Guideline. Department of Environment and Conservation, Sydney, New South Wales.

DECCW. 2011. NSW Road Noise Policy. Department of Environment, Climate Change and Water, Sydney, New South Wales.

DECCW. 2009. Interim Construction Noise Guideline. Department of Environment, Climate Change and Water, Sydney, New South Wales.

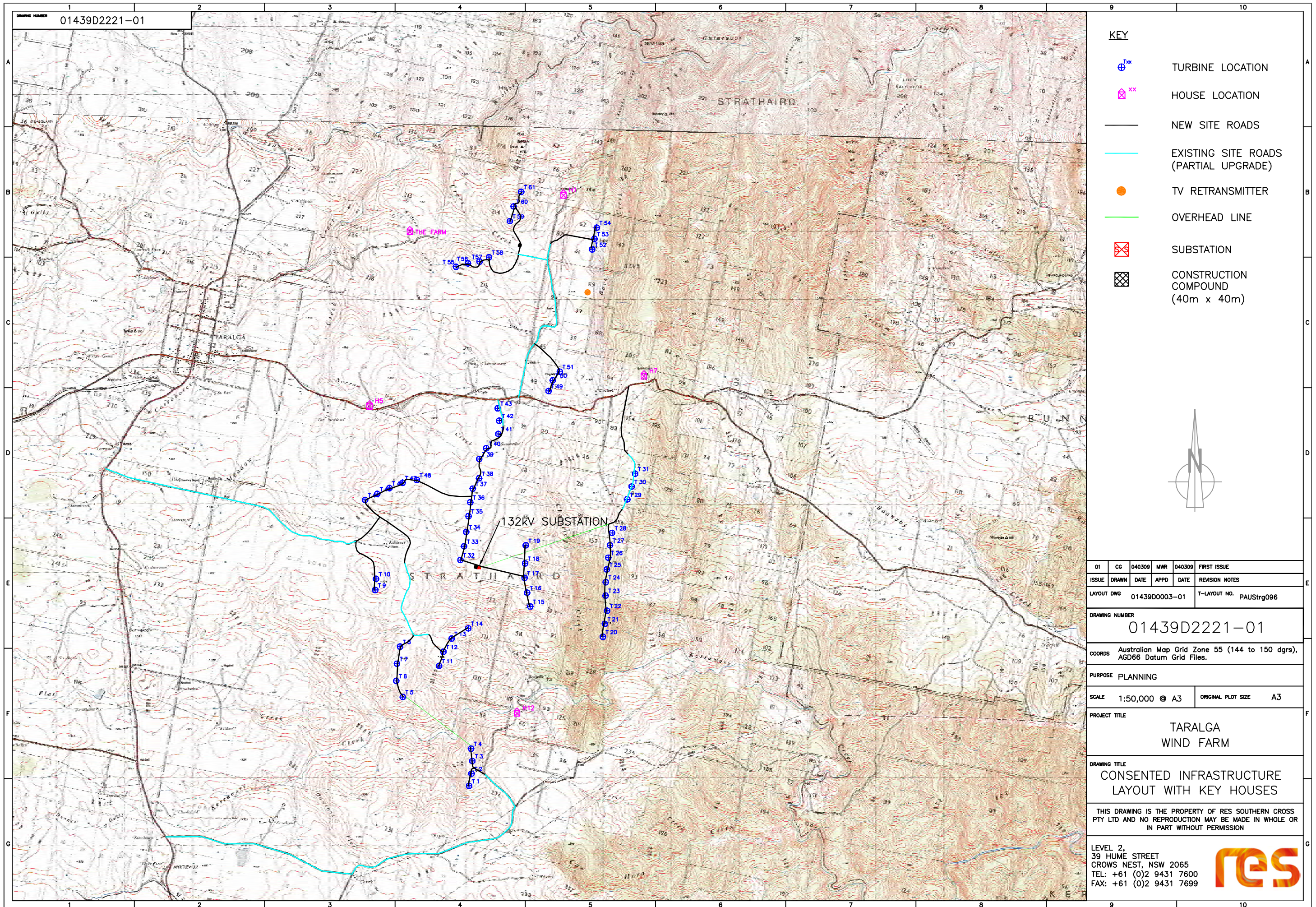
DEP. 2004. Guideline for the Preparation of Environment Management Plans. Department of Planning, Sydney, New South Wales.

Geolyse. 2004. Taralga Wind Farm Environmental Impact. November 2004, Geolyse Pty Ltd, Orange, New South Wales.

LEC. 2006. Conditions of Consent - Land and Environment Court of New South Wales Judgment No. 10196.



APPENDIX: RESIDENCES AND WIND FARM LAYOUT



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TARALGA WIND FARM					
DRAWING TITLE					
CONSENTED INFRASTRUCTURE LAYOUT WITH KEY HOUSES					
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21.0 APPENDIX 4 – CONSTRUCTION TRAFFICE MANAGEMENT SUB-PLAN



Taralga Wind Farm

CONSTRUCTION TRAFFIC MANAGEMENT PLAN



- Final
- May 2009



Taralga Wind Farm

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

- Final
- May 2009

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1. Introduction

1.1. Introduction

CBD Energy has consent to construct and operate a wind farm comprising 61 wind turbines each of 2-3MW generating capacity to the east of Taralga Village about 40 km north of Goulburn. The wind farm will have an installed generating capacity of 122-183MW. The development also includes the construction of access tracks, installation of underground electrical cabling, erection of two single pole overhead lines and the construction of a substation, control building and TV re-transmitter.

The development will generate electricity to supply a growing market demand for clean, low emission energy production. The development will assist electricity retailers to secure supply for the increasing demand for electricity; meet consumer demand for renewable energy in the form of Green Power; satisfy their obligations under the Commonwealth's Mandatory Renewable Energy Target and satisfy their obligations under the NSW Government's Greenhouse Gas Abatement Scheme.

1.2. Background

The majority of the area of the construction site is open grazing lands. There is no existing traffic activity as such. Traffic movements will be significant during key activity phases throughout construction. All equipment and materials required for construction will be delivered to the Wind Farm site by road. It is estimated that the civil works program will be completed over an 8 month period and overall construction activity will require up to 17 months. Therefore, the construction traffic movements in the surrounding area have been identified as a key issue.

1.3. Construction Traffic Management Plan

Condition No. 25 requires the preparation and implementation of a Construction Environmental Management Plan (CEMP). The CEMP is to incorporate mitigation and monitoring measures identified in the EIS and in the conditions of consent. Condition No. 58 requires that as part of the CEMP, a Construction Traffic Management Plan (CTMP) be prepared in consultation with Upper Lachlan Shire Council, the RTA and NSW Police, to manage traffic related issues associated with the development during construction. This consultation has been carried out and the outcomes incorporated into this document. This CTMP has been prepared so that it is consistent with the approved EIS for the Taralga Wind Farm and the relevant applicable conditions of consent, outlined below.

Condition Number	Section of CTMP where addressed
30 A Community Information Plan (CIP) must be	



prepared prior to the commencement of Construction. The CIP must set out the community communications and consultation processes to be undertaken during the construction period of the development. The Plan must include but not be limited to:	
(a) procedures to inform the local community of planned investigations and construction activities, including planned construction activities outside standard construction hours;	Section 5.6
(b) procedures to inform the relevant community of construction traffic routes and any likely disruptions to traffic flows and amenity impacts;	Section 5.6
(c) procedures to consult with local landowners in regards to construction traffic to ensure safety of livestock and limited disruption to livestock movements;	Section 5.6

Condition Number	Section of CTMP where addressed
58 As part of the CEMP, a Construction Traffic Management Plan must be prepared in consultation with Upper Lachlan Council, the RTA and NSW Police, to manage traffic related issues associated with the development during Construction. The Plan must identify:	Section 1.3 and Section 4.5
(a) designated transport routes for heavy vehicles to the site associated with the development;	Figure 3-3
(b) heavy vehicle movements at the junction of Lagoon Street (MR676) and Union Street (MR256), including demonstration that junction accommodates turning movements in accordance with AUSTROADS standards;	Section 4.4.2
(c) details of procedures to minimise traffic disruption;	Section 3.3.2, Section 3.3.3, Section 3.3.4, Section 3.3.5 and Section 3.3.6
(d) procedures to minimise disturbance from traffic noise, particularly during night periods;	Section 4.3 and Section 5.5
(e) procedures to manage construction traffic to ensure the safety of:	
(i) livestock and limit disruption to livestock movement;	Section 4.4.2 and Section 5.6
(ii) school children and limit disruption to school bus timetables;	Section 4.4.1
(f) a community information program to inform the community of traffic disruptions resulting from the construction program; and	Section 5.6
(g) details of complaints management procedures for traffic impacts.	Section 5.7

Condition Number	Section of CTMP where addressed
59 Should any vehicle accessing the site during Construction or Operation of the development exceed	Section 3.4.3



the road limit for length or mass on any road, the applicant must apply for Specific Oversized/Over Mass Permit from the RTA.	
---	--

Condition Number	Section of CTMP where addressed
61 A Section 138 Approval from Council with RTA concurrence within the Classified Road Reserve must be obtained.	Section 5.3

Condition Number	Section of CTMP where addressed
62 All large construction vehicles associated with the development must only utilise the transport routes identified in Figure 5.16 of the EIS.	Section 3.4

Condition Number	Section of CTMP where addressed
63 The Applicant must apply for a Road Occupancy Licence (ROL) from the RTA Traffic Operations Unit (TOU) before commencing work within the classified road reserve. Should the Traffic Management Plan, identified in condition 58, require a reduction of the speed limit, a Direction to Restrict must be obtained from the TOU at least two weeks prior to using the road reserve.	Section 5.2

Condition Number	Section of CTMP where addressed
64 Prior to the commencement of Construction, the Applicant must undertake a 'before' road dilapidation report utilising the ARRB (Australian Road Research Board Limited) 'laser car', to assess the existing condition of Taralga Road (MR256), Bannaby Road and Old Showground Road. The report is required for the respective lengths of road that are to be utilised for heavy vehicle access. It must be undertaken in consultation with Council's Director of Works.	Section 5.4

Condition Number	Section of CTMP where addressed
65 Following completion of Construction, and prior to the commencement of Operation, an 'after' road dilapidation report utilising the ARRB 'laser car' and road video images (i.e. RTA "gypsy" cam car) must be prepared in consultation with Council to determine the works required by the Applicant to restore the road to at least its pre-development condition.	Section 5.4



Condition Number	Section of CTMP where addressed
66 The Applicant must restore the roads to a standard not less than recorded in the initial dilapidation report, unless the damage can be reasonably attributed to influences other than the development. The Applicant must restore the road to at least its pre-development condition, to the satisfaction of Council within three (3) months of the commencement of operation, unless otherwise agreed by Council.	Section 5.4

Condition Number	Section of CTMP where addressed
67 In the event that the turning movements of heavy vehicles at the junction of Lagoon Street (MR676) and Union Street (MR256) cannot be achieved, the Applicant must upgrade the junction in accordance with the RTA Road Design Guide.	Section 3.4.2

Condition Number	Section of CTMP where addressed
68 Prior to the commencement of any transport to the site associated with the development from Taralga Road involving heavy vehicles, the Applicant must construct site access points along Taralga Road to a minimum 'BAL', 'BAR' treatment, to the satisfaction of Council and RTA. Detailed drawings of the access points along Taralga Road must be approved by the RTA prior to the commencement of these works.	Section 3.3

Condition Number	Section of CTMP where addressed
69 Prior to heavy vehicle movements to and from the site associated with the development, the Applicant must complete the following works along the designated route, to the satisfaction of Council:	
(a) a condition survey of all bridges and drainage structures along the proposed access roads for construction heavy vehicles by a competent and qualified person, to determine the adequacy of the bridges and drainage structures to withstand the proposed loads;	Section 3.4.1
(b) implement a program of works as necessary to reinforce and strengthen bridges and drainage structures identified in (a) above to permit heavy vehicles to pass without causing damage;	Section 3.4.1
(c) construction of site access points and turning bay along the Bannaby Road with a minimum of 180m stopping sight distance for approaching traffic;	Section 3.3
(d) construction of site access points and turning bay along the Alders and Crees Road with a minimum of 160m stopping sight distance for approaching traffic;	Section 3.3



Condition Number	Section of CTMP where addressed
(e) road improvements and realignment of roads as identified by Council to permit the safe passage of over length and overweight vehicles;	Section 3.4
(f) strengthening of a major twin cell culvert at Bannaby Road (chainage 0.87km) by additional temporary supports for the duration of the construction period, if this culvert is identified to be on the route used by Construction vehicles.	Section 3.4.1

Condition Number	Section of CTMP where addressed
70 All roadwork is to be designed and constructed to Upper Lachlan Council's version of AUS-SPEC Design and Construction specification or alternative specifications that meet the minimum requirements of AUS-SPEC. Detailed drawings of the access points along Bannaby Road must be approved by the Council prior to the commencement of these road works.	Section 3.3

Condition Number	Section of CTMP where addressed
71 Prior to the commencement of Construction, site road work design and specifications shall be completed and certified by an appropriately qualified person that all roads within the site associated with the development are of an acceptable standard for traffic generating requirements of the development.	Section 3.1

1.3.1. Objectives

This document reports on the impact of changes made to the local and regional road network during construction, with regard to traffic and transport operations, and makes recommendations to mitigate the traffic impact as part of a Construction Traffic Management Plan. The purpose of this Construction Traffic Management Plan is to ensure that:

- the impacts of construction works on the public domain, in particular with respect to temporary interruptions to vehicular movements, are considered;
- public safety is maintained at all times; and
- insofar as is possible, that any interruption to the use of public space is minimised.

When approved, this CTMP will generate any associated Traffic Control Plans, Road Occupancy Licence applications, and 'Speed Zone Authorisations' supporting the CTMP that require submission to Upper Lachlan Shire Council, Goulburn Mulwaree Council, NSW Police and the RTA for consideration and approval.



This CTMP has been prepared in accordance with the guidelines outlined in the *Procedures for use in the preparation of a Traffic Management Plan (TMP)*¹. In the course of preparing this CTMP, site visits were carried out to survey the existing transport conditions surrounding the site.

The rest of this report is set out as follows:

- **Section 2** describes the existing traffic and transport situation near the construction site;
- **Section 3** reports on the proposed Construction Traffic Management Plan;
- **Section 4** assesses the construction traffic impacts of the project; and
- **Section 5** describes the mitigation measures and safeguards.

1.4. Details of Revision Amendments

1.4.1. Plan Control

Distribution of the Plan by “hard copy” will be to those detailed below:

- CBD Energy.
- The Roads and Traffic Authority (RTA).
- Upper Lachlan Shire Council;
- Goulburn Mulwaree Council; and
- NSW Police.

The Environmental Representative will maintain, review and update this plan on an on-going basis throughout the construction period.

1.4.2. Amendment

Each new revision to the Taralga Wind Farm CTMP will be distributed with an instruction that the superseded copy be destroyed.

The revision number is included at the end of the document number, which is noted on each page. When amendments occur, the entire document will be reissued with the revision number updated accordingly.

The Environmental Representative may revise any attachments to this plan separately from the CTMP and reissue any revised attachments and/or the entire document accordingly, to all on the distribution list.

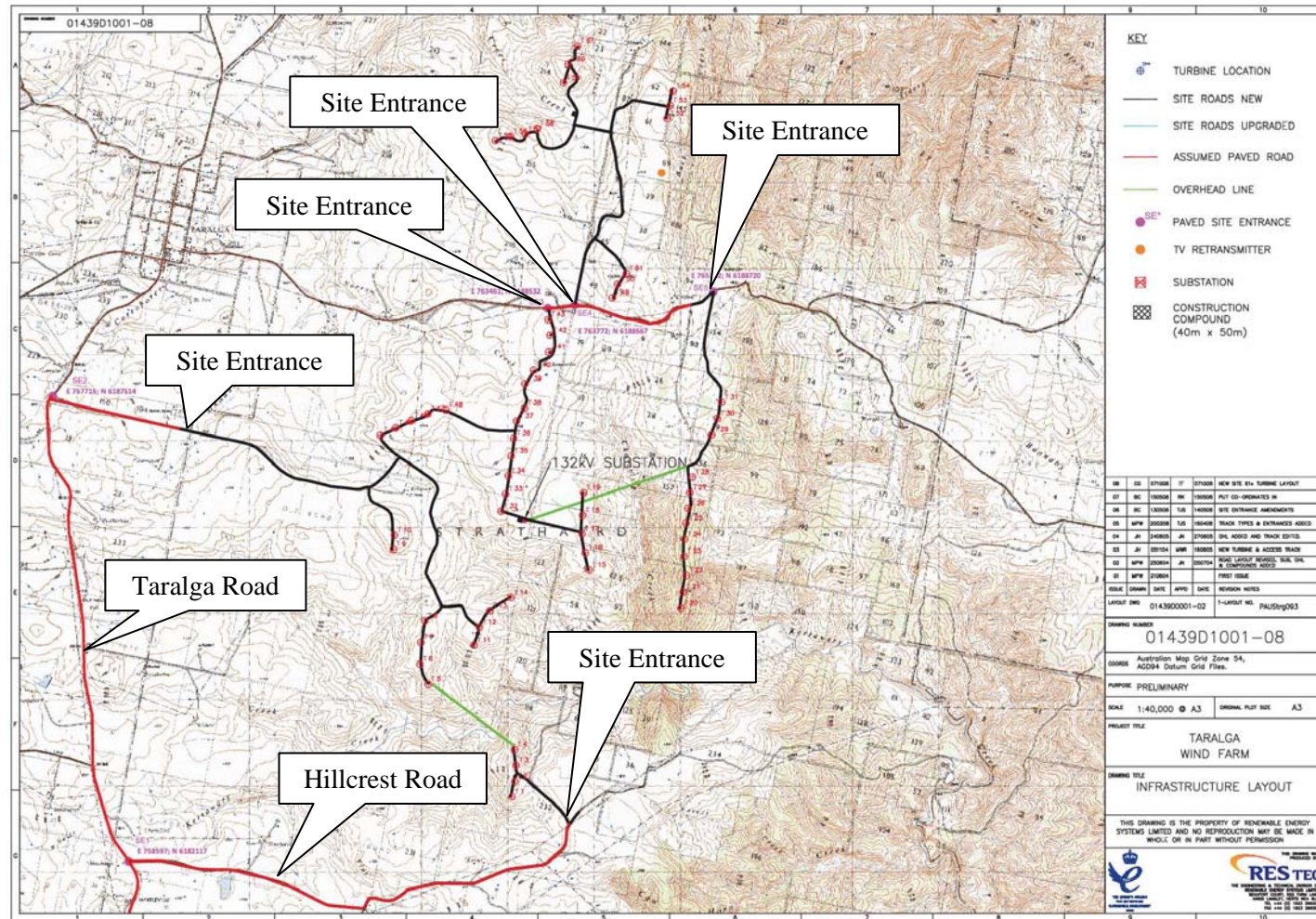
¹ Procedures for use in the preparation of a Traffic Management Plan (TMP), RTA, December 2001



2. Existing Situation

The proposed Taralga Wind Farm site (the site) is located to the east of Taralga Village. The Wind Farm would be built along ridgelines that stretch approximately 11km north to south and up to 4km east to west. The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks. The main regional access route to the site will be via Taralga Road. Other local roads that will be utilised for access to the site include Hillcrest Road, Old Showground Road, Bannaby Road, Alders and Crees Road, Riparosso Road and Soldiers Settlement Road. A location map is presented in **Figure 2-1**.

■ Figure 2-1 Site Location





2.1. Surrounding Road Network Conditions

Taralga Road (Main Road 256) is a regional road under local Council's jurisdiction. This is approximately 7m wide, and is a sealed, two-lane two-way rural road with a centreline, edge lines and varying shoulder widths. Taralga Road is the only suitable route through Goulburn to Taralga, especially for over-dimensional loads. It connects Taralga with the regional road network and Sydney via the Hume Highway. Currently a gross weight limit of 42.5t applies to Taralga Road.

Bannaby Road is a local road, providing access to local farms. Bannaby Road is sealed and is approximately 6m wide with no linemarking. It runs adjacent to the wind farm site and carries a low amount of traffic.

Old Showground Road is sealed between Taralga Road and the waste transfer station. Hillcrest Road, Old Showground Road, Alders and Crees Road, Riparosso Road and Soldiers Settlement Road are unsealed roads servicing farms. Hill Crest Road and Alders and Cress Road are fitted with grids for stock control.

A summary of existing traffic volumes along the surrounding road network is provided in **Table 2-1**.

■ **Table 2-1 Existing Daily Traffic Volumes**

Road	Location	Vehicles Per Day	Source (Year)
Taralga Road	North of Goulburn	830	2000
Taralga Road	South of Taralga Village	630	2000
Bannaby Road	East of Taralga Village	180	2000
Hillcrest Road	-	40	2002
Old Showground Road	-	40	2002
Alders and Crees Road	No data. Provides access to 4 properties	-	-
Soldiers Settlement Road	No data. Provides access to 5 properties	-	-
Riparosso Road	No data. Provides access to 1 property	-	-

Source: Greater Argyle Council, Engineering department, August 2004. Council has historically assumed between 10-15% heavy vehicles for Taralga Road. Numbers are not expected to have increased significantly since the counts were undertaken.

2.2. Public Transport

No regular public transport serves Taralga Village. A community bus service operates between Crookwell and Taralga fortnightly on Wednesdays. The time table of the community bus service is shown below:



Departs Crookwell	9.00am
Arrives Taralga Sunset Lodge	9.30am
Turn around	
Arrives Crookwell	10.30am
Departs Crookwell	4.00pm
Arrives Taralga	4.30pm

The Taralga Public School, located at Orchard Street, Taralga, is the only operational school within the Taralga Village.

Three school bus routes operate in the area.

- Goulburn to Taralga;
- Taralga to Myrtleville; and
- Taralga to Wombeyan.

There are no school buses that travel along Bannaby Road. Two bus companies have school bus services along the Goulburn to Taralga route. Noack's Buses has two buses that leave Taralga via Taralga Road between 7:30-8:30am for schools in Goulburn. These buses return between 2:30-4:00pm. Pitts Bus Service has buses that bring students into Taralga via Taralga Road between 8:30 – 9:00am. These buses return between 3:00-4:00pm.

2.3. Cyclists

There are no designated cycle routes near the site and no cyclists were observed during the site visit.

2.4. Pedestrians

There are no footpaths provided on either side of Taralga Road, Bannaby Road nor other local roads adjacent to the construction site. No pedestrian movements adjacent to the construction site were observed during site investigations.



3. Construction Traffic Management Plan

The Construction Traffic Management Plan presented in this section, indicates the proposed traffic management measures for the construction of the Taralga Wind Farm. As most of the construction works will be undertaken within the site, the traffic impact on the surrounding road network associated with the construction is anticipated to be minimal. However, the movement of construction vehicles to and from the site has the potential to impact on the surrounding road network.

3.1. Development Overview

The construction of the Taralga Wind Farm will be a major civil works project and will be completed over approximately 24 months. The staging of the construction program will involve the following key sequences of activities.

- Installation of environmental, erosion sedimentation control measures for main access track;
- Construction of main access track;
- Construction of main construction compound
- Installation of environmental, erosion sedimentation control measures of remaining access tracks;
- Construction of road improvements to the site entrances;
- Construction of the two temporary compounds;
- Construction of remaining internal site access tracks;
- Excavation and construction of the turbine foundations;
- Construction of the substation and erection of the internal above ground power lines;
- Excavation of trenches and laying power and instrumentation cables;
- Erection of the turbines;
- Commissioning the turbines; and reinstatement, removal of works compounds and clearance of the site.

Prior to the commencement of construction, site road work design and specifications shall be completed and certified by an appropriately qualified person. All roads within the site associated with the development will be of an acceptable standard to meet the traffic generating requirements of the development.

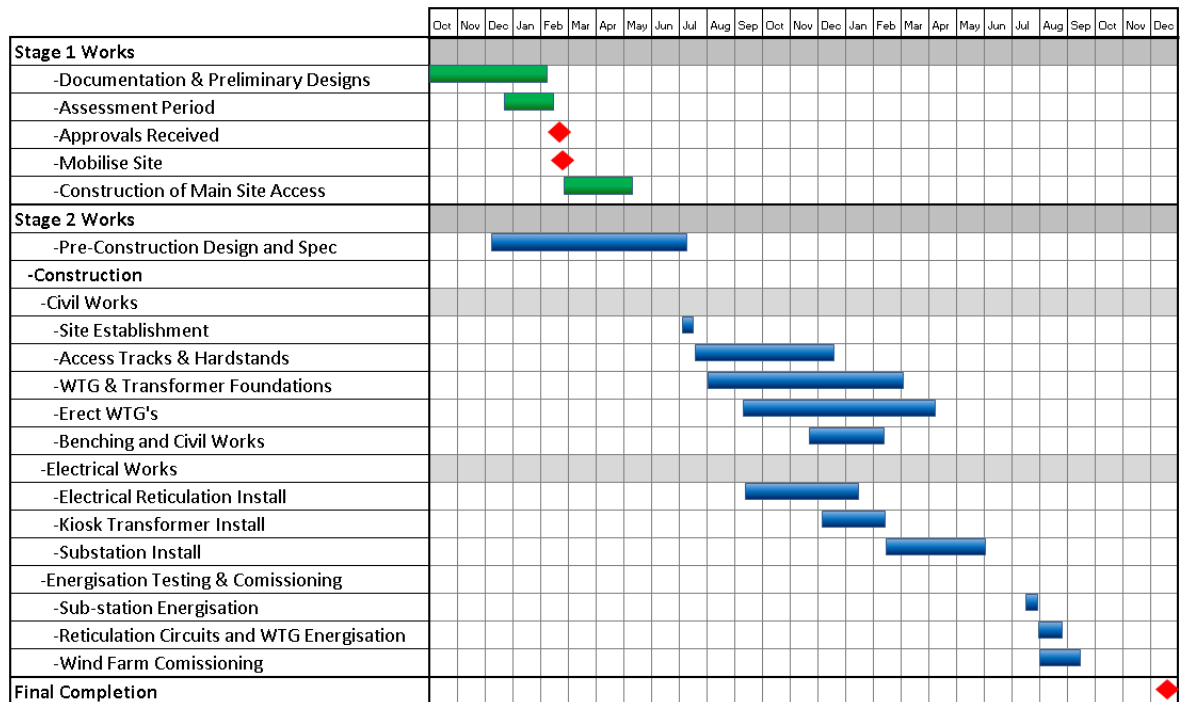
3.2. Construction Staging

The construction work will be conducted in three stages namely civil, electrical and turbine works. The construction schedule is shown in **Figure 3-1**

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■ **Figure 3-1 Construction Schedule**



3.2.1. Preconstruction Works

The preliminary works on site include establishment of contractor's site offices, amenities and stores and installation of environmental, erosion sedimentation control measures. This will run for about 9 months from the beginning of the work.

3.2.2. Construction Stage 1 – Civil Works

This stage will take approximately 14 months to complete and will be conducted in parallel with Stage 2. The key activities proposed to be carried out in this stage include:

- Installation of environmental, erosion sedimentation control measures for main access track;
- Construction of main access track;
- Construction of main construction compound
- Construction of improvements of the proposed site entrances from the public road network;
- Existing access roads upgrade works;
- Construction of new internal site access tracks;
- Construction of substation and control building;



- Excavation and construction of turbine foundations;
- Construction of turbine transformer foundation; and
- Construction of crane hard stand areas.

In order to complete these construction activities safely and to minimise traffic impact, the following traffic management arrangements and measures are required prior to construction commencing.

3.2.3. Construction Stage 2 – Electrical Works

This stage will take approximately 9 months to complete and will start within 5 months of the beginning of the work. The key activities proposed to be carried out in this stage include:

- Cabling between the turbines and the substation on the site will be laid in a trench approximately 0.5m wide by 1m deep adjacent to the access track;
- In some areas where double circuits are laid, cable trenching will be slightly wider or trenching will be required on both sides of the access track; and
- Installation of overhead lines.

The traffic management arrangements and measures for this stage will be the same as for Stage 1.

3.2.4. Construction Stage 3 – Turbine Works

This stage will take approximately 7 months to complete and will commence from the 7th month. The key activities proposed to be carried out in this stage include:

- Erection of turbines;
- Fit out of turbines; and
- Commissioning and testing of turbines.

The traffic management arrangements and measures for this Stage will be the same as for Stage 2.

3.3. Construction Site Access

Access to the construction site from the existing public road network is proposed via five access gates located along Alders and Crees Road, Old Showground Road and Hillcrest Road.

Site access points along the Alders and Crees Road will be constructed with a minimum of 160 metres sight distance for approaching traffic. Alders and Crees Road is accessed via Bannaby Road. The intersections at these access points will have a minimum of 180 metres sight distance for approaching traffic.

Part of the works will include the upgrade of the intersections of Old Showground Road and Hillcrest Road with Taralga Road to 'BAL' and 'BAR' treatments. Detailed drawings of these



access points will be submitted to Upper Lachlan Shire Council and the RTA for approval prior to the commencement of these works. The construction of these access points will occur prior to the commencement of any heavy vehicle transport associated with the development to the site from Taralga Road.

All roadwork is to be designed and constructed to Upper Lachlan Council's version of AUS-SPEC Design and Construction specification, Austroads, Australian Standards, and/or the RTA Road Design Guide specifications. Detailed drawings of access points along Bannaby Road will be submitted to Upper Lachlan Shire Council for approval prior to the commencement of these road works.

3.3.1. Minimise movements of construction vehicles through Taralga Village

Over-size and over-mass construction traffic requiring access to turbine rows 10, 11, 12 and 13 (north of Bannaby Road) and turbine rows 6 and 7 (south of Bannaby Road), will be diverted off Taralga Road (and hence away from Taralga Village) via Hillcrest Road and Old Showground Road, through the proposed new site access tracks. Following approval of this construction management plan, a traffic control plan will be produced and signage installed at the intersection of Taralga Road and Old Showground Road to prohibit construction vehicles from travelling further north along Taralga Road beyond this point. The control measures will also be communicated to all drivers of heavy vehicles during their site induction.

The contractor commissioned to transport the turbines will be required to generate a Over Dimension Vehicle Management Plan specifically related to the haulage operations and submit it for approval to the RTA as part of the submission for approval of any overdimension vehicle permits, a copy of which would also be forwarded to the relevant Council Authority. The Over Dimension Vehicle Management Plan is anticipated to address the following information:

- Detail of the proposed vehicle and load, including dimensions;
- Dates and times of any proposed movements;
- Details of any additional safety measures for night time movements (if relevant);
- A survey of the proposed route with associated photographs, highlighting expected problem locations;
- Identification of; pinch points, rest stops, bridge crossing and critical infrastructure along the proposed route and detail of any adjustments/alternative control to accommodate these;
- Identification of appropriate locations to allow traffic to pass, and triggers for implementation;
- Evidence of contact with local road managers and associated permissions and any identified access or environmental issues in this regard;
- Detail of required number and location of police/pilots together with evidence of contact in this regard;

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- Traffic assessment and management strategy for the route to identify busy periods and how these will be avoided;
- Any current roadworks along proposed route and how access through or past worksites would be managed;
- Detail of any required road closures and associated management;

In addition, traffic control plans will be implemented at site entrance 3 (see **Figure 2.1**) as shown in the plan to prohibit construction vehicles travelling beyond this point towards Taralga Village.

3.3.2. No Right Turn for Heavy Vehicles Exiting from Old Showground Road

Heavy construction vehicles associated with the development will be strictly prohibited from turning right into Taralga Road when exiting the site via the Old Showground Road. This traffic arrangement will mitigate any impact of construction traffic on the existing local traffic environment in the residential area further north along Taralga Road. More details regarding access routes can be found in **Section 3.4**. This restriction will have no impact on local heavy vehicle traffic.

3.3.3. No Left Turn for Heavy Vehicles Exiting from Site at Entrance 3

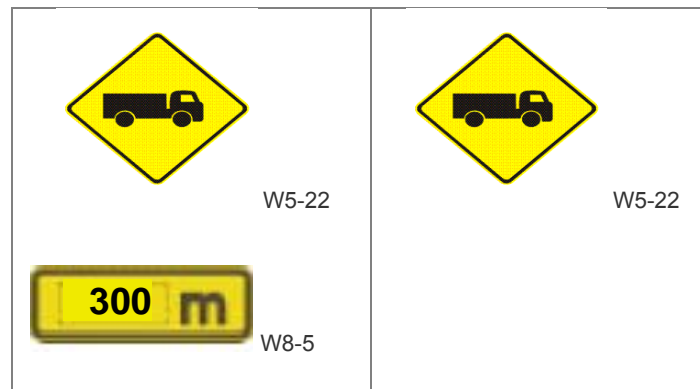
Heavy construction associated with the development vehicles will be strictly prohibited from turning left into Bannaby Road when exiting the site at this entry/exit point. This traffic arrangement will mitigate any impact of construction traffic on the existing local traffic environment in the residential area further west along Bannaby Road. This restriction will have no impact on local heavy vehicle traffic.

3.3.4. Installation of Warning Signs

Truck turning signs will be installed in both directions on Taralga Road and Bannaby Road to increase motorist's awareness of the potential for construction vehicles as they approach the site entrances. **Figure 3-2** illustrates the proposed warning signs and their desirable distance from the access point. Adjustment of this distance may be required depending on site geometry. Signs will be removed or covered outside work hours. Consideration should be given to using folding signs, so that they may easily be covered when not in use.

- **Figure 3-2: Proposed Warning Signs in Taralga Road and Bannaby Street**

300m before access point	200m before access point
--------------------------	--------------------------



3.3.5. Application for Work Zone

The contractor will submit a request for a Work Zone to Upper Lachlan Shire Council and gain approval from Council prior to the commencement of intersection upgrade works. The Work Zone will be located at the intersections of Taralga Road and Old Showground Road; Taralga Road and Hillcrest Road; Bannaby Road and Alders and Crees Road; and Bannaby Road and proposed Site Entrance 3 to ensure that no vehicles park near the site entrance, and to maintain a safe buffer zone between the site and through traffic during construction. Fencing or barriers along the Work Zone will also be provided to define the site area. This Work Zone will be removed once the construction is complete. Full access will be maintained for local residents.

3.3.6. Implementation of Approved Traffic Control Plans

All Traffic Control Plans will be prepared in accordance with this CTMP and submitted to Upper Lachlan Council for consideration. Once approval for the TCP is received, the contractor will implement the approved TCP in accordance with AS1742.3 (*Traffic Control Devices for Works on Roads*) and the RTA's *Traffic Control at Worksites* Manual.

3.4. Over-dimensional and Heavy Vehicle Access Routes

All equipment and materials required for construction will be delivered to the wind farm site by road. For over-size and over-mass loads the haulage route from Sydney or Port Kembla will be via Goulburn and into the site from Taralga Road. The dominant determining delivery size is the turbine components (eg. blades, nacelle, hub and tower sections). The equipment required to transport these over-dimensional components will be low loaders, steerable low loaders, fixed jinkers, steerable jinkers and platform trailers. Over-dimensional and over-mass permits will be obtained from the RTA.

The approved haulage route for delivery of turbine components and the substation transformer is shown in **Figure 3-3**. The equipment will be transported to Goulburn via the Hume Highway. This is a four-lane dual carriageway road and the main transport route for freight vehicles between Sydney and Melbourne. The only suitable route through Goulburn to Taralga is via Taralga Road.



After exiting the Hume Highway via the Sydney Road exit, the route travels approximately 4km (Sydney Road then becomes Lagoon Street) to the traffic signals at the intersection of Lagoon Street and Union Street. It is proposed to turn right at these traffic lights into Union Street, then turn right into Wilmot Street, which becomes Tarlo Street. Tarlo Street then becomes Taralga Road. Taralga village is then approximately 42km to the north along Taralga Road.

Taralga Road (Main Road 256) is a regional road that Council (both Upper Lachlan Shire Council and Goulburn Mulwaree Council) maintain under a funding arrangement with the Roads and Traffic Authority. It is a sealed two lane rural road approximately 7m wide with a centreline, edge lines and varying shoulder widths. Taralga Road has a gross weight limit of 42.5 tonnes. Most of the construction heavy vehicles will travel between Goulburn and Taralga utilising Taralga Road. Other public roads to be utilised for access to the site during construction are local roads for which Upper Lachlan Shire Council is the relevant road authority. These include Hillcrest Road, Old Showground Road, Bannaby Road, Alders and Crees Road, Riparosso Road and Soldiers Settlement Road. With the exception of Bannaby Road and a section of Old Showground Road (to the waste transfer station), these are unsealed roads servicing farms. Hillcrest Road and Alders and Crees Road are fitted with ramps for stock control. This route was assessed by a specialised transport company in 2004. In terms of the physical size of the loads, the route to Taralga should not pose any major issues for transport purposes (Kingston Heavy Haulage, 2004).

[illegible]



3.4.1. Structural Assessment

A condition survey of all bridges and drainage structures along the proposed access route between Goulbourn and Taralga has been undertaken by a qualified structural engineer. Each structure along the route was assessed for its ability to support the proposed vehicle loadings (vehicles up to 9.25 tonne axle loads for standard 2 metre axle widths and 16 tonne axle loads for 4.2 metre axle width). Tarlo River Bridge and Cowpers Creek Bridge were identified as being potentially inadequate to carry the anticipated loads, with all others identified as being adequate. These two structures may require strengthening for the duration of the construction period, depending on the final axle configurations. Any strengthening would be undertaken to the satisfaction of Council and/or the RTA, and would likely involve propping the culverts or plating their deck.

3.4.2. Intersection of Lagoon Street and Union Street

The impact of the right turning movement of the over-dimensional and over-mass load at the intersection of Lagoon Street and Union Street has been assessed using AUTOTRACK. The swept path of the load is shown in **Appendix A**. The swept path analysis has been carried out using a 36.5m long extendable low loader, it is assumed all equipment to be transported to the site can be accommodated on this size of vehicle. Should loads in excess of this vehicle be required, these would be detailed by the haulage contractor, following their appointment, in their submissions to the road authority for over dimension vehicle permits.

Similarly, further detailed investigation into the required modifications to this intersection will be carried out in consultation with the specialist haulage contractor following their engagement. Details of any required temporary modifications will be submitted to Goulburn Mulwaree Council and the RTA for approval prior to the commencement of these works. All modifications will be designed in accordance with the RTA's Road Design Guide. The intersection will be restored to its original condition following completion of haulage activities.

It is understood that large vehicle movements will not be permitted through Lagoon Street and Union Street on Police pass out days due to increased traffic flows. Qualified traffic controllers will be used to guide traffic through this intersection during the haulage operation.

3.4.3. Procedure to obtain over-dimensional and over- mass permit

An oversize permit is required for travel when:

- the height, width or length of an oversize vehicle (including any load) exceeds any of the maximum dimension limits specified in the General Class 1 Oversize Notice(as reproduced in **Table 3-1** below; or



- travel by a vehicle operating under the General Class 1 Oversize Notice is proposed on a restricted road.

■ **Table 3-1: Maximum Overall dimension Limits**

Vehicle	Height	Width	Length	Rear Overhang Limit *
Loaded rigid motor vehicle	4.3m	3.5m	12.5m	Lesser of 3.7m or 60% of wheel base
Loaded combination consisting of a prime mover and a semitrailer	4.3m	3.5m	25.0m	Lesser of 5.5m or 25% of trailer length
Loaded rigid vehicle and trailer combination	4.3m	3.5m	19.0m	Lesser of 3.7m or 60% of wheel base
Unloaded articulated low loader	4.3m	2.5m	25.0m	Lesser of 3.7m or 60% of wheel base
Unloaded articulated low loader with 8 tyres per axle	4.3m	2.7m	25.0m	Lesser of 3.7m or 60% of wheel base
Other vehicles including unladen vehicles	No special allowances			

If an oversize permit is required, it must be carried in the vehicle at all times, in addition to these Operating Conditions and the General Class 1 Oversize Notice.

There are two types of specific permits available to heavy vehicles. They are:

- oversize permits, which may be required in addition to a General Class 1 Oversize Notice; and
- overmass permits.

A specific permit:

- prescribes the travel conditions that apply to a particular vehicle;
- identifies the vehicle to which the permit applies; and
- identifies the registered operator of the vehicle.

The permit may also specify conditions to secure payment for:

- damage caused to roads, bridges or other property by the vehicle;
- road work that must be conducted before the vehicle can travel on a particular route; or
- costs incurred by the RTA to evaluate the proposed route or provide any special escort services.

The RTA can issue permits for a single journey or for multiple journeys that must be completed within a defined period on a defined route. Permits granted for a defined period of time only apply to the vehicle, routes and maximum dimensions specified in the permit application.



If a proposed route has not previously been travelled by a vehicle (and any load) of a particular weight, configuration or dimensions, a route survey must be conducted to determine if all bridge structures are satisfactory.

A specific permit does not entitle a vehicle to travel on any of the restricted roads listed in Part 6 of the General Class 1 Oversize Notice, unless the road has been included in the permit application and is listed in the Route Details section of the permit. In many cases, through travel is not permitted on restricted roads. Contact the RTA Special Permits Unit for more information.

If a vehicle's proposed route passes through a critical location, check the requirements in Part 7 of the General Class 1 Oversize Notice and, if necessary, contact the police.

The application for Overmass or Oversize Permit is available from the RTA website at:

www.rta.nsw.gov.au/publicationsstatisticsforms/downloads/forms_heavyvehicle_dl1.html

All necessary approvals will be obtained by the transport contractor from the RTA and / or Police, and the application for these specific approvals will occur subsequent to the appointment of the transport contractor.

All activities associated with the heavy / oversize transportation services will be performed strictly in accordance with the requirements of the regulations of the relevant statutory authorities.



4. Construction Traffic Impact Assessment

This section reports on the impacts of the construction activity on traffic and transport operations in the surrounding road network.

4.1. Construction Traffic Generation

Under the proposed construction timetable, up to 220 vehicle movements (110 inbound / 110 outbound) per day are expected to access the construction site, 7% of which are light vehicles. The duration of peak traffic generation is expected to be for a five month period out of the 24 month timetable. For the majority of the construction timetable the traffic generated by the development is expected to be between 8 - 16 heavy vehicle movements per hour.

In order to assess the impact of the construction traffic on the surrounding road network, Austroads *Guide to Traffic Engineering Practice Series- Part 2 Roadway Capacity* has been referenced. The procedure described in the guide was followed to assess the mid-block capacity of Taralga Road near the construction site. The traffic count taken in 2000 was projected to 2008 by assuming a growth rate of 3%. The estimated construction vehicle movements were then added to the projected volume in Taralga Road and used in the capacity assessment. The assessment concluded that there will be approximately 40% spare capacity in Taralga Road near the construction site during the construction period.

In order to mitigate any potential impacts, it is recommended that the heavy vehicle movements associated with construction should be minimised during peak hours. The contractor will take this into consideration when scheduling on-site activities. In general, all activities associated with heavy vehicle movements will be timed to occur outside of the peak traffic periods to minimise traffic impact in the area. Where possible, heavy vehicle movements will be scheduled so as not to conflict with school bus operations.

4.2. Construction Vehicles

The construction workforce involved in Taralga Wind Farm project is anticipated to be relatively small and, as such, the number of trips generated will be low.

During construction there will be a temporary workforce varying between 20 and 40 personnel onsite over the 24 month construction period. No overnight accommodation on the site is proposed. The two hotels in Taralga have 34 beds that could be available for accommodating construction personnel. There are also existing Bed & Breakfast and house leasing opportunities.

The vehicles and equipment shown in Table 4-1 are likely to be required for construction activities.



■ **Table 4-1 Proposed Construction Vehicles and Equipment**

Activities	Typical Vehicles and Equipment
Site set-up	Low loader
Road and hard standing construction	Low loader Tipper truck Mobile crusher plant
Foundation construction	Truck mounted pump JCB Flat bed 80 to 100t crane
On-site concrete batching	20t tankers 30t tipper
Off-site concrete batching	Agitator trucks
Turbine works	Extendable trailers Low loader Truck mounted containers Cranes
Electrical works	Very low loaders Flat bed Mixer trucks 30t tipper Telescopic crane Low loaders JCB
Construction Staff	Cars/4WD

The type of activities involved in this project will not generate concentrations of vehicle movements. All vehicles leaving the site will be cleaned and free of dust and debris before entering into any public road. The site will be kept in a clean and tidy condition throughout the construction period. Once the routes for the movement of spoil are identified, they will be submitted to the RTA, Upper Lachlan Shire Council and Goulburn Mulwaree Council for their consideration.

4.2.1. Construction Employees

The construction workforce involved in Taralga Wind Farm project is anticipated to be relatively small and, as such, the number of trips generated will be insignificant.

During construction there will be a temporary workforce varying between 20 and 40 personnel onsite over the 17 month construction period. No overnight accommodation on the site is proposed. The two hotels in Taralga have 34 beds that could be available for accommodating construction personnel. There are also existing Bed & Breakfast and house leasing opportunities.

Through the site induction program, the contractor will encourage vehicle sharing to mitigate any potential impact of personnel travelling to work. This message, along with information on safe driving practices, will be reinforced to all employees as part of their site induction,



4.3. Construction Hours

Standard construction work hours are between 07:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm on Saturdays. Construction work will not generally be undertaken on Sundays or public holidays, however, may need to be undertaken in some circumstances for operational / construction related reasons. Condition no. 40 permits the following activities to be carried out in association with construction outside these hours:

- a) any works that do not cause noise emissions to be audible at any nearby residences not located on the site;
- b) the delivery of materials as requested by Police or other authorities for safety reasons; and
- c) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

4.4. Impact on Amenity, Traffic and Transport Operations

The haulage route for over-dimensional vehicles was assessed by a specialised transport company in 2004. The assessment found that the route to Taralga should not pose any major issues for transport purposes (Kingston Heavy Haulage, 2004), with the intersection of Lagoon Street and Union Street posing the only potential problem due to the geometry of the intersection and the location of traffic signal pedestals in the medians. Any road improvements or realignments required by Upper Lachlan Shire Council or Goulburn Mulwaree Council to facilitate the progression of over-weight and over-dimensioned vehicles through the road network will also be undertaken.

4.4.1. School Bus Operation

The existing school bus operations along Taralga Road will not be adversely affected by the Project as heavy vehicle movements will be scheduled to occur outside of school bus operating hours wherever possible.

4.4.2. Livestock Movements

Hillcrest Road and Alders and Crees Roads are fitted with ramps for stock control. There is no set time for stock transport as the activity is dependent on several factors such as market condition, season, weather, etc. Under the project's communication plan, regular contact will be maintained with the stock exporters in the area to plan and minimise the construction traffic movements along Hill Crest Road and Alders and Crees Road at the time of stock transport.

4.4.3. Cyclists

The construction activity will not have any impact on existing cycling activity.



4.4.4. Pedestrians

The construction activity will not have any impact on existing pedestrian activity.

4.4.5. Impact on Emergency Vehicles

The construction activity will not have any impact on emergency vehicles. No road closure or significant delay at intersections is anticipated due to the construction activity. No remedial measures are required. Emergency agencies will be informed of over-dimensional vehicles schedules, proposed access routes and estimated of running times.

4.5. Public Consultation

The Construction Traffic Management Plan for the Construction of the Taralga Wind Farm has been submitted to the Local Traffic Committee of Upper Lachlan Shire Council and Goulburn Mulwaree Council for their consideration. The feedback or comments have been received and incorporated into the CTMP. The representatives of each organisation who participated in the consultation are detail in **Table 4-2**.

■ **Table 4-2: Representatives of Consulted Organisations**

Name	Title	Contact
Upper Lachlan Shire Council		
Alan Lawrence		alawrance@crookwell.nsw.gov.au
Goulbourn Mulwaree Shire Council		
Andrew Palmer	Works Engineer	(02) 4823 4538
Ian Aldridge		ian.aldridge@goulburn.nsw.gov.au
Roads and Traffic Authority		
Patrick Munro	Co-ordinator Special Permits Unit	1300 656 371
Rhod Stevens		Rhod_STEVENS@rta.nsw.gov.au
Wayne Wilson	Traffic Operations Manager, RTA Southern Regional Office	4221 2448
NSW Police		
Senior Sergeant Karen Forrester	Senior Supervisor, Goulburn LAC Highway Patrol	4824 0784
Rod Cranston		cran1rod@police.nsw.gov.au
Senior Constable Phil Pollard	Police representative on local Traffic Committee	

The Contractor will work closely with Council's officers throughout the construction period keeping them fully informed of each stage of the work.



5. Safeguards and Mitigation Measures

Safe work methods will be developed as part of Taralga Wind Farm Construction Traffic Management Plan in accordance with the RTA's *Traffic Control at Work Sites Manual*. These safeguards will include barriers, signage and traffic controllers.

5.1. Traffic Control Plans

5.1.1. Preparation and implementation of Traffic Control Plans

The Traffic Control Plan (TCP) to be used during the construction activity will be developed in accordance with Australian Standard 1742.3, and the RTA's "*Guide to Traffic Control at Worksites*".

A TCP can only be prepared by a person who has undertaken and passed the RTA's "*Traffic Control at Worksites Manual*" training course and holds a current certification.

Relevant reference documents are:

- Australian Standard AS1742.3 – 2002 *Manual of uniform traffic control devices Part 3 Traffic control devices for works on roads*;
- Road and Traffic Authority NSW. *Traffic Control at work sites (TCAWS)*. Version 3, 2004; and
- AUSTROADS. *Guide to Traffic Engineering Practice. Part 2 – Roadway Capacity*. 1999.

All worksites and traffic control plans will be implemented as per the authorised TCP for the appropriate stage of the works by suitably qualified personnel.

5.1.2. Inspection of Roadwork Traffic Schemes

The requirement to inspect traffic control is stipulated in Section 6 of the RTA's "*Traffic Control at Worksites Manual*" and Appendix A of Australian Standard 1742.3. There are three main types of inspection:

- Pre-start and pre-closedown inspections of short term traffic control;
- Weekly inspections of long term traffic control; and
- Night inspections of long-term traffic control.

The checklist in the RTA's "*Traffic Control at Worksites Manual*" is generic and can be used for all three types of inspection whether short term, long term or night.



The responsibility and frequency of inspections is clearly stipulated in Section 6.1 of the RTA's "*Traffic Control at Worksites Manual*" and is summarised in **Table 4-1**:

■ **Table 5-1 TCP Inspections**

Inspection	Responsibility	Frequency
Pre-start & pre-closedown	Site Ganger	Before work starts, regularly through the shift and prior to closing down
Weekly Inspections	Works Supervisor	On the day the work begins and at least once per week
Night inspections	Works Supervisor	At least once during the first week and at least every 2 months
Pre-opening Inspections	Project Manager	Prior to opening temporary carriageway deviation or detour

5.2. Road Occupancy Licence

A Road Occupancy Licence authorises the occupation of a portion of the road that will normally be available to traffic. Except in the case of an Unplanned Incident, or when directed by the Police or other Emergency Services, a Road Occupancy Licence must be obtained for any work which:

- Slows, stops or otherwise delays or affects the normal flow of traffic;
- Diverts traffic from its normal course along the road, including lane closures and detours); or
- Occupies any portion of the road related area, including the footpath that is normally available for vehicular, pedestrian or bicycle movement.

Applicants are required to prepare submissions for Road Occupancy Licences and complete relevant application forms as required by Upper Lachlan Shire Council, Goulburn Mulwaree Council and the RTA.

Applications for Road Occupancy Licences should be submitted to Upper Lachlan Shire Council, Goulburn Mulwaree Council and the RTA at least 10 working days prior to the proposed occupancy. The Council and the RTA will grant or reject the application within this period.

Road Occupancies must comply with the Construction Traffic Management Plan.

The traffic control arrangements must provide sufficient capacity to accommodate the expected traffic volumes during the period of occupancy. The Council will not grant approval for those activities that will not satisfy this requirement.

5.3. Road Works

Section 138 of the Roads Act 1993 Works and structures requires that all proponents seek consent from the appropriate Road Authority before carrying out any of the following activities:

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- erect a structure or carry out a work in, on or over a public road, or
- dig up or disturb the surface of a public road, or
- remove or interfere with a structure, work or tree on a public road, or
- pump water into a public road from any land adjoining the road, or
- connect a road (whether public or private) to a classified road,

Consent may not be given with respect to a classified road except with the concurrence of the RTA.

Applications for consent under Section 138 of the Roads Act 1993 will be made to Upper Lachlan Shire Council, Goulburn Mulwaree Council and the RTA prior to the commencement of any work impacting on a public road.

5.4. Road Dilapidation Surveys

Prior to work commencing, a 'before' road dilapidation survey will be undertaken using the AARB 'laser car'. This survey will assess the existing condition of the following roads along the haulage route, for the lengths which are to be utilised:

- Taralga Road (MR256);
- Bannaby Road; and
- Old Showground Road.

On completion of the project, the roads will be restored to a standard not less than that recorded in the 'before' survey. In order to do this, an 'after' survey will be undertaken using the AARB 'laser car' and road video images (such as those available from the RTA's GypsiCam). A report will be prepared in consultation with Council, detailing the findings of the 'before and after' study and determining whether the roads have been impacted upon as a result of the project, and detailing any works required to restore the roads. Where defects are found to be attributable to the Taralga Wind Farm Project, any restoration will be paid for as part of the Project. The roads will be restored at least to their pre-development condition, to the satisfaction of the relevant Council, within three months of the commencement of operation, unless otherwise agreed by Council.

5.5. Noise Control Measure

The following mitigation measures will be in place to manage noise pollution due to construction activities:

- Construction work will generally be undertaken during the approved hours. Any works carried out outside of these hours are not to cause audible noise emissions at any nearby residences not located on the site;
- Position noisy equipment to minimise noise impacts on sensitive receivers and wildlife;



- Adopt alternative construction measures;
- Minimise truck reversing;
- Noise monitoring;
- Community notifications; and
- Use of temporary acoustic shield if necessary.

5.6. Community Information Plan

The environmental management team will set-up proactive measures to liaise, consult and communicate with the community, RTA, Local Councils, emergency service agencies and key stakeholders during the construction phase. The main objectives of the traffic communications strategy are to;

- provide timely, accurate and comprehensive traffic information to all potential and existing road users;
- allow and accommodate community and key stakeholder feedback regarding road safety and traffic management issues;
- minimise and manage traffic impacts and construction activities to protect locally affected residential and business amenity; and
- ensure media are well informed and work with the RTA to help minimise traffic impacts.

The environmental management team will disseminate changed traffic condition information using the following methods:

- Consultation with key stakeholders;
- Variable message and temporary roadwork information signage, with the proposed use of variable message boards to be included in the relevant TCP for approval by the RTA;
- Changed traffic condition advertising (including newspapers, radio, website and RTA IRIS); and
- Community letterbox notifications.

Information will be communicated within the community to ensure the community is well informed about the scope and duration of the activities and also the potential impacts of them. The information would include, but not be limited to the following:

- Planned start and end date of investigation and or construction activities;
- Timing of the construction activities during the day, including any activities outside standard construction hours;
- Planned routes for construction and heavy vehicles;



- Planned duration and timing of any road closure or lane closure if required, including any other anticipated disruption to normal traffic flows and impacts on amenity; and
- Inform affected landowners about the planned duration and timing of the construction vehicle activity and their impacts on the live stock movements.

5.7. Complaint Management Procedure

The environmental management team will regularly consult with key stakeholders and community representatives, either directly or through the forum provided by the Community Consultative Committees. The key stakeholders to be consulted will include but are not limit to; RTA, Upper Lachlan Shire Council, Goulburn Mulwaree Council, NSW Police and the Rural Fire Service. A complaint management procedure will also be established as follows:

- Contact details for responsible persons will be published in the local newspaper and forwarded to the local resident letterboxes and Council's traffic teams;
- Any complaints received will be investigated immediately and mitigation measures will be implemented by the environmental management team;
- The person, group or the authority will be contacted to clarify the issue and also to notify the outcome of investigation and mitigation measures that has been in place.

The Project Civil Engineer, will attend and update the Local Council Traffic Committees, as required. Issues to be discussed may include, potential risks proposed changed traffic conditions, public safety, construction activities, community concerns, public transport issues, pedestrians and bicycle movements, and communication strategies, etc.



Over-Dimensional Vehicle Swept Path

22.0 APPENDIX 5 – BIODIVERSITY SUB-PLANS

- Construction Flora & Fauna Management Sub-Plan;
- Bird and Bat Adaptive Management Program; and
- Riparian Vegetation Management Sub-Plan.



TARALGA WIND FARM
CONSTRUCTION ENVIRONMENTAL
MANAGEMENT PLAN (CEMP)

BIODIVERSITY SUB-PLANS

Flora and Fauna Management Sub-Plan
Bird and Bat Adaptive Management Program
Riparian Vegetation Sub-Plan

CBD Energy



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1. INTRODUCTION

CBD Energy has approval to construct and operate a 61 turbine wind farm near Taralga in the southern tablelands of New South Wales. As a condition of its approval by the NSW Land and Environment Court (Court Order 10196 of 2006), the proponent is required to prepare a Construction Environmental Management Plan (CEMP). This CEMP has a number of components, including sub-plans and plans for mitigating and managing the impacts of the wind farm on biodiversity.

This document provides the three Construction Environmental Management Sub-Plans relevant to biodiversity, namely:

- Flora and Fauna Management Sub-Plan;
- Bird and Bat Adaptive Management Program; and
- Riparian Vegetation Management Sub-Plan.

Each of these sub-plans is presented as a separate chapter in this document. The content of this document is designed to be incorporated into the overall CBD Energy CEMP. For this reason, reporting arrangements and responsibilities are not included here as they are covered in the over-arching plan. In brief, the proponent will appoint an independent Environmental Representative to audit implementation and reporting required by the plan.

The following personnel from NSW Government Departments were consulted with to ensure that work on these plans was consistent with requirements:

- Mr Michael Saxon – Department of Environment, Climate Change and Water (DECCW), within Office of Environment and Heritage (OEH), approval on behalf of the Director-General of the field team to undertake botanical assessment of the site;
- David Zerafa, NSW Office of Water (part of DECCW) – directions for the preparation of the Riparian Plan; and
- Helen Ward, Hawkesbury-Nepean Catchment Management Authority – provision of species lists for revegetation works.

2. FLORA AND FAUNA MANAGEMENT SUB PLAN

2.1. Introduction

This sub-plan provides objectives, identification of responsibilities, methods for implementation and a monitoring framework that ensure the appropriate management of flora and fauna values on the site potentially affected by the Taralga Wind Farm project.

Relevant Conditions of Consent

Condition number 85 of the Conditions of Consent requires the preparation of a Construction Flora and Fauna Management Plan as part of the project CEMP. This sub plan must be prepared in consultation with the New South Wales Department of Planning and include, but not be limited to:

- (a) *“Detailed plans identifying:*
 - (i) *Terrestrial vegetation communities; important flora and fauna habitat areas; habitat trees, locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the development where this contains important habitat areas and/or threatened species, populations or ecological communities;*
- (b) *Methods to manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the development. These must include:*
 - (i) *Procedures for vegetation clearing, soil management and managing other habitat damage (terrestrial and aquatic) during construction;*
 - (ii) *Methods to protect vegetation both retained within, and also adjoining, the development from damage during construction;*
 - (iii) *Methods to protect rocky outcrops and other potential reptile habitat both retained within, and also adjoining, turbines and ancillary development from damage during construction;*
 - (iv) *A habitat tree management program including fauna recovery procedures and habitat maintenance (e.g. relocating hollows or installing nesting boxes)- dealt with in Section 3; and*
 - (v) *Performance criteria against which to measure the success of the methods;*
- (c) *Details of how structures associated with the development will be designed to reduce the risk of bird and bat strike (dealt with in Section 3);*
- (d) *Rehabilitation details including:*
 - (i) *Identification of locally native species to be used in rehabilitation and landscaping works, including flora species suitable as a food source for threatened fauna species;*
 - (ii) *The source of all seed or tube stock to be used in rehabilitation and landscaping works including the identification of seed sources within the site. Seed of locally native species should be collected before construction commences; and*
 - (iii) *Methods to re-use topsoil (and where relevant, subsoils), surface rocks and cleared vegetation;*

- (e) a Weed Management Strategy including:
- (i) identification of weeds within the site and adjoining areas;
 - (ii) weed eradication methods and protocols for the use of herbicides;
 - (iii) strategies to control the spread of weeds during construction, including ensuring that machinery brought on site is weed and pathogen free;
- (f) A program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures against the identified performance criteria. Management methods must be reviewed and revised where found to be ineffective; and
- (g) A program to ensure that all staff and contractors associated with the development are aware of the location of all protected areas.”

Condition 86 states that:

“The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and loss of suitable habitat for Natural Temperate Grassland and the orchid Diurus aequalis.

To ensure compliance with this condition, the applicant must engage a suitably qualified person(s) who is to receive the prior approval of the Director-General, to undertake a detailed botanical survey, prior to the commencement of construction, of:

- Turbine rows 4, 5, 6, 7 and 10; and
- All access roads requiring construction or upgrading

during the appropriate season (that is, November to December)

Where Natural Temperate Grassland or Diurus aequalis is found to occur, either on or adjacent to these locations, the area must be fenced during construction and that component of the development (including construction components) must be relocated at least 50 metres from the grassland or orchid population but no more than 250 metres from the original location of that component.

A report detailing the results of this survey, including details of any proposed relocation of infrastructure associated with the development is to be submitted to the Director-General within one month of completion of completion of the survey. Construction must not commence until the Director-General has confirmed the results of the survey and approved the position of any relocated infrastructure (inclusive of any construction related components).

Note: The Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory Endangered Ecological Community “Natural temperate Grassland” is defined under the Commonwealth Environmental Protection and Biodiversity Conservation Act, 1999. The location of the turbine rows and the access tracks is as described in the EIS.

Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the

grant of consent, modification of the consent or further consent under the Act will be required."

Condition 87 states:

"The applicant must design, construct, operate and maintain the development in a manner that avoids damage to and/ or loss of suitable habitat for the Striped Legless Lizard and the Grassland Earless Dragon.

To ensure compliance with this condition, the Applicant must engage a suitably qualified person(s) that is to receive the prior approval of the Department, to undertake a detailed survey of the site to determine the presence of such suitable habitat, so as to enable the Applicant, in consultation with the DEC and the Department, to locate infrastructure (including turbines, underground cables and power poles) and other elements associated with the development (such as access tracks and construction lay-down areas) at least 50 metres from these areas, but no more than 250 metres from the original location of the infrastructure or element.

Note: Where any component of the development is proposed to be relocated greater than 250 metres from its original position on the on the grant of consent, modification of the consent or further consent under the Act will be required."

Condition 88 states:

"Notwithstanding condition 87, where the Applicant is unable to avoid damage to and/ or loss of such suitable habitat in respect of the Striped Legless Lizard, the Applicant may seek the approval of the Director-General to damage and/ or destroy this habitat however, this loss must be suitably compensated. Any such compensatory works are to be implemented, in consultation with and to the satisfaction of the Department and the DEC."

Condition 89 states

"Prior to the commencement of construction, all vegetation and fauna habitat to be protected under this consent is to be fenced off with clearly visible, durable and appropriately signposted exclusion fencing to prevent uncontrolled or inadvertent access by vehicles or construction personnel."

Condition 90 states:

"To compensate for the loss of the existing forest/ woodland resulting from the construction of the wind turbine generators and access tracks on Row 6, the Applicant must reforest a similar-sized area to that which is lost, at a location not immediately adjacent to any turbine.

To ensure compliance with this condition, the Applicant must prepare and submit for the approval of the Director General, details of the habitat compensation plan. Construction activities at Row 6 must not commence until the Director-General has approved the plan. Following approval by the Director-General, the Applicant must implement the compensatory measures within such periods as the Director-General may direct."

The flora and fauna management sub-plan has been prepared to address these conditions, with the exception of Condition 86. The proponent has commissioned a separate report on Natural Temperate Grassland on the development site, to satisfy Condition 86, and this is presented as Appendix 9 to this report.

The table below indicates where content that addresses each consent condition can be found in this report.

Consent Condition	Reference
Condition 85	
(a) "Detailed plans..."	Figures 1 and 2
(b) (i) "Methods to manage impacts on flora and fauna..."	Tables 5 and 6
(b) (ii) "Methods to protect vegetation..."	Tables 5 and 6
(b) (iii) "Methods to protect rocky outcrops and other potential reptile habitat..."	Tables 5 and 6
(b) (iv) "A habitat tree management program..."	Tables 5 and 10
(b) (v) "Performance criteria..."	Tables 5, 6 and 10
(c) "Details of how structures..."	Table 10
(d) (i) "Identification of locally native species to be used in rehabilitation"	Appendix 1
(d) (ii) "The source of all seed or tube stock to be used..."	Section 2.4.1
(d) (iii) "Methods to re-use topsoil..."	Table 5
(e) (i) "identification of weeds..."	Table 6
(e) (ii) "weed eradication methods and protocols for the use of herbicides"	Table 6, Section 2.4.1
(e) (iii) "strategies to control the spread of weeds during construction..."	Tables 5 and 6
(f) "A program for reporting..."	See Reporting requirements in overall CEMP
(g) "A program for ensuring... staff and contractors... are aware of the location of all protected areas"	See Site Management requirements in overall CEMP
Condition 86	
Avoiding impacts on Natural Temperate Grassland and <i>Diuris aequalis</i>	Table 5, Appendix 8, Appendix 9
Condition 87	
Avoiding and minimising impacts on Striped Legless Lizard and	Table 5, Appendix 9

Consent Condition	Reference
Grassland Earless Dragon habitat	
Condition 88	
Removal of Striped Legless Lizard and Grassland Earless Dragon habitat	Table 5, Appendix 9
Condition 89	
“Prior to the commencement of construction, all vegetation and fauna habitat to be protected... is to be fenced...”	Table 5
Condition 90	
“To compensate for the loss of the existing forest/ woodland ... on Row 6, the Applicant must reforest a similar-sized area...”	Section 2.4.1 and Figure 7

An assessment in 2008 by Brett Lane and Associates Pty Ltd identified the potential occurrence of *Diuris aequalis* within Turbine Row 6 at coordinates: 34°25'49.01" S, 149°53'10.85" E. A more recent targeted survey for this species, during the species' flowering period, was completed by Kevin Mills and Associates (KMA 2011). The assessment by KMA concluded that no *Diuris aequalis* plants occurred within the proposed development area. The current sub-plan reflects the KMA findings and therefore provides no measure for the protection of *Diuris aequalis*.

This Sub Plan presents and refers to an indicative development layout only, since detailed development plans have not yet been prepared. Once detailed development plans are provided, figures will be prepared that identify in more detail the location of relevant environmental values in relation to proposed construction and works.

2.2. Risk assessment

This sub-section outlines the risk assessment framework used to prioritise responses to the risk the project represents for flora and fauna.

Risk assessment involves combining an assessment of the consequences of a particular potential impact of an action on flora and fauna with the likelihood of it occurring. To enable this assessment, both consequence and likelihood criteria have been developed (see Table 4). In addition, scores have been allocated to different levels of consequence and likelihood to enable a consistent comparison of risks.

The risk assessment has been undertaken with regard to the following flora and fauna attributes of the site:

- Threatened flora species, in particular the site near Row 6, initially considered to potentially support *Diurus aequalis*;
- Threatened fauna species, other than birds and bats;

- Native vegetation and vegetation communities; and
- Key indigenous fauna habitats.

The risk assessment has considered the following potential impacts on flora, fauna during construction:

- Removal of threatened flora populations;
- Removal of sensitive native vegetation (e.g. grasslands);
- Damage to and removal of remnant native trees;
- Removal of key ground fauna habitat components, such as logs and surface rock;
- Erosion and sedimentation smothering vegetation near construction areas;
- Fragmentation of habitat links;
- Inadvertent damage to vegetation and habitat near construction areas due to uncontrolled access by personnel, vehicles and construction machinery; and
- Earthworks and soil stockpiling on remnant native vegetation, fauna habitats and around remnant native tree root zones.

Table 1: Consequence and likelihood criteria for flora and fauna risk assessment at Taralga Wind Farm.

Consequence Criteria				
Negligible	Minor	Moderate	Major	Extreme
Local population or area of community may change but detectable change unlikely to be beyond natural variation	Detectable change in local population or area of community (1 – 5 %) beyond natural variability but no impact on population or community viability (i.e. recruitment, breeding, recovery capacity).	Detectable change in local population or area of community (5 – 10 %) beyond natural variability but no impact on population viability (i.e. recruitment, breeding, recovery capacity) in the long term but recovery may be delayed.	Detectable change in local (>10%) and regional (1 – 5 %) population size or area of community beyond natural variability. Permanent impact on local population viability and capacity to recover	Local extinction of population or community and likely detectable change to regional population or area of community (> 5%) beyond natural variability. Permanent impact on viability and capacity to recover at regional scale.
Likelihood Criteria				
Almost impossible	Very Unlikely	Possible	Highly Probable	Certain
No previously documented instance	Instance has occurred very rarely elsewhere	Instance has occurred elsewhere but under different site conditions	Instance has occurred regularly elsewhere under similar site conditions	Certain to occur based on experience elsewhere

Table 2 provides a risk matrix that defines risk as high, moderate or low, depending on the combination of consequence and likelihood levels.

Table 2: Risk matrix

Consequence Likelihood	Negligible	Minor	Moderate	Major	Extreme
Almost Impossible	Low	Low	Low	Low	Moderate
Very Unlikely	Low	Low	Low	Moderate	High
Possible	Low	Low	Moderate	Moderate	High
Highly Probable	Low	Moderate	Moderate	High	High
Certain	Moderate	Moderate	High	High	High

Table 3 scores each of these potential impacts for their consequence and likelihood. Consequence scores are generally low due to the small proportion of remnant areas of grassland and other native vegetation affected by the project.

Table 3: Consequence and likelihood scoring for impacts on native flora and fauna

Impact	Pre-mitigation		Risk Level	Mitigation Actions	Post-mitigation		Residual Risk Level
	Consequence	Likelihood			Consequence	Likelihood	
Removal of threatened flora populations	Moderate	Highly Probable	Moderate	As in Table 5	Minor	Highly Probable	Moderate
Removal of sensitive native vegetation	Moderate	Certain	High	As in Table 5	Negligible	Certain	Moderate
Damage to and removal of remnant native trees	Minor	Highly Probable	Moderate	As in Tables 5 & 6	Negligible	Highly Probable	Low
Removal of key ground fauna habitat components	Minor	Highly Probable	Moderate	As in Table 5	Negligible	Highly Probable	Low
Erosion and sedimentation smothering vegetation	Minor	Certain	Moderate	As in Table 5	Negligible	Possible	Low
Fragmentation of habitat links	Minor	Highly Probable	Moderate	As in Table 5	Negligible	Highly Probable	Low
Inadvertent damage to vegetation and habitat	Minor	Certain	High	As in Tables 5 & 6	Negligible	Possible	Low

2.3. Management Objectives

The objectives of this sub-plan are to:

- Document areas of sensitive native vegetation, flora and/or fauna on the Taralga Wind Farm site;
- Provide methods to manage (i.e. avoid and minimise) impacts on flora and fauna species (terrestrial and aquatic), their habitat and native ecological communities which may be directly or indirectly affected by the development;
- Ensure that the construction phase of the project does not result in the direct or indirect degradation of flora or fauna populations, their habitat or ecological communities on and adjoining the Taralga Wind Farm construction zone; and
- Ensure that environmental rehabilitation measures are appropriately designed and implemented.

2.4. Environmental management activities and controls

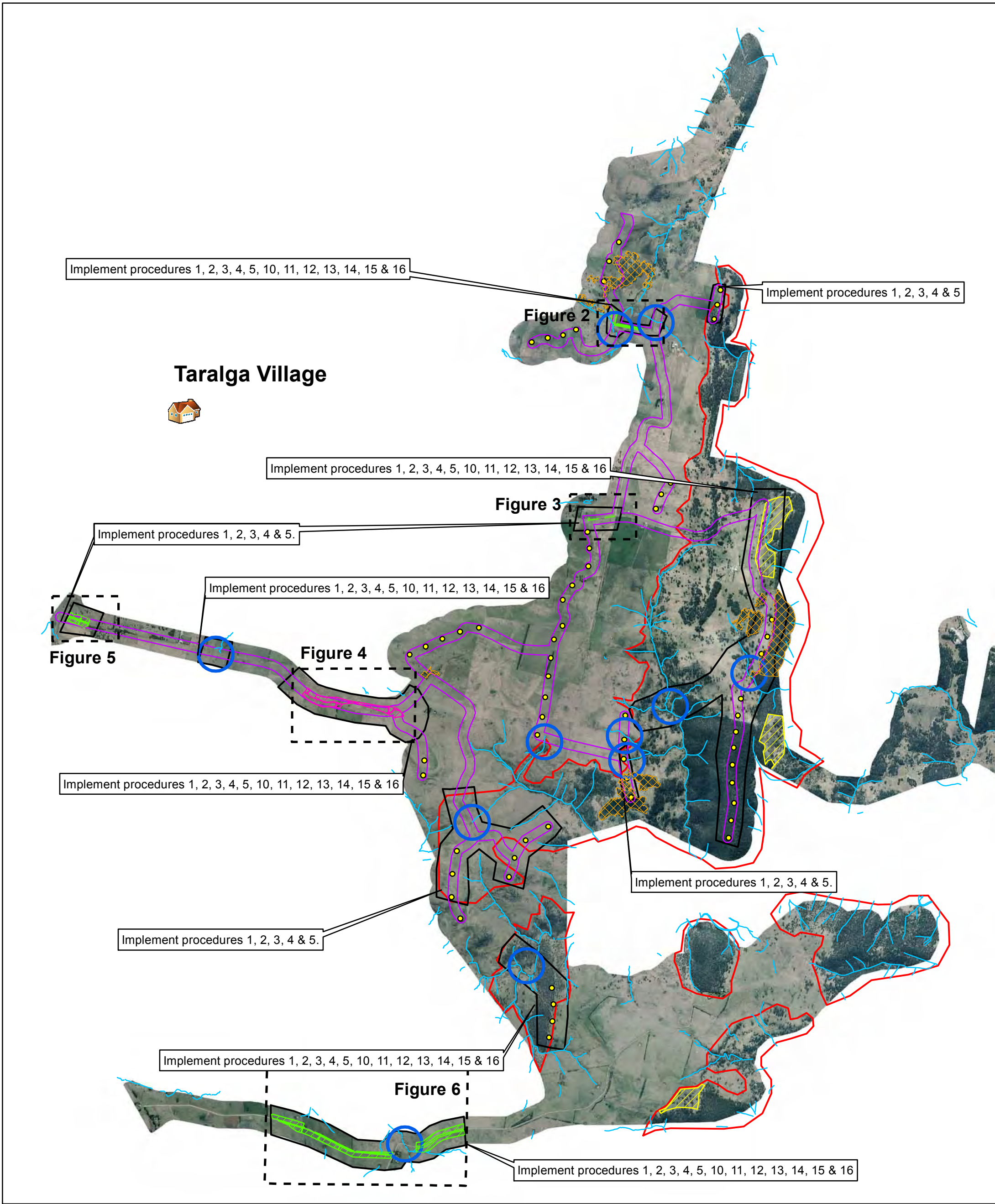
Figure 1 to Figure 6 shows the location of areas of environmental sensitivity where construction environmental management procedures are required. In each area, the procedures that apply are identified. Legislation and policies that relate to the main management issues are presented in Table 4. Procedures aimed at managing those issues, including the procedure numbers identified in Figure 1 to Figure 6, are detailed in Table 5.

All staff and contractors should be inducted into this part of the CEMP and familiarised with the locations of all environmentally sensitive areas before commencing any work. All environmental controls should be checked for compliance on a regular basis by the Environmental Representative.

Identification and clear marking of environmentally sensitive areas should be undertaken before construction commences by the construction manager and relevant construction team members.

Table 4: Environmental issues and the legislation and policies that relate to the flora and fauna management sub plan

Issue	Relevant legislation/policies
Damage to, or clearing of retained native vegetation and other environmentally sensitive areas	<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), Native Vegetation Act 2003 (NV Act), Environmental Planning and Assessment Act 1979 (EPA Act)</i>
Damage to, or degradation of significant adjacent native vegetation	<i>National Parks and Wildlife Act 1974 (NPW Act), EPA Act</i>
Depletion or degradation of soil resources	EPA Act
Impacts on native flora and fauna and their habitat	<i>Threatened Species Conservation Act 1995 (TSC Act), NV Act, EPA Act, Fisheries Management Act 1994 (FM Act)</i>
Weed and pathogen invasion	FM Act, EPA Act, TSC Act



Legend

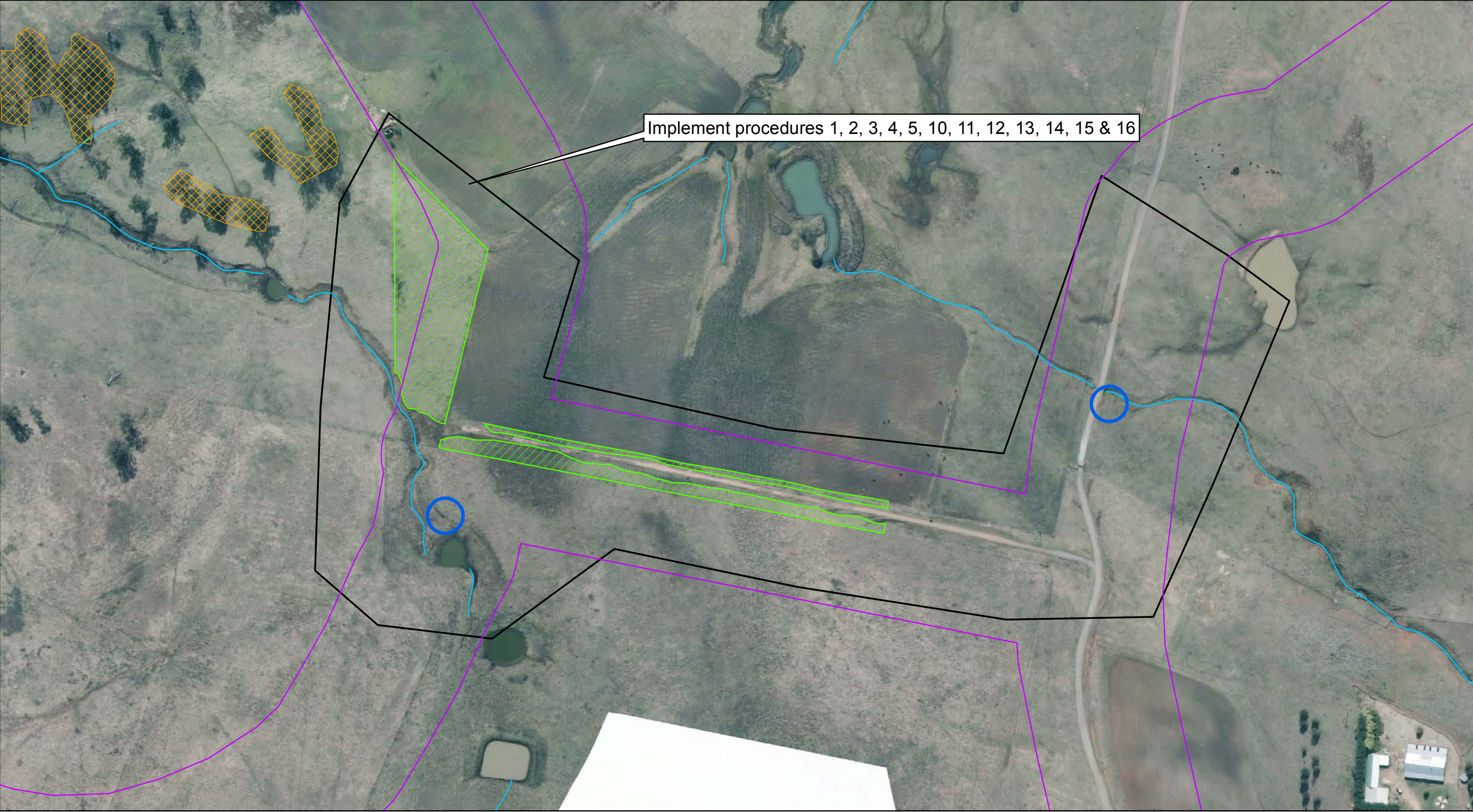
- Flora & fauna habitat areas
- 50m buffer of access tracks
- Procedures Areas
- Proposed revegetation zones
- Tablelands Basalt Forest (KMA 2011)
- Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT

- Rivers and Creeks
- Turbines
- Proposed creek and riparian zone crossings
- Native Grassland to be retained where possible

Metres

0 500 1,000 2,000

Figure 1: Study area and areas of environmental sensitivity - Overview		
Project: Taralga Wind Farm		
Client: CBD Energy		
Project No.: 8129	Date: 19/01/2012	Created By: D. Coppolino / M. Ghasemi
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>BL&A Brett Lane & Associates Pty. Ltd. Ecological Research & Management</p> </div> <div style="text-align: right;"> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <p>● Experience</p> <p>● Knowledge</p> <p>● Solutions</p> </div> <div> <p>25 Burwood Rd, Hawthorn</p> <p>PO Box 74, Richmond</p> <p>VIC 3121 Australia</p> </div> <div> <p>ph (03) 9815 2111 fax (03) 9815 2685</p> <p>blane@ecologicalresearch.com.au</p> <p>www.ecologicalresearch.com.au</p> </div> </div>		



Legend

- Flora & fauna habitat areas
- 50m buffer of access tracks
- Procedures Areas
- Proposed revegetation zones
- Tablelands Basalt Forest (KMA 2011)
- Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT
- Rivers and Creeks
- Turbines
- Proposed creek and riparian zone crossings

Figure 2: Study area and areas of environmental sensitivity - Detailed

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129

Date: 19/01/2012

Created By: D. Coppolino / M. Ghasemi

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Ecological Research & Management



Legend

- Flora & fauna habitat areas
- 50m buffer of access tracks
- Procedures Areas
- Proposed revegetation zones
- Tablelands Basalt Forest (KMA 2011)
- Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT
- Rivers and Creeks
- Turbines
- Proposed creek and riparian zone crossings



Figure 3: Study area and areas of environmental sensitivity - Detailed

Project: Taralga Wind Farm

Client: 7 6 8 Energy

Project No.: 8129	Date: 19/01/2012	Created By: D. Coppolino / M. Ghasemi
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Knowledge
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Legend

- Flora & fauna habitat areas

50m buffer of access tracks

Procedures Areas

Proposed revegetation zones

Tablelands Basalt Forest (KMA 2011)

Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT
- Rivers and Creeks

Turbines

Proposed creek and riparian zone crossings

Native Grassland to be retained where possible

Points relating to actions in Table 5



Figure 4: Study area and areas of environmental sensitivity - Detailed

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129

Date: 19/01/2012

Created By: D. Coppolino / M. Ghasemi

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Legend

- Flora & fauna habitat areas
- 50m buffer of access tracks
- Procedures Areas
- Proposed revegetation zones
- Tablelands Basalt Forest (KMA 2011)
- Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT
- Rivers and Creeks
- Turbines
- Proposed creek and riparian zone crossings



Figure 5: Study area and areas of environmental sensitivity - Detailed

Project: Taralga Wind Farm

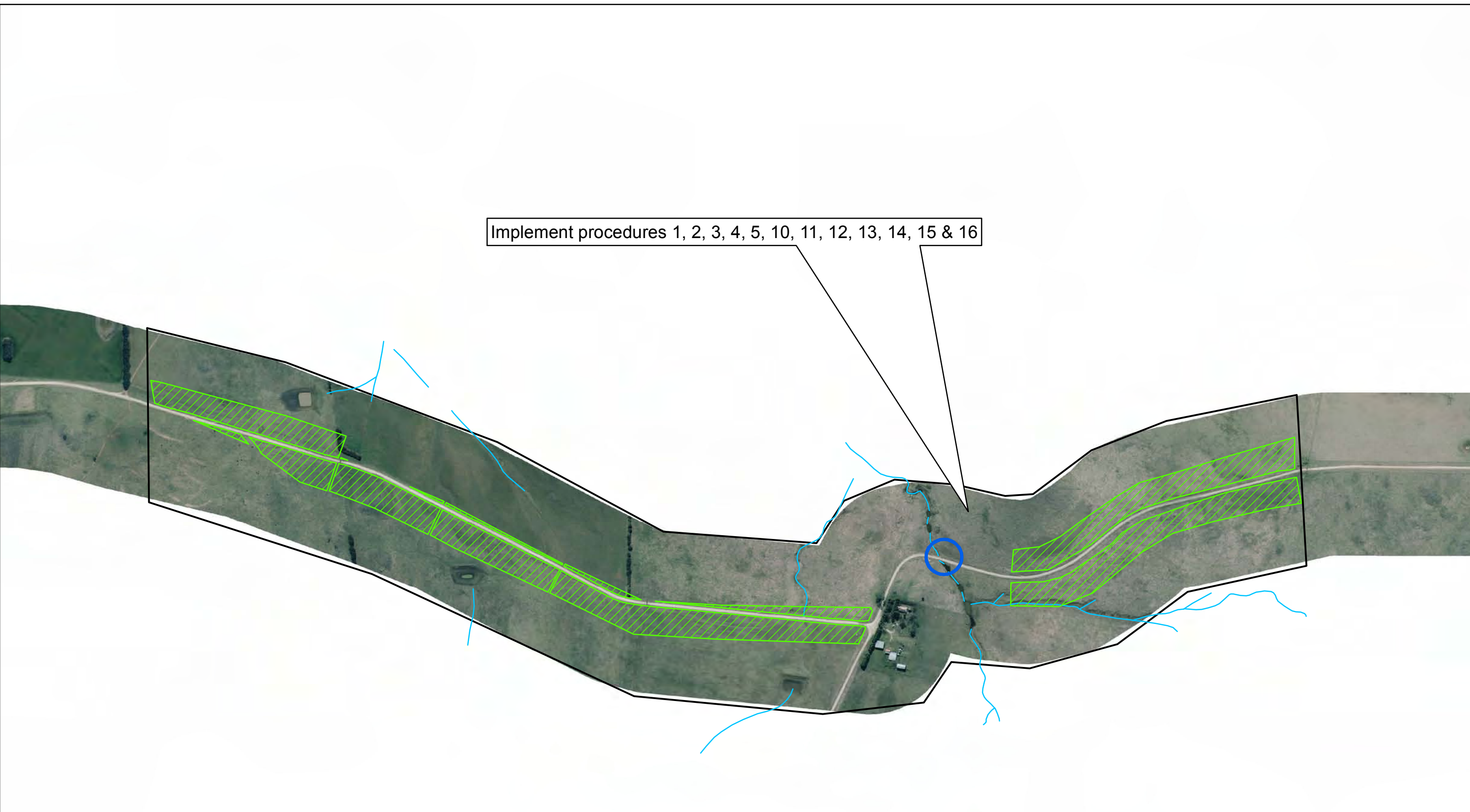
Client: CBD Energy

Project No.: 8129	Date: 19/01/2012	Created By: D. Coppolino / M. Ghasemi
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






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Legend

-  Flora & fauna habitat areas
-  50m buffer of access tracks
-  Procedures Areas
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-  Tablelands Basalt Forest (KMA 2011)
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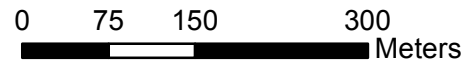


Figure 6: Study area and areas of environmental sensitivity - Detailed

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129	Date: 19/01/2012	Created By: D. Coppolino / M. Ghasemi
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Table 5: Key management actions for identified areas of environmental sensitivity

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
Procedure 1 – Avoiding and minimising damage to, or clearing of retained native vegetation and other environmentally sensitive areas			
<ul style="list-style-type: none"> Ensure that the construction disturbance footprint does not exceed that which has been approved. Ensure that there is no additional damage caused from vehicles or personnel carrying out any activities in areas of native vegetation or environmental sensitivity. Avoid significant impacts on Natural Temperate Grasslands of the Southern Tablelands of NSW and 	Prior to construction, scattered indigenous trees to be retained should be securely fenced in 'tree protection zones' at one metre from the canopy drip lines. All machinery and earthworks should be excluded from the tree protection zones and they should be appropriately signed as tree protection zones.	Proponent	<ul style="list-style-type: none"> Tree protection zones erected. No removal of, or damage to, trees within tree protection zones.
	Trees should be lopped or trimmed in preference to removal. Any tree pruning should be undertaken by an experienced arborist to prevent disease or unnecessary damage to the tree or disturbance to understorey vegetation during tree trimming.	Proponent	<ul style="list-style-type: none"> No unnecessary tree removal. Tree lopping not to lead to deterioration in the condition of affected trees.
	Machinery wash down, lay down and personnel rest areas are to be clearly defined (fenced and signed) and situated at least ten metres away from native vegetation and areas of environmental sensitivity.	Proponent	<ul style="list-style-type: none"> No degradation caused by machinery wash down, lay down and personnel rest in surrounding native vegetation or areas of environmental sensitivity.

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
<p>the Australian Capital Territory.</p> <ul style="list-style-type: none"> Ensure that all parties follow appropriate procedures for clearing any native vegetation. 	<p>Where possible, access tracks and turbines should be sited (within the approved alignment) in areas that minimise the need for native vegetation removal with higher priority given to the retention of larger hollow-bearing trees. Before construction commences, clearly mark trees that are to be removed.</p>	Proponent	<ul style="list-style-type: none"> No unmarked trees removed.
	<p>Microsite access track as follows:</p> <ul style="list-style-type: none"> Between points 1 and 2 in Figure 4, direct access track along existing farm track; Between points 2 and 3 in Figure 4, direct access track along existing farm track or up to 15m further downhill (do not remove vegetation uphill of existing track); Between points 3 and 4 in Figure 4, direct access track along existing farm track; Between points 4 and 5 in Figure 4, direct access track as close to the existing track as possible and preferably avoid areas downhill. Avoid area of mapped NTG-ST, which occurs downhill; Between points 5 and 6 in Figure 4, direct access track along existing farm track or up to 15m further uphill (do not remove vegetation downhill of existing track); <p>Between points 6 and 7 in Figure 4, direct access track along existing farm track. If this is not possible, keep this section of the access track as</p>	Proponent	<ul style="list-style-type: none"> Access tracks microsited as specified.

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
	straight and narrow as possible to minimise grassland removal.		
	<p>Patches of Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT, which also comprise potential habitat for the Striped Legless Lizard and Grassland Earless Dragon, are to be clearly identified (i.e. fenced and signed) prior to construction. No construction, works or soil disturbance is to occur within these areas.</p> <p>(NB: Appendix 9 provides an account of Natural Temperate Grassland, Striped Legless Lizard and Grassland Earless Dragon habitat on the site)</p>	Proponent	<ul style="list-style-type: none"> ▪ Mapped areas of Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT, which also comprise potential habitat for the Striped Legless Lizard and Grassland Earless Dragon, fenced and signed before construction commences. ▪ No removal or degradation of Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT. If removal or degradation of this habitat is required then approval will be sought from the Director-General.
	Patches of Tablelands Basalt Forest (see Figure 1 to Figure 6) are to be clearly identified (i.e. fenced and signed) prior to construction. No construction, works or soil disturbance is to occur within these areas.	Proponent	<ul style="list-style-type: none"> ▪ Mapped areas of Tablelands Basalt Forest fenced and signed before construction commences. ▪ Wind farm designed (i.e. microsite access tracks, turbines, etc.) and constructed in a way that avoids impacts on (e.g. removing; traversing over; encouraging weed invasion into, etc.) Tablelands Basalt Forest wherever possible. ▪ In areas where impacts on Tablelands Basalt

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
			Forest cannot be completely avoided, the wind farm is designed (i.e. microsite access tracks, turbines, etc.) and constructed in a way that minimises impacts on (e.g. removing; traversing over; encouraging weed invasion into, etc.) Tablelands Basalt Forest to the most practicable extent.
	Redistributing cut soil into adjacent areas of native vegetation and areas of environmental sensitivity is to be avoided where possible. All removed soil is to be stockpiled on disturbed land that doesn't support native vegetation or areas of environmental sensitivity. This soil could be reused on site for revegetation works (where the natural soils are similar to those that have been stockpiled).	Proponent	<ul style="list-style-type: none"> All removed soil stockpiled on disturbed land that doesn't support native vegetation or areas of environmental sensitivity.
	All machinery should enter and exit works sites along defined routes that do not impact on native vegetation or areas on environmental sensitivity.	Proponent	<ul style="list-style-type: none"> All site entry and exit routes defined outside of native vegetation and areas of environmental sensitivity.
	Areas of environmental sensitivity and native grassland marked for retention where possible are to be clearly marked (i.e. using temporary high-visibility fencing) and signed as "sensitive environmental area – keep out".	Proponent	<ul style="list-style-type: none"> Areas of environmental sensitivity clearly marked and signed as "area of environmental sensitivity – keep out". No unapproved removal or disturbance of native vegetation within these fenced areas.
Procedure 2 - Avoid indirect damage to, or degradation of significant adjacent native vegetation			

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
<ul style="list-style-type: none"> Avoid fragmentation of native vegetation patches. Avoid increasing edge effects in patches of native vegetation. 	No clearance or soil disturbance is to occur within adjoining native vegetation.	Proponent	<ul style="list-style-type: none"> No clearance or soil disturbance within adjoining native vegetation.
	Where possible, avoid removal or degradation of native vegetation and fauna habitat areas that form a link between two or more large native vegetation or fauna habitat areas.	Proponent	<ul style="list-style-type: none"> No removal of linking areas of native vegetation and fauna habitat that form a corridor between large vegetation patches or habitat areas.
	Monitor and control any weed outbreaks in adjacent areas of native vegetation as detailed in Table 6.	Proponent	<ul style="list-style-type: none"> No significant increase in the average weed projective foliage cover (as a percentage of total foliage cover) in adjacent areas of native vegetation.
Procedure 3 - Manage the site's soil resource			
<ul style="list-style-type: none"> Prevent soil erosion. Avoid altering the site's soil characteristics where possible. Utilise the site's soil resource for environmental rehabilitation works. Prevent adverse impacts on water quality 	Minimise the area of soil that is cleared of vegetation at any one time to minimise soil erosion.	Proponent	N/A
	Excavations are to be left open for as short a time as possible and such sites would be stabilized and restored promptly after works are undertaken.	Proponent	N/A
	Revegetate disturbed areas with indigenous vegetation immediately after the disturbance activity has been completed.	Proponent	<ul style="list-style-type: none"> Native revegetation commenced no more than one week following the completion of each disturbance activity.
	Revegetate any disturbed soils (e.g. fringing access tracks and associated with turbine footing development). Manage until sites are satisfactorily stabilised and restored.	Proponent	<ul style="list-style-type: none"> Native revegetation commenced no more than one week following the completion of each disturbance activity. Revegetation completed no more than one

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
			month after commencement.
	Filter any drainage or waste water properly before it is re-released.		<ul style="list-style-type: none"> No significant reduction in water quality within receiving watercourses
	Use sediment traps from before soils are disturbed until after the vegetation has been re-established. Install sediment fences down slope of exposed soil and stockpiles. Location of sediment traps and/or fences will be determined after the detailed wind farm design is finalised. Sediment will be removed when it reaches one third of the height of the fence.	Proponent	<ul style="list-style-type: none"> No exposed soils entering watercourses. No significant increase in turbidity of nearby watercourses.
	Soil stockpiling is to occur at least 50 metres from watercourses (including their riparian zones and significant tributaries).	Proponent	<ul style="list-style-type: none"> No exposed soils entering watercourses. No significant increase in turbidity of nearby watercourses.
	Bund all soil stockpiles	Contractor	<ul style="list-style-type: none"> No exposed soils entering watercourses. No significant increase in turbidity of nearby watercourses.
Procedure 4 – Managing impacts on native flora and fauna, and their habitats			
<ul style="list-style-type: none"> Minimise and appropriately manage any habitat damage caused during construction. 	Keep all construction, works and soil disturbance at least five metres away from the parallel rocky outcrops along, and parallel to the hillcrest within turbine row 6.	Proponent	<ul style="list-style-type: none"> No construction, works and soil disturbance within five metres of the rocky outcropping along, and parallel to the hillcrest within turbine row 6. No known plants removed or disturbed.

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
<ul style="list-style-type: none"> Ensure that all parties can identify listed rare or threatened flora and fauna that occur within the study area. Ensure that the construction phase of the project does not directly or indirectly result in significant impacts on listed rare or threatened flora and/or fauna. Maintain native flora or fauna habitat availability. 	Temporarily fence off and sign (i.e. as threatened flora protection area) any identified <i>Diuris aequalis</i> populations (including a buffer radius of at least five metres) during construction. No <i>Diuris aequalis</i> were found at the site (KMA 2011)	Proponent	<ul style="list-style-type: none"> Temporary fencing and signage erected. No known <i>Diuris aequalis</i> plants removed or disturbed.
	Logs and felled trees must be retained as logs in or adjacent to native vegetation within the study area (as close as possible to their place of origin) for fauna habitat.	Proponent	<ul style="list-style-type: none"> No felled trees removed from the study area. Felled trees and logs left at lengths not less than three metres long where they were three metres or longer to start with.
	Provide factsheets to all parties, including clear images and identification features, of the <i>Diuris aequalis</i> .	Proponent	<ul style="list-style-type: none"> All staff and contractors provided with, and signed for a <i>Diuris aequalis</i> factsheet All <i>Diuris aequalis</i> sightings recorded and reported to the DECC.
	Clearing of native trees is to be undertaken under the supervision of an arborist or suitable expert and any trees to be cleared will be inspected for fauna usage before removal (e.g. roosts, nests, occupied hollows).	Proponent	<ul style="list-style-type: none"> No fauna harmed during tree removal
	Any hollow-bearing trees marked for removal are to be surveyed by an arborist or ecologist to determine the number of nesting sites that will be removed. For each nesting site removed, one bird/bat box should be installed and maintained in areas of native vegetation adjacent to the area of vegetation removal.	Proponent	<ul style="list-style-type: none"> One bird/bat box installed and maintained for each identified nesting site removed. All bird and bat boxes maintained (e.g. repaired where required and kept free of bees) for at least ten years.

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
	Removed bush rock will be relocated from within the approved disturbance footprint into adjacent or nearby native vegetation or revegetation areas to enhance habitat there.	Proponent	<ul style="list-style-type: none"> No bush rock removed from the wind farm site. Bush rock relocated to nearby native vegetation and/or revegetation areas to enhance habitat.
Procedure 5 – Avoiding weed and pathogen invasion			
<ul style="list-style-type: none"> Ensure there are no weed infestations in areas of native vegetation. Prevent the spread of pathogens from one part of the study area to another, from the study area to another site, or from another site to the study area. 	All disturbed soils are to be continually inspected for weed invasion and managed where necessary as detailed in Table 6.	Proponent	<ul style="list-style-type: none"> See Table 6
	All machinery should enter and exit works sites along defined routes that do not cause soil disturbance and weed spread.	Proponent	<ul style="list-style-type: none"> All site entry and exit routes defined outside of high-risk weed areas on environmental sensitivity.
	All machinery brought on site should be weed and pathogen free.	Contractor	<ul style="list-style-type: none"> All vehicles cleaned, inspected and logged before each visit to the study area.
	All machinery should be washed down on site before leaving the site to avoid spreading weeds and pathogens to other locations. This should not occur within 50 metres of areas of remnant native vegetation.	Proponent	<ul style="list-style-type: none"> All vehicles cleaned, inspected and logged before exiting the study area.
	Use inert, weed-free crushed rock road base for the construction of, and upgrades to all access tracks (except where unavoidable e.g. bridges).	Proponent	<ul style="list-style-type: none"> No materials other than weed-free crushed rock road base used for the construction of, and upgrades to all access tracks (except where unavoidable e.g. bridges).

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
	Any soils being reused for revegetation works should be monitored and managed for weeds as detailed in Table 6.	Proponent	<ul style="list-style-type: none"> No increase in the distribution and/or abundance of identified weed species within the study area and no spread of weeds into areas of previously uninvaded native vegetation (i.e. specific to each weed species). See Table 3

2.4.1. Rehabilitation guidelines

This section provides directions for rehabilitation works associated with wind farm construction. The aims of the rehabilitation works are to offset any losses of flora, native vegetation and fauna habitat, and to manage any direct or indirect impacts on these during construction.

Native revegetation/habitat re-creation

This section provides guidelines for revegetation works and habitat recreation which is aimed at offsetting native vegetation and habitat removal associated with the Taralga Wind Farm project.

Note that no revegetation should occur close to or between turbines within rows. This will avoid attracting foraging bats to the higher risk zone immediately around turbines. Where revegetation can assist in re-establishing habitat links, these links should be located well away from rows of turbines.

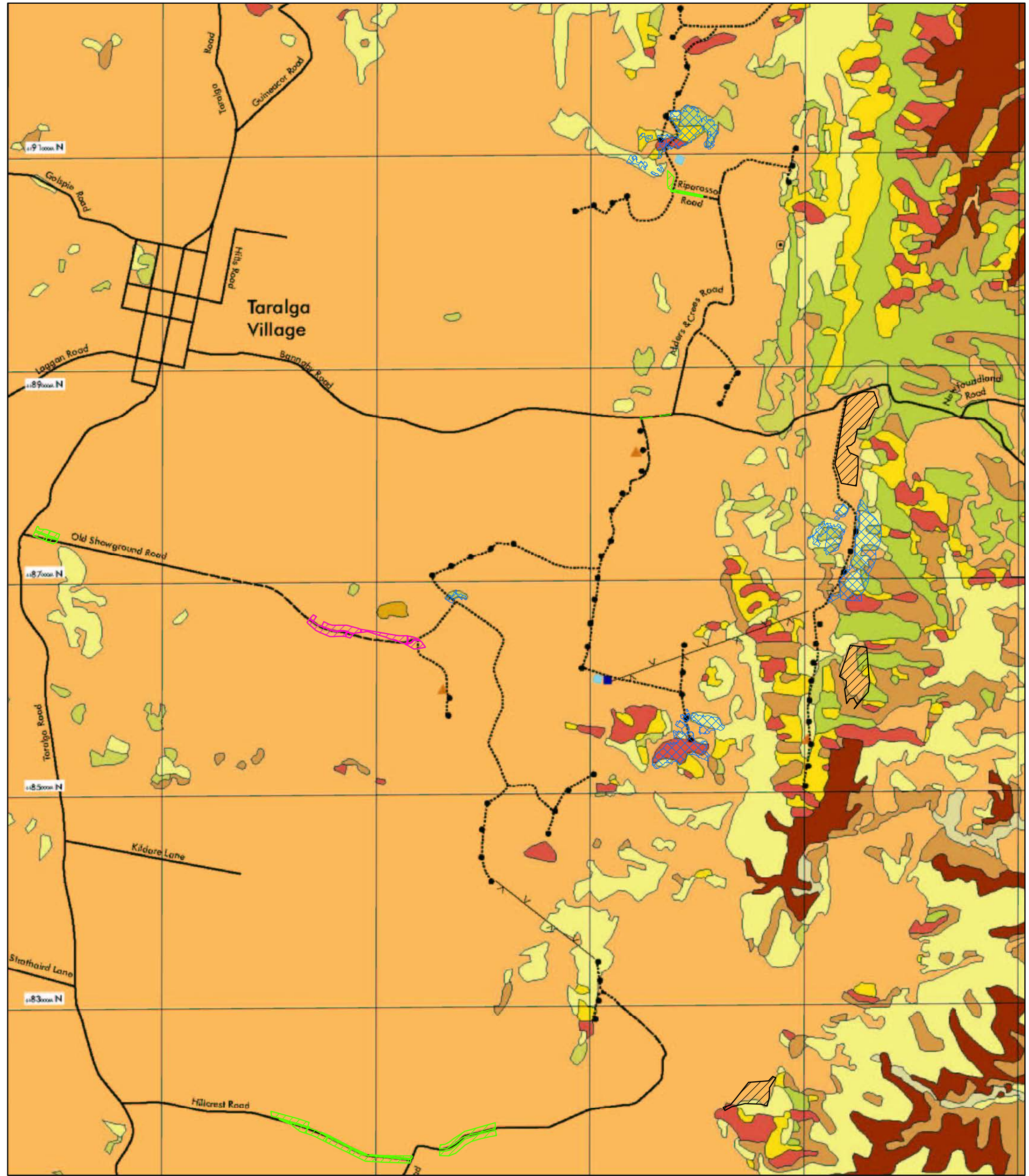
A list of flora species suitable for revegetation is provided in Appendix 1. This list was generated using information gathered during a site inspection and from the following resources:

- Environmental Impact Statement – Taralga Wind Farm (Brownlow 2004);
- Vegetation of the Taralga Area and the Proposed Taralga Wind Farm, Shire of Upper Lachlan (Kevin Mills & Associates 2006); and
- Native vegetation map report series. No. 4 - Version 2.2 (Tindall et al. n.d.), provide by the Helen Ward of the Hawksbury-Nepean Catchment Management Authority, Taralga.

Seed and tubers can be collected from remnant vegetation within the study area. Figure 7 shows where specific vegetation communities occur and therefore where seed and tubers may be sourced for revegetation works. Areas of vegetation proposed for removal should be priority sites for seed and tuber collection. Seed and tubers should be collected and preferably propagated before construction commences. Vegetation community mapping should also be used to determine what vegetation communities to restore in revegetation areas.

Any removed surface rock, native plants and topsoil should be relocated to revegetation areas. Surface rock may also be relocated to adjacent or nearby areas of native vegetation.

Relocated topsoil, and the topsoil's origin, should be closely monitored and managed for weed invasion for at least one year after removal.



Legend

Proposed revegetation zones

Tablelands Basalt Forest (KMA 2011)

Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT

Native Grassland to be retained where possible

Wollondilly - Shoalhaven Gorge Woodland

Cool Mantane Wet Forest

Midified or disturbed land

Western Tableland Dry Forest

EasternTableland Dry Forest

Tableland Hills Grassy Woodland

River Bark Forest

Forest Hollow Grassy Woodland

Tableland Ridge Forest

Shrubby Swamp Meadow

Turbines

Re- transmitter

Public Road

Upgrade Access Track

New Access Track

Overhead Power Lines

Wind Monitoring Towers

Temporary Work Compounds

Substation

Figure 7: Vegetation communities within the Taralga Wind Farm

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Client: CBD Energy

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Weed management

Table 6 indicates weed species that occur in native vegetation near construction areas. This CEMP requires that weeds are controlled to the standards indicated in Table 6 in areas of native vegetation immediately adjoining and within 100m of the construction zone.

Protocols for use of herbicides (e.g. spot-spraying and use in wet/windy conditions), controlling the spread of weeds during construction, including machinery hygiene details (for weeds and pathogens) are described below.

Precision herbicide application techniques such as spot-spraying or cutting and swabbing should be used to reduce adverse impacts on the receiving environment. A cone should be fitted to spray equipment to minimise off-target kills. Herbicide application should not occur within watercourses and should not occur during or just before wet weather or in very windy conditions.

Strict hygiene measures should be carried out for all staff, contractors and machinery to minimise the risk of spreading weed seed around, out of or into the site. This should include frequent checking and cleaning of vehicles (e.g. wheels and undercarriage) and clothing (e.g. socks, shoes and pants), particularly when working in or around areas of environmental sensitivity.

During construction and for the first twelve months after commissioning, soil disturbance areas and adjacent areas of native vegetation should be monitored two-monthly in spring, summer and autumn to determine weed management success, to identify new infestations and to inform decisions on the next round of weed control work. The results of this monitoring should be made available on request to the Environmental Representative.

Weed control methods should be adapted where appropriate (in consultation with a suitably experienced bushland regenerator) to ensure that weed control targets are met without compromising the ability to achieve other targets set out in this CEMP.

All machinery should be washed down in the designated wash-down areas before entering and exiting the site to minimise the risk of weed and soil pathogen spread.

Table 6: Weed species and control objectives in native vegetation for areas on and within 100 metres of the construction footprint.

Priority	Common Name	Scientific name	Objective	Control Method	Control Target within ten metres of disturbance area
High	Blackberry	<i>Rubus fruticosus</i> spp. agg.	Reduce cover and prevent spread	In lower priority areas, slash dense infestations in summer and apply blackberry leaf rust to slow their spread. High-volume spray high-priority sites with an appropriate herbicide where native plants and waterways are not likely to be affected (mid-summer to mid-autumn). Spot-spray other plants with a suitable herbicide (mid-summer to mid-autumn). Revegetate weeded areas with winter-germinating indigenous plants.	<1% increase in projective foliage cover, <2% non-target species death
High	Hawthorn	<i>Crataegus monogyna</i>	Eliminate	Hand-pull seedlings in autumn . Cut and swap (with an appropriate herbicide) mature plants in autumn and spring .	No increase in projective foliage cover, <2% non-target species death
High	Needle Grass	<i>Nassella</i> spp.	Reduce cover and prevent spread	Restrict access (e.g. for livestock, personnel and machinery) to infested sites during seeding period between mid-spring and late summer . Spot-spray with a suitable herbicide between late winter and early spring as well as autumn.	<1% increase in projective foliage cover, <2% non-target species death
High	Serrated Tussock	<i>Nassella trichotoma</i>	Reduce cover and prevent spread	Spot-spray with a suitable herbicide between early spring and early summer . In areas of dense infestation, revegetate with competitive indigenous grasses (e.g. Kangaroo Grass) after weeding.	<1% increase in projective foliage cover, <2% non-target species death
High	Spanish artichoke	<i>Cynara cardunculus</i>	Eliminate	Remove flowers before seed-set period in summer . Spray with appropriate herbicide or use wick wiper or dabbers to minimise off target damage (spring to early summer)	No increase in projective foliage cover, <2% non-target species death
High	Spear Thistle	<i>Cirsium vulgare</i> .	Reduce cover and prevent spread	Spot-spray with an appropriate herbicide during autumn and spring .	<1% increase in projective foliage cover, <2% non-target species death

Priority	Common Name	Scientific name	Objective	Control Method	Control Target within ten metres of disturbance area
High	Sweet Briar	<i>Rosa rubiginosa</i>	Reduce cover and prevent spread	Cut and Paint mature plants and spray seedlings with appropriate herbicide during late spring to late summer .	<1% increase in projective foliage cover, <2% non-target species death
High	White Willow	<i>Salix alba</i>	Reduce cover and prevent spread	Practice strict personnel and machinery hygiene*. Drill and fill plants with a suitable herbicide in early spring . Hand-pull seedlings that are less than 0.5 metres tall. Hygienically remove and destroy removed plant material. Revegetate weeded areas with indigenous flora. Work from upstream areas to downstream areas.	<1% increase in projective foliage cover, <2% non-target species death
High	Yorkshire Fog	<i>Holcus lanatus</i>	Reduce cover and prevent spread	During autumn and spring , spot-spray with an appropriate herbicide or use wick wiper or dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Annual Veldt-grass	<i>Ehrharta longiflora</i>	Reduce cover and prevent spread	Spot-spray all-year-round with appropriate herbicide or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Barley Grass	<i>Hordeum leporinum</i>	Reduce cover and prevent spread	During early spring , spot-spray with appropriate herbicide or use dabbers to minimise off target damage. Alternatively, pulse-graze in early spring before seed set .	<1% increase in projective foliage cover, <2% non-target species death
Medium	Capeweed	<i>Arctotheca calendula</i>	Reduce cover and prevent spread	During autumn and spring , spot-spray with an appropriate herbicide or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Cocksfoot	<i>Dactylis glomerata</i>	Reduce cover and prevent spread	During winter and spring , spot-spray with an appropriate herbicide or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death

Priority	Common Name	Scientific name	Objective	Control Method	Control Target within ten metres of disturbance area
Medium	Paterson's Curse	<i>Echium plantagineum</i>	Reduce cover and prevent spread	During autumn , hand-pull, spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Perennial Rye-grass	<i>Lolium Perenne</i>	Reduce cover and prevent spread	During winter and spring , spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Phalaris	<i>Phalaris aquatica</i>	Reduce cover and prevent spread	During autumn and spring , spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	Reduce cover and prevent spread	During winter and spring , spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage. Alternatively, pulse-graze in early spring before seed set .	<1% increase in projective foliage cover, <2% non-target species death
Medium	Thistle	<i>Onopordum spp.</i>	Reduce cover and prevent spread	During autumn and spring , spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	Viper's Bugloss	<i>Echium vulgare</i>	Reduce cover and prevent spread	During autumn , hand-pull, spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death
Medium	St, John's Wort	<i>Hypericum perforatum</i>	Reduce cover and prevent spread	During spring , spot-spray with an appropriate herbicide, or use dabbers to minimise off target damage. In lower priority sites where spraying isn't achievable in any given year, pulse-graze in early spring before seed set .	<1% increase in projective foliage cover, <2% non-target species death

Priority	Common Name	Scientific name	Objective	Control Method	Control Target within ten metres of disturbance area
Medium	Horehound	<i>Marrubium vulgare</i>	Reduce cover and prevent spread	Slash plants in early autumn then spot-spray the new growth and seedlings with an appropriate herbicide, or use dabbers to minimise off target damage.	<1% increase in projective foliage cover, <2% non-target species death

2.4.2. Reporting

Documenting progress in implementing management activities and in achieving the outcomes required in this plan will be the responsibility of the proponent, consistent with the reporting requirements of the Construction Environmental Management Plan. The Environmental Representative will be provided with relevant documentation of the results of monitoring and management on request.

3. BIRD AND BAT ADAPTIVE MANAGEMENT PROGRAM

3.1. Introduction

This Bird and Bat Adaptive management program addresses the conditions outlined in the Conditions of Consent (No. 10196 of 2006).

3.1.1. Condition of Consent

Condition 93 states:

“Prior to the commencement of Construction, the Applicant must prepare and submit for the approval of the Director-General, a Bird and Bat Adaptive Management Program must be prepared and undertaken, which takes account of bird/bat monitoring methods identified in the current editions of AusWEA Wind Farms and Birds: Interim Standards for Risk Assessment (July 2005). The Program must be undertaken by a suitably qualified expert, approved by the Director-General.

The Program must incorporate Monitoring, and a Decision Matrix that clearly sets out how the Applicant will respond to the outcomes of monitoring. It must:

- (a) incorporate an ongoing role for the suitably qualified expert;*
- (b) set out monitoring requirements. The requirements must account for natural and human changes to the surrounding environment that might influence bird and/or bat behaviour such as changes in land use practices, and significant changes in water levels in nearby water bodies;*
- (c) incorporate a decision making framework that sets out specific actions and when it may be required to reduce identified impacts on birds and bats;*
- (d) set out available mitigation measures;*
- (e) incorporate reporting requirements on the outcomes of monitoring, including details on all mortalities, on the application of the decision making framework, the need for mitigation measures, progress with implementation of such measures, and their success and details of all payments made to WIRES (as required under condition 92) that have been made during each reporting period. Reports must be prepared on an annual basis, from the commencement of operation and must be prepared within 2 months of the end of the reporting period and be provided to the Director-General. The Director-General may vary the reporting requirement or period by notice in writing to the Applicant; and*
- (f) identify any necessary mitigation measures and implementation strategy including, but not limited to, those referred to in condition 91.*

The Applicant is required to implement reasonable and feasible mitigation measures, to the satisfaction of the Director-General, where the need for further action is identified through the Bird and Bat Adaptive Management Program.”

The table below indicates where in this plan each condition of consent has been addressed

Consent Condition	Reference
Condition 93	
(a) “incorporate an ongoing role for the suitably qualified expert.”	Section 3.4
(b) “set out monitoring requirements ...”	Section 3.4.1
(c) “incorporate a decision making framework..”	Section 3.5.1
(d) “set out available mitigation measures.”	Section 3.4.2
(e) “incorporate reporting requirements...”	Section 3.5.2
(f) “identify any necessary mitigation measures...”	Section 3.4.2

3.2. Risk assessment

This sub-section outlines the risk assessment framework used to prioritise responses to the risk the project represents for birds and bats.

Risk assessment involves combining an assessment of the consequences of a particular potential impact of an action on birds and bats with the likelihood of it occurring. To enable this assessment, both consequence and likelihood criteria have been developed (see Table 7). In addition, scores have been allocated to different levels of consequence and likelihood to enable a consistent comparison of risks.

Risks to birds and bats arise from four possible impact mechanisms, described briefly below.

- Direct impacts arising from collision with operating wind farm infrastructure;
- Direct impacts arising from the removal of habitat for the construction of wind farm infrastructure;
- Indirect impacts arising from disturbance effects to surrounding habitats; and

Table 7: Consequence and likelihood criteria and scores for bird and bat risk assessment at the Taralga Wind Farm.

Consequence Criteria				
Negligible	Minor	Moderate	major	Extreme
Local population size or behaviour may change but detectable change unlikely to be beyond natural variation	Detectable change (1 – 5 %) in local population size and /or behaviour beyond natural variability but no impact on population viability (i.e. recruitment, breeding, recovery capacity).	Detectable change (5 – 10 %) in local population size and/or behaviour beyond natural variability but no impact on population viability (i.e. recruitment, breeding, recovery capacity) in the long term but recovery may be delayed.	Detectable change to local (>10%) and regional (1 – 5 %) population size and/or behaviour beyond natural variability. Impact on local population viability and capacity to recover	Local extinction likely detectable change to regional population (> 5%) beyond natural variability. Impact on regional population viability and capacity to recover.
Likelihood Criteria				
Almost impossible	Very Unlikely	Possible	Highly Probable	Certain
No previously documented instance	Instance has occurred elsewhere but under different patterns of bird and bat use	Instance has occurred very rarely elsewhere under similar patterns of bird and bat use	Instance has occurred regularly elsewhere under similar patterns of bird and bat use	Certain to occur based on experience elsewhere

- Indirect effects arising from barrier effects of rows of turbines.

Table 8 provides a matrix showing applicable risk ratings for particular consequence and likelihood levels.

Table 8: Risk matrix

Consequence Likelihood	Negligible	Minor	Moderate	Major	Extreme
Almost Impossible	Low	Low	Low	Low	Moderate
Very Unlikely	Low	Low	Low	Moderate	High
Possible	Low	Low	Moderate	Moderate	High
Highly Probable	Low	Moderate	Moderate	High	High
Certain	Moderate	Moderate	High	High	High

Potential impacts are rated for their risk in Table 9 based on the criteria in Table 7 for the following bird and bat groups:

- Threatened bird species (incl. Powerful Owl and Glossy Black Cockatoo);
- Threatened bat species (incl. Yellow-bellied Sheath-tail Bat and Eastern Falsistrelle)
- Wedge-tailed Eagle;
- Common birds; and
- Common bats.

Table 9: Risk Assessment rating for Taralga Wind Farm impacts on bird and bats

	Pre-mitigation				Post-mitigation			
Impact	Consequence	Likelihood	Risk Level	Mitigation Actions	Consequence	Likelihood	Residual Risk Level	
Threatened birds (particularly Powerful Owl)								
Turbine Collision	Minor	Very unlikely	Low	None	Minor	Very unlikely	Low	
Habitat removal	Minor	Certain	Moderate	Procedure 1 of Flora and Fauna Management Sub-Plan	Minor	Certain	Moderate	
Disturbance and displacement	Minor	Almost impossible	Low		None	Minor	Almost impossible	Low
Barrier effects of lines of turbines	Negligible	Almost impossible	Low		None	Negligible	Almost impossible	Low
Threatened birds (particularly Glossy Black Cockatoo)								
Turbine Collision	Negligible	Almost impossible	Low	None	Negligible	Almost impossible	Low	
Habitat removal	Negligible	Almost impossible	Low	None	Negligible	Almost impossible	Low	
Disturbance and displacement	Negligible	Almost impossible	Low	None	Negligible	Almost impossible	Low	
Barrier effects of lines of turbines	Negligible	Almost impossible	Low	None	Negligible	Almost impossible	Low	

Impact	Pre-mitigation		Risk Level	Mitigation Actions	Post-mitigation		Residual Risk Level
	Consequence	Likelihood			Consequence	Likelihood	
Threatened bat species							
Turbine Collision	Negligible	Possible	Low	None	Negligible	Possible	Low
Habitat removal	Minor	Possible	Moderate	None	Minor	Possible	Moderate
Disturbance and displacement	Minor	Possible	Moderate	None	Minor	Possible	Moderate
Barrier effects of lines of turbines	Minor	Possible	Moderate	None	Minor	Possible	Moderate
Wedge-tailed Eagle							
Turbine Collision	Minor	Highly Probable	Moderate	Procedures 7 and 9 of this plan	Minor	Possible	Low
Habitat removal	Negligible	Certain	Low	None	Negligible	Certain	Low
Disturbance and displacement	Minor	Certain	Low	None	Minor	Certain	Low
Barrier effects of lines of turbines	Negligible	Almost impossible	Low	None	Negligible	Almost impossible	Low
Common birds							

	Pre-mitigation				Post-mitigation		
Impact	Consequence	Likelihood	Risk Level	Mitigation Actions	Consequence	Likelihood	Residual Risk Level
Turbine Collision	Negligible	Certain	Low	None	Negligible	Certain	Low
Habitat removal	Negligible	Certain	Low	None	Negligible	Certain	Low
Disturbance and displacement	Negligible	Very unlikely	Low	None	Negligible	Very unlikely	Low
Barrier effects of lines of turbines	Negligible	Very Unlikely	Low	None	Negligible	Very Unlikely	Low
Common bats							
Turbine Collision	Negligible	Certain	Low	None	Negligible	Certain	Low
Habitat removal	Negligible	Certain	Low	None	Negligible	Certain	Low
Disturbance and displacement	Negligible	Very unlikely	Low	None	Negligible	Very unlikely	Low
Barrier effects of lines of turbines	Negligible	Very Unlikely	Low	None	Negligible	Very Unlikely	Low

3.3. Adaptive Management Program Objectives

The objective of this adaptive management program is to minimise bird and bat impacts from the construction and operation of the Taralga wind farm and in particular reduce bird and bat turbine collision risk. Bird and bat collision rates should not exceed between two and four individuals per turbine per year of common species and no repeat fatalities of threatened birds or bats listed on the EPBC Act or TSC Acts should occur.

This is achieved by establishing monitoring and management procedures, consistent with the methods outlined by the Australian Wind Energy Association (2005). A reporting program is also described to present results and proposed improvements to management measures.

In order to ensure the efficacy of this adaptive management program, all activities will be undertaken subject to regular review and reporting by a suitably qualified expert approved by the Director-General of the DECC with relevant experience. The expert will also be in charge of data analysis, interpretation and reporting.

Should the mortality rate of birds and bats significantly exceed two to four bats per turbine per year, or should repeat fatalities of listed threatened bird or bat species occur then measures will be taken to investigate and reduce impacts. The Decision Matrix, in Figure 8 indicates how this will occur (see section 3.5.2).

3.4. Environmental management activities and controls

On the Taralga Wind Farm, management procedures are proposed to mitigate the potential impact of the project on birds and bats, and monitoring methods are identified to test the success of the management procedures and inform their refinement, if necessary. The implementation and reporting on this program will require input from a suitably qualified expert.

3.4.1. Monitoring

The monitoring program requires:

- Suitably qualified expert approved by the Director-General to oversee program;
- Collection of baseline data before construction to provide a level of bird and bat utilisation within the site boundary;
- Pre-construction avian and bat fatality monitoring program including a protocol for handling and reporting fatalities and injured wildlife;
- Operational avian and bat monitoring program including a protocol for handling and reporting fatalities and injured wildlife; and
- Regular monitoring reporting program.

Methods to achieve these goals are provided below.

Baseline Data

Baseline data is collected by undertaking bird and bat utilisation surveys within the site, using the methods described below.

Bird Utilisation Survey (BUS)

Within the wind farm, fixed point censuses of birds will be undertaken. This is achieved by establishing impact monitoring points within the site boundary and reference monitoring points, situated 350m from the turbine locations. At each point, a 15 minute count of all birds will be undertaken, with all species identified and their flight height recorded within a 100m radius of the central point. A total of 10 impact monitoring points will be established within the wind farm and four reference monitoring points nearby (>500m from the nearest turbine) in similar landscape and habitat settings.

Flight height will be recorded in three categories: below Rotor Swept Area (RSA) height; at RSA height; and above RSA height. Heights will be estimated against nearby fence posts of known spacing, or against nearby objects of known height.

Each point will be surveyed at least eight times in one of four periods of the day (0730-1000, 1000-1200, 1200-1400 and 1400-1700). Each survey should be undertaken in each of the four seasons (Feb, May, June and October) to account for seasonal differences in bird activity and presence of species (due to migration). The timing and extent of data collection can be adjusted to take account of existing bird utilisation data collected as part of the original wind farm impact assessment.

Bat Utilisation Survey

Bat activity surveys are undertaken using Anabat® detectors which record bat calls within a 20 to 30 m radius. The methodology used is provided in “*Guidelines for Bat Surveys in Relation to Wind Farm Developments*” (Lumsden, 2007), which although prepared for Victoria are equally applicable to any setting in south eastern Australia. Bat surveys should be undertaken during the peak bat activity season (November to April) and in optimal weather conditions (relatively mild, dry and with little or no wind).

Surveys should be undertaken within each habitat type, spread across the whole wind farm site. The survey should be undertaken at 20 sites for five consecutive nights. Taking into consideration the possibility that bat activity will occur high above the ground, and the difficulty in placing the detectors at that level, a number of paired sampling sites are required where a detector is placed high above the ground (between 20 and 30 m). A rope and pulley system should be installed on wind monitoring masts to enable bat detection 50 metres above the ground as well as simultaneously at ground level. The information obtained using this method can then be used to assess how much data obtained from the ground can be extrapolated.

In previous bat surveys at the Taralga Wind Farm, the only key area for threatened bat species was shown to be at the wooded ridge in the east of the site (Row 6). To gain an insight into the frequency of bat utilisation of this area, pre-construction monitoring will be conducted for a period of 30 consecutive nights at a peak time of the season (January-February). Data from this survey will assist in the planning of collision mitigation when the site is operational. The calls obtained from all surveys are to be analysed by appropriately trained specialists and an assessment of activity can then be made.

Pre-construction Bird and Bat Fatality Monitoring Program

The first stage of monitoring bird and bat fatality resulting from collisions with the turbines is achieved by collecting baseline mortality of birds and bats within the site. This involves searching future turbine sites for birds and bats that have died of natural causes prior to the construction of the wind farm.

Pre-construction fatality monitoring involves a carcass search procedure that includes:

- Searches for carcasses within 100m of the potential turbine sites (impact sites) for bird and bat carcasses; and
- Searches for carcasses within 100m of fixed areas in similar habitat to the turbine sites centred on a point at least 350m away from the turbines (reference sites).

Procedures for this component of the monitoring program are provided below.

As observers do not necessarily detect all carcasses present and because scavengers can remove carcasses before they are found, correction factors for these two factors are provided.

Site selection and frequency for carcass searches

Fifteen proposed turbine sites, referred to as impact points, will be selected in addition to a minimum of ten reference sites. The impact points will include (if relevant) the locations of turbines supporting aviation safety lighting. Selected impact and reference sites will be distributed as evenly as possible throughout the wind farm site with the exact site chosen randomly within sub-areas that ensure an even geographical spread. Carcass searches will be undertaken at least four times before construction commences. Once operations commence, sites will be searched monthly.

Carcass searches

A carcass search involves intensively searching around turbine sites and reference sites for dead or injured birds and bats. Direct evidence of dead birds and bats includes actual remains of individuals (e.g. body, wings, skeleton). Indirect evidence of dead birds includes feather-spots. A feather-spot is a clump of feathers (minimum of ten feathers) that may be recent evidence of dead birds, in particular dead birds that have been scavenged. Procedures for the carcass search are detailed below. It is important that personnel involved in the carcass searches be adequately trained in this procedure.

Search area

Sites will be searched to a radius of 100 metres.

Search method

The searcher will walk the area at approximately 30–60 metres per minute (or faster if ground cover does not limit visibility of carcasses) and search thoroughly for dead birds and bats to a distance of three metres either side of the search route. The searcher will therefore walk transects about six metres apart across the circular search area until all of the area has been searched. Searching will start once the sun is a reasonable height above the horizon, providing good back-

lighting at ground level. It is estimated that the searching will take several days to complete for each search period.

The results of all searches will be recorded in a carcass search data sheet (see Appendix 1). The data sheets will be filled out for every site search undertaken, to ensure details of all searches are recorded, including those during which no carcasses were found (likely to be for most searches).

Scavenger Trials

Estimates of carcass removal by scavengers (expressed as the average carcass duration) are used to correct for the fact that scavenging significantly reduces the detection of bird and bat carcasses under wind turbines. It is necessary to conduct scavenger trials to estimate the length of time bird and bat carcasses remain detectable before being scavenged. Two scavenger trials are recommended, one when vegetative ground cover is high and lush (October) and one when vegetative cover levels are low (March/April).

A procedure for the scavenger trials is provided below.

- The trials will be conducted at five randomly-selected turbine sites and five reference sites of similar habitat to the turbine sites.
- Placed carcasses will be checked daily for the first five days then every second day until all carcasses have disappeared, or for a maximum of 30 days. After 30 days, remaining carcasses will be removed. (Experience suggests that most carcasses disappear within five to ten days)
- At each trial site, one carcass (or more) will be placed randomly within a 50 metre radius search area around the turbine, or around the centre point of the search area in the case of reference sites.
- A mix of small, medium and large native birds (collected from road-sides before the monitoring begins) and some bat carcasses (if available) will be obtained for use in the scavenger trial. In the absence of available native carcasses, quail and mouse carcasses will be used. It will not be possible to simulate a bat carcass.
- Carcasses used in the trial will have their coordinates recorded to ensure that they are not confused with an actual fatality found under a turbine during the trial searches.
- The mean length of time a carcass remains in the study area before being scavenged and associated variance will be calculated.
- Notes will be taken on evidence remaining at sites where carcasses have been scavenged (e.g. scavenger scats, bones, feather[s], animal parts and type of scavenging, if visible, such as tearing, pecking, complete removal of carcass, partial removal of carcass, bird or mammal predator evidence).
- Notes will be taken on the daily state of remaining carcasses.
- Latex gloves will be worn at all times while handling carcasses to minimise contact with human scent, which may alter predator responses around carrion and to minimise disease risk to the handler.

- The mean duration of carcasses before scavenging will be calculated and a correction factor developed accordingly.

Searcher efficiency trial

Searcher efficiency trials will be conducted on the first day that the two scavenger trials are undertaken. This will enable an estimate of the percentage of carcasses found by searchers. Data collected at other wind farms indicates that the detection of bats is very similar to that of small birds (Johnson *et al.* 2002).

The procedure for the searcher efficiency trial is presented below.

- Personnel conducting searches will not know the location of carcasses until after the searcher efficiency trial but the GPS coordinates of carcasses will have been recorded so that the observer(s) can later be shown the carcass for the scavenger trial.
- Personnel conducting searches are to apply the same search method as intended for normal carcass searches.
- Carcasses will be placed in search areas as before the observer's first search but on the same day, thereby minimising the chances of a carcass being removed by a scavenger before the searcher can find it.
- Carcasses will be placed in a variety of exposures to simulate a range of conditions.
- Carcasses will have their GPS coordinates recorded to avoid the possibility of being counted in subsequent carcass searches or incidental collections.
- The mean proportion of placed carcasses found by searchers will be calculated and a correction factor derived.

Protocol for Handling and Reporting Fatalities and Injured Wildlife

All dead birds, feather-spots and/or dead bats found during searches will be handled in the manner described below. The carcass details in the carcass search data sheet (see Appendix 1) will be filled out for each search where a carcass is found, in addition to the search details.

- The carcass will be removed from the site to avoid re-counting;
- It will be transferred to a freezer at the site office for storage so it can be used in post-construction observer efficiency and scavenger trials;
- The Department of Environment, Climate Change and Water's (within OEH) regional office will be provided with a copy of the completed carcass search data-sheet for recorded carcasses within seven days of it being found; and
- It will be necessary for the wind farm operator to obtain from the Department of Environment, Climate Change and Water a permit under the state *National Parks and Wildlife Act 1974* to handle and keep native wildlife (even dead wildlife) as part of the monitoring program.
- Contact details of local veterinary clinics and wildlife carers will be provided so that advice and/or treatment may be sought for injured wildlife.

Additionally, all records of Wedge-tailed Eagle collision will be recorded separately to ensure that the appropriate compensation fee is paid to WIRES. Records of payment will also be recorded and reported within the annual report to the Director-General.

Operational Bird and Bat Fatality Monitoring Program

An operational bird and bat fatality monitoring program will continue for two years after commissioning of the wind farm, with continuation dependant on a review of the results and the likelihood of significant impacts occurring.

The carcass search method described above will be adopted for the operational monitoring. This will use the same methods, though each turbine in the wind farm will be searched each month, with the order in which they are searched varied randomly. Reference sites will be searched as often as they were before construction commenced.

Performance Criteria: Studies have shown that on average turbines cause the death of between two and four birds per year and although no accurate information on bats is currently available, evidence suggest similar numbers of bats are affected by turbines. A significant impact is defined as:

- In any two successive dead bird/bat searches, more than two or more carcasses are found at and impact point in each search (i.e. a total of four carcasses in two successive searches); and/or
- A threatened or listed migratory species (listed on the EPBC Act or the TSC Act) is found dead under a wind turbine during any carcass search.

Actions to take should a significant impact be identified are provided in Section 3.5.1.

3.4.2. Management Activities

The objective of the management prescriptions is to minimise bird and bat collision risk with the turbines, to render the habitat near turbines unattractive for birds and bats where this does not compromise the objectives of the flora and fauna management sub-plan. This is achieved using a number of methods divided into three broad management techniques:

- Habitat Management
 - Minimising opportunities for raptor perches and roosting sites near turbines, where possible; and
 - Managing habitats below the turbines so as to make them unattractive for prey species (e.g. rabbits, lambs).
- Turbine and Associated Structures Management
 - Minimising external lighting of wind farm infrastructure; and
 - Use of deterrents.
- Prey / Foraging Management
 - Management of lambing;
 - Swift removal of stock and wildlife carcasses; and

- Pest-control.

Details of these techniques are provided below.

Habitat management

Five main habitat types are found within the wind farm boundary: exotic grassland, native grassland, grassland-woodland mosaic, dry forest and rocky outcrops. Previous fauna surveys indicated that raptors and bats, vulnerable to collision risk, primarily utilise grassland and dry forest habitats, with abundant foraging and roosting activity within the grassland/woodland interface. The aim of implementing habitat management techniques is to encourage species to use habitats a safe distance away from collision risk. This is achieved by:

- Removing larger trees in farmland within 100m of turbines, where landowners permit this; and
- Implementing habitat improvement measures on the lower slopes of the ridges to divert birds and bats away from turbine locations, where landowners permit this.

Removal of perching and roosting opportunities

A number of raptor species hunt from perches which can include isolated taller trees in farmland, thereby providing them with an ideal vantage point. Vantage points within 100m of the wind turbines should be removed, where the landowner permits this. Removal of trees within native vegetation is not recommended as the impacts on the vegetation would be unacceptable.

With respect to bats, many of the grassland/woodland and dry forest habitat have the potential to support roosts. It is therefore recommended that revegetation works be undertaken in a way that provides foraging and commuting corridors that encourage bats to avoid travelling through turbine lines wherever possible. This principle should guide any site revegetation works, which should not be located among or near turbines.

It is not proposed to remove perching and roosting opportunities along Row 6, as this area of habitat and native vegetation is considered significant and the aim of management will be to minimise impacts on this area.

Performance Criteria: Before construction begins, the location of perching and roosting sites in farmland near the wind farm will be recorded and regular visits to the site will be required to identify whether these are being used. During these visits, raptors observed nesting or perching will be recorded in addition to the type of habitats they are located in.

Should bat mortality significantly exceed average bat wind turbine related mortality in Australia (of about two bats per turbine per year), further investigation of causes and possible management responses will be investigated.

Improving habitats away from wind turbines

The majority of the habitats present within the wind farm have been heavily modified, particularly by intensive grazing, thereby reducing species diversity and habitat quality, rendering the site less suitable for raptor and bat prey species. Therefore, current land uses are not considered to result in a significant attraction

to bird and bat usage near turbines where they are located in agricultural areas. There are no significant standing water bodies nearby and the Tarlo River does not run through the proposed wind farm site. It is therefore unlikely that significant water changes will attract birds or bats to the site.

Where the restoration of native vegetation is to occur, there is potential for this to attract prey species, and hence raptors and bats. Native revegetation works should therefore only occur at least 200 metres away from wind turbines so that they do not attract raptors and bats to areas near wind turbines, thereby avoiding increased collision risk. Methods to achieve this are provided in Section 2.

Performance Criteria: Prior to construction, a prey-survey will be undertaken within paddocks in which the turbines are located and within areas selected for habitat improvement. The aim of this management practice is to increase prey numbers within sites situated away from bird and bat collision risk zones. Should no observable difference in prey numbers occur within these sites, management prescriptions will need to be modified.

Turbine and associated structures management

Lighting

It has long been known that sources of artificial light attract birds, particularly night-migrating birds in North America and Europe. This is probably the most important factor under human control that affects mortality rates of birds and bats colliding with all structures (Longcore et al. 2008).

Most bird mortality at communication towers for example, occurs in poor weather with low cloud in autumn and spring, i.e. during migration periods (Longcore et al. 2008).

It is postulated that bright lights may temporarily blind birds by bleaching the visual pigments of the retina, causing the birds to fly toward the light source and colliding with the structure (Gauthreaux and Belser 2006). Birds therefore become disoriented or 'trapped' in the field of light (Longcore et al. 2008).

Bats are also attracted to the increased numbers of insects that may congregate near bright light sources. They would appear prone to saturation of their retinas, causing temporary blindness when subjected to bright light (Beier 2006) and mortality of both birds and bats can result from collisions with lit structures.

Measures to reduce the impact of lighting include using low pressure sodium or mercury lamps with UV filters to reduce brightness. The colour of lighting may also be important. Some studies have found that red lights resulted in a lower mortality than white lights (Longcore et al. 2008), but more recent research on oil rigs at sea suggests that blue or green lights may result in lower mortality than red or white lights (American Bird Conservancy 2008).

Building lighting should be baffled and directed to avoid excessive light spillage and security lighting should be baffled to direct it towards the area requiring lighting and not skyward.

Should aviation safety lighting be required on turbine nacelles then this should take the form of low intensity, LED red flashing lights with a narrow vertical cross-section directed at aircraft.

Use of Deterrents

Where possible, power cables should be placed underground. Where this is not the case, these should be fitted with deterrents including marker balls and/or flags that will reduce bird collision risk at waterway crossings.

Prey / Foraging Management

Bird groups most susceptible to collision risk include raptors and migratory species. Management practices to minimise collision risk for raptors aim to deter this species group from foraging within 800m of turbines. This can be achieved by the measures described below.

- To reduce one of the most common sources of prey for raptors, an Integrated Rabbit Control program will be implemented around turbines and involves a number of methods to ensure the long-term management of this pest species (Bloomfield and Rosier, 2007).
- Lambing should not be permitted in paddocks within 800 metres of turbines to reduce their attractiveness to raptors at this time of year. The cooperation of landowners will be needed to implement this important raptor collision risk reduction measure.
- Weekly carcass removal will be implemented once the wind farm is operating. This will involve the activities described below.
 - A search for any dead stock or kangaroo carcasses that may attract raptors will be conducted;
 - Any carcasses found will be immediately collected and quickly disposed of in a manner that will avoid attracting raptors close to turbines (such as burying them in a designated location greater than 800m from turbines).
 - Carcass occurrence and removal will be recorded in a “management log book” maintained by the wind farm operator.
 - Rates at which carrion are found will be reviewed after three months of wind farm operation to ascertain if the carrion removal schedule needs to be refined.
 - An annual summary of carcass removal, based on the ‘management log’ will be provided in the annual and final year monitoring program reports to the Director-General.
 - The need for continuation of the carcass removal program will be assessed annually after wind farm operation commences.

Performance Criteria: Should the mortality rate of birds and bats exceeding the management objective, measures will be taken to reduce the risk further. This potentially includes extending areas of carcass removal and lambing area relocation.

3.5. Reporting

3.5.1. Decision-Making Framework

The Decision-Making Framework is designed to simply identify methods of responding to results from the monitoring program. This framework assists in the identification of significant impacts and provides a step-by-step mitigation program.

A significant impact on birds and/or bats, for the purposes of scheduled and non-scheduled reporting is defined as circumstances where:

- In any two successive dead bird/bat searches, more than two or more carcasses (of any species) are found at an impact points in each search (i.e. a total of four carcasses in two successive searches at the one turbine); and/or
- A threatened or listed migratory species (listed on the EPBC Act or Threatened Species Act 1995) is found dead under a wind turbine during any mortality search.

Note that successive searches may be separated by a gap, given the randomised selection of search points within the sampling strata defined (i.e. geographic and turbine lighting).

The following provides a framework for mitigating significant bat and avifauna impacts of the Taralga Wind Farm. The relationship between these activities is shown in Figure 8.

The activities include:

- Immediate reporting of a significant impact to the Director-General;
- Investigation of the occurrence and risk behaviours of listed species;
- Evaluation of the likelihood of further collisions;
- Habitat modification, if deemed necessary; and
- Bird deterrence, if considered necessary.

Any required investigation, and recommended management and mitigation measures, will be documented in the site management log, consistent with the conditions of approval. This log will be available for inspection by the Environmental Representative or on the request of the Director-General.

3.5.2. Annual Report

Results from the monitoring program will be presented within an annual report, for the life of the project, adjusted for findings in each year's report. The second post-commissioning annual report will include an evaluation of the adaptive management program. This report will be provided to the Director-General within three months of the annual deadline and include a recommendation on the continuation of monitoring and management activities, including monitoring and management measures that have been completed and/or for which continuation is not warranted based on an informed risk assessment.

Each annual report will contain:

- A brief description of the management prescriptions implemented and identify modifications made to the original management practices proposed;
- Results from the bird and bat collision rate measurements taking into consideration the scavenger and searcher efficiency correction factors;
- Results from the comparison of management prescriptions with the performance criteria;
- Discussion of the analysis of results and the efficacy of the management plan;
- Details of payments made to WIRES;
- Analysis of the effectiveness of the Decision-Making Framework; and
- Proposed modifications to the adaptive management program.

Table 10 sets out all proposed activities in this adaptive management program.

Figure 8: Operational procedure for mitigating significant impacts

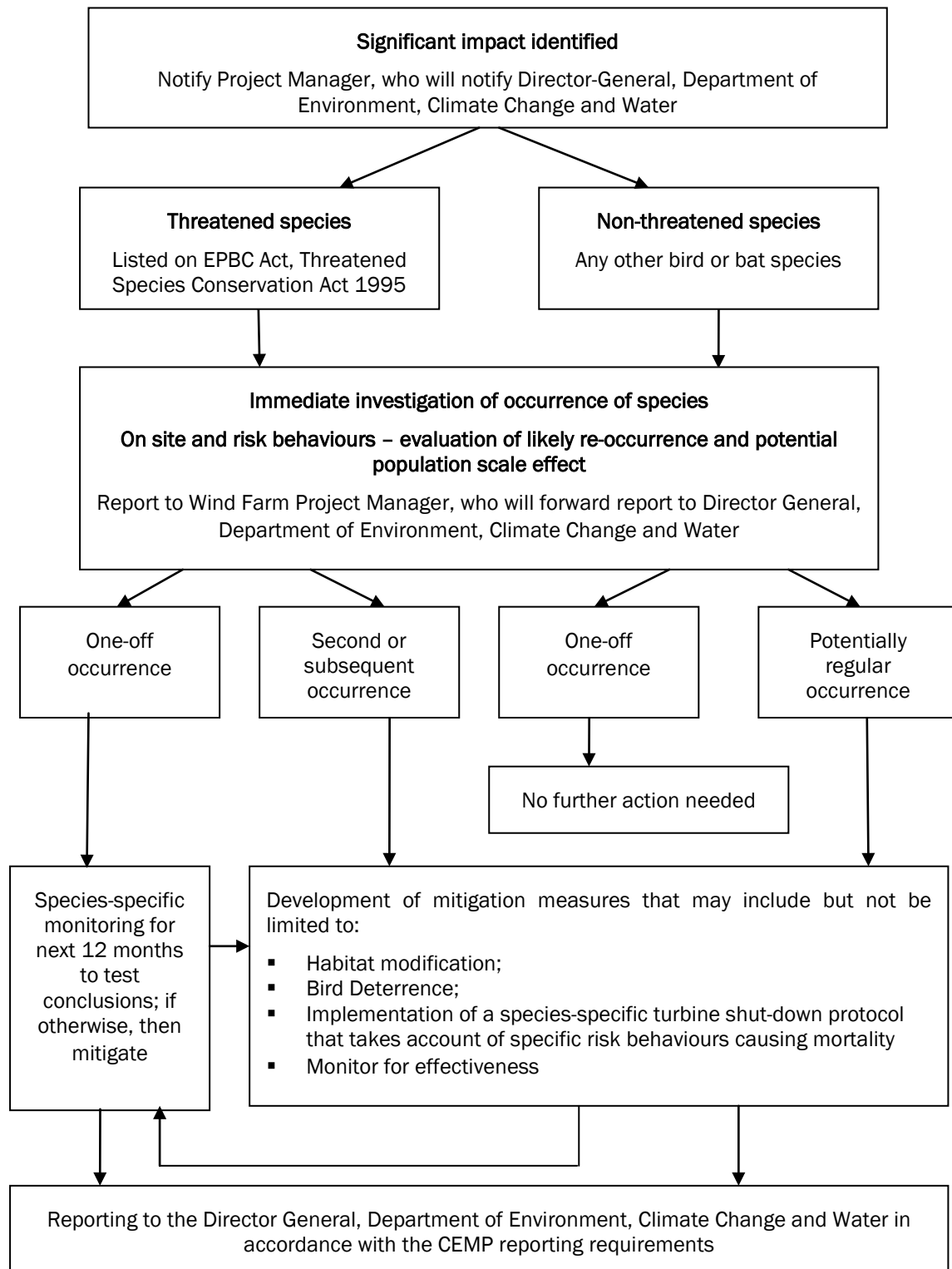


Table 10: Management Procedures for minimising and adaptively managing bird and bat collision risk at the Taralga Wind Farm

Management objectives	Management activities and controls	Performance criteria for measuring success of methods
Procedure 6: Collision Rate Measurement		
Collision rate measurement	<p>Obtaining pre-construction baseline bird and bat utilisation data</p> <p>Obtaining pre-construction bird and bat mortality data</p> <p>Calculating scavenger and searcher correction factors</p> <p>Calculating annual mortality of birds and bats per turbine based on post-operational repetition of monitoring activities</p>	<p>Significant impact is defined when:</p> <p>In any two successive dead bird/bat searches, more than two or more carcasses are found at the one impact point in each search (i.e. a total of four carcasses in two successive searches).</p> <p>A threatened or listed migratory species (listed on the EPBC Act or the Threatened Species Conservation Act 1995) is found dead under a wind turbine during any mortality search.</p> <p>Performance criteria is defined as average bird and bat mortality not exceeding annual averages for wind turbines in similarly-sized wind farms within similar climatic regions and agricultural settings.</p>
Procedure 7: Habitat management		
Minimise opportunities for raptor perches and nesting if this occurs regularly in a manner that elevates collision risk for these birds	<p>Removal of emergent trees in farmland within 100m of turbines (will also reduce bat roosting activity near turbines).</p> <p>Provide alternative perching, nesting and bat roosting sites at safe distances from collision risk zone (>500m) and within any enhanced habitats.</p>	<p>Monitor use perching and nesting sites. Should these locations be used in a manner that elevates collision risk then these should be relocated to more suitable habitat. Alternative habitats can be identified by recording observations of existing perching and nesting locations.</p>

Management objectives	Management activities and controls	Performance criteria for measuring success of methods
Procedure 8: Turbines and associated structures management		
Minimising external lighting	<p>If required, aviation safety lighting should use low intensity, LED, red flashing lights on nacelles.</p> <p>Baffle lights on buildings and sub-stations to avoid light spillage and visibility from above.</p> <p>Baffle security lighting to avoid light spillage and visibility from above..</p>	Monitor bat and bird utilisation adjacent to lit and unlit turbines. If mortality at lit turbines significantly exceeds that of activity at unlit turbines, type and duration of lighting will need to be reviewed, subject to other limitations, such as any CASA requirement.
Use of deterrents	Overhead powerlines should have marker balls and/or flags where they cross waterways	
Procedure 9: Prey/Foraging Management		
Removing prey opportunities for raptors	Implement an integrated rabbit control program.	Monitor bird mortality and where mortality occurs consistently near lambing paddocks at lambing time or in areas where carcasses are regularly found work cooperatively with landowners to move lambing paddocks further from turbines and increase frequency of stock and kangaroo carcass removal and disposal.
	Restrict lambing to paddocks at least 500m from turbines.	
	Stock and kangaroo carcasses will be removed from within 500m of wind turbines on a weekly basis and buried immediately at a designated location.	
		Monitor effectiveness of rabbit control and, where bird mortality is clearly related to rabbit numbers, increase the effectiveness of rabbit control.

4. RIPARIAN VEGETATION MANAGEMENT SUB PLAN

4.1. Introduction

This sub-plan provides objectives, responsibilities, methods for implementation and a monitoring and reporting framework that ensure the appropriate management of riparian vegetation values potentially affected by the Taralga Wind Farm project. This Riparian Vegetation Management Sub Plan has been developed in response to the Land and Environment Court Order (No. 10196 of 2006) Conditions of Consent of 23 February 2007.

Condition of Consent

Condition number 95 of the Conditions of Consent is reproduced below.

“As part of the CEMP, a Riparian Vegetation Management Sub Plan must be prepared and developed in consultation with DNR [Department of Natural Resources - the relevant department now being the Department of Water and Energy]. This Sub Plan is to outline details of the protected riparian zone(s), including, but not be limited to:

- (a) Requirements of the Permit under Part 3A of the Rivers & Foreshores Improvement Act, 1948;*
- (b) Drawings demonstrating the locations and extent of the zone(s), remnant vegetation, and where areas will be revegetated/regenerated;*
- (c) Plant species list to be utilised for revegetation; and*
- (d) Maintenance and performance monitoring.”*

The table below shows where these conditions of consent are addressed in this plan.

Consent Condition	Reference
Condition 95	
(a) “Requirements of the Permit	This will depend on the requirements of the Permit and this sub plan can be updated to reflect these requirements
(b) “Drawings demonstrating the locations and extent...”	Figures 1 to 7
(c) “Plant species list to be utilised for revegetation...”	Appendix 1
(d) “Maintenance and performance monitoring.”	Table 14

4.2. Risk assessment

This sub-section outlines the risk assessment framework used to prioritise responses to the risk the project represents for flora and fauna.

Risk assessment involves combining an assessment of the consequences of a particular potential impact of an action on flora and fauna with the likelihood of it occurring. To enable this assessment, both consequence and likelihood criteria have been developed (see Table 11). In addition, scores have been allocated to different levels of consequence and likelihood to enable a consistent comparison of risks.

Table 11 presents the consequence and likelihood criteria developed for the riparian risk assessment. Note that the waterway characteristics referred to in this table include riparian vegetation, bank stability and downstream water quality, primarily influenced by erosion and sedimentation.

Table 11: Consequence and likelihood criteria for riparian risk assessment at Taralga Wind Farm.

Consequence Criteria				
Negligible	Minor	Moderate	Major	Extreme
No waterway characteristic likely to change beyond natural variation	Detectable temporary change in waterway characteristic beyond natural variability but no downstream impact.	Detectable permanent change in waterway characteristic beyond natural variability and temporary downstream impact. Change not of long term ecological consequence	Detectable permanent change in waterway characteristic beyond natural variability and permanent downstream impact.	Permanent change in waterway characteristics beyond natural variability leading to permanent degradation to waterway well downstream
Likelihood Criteria				
Almost impossible	Very Unlikely	Possible	Highly Probable	Certain
No previously documented instance	Instance has occurred very rarely elsewhere	Instance has occurred elsewhere but under different site conditions	Instance has occurred regularly elsewhere under similar site conditions	Certain to occur based on experience elsewhere

Table 12 provides a risk matrix that defines risk as high, moderate or low, depending on the combination of consequence and likelihood levels.

The risk assessment has been undertaken with regard to the following potential impacts of waterway crossings:

- Native vegetation removal;
- Water quality in waterways (especially erosion and sedimentation); and
- Bank stability after construction.

Table 13 scores each of these potential impacts for their consequence and likelihood. The effect of mitigation measures on the level of risk is also provided.

Table 12: Risk matrix

Consequence Likelihood	Negligible	Minor	Moderate	Major	Extreme
Almost Impossible	Low	Low	Low	Low	Moderate
Very Unlikely	Low	Low	Low	Moderate	High
Possible	Low	Low	Moderate	Moderate	High
Highly Probable	Low	Moderate	Moderate	High	High
Certain	Moderate	Moderate	High	High	High

Table 13: Consequence and likelihood scoring for impacts on riparian areas

Impact	Pre-mitigation			Mitigation Actions	Post-mitigation		
	Consequence	Likelihood	Risk Level		Consequence	Likelihood	Residual Risk Level
Removal of riparian vegetation	Moderate	Highly Probable	Moderate	Procedures No. 11, 12, 13, 14, 16	Minor	Possible	Low
Water quality	Moderate	Certain	High	Procedures No. 11, 12, 15, 16	Minor	Possible	Low
Bank stability	Major	Highly Probable	High	Procedures No. 11, 12, 15, 16	Moderate	Possible	Moderate

4.3. Management Objectives

The objectives of this sub-plan are to:

- Ensure that the project complies with permit conditions set out under the *Water Management Act 2000* (the Act), including points formally addressed under Part 3A of the *Rivers & Foreshores Improvement Act, 1948* which has been repealed.
- Outline areas protected by the Act;
- Provide methods to manage (i.e. avoid and minimise) impacts on areas protected under the Act;
- Ensure that environmental rehabilitation measures are appropriately designed and implemented;
- Provide protocols for managing unintentional breaches of the Act; and
- Provide a process for continually updating this CEMP.

4.4. Environmental management activities and controls

Pursuant to the Act, a controlled activity approval under the Act is required for certain types of developments and activities that are carried out in or near a river, lake or estuary. This includes the bed and a distance of 40 metres from a river, lake or estuary.

“Under the WMA [Water Management Act 2000], a “controlled activity” means:

- *The erection of a building or the carrying out of a work (within the meaning of the Environmental Planning and Assessment Act 1979), or*
- *The removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or*
- *The deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or*
- *The carrying out of any other activity that affects the quantity or flow of water in a water source” (DWE 2009).*

Figure 1 shows the locations of areas protected under the *Water Management Act 2000* (the Act) where construction environmental management measures are required. Key actions that need to be implemented in these protected areas during construction are presented in Table 14 below.

Before commencing any work, all staff and contractors should be inducted into this Riparian Vegetation Management Sub Plan and should be familiar with the locations of all areas protected under the Act.

All environmental controls should be checked for compliance on a regular basis. If there is any unintentional breach of the WM Act, construction works in the riparian zone affected must cease immediately. Any such breach should be reported immediately to the NSW Department of Water and Energy (DWE) as well as the DECC. Rehabilitation and clean-up works must then commence.

Table 14: Key actions for identified areas that are protected by the WM Act

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
Procedure 10: Obtain required permits			
Ensure that appropriate permits are obtained to carry out construction and works legally	Obtain permit under the <i>Water Management Act 2000</i> to: <ul style="list-style-type: none"> Remove material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise (e.g. for borrow pits); or Deposit material (whether or not extractive material) on land, whether by way of landfill operations or otherwise (e.g. to change landform for construction); or Avoid carrying out any activity that affects the quantity or flow of water in a water source (e.g. waterway crossing). 	Proponent	<ul style="list-style-type: none"> Permit obtained and any conditions adhered to.
Procedure 11: Constructing outlet structures			
The DWE guidelines under the WM Act.	Follow guidelines provided in Appendix 2.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (see Appendix 2).

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
Procedure 12: Laying pipes and cables in watercourses			
See Appendix 3	Follow guidelines provided in Appendix 3.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (Appendix 3).
Procedure 13: Managing native vegetation			
See Appendix 4	Follow guidelines provided in Appendix 4.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (Appendix 4).
Procedure 14: Managing riparian corridors			
See Appendix 5	Follow guidelines provided in Appendix 5.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (Appendix 5).
Procedure 15: Carrying out in-stream works			
See Appendix 6	Follow guidelines provided in Appendix 6.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (Appendix 6).
Procedure 16: Constructing watercourse crossings			
See Appendix 7	Follow guidelines provided in Appendix 7.	Proponent	<ul style="list-style-type: none"> All points in guidelines adhered to (Appendix 7).
	Lay weed mat over exposed soils when possible to minimise soil	Proponent	<ul style="list-style-type: none"> No increase in turbidity or decline in water quality downstream of

Management objectives	Management activities and controls	Responsible party	Performance criteria for measuring success of methods
	erosion.		disturbance areas.
	Revegetate any exposed soils immediately after construction.	Proponent	<ul style="list-style-type: none"> No increase in turbidity or decline in water quality downstream of disturbance areas. Revegetation works completed no more than two weeks after the completion of construction in any given areas.
	Install sediment traps and/or fences down-slope of exposed soils.	Proponent	<ul style="list-style-type: none"> No increase in turbidity or decline in water quality downstream of disturbance areas.
	Install sediment traps and/or fences down-slope of exposed soils.	Proponent	<ul style="list-style-type: none"> No increase in turbidity or decline in water quality downstream of disturbance areas.
	Filter any suspended sediment out of water within in-stream disturbance areas before releasing it down-stream	Proponent	<ul style="list-style-type: none"> No increase in turbidity or decline in water quality downstream of disturbance areas.
	Carry out the weed and pathogen control methods outlined in Section 2.4.1.	Proponent	<ul style="list-style-type: none"> See Table 6

4.4.1. Rehabilitation guidelines

Rehabilitation works should be undertaken immediately after construction to prevent soil erosion, degradation of riparian vegetation and a reduction in water quality. Rehabilitation works should combine the relevant revegetation species list in Appendix 1 for riparian vegetation and the guidelines provided in Appendix 4 and Appendix 5.

Any rehabilitation guidelines provided in Section 2.4.1 (i.e. in the Flora and Fauna Management Sub-Plan) should also be adhered to where relevant (i.e. where indicated in Figure 1).

4.4.2. Monitoring and Reporting

Performance targets for weed control are provided in Table 6. Performance targets for all other management objectives relating to riparian vegetation management along waterways are provided in Table 14 and the relevant appendices.

During construction and for the first twelve months after commissioning, soil disturbance areas and adjacent areas of native vegetation should be monitored two-monthly in spring, summer and autumn to determine weed management success, to identify new infestations and to inform decisions on the next round of weed control work. The results of this monitoring should be made available on request to the Environmental Representative.

Weed control methods and other vegetation management objectives should be adapted where appropriate (in consultation with a suitably experienced bushland regenerator) to ensure that performance targets are met. If targets are not met, a review by an appropriately (independent) experienced person will determine if targets were not met due to procedural problems or unforeseen circumstances.

A log of management activities and outcomes results should be kept and updated by the proponent regularly.

Documenting progress in implementing management activities and in achieving the outcomes required in this plan will be the responsibility of the proponent, consistent with the reporting requirements of the Construction Environmental Management Plan. The Environmental Representative will be provided with relevant documentation of the results of monitoring and management on request.

Pursuant to the conditions of consent, for this project, the results of any monitoring must be recorded and maintained. All records kept must be:

- In a legible form, or in a form which can be readily reduced to a legible form;
- Kept for at least four years after the monitoring or event to which they relate took place; and
- Produced in a legible form to any authorised officer of the OEH or the Department who asks to see them.

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Appendix 1: List of flora species suitable for revegetation

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Acacia dealbata</i>	Silver Wattle		X		X				
<i>Acacia falciformis</i>	Broad-leaved Hickory Wattle	X	X		X			X	
<i>Acacia genistifolia</i>	Spreading Wattle		X		X				
<i>Acacia gunnii</i>	Ploughshare Wattle		X	X	X			X	
<i>Acacia lanigera</i> var. <i>lanigera</i>	Woolly Wattle		X						
<i>Acacia melanoxylon</i>	Blackwood	X							
<i>Acacia obliquinervia</i>	Mountain Hickory Wattle	X						X	
<i>Acacia obtusifolia</i>	Blunt-leaf Wattle			X					
<i>Acacia terminalis</i>	Sunshine Wattle			X				X	
<i>Acaena novae-zelandiae</i>	Bidgee Widgee	X			X				X
<i>Acaena ovina</i>	Australian Sheep's Burr						X		X
<i>Acrotriche serrulata</i>	Honey-pots	X	X				X		X
<i>Ajuga australis</i>	Austral Bugle				X				X
<i>Allocasuarina littoralis</i>	Black Sheoak			X					
<i>Amperea xiphoclada</i> var. <i>xiphoclada</i>	Broom Spurge							X	

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	Jericho Wire-grass		X		X				
<i>Aristida ramosa</i>	Cane Wire-grass				X		X		
<i>Arthropodium fimbriatum</i>	Nodding Chocolate-lily								X
<i>Arthropodium strictum</i>	Chocolate Lily								X
<i>Astroloma humifusum</i>	Cranberry Heath				X		X		X
<i>Austrodanthonia fulva</i>	Copper-awned Wallaby-grass		X						
<i>Austrodanthonia laevis</i>	Smooth Wallaby-grass				X		X		
<i>Austrodanthonia penicillata</i>	Smooth Wallaby-grass	X							X
<i>Austrodanthonia pilosa</i>	Velvet Wallaby-grass				X		X		
<i>Austrostipa bigeniculata</i>	Tall Spear-grass						X		X
<i>Austrostipa densiflora</i>	Dense Spear-grass				X				
<i>Austrostipa mollis</i>	Supple Spear-grass		X		X				
<i>Austrostipa ramosissima</i>	Spear Grass			X					
<i>Austrostipa rudis</i> subs. <i>nervosa</i>	Veined Spear-grass			X	X				X
<i>Austrostipa scabra</i>	Rough Spear-grass				X				X
<i>Backhousia myrtifolia</i>	Grey Myrtle					X			

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Billardiera scandens</i>	Common Apple-berry			X				X	
<i>Bossiaea prostrata</i>	Creeping Bossiaea						X		X
<i>Bothriochloa macra</i>	Red-leg Grass						X		X
<i>Brachyloma daphnoides</i>	Daphne Heath		X	X	X			X	
<i>Brachyscome rigidula</i>	Leafy Daisy								X
<i>Caesia calliantha</i>	Blue Grass-lily			X			X		X
<i>Calocephalus citreus</i>	Lemon Beauty-heads						X		X
<i>Carex appressa</i>	Tall Sedge	X					X		
<i>Carex inversa</i>	Knob Sedge						X		X
<i>Cassinia aculeata</i>	Common Cassinia		X	X	X				
<i>Cassinia longifolia</i>	Shiny Cassinia		X		X				
<i>Casuarina cunninghamiana</i> subs. <i>cunninghamiana</i>	River She-oak					X			
<i>Chrysocephalum apiculatum</i>	Common Everlasting				X		X		X
<i>Commelina cyanea</i>	Creeping Christian					X			
<i>Coprosma quadrifida</i>	Prickly Current-bush	X							
<i>Cymbonotus lawsonianus</i>	Bear's-ear	X			X				X
<i>Cynoglossum australe</i>	Australian Hound's-tongue				X				X

Botanical Name	Common Name	Vegetation community							
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<i>Daviesia latifolia</i>	Hop Bitter-pea		X		X			X	
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea		X	X					
<i>Daviesia mimosoides</i>	Blunt-leaf Bitter-pea							X	
<i>Daviesia ulicifolia</i>	Native Gorse	X						X	
<i>Dianella revoluta</i> var. <i>revoluta</i>	Spreading Flax-lily		X	X				X	X
<i>Dianella tasmanica</i>	Tasman Flax-lily	X						X	
<i>Dichelachne crinita</i>	Long-hair Plume-grass						X		X
<i>Dichelachne inaequiglumis</i>	Loose Plume-grass	X	X	X				X	
<i>Dichelachne rara</i>	Hairy Plume-grass	X	X	X					
<i>Dillwynia phyllicoides</i>	Small-leaf Parrot-pea		X					X	
<i>Dillwynia sericea</i>	Showy Parrot-pea		X		X				
<i>Elymus scaber</i> var. <i>scaber</i>	Common Wheat-grass				X		X		X
<i>Eryngium ovium</i>	Blue Devil						X		X
<i>Eucalyptus agglomerata</i>	Blue-leaved Stringy-bark			X					
<i>Eucalyptus blakeyii</i>	Blakely's Red-gum		X		X				
<i>Eucalyptus bridgesiana</i>	Apple Box		X		X		X		
<i>Eucalyptus dalrympleana</i> subs. <i>dalrympleana</i>	Mountain Gum		X		X			X	

Botanical Name	Common Name	Vegetation community							
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<i>Eucalyptus dives</i>	Broad-leaved Peppermint		X		X			X	
<i>Eucalyptus globoidea</i>	White Stringybark			X					
<i>Eucalyptus goniocalyx</i>	Bundy		X						
<i>Eucalyptus macrorhyncha</i>	Red Stringybark		X		X				
<i>Eucalyptus mannifera</i>	Brittle Gum		X	X	X			X	
<i>Eucalyptus melliodora</i>	Yellow Box		X		X				
<i>Eucalyptus pauciflora</i>	Snow Gum						X		
<i>Eucalyptus radiata</i> subs. <i>radiata</i>	Narrow-leaved Peppermint	X						X	
<i>Eucalyptus rossii</i>	Scribbly Gum		X	X	X				
<i>Eucalyptus rubida</i> subs. <i>rubida</i>	Candlebark				X		X		
<i>Eucalyptus sieberi</i>	Silvertop Ash			X				X	
<i>Eucalyptus smithii</i>	Gully Gum							X	
<i>Eucalyptus viminalis</i>	Manna Gum	X			X		X		
<i>Geranium solanderi</i> var. <i>solanderi</i>	Austral Crane's-bill	X			X	X	X		X
<i>Gompholobium huegelii</i>	Pale Wedge-pea		X						
<i>Gompholobium minus</i>	Wedge Pea		X	X					

Botanical Name	Common Name	Vegetation community							
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<i>Goodenia hederacea</i> subs. <i>hederacea</i>	Ivy Goodenia		X	X	X			X	
<i>Hakea decurrens</i> subs. <i>decurrens</i>	Bushy Needlewood		X						
<i>Hakea eriantha</i>	Tree Hakea	X							
<i>Hardenbergia violacea</i>	Native Sarsaparilla		X		X				
<i>Helichrysum leucopsidium</i>	Satin Everlasting	X		X	X				X
<i>Helichrysum scorpioides</i>	Button Everlasting	X					X		
<i>Hibbertia empetrifolia</i> subs. <i>empetrifolia</i>	Tangled Guinea-flower			X					
<i>Hibbertia obtusifolius</i>	Grey Guinea Flower	X	X	X	X			X	
<i>Hovea linearis</i>	Hovea		X	X	X			X	
<i>Joycea pallida</i>	Silvertop Wallaby-grass		X	X	X				
<i>Kunzea ericoides</i>	Burgan		X		X				
<i>Lepidosperma gunnii</i>	Slender Sword-sedge			X	X				
<i>Leptorhynchos squamatus</i> subs. A	Scaly Buttons						X		X
<i>Leptospermum continentale</i>	Prickly Tea-tree						X		

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<i>Leptospermum myrtifolium</i>	Myrtle Tea-tree	X	X				X		
<i>Leucopogon hookeri</i>	Mountain Beard-heath	X							
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	Lance Beard-heath							X	
<i>Leucopogon virgatus</i>	Common Beard-heath		X						
<i>Lomandra cylindrica</i>	Mat Rush			X					
<i>Lomandra filiformis</i> subs. <i>coriacea</i>	Wattle Mat-rush		X	X	X			X	X
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	X				X		X	
<i>Lomandra multiflora</i> subs. <i>multiflora</i>	Many-flowered Mat-rush		X	X					
<i>Lomandra obliqua</i>	Mat Rush			X					
<i>Lomatia fraseri</i>	Tree Lomatia	X							
<i>Lomatia ilicifolia</i>	Holly Lomatia			X				X	
<i>Luzula densiflora</i>	Woodrush		X		X				
<i>Luzula flaccida</i>	Woodrush	X							
<i>Melichrus urceolatus</i>	Urn Heath			X					
<i>Microlaena stipoides</i>	Weeping Grass	X		X	X	X	X		X

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Monotoca scoparia</i>	Prickly Broom-heath							X	
<i>Pandorea pandorana</i>	Wonga Vine					X			
<i>Patersonia glabrata</i>	Leafy Purple-flag			X					
<i>Patersonia longifolia</i>	Purple Flag			X					
<i>Patersonia sericea</i>	Silky Purple-flag			X					
<i>Pellaea falcata</i>	Sickle Fern					X			
<i>Persicaria decipiens</i>	Slender Knotweed					X			
<i>Persoonia chamaepeuce</i>	Dwarf Geebung		X						
<i>Persoonia laurina</i>	Geebung			X				X	
<i>Persoonia linearis</i>	Narrow-leaf Geebung							X	
<i>Persoonia mollis</i> subs. <i>livens</i>	Geebung		X		X				
<i>Persoonia silvatica</i>	Forest Geebung	X							
<i>Pimelea curviflora</i> var. <i>sericea</i>	Curved Rice-flower		X		X		X		X
<i>Plantago gaudichaudii</i>	Narrow Plantain				X		X		X
<i>Platylobium formosum</i>	Handsome Flat-pea		X						
<i>Poa labillardierei</i> var. <i>labillardierei</i>	Tussock Grass						X		X

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Poa sieberiana</i> var. <i>sieberiana</i>	Snowgrass	X	X		X		X	X	X
<i>Podolepis hieracioides</i>	Long Podolepis	X							X
<i>Podolobium ilicifolium</i>	Prickly Podolobium			X					
<i>Pomaderris prunifolia</i> var. <i>prunifolia</i>	Prunus Pomaderris		X		X				
<i>Pomax umbellata</i>	Pomax			X					
<i>Pultenaea subspicata</i>	Low Bush-pea		X				X		
<i>Ranunculus lappaceus</i>	Australian Buttercup	X			X				X
<i>Rhytidosporum procumbens</i>	White Marianth			X					
<i>Rumex brownii</i>	Slender Dock				X	X	X		X
<i>Schoenus apogon</i>	Common Bog-rush				X				X
<i>Senecio linearifolius</i>	Fireweed Groundsel					X			
<i>Stylidium graminifolium</i>	Grass Trigger-plant	X	X					X	X
<i>Stypandra glauca</i>	Nodding Blue-lily		X	X				X	
<i>Tasmannia lanceolata</i>	Mountain Pepper	X							
<i>Themeda triandra</i>	Kangaroo Grass				X				X
<i>Tristaniopsis laurina</i>	Kanooka					X			
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzy New Holland Daisy								X

Botanical Name	Common Name	Vegetation community							
		Cool Montane Wet Forest	Western Tableland Dry Forest	Eastern Tableland Dry Forest	Tableland Hills Grassy Woodland	Riverbank Forest	Frost Hollow Grassy Woodland	Tableland Ridge Forest	Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT
<i>Wahlenbergia communis</i>	Tufted Bluebell				X				X
<i>Wahlenbergia stricta</i> subs. <i>stricta</i>	Tall Bluebell		X						X
<i>Xerochrysum bracteatum</i>	Golden Everlasting	X							

Appendix 2: Guidelines for controlled activities – Outlet structures

(Source: Department of Water and Energy)



Controlled activities

Guidelines for outlet structures

This guideline relates to the design of stormwater outlets and spillways from infrastructure (including roads, buildings, constructed basins/wetlands, swales or other drainage works) into a watercourse or waterfront land.

Outlet structures on waterfront land are a controlled activity under the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

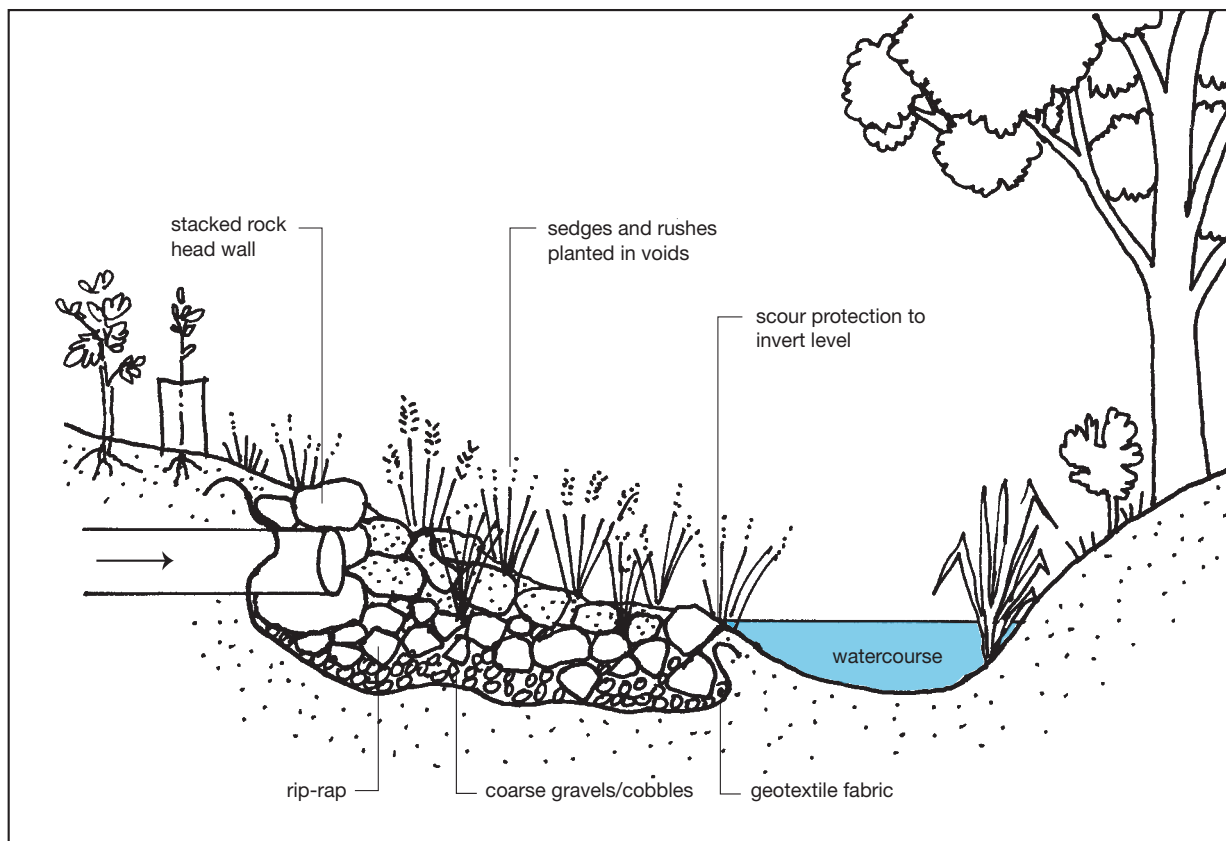
Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means a **Controlled Activity Approval** must be obtained from the NSW Office of Water **before** commencing the controlled activity.

WHAT ARE THE AIMS AND OBJECTIVES FOR OUTLET STRUCTURES?

The design and construction of stormwater outlets should aim to be 'natural', yet provide a stable transition from a constructed drainage system to a natural flow regime (see Figure 1).

Figure 1. 'Natural' outlet structure.



The design and construction footprint and extent of disturbance within the riparian corridor should be minimised even allowing for the intended discharge function to be achieved (refer to the NSW Office of Water's ***Guidelines for riparian corridors***).

All ancillary drainage infrastructure, such as oil/grease interceptors, sediment and litter traps, constructed wetland, detention basins or any 'works' requiring ongoing access or maintenance should be located outside the riparian corridor.

Water run-off from the site should be of appropriate quality and quantity before being discharged into a riparian corridor or watercourse.

Appropriate rehabilitation of disturbed areas following the installation of outlet structures should adequately restore the integrity of the riparian corridor.

WHAT SHOULD BE CONSIDERED IN THE DESIGN AND CONSTRUCTION OF OUTLET STRUCTURES?

The design and construction of outlet structures should consider, but not be limited to, the following principles:

- Define the infrastructure route and identify the specific point of discharge. Where possible select a route along an existing cleared or disturbed area that avoids trees, preferably beyond their drip line.
- Choose a stable section of the stream for the discharge point, preferably mid-way between bends. Alternatively, incorporate outlet discharge points into disturbed/eroded areas which are to be stabilised or rehabilitated.
- Minimise construction footprint and proposed extent of disturbance to soil and vegetation within the watercourse or waterfront land.
- Demonstrate that changes to the hydrology of the receiving watercourse have been assessed and there is no detrimental impact on discharge volumes and channel velocities. Discharge velocities and flow rates should mimic 'natural' flows and not initiate erosion.
- Discharge from an outlet should not cause bed or bank instability.
- Protect the bed of the watercourse below the outlet (if not bedrock), or if bed scour is likely. Consider bank material and outlet 'jet' effect and protect the opposite streambank if required.
- Point outlet structure and direct discharge downstream.
- The outlet should not protrude beyond the streambank but tie in with the adjoining bank alignment.
- Calculate tractive stresses generated from outlet discharges and from bank full discharges to determine appropriate rock size requirements for the structure.
- Rock rip-rap is the preferred material to provide a 'natural' outlet. Rip-rap should extend for the full extent of the design scour apron and adjoining flanks/streambank. Rip-rap must be appropriately 'keyed in' (to withstand the velocities of runoff or discharge from the site) and cut-off trenches should be provided where necessary.
- Rip-rap should consist of durable, angular run-of-quarry rock placed over a bedding layer of angular cobbles over geotextile. Where possible, incorporate vegetation such as sedges and rushes into scour management (Figure 1) for further stability.
- Grade scour apron to bed level of the watercourse or just below any permanent water created by any stable feature such as a rock bar within the watercourse.
- Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation/regeneration, mulching, weed control and maintenance.

WHAT INFORMATION SHOULD BE SUBMITTED FOR ASSESSMENT?

When seeking approval to outlet structures across a watercourse or waterfront land, the NSW Office of Water will rely on the above information to undertake its assessment and to determine if the activity should be approved. All works/activities within watercourses should be **designed by suitably qualified persons**.

The following additional information may also be required:

- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse showing proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section is to extend to the landward limit of the identified riparian corridor. All plans **MUST** include a scale bar.
- Detailed plans should include a location plan, plan view, elevation view and cross section of the proposed outlet structure.
- Detailed plans of any permanent bed and bank stabilisation works for scour protection.
- Sediment and erosion control plan.
- Detailed report of pre and post construction hydraulic, hydrologic and geomorphic conditions.
- Photographs of the site should be supplied. To assist with future monitoring and reporting, all photo points should be identified by GPS coordinates or by survey - particularly for large scale earthworks or extractive industries.
- A Vegetation Management Plan prepared in accordance with the NSW Office of Water's ***Guidelines for Vegetation Management Plans***
- A Site Management Plan incorporating a works schedule, sequence and duration of works, contingencies (in case of flooding etc) erosion and sediment controls and proposed monitoring and reporting periods.
- Costing of all works (materials, labour) and stages of works (outlet structure installation, rehabilitation).
- Copies of other relevant approvals, for example development consent.

WILL A MAINTENANCE PERIOD BE NECESSARY?

Applicants may need to allow for a minimum **maintenance period** of two years after practical completion of each stage or until site is stable. The maintenance period will depend on the scope (size) and level of risk. Engineering certification may be required at the end of the maintenance period. Maintenance (until stable) includes sediment and erosion control; the replacement of any works, vegetation or areas damaged or destroyed by flows and flooding or vandalism; and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

WILL A SECURITY BE REQUIRED?

Applicants should note that if the likelihood of significant impact on the watercourse or waterfront land is identified, **security** (as bank guarantees) may be required before the controlled activity is commenced. The amount of security is usually based on the costings provided.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

Find out more about controlled activities at www.water.nsw.gov.au

CONTACT US

Contact a water licensing officer at a local office listed on our website, free call the licensing information on 1800 353 104 or email information@water.nsw.gov.au

Appendix 3: Guidelines for controlled activities – Laying pipes and cables in watercourses

(Source: Department of Water and Energy)



Controlled activities

Guidelines for laying pipes and cables in watercourses

This guideline relates to the laying of pipes and cables in or across watercourses and adjoining waterfront land for utilities such as sewage, water, gas, electricity and communications.

The laying of pipes and cables in or across a watercourse is a controlled activity under the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that a **Controlled Activity Approval must be obtained** from the NSW Office of Water **before** commencing the controlled activity.

WHAT ARE THE AIMS AND OBJECTIVES FOR LAYING PIPES AND CABLES?

The design and construction footprint and extent of disturbance associated with the placement of pipes and cables across a watercourse or on waterfront land should be minimised.

Rehabilitation of disturbed areas post installation should restore bed and bank stability and the integrity of any existing vegetation on the waterfront land.

Consultation with relevant government agencies at the concept stage (of development) and during the design phase is recommended so that good outcomes can be identified, planned for and achieved.

WHAT ARE THE RELEVANT DESIGN CONSIDERATIONS?

The design and installation of pipes and cables on waterfront land should consider, but not be limited to, the following principles:

- Identify the width of the riparian corridor in accordance with the NSW Office of Water's ***Guidelines for riparian corridors***.
- Consider the full width of the riparian corridor and its functions in the location and installation of any pipes and cables. Where possible, the design should accommodate fully structured native vegetation.
- Minimise the design and construction footprint and proposed extent of disturbance to soil and vegetation within the watercourse or waterfront land.
- Utilise existing easements. Pipes and cables should be incorporated within existing cleared or disturbed areas with (or adjacent to) other crossing points such as roads, particularly if future maintenance and on-going access is required.
- Maintain existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. Demonstrate that the pipe and cable installations will not have a detrimental impact on these functions.
- Identify alternative options for works and detail the reasons for selecting the preferred option/s.

Directional boring under a watercourse is preferred to trenching through a watercourse.

- Proposals for directional boring should seek to:
 - minimise or avoid disturbance to channel bed and banks
 - minimise or avoid rehabilitation, maintenance and on-going costs after construction
 - minimise risks associated with cave-ins, bed collapse or frac-outs during boring
 - ensure depth does not result in exposure of assets if channel experiences bed or bank degradation
 - locate bore entry and exit points outside designated riparian corridors and existing vegetation
 - address the recovery and removal of construction plant and materials, including drilling mud.
- Proposals for trenching should:
 - prepare rehabilitation plans for disturbed bed and banks
 - locate (lay) pipes and cables across the watercourse on the downstream side of channel bedrock outcrops (through the drop deposit zone if a plunge pool is present)
 - avoid outside bends – choose a straight section of the watercourse to cross
 - place infrastructure below calculated bankfull flow scour depths and allow a safety margin
 - avoid concrete caps and casings at shallow depths which may become exposed by bed lowering
 - ensure backfilling restores the channel shape and bed level to preconstruction condition
 - ensure trench is open for minimal length of time
 - avoid 'stopping' the flow of a permanent watercourse by staging the trench across the channel or minimise the time involved in stopping or intercepting flows
 - address additional disturbances from temporary coffer dams or diversion of flows around work site, vehicle and machinery access and crossings, material stockpiles, etc
 - prevent potential water quality issues (turbidity, spills)
 - address the recovery and removal of construction plant and materials.

WHAT INFORMATION SHOULD BE SUBMITTED FOR ASSESSMENT?

When seeking approval to install pipes or cables across a watercourse or waterfront land, the NSW Office of Water will rely on the above information to undertake its assessment and to determine if the activity should be approved. All works/activities within watercourses should be **designed by suitably qualified persons**.

The following additional information may also be required.

- Detailed design drawings of proposed works/structures (engineering certification may also be required).
- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse showing proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section is to extend to the landward limit of the identified riparian corridor. All plans **MUST** include a scale bar.
- Detailed report of pre and post construction hydraulic, hydrologic and geomorphic conditions.
- Detailed plans of any permanent bed and bank stabilisation works for scour protection.
- Photographs of the site should be supplied. To assist with future monitoring and reporting, all photo points should be identified by GPS coordinates or by survey. This is particularly important for large scale earthworks or extractive industries.
- Sediment and erosion control plan
- A Vegetation Management Plan prepared in accordance with the NSW Office of Water's ***Guidelines for Vegetation Management Plans***.

- A site management plan incorporating a works schedule, sequence and duration of works, contingencies (in case of flooding etc), erosion and sediment controls and proposed monitoring and reporting periods.
- Costing of all works (materials, labour) and stages of works (channel stabilisation, rehabilitation) etc.
- Copies of other relevant approvals, for example land owner's consent or development consent.

WILL A MAINTENANCE PERIOD BE NECESSARY?

Applicants will also need to provide for a **maintenance period** of between three and five years after practical completion of each stage or until site is stable. The maintenance period will depend on the scope (size) and level of risk. Engineering certification may be required at the end of the maintenance period. Maintenance includes sediment and erosion control; the replacement of any works, vegetation or areas damaged or destroyed by flows and flooding or vandalism; and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

WILL A SECURITY BE REQUIRED?

Applicants should note that if the likelihood of significant impact on the watercourse or waterfront land is identified, **security** (as bank guarantees) may be required before the controlled activity is commenced. The amount of security is usually based on the costings provided.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

Find out more about controlled activities at www.water.nsw.gov.au

CONTACT US

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Appendix 4: Guidelines for controlled activities – Vegetation Management Plans

(Source: Department of Water and Energy)



Controlled activities

Guidelines for Vegetation Management Plans

Controlled activities carried out in, on or under waterfront land are regulated by the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

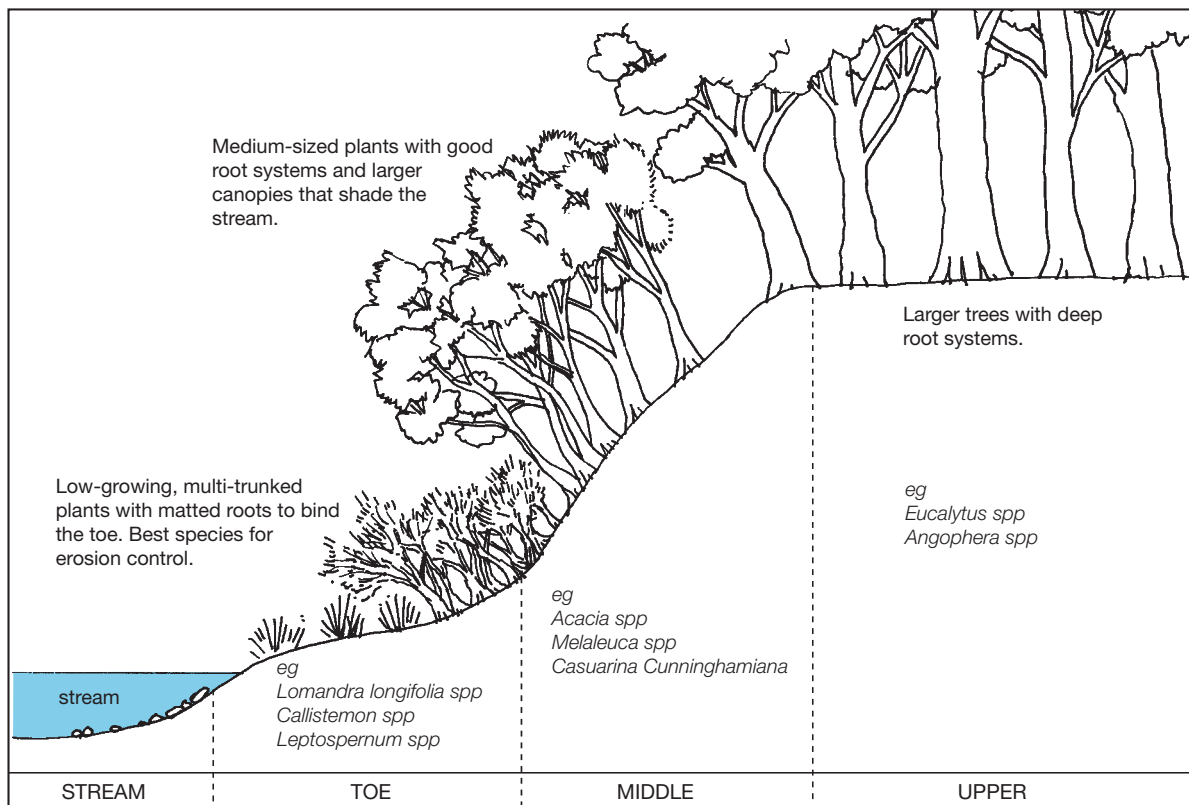
This means that a **Controlled Activity Approval must be obtained** from the NSW Office of Water **before** commencing the controlled activity.

WHY IS A VEGETATION MANAGEMENT PLAN REQUIRED?

When a proposed controlled activity disturbs or substantially modifies the riparian corridor, its restoration or rehabilitation will be a requirement of the Controlled Activity Approval. A Vegetation Management Plan (VMP) details how the restoration or rehabilitation will be carried out.

The main objective of a VMP is to provide a stable watercourse and riparian corridor which will emulate local native vegetation communities.

Figure 1. Typical riparian cross section - Adapted from *Rivercare: Guidelines for Ecological Sustainable Management of Rivers and Riparian Vegetation*: Raine, A.W & Gardiner, J.N, (1995), Land and Water Resources Research and Development Corporation, Canberra.



HOW SHOULD A VEGETATION MANAGEMENT PLAN BE PREPARED?

A VMP should be prepared by a suitably qualified person and should clearly address the following criteria:

- An appropriate width for the riparian corridor should be identified by consulting either the development consent, the relevant Environmental Planning Instrument or the NSW Office of Water's **Guidelines for riparian corridors**. The VMP should consider the full width of the riparian corridor and its functions including accommodating fully structured native vegetation.
- Maps or diagrams which clearly identify the riparian corridor; the existing vegetation; the vegetation to be retained; the vegetation to be cleared; the footprint of construction activities; and areas of proposed revegetation etc should be prepared.
- The location of the bed and banks or foreshore of waterfront land and the footprint of the riparian corridor should be clearly identified. Core riparian zones must be indicated.
- Photographs of the site should be supplied and photo points should be identified. To assist with future monitoring and reporting requirements, the photo points should be identified by GPS coordinates or by survey. This is particularly important for large scale earthworks or extractive industries.
- Measures for controlling long term access and encroachments (bollards, fences, etc.) into the riparian corridor should be identified.
- Vegetation species composition, planting layout and densities should be identified. The required mix of plant species relates to the actual community to be emulated and the size of the area/s to be rehabilitated but mature vegetation communities are generally well structured, comprising trees, shrubs and groundcovers species. Planting densities should achieve quick vegetative cover and root mass to maximise bed and bank stability along the subject watercourse. Costs associated with high density planting will be recovered through reduced maintenance costs (weeding, replacement planting etc) in the maintenance period specified in the Controlled Activity Approval (CAA).
- Seed/plant sources should be identified. Where possible, native plants and seed sources of local provenance should be used.
- Exotic vegetation should be avoided. The use of exotic species for temporary soil stabilisation is permitted provided they are sterile, non-invasive and easily eradicated when permanent vegetation is established.
- Details of the planting program, rehabilitation methods and staging should be provided. Techniques such as hydro-seeding, direct seeding, brush matting or assisted natural regeneration may be considered.
- Maintenance requirements should extend for a minimum of two years after the completion of works or until such time as a minimum 80 per cent survival rate of each species planted and a maximum 5 per cent weed cover for the treated riparian corridor (controlled activity) is achieved.
- Project tasks should be defined and described, including a schedule detailing the sequence and duration of works necessary for the implementation of the VMP.
- Costings for the implementation of all components and stages of the work including materials, labour, watering, maintenance (including plant replacement), monitoring and reporting should be prepared.
- Processes for monitoring and review, including a method of performance evaluation, should be identified. This should include replacing plant losses, addressing deficiencies, problems, climatic conditions, successful completion of works, etc.
- Regular reporting on the implementation and status of works (progress, success/failures and completion) should be provided. The number and duration of reporting periods will be identified in the CAA. 'Works as executed' plans and reports detailing how the components of the VMP have been implemented will be required prior to the release of any security held by the NSW Office of Water.
- Security (as bank guarantees) may be required before a controlled activity involving the implementation of a VMP is commenced. The amount of security is usually based on the costings provided.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

Find out more about controlled activities at www.water.nsw.gov.au

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Appendix 5: Guidelines for controlled activities – Riparian corridors

(Source: Department of Water and Energy)



Controlled activities

Guidelines for riparian corridors

Controlled Activities carried out in, on or under waterfront land are regulated by the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that a **Controlled Activity Approval** must be obtained from the NSW Office of Water **before** commencing the controlled activity.

WHAT IS A RIPARIAN CORRIDOR?

A riparian corridor forms a transition zone between the land, also known as the terrestrial environment, and the river or watercourse or aquatic environment. Riparian corridors perform a range of important environmental functions such as:

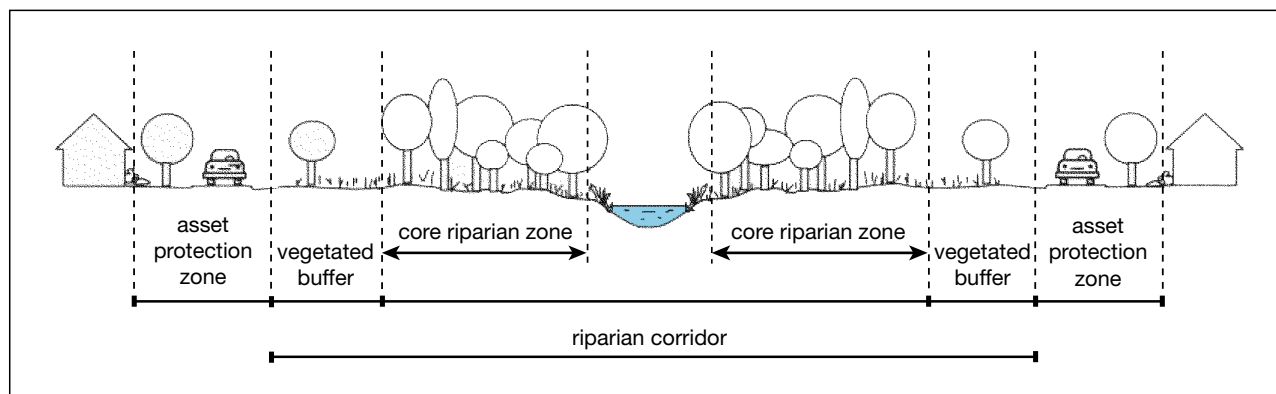
- providing bed and bank stability and reducing bank and channel erosion
- protecting water quality by trapping sediment, nutrients and other contaminants
- providing diversity of habitat for terrestrial, riparian and aquatic plants (flora) and animals (fauna)
- providing connectivity between wildlife habitats
- conveying flood flows and controlling the direction of flood flows
- providing an interface or buffer between developments and waterways.

The protection, restoration or rehabilitation of vegetated riparian corridors is important for maintaining or improving the shape, stability (or geomorphic form) and ecological functions of a watercourse.

When determining an appropriate width for a riparian corridor and the quantity of riparian vegetation that should be protected or re-established on a site, the following three riparian zones (Figure 1) should be considered.

1. The **core riparian zone** (CRZ) is the land contained within and adjacent to the channel. The CRZ should be retained, or revegetated with fully structured native vegetation (including groundcovers, shrubs and trees). The width of the CRZ from the banks of the stream is determined by assessing the importance and riparian functionality of the watercourse (Table 1), merits of the site and long-term land use. Infrastructure such as roads, drainage, stormwater structures, services, etc should not be located within a CRZ.
2. The **vegetated buffer** (VB) protects the environmental integrity of the CRZ. The VB should be wide enough to protect the CRZ from weed invasion, micro-climate changes, litter, trampling and pollution and the recommended width is 10 metres although this is subject to merit assessment. Infrastructure such as roads, drainage, stormwater structures, services, etc should be located outside the VB.
3. The **asset protection zone** (APZ) is a requirement of the NSW Rural Fire Service and is designed to protect assets (houses, buildings, etc.) from potential bushfire damage. The APZ is measured from the asset to the outer edge of the vegetated buffer (VB). The APZ should contain cleared land which means that it cannot be part of the CRZ or VB. The APZ must not result in clearing of the CRZ or VB. Infrastructure such as roads, drainage, stormwater structures, services, etc can be located within the APZ.

Figure 1. Riparian corridor zones



The NSW Office of Water recommends a vegetated CRZ width based on watercourse order as classified under the Strahler System of ordering watercourses and based on current 1:25 000 topographic maps (see Table 1). The width of the CRZ should be measured from the top of the highest bank and on both sides of the watercourse.

Table 1. Recommended CRZ widths.

Type of watercourse	Width of CRZ
Any first order watercourse and where there is a defined channel where water flows intermittently or any 'river' not identified on a topographic map	10 metres
<ul style="list-style-type: none"> ■ any permanently flowing first order watercourse, or ■ any second order watercourse and where there is a defined channel where water flows intermittently or permanently.	20 metres
Any third order or greater watercourse, where there is a defined channel and where water flows intermittently or permanently. Includes estuaries, wetlands and any parts of rivers influenced by tidal waters.	20 - 40 metres ¹

¹ merit assessment based on riparian functionality of the river, lake or estuary, the site and long-term land use.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

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Appendix 6: Guidelines for controlled activities – In-stream works

(Source: Department of Water and Energy)



Controlled activities

Guidelines for in-stream works

This guideline relates to the design and construction of works within a watercourse or on waterfront land. In-stream works include modifications or enhancements to the watercourse, channel realignment, bed control structures, pipe laying and cable trenching etc.

In-stream works are regulated by the controlled activity provisions of the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that a **Controlled Activity Approval must be obtained** from the NSW Office of Water **before** commencing the controlled activity.

WHAT ARE THE AIMS AND OBJECTIVES FOR IN-STREAM WORKS?

The design and construction of works or activities within a watercourse or adjoining waterfront land should protect and enhance water flow, water quality, stream ecology and existing riparian vegetation. Impacts on the hydrologic, hydraulic and geomorphic functions of a watercourse should also be minimised.

Consultation with relevant government agencies at the concept stage (of development) and during the design phase is recommended so that good outcomes can be identified, planned for and achieved.

The design and construction footprint and the extent of disturbances within waterfront land should be minimised.

Asset protection zones and all ancillary infrastructure such as utility easements, detention basins and water quality control structures, roads, paths/cycle ways, etc should be located outside the riparian corridor (see NSW Office of Water's *Guidelines for riparian corridors*.)

All waterfront land disturbed by the construction or installation of a controlled activity should be rehabilitated in such a way that the integrity of the watercourse and its riparian corridor is restored or rehabilitated.

WHAT SHOULD BE CONSIDERED IN THE DESIGN AND CONSTRUCTION OF IN-STREAM WORKS?

The design and construction of in-stream works should consider, but not be limited to, the following principles:

- Identify the width of the riparian corridor in accordance with the NSW Office of Water's *Guidelines for riparian corridors*.
- Consider the full width of the riparian corridor and its functions in the design and construction of any in-stream works. Where possible, the design should accommodate fully structured native vegetation.
- Identify alternative options and detail the reasons for selecting the preferred option/s.
- Minimise the design and construction footprint and proposed extent of disturbances to soil and vegetation within watercourse or waterfront land.

- Maintain or mimic existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. Demonstrate the in-stream works will not have a detrimental impact on these functions.
- Maintain the natural geomorphic processes:
 - accommodate natural watercourse functions
 - establish natural bed and bank profiles, for example meanders, chain of ponds, surface water pools and riffles and bed controls
 - allow for the movement of sediment and woody debris
 - do not increase scour and erosion of the watercourse bed or banks in any storm events
 - avoid locating works or structures on bends in the channel unless they are structures to restore stability
 - address existing bed degradation to protect structures and restore channel and bed stability.
- Maintain the natural hydrological regimes:
 - accommodate site hydrological conditions, for example maintain low flows
 - do not alter natural bank full or floodplain flows. Modifications to watercourses should be based on roughness coefficients that represent the 'natural' state including fully structured mature riparian vegetation
 - do not change the gradient of the bed except to address existing bed and bank degradation
 - do not increase velocities by constricting flows.
- Protect against scour by designing and providing necessary scour protection, for example, rock rip-rap and vegetation.
- Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor.
- Monitor and maintain all in-stream works until suitably stabilised.

WHAT INFORMATION SHOULD BE SUBMITTED FOR ASSESSMENT?

When seeking approval to construct in-stream works, the NSW Office of Water will rely on the above information to undertake its assessment and to determine if the activity should be approved. All in-stream works/activities should be **designed and certified by suitably qualified persons**.

The following additional information will also be required:

- Detailed design drawings of proposed works (engineering certification may also be required).
- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse, showing the proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section should extend to the landward limit of the identified riparian corridor. All plans **MUST** include a scale bar.
- Detailed report of pre and post construction hydraulic conditions. The report should address bank full discharge, velocity, tractive force or shear stress, afflux (Modified RTA method is acceptable), Froude and Manning's 'n' roughness values, relative to the proposed structure.
- Detailed plans of permanent bed and bank stabilisation works for scour protection.
- Photographs of the site. To assist with future monitoring and reporting, all photo points should be identified by GPS coordinates or by survey - particularly for large scale earthworks or extractive industries.
- A Vegetation Management Plan prepared in accordance with NSW Office of Water's ***Guidelines for Vegetation Management Plans***.
- Sediment and erosion control plan.
- A site management plan incorporating a works schedule, sequence and duration of works, contingencies (in case of flood etc), erosion and sediment controls and proposed monitoring and reporting periods.
- Costing of all works (materials, labour) and stages of works (channel stabilisation, rehabilitation, etc).
- Copies of other relevant approvals for example land owner's consent or development consent.

WILL A MAINTENANCE PERIOD BE NECESSARY?

Applicants will also need to provide for a maintenance period of between three and five years after practical completion of each stage, or until site is stable. The maintenance period will depend on the scope (size) and level of risk. Engineering certification may be required at the end of the maintenance period. Maintenance includes sediment and erosion control; the replacement of any works, vegetation or areas damaged or destroyed by flows and flooding or vandalism; and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

Maintenance should include sediment and erosion control, replacement of any works/areas damaged or destroyed by flows and flooding or vandalism, and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

WILL A SECURITY BE REQUIRED?

Applicants should note that if the likelihood of significant impact – on the watercourse or waterfront land – is identified, **security** (as bank guarantees) may be required before the controlled activity is commenced. The amount of security is usually based on the costings provided.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

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Controlled activities

Guidelines for in-stream works

This guideline relates to the design and construction of works within a watercourse or on waterfront land. In-stream works include modifications or enhancements to the watercourse, channel realignment, bed control structures, pipe laying and cable trenching etc.

In-stream works are regulated by the controlled activity provisions of the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that a **Controlled Activity Approval must be obtained** from the NSW Office of Water **before** commencing the controlled activity.

WHAT ARE THE AIMS AND OBJECTIVES FOR IN-STREAM WORKS?

The design and construction of works or activities within a watercourse or adjoining waterfront land should protect and enhance water flow, water quality, stream ecology and existing riparian vegetation. Impacts on the hydrologic, hydraulic and geomorphic functions of a watercourse should also be minimised.

Consultation with relevant government agencies at the concept stage (of development) and during the design phase is recommended so that good outcomes can be identified, planned for and achieved.

The design and construction footprint and the extent of disturbances within waterfront land should be minimised.

Asset protection zones and all ancillary infrastructure such as utility easements, detention basins and water quality control structures, roads, paths/cycle ways, etc should be located outside the riparian corridor (see NSW Office of Water's *Guidelines for riparian corridors*.)

All waterfront land disturbed by the construction or installation of a controlled activity should be rehabilitated in such a way that the integrity of the watercourse and its riparian corridor is restored or rehabilitated.

WHAT SHOULD BE CONSIDERED IN THE DESIGN AND CONSTRUCTION OF IN-STREAM WORKS?

The design and construction of in-stream works should consider, but not be limited to, the following principles:

- Identify the width of the riparian corridor in accordance with the NSW Office of Water's *Guidelines for riparian corridors*.
- Consider the full width of the riparian corridor and its functions in the design and construction of any in-stream works. Where possible, the design should accommodate fully structured native vegetation.
- Identify alternative options and detail the reasons for selecting the preferred option/s.
- Minimise the design and construction footprint and proposed extent of disturbances to soil and vegetation within watercourse or waterfront land.

- Maintain or mimic existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. Demonstrate the in-stream works will not have a detrimental impact on these functions.
- Maintain the natural geomorphic processes:
 - accommodate natural watercourse functions
 - establish natural bed and bank profiles, for example meanders, chain of ponds, surface water pools and riffles and bed controls
 - allow for the movement of sediment and woody debris
 - do not increase scour and erosion of the watercourse bed or banks in any storm events
 - avoid locating works or structures on bends in the channel unless they are structures to restore stability
 - address existing bed degradation to protect structures and restore channel and bed stability.
- Maintain the natural hydrological regimes:
 - accommodate site hydrological conditions, for example maintain low flows
 - do not alter natural bank full or floodplain flows. Modifications to watercourses should be based on roughness coefficients that represent the 'natural' state including fully structured mature riparian vegetation
 - do not change the gradient of the bed except to address existing bed and bank degradation
 - do not increase velocities by constricting flows.
- Protect against scour by designing and providing necessary scour protection, for example, rock rip-rap and vegetation.
- Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor.
- Monitor and maintain all in-stream works until suitably stabilised.

WHAT INFORMATION SHOULD BE SUBMITTED FOR ASSESSMENT?

When seeking approval to construct in-stream works, the NSW Office of Water will rely on the above information to undertake its assessment and to determine if the activity should be approved. All in-stream works/activities should be **designed and certified by suitably qualified persons**.

The following additional information will also be required:

- Detailed design drawings of proposed works (engineering certification may also be required).
- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse, showing the proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section should extend to the landward limit of the identified riparian corridor. All plans **MUST** include a scale bar.
- Detailed report of pre and post construction hydraulic conditions. The report should address bank full discharge, velocity, tractive force or shear stress, afflux (Modified RTA method is acceptable), Froude and Manning's 'n' roughness values, relative to the proposed structure.
- Detailed plans of permanent bed and bank stabilisation works for scour protection.
- Photographs of the site. To assist with future monitoring and reporting, all photo points should be identified by GPS coordinates or by survey - particularly for large scale earthworks or extractive industries.
- A Vegetation Management Plan prepared in accordance with NSW Office of Water's ***Guidelines for Vegetation Management Plans***.
- Sediment and erosion control plan.
- A site management plan incorporating a works schedule, sequence and duration of works, contingencies (in case of flood etc), erosion and sediment controls and proposed monitoring and reporting periods.
- Costing of all works (materials, labour) and stages of works (channel stabilisation, rehabilitation, etc).
- Copies of other relevant approvals for example land owner's consent or development consent.

WILL A MAINTENANCE PERIOD BE NECESSARY?

Applicants will also need to provide for a maintenance period of between three and five years after practical completion of each stage, or until site is stable. The maintenance period will depend on the scope (size) and level of risk. Engineering certification may be required at the end of the maintenance period. Maintenance includes sediment and erosion control; the replacement of any works, vegetation or areas damaged or destroyed by flows and flooding or vandalism; and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

Maintenance should include sediment and erosion control, replacement of any works/areas damaged or destroyed by flows and flooding or vandalism, and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

WILL A SECURITY BE REQUIRED?

Applicants should note that if the likelihood of significant impact – on the watercourse or waterfront land – is identified, **security** (as bank guarantees) may be required before the controlled activity is commenced. The amount of security is usually based on the costings provided.

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Appendix 7: Guidelines for controlled activities – Watercourse crossings

(Source: Department of Water and Energy)



Controlled activities

Guidelines for watercourse crossings

This guideline relates to the design and construction of watercourse crossings and ancillary works, such as roads on waterfront land. Crossings have the potential to disrupt the hydrologic, hydraulic, and geomorphic functions of a watercourse affecting flows, bed and bank stability and the ecological values and functions of the riparian corridor (refer to NSW Office of Water's **Guidelines for riparian corridors**).

Watercourse crossings are a controlled activity under the *Water Management Act 2000* (WMA). The NSW Office of Water administers the WMA and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

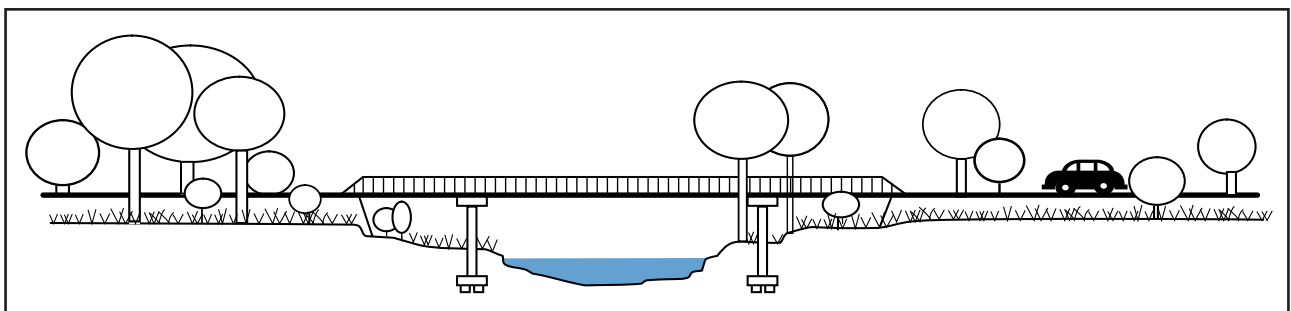
This means that a **Controlled Activity Approval must be obtained** from the NSW Office of Water **before** commencing the controlled activity.

HOW CAN I MINIMISE THE IMPACTS OF WATERCOURSE CROSSINGS?

The design and construction of works or activities within a watercourse or adjoining waterfront land should protect and enhance water flow, water quality, stream ecology and existing riparian vegetation. Impacts on the hydrologic, hydraulic and geomorphic functions of a watercourse should also be minimised.

Bed level crossings or **bridges** which fully span the watercourse channel provide the best opportunities for maintaining channel functions, as illustrated in Figure 1. However, alternative structures such as box culverts which can achieve equivalent riparian functions may also be considered.

Figure 1. Bridge crossing over watercourse and riparian corridor



WHAT SHOULD BE CONSIDERED IN THE DESIGN AND CONSTRUCTION OF WATERCOURSE CROSSINGS?

The design and construction of crossing structures should consider, but not be limited to, the following principles.

- Identify the width of the riparian corridor in accordance with the NSW Office of Water's **Guidelines for riparian corridors**.
- Consider the full width of the riparian corridor and its functions in the design and construction of crossings. Where possible, the design should accommodate fully structured native vegetation.

- Minimise the design and construction footprint and extent of proposed disturbances within the watercourse and riparian corridor.
- Maintain existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse.
- Demonstrate that where a raised structure or increase in the height of the bed is proposed there will be no detrimental impacts on the natural hydraulic, hydrologic, geomorphic and ecological functions.
- Maintain natural geomorphic processes:
 - accommodate natural watercourse functions
 - maintain the natural bed and bank profile
 - ensure the movement of sediment and woody debris is not inhibited
 - do not increase scour and erosion of the bed or banks in any storm events
 - avoid locating structures on bends in the channel
 - where bed degradation has occurred, address bed degradation to protect the structure and restore channel and bed stability.
- Maintain natural hydrological regimes:
 - accommodate site hydrological conditions
 - do not alter natural bank full or floodplain flows or increase water levels upstream
 - do not change the gradient of the bed except where necessary to address existing bed and bank degradation
 - do not increase velocities by constricting flows, for example filled embankments on approaches.
- Protect against scour:
 - provide any necessary scour protection, such as rock rip-rap and vegetation
 - ensure scour protection of the bed and banks downstream of the structure is extended for a distance of either twice the channel width or 20 metres whichever is the lesser
 - if cutting into banks, protect cuttings against scour.
- Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor.

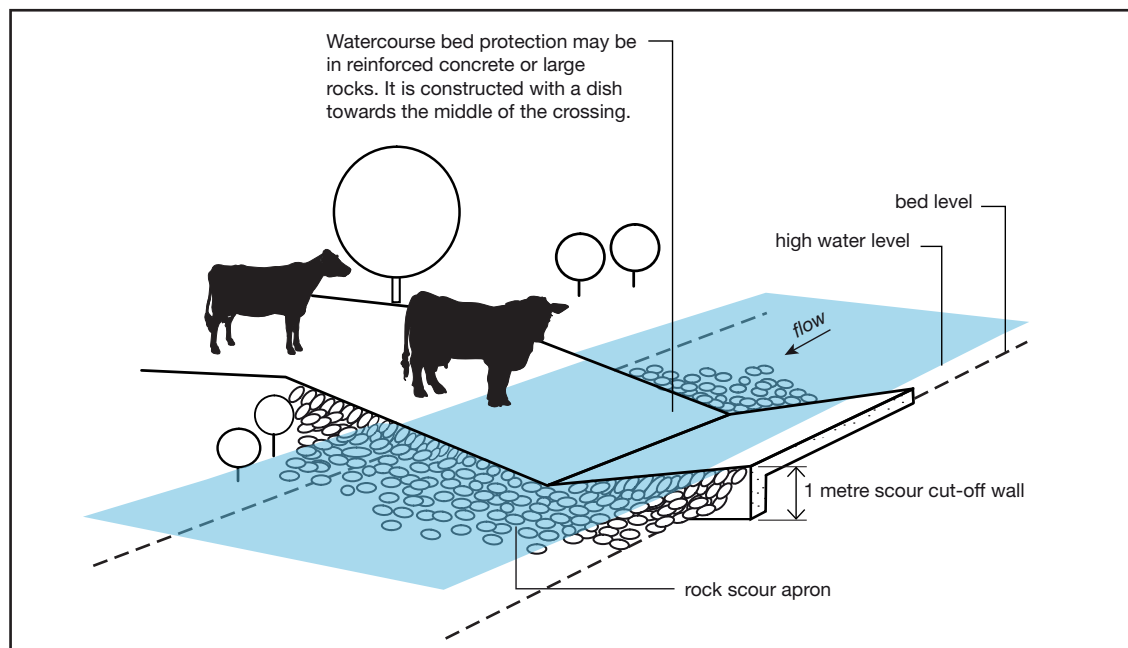
Bridges - additional design considerations

- Ideally, bridges shall be elevated and span the riparian corridor.
- Bridge piers or foundations should not be located within the main channel of the watercourse.
- The bridge design **must be certified** by a suitably qualified engineer.

Causeways or bed level crossings – additional design considerations

- The deck of the crossing shall be at the natural bed elevation.
- The crossing should have a vertical cut-off wall on the downstream side of the crossing to a minimum depth of one metre and minimum width of 100 mm.
- Approaches to crossings should be sealed and incorporate appropriate roadside drainage, such as stabilised table drains where necessary.

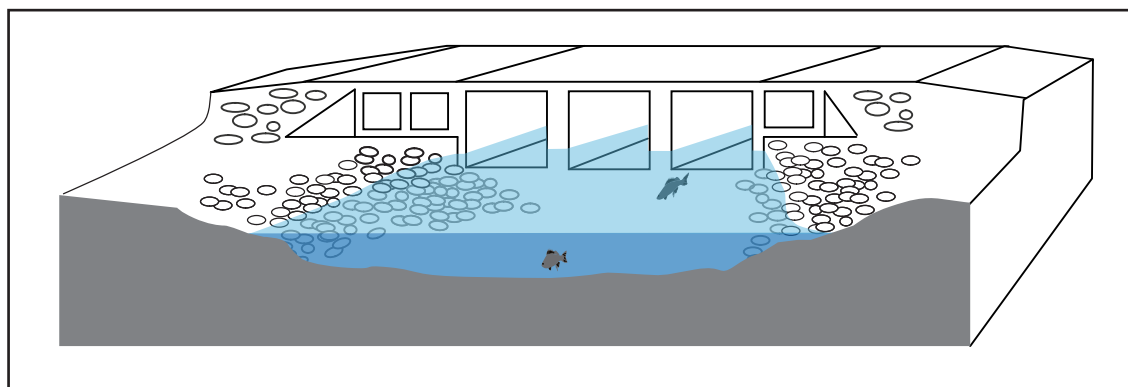
Figure 2. Splash crossing for livestock and vehicles on small intermittent watercourses



Culverts – additional design considerations

- Box culverts are preferred to pipes.
- Align culverts with downstream channel.
- Incorporate elevated 'dry cells' and recessed 'wet cells' with the invert at or below the stable bed level.
- The culvert design **must be certified** by a suitably qualified engineer.

Figure 3. Road crossing allowing fish passage



WHAT INFORMATION SHOULD BE SUBMITTED FOR ASSESSMENT?

When seeking approval for watercourse crossings, the NSW Office of Water will rely on the above information to undertake its assessment and to determine if the activity should be approved. All works/activities should be **designed by suitably qualified persons**.

The following additional information may also be required:

- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse, showing proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section should extend to the landward limit of the identified riparian corridor. All plans **MUST** include a scale bar.
- Detailed crossing design plans should include a location plan, plan view, elevation view and cross-section of the proposed crossing structure.

- Detailed report of pre and post construction hydraulic conditions. The report should address - bank full discharge, velocity, tractive force or sheer stress, afflux (modified RTA method is acceptable), and Froude and Manning 'n', relative to the proposed structure.
- Plans showing the extent and designs of permanent bed and bank stabilisation works necessary for scour protection (see NSW Office of Water's **Guidelines for in-stream works**).
- A Vegetation Management Plan prepared in accordance with the NSW Office of Water's **Guidelines for Vegetation Management Plans**.
- Sediment and erosion control plan.
- A site management plan incorporating a works schedule, sequence and duration of works, contingencies (in case of flood etc) erosion and sediment controls and proposed monitoring and reporting periods.
- Costing of all works (materials, labour) and stages of works (crossing construction, rehabilitation).
- Copies of other relevant approvals, for example land owner's or development consent.

WILL A MAINTENANCE PERIOD BE NECESSARY?

Applicants will also need to provide for a maintenance period of between three and five years after practical completion of each stage or until site is stable. The maintenance period will depend on the scope (size) and level of risk. Engineering certification may be required at the end of the maintenance period. Maintenance should include sediment and erosion control, replacement of any works/areas damaged or destroyed by flows and flooding or vandalism, and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.

WILL A SECURITY BE REQUIRED?

Applicants should note that if the likelihood of significant impact – on the watercourse or waterfront land – is identified, **security** (as bank guarantees) may be required before the controlled activity is commenced. The amount of security is usually based on the costings provided.

WHERE DO I GO FOR ADDITIONAL INFORMATION?

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Appendix 8: Summary of report on significant flora at the Taralga Wind Farm site, specifically habitat for Natural Temperate Grassland and the orchid *Diuris aequalis* (Source: Kevin Mills & Associates Pty Ltd 2011)

The Taralga Wind Farm received approval by the NSW Land and Environment Court in April 2009. The condition of approval contains several matters dealing with protection of flora and fauna. Two matters are dealt with in this report, as set out in Condition 86, pertaining to avoiding “damage or loss of suitable habitat for Natural Temperate Grassland and the orchid *D. aequalis*”.

The summary of this report describes the results of field surveys undertaken in late 2011 to address the above condition 86 of Permit No. 10196 of 2006 states that Turbine rows 4, 5, 6, 7 and 10. The consultant has previously carried out flora surveys in the area for the Taralga Wind Farm project (KMA 2006, 2007, 2009).

Methods

The surveys were concentrated around the five turbine rows mentioned above, plus the access routes to all turbine rows. The key area for the orchid survey was Row 6, as it is the only area that has not been severely modified from its original forest/grassland cover.

Orchid Searches

Orchid surveys were undertaken between late October and late November 2011, the reported flowering period of the target threatened orchid *D. aequalis*. Three searches were undertaken during that time, about ten days apart. The method was an area search of potential habitat. That potential habitat was the woodland along Row 6 and areas of native grassland or woodland on or near proposed access roads. Careful searching along transects that covered the entire habitat area were carried out. An area at least 50 metres wide on the ridge crest along Row 6 was searched. All species of terrestrial orchid were identified and recorded during the surveys and their numbers recorded.

Natural Temperate Grassland

Native grassland and grassland that may be Natural Temperate Grassland (NTG) was surveyed for along the various access routes and turbine rows. Where located, such grassland was investigated to prepare a list of the native species present, the dominant species and the amount of exotic plants present.

Remnants of NTG are considered part of the listed community (Environment ACT 2005) if:

- they are dominated by native grasses and/or native forbs (more than 50% total vegetative cover, excluding exotic annuals), and
- a diversity of native forbs is present, or
- if disturbed, they have components of the indigenous native species (including both existing plants and reproductive propagules in the soil such as soil seed banks) sufficient to re-establish the characteristic native groundcover.

Results and Conclusions

The orchid surveys within the woodland along Row 6 found nine species of terrestrial orchid over the three surveys. None of these species are listed threatened species; the subject of the targeted surveys, *D. aequalis*, was not encountered. Searches of small patches of native grassland and woodland in several locations failed to find *D. aequalis*.

It is concluded that this threatened orchid does not occur in the woodland along Row 6 of the proposed wind farm. This conclusion has been reached because: (1) the species was not found during targeted surveys carried out during the known flowering season of the orchid; and (2) the season was a particularly good one for orchids, indicated on the high number of species and high number of individuals found flowering in the survey area; in such a season, *D. aequalis* would be expected to flower if it was present.

Native grassland and grassland dominated by a native perennial grass were found in several places in the Taralga Wind Farm precinct, but the identified native grassland is contained within road reserves (i.e. Bannaby Road and Old Showground Road). The patches are small and of low native plant diversity. The identified areas are readily avoided by the access roads for the wind farm or are not on sections of road that require upgrading.

The field surveys undertaken in late 2011 meet the requirements of the conditions of approval for the Taralga Wind Farm as they relate to the threatened orchid *D. aequalis* and natural temperate grassland. The surveys did not find the orchid and it is very unlikely that this species occurs in the areas surveyed. Although small patches of native grassland, which may be NTG occur in a few places in the district, they will not be impacted by the proposed wind farm infrastructure.

Appendix 9: Report on Natural Temperate Grassland of the Southern Highlands of NSW and the ACT

Condition 86 of Permit No. 10196 of 2006 states that Turbine rows 4, 5, 6, 7 and 10, and all areas requiring the construction or upgrading of access tracks associated with the Taralga Wind Farm need to be surveyed to determine the extent of Natural Temperate Grasslands of the Southern Highlands of NSW and the Australian Capital Territory (NTG-ST) that may be affected. This brief report sets out the methods and findings of this survey, the results of which are summarised in Figure 1 of the Flora and Fauna Management Sub-Plan.

This information also provides background to the establishment of the potential occurrence on the site of the Striped Legless Lizard and the Grassland Earless Dragon, a requirement of Condition 87.

Methods

All areas of potential NTG-ST were identified and mapped on 2nd to 5th December 2008. Mapped NTG-ST along Old Showground Road and Bannaby Road were re-visited and amended on 13th January 2012. An additional area on Bannaby Rd, identified as NGT-ST by Kevin Mills and Associates (KMA 2010) was also visited on this date to confirm the presence of the community in this location.

It has been assumed that naturally treeless grassland is the potential habitat of the Striped Legless Lizard and the Grassland Earless Dragon, as these species are grassland specialists and that the method below is therefore also suited to identifying where these species potentially occur.

The areas of potential NTG-ST included areas of natural and secondary native grassland that met the various criteria thresholds for NTG-ST listed below:

- Up to and including 10% cover of trees, shrubs or sedges;
- Altitudes between 560 and 1200 metres;
- Up to 70% of species are forbs;
- Species that may be dominant include Kangaroo Grass, Wallaby Grass, Spear Grass, Red-leg Grass and *Poa* species;
- Structure 25cm to 1m tall;
- Occurs within the Southern Tablelands of NSW and the ACT;
- More than 50% total native vegetation cover (excluding introduced annuals); and
- Must demonstrate the natural ecological function OR must be considered recoverable (e.g. in terms of forb diversity).

It is to be noted that the criteria regarding forb diversity thresholds for identifying NTG-ST are vague, stating that patches considered to be NTG-ST require:

“A diversity of native forbs present, or if disturbed, having components of the indigenous native species (including both existing plants and propagules in the soil e.g. soil seed banks) sufficient to re-establish the characteristic native groundcover)” (Environment ACT 2005).

The following factors were also considered when determining the presence of NTG-ST in the study area:

- The rarity of NTG-ST within the region (i.e. rare in Taralga - in this region, more degraded patches should be considered to constitute NTG-ST); and
- Habitat provision; disturbance buffering for adjacent higher-quality patches; and/or corridor provision.

The criteria for determining the presence of NTG-ST also note that the community only occurs in valleys influenced by cold air drainage and in broad plains and that remnant vegetation today must formerly have been treeless. The community excludes areas that would have been a different vegetation type at the time of European settlement (e.g. forest or woodland).

The actual extent of NTG-ST was determined on 10th December 2009 and revised in areas on 13th January 2012. This involved site inspections by Davide Coppolino (Botanist – Brett Lane & Associates Pty Ltd), Kevin Mills (Ecologist – Kevin Mills & Associates Pty Ltd), the Technical Director from RES Southern Cross Pty Ltd (2009 only) and Pedro Vozzone (Renewable Energy Engineer - CBD Energy; 2012 only) as well as site map interpretation.

The following mapped information was overlayed to determine the actual extent of NTG-ST:

- The mapped extent of native grasslands (i.e. potential NTG-ST).
- Topographical maps.
- Average winter wind speed maps (provided by RES Southern Cross Pty Ltd).
- Extent of remnant forest trees (determined using aerial photography and ground truthing).

For each area of potential NTG-ST, topographical and annual winter wind speed maps were used to determine areas likely to be affected by cold-air drainage. Nearby remnant trees were then marked to determine the lowest point at which tree establishment was inhibited by cold-air drainage thus allowing for the natural formation of NTG-ST.

An access track micrositeing exercise was undertaken on 16th to 18th December 2008 to redirect access tracks around any areas of NTG-ST. This was undertaken by Davide Coppolino (BL&A) and the Civil Engineer and Project Manager from RES Southern Cross Pty Ltd.

Results

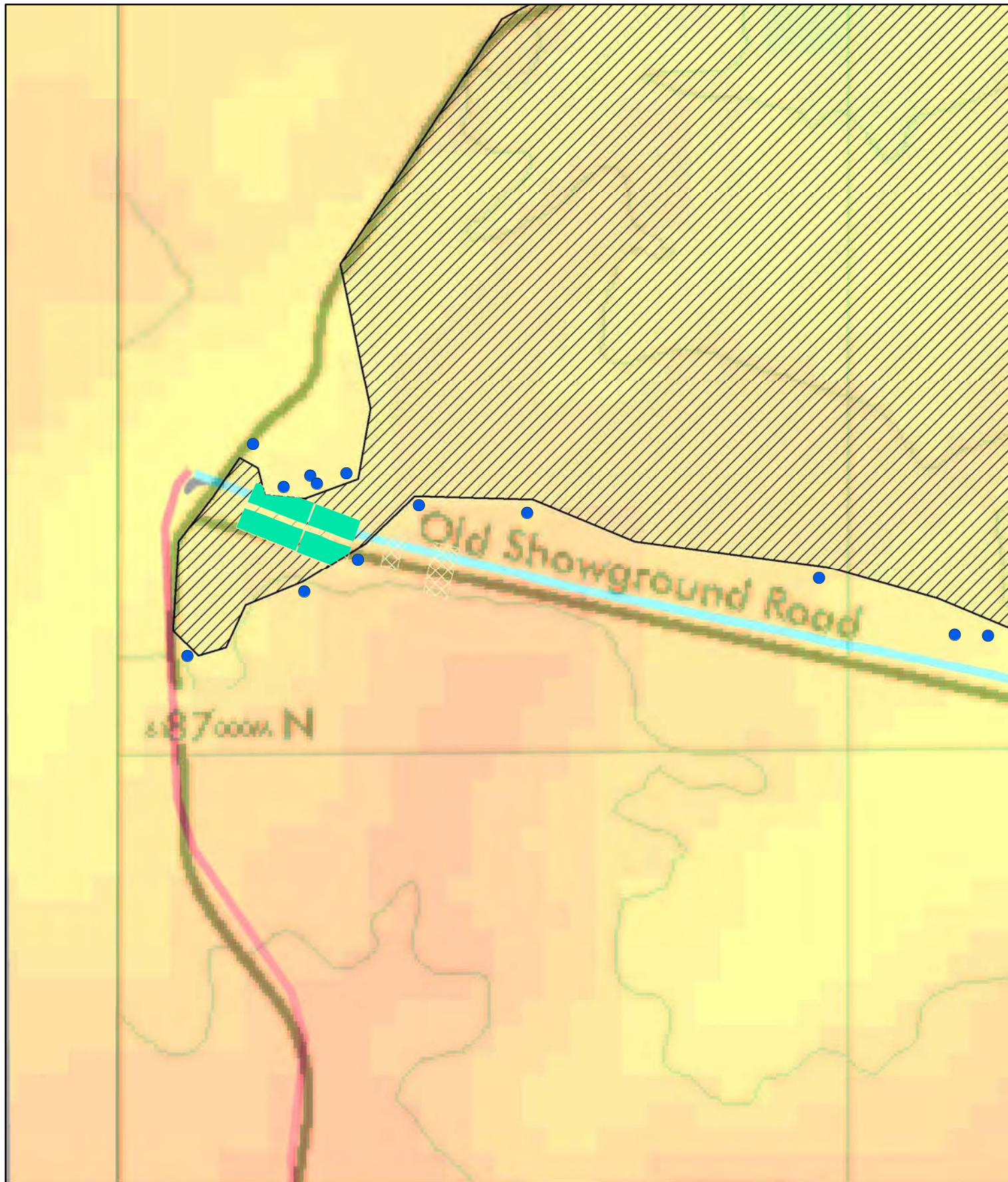
Appendix Figures 1 to 3 below show the extent of NTG-ST identified by BL&A's assessment in 2008, illustrating how the current extent of this grassland type was determined. Appendix Figure 4 shows the extent of an additional area of NTG-ST, which was confirmed onsite by BL&A during the January 2012 site inspection.

No areas of NTG-ST will be directly affected by the Taralga Wind Farm as existing tracks will be relied on where it occurs and the proponent has indicated that no additional vegetation will be removed along these tracks, except for the access track extending east from the sealed section of Old Showground Road.

Native grassland in the abovementioned location (see Appendix Figure 5), east of the sealed Old Showground Road, supported very low-quality native grassland with very low forb diversity and high weed cover. Native Grassland (recommended for retention, where possible) was mapped here due to the vague forb diversity thresholds used to identify NTG-ST making it difficult to determine whether the ecological community occurred there or not. This vegetation is considered to be marginal NTG-ST at best, due to its low quality and forb diversity.

An existing cleared dirt farm track extends through this patch. Along parts of the farm track, weedy patches extend out at least one metre beyond either side. CBD Energy has advised BL&A that parts of the existing farm track may need to be widened by up to one metre either side of the track.

Any removal of directly adjacent native grassland is considered unlikely to result in the removal of NTG-ST. However, this area has been generally mapped as native grassland and measures to minimise vegetation removal in this area have been provided as a precaution. This includes further fine scale micro-siting aimed at redirecting the access track into the weedy track edges (see Table 5 above).



Legend

- Listed Natural Temperate Grassland mapped by BL&A
- Other previously mapped native grassland
- Predicted Historical Natural Temperate Grassland extent
- Native Grassland to be retained where possible
- Listed Natural Temperate Grassland mapped by Kevin Mills & Associates (KMA 2011) and confirmed on site by BL&A
- Lowest remnant trees

0 125 250 500 Metres

Appendix Figure 1: Extent of NTG-ST

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129

Date: 15/12/2011

Created By: D. Coppolino / M. Ghasemi

BL&A

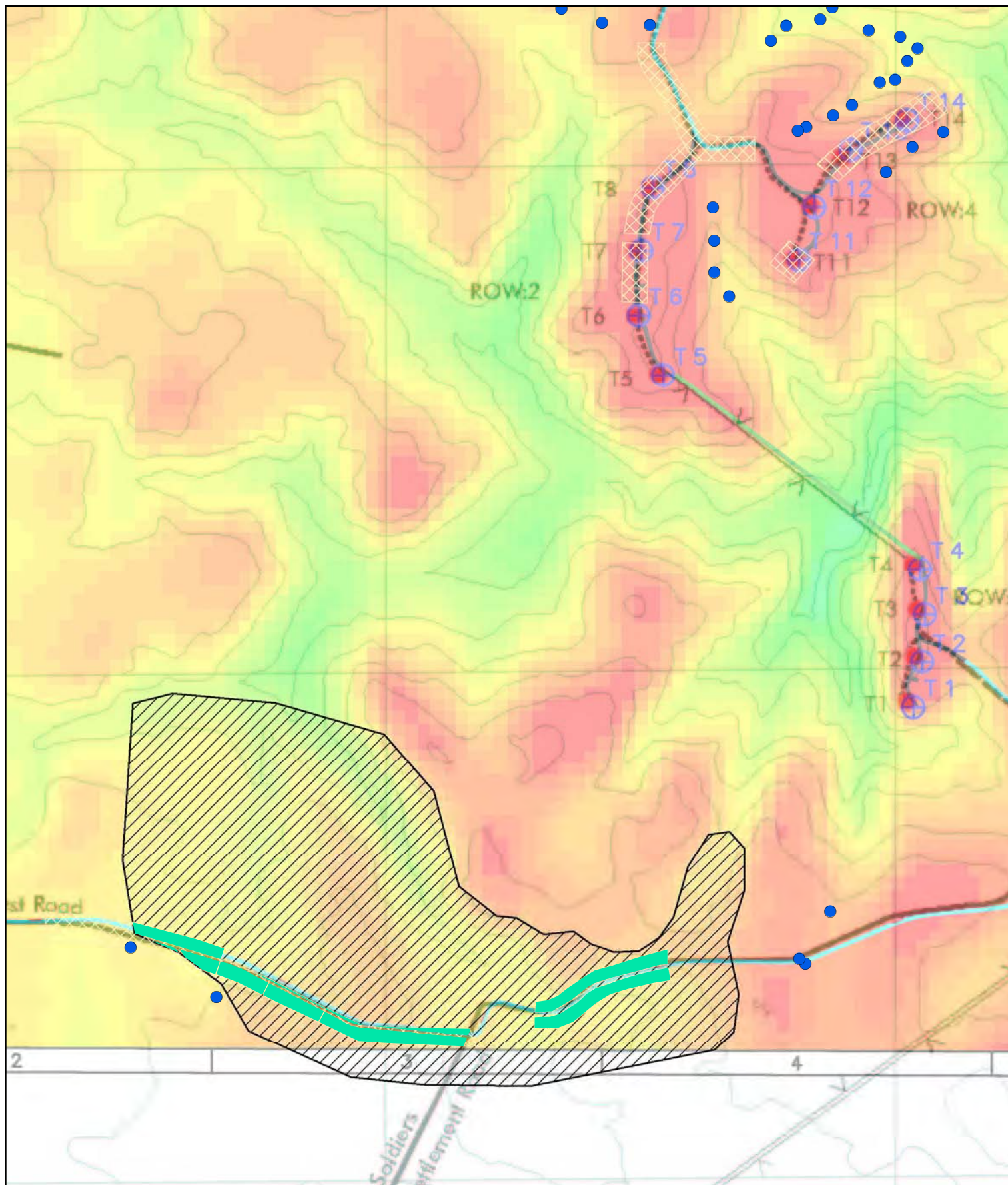
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Legend

- Listed Natural Temperate Grassland mapped by BL&A
- Other previously mapped native grassland
- Predicted Historical Natural Temperate Grassland extent
- Native Grassland to be retained where possible
- Listed Natural Temperate Grassland mapped by Kevin Mills & Associates (KMA 2011) and confirmed on site by BL&A
- Lowest remnant trees

Metres

0 250 500 1,000

Appendix Figure 2: Extent of NTG-ST

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129

Date: 15/12/2011

Created By: D. Coppolino / M. Ghasemi

BL&A

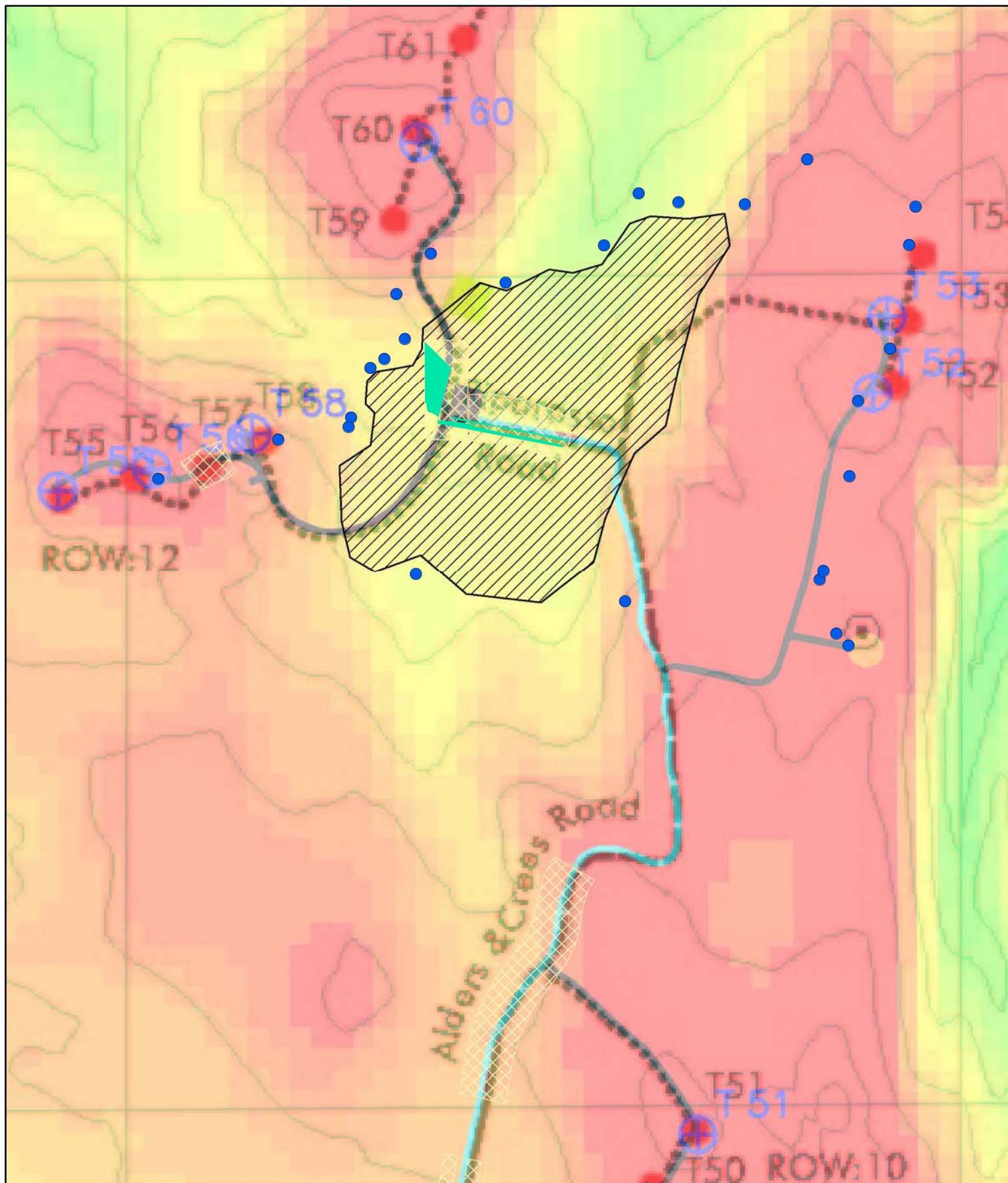
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Legend

- Listed Natural Temperate Grassland mapped by BL&A
- Other previously mapped native grassland
- Predicted Historical Natural Temperate Grassland extent
- Native Grassland to be retained where possible
- Listed Natural Temperate Grassland mapped by Kevin Mills & Associates (KMA 2011) and confirmed on site by BL&A
- Lowest remnant trees

0 150 300 600 Metres

Appendix Figure 3: Extent of NTG-ST

Project: Taralga Wind Farm

Client: CBD Energy

Project No.:8129

Date: 15/12/2011

Created By: D. Coppolino / M. Ghasemi

BL&A

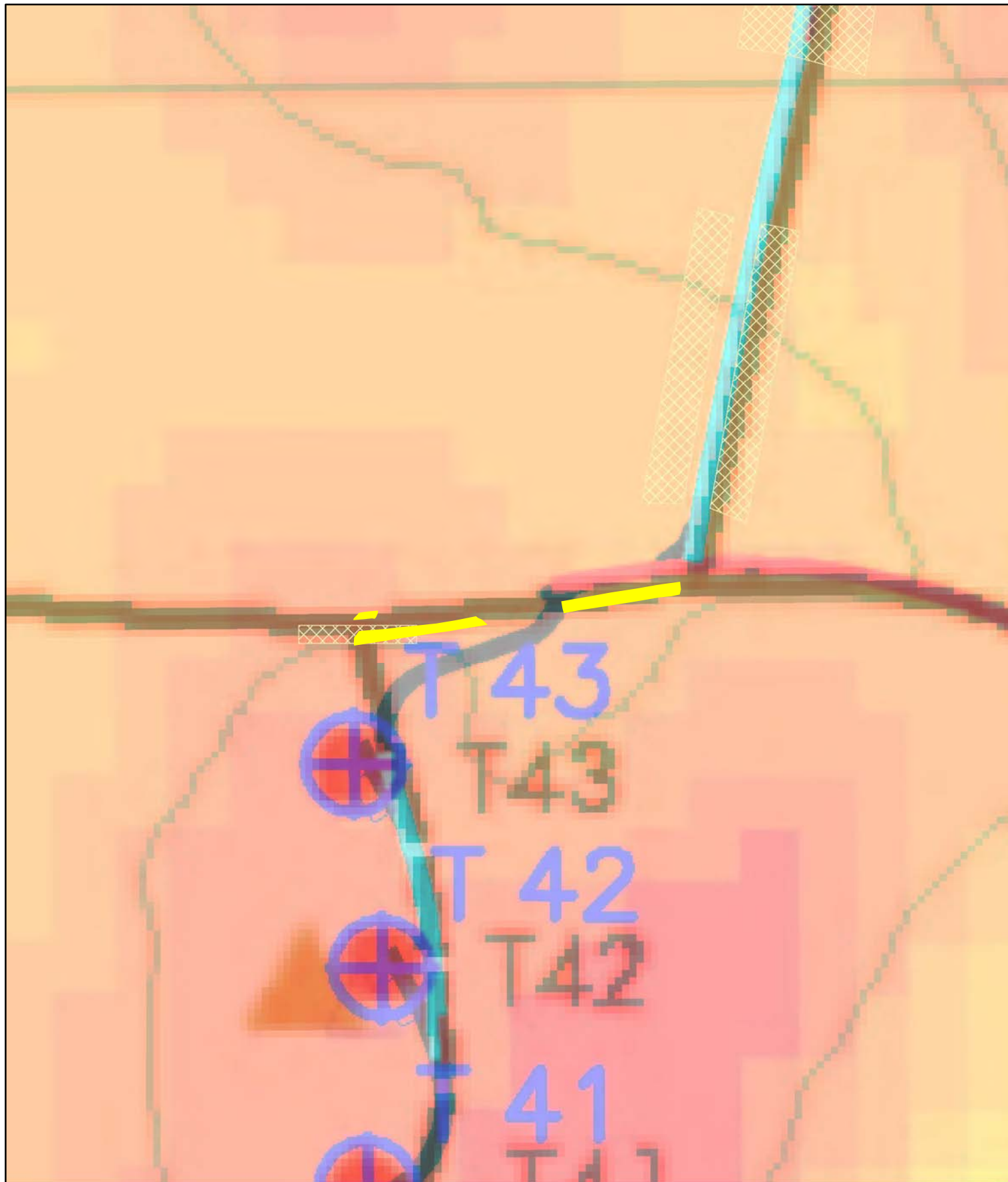
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Legend

- Listed Natural Temperate Grassland mapped by BL&A
- Other previously mapped native grassland
- Predicted Historical Natural Temperate Grassland extent
- Native Grassland to be retained where possible
- Listed Natural Temperate Grassland mapped by Kevin Mills & Associates (KMA 2011) and confirmed on site by BL&A
- Lowest remnant trees

0 50 100 200 Metres

Appendix Figure 4: Extent of NTG-ST

Project: Taralga Wind Farm

Client: CBD Energy

Project No.: 8129

Date: 15/12/2011

Created By: D. Coppolino / M. Ghasemi

BL&A

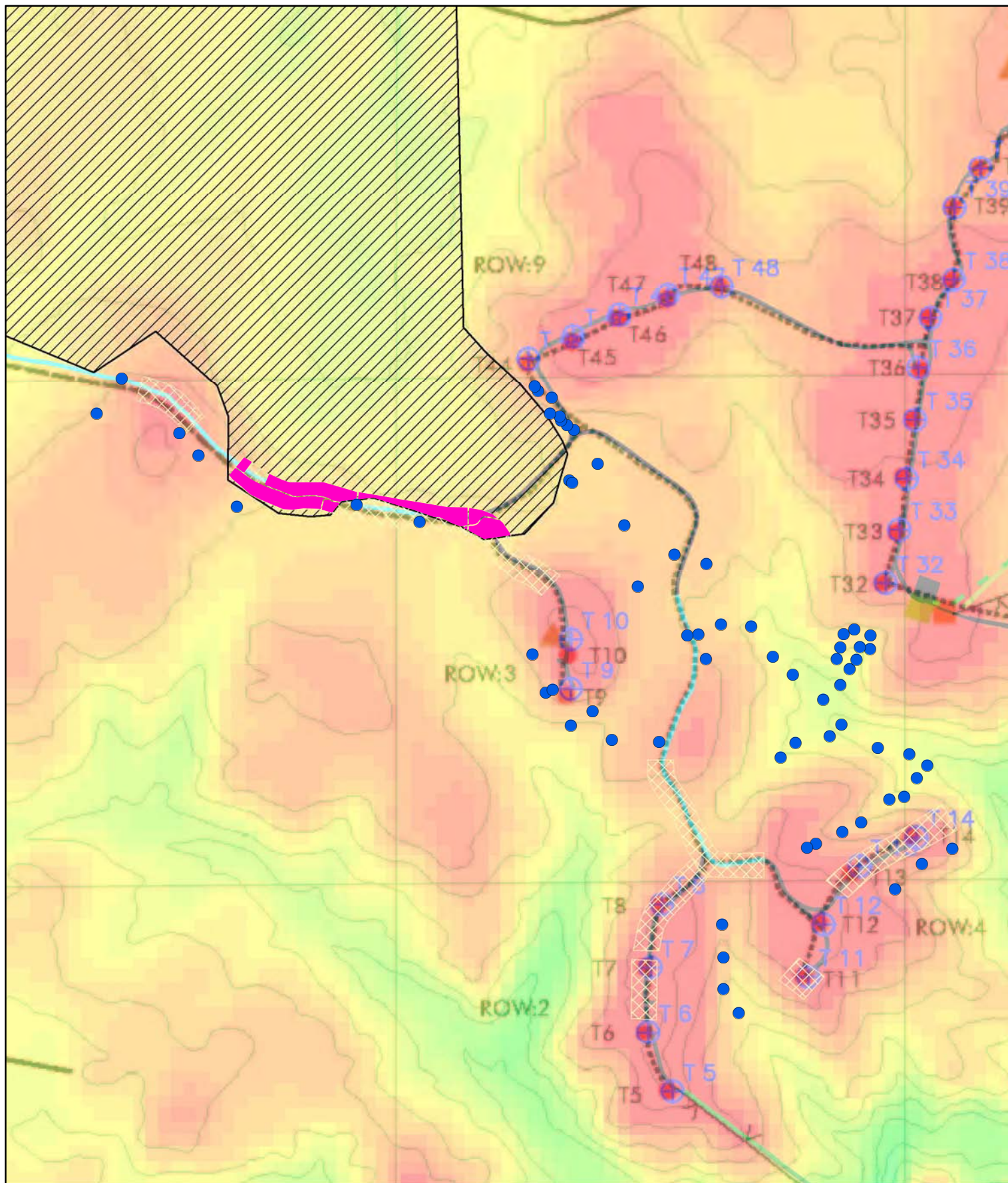
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Legend

- Listed Natural Temperate Grassland mapped by BL&A
- Other previously mapped native grassland
- Predicted Historical Natural Temperate Grassland extent
- Native Grassland to be retained where possible
- Listed Natural Temperate Grassland mapped by Kevin Mills & Associates (KMA 2011) and confirmed on site by BL&A
- Lowest remnant trees

0 250 500 1,000 Metres

Appendix Figure 5: Extent of NTG-ST

Project: Taralga Wind Farm

Client: CBD Energy

Project No.:8129

Date: 15/12/2011

Created By: D. Coppolino / M. Ghasemi



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23.0 APPENDIX 6 – SOIL AND WATER MANAGEMENT SUB-PLANS





GEOLYSE

**TARALGA WIND FARM
SOIL AND WATER MANAGEMENT SUB PLAN**

VERSION 4

**PREPARED FOR
AUSCHINA ENERGY GROUP**

DECEMBER 2011



Report Title:	<i>Taralga Wind Farm</i>
Project:	<i>Soil and Water Management Sub Plan</i>
Client:	<i>AusChina Energy Group</i>
Report Ref.:	<i>208096_REO_001_V4.docx</i>
Status:	<i>Version 4</i>
Issued:	<i>7 December 2011</i>

Geolyse Pty Ltd and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

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Introduction

1.1 BACKGROUND

This Soil and Water Management Sub Plan comprises part of the Construction Environmental Management Plan (CEMP) for the Taralga Wind Farm. This sub plan has been developed in response to the NSW Minister for Planning's Conditions of Consent (dated 17 January, 2006) as amended by the Land and Environment Court order in matter 11216 of 2007, dated 27 April 2009.

The purpose of the sub plan is to identify erosion risks and to define appropriate measures to manage erosion, sedimentation and water quality issues during the construction phase of the project. The aim is to minimise any potential adverse impacts of construction activities on the immediate site, adjacent land and waterways.

1.2 OBJECTIVES

The objectives of this Soil and Water Management Sub Plan are to:

- Provide overall soil and water management principles and guidelines for the construction phase of the project;
- Assess risk factors and define appropriate management measures to control risk to an acceptable level;
- Describe the practical measures and best management practices to prevent or mitigate potential onsite and off site impacts to soil and water; and
- Provide a monitoring, auditing and reporting framework to assess the effectiveness of the controls implemented.

This Soil and Water Management Sub Plan provides the over-arching principles for soil and water management at the construction site.

Generic details of controls required are provided for each element of the project. These controls have been derived based on a risk assessment and are adequate to contain the risks identified.

It is possible that site specific soil and water management plans may be required following detailed design. These should incorporate the guiding principles contained in this Sub Plan.

1.3 CONDITIONS OF APPROVAL

Approval conditions relevant to this Soil and Water Management Sub Plan are listed in **Table 1.1** along with reference to where each condition is addressed.

Table 1.1 - Conditions of Approval

Condition Number	Section of SWMSP Where Addressed
<p>94. The Applicant must not commence any works within 40 metres of a watercourse until; a Permit under Part 3A of the <i>Rivers & Foreshores Improvement Act</i> is obtained from DNR.</p> <p><i>See Section 2.2 for comment.</i></p>	<p>Section 2.2</p> <p>Areas within 40m of a watercourse identified on Drawings EV05, EV06, EV07 and EV08.</p>
<p>96. As part of the CEMP and OEMP, Soil and Water Management Sub Plans must be prepared in consultation with relevant government agencies. The Sub Plans must:</p>	<p>Consultation log provided in Appendix B</p>
<p>(a) be prepared by a person or persons with the experience, skills and training in the development and implementation of such plans;</p>	<p>Section 1.5</p>
<p>(b) where relevant, be in accordance with Landcom's "Managing Urban Stormwater" (2004), and other relevant guidelines including the RTA's "Guidelines for the Control of Erosion and Sedimentation in Roadworks" and the Department's "Constructed Wetlands Manual";</p>	<p>Section 2.3</p>
<p>(c) identify the activities that could cause soil erosion or discharge sediment or water pollutants from the site associated with the development;</p>	<p>Section 3.8</p>
<p>(d) describe the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site associated with the development including strategies to minimise the area of bare surfaces and to achieve nil or minimal harm to aquatic and riparian environments;</p>	<p>Section 5</p>
<p>(e) describe the location and capacity of erosion and sediment control measures;</p>	<p>Section 5</p>
<p>(f) identify the timing and conditions under which controls will be decommissioned;</p>	<p>Section 5 and specifically Section 5.4</p>
<p>(g) include contingency plans to be implemented for events such as fuel spills; and</p>	<p>Section 7</p>
<p>(h) identify how the effectiveness of the sediment and erosion control system will be monitored, reviewed and updated.</p>	<p>Section 6</p>
<p>97. The turbines, substation and access track in high erosion hazard areas must be fenced off from livestock. The location of fencing and high erosion hazard areas must be identified in the OEMP.</p>	<p>Addressed in OEMP.</p> <p>Areas of high hazard mapped on Drawings EV05, EV06, EV07 and EV08.</p>
<p>98. Design and construction of any crossings over protected waters and riparian zones must be consistent with the Department's <i>Draft Guidelines – Watercourse Crossing Design & Construction</i> and NSW Fisheries' <i>Why do Fish need to cross the Road – Fish Passage requirements for Waterway Crossings</i> (2003) and <i>Policy Guidelines Fish Friendly Waterway Crossings</i> (2004).</p>	<p>Section 2.3.2</p> <p>Protected waters and riparian zones are identified on Drawings EV05, EV06, EV07 and EV08.</p>
<p>99. Except as may be expressly provided by a licence under the POEO Act in relation to the development, the Applicant must comply with Section 120 of the POEO Act (prohibition of the pollution of waters), which prohibits pollution of waters.</p>	<p>Section 2.1</p>
<p>111. The human wastewater management system is to be designed in consultation with the SCA, in accordance with the principles contained within the guidelines <i>On-site Sewage Management for Single Households</i>, and the <i>AS/NZS 1547-2000 On-site Domestic Wastewater Management</i>. The system, including any effluent management areas, is to be located at least 100 metres from watercourses and 40 metres from drainage depressions.</p>	<p>Section 5.6</p>
<p>112. AAA-rated water conservation devices are to be installed in the site control room/facilities building to minimise the volume of wastewater produced.</p>	<p>Section 5.6</p>
<p>113. All stormwater is to be diverted away from any effluent management area associated with the development.</p>	<p>Section 5.6</p>

1.4 KEY EMERGENCY CONTACTS

Key emergency contacts are listed in **Table 1.3**.

Table 1.2 - Emergency contact details

Position	Contact Details
All emergencies	Phone: 000
Hospital (Goulburn)	Phone: 02 4827 3111
NSW Rural Fire Service	Phone: 000
Taralga Police	Phone: 02 4840 2044
NSW State Emergency Service	Phone: 000
WIRES	Phone: 1300 094 737 or 02 4822 3888

1.5 PLAN PREPARATION

This Soil and Water Management Sub Plan has been prepared by Mr Martin Haege who has the following qualifications and training:

- Master of Environmental Engineering Science, University of New South Wales (1997);
- Bachelor of Natural Resources, University of New England (1989);
- Bachelor of Engineering (Civil) (Hons), University of Newcastle (1989); and
- Short course in Soil and Water Management for Urban Development (1994).

Legislative Requirements

2.1 RELEVANT ENVIRONMENTAL LEGISLATION

Key environmental legislation relevant to soil and water management includes:

- Protection of the Environment Operations Act 1997;
- Soil Conservation Act 1938;
- Local Government Act 1993;
- Fisheries Management Act 1994;
- Environmentally Hazardous Chemicals Act 1985;
- Water Act 1912;
- Water Management Act 2000;
- Sydney Water Catchment Management Act 1998;
- Drinking Water Catchments Regional Environmental Plan No 1; and
- Catchment Management Authorities Act 2003.

2.2 APPROVALS AND PERMITS

Approvals and permits required as part of this Soil and Water Management Sub Plan are:

- Applicant must not commence any works within 40 metres of a watercourse until; a Permit under Part 3A of the *Rivers & Foreshores Improvement Act* is obtained from DNR (Consent Condition 94).

This Act has been repealed and replaced with the *Water Management Act 2000* (the WM Act). The WM Act requires that a Controlled Activity Approval will be required for installation of culverts associated with access track across drainage lines.

2.3 ENVIRONMENTAL GUIDELINES

2.3.1 SOIL AND WATER MANAGEMENT

The key environmental guidelines relevant to the project's soil and water management include:

- *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004);
- *Guidelines for the Control of Erosion and Sedimentation in Roadworks* (RTA, undated)

This Soil and Water Management Sub Plan has been prepared in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004). It identifies:

- Site characteristics and features relevant to soil and water management;
- Risks associated with the project;
- Appropriate management measures to contain the risks, utilising where possible Standard Drawings provided in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004); and
- Procedures for monitoring the performance of the plan.

2.3.2 PROTECTED WATERWAYS

The key environmental guidelines relevant to the site's protected waterways include:

- *Draft Guidelines – Watercourse Crossing Design & Construction* (Department of Planning);
- *Why do Fish need to cross the Road – Fish Passage requirements for Waterway Crossings* (NSW Fisheries 2003); and
- *Policy Guidelines Fish Friendly Waterway Crossings* (NSW Fisheries 2004).

These guidelines shall be considered during the detailed design and construction of waterway crossings.

Protected waterway and riparian zones across the site are shown on **Drawings EV05 to EV08**.

Site Description

3.1 LOCATION

Taralga is located in the Southern Tablelands of New South Wales, approximately 140km south west of Sydney 35km north of Goulburn.

The wind farm will be built along ridgelines in an area that stretches approximately 11km in a north-south direction and up to 4km in an east-west direction. The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks. Site elevation varies between 830mAHD and 960mAHD.

The layout of the wind farm is shown on **Drawing EV02**.

3.2 CLIMATE

3.2.1 RAINFALL

The average annual rainfall recorded at Taralga is 805mm. This is received over an average of 116.4 rain days per annum.

Rainfall distribution is reasonably consistent throughout the year (refer to **Graph 1**) ranging from 60.3mm in April to 74.2mm in June. The average number of rain days is higher in the winter months.

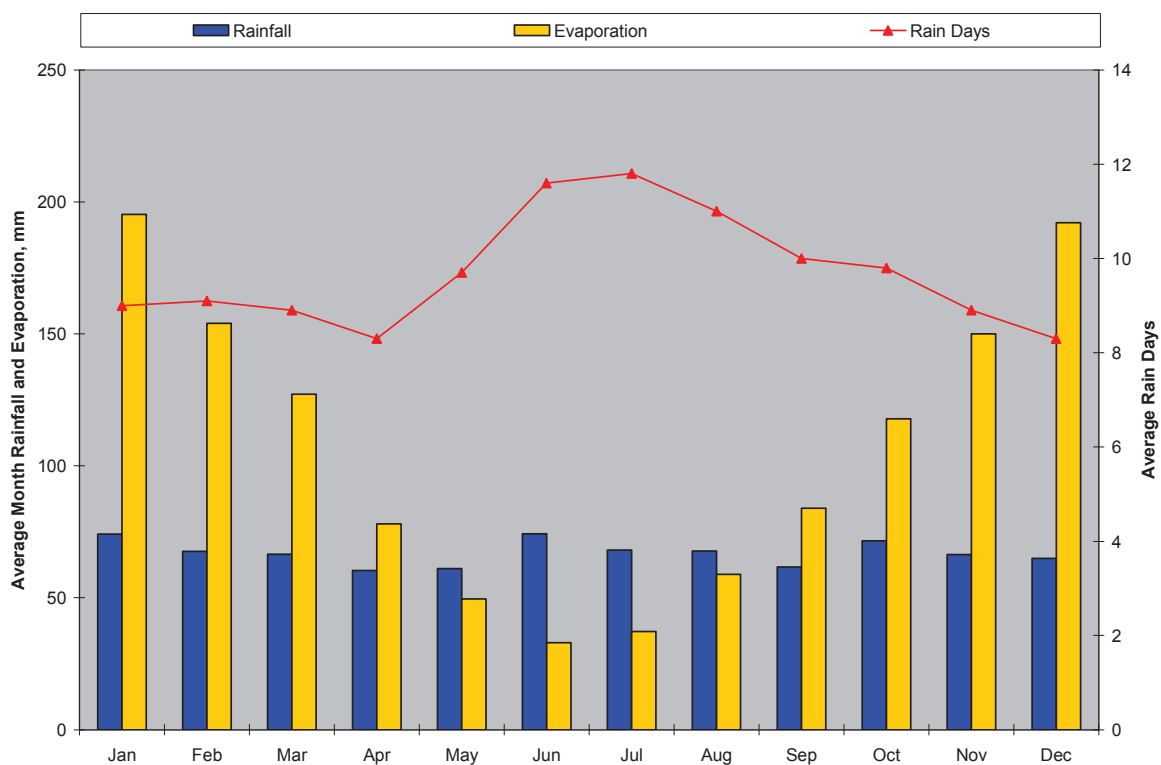
3.2.2 EVAPORATION

The average annual evaporation measured at Goulburn is 1,277mm indicating the area experiences a rainfall deficit in average years. The monthly evaporation data indicates rainfall excess occurs on average in May, June, July and August.

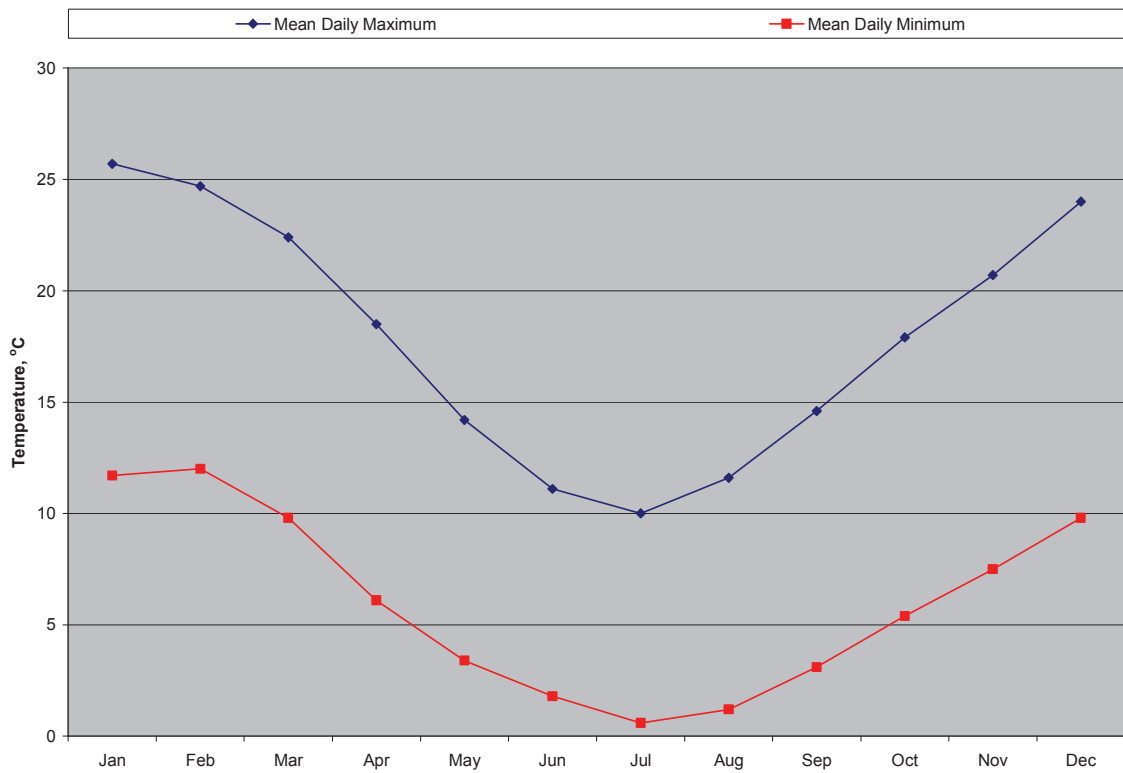
3.2.3 TEMPERATURE

Temperatures around Taralga are typical of the Southern Tablelands region. The area experiences warm summers and cool to cold winters. Average maximum temperatures range from 10°C in winter to 25.7°C in summer. Average minimum temperatures range from 0.6°C in winter to 11.7°C in summer.

Average minimum and maximum temperatures are shown on **Graph 2**.



Graph 1: Average Monthly Rainfall and Evaporation



Graph 2: Average Temperatures

3.3 TOPOGRAPHY AND LANDFORM

The proposed wind farm is located in an area that stretches about 11km in a north-south direction and 4km in an east-west direction. The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks.

Site elevation for the turbines lies between 830mAHD and 960mAHD. The highest point is located centrally in the project area adjacent to Bannaby Road.

The wind turbines and access tracks are generally located along ridgelines with slopes ranging from near flat to 20 percent (11 degrees).

3.4 SOILS

3.4.1 SOIL LANDSCAPES

Three soil landscapes have been identified and mapped across the wind farm site based on the *Soil Landscapes of the Goulburn 1:250 000 Map Sheet* (Hird, 1991) and include:

- Taralga (ta);
- Midgee (mi); and
- Lickinghole (li).

The distribution of the soil landscapes is shown on **Drawing EV03**.

3.4.1.1 Taralga Soil Landscape

The Taralga soil landscape has formed in situ and from alluvial-colluvial material derived from olivine basalt and dolerite of Tertiary larval flow. This soil unit dominates across the central portion of the site and is associated with the cleared undulating hills, ridges and plateaus.

Red-brown, finely structured clay Krasnozems and Xanthozems are found on crests. On sideslopes, friable to slightly hard setting yellow-brown finely structured clay Chocolate soils predominate. The foot slopes consist of yellow-brown finely structured clay Prairie Soils and brown finely structured clay Weisenbodens in drainage lines (Hird, 1991).

The general soil description for this soil landscape, coupled with test pit logs undertaken by Douglas Partners (2009) indicates subsoils exposed during construction are likely to be brown fine clay. These soils are likely to be Type F as defined in Table 6.1 in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

3.4.1.2 Midgee Soil Landscape

The Midgee soil unit is associated with Ordovician and some Devonian and Lower Silurian sediments and metasediments in hilly terrain. These sediments are heavily folded with the result that both deep and very shallow soils may occur within one landform element depending on the resistance of the rock strata at the surface. The Midgee soil landscape occurs in the northern and southern sections of the site.

The common soils are stony brown sandy loam Yellow Earths and Yellow Podzolics found on midslopes, these soils are almost always stony and acid. Other soils include stony brown sandy loam Red Podzolics, Lithosols, Soloths and Red Earths (Hird 1991).

The general soil description for this soil landscape, coupled with test pit logs undertaken by Douglas Partners (2009) indicates subsoils exposed during construction are likely to be silty clay. These soils are likely to be Type F as defined in Table 6.1 in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

3.4.1.3 Lickinghole Soil Landscape

The Lickinghole soil landscape includes shallow soils formed on steep to precipitous hills and mountains on a wide variety of Ordovician metasediments. Soils have formed in situ and from alluvial-colluvial material derived from the parent rock that includes silty sandstone, siltstone, greywacke, phyllite, shale, slate and quartzite. These soils are typically located on the steeper ridgelines and gullies across the site.

Shallow, stony, fine sandy loamy Lithosols and shallow Red and Yellow Earths occur on crests and side slopes. Some rock outcrops are evident on crests. Red and Yellow, stony fine sandy to loamy Podzolics occur in mid and lower slope positions (Hird, 1991).

The general soil description for this soil landscape, coupled with test pit logs undertaken by Douglas Partners (2009) indicates subsoils exposed during construction are likely to be silty clay. These soils are likely to be Type F as defined in Table 6.1 in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

3.4.2 SOIL ERODIBILITY

The erodibility of the soil landscapes as assessed by Hird (1991) is summarised in **Table 3.1** along with the adopted k factor for soil loss calculations.

Table 3.1 - Soil erodibility

Soil Landscape	Soil Type ⁽¹⁾	Topsoil Erodibility ⁽¹⁾	Subsoil Erodibility ⁽¹⁾	Erosion Hazard ⁽¹⁾	Adopted k Factor
Taralga	Chocolate Soils	Low to moderate	Low	Low to moderate	0.035
	Praire	Low	Low	Low	0.035
Midgee	Yellow Earths	High	High	Very High	0.05
	Yellow Podzolic Soils	High	Moderate	High	0.05
Lickinghole	Lithosols	High	High	Extreme	0.05
	Podzolic Soils	High	Low	High	0.05

Source: (1) Hird (1991)

The general soil characteristics indicate that the soils derived from basalt parent materials (Taralga soil landscape) present a low erosion risk. In the Taralga soil landscape, some sheet erosion is evident where the soils are cleared for cultivation or over grazed. Some mass movement is likely in steeper slopes generally lower on the slope profile. Some gully erosion is evident in these soil landscapes, again lower in the slope profile.

The shallower and coarser soils derived from the Ordovician metasediments present a higher erosion risk. These soils are typically loose, coarser grained soils that are susceptible to erosion if not carefully managed.

3.5 DRAINAGE

The local hydrology and site drainage features are shown on **Drawing EV04**.

The proposed wind farm site lies in three catchments:

- Kerrawary Creek – this catchment covers about 81km² and has its headwater west of Myrtleford. It drains in a generally easterly direction before turning south to join the Tarlo River. The central and southern sections of the proposed wind farm (generally south of Bannaby Road) are in this catchment. Tributaries include Chateris Creek and Dawson Flat Creek.
- Woolshed Creek – this catchment covers 109km² and has its headwater about 8km west of Taralga. This creek flows in a north-easterly direction to the north of Taralga and is joined by numerous ephemeral drainage lines including Corroboree Creek and its associated minor tributaries of Meadow Creek, Narrow Gut Creek, Ryders Gully and Crees Creek. Woolshed Creek joins Guineacor Creek north of the wind farm site.
- Snooks Creek – is a small catchment that covers about 6.6km² and lies on the eastern edge of the Woolshed Creek catchment. Drainage lines in this catchment include Snooks Creek and Back Creek. Both head in a northerly direction to join Guineacor Creek.

Kerrawary Creek and Woolshed Creek are defined as perennial watercourses on the Taralga 1:25,000 topographic map. All other drainage lines are defined as intermittent watercourses that generally only flow following heavy or prolonged rainfall.

The majority of the wind farm infrastructure would be located on the ridgelines at levels well above the watercourses across the site. Therefore the probability of flooding of the infrastructure is considered to be extremely low.

Exceptions include the points where access tracks cross drainage lines. There would be numerous small drainage line crossings that would be constructed with culverts to control local drainage. The three largest crossings are:

- On the access track between Turbine 28 and Turbine 29 which crosses a deep ephemeral drainage line (unnamed).
- On the access track from the Old Showground Road to Turbines 44 to 48 which crosses a broad flat ephemeral drainage line.
- On the access track from Riparosso Road to Turbines 55 to 58 that crosses Crees Creek where, at the location of the proposed crossing, there is a broad ephemeral drainage line.

These crossings would be subject to detailed engineering design to ensure the road infrastructure provides an adequate level of service and the structures do not detrimentally impact on flow patterns.

3.6 SITE CHARACTERISTICS

Site characteristics relating to the design of soil and water management measures are identified in **Table 3.2**.

Table 3.2 - Site Characteristics

Characteristic	Value
Rainfall erosivity	R = 1446
Rainfall zone	Zone 7
Slopes	Flat to 20%
Soil erodibility	Taralga K = 0.035 Midgee K = 0.05 Lickinghole K = 0.05
Calculated soil loss	Manage site to limit to less than 150 tonnes/ha/yr
Soil loss class	Manage site to limit to Soil Loss Class 1
Soil texture group	Taralga Type F Midgee Type F Lickinghole Type F
Soil hydrologic group	Taralga Group C Midgee Group B Lickinghole Group B
Volumetric Runoff coefficient	Taralga 0.25 Midgee 0.10 Lickinghole 0.10
Site area	Varies
80 th ile 5-day rainfall event (Goulburn) for Type F basin	17.8mm

3.6.1 CONSTRUCTION TIMING

Given that the objective is to manage the site as Soil Loss Class 1 there are no constraints on the timing of activities at this site (refer *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) Table 4.3).

3.6.2 MANAGEMENT APPROACH

Soil information indicates that the soils exposed during the works will be Type F. Therefore greater emphasis needs to be placed on minimising erosion by limiting work areas, controlling water movement around and through each construction site, controlling slope length and quick progressive rehabilitation of disturbed areas.

Type F sediment basin shall be used in all moderate and high risk areas. Water collected in Type F sediment basins shall be used for construction work or dust suppression as required, or treated before discharge off site.

As emphasis should be placed on minimising erosion, the site shall be managed to achieve Soil Loss Class 1.

3.7 WIND FARM INFRASTRUCTURE

Approved wind farm infrastructure is shown on **Drawing EV02** and includes:

- 61 wind energy turbines;
- new and upgraded access tracks;
- underground and overhead electricity cables;
- substation and overhead power connection to grid;
- construction compound; and
- TV retransmitter tower.

3.8 POTENTIAL IMPACTS

Construction activities have the potential to cause adverse environmental impacts on soil and water quality. The proposed development will require earthworks, minor modifications to the existing landform through excavation and filling, alterations to existing localised drainage systems and changes to vegetation. These activities have the potential to cause on site and off site erosion, sedimentation and water quality impacts. A summary of the proposed construction activities and potential impacts on soil and water are identified in **Table 3.3**.

Table 3.3 - Potential soil and water impacts

Activity	Potential Environmental Impacts
Vegetation clearing	<ul style="list-style-type: none"> • Soil disturbance increasing possibility of wind and water erosion • Erosion and sedimentation of disturbed areas • Movement of soil and attached nutrients
Topsoil stripping	<ul style="list-style-type: none"> • Erosion of soil horizons that are exposed to water and wind erosion • Erosion of stockpiles and loss of topsoil • Sterilisation of topsoil
Bulk earthworks	<ul style="list-style-type: none"> • Erosion of disturbed areas • Changes to flow patterns • Sedimentation of local drainage lines • Channelisation of water flow and increased velocity causing scour
Drainage line crossings	<ul style="list-style-type: none"> • Erosion of disturbed areas • Changes to flow patterns • Sedimentation of local drainage lines • Channelisation of water flow and increased velocity causing scour
Turbine construction	<ul style="list-style-type: none"> • Pollution from accidental spillage from construction equipment • Damage to erosion and sediment controls by machinery causing off site movement of sediment

Table 3.3 - Potential soil and water impacts

Activity	Potential Environmental Impacts
Buried cable installation	<ul style="list-style-type: none"> • Erosion of disturbed areas • Changes to flow patterns • Sedimentation of local drainage lines • Channelisation of water flow along cable route and increased velocity causing scour • Pollution from accidental spillage from construction equipment
Overhead cable installation	<ul style="list-style-type: none"> • Erosion of access tracks for machinery • Sedimentation of local drainage lines • Pollution from accidental spillage from construction equipment
Compounds including fuel oil and chemical storage areas	<ul style="list-style-type: none"> • Pollution from accidental spillage, failure of a control or inappropriate storage • Ground contamination
Mobile concrete batch plant (subject to further approval)	<ul style="list-style-type: none"> • Discharge of concrete products or raw materials • Pollution from accidental spillage from batching equipment

Risk Assessment and Objectives

4.1 RISK ASSESSMENT

4.1.1 METHODOLOGY

A risk assessment process was undertaken to identify areas that would be prone to higher levels of soil erosion and water related risks. The risk assessment considered:

- Soil type;
- Slope;
- Drainage lines; and
- Location of project infrastructure including turbine sites, tracks, cable routes compounds and sub stations.

The risk assessment considered the combination of soil type and slope to identify areas of higher risk. The classification of slope and soil type is provided in **Table 3.1**. All areas within 40m of a drainage line were assigned as high risk areas due to the proximity to waterways.

Table 4.1 - Soil and slope risk categories

Soil Type	Slope		
	0 – 2.5 degrees 0 – 4.4%	2.5 – 10 degrees 4.4% – 17.6%	> 10 degrees > 17.6%
Taralga	Low	Moderate	High
Midgee	Low	Moderate	High
Lickinghole	Low	Moderate	High

The proposed infrastructure was then mapped to identify areas that present low, moderate and high soil and water risks. Results of this assessment are shown on **Drawings EV05 to EV08**.

4.2 RISK MAPPING

The proposed infrastructure was mapped to identify areas that present low, moderate and high soil and water risks. Results of this assessment are shown on **Drawings EV05 to EV08**. There are a number of areas that present moderate or high soil and water risks. These are presented in **Table 4.2**. Note that micro-siting the turbines may lower the assessed risk.

Table 4.2 - Soil and water risk assessment

Risk Level	Location	Risk Factors
High	Turbines: T9, T18, T19, T49, T55, T58, T59, T61	Steep slopes
	Access track to T9 and T10	Steep grades
	Access track T18 to T19	Drainage line
	Access track T28 to T29	Drainage line
	Access track to T44	Drainage line
	Access track to row T55 to T58	Drainage line, and steep grades
	Access track to row T52 to T54	Drainage line, and steep grades
	Access track to row T1 to T4	Steep grades
Moderate	Turbines: T1, T3, T4, T5, T6, T8, T10, T11, T12, T13, T14, T15, T20, T21, T22, T24, T25, T26, T27, T28, T35, T39, T40, T41, T42, T43, T44, T45, T46, T50, T51, T53, T54, T56, T57, T60	Moderate slopes.
Low	Turbines: T2, T7, T16, T17, T23, T29, T30, T31, T32, T33, T34, T36, T37, T38, T47, T48, T52	Low risk factors due to relatively flat sites.

Areas of low risk should not be dismissed and management measures outlined in this Sub Plan should be applied.

4.3 SITE MANAGEMENT OBJECTIVE

Soil information indicates that the soils exposed during the works will be Type F. Therefore greater emphasis needs to be placed on minimising erosion by limiting work areas, controlling water movement around and through each construction site, controlling slope length and quick progressive rehabilitation of disturbed areas.

As emphasis should be placed on minimising erosion, the site shall be managed to achieve Soil Loss Class 1. As rainfall, soil and slope factors are fixed the slope length, or distance between controls that slow or dissipate water movement, needs to be controlled. This control applies to the linear components of the wind farm development.

Drawings EV09 to EV12 shows the maximum spacing between controls for the development.

Slope length shall be controlled by:

- Installing silt fences or rock check dams in road table drains or along backfilled cable trenches at the maximum spacing as shown on **Drawings EV09 to EV12**; or
- Providing mitre drains to discharge water from road table drains at the maximum spacing as shown on **Drawings EV09 to EV12**.

Management Measures

5.1 MANAGEMENT PRINCIPLES

This Soil and Water Management Sub Plan provides the over-arching principles for soil and water management at the construction site. The principles adopted in the implementation of the Soil and Water Management Sub Plan are:

- minimisation of disturbed areas;
- minimising the soil erosion potential during construction – the site shall be managed to achieve Soil Loss Class 1;
- diversion of clean water from undisturbed areas around or away from disturbed areas;
- controlling water movement through the site;
- the use of temporary erosion control measures as required;
- directing stormwater runoff from disturbed areas to sediment trapping devices; and
- adequate maintenance of control structures.

This Soil and Water Management Sub Plan should be reviewed throughout the design and construction phase. The review should incorporate the guiding principles contained in this plan.

General arrangement of control measures are shown on **Drawings EV13 to EV18**. These drawings, and the descriptions provided in the following sections, make reference to Standard Drawings which are taken from *Managing Urban Stormwater: Soils and Construction* (Landcom 2004). The Standard Drawings are included in **Appendix D**.

5.2 GENERAL CONTROL MEASURES

5.2.1 SITE INSTRUCTIONS

The following general instructions should be given to contractors engaged on the site.

- i) This sub plan and report should be read in conjunction with the engineering plans and any other plans relating to the development.
- ii) It is possible that this SWMP may require modification as the development proceeds. The same principles outlined in this plan shall be adopted for any modifications.
- iii) Contractors will ensure that all soil and water management works are undertaken as instructed in this plan and constructed following the guidelines stated in *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).
- iv) All subcontractors will be informed of their responsibilities in reducing the potential for soil erosion and pollution to downslope areas.

5.2.2 LAND DISTURBANCE

Exposed areas will be kept to a minimum by applying the work limitations detailed in **Table 5.1**.

Table 5.1 - Work Limitations

Land Use	Limitation	Comments
Construction Areas	Disturbance be no further than 5 metres from the edge of any essential construction activity as shown on the engineering plans.	All site workers should clearly recognise construction areas that, where appropriate, are identified with barrier mesh (upslope) and silt fencing (down slope) or similar materials.
Access Areas	Limited to a maximum width of 10 metres.	The site supervisor will determine and mark these areas on-site. Access roads are shown on the construction plans. Where appropriate, identified with barrier mesh and silt fencing, or similar materials.
Remaining Land	Entry prohibited except for essential plant thinning.	

5.2.3 TOPSOIL MANAGEMENT

- Topsoil shall be stripped and stockpiled immediately before commencing bulk earthworks. The depth of topsoil to be removed shall be determined on site. Construct topsoil stockpile and sediment controls to detail on **Standard Drawing SD4-1 (Appendix D)**.
- All stockpile areas will be defined with appropriate delineators (flagging or fencing).
- Silt fencing will be installed on the down slope side of stockpiles. Upslope diversion drains will be installed as required.
- Stockpiles will be located on level ground (as far as possible), 5 metres away from drainage lines, 5 metres from standing vegetation and out of the drip line.

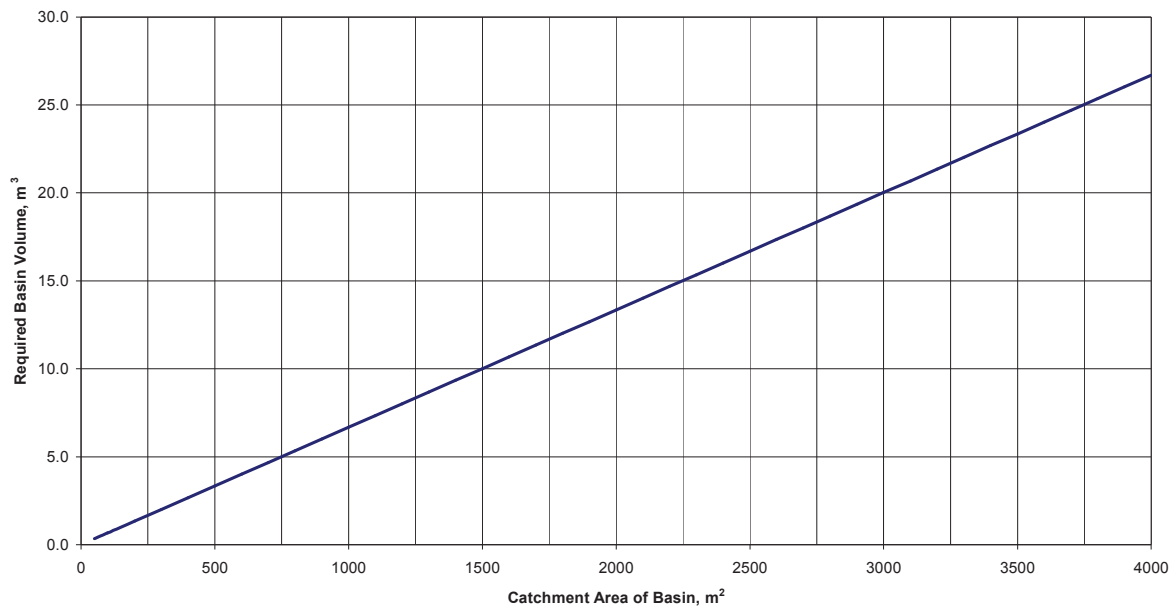
5.2.4 SOIL EROSION CONTROL CONDITIONS

- Clearly visible barrier fencing, or other delineation method, shall be installed as required or at the discretion of the site manager to ensure traffic control and prohibit unnecessary site disturbance.
- Access roads/tracks shall be topped with a layer of gravel.
- The site shall be managed to achieve Soil Loss Class 1.
- Construction areas shall be rehabilitated as soon as possible following completion of works.

5.2.5 SEDIMENT CONTROL CONDITIONS

- Type F sediment basins shall be installed as required in all HIGH risk areas to contain site runoff prior to off-site discharge.
- Sizing of the Type F sediment basins will be determined for the area of disturbed land draining to the basin in accordance with **Appendix A** or the Graph below.

Taralga Windfarm: Type F Soil Sediment Basin Sizing



- Water shall be pumped from the sediment basins and used on-site for construction work or dust suppression. The basins shall be used as the first preference for water supply to ensure it remains as close to empty as possible.
- Sediment shall be removed from sediment basin when it increases to a level that reduces the volume by about 30%. Sediment removed from any trapping device will be disposed in locations where further erosion and consequent pollution of downstream lands and waterways will not occur and only in areas protected by soil erosion works.
- If water is to be pumped from the basins and discharged to the environment, it must be treated to ensure it contains a suspended solids concentration of less than 50 mg/L.

5.2.6 SITE CONSTRUCTION ENTRANCES

Site construction entrances shall be constructed at:

- All construction entrances from main roads; and
- Points where new access tracks are constructed off existing access tracks.

Site construction entrances shall be constructed in accordance with **Standard Drawing SD6-14**.

5.3 SPECIFIC CONTROLS

The recurring nature of the construction work allows specific measures to be defined for each element of the project. These measures are detailed in the following sections.

5.3.1 TURBINE AND CRANE PADS

Low and Moderate Risk Areas

All turbine and crane pads in areas of low to moderate soil and water risk (refer to **Drawings EV05 to EV08**) shall incorporate the generic controls as shown on **Drawing EV13**. These include:

1. Defining the area of disturbance;
2. Diversion of upslope runoff as required;
3. Stockpiling of topsoil in accordance with Section 5.2.3;
4. Downslope silt fence installed in accordance with **Standard Drawing SD6-8**;
5. Compaction of crane hardstand pavement as soon as practicable following bulk earthworks to minimise the time of exposed sub soil material;
6. Site rehabilitation in accordance with Section 5.4; and
7. Site monitoring in accordance with Section 6.1; and
8. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

High Risk Areas

All turbine and crane pads in areas of high soil and water risk (refer to **Drawings EV05 to EV08**) shall incorporate the generic controls as shown on **Drawing EV13**. These include:

1. Defining the area of disturbance;
2. Diversion of upslope runoff as required;
3. Stockpiling of topsoil in accordance with Section 5.2.3;
4. Downslope sediment basin installed in accordance with **Standard Drawing SD6-4** and sized in accordance with Section 5.2.5;
5. Compaction of crane hardstand pavement as soon as practicable following bulk earthworks to minimise the time of exposed sub soil material;
6. Site rehabilitation in accordance with Section 5.4; and
7. Site monitoring in accordance with Section 6.1; and
8. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

5.3.2 ACCESS TRACKS

General arrangements for the access track are shown in **Drawings EV14 to EV15**. These arrangements apply for new and upgraded access tracks.

Potential soil loss along the access track shall be managed by limiting the slope length (the distance between sediment controls) to achieve a Soil Loss Class 1 (i.e. < 150 tonnes/ha/year soil loss).

Generic controls for soil and water management along the access track are shown in **Drawings EV14 to EV15** and include:

1. Defining the area of disturbance;
2. Diversion of upslope runoff as required using berms or swales;
3. Stockpiling of topsoil in accordance with Section 5.2.3;
4. Installation of silt fence (**Standard Drawing SD6-8**), straw bales (**Standard Drawing SD6-7**), rock check banks (**Standard Drawing SD5-4**) or mitre drains along access track table drains. **Drawings EV05 to EV08** shows the maximum length between controls;
5. Compaction of road pavement as soon as practicable following bulk earthworks to minimise the time sub soil material is exposed;
6. Site rehabilitation in accordance with Section 5.4; and
7. Site monitoring in accordance with Section 6.1; and
8. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

5.3.3 DRAINAGE LINE CROSSINGS

All drainage line crossings are in areas of high soil and water risk (refer to **Drawing EV05**). Drainage line crossings shall incorporate the generic controls as shown on **Drawing EV16**. These include:

1. Defining the area of disturbance;
2. Diversion of upslope runoff as required;
3. Stockpiling of topsoil in accordance with Section 5.2.3;
4. Construction of sediment basins at the table drain discharge points, installed in accordance with **Standard Drawing SD6-4** and sized in accordance with Section 5.2.5;
5. Compaction of road pavement as soon as practicable following bulk earthworks to minimise the time of exposed sub soil material;
6. Installation of scour protection around culverts and at table drain discharge points as required to suit final engineering design and site layout;
7. Site rehabilitation in accordance with Section 5.4; and
8. Site monitoring in accordance with Section 6.1; and
9. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

5.3.4 UNDERGROUND CABLE TRENCHES

General arrangements for the underground cable trenches are shown in **Drawing EV17**.

Potential soil loss along the cable trenches shall be managed by limiting the slope length (the distance between sediment controls) to achieve a Soil Loss Class 1 (i.e. < 150 tonnes/ha/year soil loss).

Generic controls for soil and water management along the cable trenches are shown in **Drawings EV17** and include:

1. Defining the area of disturbance;
2. Minimising the time that the trenches are open;
3. Placing excavated material on the upslope side of the open trench during construction;
4. Backfilling and compacting trenches to prevent subsidence along the trench line;
5. Stabilisation of the trenches as soon as practicable in accordance with Section 5.4;
6. Installation of silt fence (**Standard Drawing SD6-8**), straw bales (**Standard Drawing SD6-7**) or earth berms perpendicular to the trench alignment. **Drawings EV05 to EV08** shows the maximum length between controls;
7. Site monitoring in accordance with Section 6.1; and
8. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

5.3.5 SITE COMPOUNDS

General arrangements for site compounds are shown in **Drawing EV18** and include:

1. Defining the area of disturbance;
2. Diversion of upslope runoff as required using berms or swales;
3. Stockpiling of topsoil in accordance with Section 5.2.3;
4. Downslope silt fence installed in accordance with **Standard Drawing SD6-8**;
5. Construction of a sediment basin at the discharge point, installed in accordance with **Standard Drawing SD6-4** and sized in accordance with Section 5.2.5 IF the compound is located in a high hazard area (refer to **Drawings EV05 to EV08**);
6. Provision of designated bunded areas for vehicle servicing, refuelling and maintenance;
7. Compaction of hardstand pavement as soon as practicable following bulk earthworks to minimise the time of exposed sub soil material;
8. Rehabilitation of disturbed areas outside of the compound area that will not be subject to high traffic load. Rehabilitation to be undertaken in accordance with Section 5.3;
9. Site monitoring in accordance with Section 6.1; and
10. Removal of temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment.

5.3.6 POLLUTANT DISCHARGE

The risk of pollutant discharge shall be controlled by:

- Undertaking machinery maintenance in the work compound area only and within designated bunded areas;
- Refuelling within bunded areas only;
- Storing all chemicals in accordance with relevant codes and legislation, including appropriate bunding and signage; and
- Maintaining a spill kit on site at all times.

5.4 REHABILITATION CONDITIONS

Any works that disturb areas and expose soil shall be rehabilitated in accordance with the following conditions.

- Disturbed areas will be rehabilitated as soon as possible after completion of land shaping and within:
 - 5 working days where slopes exceed 15%; and
 - 14 working days on remaining lands.

Working days do not include holidays or days when works cannot proceed due to, for example, inclement weather.

- Before placing topsoil, the surface shall be scarified along the contour to provide keying for topsoil.
- Topsoil shall be handled moist and applied to a depth of:
 - 40 to 60mm on lands where the slope exceeds 4:1 (H:V); or
 - 75mm on lands where the slope is less than 4:1 (H:V).
- Revegetation species for general disturbed areas shall be as listed in **Table 5.2**.
- Temporary soil and water management structures will be removed only after rehabilitation works have been completed on more than 90% of the contributing catchment.
- Recently rehabilitated areas will be regularly maintained until an effective cover has properly established.
- Remove temporary soil conservation structures as a last activity in the rehabilitation program. Remove temporary sediment control measures only after rehabilitation works have been completed on more than 90% of the contributing catchment

Table 5.2 - Revegetation Species (General)

Species	Sowing Rate kg/ha
Cereal rye	15
Woolly pod vetch	10
Rhodes grass	5
Sephi medic (2)	4
'Haifa' white clover (2)	0.5
Perennial ryegrass	5
Fertiliser – DAP	100 (if broadcast) 200 (if hydroseeded)

5.5 WASTE MANAGEMENT

Covered bins shall be provided for general wastes. These shall be provided at the work compound and at locations specified by the Site Manager.

Clearance service shall be provided weekly.

5.6 WASTEWATER MANAGEMENT

5.6.1 CONSTRUCTION

Portable chemical toilets shall be provided throughout the construction program and shall be located in the work compound.

Portable toilets shall be serviced as required with wastewater removed by a licensed contractor and transported off site to an approved disposal facility.

5.6.2 OPERATION

A dry composting toilet, wash basin and emergency shower would be provided at the control building. Rain water would be collected from the roof of the control building for amenities. An on-site wastewater management system shall be used to treat and dispose of liquid wastes generated from the hand basins and emergency shower in accordance with the following:

- AAA rated water fittings shall be used throughout the control building;
- Liquid wastes shall be drained and treated in a septic tank with minimum volume of 3,000 litres;
- Wastewater from the septic tank shall be disposed of via a sub surface absorption trench sized in accordance with *AS/NZS 1547:2000* for Soil Category 4;
- The absorption trench shall be located a minimum of 40m from drainage depression and 100m from watercourses on the site; and
- Surface water shall be diverted away from the absorption trench using low grassed berms.

Inspection, Monitoring and Reporting

6.1 INSPECTION AND MONITORING

The maintenance of erosion and sediment control structures is critical for their ongoing operation. Adequate maintenance keeps the potential soil erosion hazard on the site, and consequent sediment pollution to down slope areas, to a minimum. The following site inspection and maintenance program will be implemented.

- The site manager will check the operation of all soil and water management works weekly and initiate repair or maintenance as required. The inspection and maintenance program shall include:
 - ensuring all drains operate effectively
 - removing spilt sand, soil or other material from within 2m of hazard areas such as areas of concentrated or high velocity flow
 - ensuring rehabilitated lands have effectively reduced the erosion hazard
 - controlling dust emission
 - maintaining the sediment retention traps in good working condition ensuring trapped sediment is removed whenever less than the design capacity remains
 - constructing additional erosion and sediment control measures as might become necessary
 - maintaining erosion and sediment control measures in a functioning condition until all earthwork activities are completed and the site is rehabilitated (in accordance with Section 5.4)
- Records of weekly inspection shall be maintained using the weekly inspection form (**Appendix C**).
- This Soil and Water Management Sub Plan shall be reviewed as the work progresses to ensure it remains applicable.
- Wastes receptors will be emptied as necessary.

6.2 REPORTING

The site manager will complete a weekly checklist form (**Appendix C**). This form will also be completed following significant rainfall (more than 15mm in one storm) and/or site closure. These forms shall include details of non-conformance and correctives actions.

The completed forms will be kept on-site and made available to any authorised person on request.

Emergency Response Procedures

7.1 EMERGENCY RESPONSE

The CEMP provides details on emergency incident response procedures. Typical emergency situations that may impact on soil and water management include:

- Spillage of fuels, oils and chemicals;
- Uncontrolled vegetation clearing;
- Fire;
- Failure of sediment control measures that cause impact on a waterway.

Typical emergency response procedures that apply to the management of soil and water include:

1. Contain and control environmental emergency incidents where possible.
2. Safeguard people on-site and off-site.
3. Notify supervisor and follow chain of command.
4. Notify the Environmental Representative who will then advise relevant agencies as required (ie DECC).
5. Protect adjacent areas, drainage depressions and watercourses.
6. Minimise damage to property and environment.
7. Remove and dispose of any contaminated soil and clean up materials in accordance with relevant guidelines or Government Agency directions.
8. Remediate the area where the incident occurred to the satisfaction of the relevant authorities and the Environmental Representative.
9. Complete an environmental incident report form (**Appendix E**).
10. Instigate corrective actions and amendment to procedures where applicable to prevent a recurrence.

7.2 CORRECTIVE ACTION

A non-conformance would include failure to implement the identified management measures in the Soil and Water Management Sub Plan or failure of installed measures. These would be noted and recorded on the weekly checklist.

Any non-conformance with this Sub Plan shall be recorded, investigated and, if necessary, corrected to ensure effective soil and water management practices at all times on site.

All inspection reports and non-conformance reports shall be acted upon quickly and a written response provided within 7 working days detailing the action taken or measures proposed to address the issue.

This Soil and Water Management Sub Plan will be reviewed and amended, if required, and reissued as soon as possible following review by the Environmental Representative and Department of Planning. Project staff will be notified of any changes made to the Sub Plan once approved.

References

AS/NZS 1547:2000 *On-site Domestic Wastewater Management*

Douglas Partners 2009 *Report on Geotechnical Investigation, Taralga Wind Farm, Taralga New South Wales.*

Hird, C 1991 *Soil Landscapes of the Goulburn 1:250 000 Sheet.* Soil Conservation Service of NSW

Landcom 2004 *Managing Urban Stormwater: Soils and Construction*

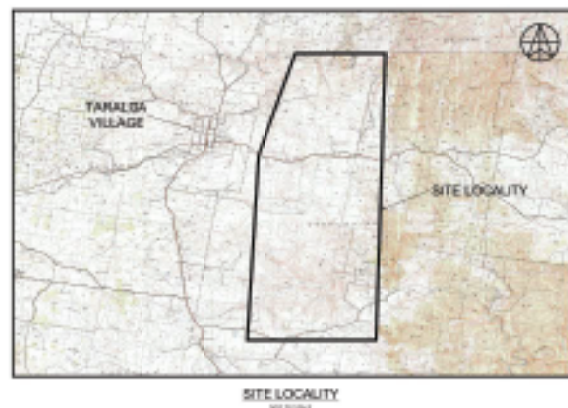
Drawings

TARALGA WIND FARM

AUSCHINA ENERGY GROUP

SOIL AND WATER MANAGEMENT SUB PLAN DRAWINGS

SCHEDULE OF DRAWINGS			
SHEET	TITLE	REV.	DATE
01C_EV01	TITLE SHEET, DRAWING LIST & SITE LOCALITY	C	07/12/2011
01C_EV02	OVERALL LAYOUT	C	07/12/2011
01C_EV03	SOIL LANDSCAPES	C	07/12/2011
01C_EV04	LOCAL HYDROLOGY	C	07/12/2011
01C_EV05	RISK MAP OVERALL LAYOUT	C	07/12/2011
01C_EV06	RISK MAP SHEET 1 OF 3	C	07/12/2011
01C_EV07	RISK MAP SHEET 2 OF 3	C	07/12/2011
01C_EV08	RISK MAP SHEET 3 OF 3	C	07/12/2011
01C_EV09	SLOPE LENGTH OVERALL LAYOUT	C	07/12/2011
01C_EV10	SLOPE LENGTH SHEET 1 OF 3	C	07/12/2011
01C_EV11	SLOPE LENGTH SHEET 2 OF 3	C	07/12/2011
01C_EV12	SLOPE LENGTH SHEET 3 OF 3	C	07/12/2011
01C_EV13	TURBINE GENERAL CONTROLS	C	07/12/2011
01C_EV14	ACCESS TRACKS GENERAL ARRANGEMENT SHEET 1 OF 2	C	07/12/2011
01C_EV15	ACCESS TRACKS GENERAL ARRANGEMENT SHEET 2 OF 2	C	07/12/2011
01C_EV16	ACCESS TRACKS TYPICAL DRAINAGE LINE CROSSING	C	07/12/2011
01C_EV17	CABLE TRENCHES	C	07/12/2011
01C_EV18	SITE COMPOUND	C	07/12/2011



SITE LOCALITY



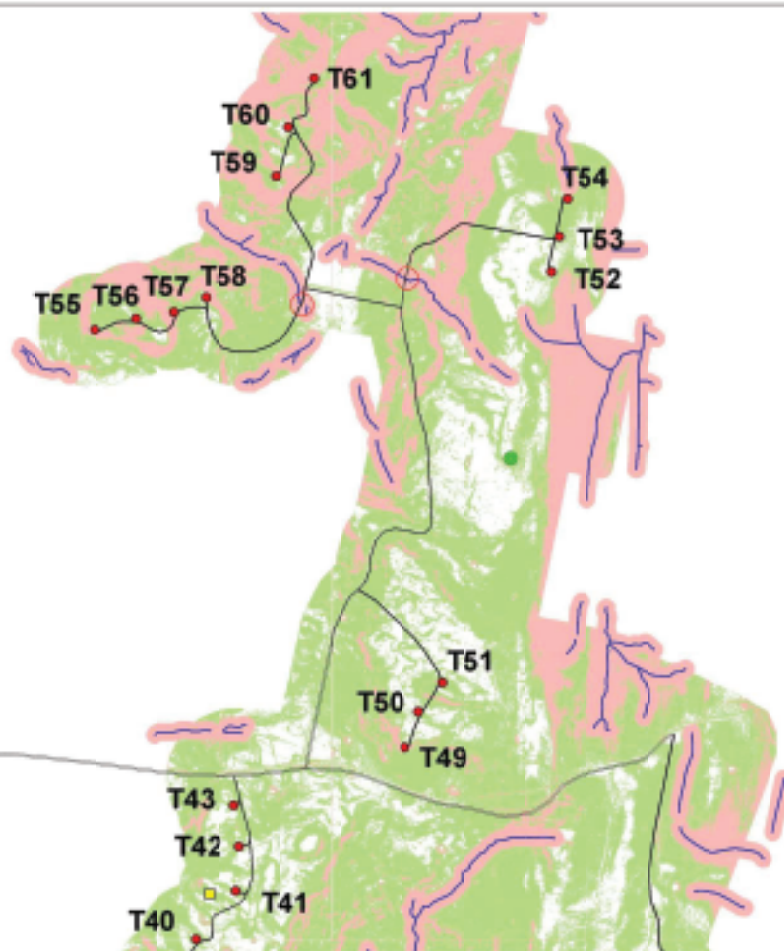
NO.	REV.	DATE	BY	CHKD.	APPD.
1	01	07/12/2011	J. H.	M.	
2	02	07/12/2011	J. H.	M.	
3	03	07/12/2011	J. H.	M.	
4	04	07/12/2011	J. H.	M.	
5	05	07/12/2011	J. H.	M.	
6	06	07/12/2011	J. H.	M.	
7	07	07/12/2011	J. H.	M.	
8	08	07/12/2011	J. H.	M.	
9	09	07/12/2011	J. H.	M.	
10	10	07/12/2011	J. H.	M.	

TARALGA WIND FARM SOIL AND WATER MANAGEMENT SUB PLAN
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NSW DEPARTMENT OF PLANNING

AUSCHINA ENERGY GROUP

TITLE SHEET, DRAWING LIST & SITE LOCALITY
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01C

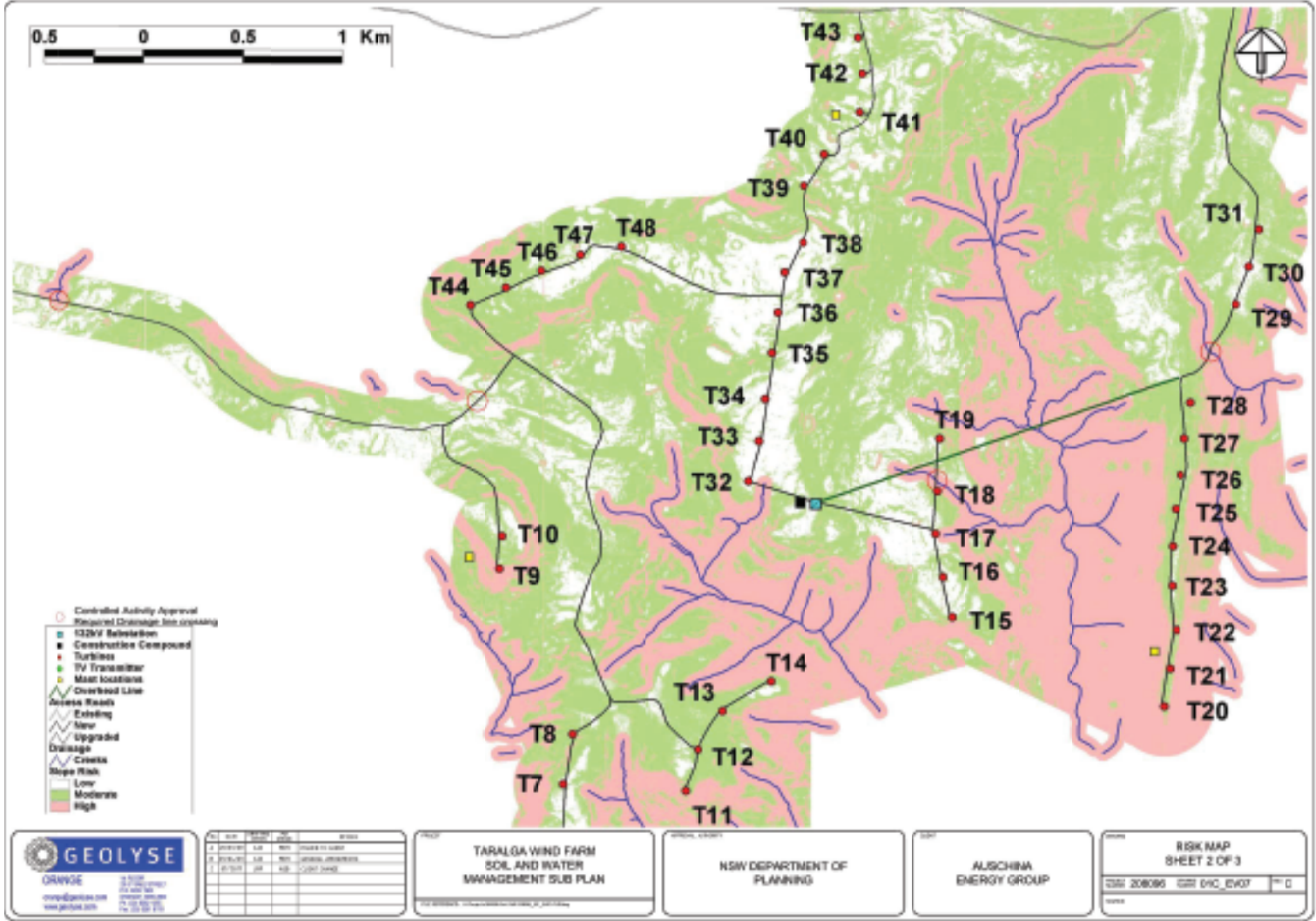


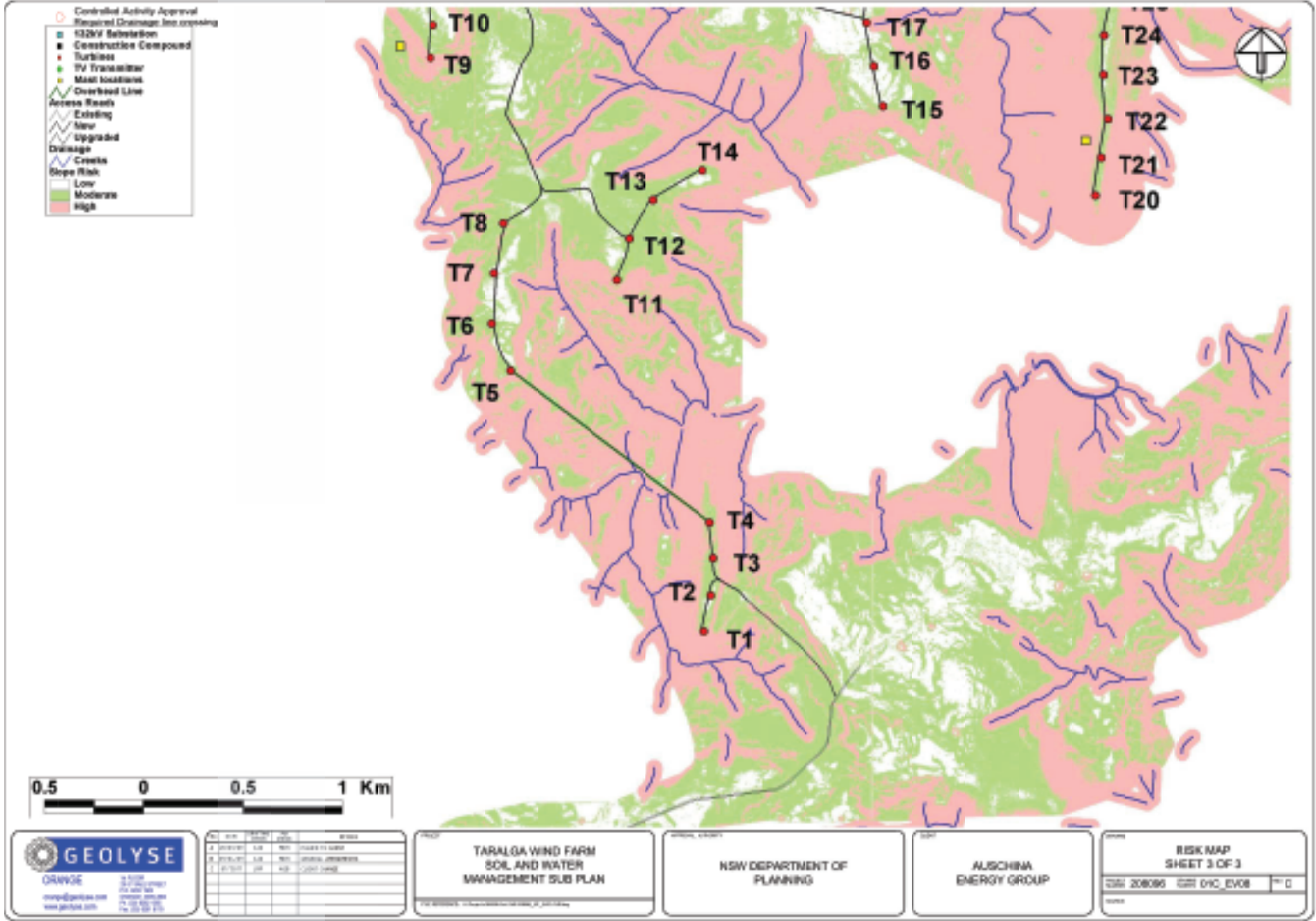
-  Controlled Railway Approval Required Drainage line crossing
 G26V Retention
 Construction Compound
 Turbines
 TV Transmitter
 Main locations
 Overhead Line
 Access Roads
 Existing
 New
 Upgraded
 Drainage
 Crests
 Slope Risk
 Low
 Moderate
 High

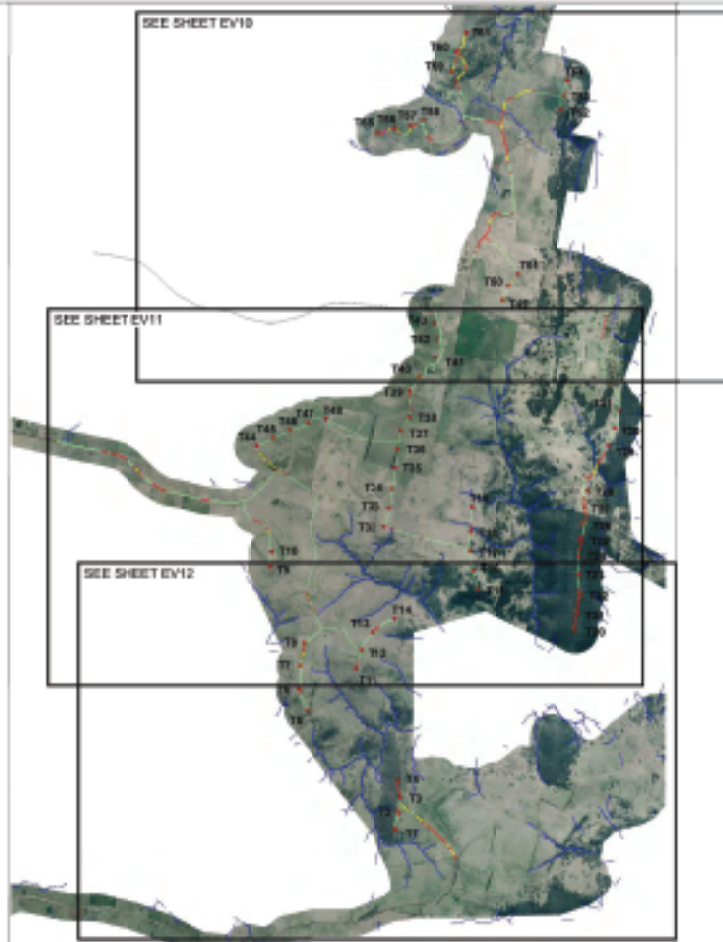
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SOIL AND WATER
MANAGEMENT SUB PLANNSW DEPARTMENT OF
PLANNINGALSCINA
ENERGY GROUPRISK MAP
SHEET 1 OF 3

DATE 200806	TIME 090	EV06	TM 0
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- Turbines
- Access Roads
- Existing
- Max. Control Spacing
- 40m
- 10m
- 5m
- Drainage
- Creeks



REV	DATE	DESCRIPTION	BY	CHKD	APPD
1	20/01/2017	ISSUED FOR TENDERS	W. JONES		
2	20/01/2017	ISSUED FOR TENDERS	W. JONES		
3	20/01/2017	ISSUED FOR TENDERS	W. JONES		
4	20/01/2017	ISSUED FOR TENDERS	W. JONES		
5	20/01/2017	ISSUED FOR TENDERS	W. JONES		
6	20/01/2017	ISSUED FOR TENDERS	W. JONES		
7	20/01/2017	ISSUED FOR TENDERS	W. JONES		
8	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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13	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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15	20/01/2017	ISSUED FOR TENDERS	W. JONES		
16	20/01/2017	ISSUED FOR TENDERS	W. JONES		
17	20/01/2017	ISSUED FOR TENDERS	W. JONES		
18	20/01/2017	ISSUED FOR TENDERS	W. JONES		
19	20/01/2017	ISSUED FOR TENDERS	W. JONES		
20	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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23	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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29	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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66	20/01/2017	ISSUED FOR TENDERS	W. JONES		
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99	20/01/2017	ISSUED FOR TENDERS	W. JONES		
100	20/01/2017	ISSUED FOR TENDERS	W. JONES		

TARALGA WIND FARM
SOIL AND WATER
MANAGEMENT SUB PLAN

NSW DEPARTMENT OF
PLANNING

AUSCHWA
ENERGY GROUP

SLOPE LENGTH
OVERALL LAYOUT

DATE	20/01/2017	ISSUED FOR TENDERS	REV	0
------	------------	--------------------	-----	---



- Turbines
 Access Roads
 Existing
 Max. Control Spacing
 40m
 10m
 5m
 Drainage
 Creeks
- SEE NOTES 1 AND 2

NOTE
1. THE FOLLOWING INFORMATION APPLIES TO THE
CHARTER OF THE FINANCIAL ACCOUNTING STANDARDS BOARD
OF THE UNITED STATES OF AMERICA AND THE FINANCIAL
ACCOUNTING STANDARDS BOARD OF CANADA AND
INTERNATIONAL FINANCIAL
2. THE FOLLOWING INFORMATION APPLIES TO THE CHARTER OF



CRANES
www.cranesusa.com
www.cranesusa.com

No.	DATE	DEBITED	BY	REMARKS
1.	20/05/2019	1000	PRD	SALES TO SUBS
2.	20/05/2019	1000	PRD	SALES TO SUBS
3.	20/05/2019	1000	PRD	SALES TO SUBS

505

TARALOA WIND FARM
SOIL AND WATER
MANAGEMENT SUB PLAN

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100

NSW DEPARTMENT OF
PLANNING

10

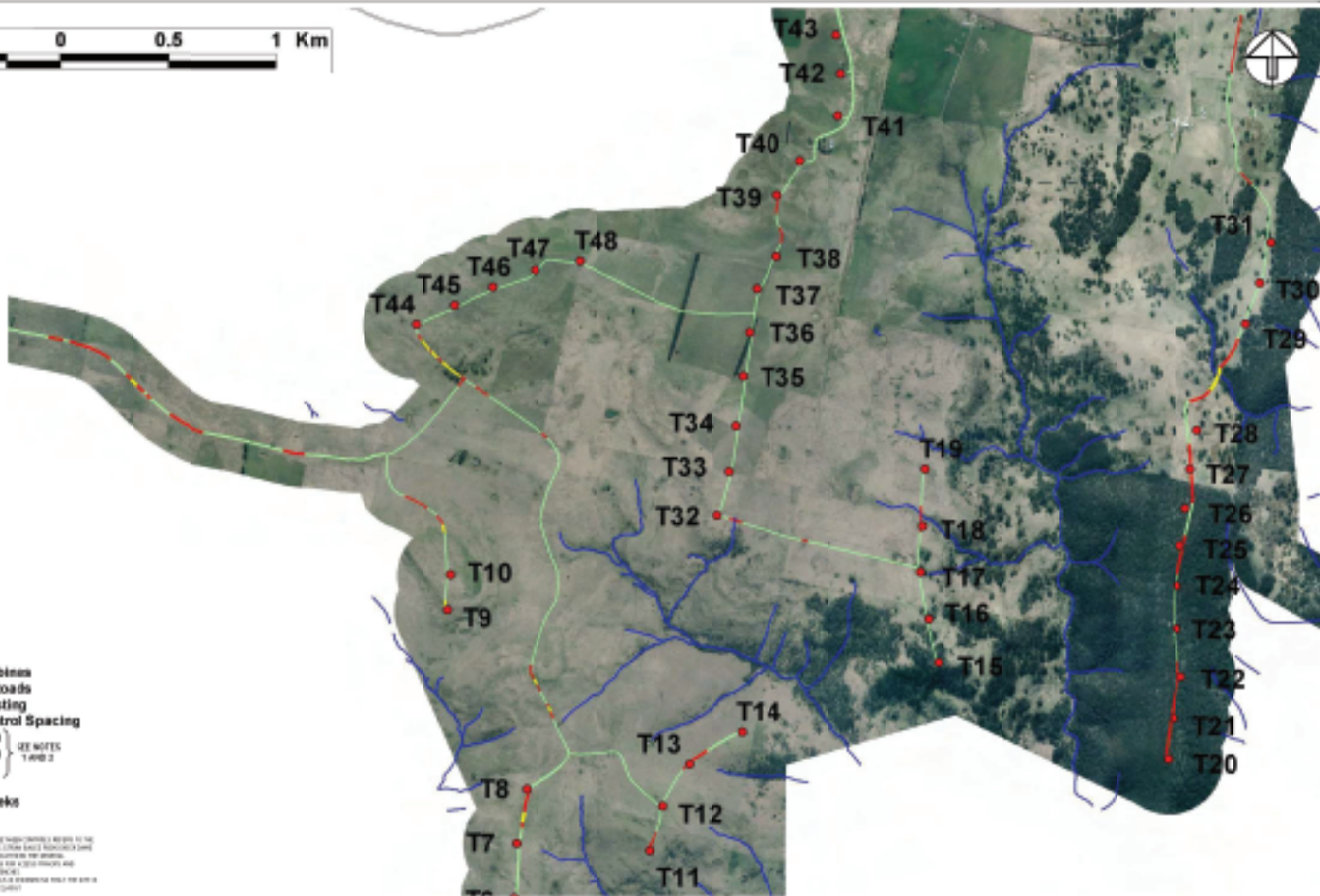
ALSD-INA
ENERGY GROUP

5

SLOPE LENGTH
SHEET 1 OF 3

THE SOURCE	THE OLD FILE	FILE
------------	--------------	------

Case	200009	Case	010_CV18	Page	1
<p>Case 1:00-cv-00018 Document 1-1 Filed 08/01/00 Page 1 of 1</p>					



- Turbines
- Access Roads
- Existing
- Max. Control Spacing
- 40m
- 10m
- 5m
- Drainage
- Creeks

NOTE:
1. THE LOCATION AND SPACING OF TURBINES IS BASED ON THE
CHARTERED SURVEYOR'S (CLM) SURVEY DATA AND IS NOT
A GUARANTEE OF THE LOCATION AND SPACING OF TURBINES.
2. THE LOCATION AND SPACING OF TURBINES IS BASED ON THE
CHARTERED SURVEYOR'S (CLM) SURVEY DATA AND IS NOT
A GUARANTEE OF THE LOCATION AND SPACING OF TURBINES.



CRANIE
www.geolyse.com.au
1300 777 777
1300 777 777
1300 777 777

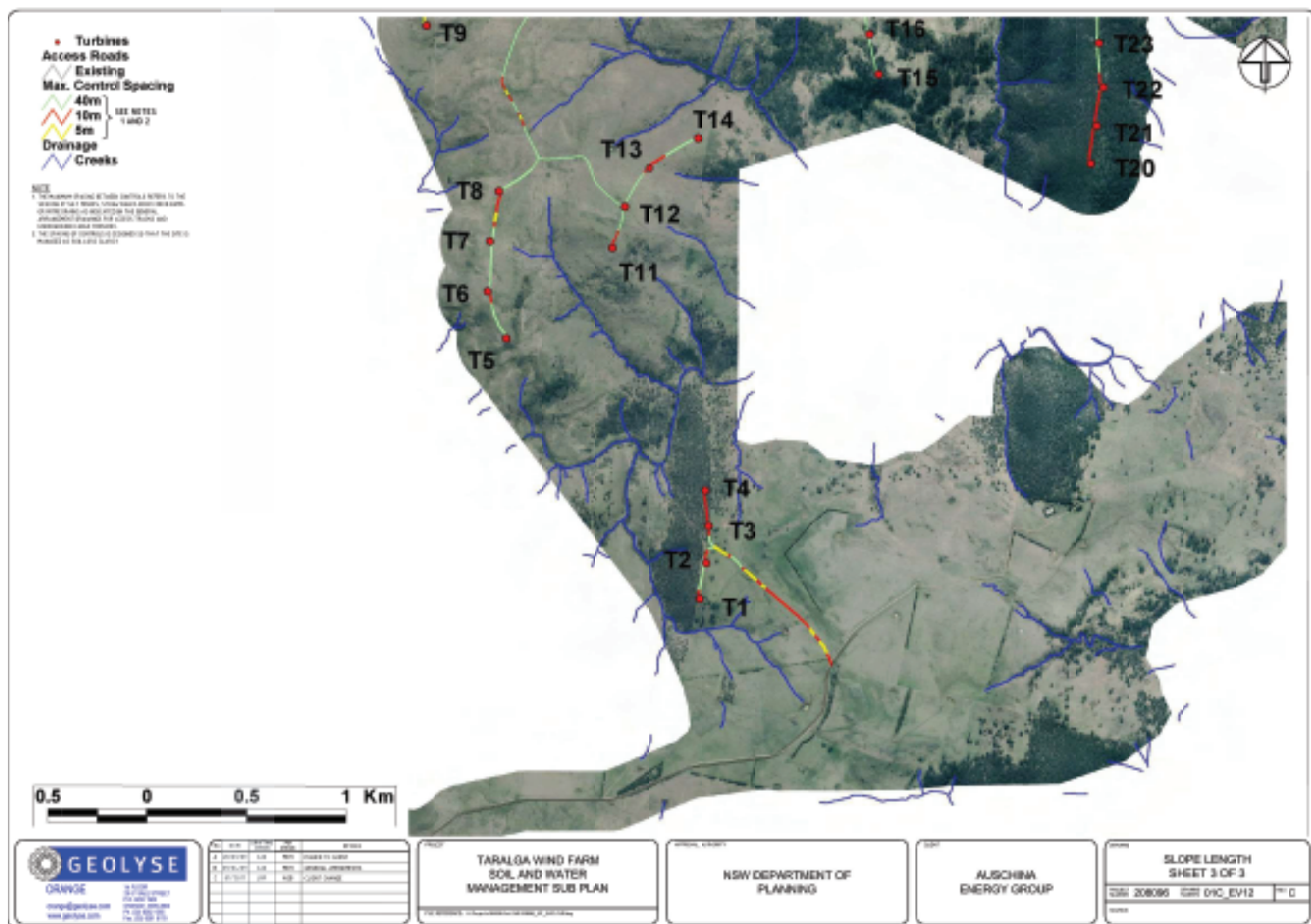
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2	20/08/2018	002	XXX	ISSUED FOR COMMENT
3	20/08/2018	003	XXX	ISSUED FOR COMMENT

PROJECT	TARALGA WIND FARM SOIL AND WATER MANAGEMENT SUS PLAN
PROJECT LOCATION	NSW DEPARTMENT OF PLANNING
PROJECT OWNER	AUSCHINA ENERGY GROUP

PROJECT	TARALGA WIND FARM SOIL AND WATER MANAGEMENT SUS PLAN
PROJECT LOCATION	NSW DEPARTMENT OF PLANNING
PROJECT OWNER	AUSCHINA ENERGY GROUP

PROJECT	TARALGA WIND FARM SOIL AND WATER MANAGEMENT SUS PLAN
PROJECT LOCATION	NSW DEPARTMENT OF PLANNING
PROJECT OWNER	AUSCHINA ENERGY GROUP

PROJECT	TARALGA WIND FARM SOIL AND WATER MANAGEMENT SUS PLAN
PROJECT LOCATION	NSW DEPARTMENT OF PLANNING
PROJECT OWNER	AUSCHINA ENERGY GROUP

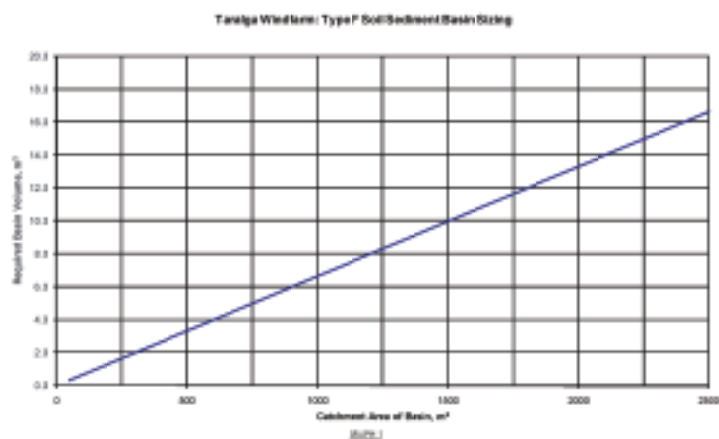
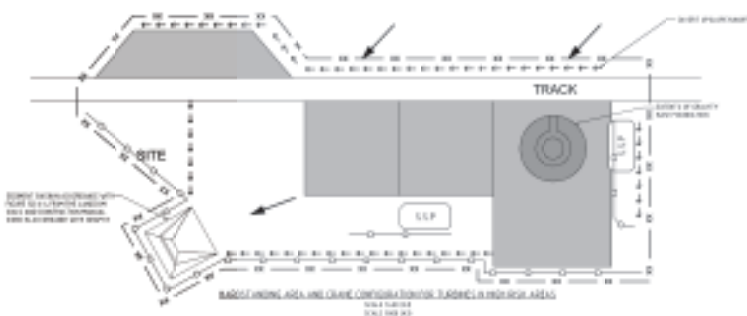
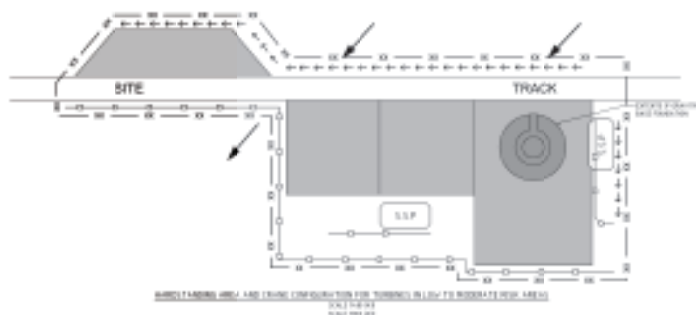


LARGE JUNE PRODUCE BOX WITH JUNE 1 & 2 SMALLS INCLUDED

2. Determine the area of the rectangle.
3. Calculate the area of the shaded rectangle.
4. Calculate the area of the shaded rectangle.
5. Calculate the area of the shaded rectangle.
6. Calculate the area of the shaded rectangle.
7. Calculate the area of the shaded rectangle.
8. Calculate the area of the shaded rectangle.
9. Calculate the area of the shaded rectangle.
10. Calculate the area of the shaded rectangle.

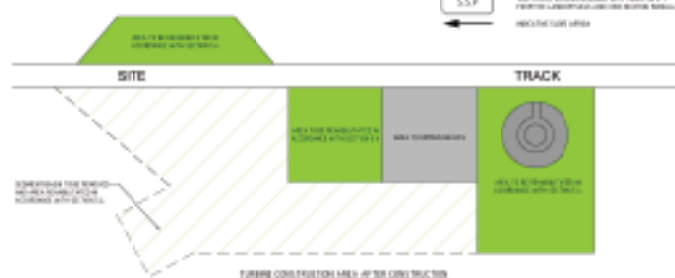
INTRACRANIAL AND SMALL-CELL DISEASE

1. **Identify the main components of the system and their interactions.** (10 marks)
2. **Describe the data flow and storage mechanisms.** (10 marks)
3. **Explain the security and access control measures.** (10 marks)
4. **Discuss the scalability and performance considerations.** (10 marks)
5. **Summarize the overall architecture and its benefits.** (10 marks)



¹ *Staphylococcus aureus* strains were first obtained in association with the lymphatic and circulatory system lesions associated with a breast tumour.

- [illegible]



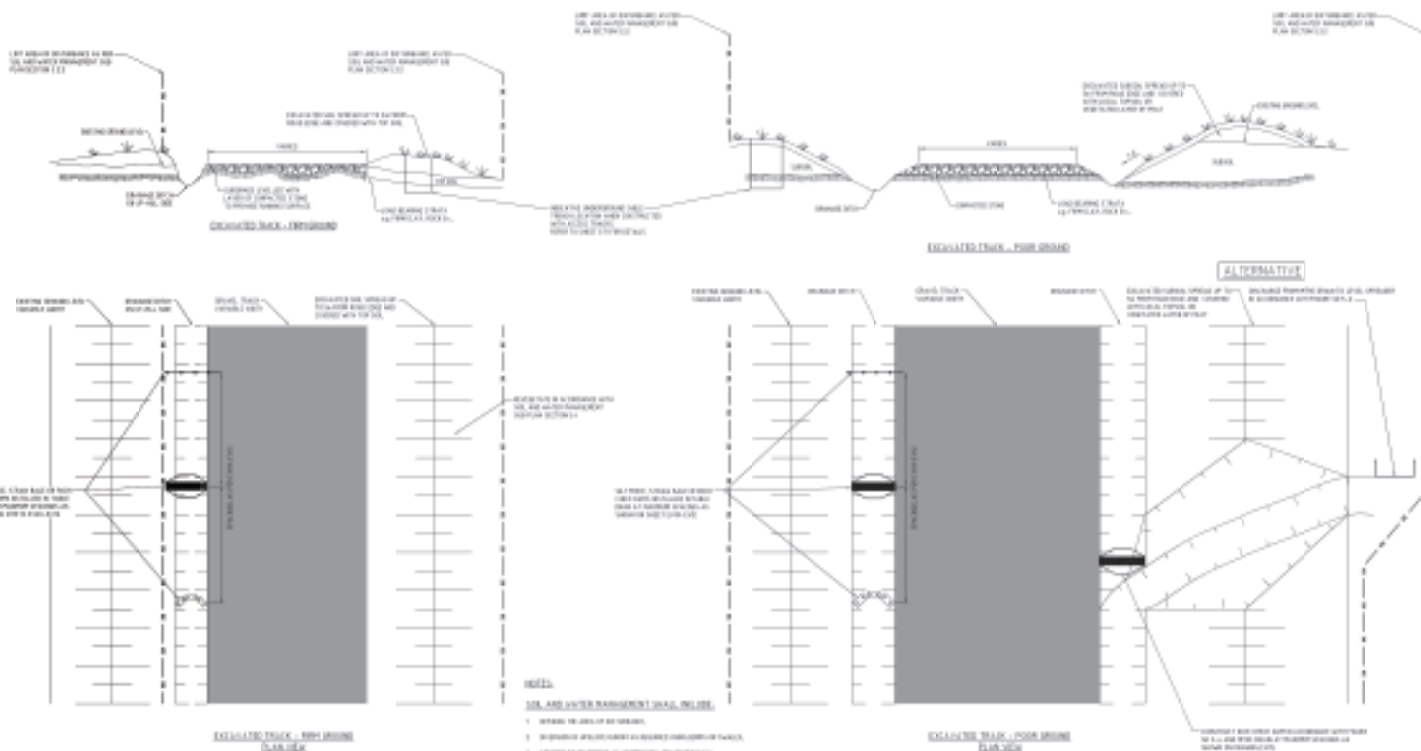
№	名称	数量	单位	备注
1	汽油	1.0	升	用于清洗
2	柴油	1.0	升	用于发电
3	电	100	度	用于照明
4	水	100	升	用于清洗
5	沙子	100	方	用于填土
6	石子	100	方	用于填土
7	水泥	100	吨	用于填土
8	钢筋	100	吨	用于填土
9	木材	100	方	用于填土
10	砖	100	万	用于填土

TARALGA WIND FARM
SOIL AND WATER
MANAGEMENT SUB PLAN

NSW DEPARTMENT OF PLANNING

ALSCINA
ENERGY GROUP

TURBINE GENERAL
CONTROLS



NOTES

NOTES SET OUT IN ACCORDANCE WITH AS/NZS 4455:2014
 NOTES SET OUT IN ACCORDANCE WITH AS/NZS 4455:2014
 NOTES SET OUT IN ACCORDANCE WITH AS/NZS 4455:2014

NOTES

SOIL AND WATER MANAGEMENT SHAUL INCLUDE:

1. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
2. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
3. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
4. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
5. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
6. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
7. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
8. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
9. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL
10. REMOVAL OF SOIL AND WATER MANAGEMENT SHAUL



NO.	DATE	DESCRIPTION	BY	CHECKED
1	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
2	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
3	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
4	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
5	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
6	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
7	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
8	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
9	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH
10	20/01/2014	ISSUED FOR TENDER	J. SMITH	J. SMITH

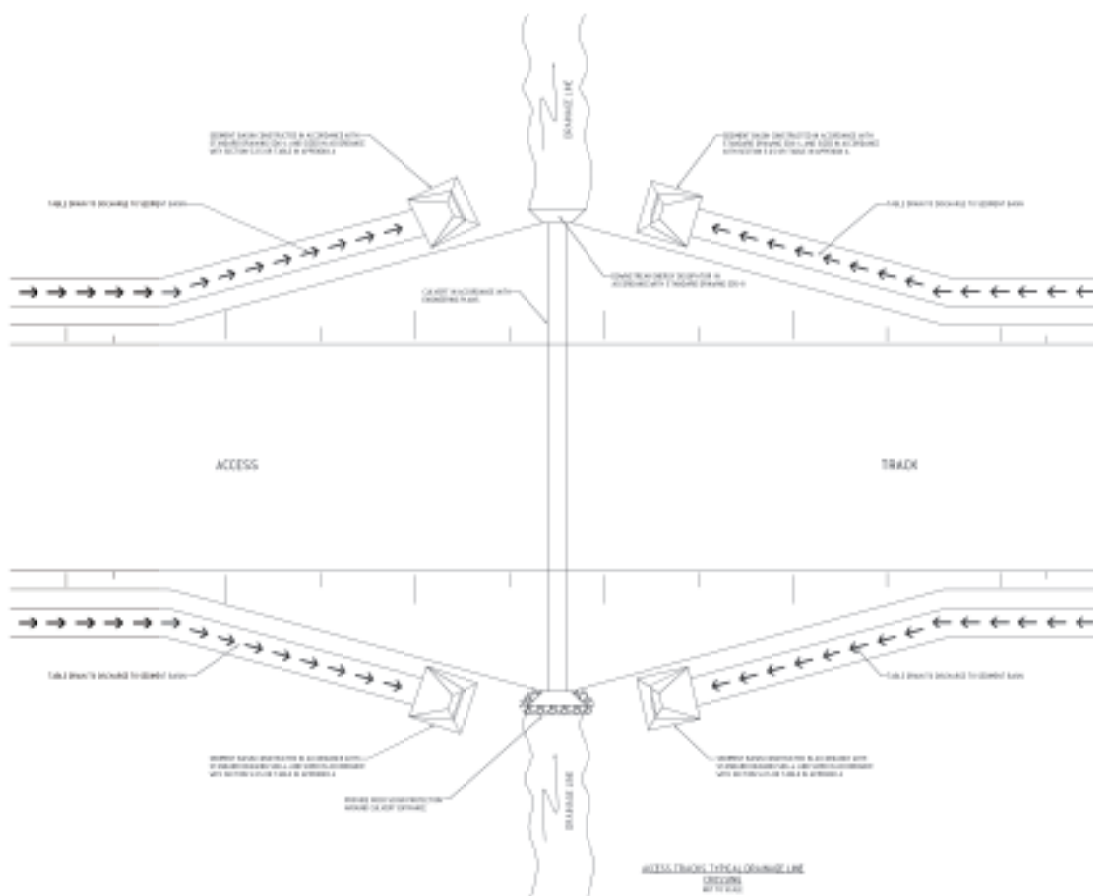
TARALGA WIND FARM
 SOIL AND WATER
 MANAGEMENT SUB PLAN

NSW DEPARTMENT OF
 PLANNING

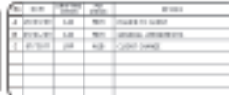
AUSCHWA
 ENERGY GROUP

ACCESS TRACKS GENERAL
 ARRANGEMENTS SHEET 1 OF 2

CSI 208095 CSI DYC EV14 100 C



- NOTE: DRAINAGE LINE CROSSING SHALL INCLUDE:**
1. A DRAINAGE LINE CROSSING SHALL INCLUDE:
 2. A DRAINAGE LINE CROSSING SHALL INCLUDE:
 3. A DRAINAGE LINE CROSSING SHALL INCLUDE:
 4. A DRAINAGE LINE CROSSING SHALL INCLUDE:
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 8. A DRAINAGE LINE CROSSING SHALL INCLUDE:
 9. A DRAINAGE LINE CROSSING SHALL INCLUDE:
 10. A DRAINAGE LINE CROSSING SHALL INCLUDE:



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Year	Number of cases	Percentage of cases
1990	10	10.0
1991	15	15.0
1992	20	20.0
1993	25	25.0
1994	30	30.0
1995	35	35.0
1996	40	40.0
1997	45	45.0
1998	50	50.0
1999	55	55.0
2000	60	60.0
2001	65	65.0
2002	70	70.0
2003	75	75.0
2004	80	80.0
2005	85	85.0
2006	90	90.0
2007	95	95.0
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2095	535	535.0
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2097	545	545.0
2098	550	550.0
2099	555	555.0
2100		

name: 2008.090	name: 2008.090
----------------	----------------

10078

Appendix A

SEDIMENT BASIN SIZING TYPE F

Sediment Basin Sizing - Type F

Based on Type F basin for Taralga area

Volume = settling zone + sediment storage zone

where:

settling zone = $10 \times C_v \times A \times R_{(y\%ile, 5 \text{ day})}$

C_v 0.25 soil hydrologic group C

A varies

R 17.8 mm, 80th %ile 5 day rainfall for Goulburn

sediment storage zone = 50% of settling zone capacity

Area, m ²	Settling Zone m ³	Sediment Storage Zone m ³	Total Sediment Basin Volume m ³
50	0.2	0.1	0.3
100	0.4	0.2	0.7
200	0.9	0.4	1.3
300	1.3	0.7	2.0
400	1.8	0.9	2.7
500	2.2	1.1	3.3
600	2.7	1.3	4.0
700	3.1	1.6	4.7
800	3.6	1.8	5.3
900	4.0	2.0	6.0
1000	4.5	2.2	6.7
1100	4.9	2.4	7.3
1200	5.3	2.7	8.0
1300	5.8	2.9	8.7
1400	6.2	3.1	9.3
1500	6.7	3.3	10.0
1600	7.1	3.6	10.7
1700	7.6	3.8	11.3
1800	8.0	4.0	12.0
1900	8.5	4.2	12.7
2000	8.9	4.5	13.4
2100	9.3	4.7	14.0
2200	9.8	4.9	14.7
2300	10.2	5.1	15.4
2400	10.7	5.3	16.0
2500	11.1	5.6	16.7
2600	11.6	5.8	17.4
2700	12.0	6.0	18.0
2800	12.5	6.2	18.7
2900	12.9	6.5	19.4
3000	13.4	6.7	20.0
3100	13.8	6.9	20.7
3200	14.2	7.1	21.4
3300	14.7	7.3	22.0
3400	15.1	7.6	22.7
3500	15.6	7.8	23.4
3600	16.0	8.0	24.0
3700	16.5	8.2	24.7
3800	16.9	8.5	25.4
3900	17.4	8.7	26.0
4000	17.8	8.9	26.7

Appendix B

AGENCY CONSULTATION



GEOLYSE

Table 8.1 - Agency Consultation

Date	Agency	Comment
October 2008	Sydney Catchment Authority Ms Girja Sharma	Preparation of Soil and Water Management Sub Plan based on a risk management approach considered to be appropriate for the development. Relevant contact person for SCA is Mr Jim Caddey.
February 2009	Sydney Catchment Authority Mr Jim Caddey	Discussed the adopted risk management approach and identification of low, medium and high risk areas with management measures defined for each risk area. This approach is considered appropriate and is promoted by the SCA for this type of development. In absence of site specific soil data, the erosion risk is being based on soil landscape maps which was considered to be appropriate for the development. SCA will be happy to receive a copy of the draft SWMSP however it is unlikely that a formal response will be received.

Appendix C

WEEKLY CHECKLIST

SOIL and WATER MANAGEMENT PLAN WEEKLY INSPECTION CHECKLIST

This form is to be completed weekly or immediately following significant rainfall (>15mm in one storm)

Section A — SWMP

- A1 Are all work areas clearly marked and defined?
- A2 Are all temporary and permanent drains operating effectively (ie not eroding, discharging to stable areas)?
- A3 Are all sediment traps functioning?
- A4 Are any additional sediment traps required?
- A5 Do any silt traps need cleaning?
- A6 Are actions taken after the last inspection adequate and effective?

Yes	No	N/A

Section B — Non-Conformance and Corrective Action

Item (ie A1, A2 etc) _____

Non-Conformance _____

Action Required _____

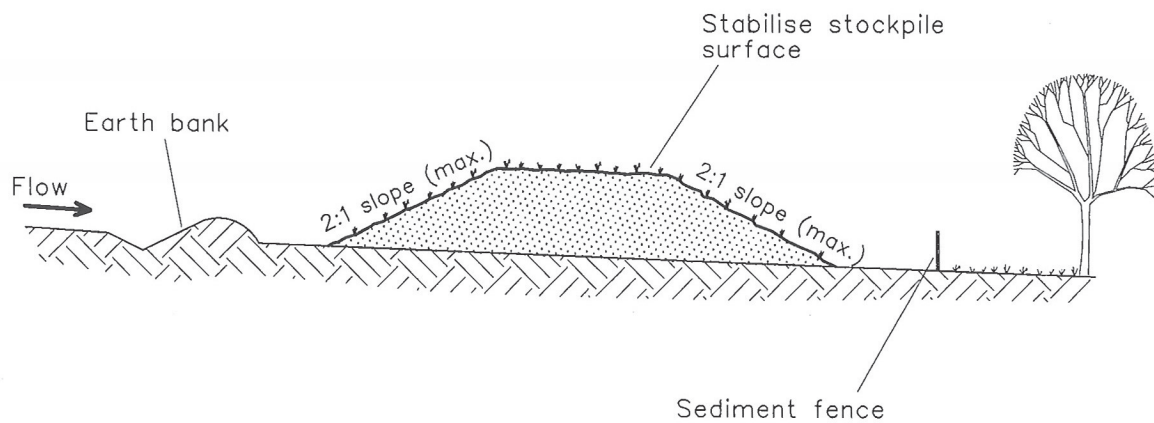
Form Completed By _____

Signed _____

Date: _____

Appendix D

STANDARD DRAWINGS (LANDCOM 2004)

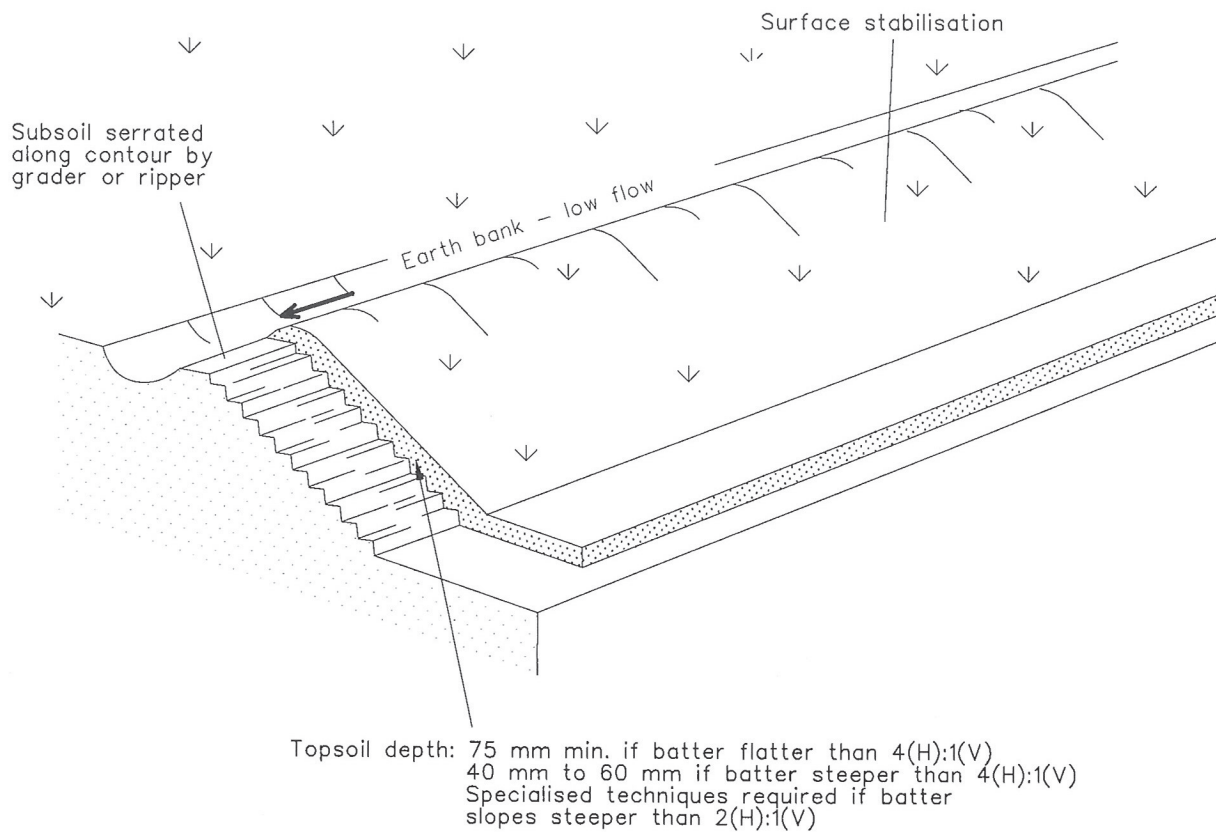


Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

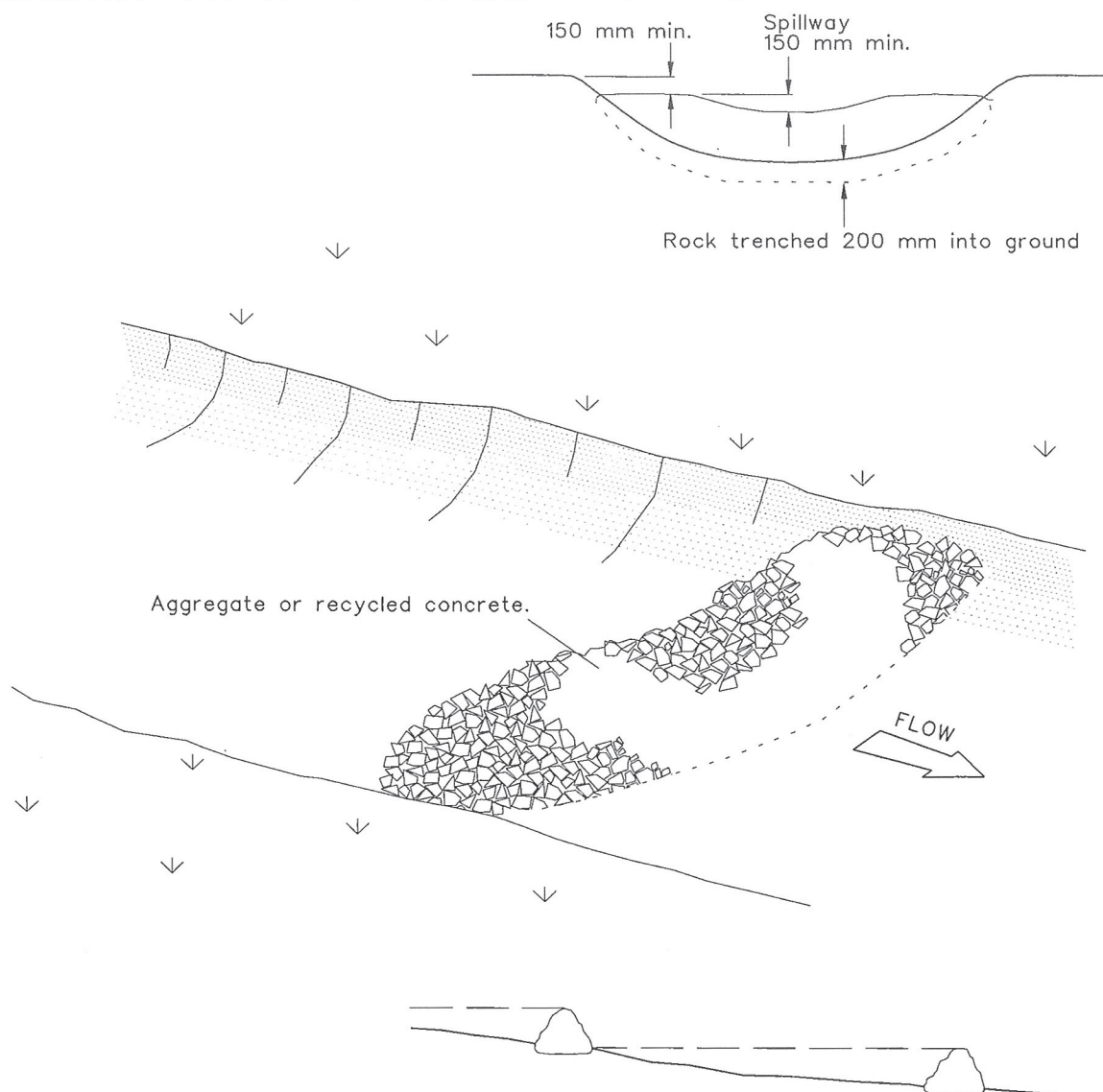
STOCKPILES

SD 4-1



Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.



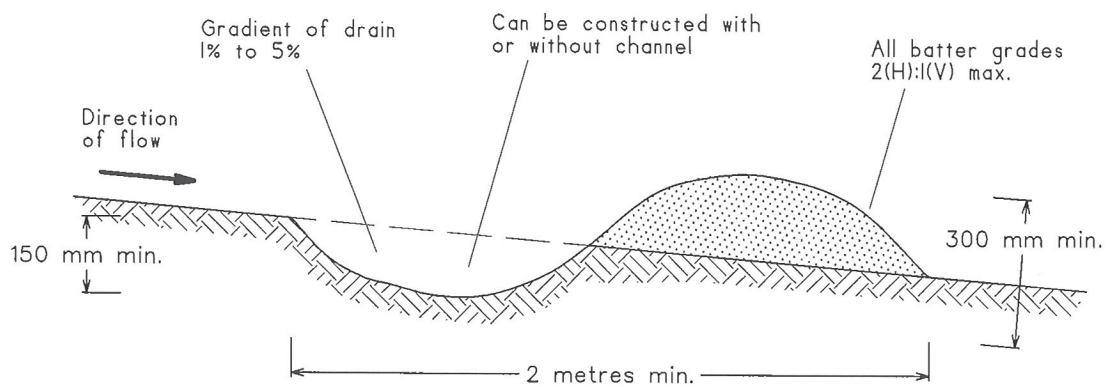
Spacing of check dams along centreline and scour protection below each check dam to be specified on SWMP/ESCP

Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM

SD 5-4



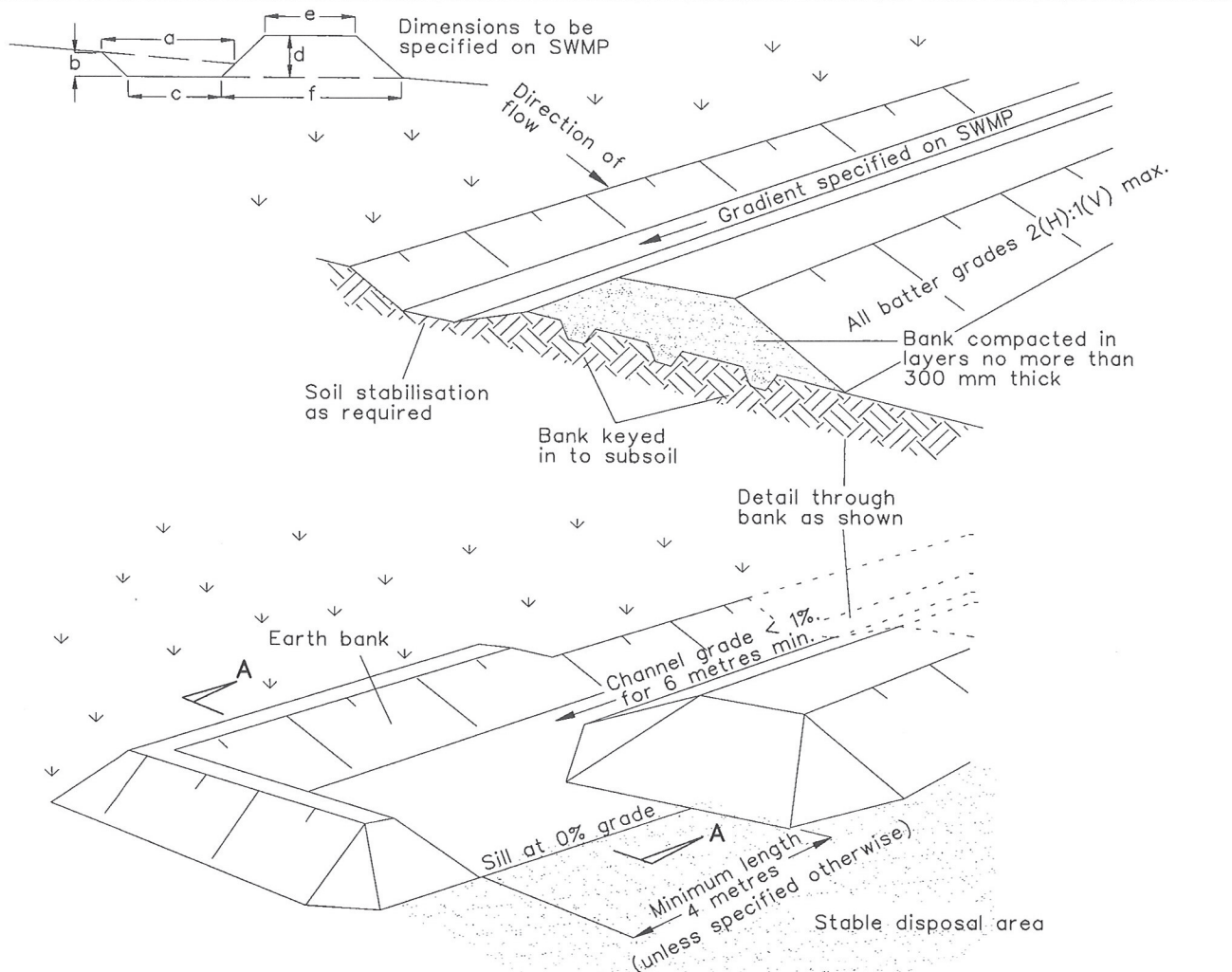
NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW)

SD 5-5



Level Spreader (or Sill)

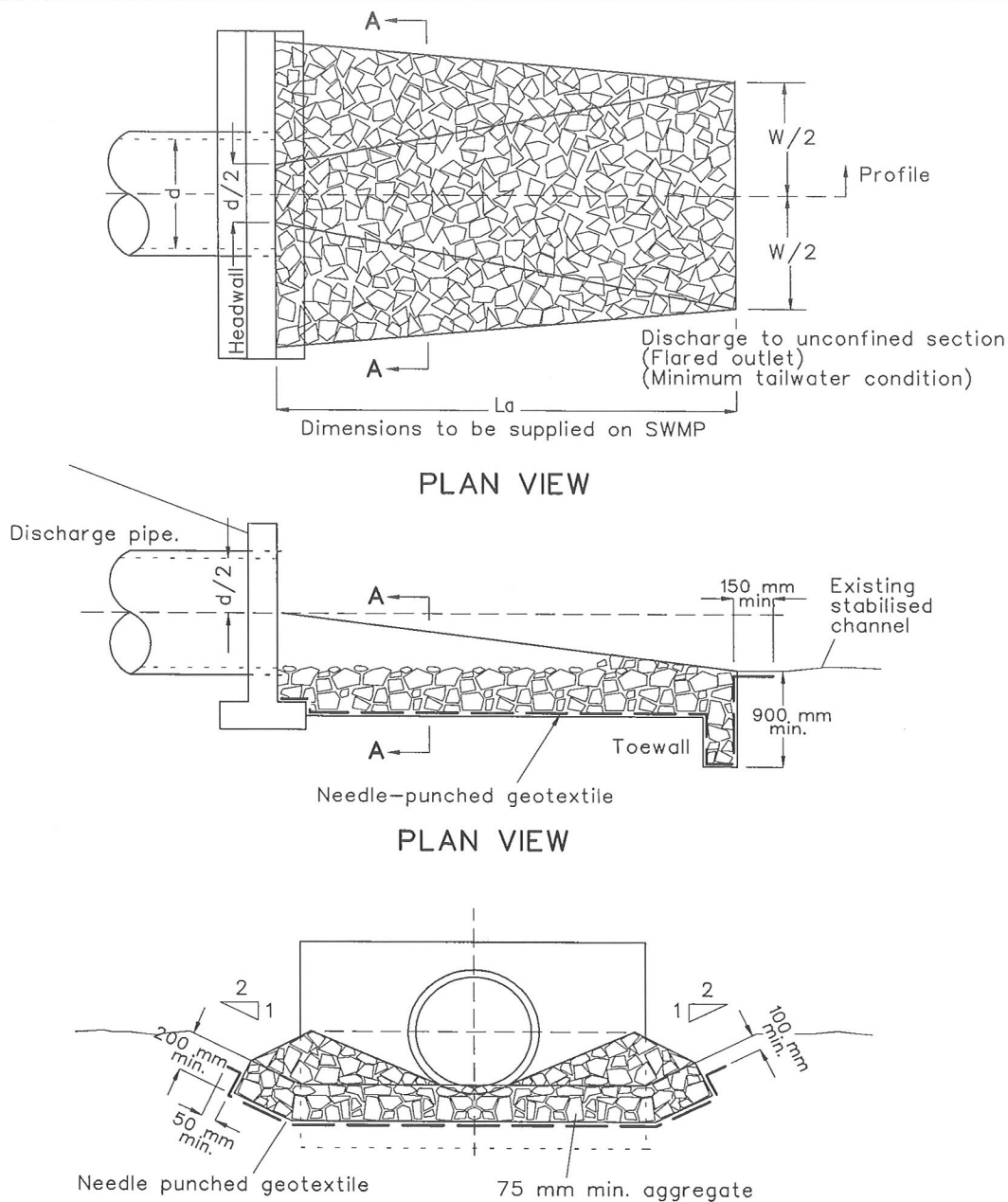
Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

Section AA

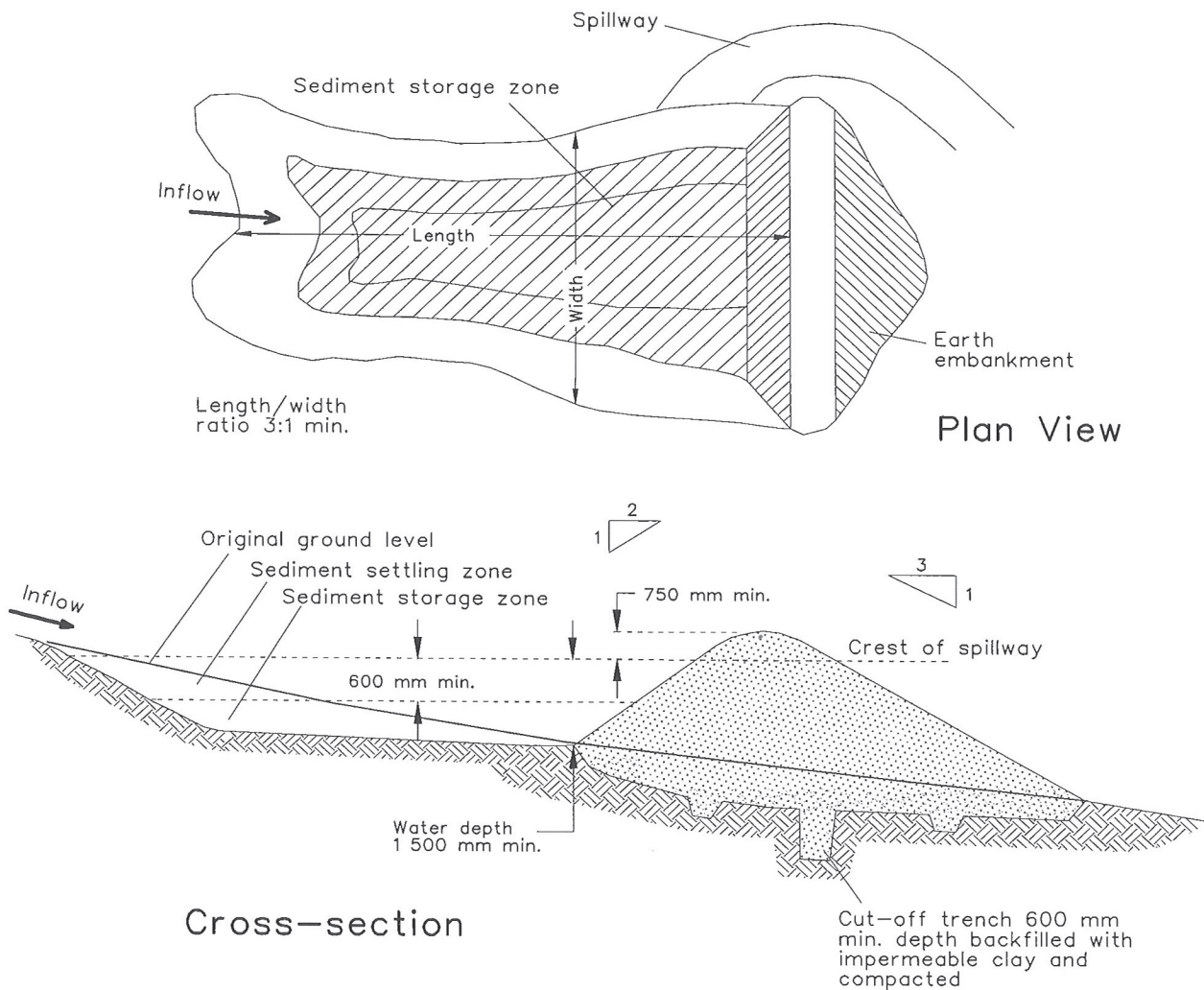
EARTH BANK (HIGH FLOWS)

SD 5-6



Construction Notes

1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.



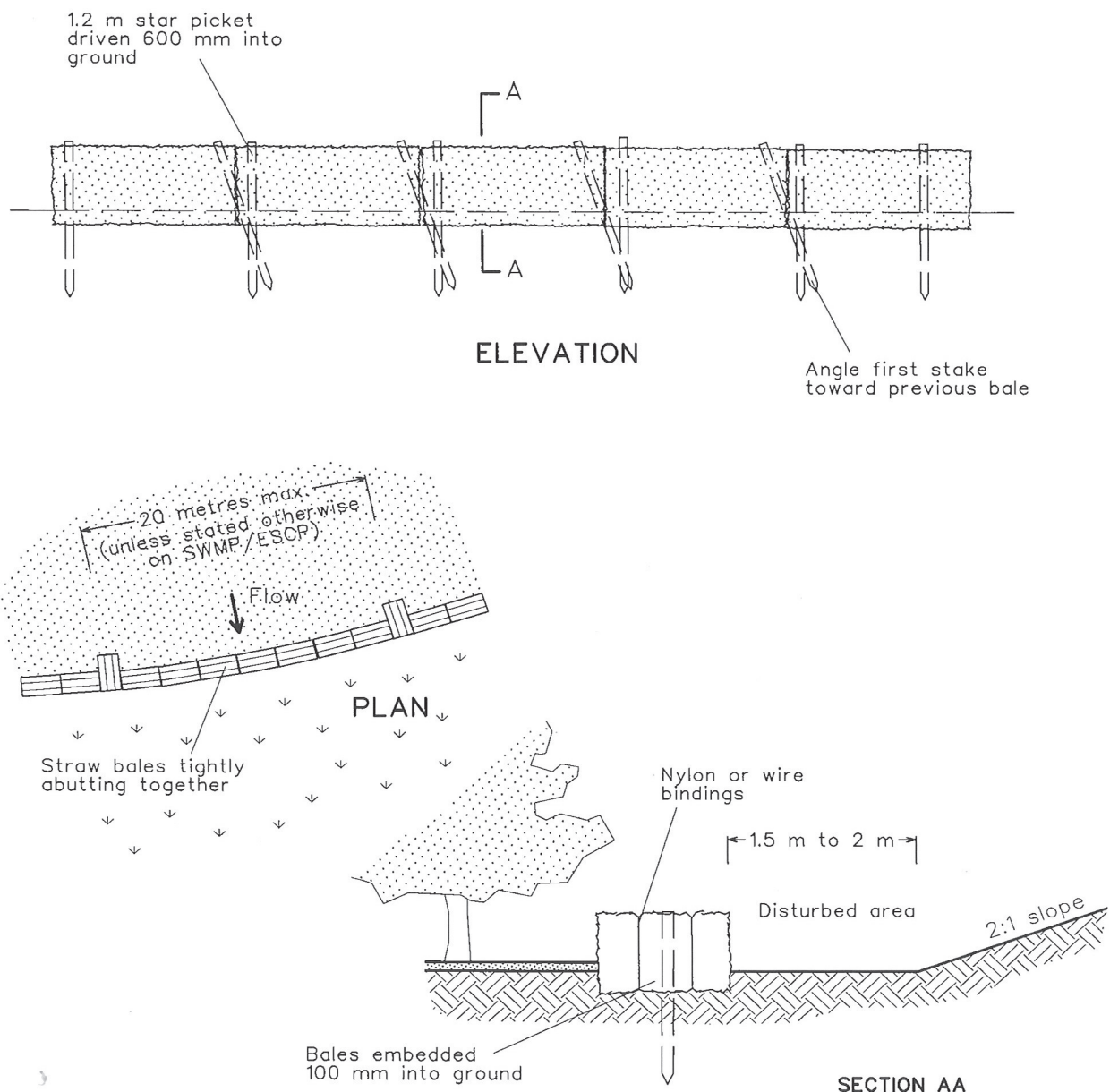
Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

EARTH BASIN - WET

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

SD 6-4

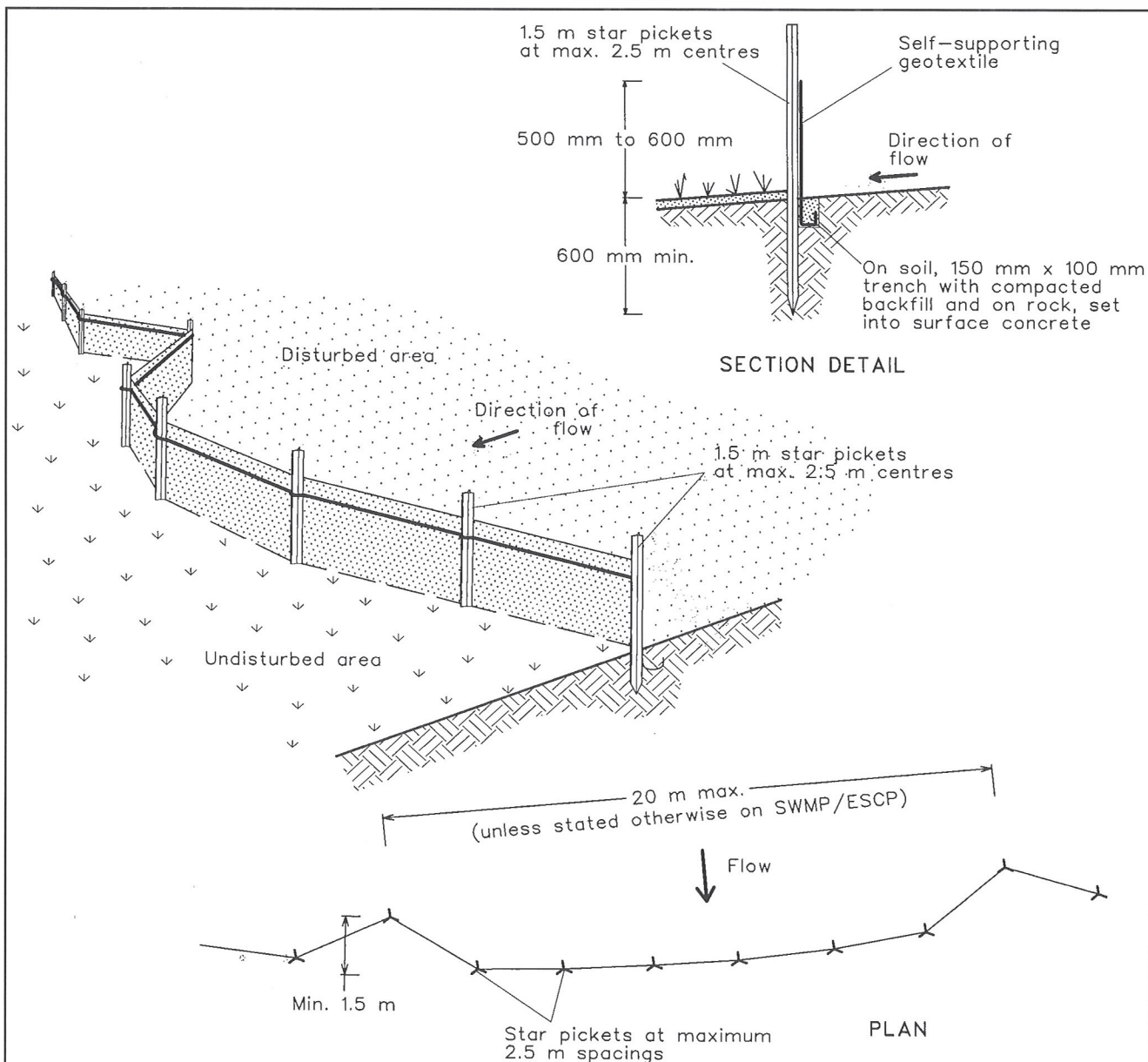


Construction Notes

1. Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2. Place bales lengthwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. Straws are to be placed parallel to ground.
3. Ensure that the maximum height of the filter is one bale.
4. Embed each bale in the ground 75 mm to 100 mm and anchor with two 1.2 metre star pickets or stakes. Angle the first star picket or stake in each bale towards the previously laid bale. Drive them 600 mm into the ground and, if possible, flush with the top of the bales. Where star pickets are used and they protrude above the bales, ensure they are fitted with safety caps.
5. Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1 to 2 metres downslope from the toe.
6. Establish a maintenance program that ensures the integrity of the bales is retained - they could require replacement each two to four months.

STRAW BALE FILTER

SD 6-7

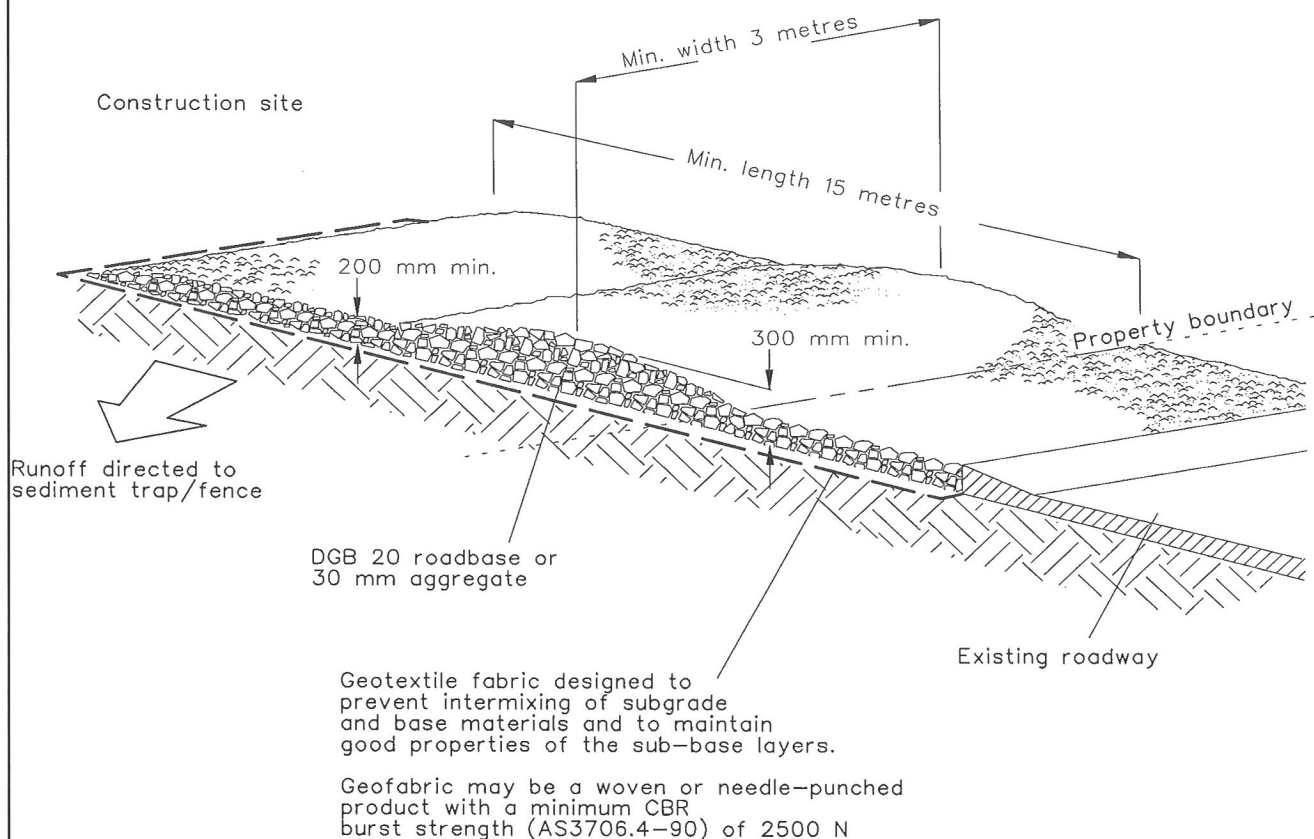


Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-8



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

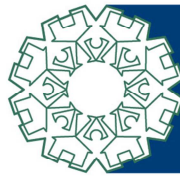
Appendix E

INCIDENT REPORT

INCIDENT REPORT**DATE:****TIME:****INCIDENT NO:****INCIDENT DETAILS:****NATURE OF INCIDENT:****CAUSE:****CORRECTIVE ACTION****FOLLOW-UP CONTACT REQUIRED?****SIGNATURE:****DATE:**

24.0 APPENDIX 7 – BUSHFIRE MANAGEMENT SUB-PLANS





GEOLYSE

**TARALGA WIND FARM
BUSHFIRE FIGHTING SUB PLAN**

**PREPARED FOR
CBD ENERGY LIMITED**

FEBRUARY 2012

Report Title:	<i>Taralga Wind Farm</i>
Project:	<i>Bushfire Fighting Sub Plan</i>
Client:	<i>CBD Energy Limited</i>
Report Ref.:	<i>211288_Bushfire_001.docx</i>
Status:	<i>For Approval_Revision 1</i>
Issued:	<i>7 February 2012</i>

Geolyse Pty Ltd and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All data contained within this report are prepared for the exclusive use of CBD Energy Limited to accompany this report for the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes apart from those stated therein.

Geolyse Pty Ltd accepts no responsibility for any loss, damage suffered or inconveniences arising from, any person or entity using the plans or information in this study for purposes other than those stated above.

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Introduction

1.1 BACKGROUND

This Bushfire Fighting Sub Plan (BFSP) comprises part of the Construction Environmental Management Plan (CEMP) for the Taralga Wind Farm.

This sub plan has been developed in response to the NSW Minister for Planning's Conditions of Consent (dated 17 January, 2006) as amended by the Land and Environment Court order in matter 11216 of 2007, dated 27 April 2009.

1.2 CONDITIONS OF APPROVAL

Approval conditions relevant to bushfire fighting are listed in **Table 1.1**.

Table 1.1 – Conditions of Approval

Condition Number
105. As part of the CEMP, the Applicant must provide details of measures to prevent fires igniting during construction activities. These measures must include, but not be limited to: (a) prohibition of work involving risk of ignition during total fire bans; (b) availability of fire suppression equipment; and (c) storage and maintenance of fuels and other flammable materials.
106. During Construction, the Applicant is to consult with the local RFS in periods of high fire danger to verify that proposed activities to be undertaken during this period, will not adversely increase the risk of bushfire. The Applicant must comply with any reasonable request of the local RFS.
107. The Applicant must consult with the RFS after the commencement of operation and any other time thereafter as required by the RFS, to ensure that the local RFS is familiar with the development, including location and identification of wind turbines for the purpose of fast access in emergencies. ^{Note 1}
Note 1: To be addressed in the Operational Environmental Management Plan (OEMP)

1.3 OBJECTIVES

The objectives of this Bushfire Fighting Sub Plan are to:

- Define appropriate measures and processes to minimise bushfire related risks during the construction of the Taralga Wind Farm.
- Confirm the intent to engage with the Rural Fire Service in the refinement of this sub plan as the detailed design progresses, and detail relevant to the construction schedule and methodology is refined.
- Provide a monitoring, auditing and reporting framework to ensure the effectiveness of the controls implemented.

1.4 WIND FARM INFRASTRUCTURE

Approved wind farm infrastructure is shown on **Drawing EV02** and includes:

- 61 wind energy turbines;
- new and upgraded access tracks;
- underground and overhead electricity cables;
- substation and overhead power connection to grid;
- construction compound; and
- TV retransmitter tower.

1.5 KEY CONTACTS

1.5.1 RURAL FIRE SERVICE

The construction of the wind farm will involve the use of motorised equipment, the storage of combustible materials, and the presence of construction personnel in grassed and timbered areas; on land mapped as bush fire prone by the Rural Fire Service (refer **Drawing EV03**)¹.

Consistent with the Minister's consent condition, CBD Energy Limited will consult with the local Rural Fire Service (RFS) to manage the bushfire risk.

The appropriate local RFS contact, confirmed through preliminary consultations with the RFS, is the Operations Manager of the Southern Tablelands Zone (contact details below).

Operations Manager

Mr Ian Kennerley

Phone: 02 4832 0268

E-mail: ian.kennerley@rfs.nsw.gov.au

After Hours Duty Officer Phone: 02 6226 3100

1.5.2 EMERGENCY AGENCIES

Emergency contacts for other agencies/stakeholders are listed in **Table 1.2**.

Table 1.2 - Emergency Contacts

Position	Contact Details
All emergencies	Phone: 000
Hospital (Goulburn)	Phone: 02 4827 3111
NSW Rural Fire Service	Phone: 000
Taralga Police	Phone: 02 4840 2044
NSW State Emergency Service	Phone: 000
WIRES	Phone: 1300 094 737 or 02 4822 3888

¹ This drawing is extracted from the original EIS (2004) and includes turbines which have since been dropped – it is included as it shows mapped Bushfire Prone Land.

Legislative Requirement

2.1 RURAL FIRES ACT, 1997

Pursuant to the *Rural Fires Act 1997* (RFA, 1997):

- It is the duty of the owner or occupier of land to take notified and practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of bush fires on or from, that land.
- If a fire (not being a fire or part of a fire lit under the authority of this Act or any other Act) is burning on any land at any time during a bush fire danger period applicable to the land the occupier of the land must:
 - (a) immediately on becoming aware of the fire and whether the occupier has lit or caused the fire to be lit or not, take all possible steps to extinguish the fire, and
 - (b) if the occupier is unable without assistance to extinguish the fire and any practicable means of communication are available, inform or cause to be informed an appropriate officer of the existence and locality of the fire if it is practicable to do so without leaving the fire unattended.

Site Description

3.1 LOCATION

Taralga is located in the Southern Tablelands of New South Wales, approximately 140km south west of Sydney 35km north of Goulburn (refer **Drawing EV01**). The wind farm will be built along ridgelines in an area that stretches approximately 11km in a north-south direction and up to 4km in an east-west direction. The site comprises flat plateaus and undulating land between ridgelines and gullies formed by creeks. Site elevation varies between 830mAHD and 960mAHD. The highest point is located centrally in the project area adjacent to Bannaby Road.

3.2 CLIMATE

The average annual rainfall recorded at Taralga is 805mm. This is received over an average of 116.4 rain days per annum. Rainfall distribution is reasonably consistent throughout the year (refer to **Graph 1**) ranging from 60.3mm in April to 74.2mm in June. The average number of rain days is higher in the winter months. Temperatures around Taralga are typical of the Southern Tablelands region. The area experiences warm summers and cool to cold winters. Average maximum temperatures range from 10°C in winter to 25.7°C in summer. Average minimum temperatures range from 0.6°C in winter to 11.7°C in summer.

Average minimum and maximum temperatures are shown on **Graph 2**.

3.3 DRAINAGE & ACCESS

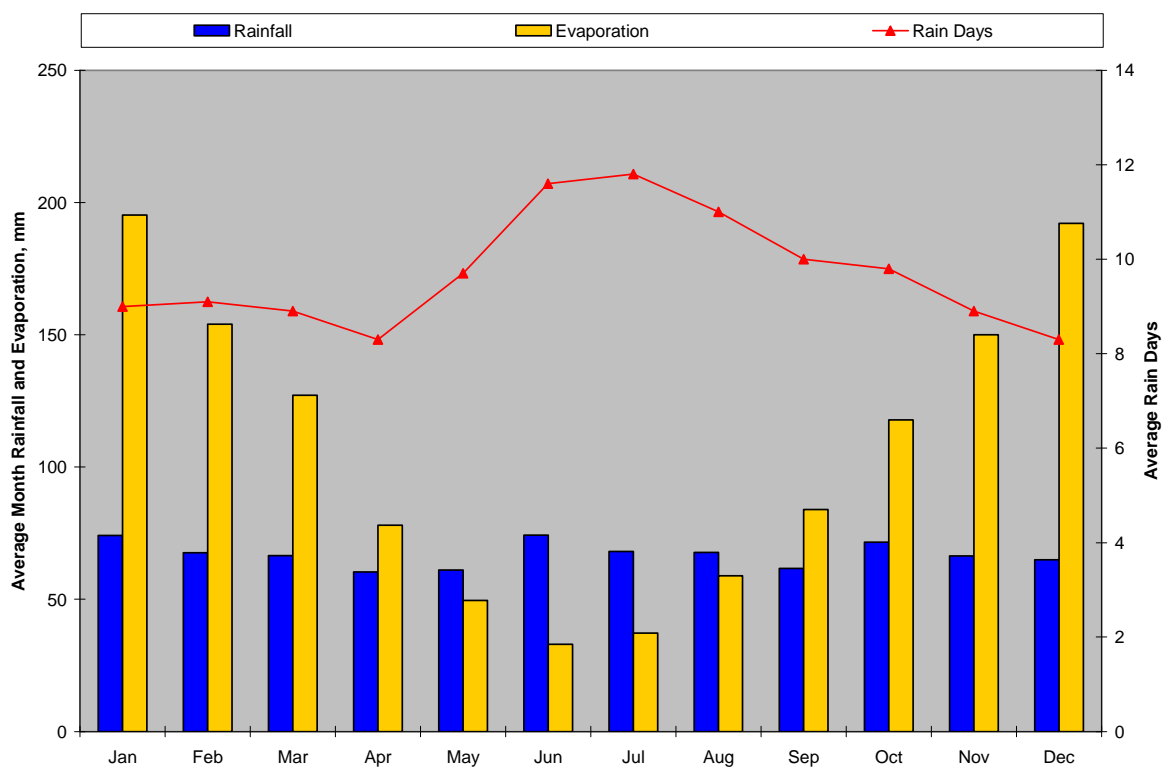
The wind farm site lies in three catchments:

- Kerrawary Creek – which drains in a generally easterly direction before turning south to join the Tarlo River. The central and southern sections of the proposed wind farm (generally south of Bannaby Road) are in this catchment. Tributaries include Chateris Creek and Dawson Flat Creek.
- Woolshed Creek –flows in a north-easterly direction to the north of Taralga and is joined by numerous ephemeral drainage lines including Corroboree Creek and its associated minor tributaries of Meadow Creek, Narrow Gut Creek, Ryders Gully and Crees Creek. Woolshed Creek joins Guineacor Creek north of the wind farm site.
- Snooks Creek – is lies on the eastern edge of the Woolshed Creek catchment. Drainage lines in this catchment include Snooks Creek and Back Creek. Both head in a northerly direction to join Guineacor Creek.

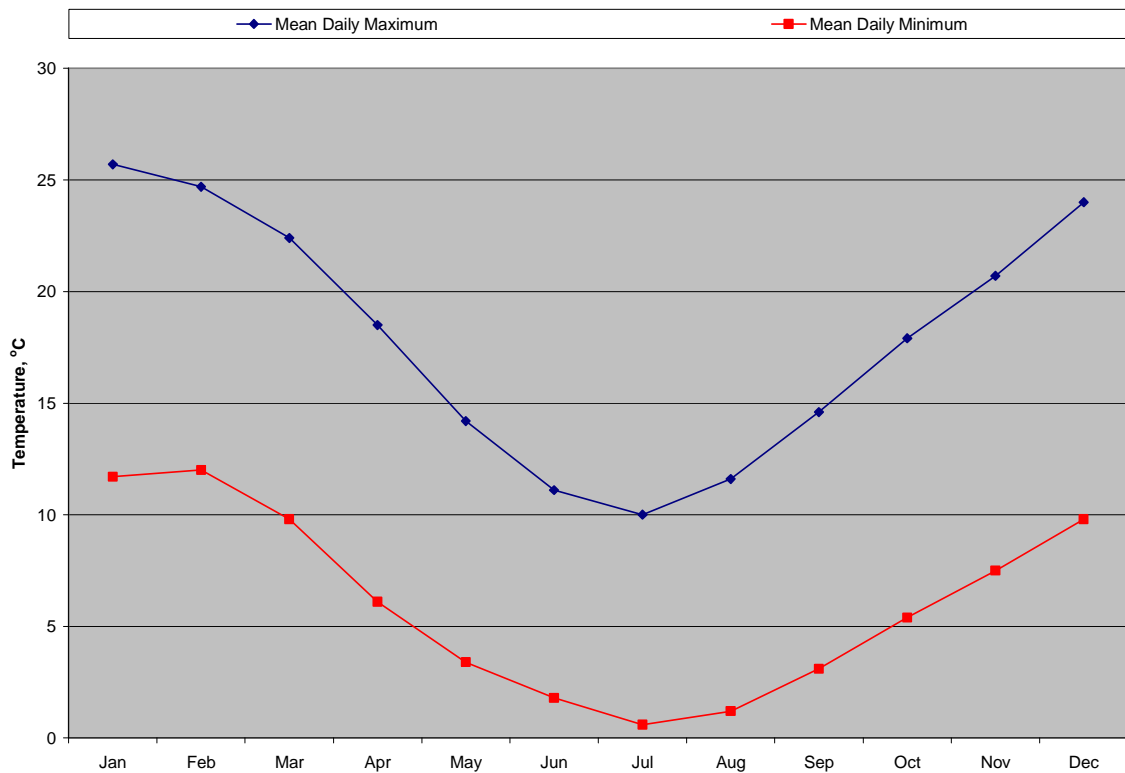
Kerrawary Creek and Woolshed Creek are defined as perennial watercourses on the Taralga 1:25,000 topographic map. All other drainage lines are defined as intermittent watercourses that generally only flow following heavy or prolonged rainfall.

The majority of the wind farm infrastructure would be located on the ridgelines at levels well above the watercourses across the site. Exceptions include the points where access tracks cross drainage lines. There would be numerous small drainage line crossings that would be constructed with culverts to control local drainage.

The wind turbines and access tracks are generally located along ridgelines with slopes ranging from near flat to 20 percent (11 degrees).



Graph 1: Average Monthly Rainfall and Evaporation

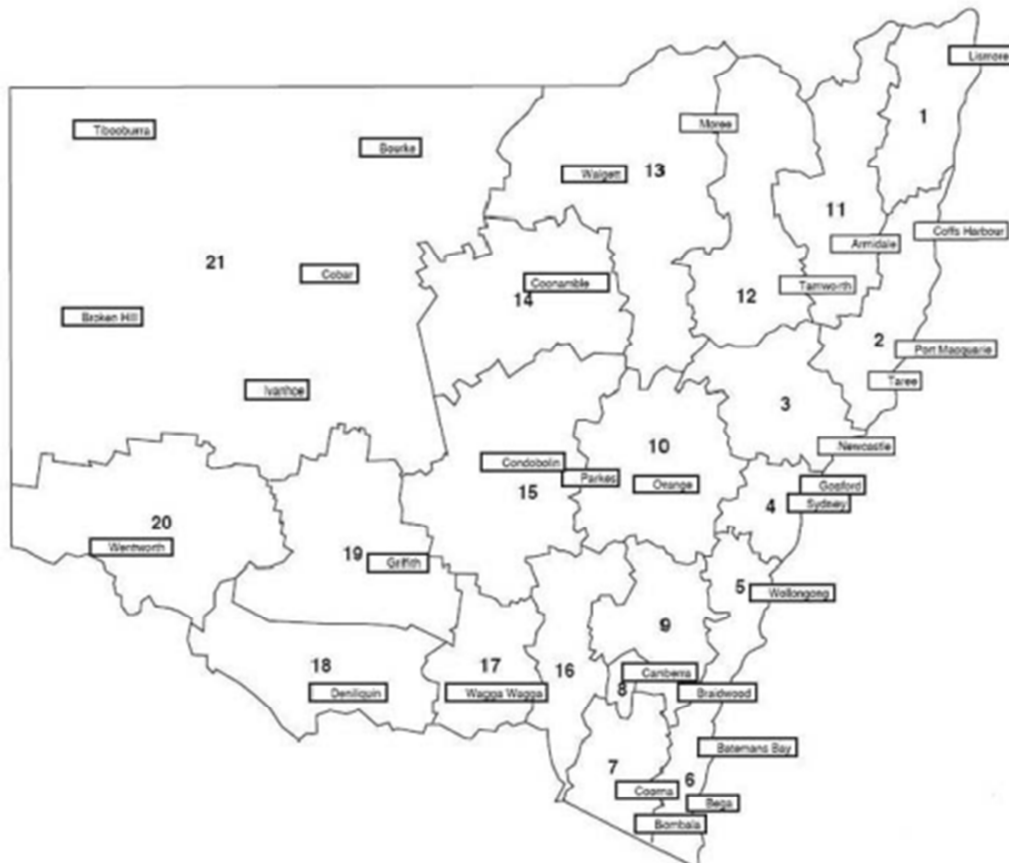


Graph 2: Average Temperatures

Management Measures

4.1 FIRE DANGER STATUS

The fire danger status shall be obtained through the RFS website http://www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1109 and detailed at the contractor sign-in register daily. The site at Taralga is Located in zone 9 on the map.



Where there is a high rating identified, appropriate measure will be put in place and advertised to workers on site.

4.2 TOTAL FIRE BAN RULES

During a Total Fire Ban no fire may be lit in the open and all Fire permits are suspended. This includes incinerators and barbecues which burn solid fuel (eg. wood or charcoal).

You may use a gas or electric barbecue, but only if:

- It is on a residential property within 20 metres of the house or dwelling ;
- It is a picnic area and the appliance is approved by Council, National Parks or State Forest;
- It is under the direct control of a responsible adult;
- The ground within 2 metres of the barbecue is cleared of all materials which could burn; and
- You have an immediate and continuous supply of water available

A range of activities may be exempt from Total Fire Bans, such as emergency infrastructure work or ceremonial fires. The RFS Commissioner is responsible for exemptions to Total Fire Bans. These exemptions are detailed in the NSW Government Gazette each time a total fire ban is declared.

Lighting a fire on a day of Total Fire Ban attracts a fine of up to \$5500 and/or 12 months gaol. Penalties for a fire that escapes and damages or destroys life, property or the environment can attract much greater fines and gaol terms with maximums at \$100,000 and/or 14 years gaol.

Civil law suits can also be brought against the person responsible for a fire by those seeking compensation for losses sustained.

The Rural Fires Regulation 2008 states:

A person must not, in connection with any agricultural, pastoral or other land use, drive or use in any grass, crop or stubble land any motorised machine unless:

- *the machine is constructed so that any heated areas will not come into contact with combustible matter, and*
- *the machine is maintained in a good and serviceable condition so as to prevent the outbreak of fire.*

A person must not, in connection with any agricultural, pastoral or other land use:

- *drive or use in any grass, crop or stubble land, a motorised machine on which it is practicable to carry prescribed fire safety equipment, or*
- *carry out welding operations or use explosives or an angle grinder or any other implement that is likely to generate sparks,*

unless the person carries on the machine, or has in the vicinity, prescribed fire safety equipment that is maintained in a serviceable condition.

Whilst the above clauses of the Regulation apply all year round, particular care should be taken to adhere to the above clauses during a Total Fire Ban.

Schedule Standard Total Fire Ban Exemptions for Government Gazette 300708

Below is an extract from the above government gazette, noting exclusion from total fire bans.

Schedule 14 - Building Construction / Demolition – Urgent and Essential

Fire lit, maintained or used in association with welding, cutting and grinding work undertaken in the course of urgent and essential construction or demolition of buildings provided that:

- a) *the fire is lit and maintained in a manner which will prevent the escape of fire, sparks or incandescent or burning material from the site of the works;*
- b) *adequate fire fighting equipment is provided at the site of the works to prevent the escape or spread of the fire; and*
- c) *if the work is to be carried out above the normal ground or floor level the area below the works must be totally free of combustible material and any fire, spark or incandescent material must be prevented from falling to that area.*
- d) *prior to lighting the fire, the person in charge of the work must notify:*
 - (i) *the NSW Rural Fire Service Zone or District Manager for that district, If the site of the work is within a rural fire district; or*
 - (ii) *the Officer in Charge of the nearest NSW Fire Brigades fire station if the site of the work is within a fire district and comply with any direction or additional condition which may be imposed by that officer which may include a direction that the fire not to be lit.*

4.3 STORAGE OF FUELS AND COMBUSTIBLES

During work hours fuels and combustible materials are to be stored and used in accordance with the manufacturer/suppliers recommendations, including the availability of any fire fighting equipment. Upon the cessation of work for the day all fuels and like products must be returned to the main site compound and stored in the designated area. This designated area will be sign posted "Fuel storage area" and appropriate controls such as fire fighting equipment made available to the area. The fuel storage area will be free of grass and other combustible material and be located away from any site accommodation such as offices, amenities and lunch rooms. The above should be undertaken in accordance with any further requests as received from the rural fire service. Provisions include the storage of fuel in 110% bunded areas.

4.4 SPECIFIC CONTROLS

The following measures would be adopted to minimise bushfire related risks throughout the construction phase.

- Motorised equipment would not be driven in grassed areas unless that machine is constructed so that any heated areas do not come in contact with combustible matter.
- All machines and equipment would be maintained in a good and serviceable condition.
- All plant and equipment accessing the site, and activities that could generate sparks (i.e. welding and use of angle grinders), would require ready access to prescribed fire safety equipment (knapsack spray pump of 16L capacity filled with water, fire extinguisher (liquid type) of 9L capacity or dry powder type extinguisher of 0.9kg capacity).
- During construction trailer mounted water tankers with fire fighting pumps and spray hoses would be available on site at all times.
- On an ongoing basis the areas immediately around turbines, substation and construction compounds would be managed to prevent the build up of combustible matter.

4.5 RFS ENGAGEMENT

As the construction schedule is refined and relevant detail becomes available, CBD Energy Limited will consult with the RFS to ensure:

- Restrictions related to the prohibition and or restriction of certain construction activities, at certain locations, in certain circumstances (e.g. periods of total fire bans) are clearly understood by all parties and adhered to.
- The specification of fire suppression equipment available on site, include tanker access and sources of water, are adequate.

To this end, it is noted that the wind farm will result in improved trafficable access for the local brigade and enhance fire fighting containment options over a greater area of grassland/woodland interface in this area east of Taralga.

- That a detailed and accurate site map is made available that specifies the location and quantities of all stored flammable material (e.g. fuels).
- That a suitable emergency evacuation plan is prepared and adequate training in the use of fire fighting equipment is provided.

During construction, the CBD Energy Limited will also consult continuously with the local RFS in periods of high fire danger to verify that proposed activities to be undertaken during this period will not adversely increase the risk of bushfire.

CBD Energy Limited acknowledge that the Minister's consent requires it to comply with any reasonable request of the local RFS.

Inspection and Monitoring

5.1 INSPECTION AND MONITORING

Maintenance and ready access to all fire fighting equipment is a critical element of bushfire risk management.

Accordingly, the site manager will, during the bushfire season, check the operation of all equipment on a weekly basis. Outside the bushfire season equipment will be inspected and checked on a monthly basis.

Records of weekly and monthly inspections shall be maintained.

5.2 RFS CONSULTATION

As required, the site manager will maintain consultation with the Operations Manager of the Rural Fire Service's Southern Tablelands Zone throughout the construction period.

This will include submission of the final Bushfire Fighting Sub Plan as the design effort on the wind farm progresses, and aspects related to the construction schedule and techniques are refined.

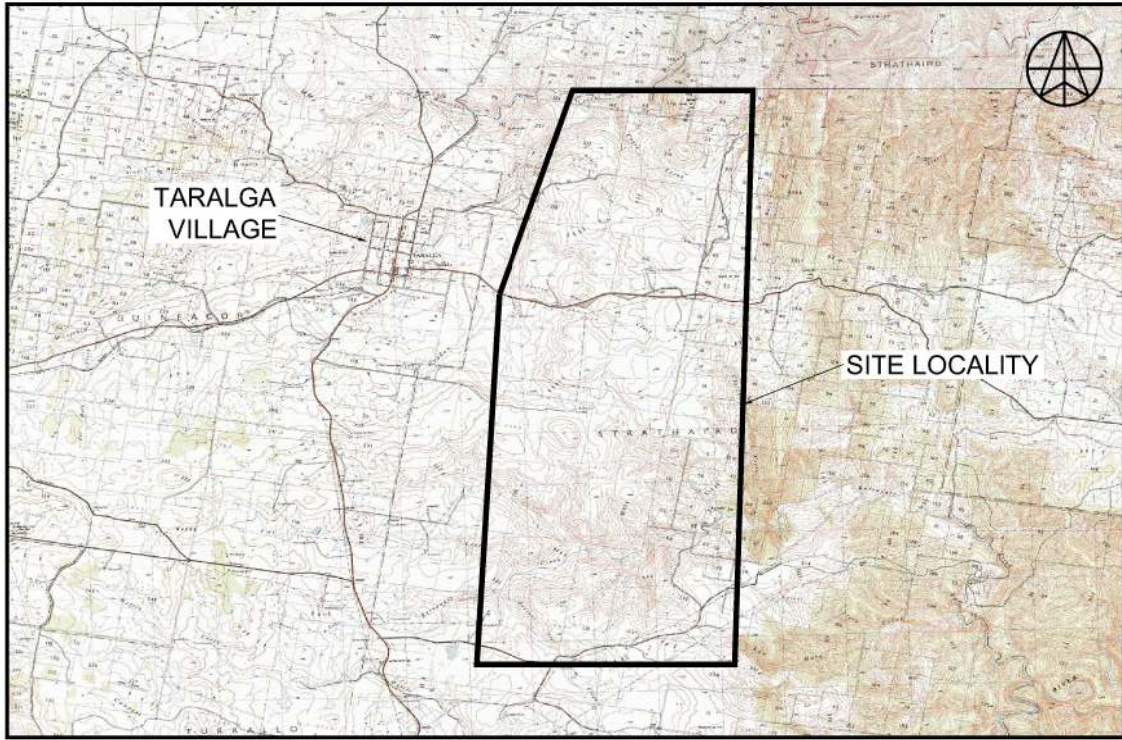
Drawings

TARALGA WIND FARM

CBD ENERGY LIMITED

BUSHFIRE FIGHTING SUB PLAN DRAWINGS

SCHEDULE OF DRAWINGS			
SHEET	TITLE	REV.	DATE
02A_EV01	TITLE SHEET, DRAWING LIST & SITE LOCALITY	A	07/02/2012
02A_EV02	OVERALL LAYOUT	A	07/02/2012
02A_EV03	BUSHFIRE PRONE LAND	A	07/02/2012



SITE LOCALITY
NOT TO SCALE



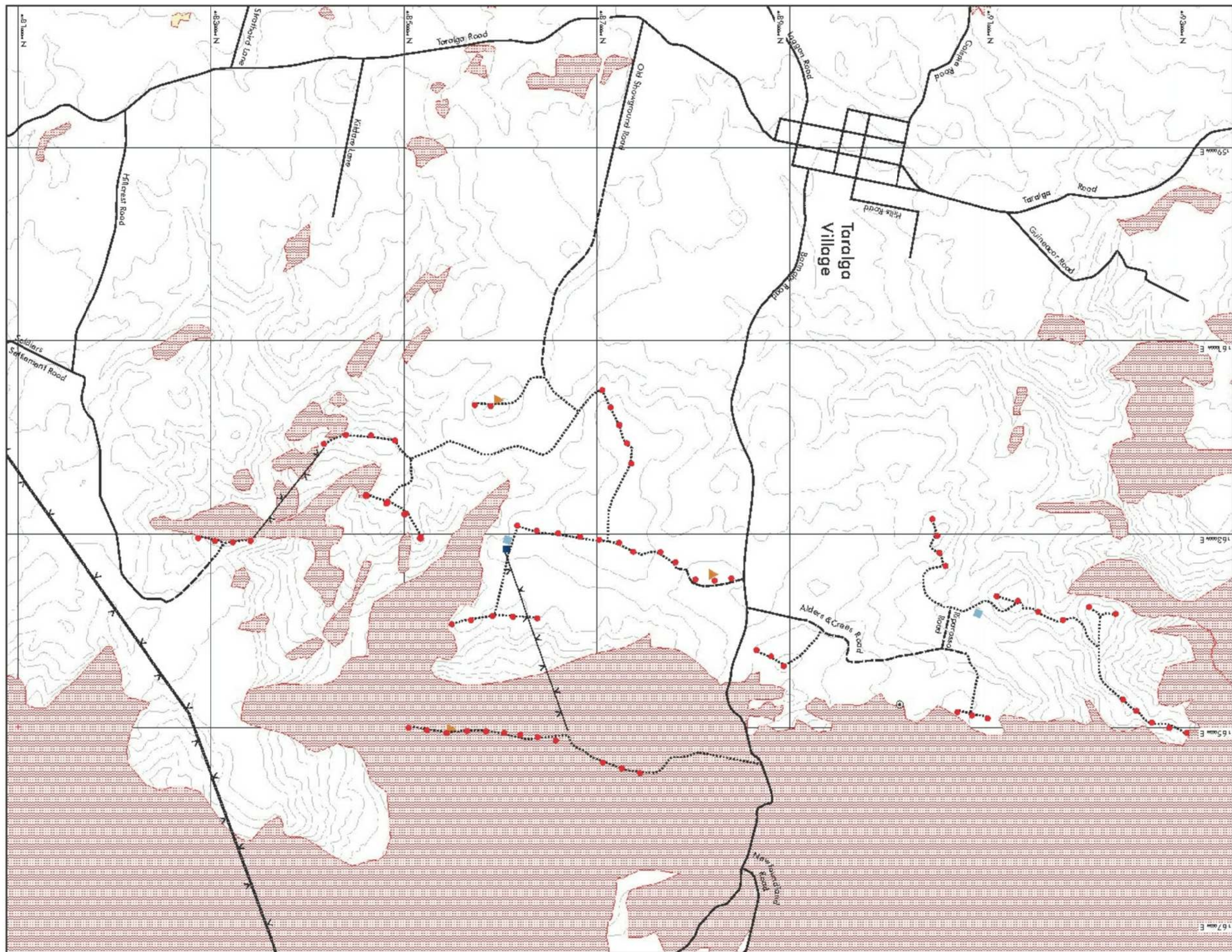
No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	07/02/12	LRP/RMS	AGB	DRAFT

PROJECT
TARALGA WIND FARM BUSHFIRE FIGHTING SUB PLAN
FILE REFERENCE: 211288_02A_EV01-EV03.dwg

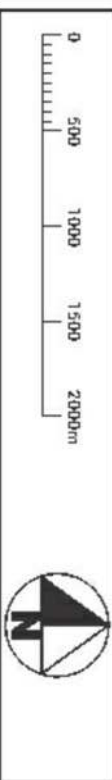
APPROVAL AUTHORITY
NSW DEPARTMENT OF PLANNING

CLIENT
CBD ENERGY LIMITED

DRAWING		
OVERALL LAYOUT		
PROJECT NUMBER:	211288	DRAWING NUMBER: 02A_EV02
		REV. A
SOURCE:		



- Wind Turbines
 - Re-transmitter
 - Upgrade Access Track
 - New Access Track
 - Public Road
 - Overhead Power Lines
 - Wind Monitoring Towers
 - Temporary Work Compounds
 - Substation
 - Bush Fire Prone Land
- Reproduced from digitised mapping provided by Rural Fire Service based on Landsat image. Vegetation classifications included forest, scrubby woodland and hilly grasslands. Latter two vegetation types not delineated on above figure and both shown as bush fire prone land.



Taralga Windfarm

FIGURE 5.17

BUSHFIRE PRONE LAND

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	07/02/12	LRP/RMS	AGB	DRAFT

PROJECT
TARALGA WIND FARM BUSHFIRE FIGHTING SUB PLAN
FILE REFERENCE: 211288_02A_EV03-EV03.dwg

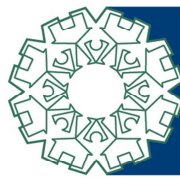
APPROVAL AUTHORITY
NSW DEPARTMENT OF PLANNING

CLIENT
CBD ENERGY LIMITED

DRAWING					
BUSHFIRE PRONE LAND					
PROJECT NUMBER:	211288	DRAWING NUMBER:	02A_EV03	REV.	A
SOURCE:					

25.0 APPENDIX 8 – HERITAGE MANAGERMENTS SUB-PLANS





GEOLYSE

TARALGA WIND FARM HERITAGE SUB PLAN

**PREPARED FOR
AUSCHINA ENERGY GROUP**

DECEMBER 2011

Report Title:	<i>Taralga Wind Farm</i>
Project:	<i>Heritage Sub Plan</i>
Client:	<i>AusChina Energy Group</i>
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The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

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Introduction

1.1 BACKGROUND

This Heritage Sub Plan (HSP) comprises part of the Construction Environmental Management Plan (CEMP) for the Taralga Wind Farm.

This sub plan has been developed in response to the NSW Minister for Planning's Conditions of Consent (dated 17 January, 2006) as amended by the Land and Environment Court order in matter 11216 of 2007, dated 27 April 2009.

1.2 CONDITIONS OF APPROVAL

Approval conditions relevant to heritage are listed in **Table 1.1**.

Table 1.1 - Conditions of Approval

Condition Number
83. In the event that an Aboriginal object (as described in <i>the National Parks and Wildlife Act, 1974</i>) or a relic is uncovered during the Construction, all work in the vicinity of the object must cease and the Applicant must contact the DEC as soon as practicable. The Applicant must meet the requirements of the DEC with respect to the treatment, management, and/or preservation of any such object.
84. In the event that a non-indigenous heritage item is uncovered during Construction, all work in the vicinity of the object must cease and the Applicant must contact the NSW Heritage Council to determine an appropriate course of action prior to the recommencement of work in the vicinity of the item.

1.3 OBJECTIVES

The objectives of this Heritage Sub Plan are to:

- Provide heritage mitigation measures for the construction of the Taralga Wind Farm;
- Describe the practical measures, including monitoring, to prevent or mitigate potential impacts to heritage.

1.4 HERITAGE DISCOVERY CONTACTS

In the event of heritage items being uncovered during construction works, the following heritage contacts would be contacted in **Table 1.2**.

Table 1.2 - Heritage Discovery Contacts

Position	Contact Details
Phil Boot; Regional Archaeologist, Office of Environment and Heritage, Queanbeyan	6229 7177
Delise Freeman, Pejar Local Aboriginal Land Council	4822 3552
Bill Hardie, Gundungurra Tribal Council Aboriginal Corporation	4782 2413

Legislative Requirements

2.1 RELEVANT LEGISLATION

Key environmental legislation relevant to heritage management includes:

- *NSW Heritage Act 1977;*
- *Environmental Planning and Assessment Act 1979 amended by the Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) 2005;*
- *National Parks and Wildlife Act 1974;*
- *Environmental Protection and Biodiversity Conservation Act 1999 amended by the Environment and Heritage Legislation Amendment Act (no. 1) 2003;*
- *Australian Heritage Council Act 2003.*

2.2 APPROVALS AND PERMITS

Given the realignment of turbines and infrastructure to avoid impacts, there are no known necessary approvals or permits required as part of this Heritage Sub Plan.

2.3 INDIGENOUS LAND USE AGREEMENT

AusChina Energy Group are also committed to managing indigenous heritage issues in accordance with the Land Use Deed dated 21st July 2005 negotiated between the registered Native Title Claimant (NC97/7) Gundungarra Tribal Council Aboriginal Corporation (GTCAC) and RES Southern Cross Pty Ltd to permit use of portions of Crown Land (Portion 238 – DP 750046) for four turbines.

Site Description

3.1 WIND FARM INFRASTRUCTURE

Approved wind farm infrastructure includes:

- 61 wind energy turbines;
- new and upgraded access tracks;
- underground and overhead electricity cables;
- substation and overhead power connection to grid;
- construction compound; and
- TV retransmitter tower.

The wind farm layout is shown in **Drawing EV02**.

3.2 POTENTIAL IMPACTS

3.2.1 INDIGENOUS HERITAGE VALUES

There is evidence of occupation, use and association with the landscape by indigenous peoples.

Six open archaeological sites were recorded in the study area. A Claimant Application (NC97/7) under the National native Title Tribunal also exists on a parcel of vacant Crown Land.

The study area and landscape has cultural heritage values for the community, including Pejar Local Aboriginal Land Council (PLALC) and the Gundungurra Tribal Council Aboriginal Corporation (GTCAC).

Construction activities have the potential to cause adverse environmental impacts on indigenous heritage sites. Refinement to the wind farm layout, including positioning of all associated infrastructure was undertaken in parallel with the findings of the archaeological survey.

The wind farm layout, as approved, avoids the need to disturb recorded Aboriginal sites.

3.2.1 NON-INDIGENOUS HERITAGE VALUES

The heritage survey identified two ruins including the remains of a stone cottage and a stone hearth. Both of these items were considered to be of low significance and do not meet the NSW State heritage criteria used for assessing significance for entry in the Heritage Register.

Refinement to the wind farm layout was undertaken in parallel with the findings of the heritage survey. The current wind farm layout will not disturb the two ruins.

The location of these heritage sites is shown on Drawing EV03.1

¹ This drawing is extracted from the original EIS (2004) and includes turbines which have since been dropped – it is included as it shows mapped heritage sites.

Mitigation measures

4.1 INDIGENOUS HERITAGE

4.1.1 SPECIFIC CONTROLS

- The three areas at which design refinement has resulted in access tracks and turbines to be located outside the areas surveyed for indigenous heritage, would be assessed with representatives of the Aboriginal community prior to finalising detailed design and, if necessary, amended to protect any identified cultural heritage sites.
- At Turbine Row 10, fence a 30 metre buffer around open site (OS1) from the beginning of the Eucalyptus copse and southern-most turbine (T49 – as shown on **Drawing EV03**)
- At Turbine Row 11 (as shown on **Drawing EV03**) install protective fence 25 metres from the existing fenceline and extend north of the dam for at least 100 metres, providing a 30 metre buffer around open site (OS2).
- Route access to Turbine Row 12 (as shown on **Drawing EV03**) at least 100 metres south of the site complex (OS3 and OS4) and ensure construction techniques avoid stripping of the ground for 100 metres either side of the site.
- Route access to Turbine Row 14 (as shown on **Drawing EV03**) as far east as possible of the site (OS6) and ensure construction techniques avoid stripping of the ground for 100 metres either side of the site.
- In the event any Aboriginal site is identified during construction, work in that area would cease and the Office of Environment and Heritage's Regional Archaeologist, the Pejar LALC and the Gundungurra TCAC would be contacted to discuss how to proceed.

4.1.2 TRAINING

- All construction personnel would undertake site induction concerning cultural heritage issues (locations and legislative obligations not to disturb).

4.1.3 LAND USE DEED

Provided below are relevant extracts from the Indigenous Land Use Agreement that specify requirements relating to managing the construction works. In this section the Company refers to the AusChina Energy Group; GTCAC refers to the Gundungarra Tribal Council Aboriginal Corporation.

Work Programs

- The Company will, upon establishment of its work programs for the construction and operation of the Project as it relates to the Land, present to and discuss with the Claimants the said work program. In the event that representatives of GTCAC and/or the Claimants are unable to convene a meeting within 30 days of a request by the Company for a meeting (which request must be accompanied by a copy of the proposed work program) such work program (as provided to the GTCAC) will be deemed to be satisfactory and the Company may proceed on the basis of that work program.*
- Any concerns of the Claimants and GTCAC regarding the work program will be dealt with by discussion the Claimants and, where appropriate, by modification of the work program where appropriate and reasonable under the Project as a whole.*
- Reasonable notice will be given to the Claimants and GTCAC and the parties agree to act cooperatively and reasonably, with due regard to both aboriginal law and custom and the commercial and legal obligations of the Company, at all times. The Claimants and GTCAC will not*

unreasonably withhold cooperation or consent to a work program and will act in good faith to negotiate such work program in a prompt manner.

- (d) *Changes may be made to the program by the Company provided reasonable notice is provided to the Claimants and GTCAC.*

Aboriginal Cultural Heritage and Monitoring

- (a) *The parties acknowledge that Aboriginal culture is an important heritage resource for all Australians. To protect this resource and the interests and concerns of the Gundungarra People, the principles upon which the parties will act shall include:*
- (i) *all reasonable precautions will be taken to protect cultural places from damage as a result of the Project;*
- (ii) *the Claimants' beliefs and cultural knowledge remain the property of the Claimants and ownership and control of cultural knowledge will remain with the Claimants during all stages of identification, protection and management;*
- (iii) *monitoring and cultural heritage management will be carried out by the Claimants working together, as may be required, with the Company's archaeological consultants;*
- (iv) *respect of Aboriginal culture by all parties shall be fundamental to effect cultural heritage management;*
- (v) *to facilitate an awareness of Aboriginal cultural heritage a suitable induction program will be undertaken for key personnel associated with the Project;*
- (vi) *all Project construction activity on the Land will be carried out by persons inducted pursuant to clause 5(a)(v) above or by other persons under the direct supervision of such a person;*
- (vii) *it is acknowledged that the Company has sought and obtained professional expertise from an independent archaeologist who will assist with the cultural heritage monitoring as contemplated by this clause (a)(iii).*
- (b) *The Claimants and GTCAC acknowledge that an cultural heritage survey has been conducted by Ozark Cultural Heritage Management Pty Limited and that the contents are noted and accepted.*
- (c) *The parties also acknowledge that the cultural heritage survey referred to in clause 5(b) covered all proposed access tracks, turning circles, construction sites, parking areas and all other parts of the Land that may be disturbed or otherwise impacted by the Project or its construction.*
- (d) *The parties agree to act cooperatively in accordance with the terms of this Deed and with due respect to both the traditional law and custom of the Claimants and the rights and obligations of the Company.*
- (e) *The Claimants may appoint a representative (the Monitor) to inspect the Project operations on the Land during excavation and construction provided also that prior notice of an inspection by the Monitor is given to the Company and the inspection is subject to all applicable legal requirements including health and safety and prior permission is obtained to cross others landowner' land.*
- (f) *The Monitor may make an initial inspection of the Land prior to commencement of site works and may also be present to inspect any mitigative measures recommended by the Cultural Heritage Survey.*
- (g) *The Company will remunerate the Monitor on the basis set out in Schedule 3, subject to the Company's right to limit the total costs of the monitoring process .*
- (h) *No activity which is likely to significantly disturb the surface or sub-surface of the Land (Earth Breaking Activity) shall occur unless there is a Monitor present to carry out monitoring of such*

activity. The Claimants shall ensure that, in accordance with the terms of this Deed, a Monitor is present during the time that Earth Breaking Activity is being undertaken.

- (i) The Company shall give at least 14 days advance notice of the date of any Earth Breaking Activity and will cooperatively coordinate the timing of such activity with the Claimants so as to allow monitoring of such activity.*
- (j) Monitoring of Earth Breaking Activity by the Monitor will ensure that:
 - (i) any detection of sub-surface aboriginal cultural heritage is located and impact avoided;*
 - (ii) identified Aboriginal heritage is not inadvertently damaged; and**
- (iii) detected sub-surface Aboriginal cultural heritage which may be disturbed is dealt with in an appropriate manner.*
- (k) The parties agree that the Monitor will have authority to stop machinery from working if that machinery is approaching Aboriginal cultural heritage identified in a prior heritage survey, or if human skeletal remains or sub-surface cultural heritage is detected or impacted or likely to be impacted.*
- (l) The Monitor shall be responsible for any flagging, fencing or erecting of signs, any collection and removal of any Aboriginal cultural heritage items are for removal of flagging, fencing or signs.*
- (m) Where human remains of Aboriginal cultural heritage sites are discovered during excavation activity, the Company may, after consultation with the Claimants, elect either to exclude that area from further excavation activity, or to arrange with the Claimants for some other form of protection for the human remains or heritage sites.*
- (n) The Parties shall ensure that any proposed protocols, Cultural Heritage Management Plan, or recommendations resulting from the Cultural Heritage Survey are fully implemented, observed and carried out, in consultation with each other. If there are concerns and issues with such protocols, plans or recommendations, the Parties agree that they will negotiate in good faith to accommodate each Party's requirements.*
- (o) The provisions of this clause 5 are subject at all times to the rights and obligations of the parties under any relevant legislation and in particular the National Parks and Wildlife Act (NSW).*
- (p) The Company will consult with and provide information to the Claimants at the expiry of the Project, in relation to the Company's proposed rehabilitation and its removal of infrastructure. If the Claimant reasonably requires, the Claimants will monitor the rehabilitation and removal at the same rate and on the same basis as herein.*

4.2 NON INDIGENOUS HERITAGE

- Should the proposed access road turbine row 15 (as shown on **Drawing EV03**) be realigned closer to stone cottage, the cottage would need to be temporarily fenced off.
- Realignment of the northernmost turbine of turbine row 10 to establish a 50 metre buffer between stone hearth and the turbine. Temporary fencing around the hearth and an area 4 metres to the west of the hearth (as shown on **Drawing EV03**).
- In the event that a non-indigenous heritage item is uncovered during construction, all work in the vicinity of the object must cease and the AusChina Energy Group must contact the NSW Heritage Council to determine an appropriate course of action prior to the recommencement of work in the vicinity of the item.

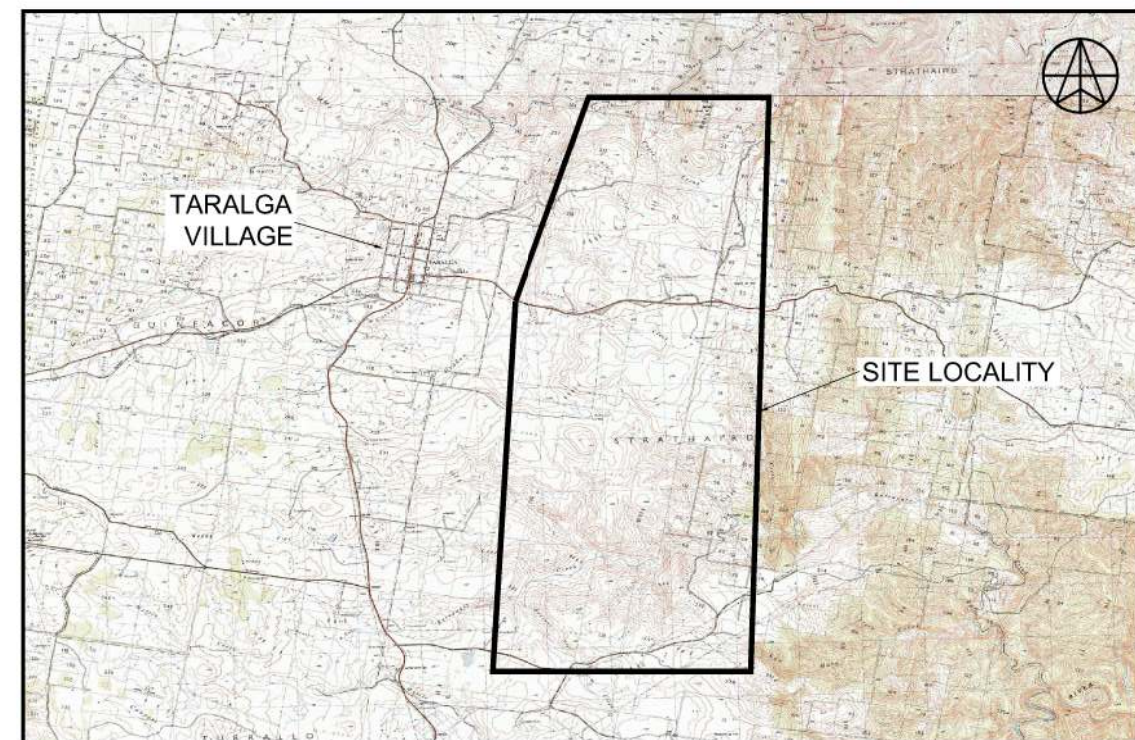
Drawings

TARALGA WIND FARM

AUSCHINA ENERGY GROUP

HERITAGE SUB PLAN DRAWINGS

SCHEDULE OF DRAWINGS			
SHEET	TITLE	REV.	DATE
01A_EV01	TITLE SHEET, DRAWING LIST & SITE LOCALITY	A	13/12/2011
01A_EV02	OVERALL LAYOUT	A	13/12/2011
01A_EV03	HERITAGE SITES	A	13/12/2011



SITE LOCALITY
NOT TO SCALE

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	13/12/11	LRP/RmS	AGB	DRAFT

PROJECT	TARALGA WIND FARM HERITAGE SUB PLAN
FILE REFERENCE:	211288_01A_EV01-EV03.dwg

APPROVAL AUTHORITY	NSW DEPARTMENT OF PLANNING
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CLIENT	AUSCHINA ENERGY GROUP
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DRAWING	TITLE SHEET, DRAWING LIST & SITE LOCALITY
PROJECT NUMBER: 211288	DRAWING NUMBER: 01A_EV01
SOURCE: INTERNAL	REV. A



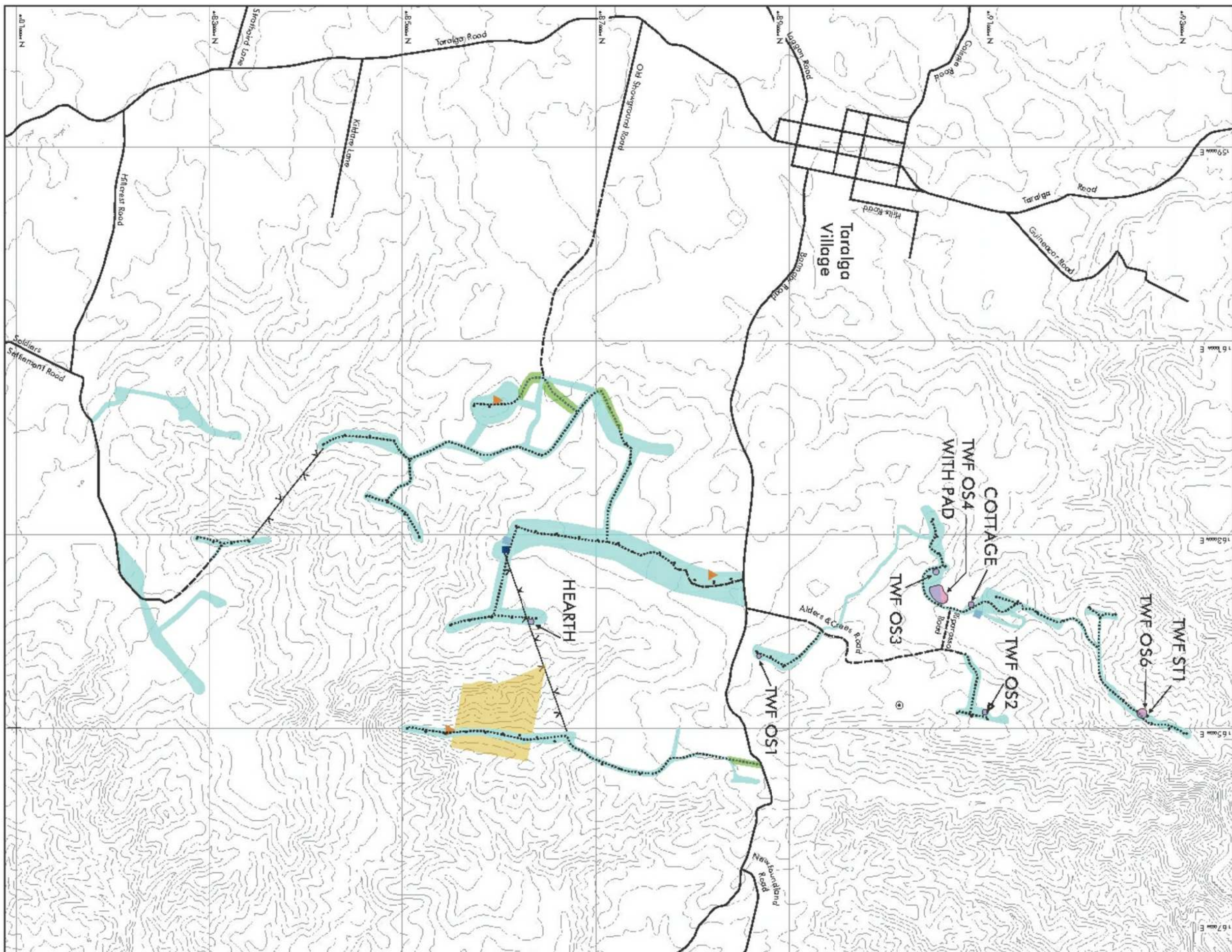
No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	13/12/11	LRP/RMS	AGB	DRAFT

PROJECT
TARALGA WIND FARM HERITAGE SUB PLAN
FILE REFERENCE: 211288_01A_EV01-EV03.dwg

APPROVAL AUTHORITY
NSW DEPARTMENT OF PLANNING

CLIENT
AUSCHINA ENERGY GROUP

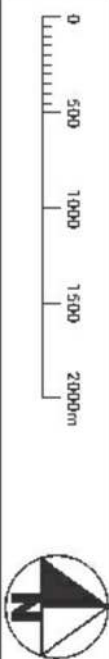
DRAWING		
OVERALL ALYOUT		
PROJECT NUMBER: 211288	DRAWING NUMBER: 01A_EV02	REV. A
SOURCE:		



Taralga Windfarm

FIGURE:5.9

HERITAGE SITES



GEOLYSE

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	13/12/11	LRP/RmS	AGB	DRAFT

PROJECT
TARALGA WIND FARM HERITAGE SUB PLAN
FILE REFERENCE: 211288_01A_EV01-EV03.dwg

APPROVAL AUTHORITY
NSW DEPARTMENT OF PLANNING

CLIENT
AUSCHINA ENERGY GROUP

DRAWING					
HERITAGE SITES					
PROJECT NUMBER:	211288	DRAWING NUMBER:	01A_EV03	REV:	A
SOURCE:					



26.0 APPENDIX 9 – COMMUNICATION AND CONSULTATION MANAGEMENT PLAN



Taralga Wind Farm Communication and Consultation Plan



13 February 2012

Revision E

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Revision	Date	Change Summary
A	1/1/12	Issued as Draft
B	2/1/12	Internal Revisions
C	2/1/12	KJA amendments
D	8/2/12	DoP amendments (KJA)
E	13/2/12	DoP amendments (additional) (KJA)

1. Background to the project

CBD Energy is about to commence construction of a wind farm at Taralga in the Upper Lachlan Shire Council area in the state seat of Goulburn. The wind farm leases and Development Consent have been acquired by CBD Energy from RES and transition of ownership is underway. Construction of Taralga Wind Farm is due to commence in February 2012.

Construction of the Taralga Wind Farm will include up to 61 x 130 metre high wind turbines that will require a large crane on site, cables, a transmission control building and transmission lines. The work will be staged over two years and is worth \$200m.

As well as the usual construction impacts including increased traffic, disruption to farming operations, dust and noise, there are also the broader issues around wind farming to be managed. These include perceived environmental and unproven health impacts.

Despite these issues, there is ample opportunity for CBD Energy to highlight the benefits of the development for the community, particularly in terms of leases and local employment during construction, and a community endowment program which is yet to be negotiated with the Upper Lachlan Council.

Additionally, there is an opportunity to present the wide reaching benefits associated with renewable energy and dispel many myths associated with the operation of wind farms. Managing these issues and highlighting the project's benefits will be the key to positioning CBD Energy in the local area, and in the wind farm and renewable energy industries.

Taralga Wind Farm will be constructed over a period of two years, and maintain operations of the wind farm for 25 years. In this context, CBD Energy wants to ensure that relationships with the local community remain strong, transparent and accessible.

The Department of Planning and Infrastructure's Conditions of Approval include a requirement for a Communication and Consultation Plan that incorporates a complaints management system and a community information plan.

This document details the principles of communications and consultation to ensure that community relationships are fostered and strengthened through community engagement activities, support for local businesses and the wider Taralga economy, and by providing accurate, accessible information.

The plan also includes protocols and processes for enquiries and complaints handling, media enquiries and site personnel communications inductions.

Initially, development of the Taralga Wind Farm community consultation plan will involve the rollover of existing information and processes from RES to ensure seamless transfer of knowledge and relationships to CBD Energy.

2. Purpose of the plan

To demonstrate its commitment to the community, CBD Energy will develop and deliver a series of community consultation and stakeholder engagement activities in the Taralga area. This will give CBD Energy a broad community presence during the construction of the Taralga Wind Farm which will provide a strong foundation for ongoing relationships.

In this plan, the local community is defined in two groups; the first is anyone living within a 10 kilometre radius of the Taralga Wind Farm, and the second group will include residents who live along any roads that will be used to access the site for deliveries and/or by site works crews and sub-contractors.

The purpose of the plan is to provide the most effective tools and methodologies to:

- provide relevant information to the community and stakeholders at appropriate intervals, about progress of the project and to reinforce the key messages, including local and regional benefits;
- provide information to the local and broader community to ensure awareness of construction program timing, possible impacts, parameters and constraints, so there can be informed views and input to the project team at all stages of construction;
- Provide timely information to the community about construction traffic routes and any possible disruptions to regular traffic flows, as well as impacts to amenity.
- ensure the community understands what is and what is not negotiable in relation to the project;
- consult with local landowners and affected residents who live adjacent to the site or along site access roads and provide timely information (at least seven day prior, earlier if scheduled movements can be confirmed) regarding any increase in construction traffic (e.g. concrete pour activities), to ensure awareness of increased traffic movements, management and protection of livestock and limit disruption to livestock movements;
- inform and consult affected residents who live adjacent to the project site or along site access roads, subject to the off-site landscape plan;
- notify relevant residents/property owners of the process available to review potential impacts on television and radio transmission;
- demonstrate how the community can provide comment and feedback on the project and how this will be considered by the project team;
- report the results of consultation to CBD Energy in an easily accessible format;
- further develop positive relationships with key stakeholders and the community;
- assess community attitudes towards the project during early works and throughout the construction period and identify how attitudes and issues can be managed. This will ensure the most appropriate tools and methodologies are used for future consultation and engagement;
- assess any stakeholder and/or community concerns and issues that could affect the delivery of the project and identify management strategies; and
- encourage community ownership and support for the project through a genuine and transparent process of consultation and engagement.

This plan also sets out the protocols and procedures for:

- developing and distributing relevant , accessible information about the Taralga Wind Farm construction for stakeholders, local communities, businesses and other interested parties;
- identifying stakeholders and organising construction briefing sessions and/or meetings;

- advertising community consultation activities such as information sessions;
- ensuring availability of clear and concise information about likely impacts of construction in terms of noise, dust, increased traffic, timing and duration;
- ensuring all communications and consultation activities include information on how to access further details about the project and how to contact the project team;
- encouraging community and stakeholder feedback throughout construction;
- taking, recording and responding promptly to all community feedback, enquiries and complaints;
- reporting the outcomes of all consultation activities and stakeholder interactions to CBD Energy;
- handling media and government enquiries;
- developing and positioning project branding, and
- conducting compulsory community relations inductions for all site personnel and subcontractors who will be working on site and/or visiting the site and the local area during construction.

3. Relevant Consent conditions

CBD has reviewed the planning consent for the project and developed the communication and consultation plan in accordance with the consent objectives. Relevant conditions of consent addressed are listed in the table below:

No	Condition Category	Condition	Community Information Plan
9	Provision of documents	The Applicant must make all relevant documents, with the exception of any confidential information, required under this consent, as identified in Schedule 3 of this consent, publicly available following their approval by the Director-General or issuing by the relevant government authority as the case may be, including provision of all documents at the site for inspection by visitors.	Section 8.1
28	Communication & Consultation	<p>Prior to the commencement of construction of the development, the Applicant must ensure that the following are available for the community for the life of the development:</p> <p>(a) a telephone number on which complaints about operations associated with the development on the site may be registered;</p> <p>(b) a postal address to which written complaints may be sent; and</p> <p>(c) an email address to which electronic complaints may be transmitted.</p> <p>The telephone number, the postal address and the email address must be advertised in a newspaper circulating in the locality prior to the commencement of construction and at quarterly intervals thereafter until construction is completed. This information must also be published on the Applicant's internet site, should one exist, and on a permanent notice board at an appropriately visible location in Taralga Village.</p>	<p>Sections 8.1 and 12.1</p> <p>Section 12.1</p> <p>Section 12.1</p> <p>Section 8.4</p>
29	Communication & Consultation	<p>The Applicant must keep a legible record of all complaints received in an up-to-date Complaints Register. The Register must record, but not necessarily be limited to:</p> <p>(a) the date and time, where relevant, of the complaint;</p> <p>(b) the means by which the complaint was made (e.g. telephone, in person, mail or email);</p> <p>(c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;</p> <p>(d) the nature of the complaint;</p> <p>(e) any action(s) taken by the Applicant in relation to the complaint, including any follow-up contact with the complainant; and</p> <p>(f) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.</p> <p>The Complaints Register must be made available for inspection on request of the Director-General or an</p>	<p>Section 12.3</p> <p>Section 12.3</p> <p>Section 12.3</p> <p>Section 12.3</p> <p>Section 12.3</p> <p>Section 12.3</p>

		<p>authorised officer of the DEC. The record of a complaint must be kept for at least seven years after the complaint was made.</p> <p>Subject to confidentiality, the information in sub-paragraphs (a), (d), (e) and (f) above is to be made publicly available.</p>	
30	Communication & Consultation	<p>A Community Information Plan (CIP) must be prepared prior to the commencement of Construction. The CIP must set out the community communications and consultation processes to be undertaken during the construction period of the development. The Plan must include but not be limited to:</p> <p>(a) procedures to inform the local community of planned investigations and construction activities, including planned construction activities outside standard construction hours;</p> <p>(b) procedures to inform the relevant community of construction traffic routes and any likely disruptions to traffic flows and amenity impacts;</p> <p>(c) procedures to consult with local landowners in regards to construction traffic to ensure safety of livestock and limited disruption to livestock movements;</p> <p>(d) procedures to inform and consult with impacted residences subject to the Off-Site Landscape Plan; and</p> <p>(e) procedures to notify relevant properties of the processes available to review potential impacts on television and radio transmission.</p> <p>The CIP must be made publicly available prior to commencement of construction.</p>	<p>Sections 8.1, 8.2</p> <p>Sections 8.4, 8.10</p> <p>Sections 8.3, 8.10</p> <p>Section 8.14</p> <p>Section 8.14</p> <p>Section 8.1</p>
38	Construction Noise and Vibration Management sub-plan	<p>(f) Community consultation and a community information program to inform, residents when they are likely to be affected by construction noise. This must include consideration of traffic noise impacts. In particular, residences adjoining site access routes east of Taralga Road must be notified in writing at least two weeks in advance of concrete pour activities and the details of such activities;</p> <p>(g) A complaints handling and complaints monitoring program, including details of a contact person to follow up complaints; and</p> <p>(h) contingency measures to deal with incidents when noise complaints have been received, including feedback on appropriate noise amelioration processes put in place in response to complaints and the timeframe for the introduction of these measures. The feedback must be provided to the complainant.</p>	<p>Section 8</p> <p>Section 12</p> <p>Section 12.2.1</p>
58	Traffic Management	<p>(f) A community information program to inform the community of traffic disruptions resulting from the construction program</p> <p>(g) details of complaints management procedures for traffic impacts.</p>	<p>Section 5.2</p> <p>Section 12.2 and 12.2.2</p>

4. Communication and Consultation Plan objectives

The objective of this Communication and Consultation Plan (CCP) is to provide defined communications and consultations strategies, methodologies and tools to effectively inform and engage the community and stakeholders throughout construction of the Taralga Wind Farm.

Achieving this objective will underpin CBD Energy's successful delivery of the project.

The plan will:

- explain the strategic approach to communications and community consultation tasks, leading up to and during construction of the Taralga Wind Farm ;
- provide ongoing identification of project stakeholders;
- outline a framework for coordinating and managing stakeholder engagement and community consultation activities;
- identify potential project risks and highlight opportunities;
- define the role of KJA and the relationship with CBD Energy, subcontractors, stakeholders and the community;
- detail communication tools and methodologies;
- clearly articulate timelines and any necessary CBD Energy branding guidelines and protocols for production of communications collateral and/or community consultation activities; and
- describe controls and systems to ensure procedures are followed, reviewed and measured.

5. Key messages

It is imperative to provide the community and stakeholders with consistent key messages about the Taralga Wind Farm.

5.1 Project start up messages

- The project is progressing as planned and construction will begin in February 2012 with construction of an access road. In total, \$250m of works will be carried out.
- There will be a transition of ownership during implementation of the project but all guidelines and commitments remain, as does CBD Energy's total commitment to working with the local community.
- A community information day in Taralga will be organised before work starts.
- The NSW Government's new planning guidelines for wind farms will not affect this project as it already meets strict guidelines.
- This project has been through multiple layers of assessment and approval to ensure it meets strict guidelines. CBD Energy remains committed to meeting all conditions of the project's development consent (2007) and subsequent Land and Environment Court Order (2009).
- The project is consented for 61 turbines. The final number will be confirmed as the project progresses, but there will never be more than the approved 61 turbines built.
- The project is planned to be completed in two years (by Q4 2013).
- Electricity generated by the turbines will be fed into the national grid. Since the project was approved in 2007, there has been regular contact with landowners and the Upper Lachlan council. We will continue to communicate with landowners, council and the wider community throughout the project, via local media the project website, newsletters, email, telephone and personal contact.
- There will be no compulsory acquisition of properties. The development consent does however have a provision for a number of identified landowners to voluntarily have their properties acquired by the proponent at their instigation.
- A survey by Upper Lachlan council confirmed that a significant majority of local residents support the wind farm.

5.2 Project construction messages

- Construction activities on the Taralga Wind Farm will be planned to minimise community impacts. Construction activities will generally occur during standard working hours, i.e. Monday to Friday 7am to 6pm and Saturday 8am to 1pm. There will be no works scheduled on Sundays or public holidays.
- Delivery and construction activities may occur out of hours if/when there is less potential to impact local traffic (e.g. local school bus runs). This will be in accordance with any edict dictated by NSW Roads and Maritime Services during the transport permit stage.
- The community will be notified about the project's progress and construction activities, particularly any which have potential impacts, including site access roadworks, increased traffic on the local area road network (such as truck movements, heavy machinery and turbine component deliveries to site), noise and dust. Notifications to affected residents will provide at least 7 days notice of such activities however as much advance warning as is possible will be provided. The information will also be made available in regular updates on the project's website.
- Project contact details including 1800 number, project email and postal address will be listed on all communication material, at each site entry point, and on the project's website.

6. Stakeholder analysis and engagement

6.1 Stakeholder communication strategy

The communication strategy for communicating and engaging with stakeholders is outlined below.

Inform	Consult	Collaborate
Stakeholders who are not directly affected, but require factual and transparent information to help them understand any problems, alternatives, opportunities/and or solutions (e.g. via advertising, newsletters, website).	Stakeholders who may be directly affected or have a greater influence on, or are impacted by, project outcomes. We will continue to consult with them to understand their concerns and, where appropriate, consider their input and feedback (e.g. via project briefings, meetings).	Stakeholders whose approval may be required, or who hold ultimate responsibility for a decision (e.g. construction approvals, access agreements, permits, legislation). We will continue to identify and engage with these stakeholders to understand and address any key issues, maximise mutual opportunities and provide them with all information to enable timely approvals (e.g. via briefings, meetings, compliance reporting).

CBD Energy will continue to expand the list of stakeholders throughout the life of the project and update the information on the contact database.

6.2 Project Stakeholders (indicative only)

Stakeholder	Concern or Interest	Management Strategy
Federal, State and Local Government		
Federal Member: Mr Alby Schultz Member for Hume State Member: Ms Pru Goward Member for Goulburn	<ul style="list-style-type: none"> • Access to information • Community concerns 	<ul style="list-style-type: none"> • Updated project briefing as required • Project and construction updates • Project website
Upper Lachlan Shire Council Goulburn Mulwaree Shire Council	<ul style="list-style-type: none"> • Access to information • Community concerns and interest • Impacts to council assets 	<ul style="list-style-type: none"> • Updated project briefing as required • Construction Management Plan • Environmental Management Plan • Heritage Management Plan • Traffic Management Plan • Project and construction updates • Project website
Government Agencies		
NSW Office of Environment and Heritage (Wombeyan Caves) NSW National Parks and Wildlife Service	<ul style="list-style-type: none"> • Access to information • Pollution control including noise, water, air, land and waste • Community impacts and disruption 	<ul style="list-style-type: none"> • Construction Management Plan • Environmental Management Plan • Heritage Management Plan • Project and construction updates • Enquiries and complaints management • Info line contact • Project website
NSW Department of Planning and Infrastructure	<ul style="list-style-type: none"> • Access to information • Construction impacts • Operational impacts 	<ul style="list-style-type: none"> • Project briefing/ meeting • Construction Management Plan • Environmental Management Plan

Stakeholder	Concern or Interest	Management Strategy
	<ul style="list-style-type: none"> Community access to information 	<ul style="list-style-type: none"> Info line contact Project email Project website
NSW Office of Communities - Aboriginal Affairs	<ul style="list-style-type: none"> Access to information Heritage Employment opportunities 	<ul style="list-style-type: none"> Construction Management Plan Environmental Management Plan Info line contact Project email Project website
NSW Department of Industries	<ul style="list-style-type: none"> Access to information Pasture protection Construction impacts Operational impacts Weed/noxious plant control Pest control 	<ul style="list-style-type: none"> Construction Management Plan Environmental Management Plan Info line contact Project email Project website
NSW Health <ul style="list-style-type: none"> NSW Ministry of Health Rural and Regional NSW, Southern NSW Local Health District (including Goulburn Hospital) 	<ul style="list-style-type: none"> Access to information Construction impacts Operational impacts 	<ul style="list-style-type: none"> Project email Project website Info line contact
Aviation and transport		
<ul style="list-style-type: none"> Civil Aviation Authority (private pilots and crop dusting companies) National and regional airlines Royal Flying Doctor Service Westpac Rescue Helicopter/Careflight 	<ul style="list-style-type: none"> Access to information Project awareness Construction site awareness Increased traffic on local roads and over local level crossings 	<ul style="list-style-type: none"> Project briefing Info line contact Project email Project website Notice to pilots via CASA

Stakeholder	Concern or Interest	Management Strategy
<ul style="list-style-type: none"> Country Rail Network Major road freight companies Coach and bus operators 		
Emergency Services		
<ul style="list-style-type: none"> Police Ambulance NSW Fire & Rescue /Rural Fire Services State Emergency Services 	<ul style="list-style-type: none"> Access to information Road and traffic impacts Changes to property access 	<ul style="list-style-type: none"> Project briefings and ongoing consultation Traffic management plan Delivery and/or construction hours/activities Project and construction updates Info line contact Project website
Local Stakeholders		
Affected property stakeholders <ul style="list-style-type: none"> Landowners/tenants at construction sites Landowners/tenants adjacent to construction sites 	<ul style="list-style-type: none"> Access to information Impacts on property values (revised) Damage to boundary fencing, stock grids, gates Damage to trees/shrubbery Noise/pollution during construction 	<ul style="list-style-type: none"> Personal consultation Project and construction updates (notifications) Regular project newsletter Information sessions and feedback forms Enquiry and complaints management Info line contact Project email Project website Landscape remediation plan
Local community (relatively neutral) <ul style="list-style-type: none"> Taralga town residents/local landowners 	<ul style="list-style-type: none"> Access to information Construction activity impacts 	<ul style="list-style-type: none"> Community information day Personal meetings/briefings

Stakeholder	Concern or Interest	Management Strategy
<ul style="list-style-type: none"> • Surrounding community (ULSC) • Taralga business owners/operators • Service associations and business organisations, such Rotary, chambers of commerce • Interest groups, including: <ul style="list-style-type: none"> • Agricultural associations and show societies • Landcare groups • Rodeo Society • Progress/business Associations • Tourism associations • Aboriginal Land Councils • Heritage groups • Shires Association 	<ul style="list-style-type: none"> • Employment opportunities • Environmental benefits • Economic benefits • Local business support • Innovation • Sustainable energy source • Community/regional benefits • Impacts/risk to local community • Asset protection (roads/fencing) • Access to information • Environmental impacts • Local area promotion 	<ul style="list-style-type: none"> • Project and construction updates (notifications) • Regular project newsletter • Advertising and media releases (local media) • Information sessions and feedback forms • Enquiry and complaints management • Info line contact • Project email • Project website
Opposition groups <ul style="list-style-type: none"> • Australian Landscape Guardians • Taralga Landscape Guardians • The Australian Environment Foundation • Some resource groups / companies 	<ul style="list-style-type: none"> • Health • Local amenity • Disruption • Impact on local flora/fauna • Noise 	<ul style="list-style-type: none"> • Monitoring and response to complaints and concerns • Community information day • Personal meetings/briefings as appropriate
Schools and kindergartens	<ul style="list-style-type: none"> • Opportunities to provide information about renewable energy • Project participation activities • Road safety and awareness information (particularly regarding heavy vehicles) • Impact on school bus routes 	<ul style="list-style-type: none"> • Briefing/information sessions (at schools) • Provide information for school newsletters / parent information • Enquiry and complaints management • Info line number • Project email

Stakeholder	Concern or Interest	Management Strategy
	<ul style="list-style-type: none"> Local traffic/road conditions 	<ul style="list-style-type: none"> Project website Design and/or painting activity for Taralga Wind Farm project promotion (optional) Seed propagation program for landscape remediation and revegetation (optional)
Media		
<ul style="list-style-type: none"> Prime Television WIN TV Corporation Capital Television Regional radio stations ABC TV and radio Local and regional newspapers The Land newspaper 	<ul style="list-style-type: none"> Access to information Community benefits Road and traffic impacts Environmental impacts Construction impacts Employment opportunities Tourism promotion 	<ul style="list-style-type: none"> Media releases/background information/interviews/updates Site tours Milestone event invitations Project and construction updates (notifications) Regular project newsletter Info line contact Enquiry and complaints management Project website Project email

7. Taralga Wind Farm Community Consultation

CBD Energy, with the assistance of their specialist consultation advisers KJA, will organise, advertise, manage and staff a number of community consultation activities during construction of the Taralga Wind Farm. Throughout the project, KJA will work with CBD Energy's Project team to develop and maintain consistent consultation and information sharing with stakeholders and the community.

7.1 Roles and responsibilities

CBD Energy's Project Director has overarching accountability for this document including authorising this document, monitoring its effectiveness and performing formal document reviews.

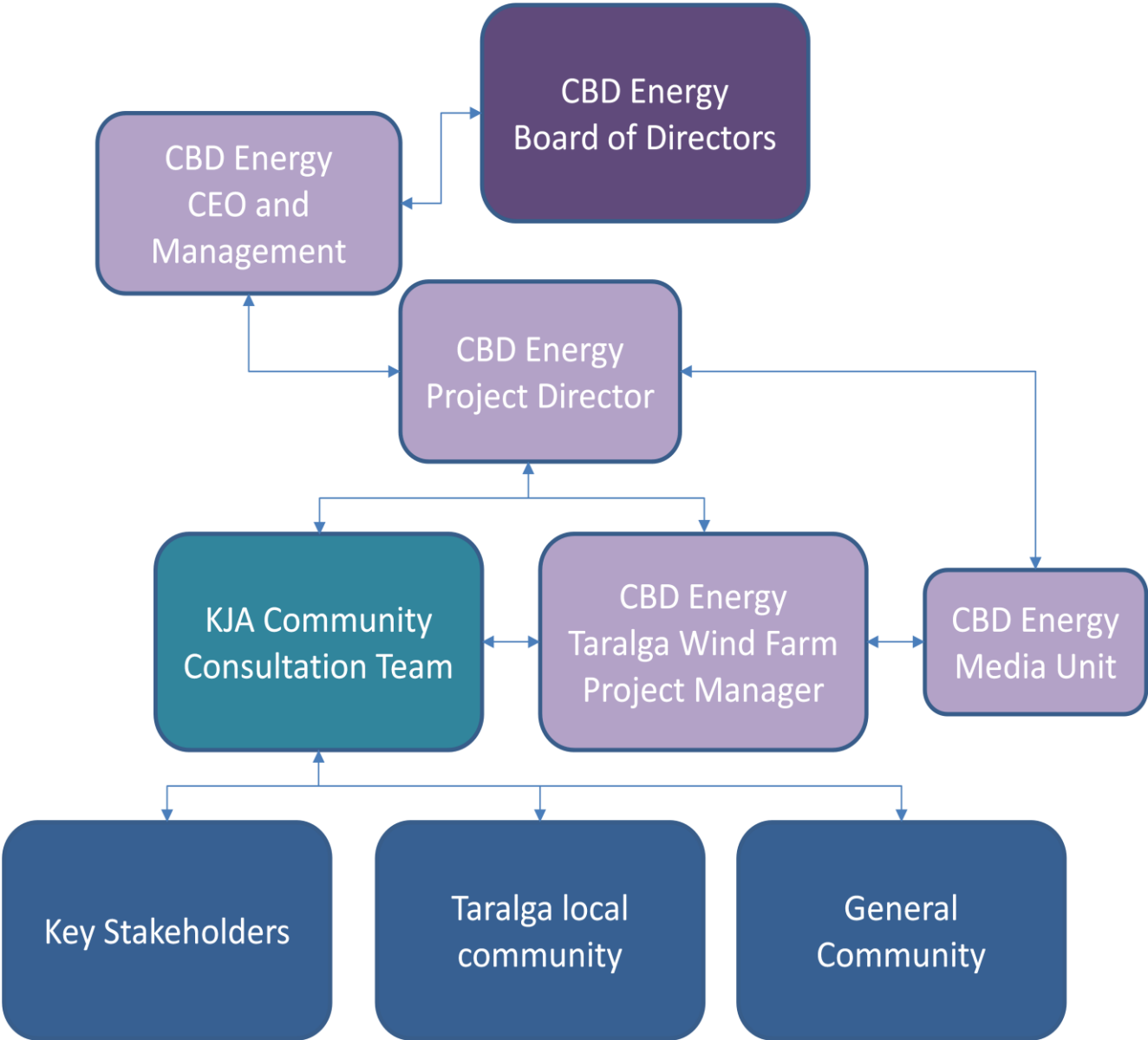
This Communication and Consultation Plan (CCP) will be implemented by KJA's Consultation Team in liaison with CBD Energy's Taralga Wind Farm Project Director and Project Manager.

KJA is accountable to CBD Energy's Project Director for ensuring the requirements of the construction consultation outlined in this document are implemented. KJA will support CBD Energy by taking responsibility for providing strategic planning and management of stakeholder briefings/meetings and including:

- liaison with CBD Energy's Project Director and Project Manager, and others as appropriate;
- delivery of stakeholder briefings/meetings and community consultation activities;
- development of media releases and/or media responses as required, in consultation with CBD Energy's media team;
- participation in community meetings or information sessions, including business liaison, stakeholder briefings and/or presentations to community interest groups;
- Management of project specific stakeholder or community enquiries and complaints;
- ensuring feedback, enquiries and complaints management strategies and processes are rigorously adhered to; and
- ensuring all reports to CBD Energy are accurate and generated within stipulated timeframes.

KJA is also accountable for developing communication materials, stakeholder engagement and consultation activities during construction of the Taralga Wind Farm.

7a. Communications organisation chart (Example)



8. Communications and consultation tools

The following communications and consultation tools will be used to maintain contact with the Taralga community, and particularly affected residents, or residents living on site access roads. These tools will be implemented leading up to and during construction of the Taralga Wind Farm to ensure communication and consultation is pro-active and informative. Tools include, but are not limited to:

8.1 Pre-construction Information for community

Before construction commences CBD Energy will ensure that the following means of contact have been established and will be maintained for the life of the development.

- A dedicated 1800 number to take enquiries and complaints (1800 268 988).
- A postal address (PO Box 89, Taralga NSW 2850).
- A project-specific email address; info@taralga-windfarm.com.au
- A project specific web address; www.taralga-windfarm.com.au

This information will be widely publicised, locally and to the wider community via:

- advertising of events such as information sessions, to be conducted prior to commencement of construction and at quarterly intervals throughout the life of the project;
- on a permanent notice board on display in Taralga village;
- on the Taralga Wind Farm website; and
- on all information collateral relating the development such as fact sheets, posters, correspondence, and CBD Energy corporate email footers etc.

Community contact through these tools will form the basis of a stakeholder database and a complaints management system (**as detailed in section 12**).

A copy of the Taralga Wind Farm Construction Environmental Management Plan (CEMP) will be made available on the project's website and in hard copy at the project's site office when it is open. In the meantime, a copy will be made available at a prominent public location in Taralga (e.g. the post office or council chambers) and the location of the hard copy will be mentioned on the project's website.

A copy of this Community Consultation Plan (CCP) will be made available on the project's website.

8.2 Information sessions

Information sessions provide an opportunity for the community, media and other interested parties to obtain information about the project, view project graphics and see video of similar projects, view plans and speak to project team members. A pre-construction community information session (drop-in day) will be held in the Taralga Memorial Hall.

All information sessions will be advertised in local and regional newspapers (Goulburn Post and Crookwell Gazette). All advertisements will include details of the location, date, duration of the information session and project contact details including 1800 number, email, website and postal address. Handouts/fact sheets distributed at information sessions will include details for obtaining further project information and project contact details as above. Attendees will be asked to register at all information sessions and their names added to the project contact database (with permission of attendee). Issues and questions raised will be recorded by a team member and entered in the complaints and enquiry register.

All enquiries and/or issues raised will be followed up by the project team in a timely manner, but not later than one business day after the contact is recorded. Any and all information on display, or provided to participants at these sessions will include the project's 1800 number, project email, postal address and project website.

8.3 Stakeholder briefings/meetings

CBD Energy will make available suitable project representatives to meet with community interest groups or key stakeholders to discuss the project, construction progress or issues. These meetings (including after hours) will be held at regular intervals (not greater than two monthly intervals) to keep key stakeholders adequately informed. CBD Energy staff will take the lead in detailing the project, progress of construction and resolution of community issues wherever possible, if and as they arise.

Briefing notes and meeting handouts will include all details for obtaining further project information and project contact details including 1800 number, project email, postal address and project website.

Stakeholder meeting attendees' names will be recorded and added to the project contact database (with permission). Issues and questions raised at stakeholder meetings will be recorded and followed up by the project team in a timely manner.

8.4 Advertising

A program of advertising will be developed to inform the community and interested parties about project information sessions and/or meetings, and advise where further construction information can be obtained – i.e. the project website or by contacting the project team. The program of advertising will begin before construction starts and continue throughout the life of the project.

Advertisements will be placed in local and/or regional media (newspapers and/or radio as appropriate) to announce progress and events, and will include all contact details including the 1800 number, project email, postal address and website.

Advertising will also be placed in local papers if there is any planned activity which may necessitate changes to regular traffic routes, or temporary road closures to permit road works. Advertising for this event will include the dates and times of any disruption or temporary closure and clear instructions if there are any detour requirements.

Requests for media interviews arising from advertising will be handled by CBD Energy's Project Director in consultation with KJA and the CBD Energy media team.

8.5 Website

Current information, graphics and images will be included on the dedicated Taralga Wind Farm website www.taralga-windfarm.com.au. Information collateral such as fact sheets, FAQ, letterbox drops, newsletters and displays will be published on the website. Publication and expiry dates for information will be clearly noted on the documents to ensure version control and so out-of-date material does not remain on the website. Outdated information will be moved to an archive file where it can be easily accessed if required.

Before publication, all information is to be signed off by the CBD Energy's Project Director.

The web address will be included on all Taralga Wind Farm related printed materials, including advertising. Where appropriate, links to the Taralga Wind Farm website will be included on third party websites, such as the local council.

The website will clearly feature all contact details and an online contact form and will be updated at least monthly, more often when there are peak periods of activity and as/when notifications, newsletters and/ or invitations to events are distributed.

8.6 Fact sheets

Fact sheets will be developed for the Taralga Wind Farm construction project and will contribute to consistency of information provided to the public. Each fact sheet will direct the reader to the project website for additional information.

Fact sheets will be prepared to describe the project and the construction process, and will be made available on the project website and in hard copy at information sessions. If requested, fact sheets will also be provided to interested parties by email or mail.

The procedure for preparation of fact sheets, approval and document control requirements will align with that of all other project related materials. All project contact information including the 1800 number, project email, postal address and website will be included on fact sheets..

8.7 Display boards

Display boards will be used at public information sessions and may include images, graphics, maps and/or examples of similar projects. These will help the community understand the visual aspects of the project, construction activities, the size of the area where the wind turbines will be constructed and any other relevant project information. For instance, diagrams can illustrate how wind farm generated energy is delivered into the national power grid.

When not in use at community information sessions, the boards will be offered for display in appropriate Taralga venues such as council chambers, the post office or local school.

8.8 Community Open Days

A pre-construction Community Open Day is being held at Taralga Memorial Hall on Thursday 16 February from 12midday to 8pm. Notices to invite people to public information sessions will be placed in the general news section of local papers, placed on exhibit in centrally located, high traffic venues in Taralga and the local area, including for example:

- local council chambers;
- library;
- post office;
- meeting places, such as sporting clubs and cafes; and
- schools.

8.9 Stakeholder Emails

In addition to other methods of contact, and as the project gets underway, stakeholders will be able to receive notices of upcoming project related activities or community events by email.

Stakeholders will be able to register for updates by providing their contact details via the 1800 number, project email, by post or by visiting the project's website where there will be a "contact us" link.

8.10 Construction site fencing

Construction site fencing and/or gates will have appropriate signage and security. This signage will include project contact details and the 1800 number. No other signage (apart from safety and regulatory signage) will be displayed without CBD Energy's written approval. No sub-contractor will be allowed to display signage on site without such permission and any non-compliant signs will be removed.

8.11 Community notifications

KJA will support CBD Energy's commitment to keeping the community informed about changes in local traffic conditions as a result of Taralga Wind Farm construction activities by ensuring timely notification of all relevant activities.

Notifications will be delivered by letterbox drop or electronically and will inform:

- local landowners and affected residents who live adjacent to the site or along site access roads at least seven day prior, (earlier if scheduled movements can be confirmed) about any increase in construction traffic movements for specific site activities (e.g. concrete pour activities). This will ensure resident awareness of increased traffic movements and allow for management and protection of livestock as well as limiting disruption to livestock movements;

Community notifications will be developed for events or activities as required, but will always include:

- The reason for the notification (e.g. increased traffic movements / road impacts/ detours);
- date, times, location of meetings or events
- expected dates when activities will occur; and
- all project contact details, including 1800 number, project email , postal address and website.

8.12 Project newsletter

KJA will develop a template and ongoing content for a project newsletter that will be distributed at regular two monthly intervals, more often during peak construction periods of the Taralga Wind Farm.

The newsletter will be distributed by letterbox drop and by email to stakeholder who provide their electronic contact details or who subscribe via the website. The newsletter will be written in a relatively informal style, designed to update the community and interested parties on project activities and progress.

The newsletter will also provide opportunities to deliver general project information as well as updates on project milestones, upcoming community events or information sessions, training programs, sustainable energy, revegetation programs and other CBD Energy projects. The newsletter will be available to download from the project's website and will contain all project contact information including 1800 number, project email, postal address and website details.

8.13 Site inspections/visitors

Site visits must only be made with permission of CBD Energy, preferably in writing (email is sufficient). At least seven days' written notice will be required. Requests may be via the project email, in which case KJA will respond to the request, after confirming the availability of a site visit with the CBD Energy's Construction Manager.

All visitors to the site must undergo a safety induction, be signed into and out of the site, and wear personal protection equipment (PPE). Minors (under 18 years of age) will not be permitted on site unless they are accompanied by an adult. CBD Energy will enable site inspections wherever possible and practicable, depending on construction activities. The CBD Energy Construction Manager has the right to allow or preclude entry, in accordance with Occupational Health and Safety and Public Liability policies.

8.14 Other Information

As well as delivery of all information related to the Taralga Wind Farm, additional relevant information will be provided to:

- affected residents who live adjacent to the project site or along site access roads, subject to the off-site landscape plan;
- relevant residents/property owners of the process available to review potential impacts on television and radio transmission;

This information will be provided to relevant stakeholders via direct contact with residents/property owners; on the project's website; by email updates; by notification; and/or in the project's newsletter.

9. Construction progress

On request, KJA will continue to deliver community and stakeholder engagement throughout construction of the Taralga Wind Farm. When construction activities have commenced and the presence of CBD Energy is familiar to the local community, activities may be confined to special events and therefore scheduled to align with major project milestones.

In addition, KJA will work with the CBD Energy team to build relationships with the local community and ensure ongoing community engagement throughout construction and operation of the wind farm.

Notable events may include installation of the first/last turbine, commissioning of the turbines and any other major milestones during construction.

KJA will maintain contact with CBD Energy's Project Manager to ensure that all stakeholders are kept informed of the project's progress and the Taralga community continues to engage with CDB Energy, across the life of the Taralga Wind Farm project.

10. Communications risks and opportunities

Identifying opportunities, along with risk assessment and mitigation, is part of the management process for controlling communications issues. The process is linked to all other activities and reporting requirements of CBD Energy's Taralga Wind Farm.

The communications risk analysis process for the project covers five basic steps to ensure an effective approach to managing risk.

- **Planning** – including clear information about scope, the project's organisation, context of the project and communications procedures;
- **Identification** – of risks and opportunities;
- **Assessment** – and analysis of those risks/opportunities, both qualitatively and quantitatively;
- **Management** – including assignment of responsibility, timing and response to communications issues;
- **Review/reporting** – of the results, including analysis of performance and communication of those results.

The following table provides a preliminary list of the possible issues and/or potential risks to the Taralga Wind Farm project, and KJA's strategies for managing each issue and/or risk, as well as highlighting potential communications opportunities.

10a – Risks and Opportunities (Indicative only)

Issue	Who is affected?	Risks and opportunities	Management strategy
Construction Stage			
Environmental incident	<ul style="list-style-type: none"> • Project delivery • Local environment • Local residents 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> • Soil contamination (e.g. fuel spill) • Weather • Geotechnic discovery <p><u>Opportunities:</u></p> <ul style="list-style-type: none"> • Incident free delivery • Improved reputation 	<ul style="list-style-type: none"> • Environmental Management Plan • Incident communication protocols
Poor workforce behaviour	<ul style="list-style-type: none"> • CBD Energy • Project delivery team • Local community 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> • Complaints from local community • Damage to public and private roads • Negative media coverage • Lack of community support for project • Project delays <p><u>Opportunities:</u></p> <ul style="list-style-type: none"> • Adherence by all team members and sub-contractors to project's code of conduct to minimise incidents and complaints • Community as project champions 	<ul style="list-style-type: none"> • Staff and sub-contractor community relations inductions / toolbox talks • Info line cards to give to anyone asking questions or complaining direct to project team members or site personnel • All interaction with community and media to be led by KJA or CBD Energy Project Director • Zero tolerance for poor social behaviour in local community

Issue	Who is affected?	Risks and opportunities	Management strategy
Graffiti and/or vandalism	<ul style="list-style-type: none"> Project delivery team Local community 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> Increased project costs Negative local media coverage Damage to property <p><u>Opportunities:</u></p> <ul style="list-style-type: none"> Community champions the project and supports “watching over” the Taralga Wind Farm site for suspicious or untoward activity. 	<ul style="list-style-type: none"> Construction Site Management Plan Site security Feedback, complaint and enquiry management
Aboriginal cultural heritage	<ul style="list-style-type: none"> Local indigenous groups Aboriginal Land Council Department of Aboriginal Affairs Local community 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> Issues with Council and/or Heritage Groups and/or Land Council <p><u>Opportunities:</u></p> <ul style="list-style-type: none"> Involve local school students in heritage identification/protection plan Engage with recognised representatives of local Aborigine groups 	<ul style="list-style-type: none"> Site induction includes awareness of procedures if possible Aboriginal objects or relics are uncovered Inclusion of representatives at site events, such as sod turning
Community safety	<ul style="list-style-type: none"> Community Site visitors Site workers WorkCover 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> Injury to member of public or visitor Property damage Negative media coverage 	<ul style="list-style-type: none"> Site areas kept secure SWMS for all works Safety Management Plan Safety signage

Issue	Who is affected?	Risks and opportunities	Management strategy
		<u>Opportunities:</u> <ul style="list-style-type: none"> • Create project champions • Develop goodwill • Enhance CBD Energy's reputation • Create support for other projects 	<ul style="list-style-type: none"> • Site security • Community information campaign about safety when visiting the site and about site security • Inductions for staff, sub-contractors and all site visitors • Appropriate PPE for construction team and site visitors
Road safety	<ul style="list-style-type: none"> • Local community • Local emergency services • Pre-school, infants and primary and secondary school students 	<u>Risks:</u> <ul style="list-style-type: none"> • Increase in traffic, particularly heavy vehicles • Road safety complacency <u>Opportunities:</u> <ul style="list-style-type: none"> • Education • Create project champions • Develop good will • Enhance CBD Energy's reputation 	<ul style="list-style-type: none"> • Information campaign at local schools, highlighting road safety awareness – particularly for truck and heavy vehicle movements
Environmental awareness	<ul style="list-style-type: none"> • Local community • Pre-school, infants, primary and secondary school students 	<u>Risks:</u> <ul style="list-style-type: none"> • Negative perception about the project • Lack of understanding or knowledge about the project's environmental impacts (negative or positive) 	<ul style="list-style-type: none"> • Involve local school students in project awareness and environmental benefits • Involve local pre-school and infants school students in a seed propagation project to support landscape remediation (optional)

Issue	Who is affected?	Risks and opportunities	Management strategy
		<p><u>Opportunities:</u></p> <ul style="list-style-type: none"> • Education • Increase environmental awareness • Create project champions • Develop good will • Develop a positive legacy for the local community • Enhance CBD Energy's reputation 	
Lack of community support for the project	<ul style="list-style-type: none"> • CBD Energy/future projects • Project delivery • Project team 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> • Complaints • Issues raised with local MP • Delays to project • Negative media <p><u>Opportunities:</u></p> <ul style="list-style-type: none"> • Creating a Taralga Wind Farm presence in the local community before major construction works begins • Create positive local relationships and project champions 	<ul style="list-style-type: none"> • Clear messages about Taralga Wind Farm benefits to the local and wider community • Personal consultation with directly affected and adjacent landowners/residents/tenants • Ongoing relationship with the community • Swift and effective response to complaints and enquiries • Update key stakeholders and local media throughout the life of the project

11. Community consultation action calendar

The table below provides an indicative calendar for community consultation activities outlined in this plan.

Table 11a–Community consultation action calendar (Indicative only)

Timing	Activity	Delivery Date	Communication Activity
W/C 30 Jan	Stakeholder analysis Develop communications collateral	W/C 30 Jan	Fact Sheets FAQ Project info line number Project email Project website
W/C 30 Jan	Site visit	W/C 30 Jan	Critical stakeholder update meetings Advertise info session Media release Info session collateral
W/C 30 Jan	Toolbox training collateral	W/C 30 Jan	Fact sheets FAQ Project info line number Project 'info@' email Project website
W/C 30 Jan	Ongoing project update	W/C 30 Jan	Coordinate key stakeholder update meetings, where relevant
Feb	Community information day	16 February 2012 – midday to 8pm	Announce beginning of construction Provide detailed written and visual information Introduce CBD Energy team to local community Identify local concerns/ potential issues Build relationships with champions/ potential supporters

Feb	Sod-turn event to celebrate commencement of construction	TBA	Media release Media invitation (regional TV and papers) Small on-site event Invite local political reps/ councillors/local Aboriginal reps Project team representation Project photographer
March	Ongoing project update	Every two months	Media release for milestone events Notification/newsletter Ongoing community involvement
	Opportunity for controlled site visits by community and/or school groups	TBA	Media release Notification /newsletter Ongoing community involvement

12. Complaints Management System

KJA will deliver a comprehensive Complaints Management System (CMS) to record, monitor and report on complaints and enquiries, as well as other interactions with stakeholders, the community and other interested parties.

Complaints enquiries may be registered via:

- Free-call project info-line number (**1800 267 988**)
- Project email (info@taralga-windfarm.com.au)
- Project website www.taralga-windfarm.com.au contact us facility
- By post – Taralga Wind Farm, PO Box 89, Taralga NSW 2850

12.1 Free-call 1800 number, project email, postal address and website

A dedicated free-call 1800 project phone number has been established (**1800 267 988**) to provide a central point for the community to register any enquiries or complaints related to the Taralga Wind Farm. CBD Energy has established its own number and this number will be managed by KJA for as long as necessary. Management may later be handed over to CBD Energy staff.

The 1800 phone number will be included on the project website, on all notifications, advertising and signage and any other information in the public domain relating to the Taralga Wind Farm.

A project team member will answer all calls during business hours and determine whether the call is an enquiry or complaint.

In the case of complaints, KJA/CBD Energy will respond immediately during business hours, or the next business day for weekend or out of hours contact (as agreed).

During the pre-construction period, and until management of this service is handed over to CBD Energy, KJA will liaise with the Taralga Wind Farm Project Manager and Project Director to determine who will investigate any complaints, whether a resolution and closeout can be readily delivered, or whether the complaint requires escalation.

Sturt Daley, Taralga Wind Farm Project Manager will have ultimate responsibility for investigating complaints and providing direct response to the complainant, or providing relevant information to KJA to enable close out of the complaint.

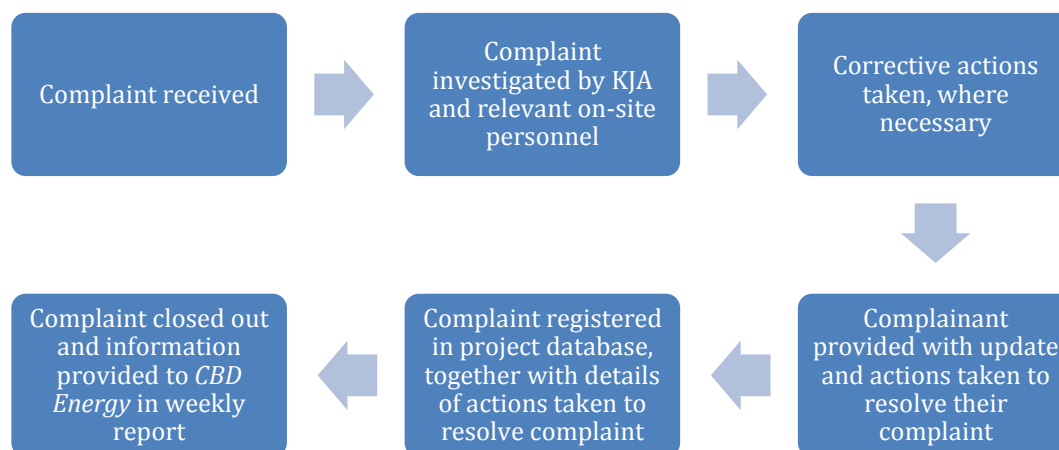
All enquiry calls to the 1800 phone or messages to the project email will be responded to immediately (i.e. same day) during business hours, or the next business day for weekend or out of hours contact. Notwithstanding the current works program, there is provision for the 1800 number to be managed at night if required.

KJA/CBD Energy will ensure that all calls and emails, both enquiries and complaints, are logged in the Taralga Wind Farm project contact database, investigated, tracked and reported to CBD Energy, and closed out.

CBD Energy aims to have each complaint/enquiry event closed out to the satisfaction of the contact, within five business days, the maximum time that should be required for postal correspondence. The close out date for each event will be noted in the complaints register.

Diagram 12a shows the complaints (and/or enquiries) handling procedure.

12a. Complaints handling procedure



12.2 Complaints handling and response

The procedure for complaints handling is as follows.

All complaints received by phone and/or email during business hours will be answered by an experienced KJA team member. The complaint will then be recorded, and (as required), directed to the Taralga Wind Farm Project Manager (Sturt Davey), who will investigate and respond – either direct to the complainant, or by providing the relevant information to KJA to deliver to the complainant, so the complaint can be closed out within 24 hours of receipt where practical.

- Generally, complaints and/or enquiries received overnight or on weekends via the 1800 phone or via project email, will be responded to within 24 hours unless otherwise agreed with the complainant, but no later than the following business day.
- Written correspondence regarding the Taralga Wind Farm will be answered by phone, email or return post, as directed by the complainant, but within seven working days of receipt.

Experience has revealed that some complainants merely want to vent, and once they have lodged their complaint, they prefer to be called back during business hours, if at all. A detailed written response will be provided to any complainant who requests same and gives their details, within seven calendar days.

Copies and/or summaries of incoming emails and correspondence and copies of responses to complaints/enquiries will be provided in monthly reports to CBD Energy.

12.2.1 Noise related complaints

In the specific case of noise related complaints and depending on the circumstances of the complaint and the complainant (i.e. certainty that the noise is project related) in the first instance the complainant will be given accurate time frames for cessation of the noisy works. CBD Energy may (at their discretion) offer temporary noise

protection to complainants, or in extreme circumstances, (such as ill-health), CBD Energy may consider an offer of temporary relocation to complainants where s no reasonable and acceptable alternative can be agreed.

12.2.2 Traffic related complaints

Traffic related complaints will be treated in the same manner as all complaints; however CBD Energy site crews and sub-contractors will aim to avoid peak travel periods, particularly for deliveries to site. CBD energy is aware of the local school bus routes and will maintain a commitment to avoiding truck/equipment movements to the site during school bus travel times.

These complaints are broadly within those defined in Section 5.6 of the Construction Traffic Management Sub Plan, Appendix 4 of the Taralga CEMP.

12.3 Complaints recording

The following information must be recorded in the complaints register.

- The date and time the complaint is received.
- The means by which the complaint was received (i.e. phone, email and letter).
- Contact details for the complainant (if provided) or a note that the complainant did not provide/want to provide contact details.
- The reason for the complaint, the issue raised or the reason for the enquiry (i.e., noise, dust, traffic movements).
- What action is taken by KJA and/or CBD Energy in response to the complaint, including any follow up contact with the complainant by KJA or CBD Energy.
- If no action is taken, the reason.
- The date the complaint is closed out.

The complaints register must be maintained and updated throughout the life of the project.

It must be made available on request to relevant authorities or their agents.

The complaints register must be retained by CBD Energy for at least seven years from the date of the last complaint.

The complaints register is to be publicly available, subject to confidentiality/privacy restrictions relating to complainants' details. Personal contact information will not be provided to any other person or agency.

In addition to registering complaints, this database will be the main reporting and monitoring tool for project communications activities. All persons registering a complaint or enquiry will be offered registration on the project contact database. This database will also be used to record progress of other interactions with the community (e.g. briefing session or meeting follow up), and will:

- record all community and stakeholder contacts and interaction (e.g. meetings, briefings, information sessions);
- record the date of issue and distribution of media releases, newsletters, notifications and any other information released in the public domain;
- provide the basis for monthly reports complaints management reporting;

- be used to identify issue and opportunity trends (through key word referencing) over the life of the project; and
- provide the basis for monthly reports on stakeholder and community contact and activities.

12.4 Complaint escalation and dispute resolution

There may be occasions when it is not possible to easily resolve a complaint. If this occurs, a complaints escalation process will be followed. The complaint will be registered and managed through the complaints management system, but if an impasse is reached, CBD Energy's Project Director will seek further dialogue with the complainant and if the issue is still not able to be resolved to the satisfaction of the complainant, a dispute resolution process may be implemented whereby the complainant will be able to request intervention and mediation by an Independent Community Liaison Representative (ICLR).

12.5 Stakeholder contact

Any contact with project stakeholders, including general discussions, project briefings or meetings, will be recorded. The stakeholder's contact details and identified areas of interest will be entered in the project contact database. With permission of the stakeholder, their details will then be used to facilitate ongoing contact, such as electronic delivery of notifications and project updates. At any time during the project, stakeholders may register their interest and provide their details for electronic receipt of information including newsletters, notifications and invitations. Stakeholders will also be able to request removal of their details from the project's database.

13. Internal communications

Clear internal communications across members of the entire project team, including construction, site personnel and sub-contractors, are vital to the success of this project.

Internal communications will be managed by KJA and the Project Director and will focus on progress of the project, review construction and brief senior representatives of CBD Energy.

KJA and the Project Director will oversee internal communications activities and ensure adherence to the CCP code of conduct.

Internal communications activities will reinforce principles of

- employee engagement with the project to maintain interest and morale;
- a culture of performance with emphasis on the positive outcomes of both what we do, and how we do it; and
- a shared set of values, including safety, honesty, respect and shared communication across all disciplines of the project team and with the community and stakeholders.

All team members and subcontractors involved in construction of the Taralga Wind Farm will be encouraged to exhibit positive, supportive and tolerant behaviour and play a role in CBD's goal of being a good neighbour to the local community. There will be zero tolerance of anti-social behavior in the local community.

13.1 Inductions

Site inductions for all employees and contractors will include information about CBD Energy's commitment to positively engaging with and minimising disruption to the community, local property owners, local businesses, transport providers and road users.

Additionally, information will be provided about project contacts and protocols for all direct enquiries and/or complaints.

KJA will draft this information, as well as developing and providing contact project information cards that can be handed out by construction and site personnel as required. Where appropriate, KJA will be available to deliver community relations inductions for construction crews, site personnel and sub-contractors and reinforce the importance of the team's role in creating positive relationships in the local community through sensible and acceptable behaviour.

Continuous community relations updates over the life of the project will be required for construction and sub-contracting crews. This should occur regularly at toolbox talks and the messages can be reinforced in CBD Energy internal project updates. Employees will also be encouraged to regularly log in to the Taralga Wind Farm website to maintain involvement in the project.

14. Issues and incident management

The Taralga Wind Farm will undoubtedly attract a degree of public interest and/or stakeholder dissatisfaction about the project, the construction and disruption to local amenity and traffic, as well as opinion and discussion about long term implications of the project.

Key issue management principles include:

- reviewing all issues for their status – major, intermediate or minor – based on the risk to the project and to CBD Energy;
- ensuring the local community and relevant stakeholders are informed of the progress of construction and advised of any construction impacts/activities, to pre-empt or respond to issues;
- regularly evaluate community enquiry/complaint outputs from the contact database to identify emerging issues;
- evaluate participation at events as well as data outputs from information sessions (via feedback forms), to monitor and gauge changing areas of community interest and to identify constant or emerging issue trends; and
- providing timely responses to all issues, both internal and external.

14.1 Incident management

Process controls will be embedded in this plan to ensure effective management of stakeholder issues or incidents that can disrupt the community or that result from natural events or criminal incidents. This includes incidents or activities that have potential to attract media attention, threaten the project or harm CBD Energy's reputation.

KJA, in consultation with the Project Director, will determine the level of seriousness of any incident - minor, intermediate, or major. Major incidents can affect the daily management of construction activities or seriously damage the reputation of CBD Energy.

All incidents will be reported to CBD Energy within the timeframes below.

14a. Incident management

Degree of Incident	Description	Action required
Minor	Any minor issue / incident that may at <u>some point</u> attract the attention of the media, an MP, local council or the broader community – including but not limited to industrial, community impact, legal and commercial issues.	Verbal notification to KJA and CBD Energy's Project Director within 24 hours.
Intermediate	Any issue / incident that is likely <u>in the short term</u> to attract the attention of the media, any MP, local council or the broader community – including but not limited to environmental, industrial, community impact, legal, and commercial issues.	Same-day (24hr) verbal notification to KJA and CBD Energy's Project Director's Project Director. <u>Note:</u> for environmental incidents, one hour verbal notification is required. A report detailing the incident is to be issued to CBD Energy's CEO within 24 hours of the incident, wherever practical.
Major	Any issue/incident that that <u>has attracted or will imminently attract</u> the attention of the media, an MP, local council or the broader community, including - but not limited to, environmental, industrial, community impact, and legal, issues.	Immediate verbal notification from the Construction Manager, within 10 minutes (wherever practical) to CBD Energy's CEO and Project Director. The Project Director will inform KJA and CBD Energy's media unit. A report detailing the incident is to be issued to CBD Energy's CEO within four hours, wherever practical.

15. Monitoring, evaluation and reporting

Monitoring, evaluation and reporting on the effectiveness of communications and engagement activities for the project will be undertaken:

Daily	via	- KJA's complaints and enquiry monitoring and recording in contact database - incident reporting - media monitoring
Monthly	via	- KJA to report to CBD Energy's Project Director
Quarterly	via	- CBD Energy to provide KJA with updated scope of works for the next 3 months
Six monthly	via	- CCP document review by KJA and Project Director
As required	via	- community and stakeholder feedback - notes from meetings.

15.1 Community consultation evaluation

Evaluation enables continuing improvements to community consultation activities and more efficient use of resources through screening out or improving activities. Throughout the life of the project, CBD Energy will evaluate individual activities, and the Project Director will evaluate the program of consultation and engagement.

Each community consultation activity will be evaluated as soon as it occurs and the results used to modify the overall CCP if necessary. The plan itself will be evaluated at key stages/milestones of construction to ensure objectives and strategies are still relevant or whether they should be modified, and at the end of the project to determine its success overall.

15.2 Evaluation methods

Evaluation of the Communication and Consultation Plan will range from quick, individual, qualitative self-assessments to feedback, questionnaires and/or surveys.

Factors to be taken into account include:

- the number of participants at community events and activities and feedback from participants;
- increase / decrease in participation and mood/tone of participants over the life of the project;
- efficient and effective complaints management – no escalation of complaints or issues; and
- Seamless delivery of community and stakeholder engagement activities to support timely delivery of construction of the Taralga Wind Farm.



27.0 APPENDIX 10 – ENVIROMENTAL REPRESENTATIVES AUDIT REPORTS





29.0 APPENDIX 11 – SITE MANAGERS INSPECTION REPORTS





30.0 APPENDIX 12 – ENVIROMENTAL CORRECTIVE & PREVENTATIVE ACTION REQUESTS

