

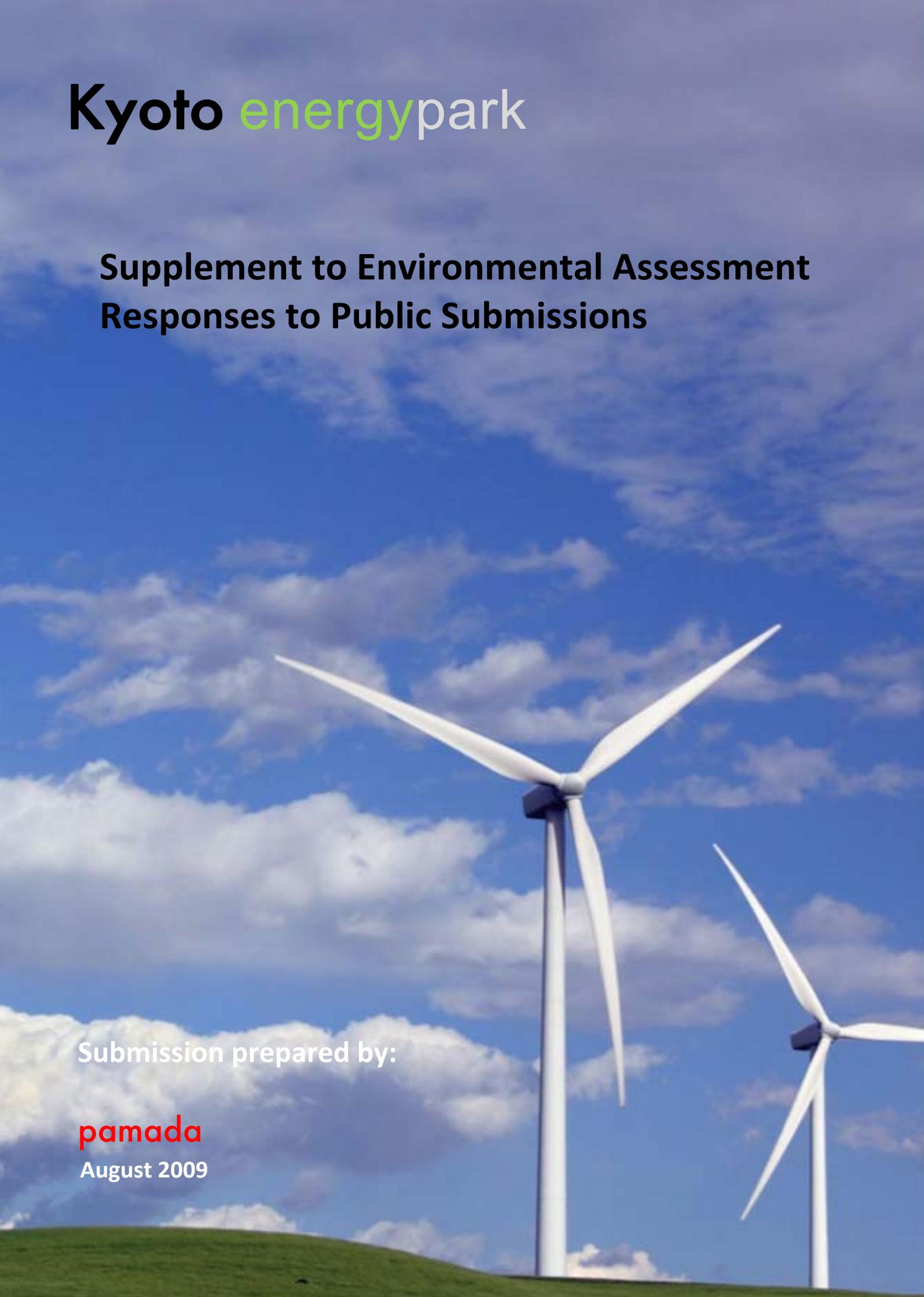
# Kyoto **energypark**

## Supplement to Environmental Assessment Responses to Public Submissions

Submission prepared by:

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August 2009





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**Responses to the Public submissions received during public exhibition of the Kyoto Energy Park proposal in accordance with Part 3A of the Environmental Planning and Assessment Act 1979.**

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## Key Amendments

The KEP project has significantly reduced the overall impacts relating to the proposal placed on public exhibition. Issues have been brought forward by Government departments and concerns have been raised by community stakeholders. These issues and concerns have been addressed in Part A (Government responses) and Part B (Responses to Community) respectively. Most of the issues raised were in relation to impacts associated with wind turbine generators.

Following consideration of these issues raised a final revised layout and revised scope of works for the proposal has been included in Part C. All changes and amendments to the original Statement of Commitments has been included in Part D reflecting these issues.

As of the date of this report a further eight (8) wind turbines have been omitted from the proposal and specifically from the Middlebrook Station site. These turbines were removed due to conflicts with aviation procedures at the Scone aerodrome. These turbines were also of most contention in consideration of visual effect, vegetation disturbance and impacts on the adjacent Towarri National Park to the north. Removal of these turbines has significantly reduced the overall residual environmental risk associated with the wind turbine component of the proposal.

The current scope of works includes a total of 34 wind turbine generators (31 turbines on Mountain Station and 3 turbines on Middlebrook Station) as outlined in Part C – Revised Scope of Works. The original proposal (2007) included a total of 47 turbines over the two properties. In November 2008 a total of five (5) turbines were removed from the original proposal to improve environmental amenity at both sites. This included the removal of 4 turbines at Mt Moobi (Mountain Station) and 1 turbine in proximity to Castle Rock (Middlebrook Station).

The final wind turbine layout has effectively reduced noise and residual visual impacts at most highly affected residents. Noise issues have been addressed through the strategic removal of turbines and the selection of a suitable turbine model for the area.

This revised layout and scope of works (Part C) fulfils the requirements of Section 75H of the Environmental Planning and Assessment Act 1979. In consideration of the assessment of the impacts from the Project contained in the EA and this document and the proposed mitigation measures committed to in the revised Statement of Commitments, it is believed that all relevant issues and concerns have been addressed and that the Project should now proceed for approval by the Minister.

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## **PART A – GOVERNMENT SUBMISSIONS**

### **1.0 NSW Department of Water and Energy**

The Department of Water and Energy concluded that potential impacts to groundwater are considered minimal and that water supply requirements appear to be adequately addressed in the EA. The Department did request clarification of the water supply for dust suppression during operations.

Operational water requirements are summarized in the Environmental Assessment (EA) Volume 1 Table 6.3 – Operational Water Consumption. Operational water consumption would be minimal, estimated at approximately 0.58 ML per annum. Most of this water would be sourced from rooftops and required for amenities proposed onsite (drinking water, toilets etc). Additional potable water shall be bought and trucked in from a registered bore located in Scone.

A water tanker will be used on site during construction operations. The water tanker would also be kept on site post construction to allow for intermittent usage on internal access tracks until consolidation occurs. Water would be sourced from on site dams on an intermittent basis (approximately 2 loads per week) for at least 6 months post construction to allow for intermittent watering of internal access tracks. In addition this water tanker may also be used for road maintenance and repairs post construction along local road routes as required.

Water required for dust suppression and road maintenance post construction would be minimal and well within the existing maximum harvestable right dam capacity (MHDRC) for on-site dams. The location of the proposed farm dams are shown in Figure 15.0 and 15.1 of the EA.

### **1.1 Department of Defence**

Pamada originally sought comments from the Department of Defence (dated March 2008). In this letter the Department of Defence requested design details of wind turbine structures be provided prior to and during construction, as well as height and location details of all 'tall structures' upon completion of works, including the existing wind masts on site.

These issues were addressed by Pamada and included in the EA submitted for public exhibition. Close consultation with the Department of Defence will be maintained during construction and details provided as requested following completion.

Further in recent response from the Department of Defence (dated 2 July 2009) no additional issues or concerns have been raised with the proposal.

### **1.2 Upper Hunter Shire Council (UHSC)**

The Upper Hunter Shire Council supports the development of renewable energy projects within the shire. The current Scone LEP (1986) was amended in 2005 to allow consideration of the Kyoto project over the subject properties referred to as Middlebrook and Mountain Stations in the Environmental Assessment (EA).

The Council notes that no objection or issues are raised in respect of the Solar PV or Mini-hydro component of the proposal.

Following perusal of the EA the Upper Hunter Shire Council have included the following issues to be addressed:

### **1.2.1 Community Participation**

The Council noted that the project *“has been in the public arena for a number of years”* and that no specific issues or concerns regarding community consultation are raised with the proponent.

### **1.2.2 Social and Economic Impacts**

#### **1.2.2.1 Capital Expenditure**

Gross Capital Expenditure has been calculated based on total project costs of 140-190 million. The range allows for variance with final wind generator capacity (2-3MW), Solar PV capacity (3-10MW) and final preferred line route (Option 2 or Option 4).

It is likely that final Capex would be considerably less dependent on selection of final components.

#### **1.2.2.2 Local Contractors**

Council have suggested that materials and labour be sourced locally where required and notes that significant resources exist within the region for supply of road base, concrete materials, steel etc.

Considerable discussion has already taken place with local contractors, fabricators, plant operators, suppliers, wind mast installers etc from Scone to regional Newcastle. Due to the presence of the mines the local workforce is well structured to provide resources and transportation for project components.

Construction resources would generally be sourced locally based on commercial negotiations and project dynamics such as availability of resources including land surveying, labour, electrical works and line work contractors, transport and machinery, road construction and earthworks.

#### **1.2.2.3 Increased Tourism**

The Council acknowledges the potential benefit to the area from increased tourism and supports the inclusion of the Visitors and Education Centre in the proposal.

#### **1.2.2.4 Developer Contributions**

Council have requested a Section 94A be levied or a Voluntary Planning Agreement reached between Pamada and the Council.

It is not expected that Council's Section 94A Contributions would be triggered in the development as the project would not require a direct increase in demand for public amenities or public services during operations. Furthermore no developer contributions were identified at the time of making the Development Application for the project.

Community contributions would be adequately supported through the Moobi Foundation set up to decide on eligible community initiatives. The level of funding would be in the order of 0.25% of annual revenue per annum for community enhancement and local initiatives.

### 1.2.2.5 Property Values

Council have suggested that Pamada undertake 'before and after' property valuations for residents within 3km of turbines and that a one off payment be made to all affected landowners for any shortfalls in value attributable to the imposition of the wind turbines.

During the assessment, market evidence was discussed relating to potential for land value impacts. The Bald Hills Panel Report in 2004 showed that there was some consensus on the potential for devaluation of non-agricultural development in view of a wind farm. However empirical market evidence to date from the US and Australia on the effect of wind farms on land values indicates that there is no correlation in reduction in land values as a result of a property being in the view shed of a wind farm development.

More recent enquiries made by Land Valuers Duponts Pty Ltd for the Kyoto Energy Park Study ( *Appendix K(i) of Volume 2 of the EA*) revealed that in wind farm areas of Victoria and principally the Codrington area recent sales of residential property within 2 kilometres of a wind farm indicated there was no discernable effect on land values. Dupont's concluded in the EA that based on market evidence, valuation experience and enquiries with other valuers in wind farm areas of Victoria, a temporary reduction in value of surrounding non-agricultural development could occur over 1-2 years. This effect would be most likely as a result of perception of negative effect rather than actual outcome. This assumption was made based on sales evidence to date within Australia and abroad and market predictions involving a worst case scenario based on Scone properties surrounding the Kyoto Energy Park.

Bearing this in mind it is important to remember that land values can be affected by a range of overlapping factors including economic conditions, existing and future land uses, transport and employment opportunities, lifestyle features etc. In addition public perception of wind farms are highly subjective and varied based on individual decision to purchase.

Therefore there is the potential for a range of factors to affect land values on surrounding non-agricultural land and there are limitations on any conclusions that may be drawn. Real land value impacts for the project are likely to relate to impacts of visual, noise, surrounding land use, traffic generation and tourism. Successful mitigation of these impacts has been addressed in the EA and will provide assistance to ensure adverse impacts are not manifested in any lowered value of nearby properties. The unique opportunity for increased tourism in the Upper Hunter was addressed in the EA and mentioned by Council. Increased tourism interest to the area will likely have a significant positive effect on the local economy and a positive impact on land values.

In a recent decision in the NSW Land and Environment Court NSWLEC; *Taralga Landscape Guardians Inc v Minister for Planning and RES Southern Cross Pty Ltd* [2007] (12 February 2007), the court decided to reject the argument that a requirement to pay compensation to adjoining landholders could be imposed. Justice Preston stated:

*"If the concepts of blight and compensation, as pressed by the Guardians, were to be applied to this private project (a proposition which I reject) then any otherwise compliant private project which had some impact in lowering the amenity of another property (although not so great as to warrant refusal on general planning grounds when tested against the criteria in s 79C of the Act) would be exposed to such a claim. Creating such a right to compensation (for creating such a right it would be) would not merely strike at the basis of the conventional framework of landuse planning but would also be contrary to the relevant objective of the Act, in s 5(a)(ii), for "the promotion and co-ordination of the orderly and economic use and development of land".*

Considerable modification and changes to turbine layout and design of turbine and generator components has already been undertaken to reduce residual impacts on local residences to within acceptable levels of impact on amenity for the locality. Five (5) turbines were removed from the original proposed layout to reduce noise, reduce visual clutter and reduce potential impacts on bird species (Nov 2008). A further 8 turbines have also been removed from Middlebrook Station (see Section 3.0 of this report) to comply with Aviation procedures at Scone Airport and environmental concerns with Middlebrook Station and turbines along the Glen Range in proximity to Towarri National Park (Jul 2009). This will greatly improve environmental benefits to the site and also the perceived impacts on residents surrounding the site.

Based on lack of evidence to date and it would not be justified to require compensation to be paid to surrounding landowners for this period. Dupont's research has suggested that devaluation may be perceived rather than real and exist probably as a result of negative sentiment generated during planning approval. Empirical evidence has shown that in some cases surrounding property values have increased above market value. Other factors such as increased tourism specific to the area from the Park may have a more significant effect on value of land.

Further consideration to devaluation of property in the vicinity of the KEP proposal has been provided in Question 20 of Section 2.1 – Responses to Public Submissions.

#### 1.2.2.6 Land Clearing and Biodiversity Corridors

It is proposed to remove 8 turbines from the Middlebrook Station site closest to Towarri National Park (see Section 3.0 – Final Layout). Removal of these turbines from the proposal will significantly reduce the amount vegetation modification, clearing and disturbance on Middlebrook Station in closest proximity to Towarri National Park.

Table 1.0 below shows a revised estimate of vegetation modification based on removal of the 8 turbines from Middlebrook Station. The original proposal (Nov 2008) was to involve the selective removal of up to a total 8.5 hectares of vegetation including 3.9 ha of the EEC White Box - Yellow Box - Blakely's Red Gum Woodland within Middlebrook Station (*Table 5.2 Appendix-A Ecological Site Assessment*). By eliminating 8 turbines a total of 93% of anticipated vegetation disturbance can be avoided on Middlebrook Station. This will also conserve 100% of the EEC Community (3.9 ha) within the Middlebrook Station site adjacent to the Towarri National Park.

Table 1.0 - Revised Estimates for Vegetation Removal and Modification

Site	Total Vegetation Disturbance in Ha (Nov 2008)	Total Vegetation Disturbance in Ha (Aug 2009)	EEC Disturbance in Ha (Nov 2008)	EEC Disturbance in Ha (Aug 2009)
Mountain Station	12.55	12.55	2.3	2.3
Middlebrook Station	8.5	0.6	3.9	0
<b>Total</b>	<b>21.05</b>	<b>13.15</b>	<b>6.2</b>	<b>2.3</b>

Therefore total vegetation disturbance has been reduced over both sites from 21.05 hectares to 13.15 hectares. The amount of EEC community requiring modification has been reduced from 6.2 to 2.3 hectares over both sites. No EEC community would be removed from Middlebrook Station as shown in the above table.

The above areas represent the area of affectation during works for installation of turbines, access tracks and transmission lines. Most of this work would be located in areas that have already been cleared such as areas of grassland or scattered trees and along existing access tracks. It is assumed that approximately 12.55 ha of vegetation will be disturbed on Mountain Station. Most of this area is already significantly disturbed (i.e. scattered trees), or is contained within existing access tracks. Works would only selectively remove trees and vegetation as the need arises within these areas. The estimate is a conservative estimate with only a small fraction of this area requiring selective removal of trees or vegetation.

Council have also requested that Federal initiatives to protect the **Great Eastern Range (GER) Wildlife Corridor** be considered and the impact of turbines along this range. The GER Wildlife Corridor is an effort to conserve vegetation and habitats within the Great Dividing Range between Atherton and the Alps. The proposal is to link existing reserves and to protect and restore ecological links that will allow free movement of species and protection of sanctuaries as the effects of climate change escalate.

Both Middlebrook and Mountain Station are outside regional or sub-regional wildlife corridors shown on maps within northern NSW. No areas within the sites have been identified as key habitats within the DEC mapping. CEG Consult did however identify Middlebrook Station as being part of contiguous vegetation that is associated with the rangelands that extend into the adjacent Towarri National Park. Turbines in close proximity to the border did pose some level of risk to bird and bat species (although not significant) that may use the vegetation (Section 5.4 Appendix-A Ecological Site Assessment). By 8 turbines from Middlebrook Station potential risks associated with impact on bird and bat species using this vegetation would be eliminated.

There would be no Asset Protection Zones (APZs) required for tower structures as there is no bushfire risks posed to towers. Hardstand areas around towers would be rehabilitated and grassed to edge of tower. Grazing of sheep around tower base will help maintain grass species in these locations.

### 1.2.3 Biodiversity Flora and Fauna

Council have requested that a financial contribution of \$1500 be made to a local wildlife service for each death of a Wedge-tailed eagle or Nankeen Kestrel from turbine blade strike. An Adaptive Management Plan would be recommended to accompany the operations of the turbines and allow further preventative measures to be adopted in relation to real impacts on these species identified in the 'species of concern'. The purpose of the plan will be to reduce or eliminate the risk of blade strike on these species. The monitoring program would document the collision impacts, monitor nests and home ranges, and would instigate preventative action based on occurrences. As a contribution to the Local Wildlife Service (WIRES) a payment may be required to be paid.

### 1.2.4 Heritage

Pamada have addressed recent concerns regarding the consultation methodology and recommendations made by the Aboriginal Community. These issues have been clarified in the responses to the Department of Environment and Climate Change (DECC) in Section 1.9.2.

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#### 1.2.4.1 Castle Rock

Castle Rock is listed as a heritage landscape feature under Schedule 4 of the Upper Hunter Shire Council LEP 1986. The original turbine layout was modified to remove 5 turbines including one turbine closest to Castle Rock, and setback the second closest turbine to improve visual setting and integration into the landscape (Nov 2008).

As of July 2009 Pamada have resolved to remove an additional 8 turbines from the Glen Range ridgeline behind the Castle Rock formation. Significant numbers of concerns were received from residents directly west of the Castle Rock formation and Middlebrook Station during exhibition of the EA. Removing these additional turbines would eliminate the visual integration concerns when viewing the Castle Rock formation from a west and south west position. Other distinctive rocky formations were identified along this western escarpment, mainly to the north of Castle Rock. Castle Rock is not a recognised tourist attraction currently within the area.

By removing an additional 8 turbines would also increase the distance of the closest turbine to Castle Rock formation from 1.3km to 1.9km.

There would be no impacts on the Castle Rock feature during construction. Construction works including upgrading of the existing access road would occur at least 1.9 km from this feature. Vegetation removal and disturbance will be extremely minimal on the Middlebrook Station site as result of the removal of a further 8 turbines. This will not create visible lines or cuts within the existing vegetation strands.

The protection of the 'petrified stump' is noted and included in the EA Volume 1 Section 19.4.3 European Heritage Impact.

#### 1.2.5 Noise Impacts

##### 1.2.5.1 Infrasound, Blade Modulation and Low Frequency Noise

Council have suggested that 'anecdotal evidence' has been received 'in relation to' the Waubra Wind Farm in Victoria in which evidence of '*Wind Turbine Syndrome*' has been attributed to low frequency noise from wind turbines. Council have expressed concern over the potential impact to residencies from infrasound.

It is noted that the Waubra Wind Farm has at least 85 residencies located within 1.5 km of a total of 128 wind turbines. In comparison the KEP project has identified only one (1) non-landowner resident within 1.5km of the closest turbine, being the '*Peakhill*' residence.

Infrasound is sound that is in the lower limits of human hearing in the lower frequency range. Infrasound near modern wind turbines is generally not perceptible to humans, either through auditory or non-auditory mechanisms. There is often an audible 'swoosh' created by wind turbines, which is essentially low frequency broadband noise which is included in noise criteria. This low level sound or 'swoosh' should not be mistakenly confused with infrasound.

In a report by the University of Salford entitled '*Research into aerodynamic modulation of wind turbine noise*' (University of Salford, UK July 2007), the effects of low frequency noise or 'infrasound' from wind turbines was investigated. Based on survey results relating to noise concerns from some 133 wind farm sites across the UK, the report concluded that infrasound associated with modern wind turbines is not a source which will result in noise levels which may injurious to the health of a wind farm neighbour. The study also found that the common cause of the noise complaint was not associated with infrasound, but

the occasional audible modulation of aerodynamic noise or blade modulation.

Van den Berg highlighted the potential for modulation in turbulent noise levels from the blades which can occur if the wind speed across the blades at the top of the swept path is sufficiently different to the wind speed at the bottom (i.e. wind shear gradient). This is more likely to also occur at night where the atmosphere can be more stable with a steeper wind speed gradient above the ground. Modulation can be exacerbated if two turbines experience this modulation and are in phase at a particular residence.

Blade modulation is a factor of the degree of wind shear across the rotor height which can be readily calculated using data from the existing wind towers on site. Potential for blade modulation was calculated to be generally below acceptable limits with potential for slight exceedance on an intermittent basis over some months. Further operational monitoring will determine if any noise exceedances are characteristic of blade modulation effects. If blade modulation is found to be above acceptable (when average wind shear coefficient > 0.2) during noise exceedance sector management of turbines would occur.

### *Peakhill residence*

Council have requested that compensation or acquisition of the 'Peakhill' residence be considered, if (subject to mitigation treatments being unsuccessful), noise levels are not maintained within criteria at the 'Peakhill' residence.

The most affected resident from noise is the 'Peakhill' residence where exceedances are predicted to occur both day and night time periods and up to 31% during winter night time periods. The EA advised that 5 turbines were removed from the original layout (Nov 2008), including 4 turbines in the vicinity of the 'PeakHill' residence to satisfy noise criteria at this residence to within manageable. Further monitoring of noise levels at the 'Peakhill' residence will need to occur during turbine operations to determine if sector management of turbines will be required. Sector management would include 'ramping down' of some or a combination of offending turbines (WTG 27,28,29,30,31) under unfavourable conditions. Monitoring of the wind shear coefficient (m) across these turbines would also ensure wind shear is maintained below a factor of 0.2.

The noise model is generally conservative. Noise levels assume that windows are left open where in actual fact windows would most likely be closed during winter. It is anticipated that sector control of WTGs 27-31 would be sufficient to control noise levels at this residence.

The turbine model and layout has been designed to ensure noise levels are maintained within acceptable at closest residencies. Noise level predictions have been made assuming a maximum SPL of 104.3 dB(A) at 105m AGL. All audible tonalities including low frequency noise have been considered in the EA in accordance with the DECC criteria the SA Guidelines and draft EV16 guidelines.

### **1.2.6 Buffer Zone**

Council have advised that the draft DCP has not yet been prepared and as such Pamada are unable to comment on it. Council also noted that a standard setback or buffer zone would not be adopted in the DCP, rather setbacks would be determined by key standard criteria such as noise and mitigation of these impacts to acceptable levels. It is noted that Pamada have assessed all impacts based on this methodology, by locating turbines based on mitigating environmental impacts and loss of amenity.

The predicted noise exceedances at the 'Peakhill' residence would be manageable to within acceptable criteria through turbine control in offending wind conditions. Noise compliance monitoring would undertaken within the first 6 months of operations. WTG 27,28,29,30,31 predict some level of exceedance mainly during winter periods however these are deemed to be manageable through control operating these turbines.

### 1.2.7 Visual Impact

Council have expressed concerns over the effective of screen planting at worst affected homesteads to reduce visual impact. Council have commented that while it may be effective at some residents in the most part it will have little benefit.

Screen planting can provide effective visual screening of wind turbines from any view point. Residencies identified in areas of greatest visual impact were illustrated in *Figure 11.4 Visual Impact Map of Volume 1 of the EA*.

The removal of 8 turbines on the Middlebrook site would reduce the overall visual impact on properties surrounding Middlebrook and directly east of Mountain Station. It is likely that some of these areas originally identified as worst affected areas (Nov 2008) have now been reduced and changed as result of the deletion of 8 turbines from the Middlebrook Station range. These areas included in Thompson's Creek Rd, Lower Sparkes Creek Rd, Dart Brook Rd, Middlebrook Rd, Moobi Rds and directly adjacent roads may have changed.

To identify the extent of potentially highly impacted areas a revised Visual Impact Map (Figure 11.4 Visual Impact Map Volume 1 of the EA) shall be prepared prior to commencement of operations. Within 6 months of commencement of operations a preliminary assessment of residencies within these highly impacted areas, will be undertaken by a specialist visual consultant to determine if visual treatments such as screen planting and integration is warranted.

A suitably qualified person would be employed to assess individual properties in these areas for existing vegetation screening, orientation of primary view zones, landscaping requirements including bushfire risk of treatments. Complimentary treatments would be provided to worst affected residencies in these areas. It is envisaged that local nurseries shall be used to grow local tree species during construction stages to allow for faster growth.

### 1.2.8 Aviation Issues

Responses to Aviation concerns from Council are contained within Section 1.3 CASA and Section 1.4 Airservices Australia.

### 1.2.9 Electromagnetic Interference (EMI)

For broadcast signals large scale interference can generally be avoided by placing the wind turbines at least 1km from a relay TV transmitter. No analogue television broadcast or communications towers have been identified within 1 km of the proposed KEP. The nearest analogue television broadcast tower is the Rossgole relay tower located approximately 8.5 km to the south of the proposed Mountain Station site.

The Rossgole lookout is a retransmission source of both analogue and digital television signals that covers the area around the KEP. Scatter regions where there may be the potential for analogue TV interference downstream of the site have been identified in Figure 13.0 of Volume 1 of the EA.

Mitigation and rectification of analogue interference is easily resolved during operations as discussed in Section 13.4 of Volume 1 of the EA. Additionally, analogue television is expected to be phased out in regional NSW in 2012, to be replaced with digital television which is essentially unaffected by wind turbines.

All registered radio licenses with 50km of the KEP site were identified and assessed. Radio broadcasting signals are generally not affected by wind turbines any more than other effects such as terrain, vegetation and other forms of signal obstruction. Should reception difficulty be encountered, the amelioration method consists of the user simply moving to receive a clearer signal. All registered licensees will be contacted prior to and after wind turbine operations to determine if interference is apparent. If signals are found to be interrupted as a result of turbines then radio signals would be rectified by the proponent. This may include installation of repeater stations at residences depending on the analysis. Additionally, essential and emergency service organisations will be contacted to minimise risks of conflict with radio communications.

#### 1.2.10 Mineral Resource Sterilisation

Responses to Mineral resource issues contained within Section 1.6 Department of Primary Industries (DPI).

#### 1.2.11 Hydrology

Council have raised no issues to hydrological aspects of the project.

#### 1.2.12 Geology and Soils

Council have requested that important landscape features such as Castle Rock be protected from construction activities within the site.

Construction works on the Middlebrook Station site will be at least 1.9 km from Castle Rock feature. Works would include upgrading the existing access road and turbine hardstand area. There are no envisaged impacts likely from construction or operations on the Castle Rock feature. Mitigation factors will be considered in Erosion and Sedimentation Control Plan and Bushfire Risk Management Plan prior to works commencing.

An Erosion and Sedimentation Control Plan will be prepared prior to construction and operation stages of the Kyoto Energy Park. Erosion and sedimentation controls will include dust suppression for internal roads during construction and operations.

#### 1.2.13 Transportation and Traffic

Council have expressed concerns that traffic routes have not been finalised. The Traffic and Transportation Assessment has identified all feasible traffic routes during the preparation of the EA. All transportation routes have been identified in the EA. These include direct routes (for normal loads) and indirect routes (for oversize and overmass components ) including some large wind turbine components and substation transformers.

The preferred port for large components is from Newcastle Port. Tower tubes would come from Victoria or Queensland via main networks. Other turbine components would be shipped to Port Newcastle. Heavy vehicle routes from Newcastle Port to Muswellbrook were identified in the Transportation and Traffic Assessment. The route utilises the main road network to Muswellbrook

frequently used to transport large machinery and infrastructure components to the power stations and coal mines. Alternative routes have been identified utilising back roads between Muswellbrook and Scone bypassing sub-rural centres of Aberdeen and Scone for larger components. This indirect route have been identified in Section 5.3 of Appendix J Traffic and Transportation Assessment. Other variations to this route have also been identified in Section 5.3 of the assessment. These routes would be subject to a special permit issued by the RTA.

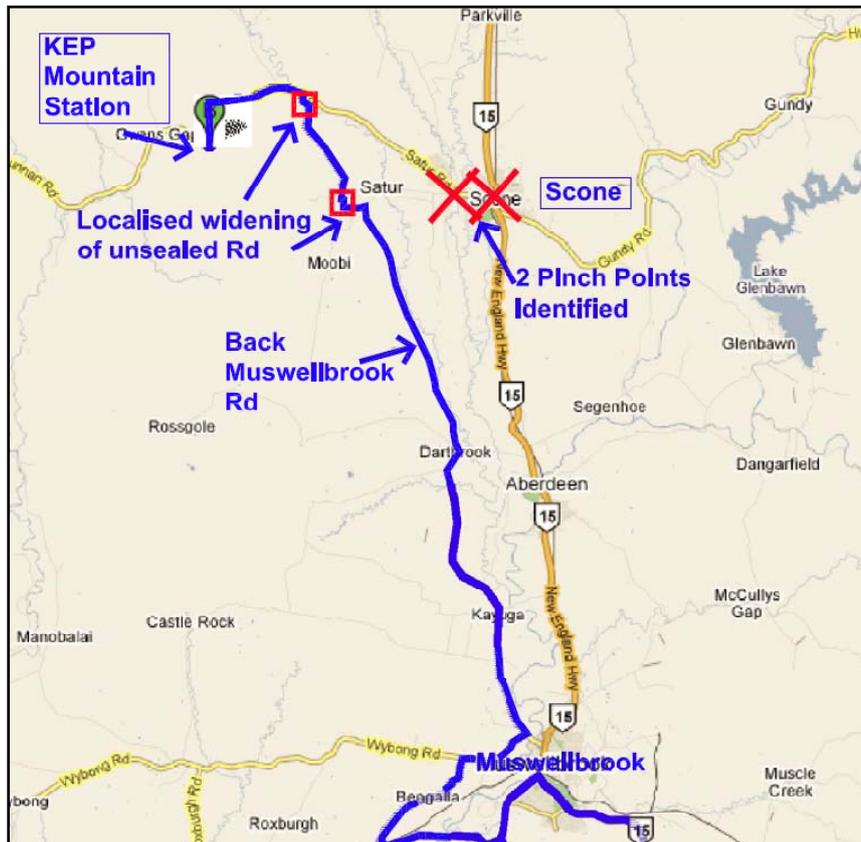


Figure 1.0 Extract from Traffic and Transport Impact Assessment (Figure 5.6 of Appendix J)

### 1.2.13.1 Traffic Management Plan

A Traffic and Transportation Plan will be prepared detailing traffic engineering, safety and management procedures, a community consultation program, environment and issues specific to all transportation management and oversize and overmass components. These issues are detailed in Section 7.1 of *Appendix J Traffic and Transport Impact Assessment*.

### 1.2.13.2 Dilapidation Reports

Council have requested dilapidation surveys on all routes requiring heavy and oversize vehicles and that roads be reinstated to the original standard. Dilapidation surveys on indirect routes shall be undertaken prior to transportation of oversize and overmass components as outlined in Section 17.3 of the EA. The purpose of the dilapidation surveys will be to record the condition of the roads prior to transportation. Post construction dilapidation surveys would be undertaken for indirect routes following completion of construction works with roads reinstated and repairs rectified. These measures will be detailed in the Traffic and Transportation Management Plan prepared subject to approval.

### **1.2.13.3 Access of Bunnan Road (Main Road 62)**

Council have requested submission of standards for site access road entrances off Bunnan Rd including pavement seal to UHSC and RTA standards.

Site access points are outlined in Section 17.8 of Volume 1 of the EA. The existing site access to Middlebrook Station is used by Clifford Quarries trucks. No intersection works or sealing of the intersection is warranted based on low traffic flows, predicted traffic flows and sufficient site distances either side of the intersection. This intersection would be used to transport turbine parts of the Middlebrook site and for additional quarry vehicles to Bunnan Rd.

The existing access point to Mountain Station has been moved to provide sufficient site distance and access as discussed in Section 17.8 of Volume 1 of the EA. The Traffic and Transportation Management Plan would be prepared which would detail measures to manage access of larger components at these access points during construction.

Operational traffic would be negligible and no intersection details or sealing works would be required for operational traffic.

### **1.2.13.4 Permanent Parking and turning areas**

No provision has been made in the EA for road widening to accommodate 'permanent parking' or 'viewing and turning areas' on local roads. This is not considered appropriate or necessary for the safe or efficient transportation of items to the site. Temporary passing lanes may be required along Yarrandi/Back Muswellbrook Rd, subject to recommendations made by RTA inspection during application for oversize and overmass permits. These passing lanes would be fully rectified and made good following construction works.

### **1.2.13.5 Yarrandi Road**

Transport routes for oversize/overmass components are via Nandowra and Yarrandi Rd to site access points along Bunnan Rd. This section of road is currently unsealed with the exception of a small section of sealed road (as shown in the diagram above). Realignment works to two (2) pinch points were identified in the EA along Yarrandi Road. These works would be fully contained within the road reserve and will not require any land acquisition of neighbouring properties. A consent for road works from the UHSC would be required under Section 138 of the Act.

Council have requested that a 6km section Yarrandi Rd be sealed with a precoat applied prior to construction and final seal following completion of construction. Dust generation along this section of unsealed road is not an issue as oversize and overmass vehicles (with escorts) travel at very load speed and do not generate dust as compared to for example a car or a gust of wind. It is however proposed to use a water cart only as required, during realignment works and on an intermittent basis during extreme wind gusts. This will only improve any potential dust problem along this section of road under all conditions.

All road works are likely to be contained within the Yarrandi Road reserve, including all vehicle turning circles, roadworks, stormwater controls and erosion and sedimentation measures. Any unforeseen damage to adjacent properties (eg fences) would be rectified immediately at the proponents expense.

### **1.2.13.6 Sealing works at Robertson's Quarry entrance**

Council have suggested that vehicles associated with transportation of construction materials including 'gravel and sand trucks' from nearby quarries, do not appear to have been taken into account in the assessment. Council have also requested that some sealing works be undertaken 300m either side of the 'Airdrie' residence (referred to as the residence near Robertson's Knob Quarry), which is in proximity to the existing haulage road used by the Clifford Quarry. Furthermore Council have requested that additional traffic generated by the quarry (to supply road base to the KEP development) must adhere to the existing hours of operations as defined in the quarries development consent.

Road base material will be required to upgrade existing internal access tracks on both sites. An option exists to source this material from the existing Clifford Quarry operations on Middlebrook Station (see Figure 1.1 below). In addition, there is an option to source concrete aggregate and materials from the Braeside Quarry operation north of the site as shown in Figure 1.1 below. Both of these operations are owned by Clifford Quarries. Braeside Quarry supplies quality concrete aggregates and blending sands to the market. An option exists to utilise the quarry for supply of concrete aggregate for foundations and concrete works and blending sands for trenches.

The concern has been raised that traffic movements from Braeside quarry to Mountain Station would pass through Satur along Middlebrook Rd/Liverpool St/Bunnan Rd route and then to site. The location of Satur Village is shown in the diagram below. An option exists to bypass the Satur Village by diverting heavy vehicles through Middlebrook Station via the existing internal haul road currently used by Clifford Quarries and represented in the diagram below. Access to this haul road would be from Middlebrook Road. By utilising this haul road traffic movements would bypass Middlebrook Road and also bypass the Satur Village along Bunnan Rd.

There are no additional traffic movements proposed. Traffic movements for road base and concrete materials have been included in the EA that was on public exhibition as detailed in Appendix J of Volume 2 of the EA. Traffic movements for supply of road base would utilise the existing Middlebrook Station haul road during construction of internal access tracks on both sites (16 movements per day for 2 months). In addition traffic movements from the Braeside Quarry would be used during pouring of turbine foundations (4 movements per day for 4 month period) at Mountain Station.

Clifford Quarries have advised that hours of operations of their quarries are from 6am - 5pm (Mon – Fri), with special permission required by Council to operate on Saturdays granted by Council subject to a water cart being in place. Any material sourced from Clifford Quarries for the KEP project would be subject to current hours of operations at the Clifford Quarries. In addition to the Clifford Quarry water cart already used along the haul road, the KEP would also utilise a water cart for wetting of haul roads during operations and during transportation of road base and concrete aggregate from Clifford Quarries.

The existing haul road at the entrance to Middlebrook Station is currently managed by Clifford Quarries under agreement from the landowner. Additional truck movements have been included in the EA. Dust mitigation measures would be sufficient to control dust at this section of the haul road during the limited period during which time the haul road would be used.

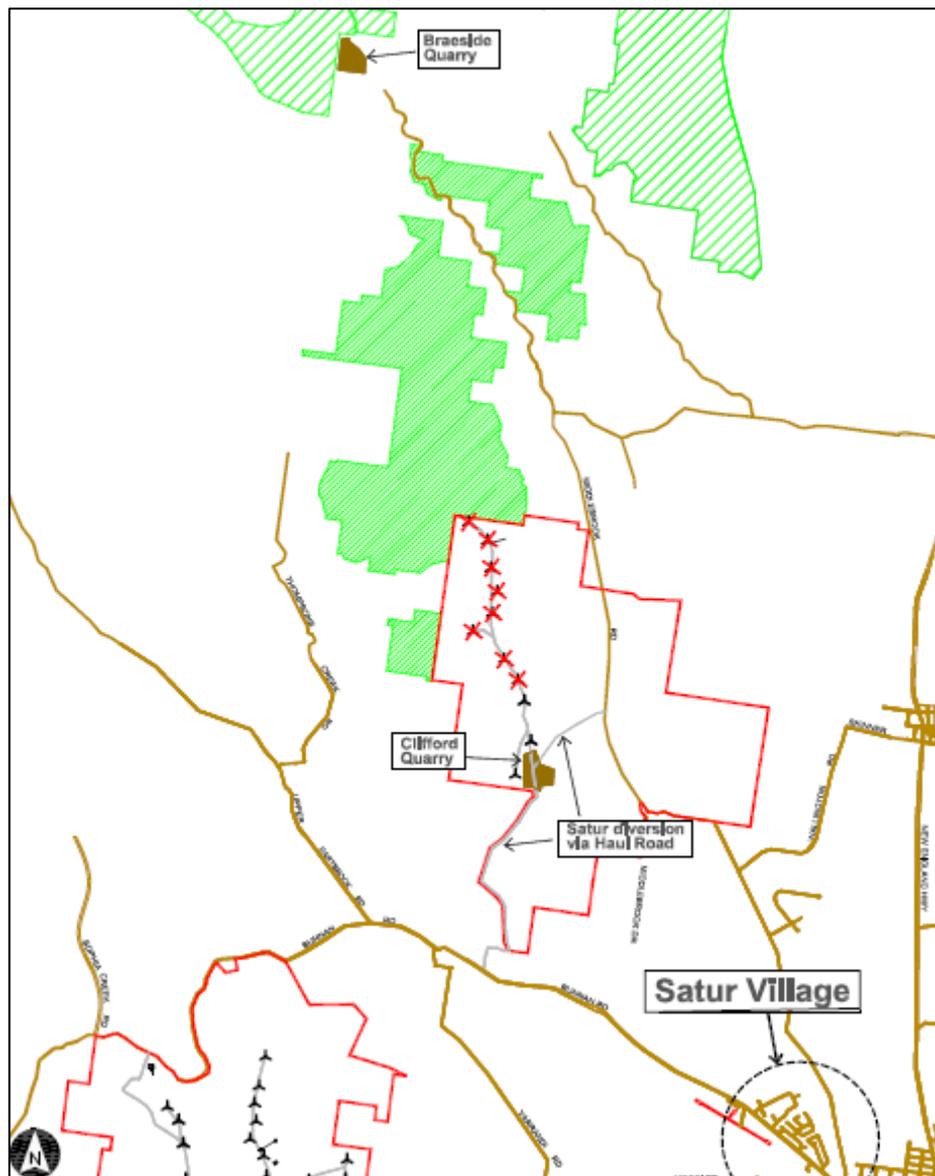


Figure 1.1 Satur Village diversion via the existing Haul Road on Middlebrook Station

### 1.2.13.8 Traffic Volumes

Oversize and overmass components (wind turbine components) would arrive by ship and are transported from dock usually over a 2-4 week period depending on scheduling from dock and availability of police escorts. Special purpose vehicle movements would average about 2-5 one way trips per day for this 2-4 week period. These movements would utilize back roads (indirect routes) dependent on scheduling times with minimal increase to traffic movements. Traffic flow will need to be managed on route utilising police escorts and pilot vehicles.

*Heavy Vehicle movements-* include all trucks (semi-trailer, concrete trucks, flatbed truck etc) that comply with RTA limitations. These vehicles would be generated from Sydney or Newcastle and from the local Scone area. Maximum heavy vehicle flows have been estimated at 8 one way movements per day for a period of two months during civil works as outlined in Section 17.9 of Volume 1 of the EA.

*Light Vehicle Movements* - include cars, 4WD and small deliveries mainly for site personnel. A large proportion of these vehicles would be generated from within the Upper Hunter region. Average light

vehicle movements over the construction period would be in the order of 14 one way vehicles per day. This is likely to peak to 25-40 one way movements per day commencing from civil works to early erection works however this will dissipate to an expected average over the remaining construction timeframe.

Traffic movements would be increased on direct routes passing through Scone and west towards the site utilising the Liverpool St/Bunnan Road local route. The total maximum daily traffic generated on this route by the Kyoto Energy Park is estimated to be approximately 70-100 trips (two way movements) per day occurring over a two month period. These additional movements are well within the road capacity for this route. Construction of the Kyoto Energy Park is expected to have minimal impact on this existing traffic flows on the existing Liverpool St, Bunnan Rd route and intersections. Impacts to traffic flows are expected to be minimal.

The proposed access point for both sites is off Bunnan Rd (Regional Road 62) as outlined in Section 17.8 of the EA. Access arrangements for both sites are sufficient for safe and manageable ingress and egress of all vehicles to and from site. No upgrades to the access points are considered appropriate based on the minimal impact of the additional traffic during construction and operations.

A consent for road works from the UHSC would be required under Section 138 of the Act for any modifications to road alignments or works under the proposal. Detailed engineering drawings would be supplied to UHSC for approval for any works required on local roads. It is envisaged that some road widening along Yarrandi Rd will be required. Consent for these works would be sort from Council prior to commencement of works. Appropriate stormwater controls will be included in design drawings for any roadworks as required.

#### 1.2.14 Bushfire Risk

Council has expressed concerns over bushfire risk from 'surging and lightning strikes' and in particular within the Middlebrook Station property and Towarri National Park.

Wind turbines manufactured today incorporate the highest quality and safety standards, and as a result turbine ignition or fire is extremely rare. The potential risk however always exists and there is at least one occurrence where this has happened in Australia. Potential ignition sources identified in the EA include from electronics, oils, and hydraulics. Electrical fires can also result from both shorts in equipment and surges due to lightning strikes. To reduce potential bushfire risk the most state of the art turbines are proposed within the EA. Additional measures are outlined in Section 18.4.2 of Volume 1 of the EA.

A total of 8 wind turbines have been removed from the Middlebrook Station layout in closest proximity to the Towarri National Park boundary (see Section 3 – Preferred Layout). The closest turbine to Castle Rock is now a distance of 1.9km away and to the Towarri National Park border a distance of 3.1 km respectively.

All turbine models have been selected based on quality and reliability and comply with International Electrotechnical Commission (IEC) standards, the recognised international body for standards development activities. Turbines self monitor system performance during operations and will automatically shut down if overheating occurs or if the ambient temperature is too high (for example during a 40 degree day).

A Bushfire Risk Management Plan would be designed in accordance with the Rural Fire Service addressing bushfire risk prior to construction and operations respectively.

### 1.2.15 Transmission Line Connection to the Grid

The EA identified two (2) preferred options for transmission line connection to the grid. These included Option 2 and Option 4 as detailed in Section 19.2.4 of Volume 1 of the EA. The final connection option has not been resolved based on outstanding technical issues with connection and determination of the final capacity of the KEP. Option 2 would be the most feasible option for a capacity <90MW and Option 4 >90 MW as detailed in Section 19.7.2 of the EA.

Some further comments have been received from the exhibition period from the Upper Hunter Shire Council and Muswellbrook Council. Both Councils have expressed a preference for connection Option 3 which was to Dartbrook Mine Switching Station. Dartbrook Mine is managed by Anglo-Coal. Anglo-coal have refused any transmission line works over there land as it may sterilise coal reserves.

Muswellbrook Council have expressed concerns over Option 4a and 4b within the Muswellbrook LGA (from Kayuga to north of Muswellbrook) saying that it would visually impact upon the alluvial flats of the north Muswellbrook area. The specific area of concern is from the impact on scenic amenity from the '25m high concrete poles' over the area.

Figure 19.2 and 19.5 of the EA shows the proposed route for Option 4. The route follows the existing Back Muswellbrook Rd easement to the Muswellbrook STS connection point. It is important to note that no new alignments will be created with Option 4. Option 4 (132kV) would replace the existing line (11kV) in preference to generating new lines. Option 4 would ultimately require larger poles (proposed concrete poles to approximately 25m agl) which would replace the existing 11kV line (timber poles to 12-13m agl). Concrete poles are the preferred pole used by Energy Australia in the area and are commonly used within the Muswellbrook and Scone areas in preference to timber poles. Energy Australia are currently upgrading line feeders to the new Scone STS (from Kayuga and from Muswellbrook) utilising concrete poles of similar height to the proposed. The Visual Assessment did not highlight any concerns over the visual impact of poles on the amenity of this area, however did suggest visual mitigation strategies be considered for line routes. These have been committed to in the SoC (see Part D of this submission).

Energy Australia have recommended that a detailed system analysis is undertaken at the time of system design for any connection. Energy Australia preference was for Option 4 (132kV). Second preference was for Option 2 (66kV) to Scone. Full details of discussions with Energy Australia during preparation of the EA is provided in Section 19.6 of the EA.

With a further reduction of 8 turbines from Middlebrook Station the overall capacity of the KEP has been reduced from between 66-104 MW total capacity. Final design parameters have yet to be finalised and are subject to receipt of approval. These include micro-siting of turbines (2-3MW) and final design of solar PV (3-10MW). Once final capacity has been determined a grid connection application would be made to Energy Australia for connection to the grid. Therefore based on recommendations and comments from the exhibition the preference for transmission line connection is Option 2 and Option 4.

Outstanding issues for preferred Option 2 and 4 are outlined below.

Table 1.1 Transmission Line Connection to the Grid

Preferred Option	Connection Point	Capacity (MW)	Length (km)	Outstanding Issues
<b>Option 2 (66kV)</b>	Scone 66kV STS Terminal	<90 (2012)	66kV = 12.6 33kV = 8.5	<ul style="list-style-type: none"> <li>Preferred connection for capacity &lt;90MW</li> <li>Upper Hunter Council have requested Option 2(a) or 2(b) consider underground cables in the vicinity of the Bill Rose Sports Complex. This would be considered in Option 2A however would not be feasible in Option 2B as it passes through private property.</li> <li>Connection subject to detailed flow analysis subject to approval</li> </ul>
<b>Option 4 (132kV)</b>	Muswellbrook 132kV STS Terminal	>90	66kV = 41.6 33kV = 8.5	<ul style="list-style-type: none"> <li>Preferred connection for capacity &gt;90MW</li> <li>Option 4a – outstanding issues over direct impact to residents along the New England Highway north of Muswellbrook connection point.</li> <li>Option 4b – most feasible option bypassing resident locations. Muswellbrook Council have expressed reservations over visual impact. Requirement for consideration for special visual treatment of poles.</li> </ul>

## 1.2.16 Other Matters

### 1.2.16.1 Viewing Area

Council have suggested that an information area be available for the public during construction and operations, with an option to place the information area on Council land subject to agreement by both parties.

Pamada agree that information may be made more accessible to the public by utilising a Council owned or controlled area such as a display area at the new Council Chambers. Pamada have already committed to the preparation of a 'Near Neighbour Consultation Strategy' in the SoC to manage community consultation and provide project information and interaction during construction. Display of this information at the new Council facility would enhance this process and be beneficial for the overall community to readily access updated information during construction.

Pamada also agree that an additional facility for display and tourist information be of benefit to the community and visitors to Scone alike. During operations the Moobi Foundation would be set up to allocate funds for ongoing community involvement as described in Section 6.6.5 of Volume 1 of the EA.

#### ***1.2.16.2 Limits of Approval/Decommissioning and non-continuous use***

Council suggests that the approval should be limited and that a bank guarantee should be provided by the proponent to ensure decommissioning works are carried out in accordance with the EA after the life of the Park.

The Kyoto Energy Park would be an electricity generation facility and as such requires an ongoing term of approval. The Energy Park has a considerable upfront capital costs which are paid off over the operating life of the generators. The initial operating life for the Park is 25-30 years after which the generator components would be replaced with more modern equipment or decommissioned. Stages of full decommissioning are described in Section 3.3 of the EA and committed to in the SoC.

#### ***1.2.16.3 Rehabilitation Bond***

Council have suggested that a rehabilitation bond be provided to guarantee rehabilitation works are carried out in accordance with the consent.

Rehabilitation works will not be considerable and as the areas of disturbance during construction will be limited to mostly existing disturbed areas. Areas would be restricted and protected during construction works such as EEC communities. Furthermore rehabilitation works on all disturbed areas would be fully rehabilitated prior to completion of construction. Given the relatively limited area for rehabilitation works a bond would not be considered appropriate. Other works including revegetation offsetting for the EEC community shall be undertaken as described in the Environmental Management Plan (see Section 8.12 of Volume 1 of the EA).

#### ***1.2.16.4 Consultative Committee***

Council have requested that a Community Consultative Committee be formed to manage community interests.

Pamada would welcome the formation of and participation in a Community Consultative Committee during the construction stages of the project to provide effective communication and management of all works with the region. Council have suggested this committee would be important during construction and the first few years of operations. Pamada anticipates that the Charter would be drafted between the proponent and the Upper Hunter Shire Council with final determination by the Director General.

#### ***1.2.16.5 Complaints Procedure***

A complaints procedure would be incorporated in the Near Neighbour Consultation Strategy developed prior to construction.

### **1.3 Civil Aviation Safety Authority (CASA)**

Consultation with the CASA was undertaken during preparation of the EA. A letter detailing the proposed Kyoto Energy Park project was compiled by Garrad Hassan and sent to CASA in October 2007. CASA replied to Garrad Hassan on the 31st October 2007 and indicated that despite the proposed turbines being outside of the OLS, obstacle lightning would be required under the CASA Advisory Circular AC 139-18(0) titled 'Obstacle Marking and Lighting of Wind Farms'.

On advice from CASA, Airservices Australia were contacted and informed about the proposed Kyoto Energy Park project. Airservices Australia responded outlining that some of the proposed wind turbines would infringe upon three flight procedures (see Section 1.4 below).

Once the final layout of the proposed Kyoto Energy Park wind farm is known, CASA would be approached to determine if obstacle lighting is still required. If it is required, then a lighting plan will need to be prepared for approval by CASA.

## 1.4 Airservices Australia

Airservices Australia have responded to the revised Environmental Assessment submitted in May 2009.

Airservices Australia advised that WTG 35,36,37,38,39,40,41,42 are intruding into PANS-OPS airspace. Pamada have originally sought advice on the potential to modify flight procedures at Scone airport to divert air traffic away from proposed turbines.

Following recent advice, Pamada confirm that these turbines (WTG 35,36,37,38,39,40,41,42) a total of 8 turbines are to be removed from Middlebrook Station. Remaining WTG 31,32,33 on Middlebrook Station remains a viable option for connection to the Mountain Station substation.

A revised layout is provided in Section 3.0 of Part C of this submission.

## 1.5 Hunter –Central Rivers Catchment Management Authority (CMA)

### 1.5.1 Catchment Action Plan (CAP)

The CMA acknowledges that the Catchment Action Plan (CAP) has been addressed in the EA but has some outstanding issues in relation to excessive clearing of native vegetation and ratios of vegetation offsets.

### 1.5.2 Vegetation Offsets

Pamada have allowed for a vegetation offset strategy for the removal of EEC community within the project. Pamada would include this vegetation offset strategy as part of the Flora and Fauna Management Plan. An offset ratio of 2:1 has been included as standard DECC clearing ratio in the EA based on anticipated disturbance of EEC community. This Plan would be prepared subject to receipt of approval. Pamada proposes to revegetate offset areas on site with similar species to those occurring on the site and adjacent bushland.

### 1.5.3 Native Vegetation

Table 5.2 of Appendix A – Ecological Site Assessment describes the amounts of vegetation required for disturbance. Removal of 8 turbines from Middlebrook Station has significantly reduced the total vegetation modification requirement by 93% to 0.6ha.

A revised estimate of vegetation disturbance is provided in Section 1.2.2.6 of this submission. Of the total 12.55 Ha of vegetation communities requiring modification on Mountain Station only a small percentage of this area would be effectively modified. 6.73 ha of this area is in grassland and scattered trees. Vegetation removal around turbine foundations and along existing access tracks would be selective. Grazing would be excluded from offsetting areas during regeneration.

#### 1.5.4 Corridors

Biodiversity corridor issues have been addressed in 1.2.2.6.

#### 1.5.5 Sediment and Erosion

A sedimentation and Erosion Control Plan shall adequately address and manage controls during construction and operations.

### 1.6 NSW Department of Primary Industries (DPI)

#### 1.6.1 Coal and Gas Resource Sterilisation

The Department of Primary Industries (DPI) have indicated that there is growing demand for coal exports and that changing market conditions and rail infrastructure developments may bring forward the economic feasibility of extraction and the increase in value of underground coal resources in the area. While these factors would likely increase the potential for underground mining in the Upper Hunter they are largely dependent on assumptions based on future events. Other factors which may reduce economic feasibility of coal extraction (eg carbon pricing, competition from other energy sources) in the long term would limit even further the potential to extract these resources.

There are currently no DAs for coal mining or gas extraction on the properties. There are currently no proposals for extraction of coal or gas on the subject properties. There are currently no mining leases over the sites or in the vicinity of both sites. The closest mining lease is at Dartbrook mine approximately 15km south east of Mountain Station. Dartbrook mine has been closed due to impurities encountered in the underground seam. One coal exploration license is held over Mountain Station site (Dept of Primary Industries - Authorisation 286).

Two gas exploration licenses exist over the sites held by Sydney Gas and Macquarie Energy. Both companies provided written confirmation that the project would not obstruct exploration activities and no objections to the proposal were raised.

In December 2005 the Dept of Planning undertook a comprehensive study into Coal Resources and mining potential in the Upper Hunter Valley (NSW Dept of Planning – *Coal Mining Potential in the Upper Hunter Valley Dec 2005*). This report identified coal reserves and long term mining potential in the Upper Hunter region.

The 2005 study concluded that the Mountain Station site was within an area which had 'no foreseeable coal exploration potential' based on deep and complex coal seams, restrictions to resource from topography and overlain strata, likely igneous intrusions, and poor quality as a result. This area (referred to in the study as Domain E) comprised a total area of 1030km<sup>2</sup> and includes areas within the shire where coal mining potential is least likely (i.e. lowest mining potential of all land). The Mountain Station site would represent less than 2% of this area and is located on the fringe in closest proximity to Scone township. Therefore it is highly unlikely Mountain Station would be considered as an attractive mining option in the medium to long term and therefore long term sterilisation of coal reserves under Mountain Station is not a consideration.

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Design of power poles within the mine subsidence areas (identified in Figure 14.0 of the EA) or newly formed mine subsidence areas would be made. This includes line route Option 4 as detailed in Section 19.2.4 of the EA.

Middlebrook Station lies within an area that was identified in the Dec 2005 study as having some long term underground coal resource potential. However the area is unlikely to have large scale coal reserves due to the geological complexity of the underlying seams. If future reserves are identified it is likely to be small scale. The site is also overlain by mountainous topography and is in close proximity to the Towarri National Park and Scone township.

## **1.6.2 Other Mineral resources**

### **1.6.2.1 Clifford Quarries**

Clifford Quarries were contacted during the planning and investigation stages of the Kyoto Energy Park proposal and during preparation of the EA. Clifford Quarries operations are located on Portions 116/117, Middlebrook Station site as shown in Figure 1.3 of Volume 1 of the EA. Figure 7.3 of Volume 1 of the EA shows the location of the existing plant and current extraction precincts. Current approved extraction precincts are limited to Portion 116/117 within Middlebrook Station. These lots are well outside the limits of the proposed location of wind turbines. Clifford Quarries did not foresee any interruptions to their existing or future operations and submitted a response in favour of the proposal.

There are no impacts relating to the Clay (Bentonite) Quarry on Cressfield Road.

### **1.6.2.2 Recommendations**

All license holders would be kept informed and updated in relation to the project. All reasonable measures will be made to ensure no disruption to existing exploration license holders is made during construction and operations.

## **1.7 Muswellbrook Shire Council**

### **1.7.1 Transmission Route Option 4**

Muswellbrook Council have objected to the proposed transmission line route Option 4 (4a or 4b), for connection to the Muswellbrook STS located just north east of Muswellbrook. This option is outlined in Section 19.2.4 of Volume 1 of the EA.

Muswellbrook Council have requested that Option 3 (Dartbrook Connection) be considered as it bypasses the alluvial flats north of Muswellbrook. A summary of responses and preferred options is contained within Section 1.2.15 of this submission.

### **1.7.2 Heavy Traffic along Wybong Rd**

Muswellbrook Council commented that Wybong Rd and Kayuga Rd have limited capacity for additional heavy vehicles and that the Council is considering placing a load limit to preserve the limited future life of the road. They also requested that as much traffic as possible be retained on the state highways and directed around the over-dimensioned route through Muswellbrook.

Options for direct (normal traffic) and indirect (oversize and overmass components) are highlighted in Section 5.0 of the Traffic and Transport Impact Assessment (Appendix J). The direct route contains some 'pinch points' which would restrict access for some wind turbine components (blades and nacelles). The diversion route identified in Figure 5.5 of Appendix J bypasses the centre of Muswellbrook and uses the industrial area, which is considered more suitable. Kayuga Rd would not be used as part of this route.

The indirect route would need to utilise approximately 3.3 km of Wybong Rd (between Bengalla mine and Back Muswellbrook Road). There would be a total of 87 one way trips needed to access this section of Wybong Rd. Of these only 35 would be overmass. Dilapidation surveys before and after would ensure any road damage is rectified. School bus periods would be managed effectively.

## 1.8 Roads and Traffic Authority (RTA)

No comments have been received from the RTA.

## 1.9 Department of Environment and Climate Change (DECC)

The following information is supplied in response to comments provided to Department of Planning and Infrastructure (DOP) from the Department of Environment, Climate Change and Water regarding the Kyoto Energy Park proposal.

### 1.9.1 Protection of the Environment Operations Act

In accordance with POEO Act there are no requirements for a license from any works on site. This is acknowledged by the DECC.

### 1.9.2 Aboriginal Cultural Heritage

It is noted that the Assessment of Aboriginal Cultural Heritage was found to be adequate in January 2009 and yet further investigations are warranted based on a further review by the DECC. Nonetheless, it is understood that the matters that need addressing have arisen from comments during the public exhibition period.

Myall Coast Archaeological have since been in contact with the DECC so that there is a clear understanding of the issues and the reviewer has been impeccable in his approach to the matters raised with him.

#### 1.9.2.1 Potential Impact on Nearby Sites

The DECC have identified three aboriginal sites within 1 to 5 km of the area boundary of Middlebrook and Mountain Station, that they say were not originally considered in the assessment. DECC have suggested that this may indicate the presence of further sites within the site and potentially in the area of impact of proposed works.

Firstly it is important to note that the immediate vicinity is generally confined to within one (1) kilometre of the area of impact. The difficulty with this survey was that it was a linear survey of some 10km (within the property) and a strict 1 km zone around the linear area of impact would still only be on the property and there were no known objects on the property. Therefore a search of the database (AHIMS) was proposed with a 5km radius from the centre of the linear area of impact. This

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too contained limited relevance. It was then decided to broaden the search to 20km which highlighted many Aboriginal objects but none having any relationship with the topography of the development. The database search revealed that there were no known objects within the development corridor, the property boundaries or within 1km of the property.

The database search as stated in the Aboriginal Heritage Assessment (Appendix H Section 3.1) stated correctly:

*“ According to the AHIMS database kept with the Department of Environment and Climate Change (DECC) whilst there are no known objects within the study area and immediate vicinity there are Aboriginal objects within a 20km radius to the proposal.”*

The DECC have referred to three known Aboriginal Objects known as an Aboriginal Burial (37-2-0138), a modified tree (37-2-0515), and an Aboriginal Hearth (29-5-0047). With respect to the objects specifically referred to in the comments from DECC they have been marked on the following map supplied by Myall Coast Archaeologists (see Figure 1.3 and 1.4 below). The modified tree and Aboriginal burial were considered in the EA submitted for public exhibition and are actually some 2.3km to 4.5km from the closest turbines respectively. These items are outside the limits of the site boundaries as shown in the figures below and therefore are not considered to be in the close vicinity.

The desktop assessment and predictive modelling indicated that it was extremely unlikely that burials within the corridor of development would be observed due to the landscape, soil, geology and landuse.

The burial in question (Figure 1.3 below) is located near water and in a completely different landscape. This particular burial is typical of the characteristics required for burials as discussed in the report and was taken into account. It was not specifically mentioned as it was 4.5km away and bore no special relevance to the study area as described above.

In regard to the modified tree; scarred trees and modified trees can be found in most landscapes. The desktop assessment indicated that scarred or modified trees could be observed. However during the field assessment none were observed. Many scarred trees were generally a product of opportunistic need. Modified trees (carved or dendroglyphs) were deliberate and served a particular function.

The tree in question has no particular relevance to the study area except that it was one of several that helped form the prediction that scarred trees could be a possibility within the study area.

The Aboriginal Hearth (fireplace) is located north of Middlebrook Station as shown in Figure 1.4. It is approximately 500m to the north of the northern property boundary and approximately 3.3km from the closest proposed turbine in a straight line. However it cannot be accessed from the ridgeline in a straight direction as it is on a footslope some 250 metres below a steep escarpment. This object was not identified on the original searches. It could be because it was outside the initial search, however should have shown up on the 20km search.

The hearth if known at the time of assessment would have played a beneficial role in reinforcing the predicted Aboriginal occupation of the area. Its location highlights camping by small groups as indicated by Table 2 of the Aboriginal Heritage Assessment (Appendix H). The hearth is located on foot slopes adjacent to a water course (probably not permanent) leading to the nearby Middlebrook Creek. It is some 250 metres below the long ridgeline of which the development corridor forms a part some 3.3km away upon which the turbines are to be placed. It is located on a completely different landform to the corridor of development and bears no landscape relevance.

Figure 1.3 Location of Aboriginal Objects in relation to Mountain Station (Myall Coast Archaeological)

However, whilst it is the closest known object to the proposal it has no direct relationship or correlation with the cultural aspects of the ridgeline. The ridgeline cannot be easily accessed from the camping area, but the ridgeline protects the camping area from seasonal elements. The camping area highlights the importance of the ridgeline in an overall landscape context. The ridgeline would have formed a barrier and boundary and confined general Aboriginal occupation to the valley floor and footslopes.

It is not agreed that the location of the 3 objects suggests the location of further significant Objects within the context of the study area and specifically the areas of proposed works. On the contrary, the landscape context of the 3 Aboriginal objects are contextually different to the development corridor that such a conclusion cannot be sustained. Two of these objects were known and used in the original assessment. The report discusses the complexities of artefact observation and distribution and the importance of the relationship between known objects or artefacts to landscape context. What the specific 3 objects do indicate is, the predictive modelling upon which the assessment was based, is sound and the conclusions reached are verified, particularly the importance, significance and context of the ridgeline. Section 5.3 of the Aboriginal Heritage Assessment (Appendix H) summarises the importance and context and makes recommendations in relation to this context.

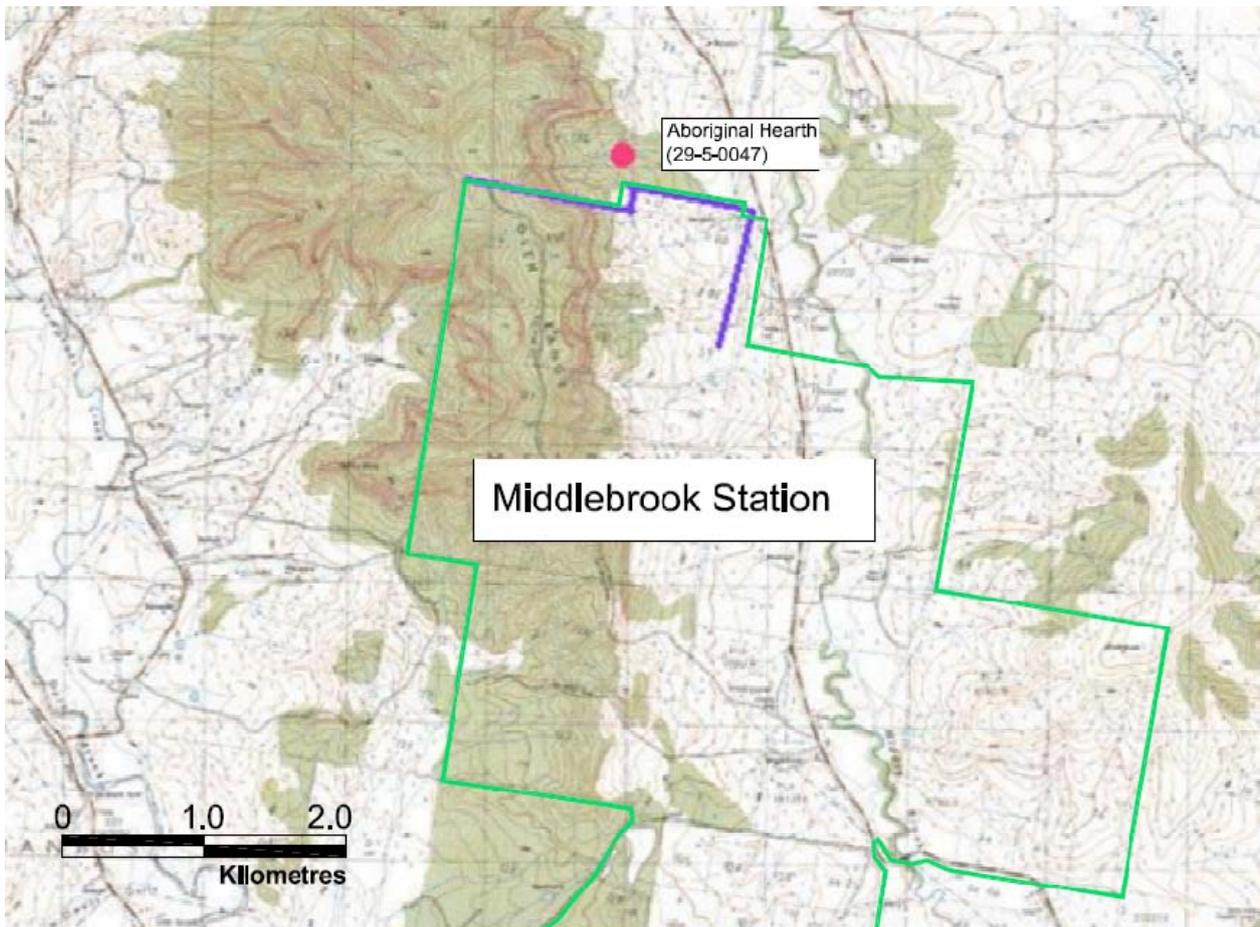


Figure 1.3 Location of Aboriginal Objects in relation to Middlebrook Station (Myall Coast Archaeological)

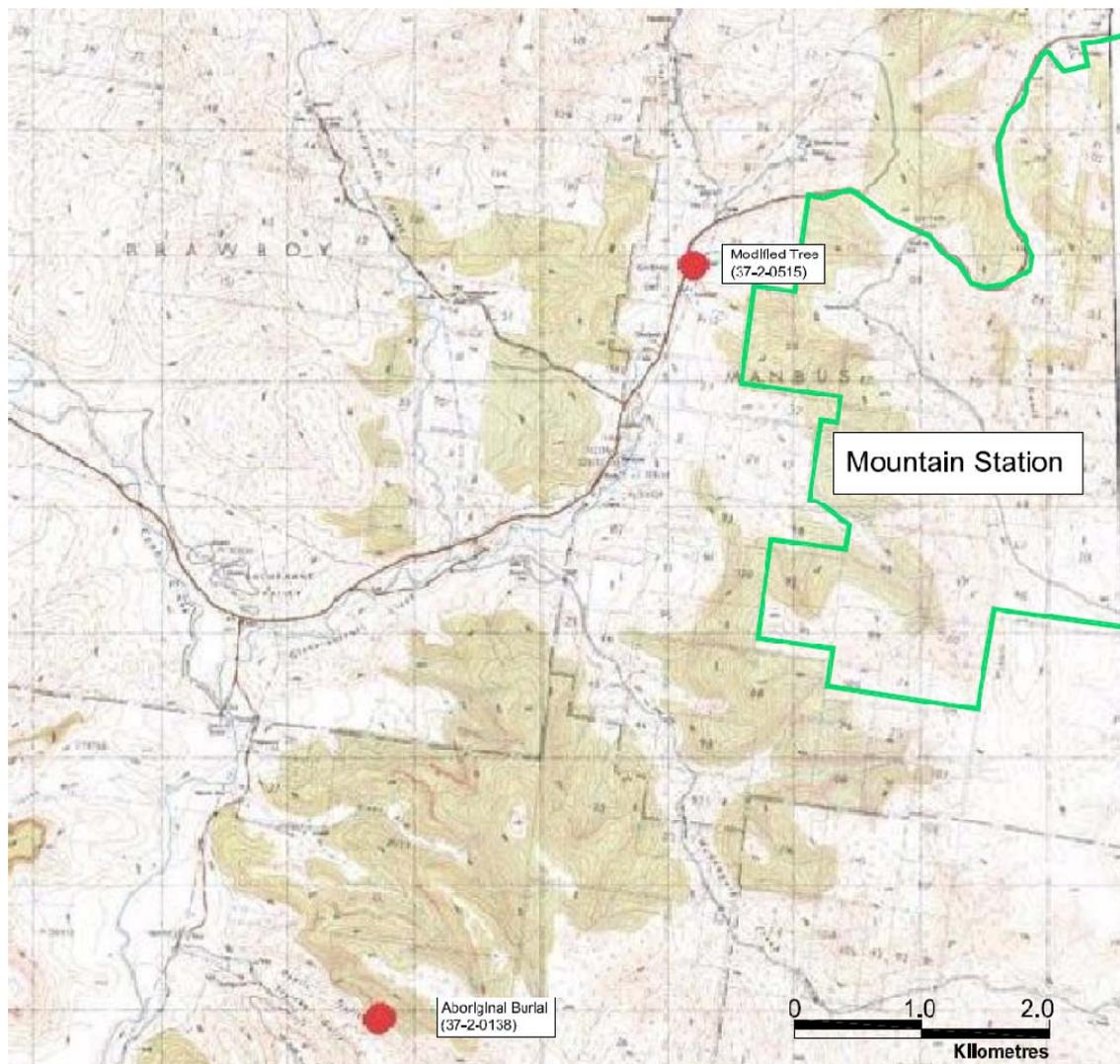


Figure 1.4 Location of Aboriginal Objects in relation to Mountain Station (Myall Coast Archaeological)

### 1.9.2.2 Consultation

Under the provisions of Part 3A of the *Environmental Planning & Assessment Act 1979*, development applications deemed to be 'Major Projects' do not require Part 6 approvals from the DEC. Under the Part 3A provisions, the Minister for Planning is the consent authority and has ultimate responsibility for determining matters relating to Aboriginal heritage.

The DECC released draft guidelines for Aboriginal cultural impact assessment of Part 3A Major Projects in July 2005. Further to this a draft version was released in September 2007. They form a guide for procedures to be included in Aboriginal heritage assessments that accompany Part 3A applications. The draft guidelines state that:

*‘all project applications must state whether or not the project is likely to have an impact on Aboriginal cultural heritage and must include information about how this assessment was made. This assessment must demonstrate that input by affected Aboriginal communities has been considered, when determining and assessing impacts, developing options, and finalising the application.’*

More specifically, the draft DEC guidelines outline the following steps that should be undertaken as part of the Aboriginal cultural heritage assessment process. These include:

- ***Undertaking a preliminary assessment to determine if the project is likely to have an impact on Aboriginal cultural heritage;***

This was done as part of the desktop assessment (predictive modelling) as contained in the report and it was determined that there was Aboriginal Heritage value to the study area.

- ***Identifying the Aboriginal cultural heritage values associated with the area through consulting with Aboriginal people with cultural knowledge or responsibilities for country in which the proposed project occurs, written and oral research and field investigations;***

This was also undertaken and clearly explained in the report. Particular emphasis was made on the point of recognising the Native title claimants who were the descendents of Sarah Madoo. In addition all known Aboriginal Groups and individuals were given the opportunity to be involved.

- ***Understanding the significance of the identified Aboriginal cultural heritage values;***

Although no artefacts (Aboriginal Objects) were located the significance of the cultural heritage values were recognised and highlighted throughout the report.

- ***Assessing the impact of the proposed development on Aboriginal objects and Aboriginal places;***

This was undertaken in the report and it was recognised that the project would avoid all known objects at the time.

Further to this if turbine locations are required to be modified during micro-siting, then Aboriginal stakeholders would be requested to further inspect turbine sites for objects. While the assessment has concluded that it is unlikely objects would be found, further field inspections at the time of micro siting would be allowed for. If Aboriginal objects are located during repositioning of turbines then appropriate measures would be taken.

- ***Describing and justifying the proposed outcomes and alternatives; and Documenting the Aboriginal cultural heritage impact assessment and the conclusion and recommendations to afford appropriate protection of Aboriginal cultural heritage.***

The recommendations are self explanatory and highlight the importance of developing a memorandum or agreement with the stakeholders if the project is approved. Although no physical evidence will be impacted upon it was agreed that intangible cultural values are attributed to the area and the Aboriginal community felt that was important that subject to approval a condition of consent be included for an agreement between the proponent and the community be established to enhance and/or compensate or any perceived loss of cultural value.

### ***1.9.2.3 Field Surveys***

There were no Aboriginal objects found during any surveys. The DECC states that a letter was sent to these from the Wanaruah Local Aboriginal Land Council (LALC) informing them of the following matters:

***“that further sites of significance occur along ridgelines that were not covered by the survey”***

All locations of proposed facilities were surveyed under the direction of the Aboriginal stakeholders present during the preliminary and detailed surveys. GPS locations of all proposed facilities were taken by Myall Coast Archaeological during these visits. All those in attendance were given opportunities to inspect sites along the ridgelines and surrounds.

***“The LALC has also expressed concern about the potential impact on shelter sites below proposed turbine towers that have not been subject to survey”***

There are no caves or shelter sites directly below the proposed turbines as the turbines are located on the elevated portion of the ridgeline. Any caves below the plateau are not part of the study area. However it was identified that caves would possibly exist and that such caves add to the significance of the area. However no caves were located neither within the vicinity nor more importantly within the impact zone of the development. The geological surveys did not indicate that there were any caves below the placement areas for the wind turbines.

***“Further, the LALC claims that field workers found objects during the inspections in the vicinity of the towers that have not been discussed in the EA”***

No objects were found during any of the inspections or surveys. It was a linear survey and an inspection corridor of each facility and its surrounds was investigated. The location of each facility and area of impact was pegged out on ground with GPS instruments. The Development corridor was a ridgeline. The area examined was provided in the description of the facilities.

Both Myall Coast Archaeological and Pamada representatives were present during all inspections and surveys. Inspections were conducted at proposed locations of facilities and surrounds to allow for micro siting of turbines. Subject to approval wind turbine locations would be micro sited to allow for optimum placement of turbines along the ridgeline. An allowance of 150m radius from current wind turbine coordinates has been allowed for. If micro siting of wind turbine locations is required (as described in Section 2.2.7 of Volume 1 of the EA), then during micro siting of the wind turbines further inspection would be undertaken by the Aboriginal stakeholders or representatives of the stakeholders. The purpose of the site inspections during micro siting would be for survey of Aboriginal objects. In the unlikely event that objects are found then appropriate measures will be undertaken in accordance with relevant legislation.

***“The number of people, the time spent searching and the extent of the survey coverage beyond the immediate geographic locations of the relevant infrastructure is not mentioned”***

The survey undertaken was a linear survey and an inspection corridor of each facility and its surrounds. The location of each facility and area of impact was pegged out on ground. There was no need to examine a larger area. The development corridor for turbines was a ridgeline. The area examined was provided in the description of the facilities.

#### ***1.9.2.4 Social Significance and Totems***

The LALC have stated that the Wedge-tailed Eagle is of cultural significance as a totem for the Wannarua people. In letter to Myall Coast Archaeological the LALC went on to say that the totem is strictly not to be eaten or killed by any person and is a core to their identity. Further the threat to this creature isn't properly understood.

Totems were an organizational structure for Aboriginal society, and not in the same symbolic sense as the American Indian totem, nor for example like the sacred cows of India. The statement that

totems were not eaten or killed is not generally accepted and this statement needs to be substantiated before it can be taken seriously. Most animals were totems to the Aboriginal people. Totems were also killed and eaten, by the Aboriginal people. Irrespective of this an archaeological survey is confined to physical evidence and protection is given to objects. While the statement is respected, full consideration has been given to the impact of the Wedge-tailed Eagle from the proposal. Residual impacts on the wedge-tailed eagle and mitigation of impacts have been addressed in Section 8.5 of Volume 1 of the EA.

#### **1.9.2.5 Statement of Commitments**

The proponent has already agreed to ongoing consultation and further management and forms part of the recommendations of the report.

#### **1.9.2.6 Aboriginal Cultural Heritage Assessment**

Issues relating to Aboriginal Cultural Heritage Assessment are discussed below:

***“The DECC guidelines are not restricted to matters requiring an Aboriginal Heritage Impact Permit (AHIP). They are also reflected in joint DECC/Department of Planning Guidelines relating to Part 3A applications and are to be followed in accordance with the DGEARS. AHIPS under the National Parks and Wildlife Act are not relevant to Part 3A matters”***

The DECC guidelines for assessment of Part 3A projects has been addressed in Section 1.9.2.2 - Consultation.

***“Native Title is extinguished on freehold lands but requires referral and consideration in the event of registered claims over certain Crown Lands”***

Noted and agreed. The point being made in the assessment was that registered Native Title Claimants have been recognised by the Federal Court as having the right to speak on country. It was also ensuring that not only the Land Council but the court recognised Wanaruah people “the descendents of Sarah Madoo,” had the opportunity to be involved in the assessment, which they did. One of their representatives was involved in organising the assessment from the outset.

***“The term ‘relic’ was removed from legislation in 2002 and replaced by ‘object’ because the former did not reflect the living vibrant nature of Aboriginal heritage and was considered offensive to Aboriginal people”.***

Noted and agreed, but not agreed that it was offensive. Myall Coast staff have commented that they are not aware of any dealings with Aboriginal persons in which this word has been construed as being offensive. However the term was not conducive to clarity of definition. In the report the term referred to ‘objects’ that were on the AHIMS database and is used interchangeably with artefact and object

***“ The reference to Aboriginal culture in Brigalow country may not be relevant to the Upper Hunter since this vegetation type does not exist there”***

This statement misses the purpose and point to the reference. The desktop assessment identified ridgelines as potential song trails. The reference to Brigalow country was not vegetation but the importance of song trails and distance of finds to water.

***“The term project corridor and study area are used interchangeably without any definition of extent”***

The reader may infer that the terms are used interchangeably and without definition and the report could have been made clearer as to what was intended. The study area was taken to mean the whole property for desktop assessment, but field survey was confined to the linear corridor of impact, which included the direct area of impact of the generators and facilities as well as the immediately surrounding area. Both terms were used in the report as the majority of the property (study area) was not changing use and only the ridgeline (project corridor) was going to be impacted and not the valley floor.

***“The certificate on Page 33 Appendix H refers to yearly compensation through the administration of a trust fund, but this is not discussed in the EA where it is stated that details are yet to be agreed”***

The Aboriginal Cultural Assessment was undertaken in close consultation with the Aboriginal knowledge holders of the land (identified Aboriginal stakeholders) to identify impacts of the project on the corridor and other areas of sensitivity. Whilst there was found to be no impact to Aboriginal objects, artefacts or Cultural heritage, the project would nonetheless alter the traditional Aboriginal landscape. The impact however would be minor.

Following consultation with the Aboriginal stakeholders Pamada agreed to enter into a binding agreement with the registered Aboriginal communities to allow further enhancement and leverage of Aboriginal culture from the project. This was to include some seed funding as part of the overall contribution to the community fund administered by the Moobi Foundation and also the opportunity for an Aboriginal Heritage and Cultural display at the Visitor’s and Education Centre. The parameters of the agreement have not been finalised and will be further discussed with Aboriginal Stakeholders subject to approval for the project.

The certificate on Page 33 of Appendix H refers to this signed agreement with all Aboriginal Stakeholders present at the time. Pamada have committed to these programs for the enhancement of Aboriginal Cultural Heritage. These commitments are made in the revised SoC in Part D of this submission.

***“There is no discussion about standard precautionary measures to be taken in the event that skeletal remains are encountered. These include a legal requirement to cease work and contact the NSW Police Department”.***

Correct. The requirement for precautionary measures is standard procedure and has therefore not been included in the assessment. These issues would however be addressed in EMP prepared prior to construction.

***“There is no discussion about the creation or location of agreed keeping places for any Aboriginal objects encountered”***

There is no need for such discussion as the surveys concluded that it was unlikely that objects were present within the area of impact. Furthermore the basis of the recommendations is that all Objects would be avoided and left in situ if found which is the preferred option by the Aboriginal community and DECC.

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### 1.9.3 DECC Estate

#### 1.9.3.1 Biodiversity Corridors

This has been addressed in Section 1.2.2.6 Land Clearing and Biodiversity Corridors.

#### 1.9.3.2 Fauna Impacts

Impacts on bird species has been addressed in the EA and In Appendix A(ii) Bird Impact Assessment. The DECC has specifically expressed concern over impacts of bird species from noise and rotor blades and specifically any residual impacts on species in the Towarri National Park. These concerns have been addressed in Section 1.2.2.6 Land Clearing and Biodiversity Corridors.

No collision risk modelling analysis was undertaken as it was not deemed suitable for this location. The sites are not located in any bird or bat migration or flight paths. Avian densities typical of inland sights are low and flight paths are random. Risk modelling was therefore not considered an appropriate analysis in this situation in preference to observation and monitoring.

#### 1.9.3.3 Asset Protection

Turbines in the vicinity of the Towarri National Park have been removed from the application. A final layout has been included in Section 3.0 Final Layout.

### 1.9.4 Threatened Species

Environmental Management Plans (OEMPs and CEMPs) would be prepared subject to receipt of development approval.

#### 1.9.4.1 Biodiversity Offsets

These issues have been addressed in Section 1.5.2 of this submission.

#### 1.9.4.2 Threatened Species Surveys, Records and Assessment

The Ecological Site Assessment states that seven (7) clumps of the endangered population *Cymbidium Canaliculatum* were found over the two sites. This is correct. This included 5 occurrences within Middlebrook Station and 2 occurrences within Mountain Station as shown on Figure 1 and 2 of the Ecological Site Assessment (Appendix A). Two of those occurrences on Middlebrook Station are within close proximity to each other and therefore were represented inaccurately in Figure 1. All occurrences of the endangered population encountered on site are outside the area of impact from proposed facilities and works.

## 1.10 Department of Lands

### 1.10.1 Crown Roads

Some concerns have been raised by the Department of Lands over impacts on Crown Roads, specifically restriction of public access and facilities on Crown Land.

The Department mention that Crown Road reserves are not indicated in the EA. Figure 1.2 and 1.3 of Volume 1 of the EA show all the cadastral boundaries and location of Crown access roads owned by the Department of Lands. These Crown roads are within the boundaries of both sites and are referred to in Figure 1.2 and 1.3 as Crown Lands – Paper Roads. All proposed facilities are represented in Figure 2.0 and 2.1 of the EA and are outside these Paper Roads (i.e. are fully contained with the landowners property).

Existing Farm access roads are located on Mountain and Middlebrook Stations, currently used by the farmer for access and transportation of farm equipment. The existing access points and access tracks are shown in Figures 7.2 and 7.3 of Volume 1 of the EA. These roads are partly contained on Crown Roads and on the landowners property. The existing access track is in poor condition and varies in width from 3.5 to 5m. It is intended to upgrade this access track to 5m width and install sedimentation and erosion control measures to protect natural drainage features.

The upgrading of the existing internal access tracks will not cause any additional restrictions to access to and around the site. Access would be improved for bushfire vehicle and staff to the ridgeline corridor. The road would continue to be used to access the site and generators for operations and maintenance. The access track would also continue to be used as before by the farmer. Minimal interruption to the existing grazing and agricultural activities would occur during operations. Disruption to existing grazing during construction would be minor and would be agreed directly with the land owner.

Application is sought by the proponent to predominantly upgrade the existing access track to facilitate construction works and ongoing operations of the Park. The existing routes are already cleared and disturbed and generally follow the highest points along the ridgelines at furthest distance from drainage formations. It is not intended to create a new access road as this would lead to additional clearing of vegetation, soil disturbance, natural drainage structures and additional requirements for sedimentation and erosion control.

### 1.10.2 Environmental Protection Reserve and Tenure

An existing Permissive Occupancy (PO) exists over Lot 118 DP 750939 (Mountain Station) in favour of the landowner. The PO is for grazing purposes only. Pamada proposes to reinstate a 5m wide access track across portion 118 DP 750939 as referred to in Figure 1.2 of Volume 1 of the EA. There is an existing access track, however it is not formed and is overgrown with re-growth. Pamada proposes to construct the road to access Turbine 15 which is located on Portion 102 as shown in the figure below.

Additionally Lot 118 is covered with a Crown Reserve (R98129) for Environmental Protection notified in the Government Gazette 18<sup>th</sup> April 1986 Folio 1718. The proposal does not include any changes to the existing use of the Crown Reserve.

There are no proposed works on Lot 118, apart from the construction of the access track to Turbine 15. The Department of Lands have requested that supporting documentation be provided to support approval for the construction of this road. Alternatively they have suggested that an application to purchase the land be made as an option.

### 1.10.3 Trigonometrical Stations

Pamada originally consulted with the Department of Lands (Survey Infrastructure & Geodesy) at Bathurst in respect to the impact on identified trigonometric stations located on both Mountain Station (TS Myall) and Middlebrook Station (TS Robertson's). Comments were received by the

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Department of Lands in July 2008. These requirements were addressed in Section 7.11 of Volume 1 of the EA.

#### **1.10.4 Water Reserve (WR41)**

Water reserve (WR41) is located within the Middlebrook Station property. There is no proposal to extract water from underground reserves or registered bores within the sites during construction and operations.

#### **1.10.5 Bushfire Assessment**

The Department of Lands have concerns over the increased bushfire risk from arson and increased public access to the site and Visitors and Education Centre.

Firstly the Kyoto Energy Park would not be open directly to the public. Visitors to the Park would be supervised and as risk of arson or incidental ignition from public would be controlled.

Secondly preventative measures would also be addressed in a Bushfire Risk Management Plan (BRMP), prepared in consultation with the Rural Fire Service (RFS). These measures would include but not limited to:

- Restricting access to areas of the Park that are controlled or maintained for fire prevention;
- Maintenance of public areas by the RFS for fire prevention;
- Supervision of all visitors to the site;
- Firefighting procedures and equipment located at the Visitors and Education Centre;
- Evacuation and Emergency Procedures to handle incidental risk

These measures would be adopted in the BRMP during operations. The BRMP would be designed by a suitably qualified Bushfire Consultant in consultation with the Rural Fire Service (RFS) and the Department of Lands (Central Coast/Hunter) if bushfire control works are required on Crown Lands.

### **1.11 Rural Fire Service (RFS)**

A response has been received from the RFS following exhibition of the EA (letter dated 30 July 2009). The response from the RFS covers technical requirements and standards specifications for compliance with structures, APZs and emergency procedures.

These technical measures would form part of the Bushfire Risk Management Plan (BRMP) during operations. The BRMP would be designed by a suitably qualified Bushfire Consultant in consultation with the Rural Fire Service (RFS).

### **1.12 Energy Australia**

A response to the exhibition of the EA has been received from Energy Australia who are the network distributors for the KEP.

During initial consultation (see Section 19.7.2) Energy Australia expressed reservations over connection to their 66kV network at any location with potential impacts associated with voltage regulation, stability, loading and protection. Energy Australia's preference was for Option 4 (132kV). Second preference was for Option 2 (66kV) to Scone. These preferences were reiterated in the EA undertaken by Pamada after considerations of community consultation, environmental and social

factors and impacts. Energy Australia recommended that a detailed system analysis is undertaken at the time of system design for any connection.

In their response to the exhibition of the EA (email dated 24 July 2009), Energy Australia have commented that further issues need to be quantified in final line infrastructure design work and management plans. These works are committed to in the EA as outlined in Section 19.7.2.

Options for connection have been revised in Section 1.2.15 of this submission.

## PART B – COMMUNITY SUBMISSIONS

### 2. 0 Summary of Questions from the Community responses

A total of 123 were received from the general community. A proportion of these were positive and a larger proportion of these were negative. Only concerns and issues relating to the proposal have been summarised in Table 2.0 below.

Questions have been summarised in original sections of the EA to allow for proper consideration of comments. Responses to these questions have been made by Pamada and sub- consultants in Table 2.1 below.

Table 2.0 Summary of Concerns raised by the Community

Section in EA	List of Questions	Reference No	
<b>1. Introduction</b>			
<b>2. Project Description</b>	1. <i>Wind is only 30% efficient and needs to be backed up by coal fired power anyway.</i>	<b>51, 31, 29</b>	
	2. <i>Wind Farms are inefficient and are already being brought down in Europe. Why don't we focus on Solar? Can the solar construction be brought forward in the planning?</i>	<b>85, 83, 81, 79, 77, 65, 48, 39, 31, 24, 10</b>	
	3. <i>Please discuss claims the wind turbines are outdated technology.</i>	<b>79</b>	
	4. <i>Power created by KEP is not displacing any coal fired power as it is not reliable. If we were to rely on KEP power we would be without electricity 23 out of 24 hours.</i>	<b>40, 25, 10, 4</b>	
	5. <i>More solar should be built to reduce the need for the amount of wind turbines.</i>	<b>51, 40</b>	
	6. <i>Solar to be scaled down if the economics of reducing WTGs doesn't help subsidize the loss of such a large solar farm.</i>	<b>40, 17</b>	
	7. <i>Solar is more efficient than wind. European countries are beginning to take down wind towers for solar farms. We should be doing this. Solar Thermal is cheaper and more reliable technology to use.</i>	<b>75, 25, 20, 4</b>	
	8. <i>There are concerns of an incremental creep of the development. That once this is approved a restaurant may be opened on Mt Moobi, or an extra solar farm considered. What plans does the developer have?</i>	<b>75, 63</b>	
	<b>3. Project Development Phases</b>	9. <i>(Relating to construction impacts) Impacts of Noise, dust and traffic management issues during construction are not identified. When would a management plan clearly articulate how the impacts will be managed? What will the hours of operation be for construction workers and traffic?</i>	<b>107,101</b>
		10. <i>Decommissioning will not be done by the developer as it will cost too much. Huge scars will be left on the landscape.</i>	<b>13, 10</b>
		11. <i>How many months will it take after approval is gained to complete the development?</i>	<b>25</b>
		12. <i>The EA is not the final document to be submitted. There is a lot of missing final design details. When will final design documents be made available along with management plans for traffic, construction and environmental</i>	<b>25</b>

	<i>monitoring?</i>	
<b>4. Statutory Planning and Consultation</b>		
<b>5. Community Participation</b>	13. <i>Concerns have been received that community consultation was not good enough. What did Pamada do to ensure all affected residents were kept aware of project developments?</i>	<b>112,107, 91, 79, 77, 57, 51, 43, 41, 27</b>
	14. <i>Adequate documentation was not available during Public exhibition. Please discuss what Pamada did to ensure accessibility to the EA.</i>	<b>101</b>
	15. <i>There is no guarantee that the Mt Moobi Foundation will ever be actually delivered.</i>	<b>40</b>
<b>6. Strategic Justification</b>		
<b>6.4 Mitigation of Greenhouse Gases</b>	16. <i>Life cycle analysis is not clear on the energy and carbon dioxide involved in the development when considering environmental benefits of the project. Please provide more information on this and expected energy payback. Please include carbon intensity of producing the Portland cement or other cement planned to be used. Consider transport of international parts and steel fabrication and creation.</i>	<b>112, 78, 25, 20</b>
	17. <i>There is no mention to the planned amount of Greenhouse Gas tonnes reduced due to the project going ahead.</i>	<b>20</b>
<b>6.6 Socio-Economic Impacts</b>	18. <i>Concern is raised that tourism will be negatively affected by visual impact. The area has a reputation as a scenic area and less tourism will result from the development. It is considered more will be gained by the landowner than by the community as a whole. Discuss.</i>	<b>118,117, 108</b>
	19. <i>Farming property value was reduced by 15% and rural residences by 30-40%. How will residences who experience a drop in value be compensated? This is based on research by John Jess a property valuer in Gippsland.</i>	<b>113, 107, 99, 95, 93, 91, 83, 81, 79, 70, 67, 65, 62, 59, 57, 53, 51, 47, 43, 42, 39, 33, 29, 27, 21, 14, 13, 4</b>
	20. <i>Some landowners are paid an easement fee for hosting power lines however the nearest landowners to the property are not given anything. How is this justified?</i>	<b>85</b>
	21. <i>The community should take some benefit for the loss of amenity as the landholders reaps all the benefit.</i>	<b>65, 50</b>
	22. <i>What is the impact on the other industries if they move out of town. This will have an impact on rate payers in the area.</i>	<b>40</b>
	23. <i>Employment opportunities are transient and mostly overseas. The increase economic activity is insignificant compared with pre-established equine industry.</i>	<b>40</b>
	24. <i>Why are Aboriginals compensated through an annual trust distribution when landowners who suffer real loss of amenity are not?</i>	<b>27</b>
	25. <i>Please provide more information on actual jobs created by the operation and construction of the wind farm.</i>	<b>25</b>
<b>6.7 Strategic Planning Considerations</b>	26. <i>The energy park is being built in a beautiful part of the country. Why not put these in places that have already been destroyed by mining and development such as the lower hunter? Suggestions were made for the Muswellbrook and Singleton areas. The NSW Wind Energy Atlas shows there is wind resource near Singleton and Muswellbrook.</i>	<b>121, 120, 113, 112, 107, 105, 97, 85, 83, 81,77, 75,70</b>

		72, 59, 57, 55, 51, 50, 46, 36, 30, 19, 17,10
	27. <i>The impacts are considered to be “overwhelming” to live near for closest residences. “The Ledge” in the Clifton Hills Estate would like to be bought due to their proximity if the effects are too great. How will this be managed?</i>	116
	28. <i>Too few beneficiaries on the project. With only 1 land owner it is not justified to impact on so many for such little community benefit. What does the community really have to gain?</i>	108, 99, 50
	29. <i>It is too close to scone and many rural lifestyle residences. Please discuss.</i>	112
	30. <i>How will horse breeders be affected by high tension power lines, EMF and noise of wind farms and blade flicker? Will the re-productive cycles of animals be affected in any way?</i>	111, 82, 43, 40, 78 , 50
<b>7. Existing Environment</b>	31. <i>We don’t want Scone to be the Wind Farm Capital of Australia.</i>	69
<b>8. Biodiversity, Flora and Fauna</b>	32. <i>How dangerous are Wind Farms to the Wedge Tail eagle? What is the likely occurrence of bird strikes? It has been stated they will be decimated.</i>	108,105, 95, 83, 81, 77, 57, 51, 50, 47, 46, 43, 39, 27 107, 25, 19, 10
	33. <i>Will birds be disorientated by the red glow of aviation lights?</i>	75
	34. <i>Will the vortex effect of blades create suction and eddy effects that will harm wildlife?</i>	75,51, 37, 27
	35. <i>Moving turbines produce a drop in air pressure which can cause the lungs of bats to expand and explode. Is this correct?</i>	40
	36. <i>The site is next to the Towarri National Park which is considered to be one of the last retreating places for wildlife in the Hunter Valley. Koalas were not found on site however could use the area as refuge.</i>	75, 51, 50, 48, 33, 17
	37. <i>Please provide more research into the nature corridor between Wollemi National Park and Barrington Tops National Park. Is this a significant thoroughfare for birdlife? A corridor from the Alps to the Atherton.</i>	55, 50, 47, 46, 37,33, 27, 13
	38. <i>Too many trees will need to be cleared on the Middlebrook Station site. Wind farms should be built on places that don’t require the additional clearing of land.</i>	51, 4
	39. <i>Flora and Fauna was carried out during drought and hence populations are underestimated.</i>	40
	40. <i>No presence of large bird concentrations are claimed in the EA. What does this actually mean?</i>	40
	41. <i>\$1500 is too low a price on bird kills. It should be set at the same rate as that imposed as fines on farmers shooting the birds. This is \$11,000. Why the double standard?</i>	17
	42. <i>Conacher Travers spent too little time doing the fauna and flora report. They only spent 4 nights observing night time fauna.</i>	17
<b>9. Heritage</b>	43. <i>Aboriginal survey was not adequately prepared for and time not given to local elders to prepare for the site visit.</i>	122
	44. <i>Employment opportunities for aboriginals are not discussed adequately. Please discuss further.</i>	122
	45. <i>Sufficient Aboriginal heritage value is not identified in the report. Can more information be provided on the process Pamada went through to</i>	112, 51

	<i>establish their current conclusions.</i>	
	46. <i>European Heritage assessment has not been done on the “Yarrandi House” which dates back to 1830. How will the development impact the cultural significance of the home?</i>	107
	47. <i>Cultural amenity lost due to this development.</i>	75
	48. <i>Some of the local Aboriginal Elders were not made aware of a cultural site visit. What lengths did Pamada go to ensure all Wonnarua traditional owners were consulted?</i>	106
	49. <i>Who was invited to be present at these cultural site inspections?</i>	106
	50. <i>Please provide statements by the Aboriginal Community regarding the impact of the development as is claimed in the report.</i>	106
	51. <i>When did Pamada or the Archaeologist hold meetings to discuss the development with the Native Title Holders?</i>	106
	52. <i>The Aboriginal cultural site assessment was not done correctly with little discussion of bird strike and caves beneath the Mt Moobi plateau not fully investigated.</i>	106
	53. <i>Wedge tail Eagle is a totem for the Wonnarua people. The totem is strictly not to be eaten or killed by any person and is a core to their identity. The threat to this creature isn’t properly understood.</i>	105
	54. <i>This is likely to be burial grounds in the vicinity with many already known about. Castle Rock is anecdotally a sacred burial site for the Wonnarua people.</i>	75
<b>10. Noise Impact</b>	55. <i>No mention is made of ways to mitigate noise impacts on properties that exceed 35dBa or have noise predicted between 32 and 25dBa. Please provide monitoring and mitigation plans for this.</i>	113,107, 51
	56. <i>How many properties will have noise monitoring equipment and how will this be recorded if there is a complaint? How will I record complaints during construction and operation?</i>	113,112, 25
	57. <i>How far will the “thud”/modulation noise travel?</i>	107, 53, 42, 27
	58. <i>What is the cumulative impact of noise from clustered turbines and the substation?</i>	108, 107, 51
	59. <i>Noise implication is not properly understood. Please discuss this. Can noise from wind turbines travel over 3km?</i>	70, 64, 62, 48
	60. <i>Noise modeling has been undertaken on the smaller 2.1MW machine and not the larger 3MW that sits at 105m.</i>	51, 43
	61. <i>How far does dB(C) travel?</i>	25
<b>11. Visual Assessment</b>	62. <i>These turbines are larger than any developed in the world. The turbines are too obtrusive on the landscape being perched up on a ridge line. Land height is too miniscule to blend the enormous structure of the turbines. Comments made include: “Why do they need to be so large?” “Bigger is not always better” “Biggest in the world”</i>	119, 84, 64, 63, 62, 40, 33, 29, 27, 14, 118
	63. <i>Why didn’t Pamada visit all 36 residences within 2.5km of the turbines, considered high impact and take photos for photo-montages? There were many areas on the consultant’s report that were classified as highly effected visually. Important high use areas such as Scone town centre and slot views down side streets. These areas also did not have photo-montages created. Comments were made about photo-montages being creating in obscure places few people could relate to.</i>	118,101,51, 40, 99
	64. <i>Where is blade flicker and blade glint referred to in the EA and its effects on locals?</i>	112, 55, 53, 47,42, 33, 4, 39
	65. <i>Middlebrook and the Glen Ranges are currently a “Scenic Zone”. This will</i>	112, 15, 14,

	<i>not be the case after development. Please discuss.</i>	<b>13</b>
	66. <i>Aviation markers will be blinking simultaneously and prevent residences from sleeping properly. How will Pamada mitigate these impacts?</i>	<b>112, 27</b>
	67. <i>Residences with "High" visual impact will have visual mitigation methods applied. These property owners have not been consulted. When is this planned and how will 150meter tall structures be erased from the skyline?</i>	<b>107,101</b>
	68. <i>Fencing can be damaged by placing trees on properties to reduce visual impact. Planting trees is not the best way. It will create more damage and maintenance for landowners.</i>	<b>53</b>
	69. <i>Concern that these are the largest wind farms and no one actually knows what they look like.</i>	<b>42</b>
	70. <i>Scone Township is within the pink shaded area meaning 100% of the turbines will be visible. Doesn't this create too significant impact on the community?</i>	<b>40</b>
	71. <i>How far away will tree screening be provided?</i>	<b>39</b>
<b>12. Aviation</b>	72. <i>What impacts will the development have on the potential expansion of the Scone Airport?</i>	<b>112, 95, 81, 51, 50, 48, 82, 58, 28</b>
	73. <i>The Scone airport is important for the equine industry with horse breeders, investors, jockeys all using the airport to access Scone. Anything that impedes large planes access to the airstrip will reduce the attractiveness of the country town. Please provide comment.</i>	<b>81, 60, 51, 43, 39, 33, 13, 5</b>
	74. <i>Lights on top of towers would be visual pollution creating a bright red glow. It may affect people's sleeping patterns. Please comment.</i>	<b>59</b>
	75. <i>The Scone airport is likely to be closed if the wind farm is approved.</i>	<b>58, 57, 51, 30, 25</b>
	76. <i>Positioning of 7 turbines on Middlebrook station will affect landing procedures, missed approach paths, descent profile and minimum safety heights.</i>	<b>51, 47, 39, 30</b>
	77. <i>The turbines on Middlebrook will affect the ability of instrumental landings by larger more sophisticated aircraft.</i>	<b>40</b>
<b>13. Electromagnetic Interference (EMI)</b>	78. <i>What will Pamada do to ensure telephone, TV and radio signals aren't lost.</i>	<b>91, 65, 51, 50, 39, 33, 14</b>
<b>14. Mineral Resource Sterilisation</b>	79. <i>Anglo Coal believe if we go with the transmission line connection through Dartbrook mine will be reduce the ability to further mine coal from the Dartbrook mine. Anecdotal evidence suggests they are hoping to be approved to begin open cut mining.</i>	
	80. <i>The renewable energy development will not halt the creep of mines up towards the UHSC.</i>	<b>14</b>
<b>15. Hydrology</b>		
<b>16. Geology and Soils</b>		
<b>17. Transportation and Traffic</b>	81. <i>Dust from transport will effect amenity along all transport routes. How will Pamada mitigate these impacts? Particularly in relation to dust on the Yarrandi Rd.</i>	<b>112,91, 50, 27</b>
	82. <i>Routes are inadequate for transport of turbines. Routes will need to be upgraded. Will these be paid for by Pamada and also all associated rehabilitation works post development?</i>	<b>112, 75, 43, 30</b>
	83. <i>An impact assessment should be prepared for the noise, and dust impacts on the Yarrandi Rd.</i>	<b>107,101</b>
	84. <i>Gravel from the Braeside Quarry will need to go through town and has not been considered in traffic movements. This traffic will pass through Scone's largest residential areas as well as a school zone. How will this be managed?</i>	<b>51</b>

	85. Judy Wheelers property will be affected significantly by the level of traffic and possibility of a batching plant near her house.	27
	86. During construction it states that hours of operation will be from 7am till 7pm. On top of local quarries of 7am till 4pm this means 13 hours of quarry and construction traffic past several houses. How can this be mitigated?	27
<b>18. Bushfire Risk</b>	87. Turbines have been known to start fires. What ways will Pamada mitigate these risks? Poor water resources are available in the near vicinity. Please discuss how Pamada plan to provide accessible water to be used to fight fires. During the drought water had to be sourced from town for fire fighting. It would seem there is inadequate water to provide for the additional risk of fire.	95, 75
	88. Prevailing winds will send any fires started by the turbines into Scone. How will this risk be mitigated?	81
	89. Lightning strikes often hit the Glen Ranges and are likely to start fires with the turbines each holding 200-400 litres of oil. Please provide comments to how these risks will be minimized.	78, 75, 48, 45, 33
<b>19. Transmission Line Connection to the Grid</b>	90. Concern of easement for transmission lines routes and Pamada's ability to negotiate connection agreement with Energy Australia and a power purchase agreement. At what stage is the development at for such agreements and at what stage do they see connection approval/PPA being gained?	113, 112, 107
	91. Dartbrook Mine will not have any transmission lines over their land. No connection into the substation or lines either.	104
	92. Connection options are not strong and significant electrical losses detract from the long term viability of the project.	75
	93. Line routes create visual impact and cross private landowners properties. These landowners will not host power lines.	25
	94. Clear and definite routes for line options and whether there will be a substation on the Middlebrook Station site as well as Mountain Station	27, 51
	95. Electricity is sent from turbines to Bunnan Rd substation then back where it came through to the Winters Rd. It seems a waste and the line should run into Scone substation as opposed to going back through the site.	25
	96. What are the health impacts of living under 132 kV lines?	90, 41
	97. Who is the correct authority to ensure that EMF monitoring and accountability are upheld according to the department's conditions of consent.	27
	98. Where does electro-magnetic frequency dissipate to?	25
<b>20. Safety and Environmental Risk</b>	99. Please discuss the potential of anxiety and stress for locals arising from the development. Please refer to 'Wind Farm Syndrome' and best practices to mitigate the effects. It was suggested a study be undertaken by a local university to test the health impacts of living near a wind farm. Dr Nina Pierpont recommendations are that 3MW machines are 3-5km from any residential block. Please discuss Vibro- acoustic disease as part of response.	117, 112, 107, 83, 51, 50, 45, 41, 35, 33, 14, 13
	100. A cumulative impact study should be undertaken based on the potential that the other wind farms be built around Scone. If this approval is the start of several more sites in the area birdlife and other impacts need to studies for the cumulative effects.	40

## 2. 1 Responses to Questions from the Community

Table 2.1 Responses to Concerns Raised by the Community

<b>1. Introduction</b>
<b>2. Project Description</b>
<p><b>1. <i>Wind is only 30% efficient and needs to be backed up by coal fired power anyway.</i></b></p> <p>The Capacity Factor (CF) of a power station, is its annual average power output (actual power output over the year) divided by its rated power. It therefore gives an indication of the percentage of time the generator is being used. Typical wind farms in Australia have a CF in the order of 30 - 40% for modern turbines. A conventional utility power plant uses fuel, so it will normally run much of the time unless it is idled by equipment problems or for maintenance. A capacity factor of 40% to 80% is typical for conventional coal fired plants for example.</p> <p>A wind farm is powered by the wind, which blows steadily at times and not at all at other times. Modern wind turbines typically operate 65% to 90% of the time (i.e. this is the period of time they are actually spinning and producing electricity), however depending on the strength of the wind, which fluctuates, they often run at less than full capacity and hence the CF is lower. The Kyoto Energy Park wind farm component has a CF of 30% which is typical for an inland type wind farm site within NSW.</p> <p><b>2. <i>Wind Farms are inefficient and are already being brought down in Europe. Why don't we focus on Solar? Can the solar construction be brought forward in the planning?</i></b></p> <p><b>3. <i>Please discuss claims the wind turbines are outdated technology.</i></b></p> <p><b>4. <i>Power created by KEP is not displacing any coal fired power as it is not reliable. If we were to rely on KEP power we would be without electricity 23 out of 24 hours.</i></b></p> <p>To handle the variations in supply and demand, a mix of different types of power station is needed on the grid. In a conventional system, these types are known as base-load (24-hour power), intermediate-load (generating from dawn to midnight) and peak-load (for power variations over a few hours at most). Wind power falls into the category or intermediate power load. When a wind turbine is producing electricity to the grid it will displace any energy generated from coal fired power. This will reduce the amount of carbon emissions from this coal fired power station.</p> <p>Wind farm forecasting has now been integrated into the grid regulators who control dispatching of energy onto the grid. A coal-fired power station fails infrequently, but when it is out of action it can be for weeks or even months. A single wind turbine can be down for much shorter periods of time (hours or days). As a consequence, both coal-fired power stations and large quantities of wind power in an electricity grid need partial back-up. In Australia, base-load power stations are mostly coal-fired, with some gas-fired.</p> <p>Wind turbine technology is rapidly improving, leading the growth in global renewable technologies. Development of the industry is summarised in Section 2.2.1 of Volume 1 of the EA.</p> <p><b>5. <i>More solar should be built to reduce the need for the amount of wind turbines.</i></b></p> <p><b>6. <i>Solar to be scaled down if the economics of reducing WTGs doesn't help subsidize the loss of such a large solar farm.</i></b></p> <p><b>7. <i>Solar Thermal is cheaper and more reliable technology to use.</i></b></p> <p>Wind Energy is by far the most viable renewable alternative in the current renewable market in relation to upfront capital costs per MW. Large-scale Solar PV installations are still quite difficult to justify based on capital costs per MW output when compared to wind. The current proposed utility scale solar PV installation at the KEP is for a size of 3-10MW. Overall infrastructure costs (e.g. electrical connection, substation, DA costs) have been spread across other generators (wind and hydro) reducing the overall upfront costs per MW for all technologies to within grid parity.</p> <p>The viability of wind energy is detailed in Section 2.2.1 of the EA and for utility scale solar PV in Section 2.3.3 of Volume</p>

1 of the EA. Both technologies still rely on government assistance in the form of Renewable Energy Certificates (RECs) issues under the MRET scheme. This federal initiative is described in Section 6.4.2 of the EA.

**8. *There are concerns of an incremental creep of the development. That once this is approved a restaurant may be opened on Mt Moobi, or an extra solar farm considered. What plans does the developer have?***

There are no plans for expansion of any ancillary facilities such as the Managers residence and the Visitor's and Education Centre. These facilities will facilitate the proper operation and function of the Energy Park. The existing tourist activities are described in Section 2.5.5 of the EA, and include tours to the Mountain Station and the site of the solar PV.

These tourism activities are operated by the landowner and would continue and expand based on demand however there are no proposals for a commercial enterprise at this Centre. The Upper Hunter Shire Council have supported the Visitors and Education Centre as a 'positive feature of the KEP' with 'increased tourism and other flow on benefits resulting from the visitation to the Education Centre'.

At this stage there is no proposal for additional stages for Solar PV installation.

**3. Project Development Phases**

**9. *(Relating to construction impacts) Impacts of Noise, dust and traffic management issues during construction are not identified. When would a management plan clearly articulate how the impacts will be managed?***

Some additional noise would be generated during the construction period mainly due to additional traffic movements on local roads. Traffic movements have been split up and diverted to reduce traffic concentrations around rural residential areas during construction. Estimated traffic movements are within road capacity and would be scheduled to reduce impact on local roads.

During construction of line works additional noise would be generated along transmission alignments. These works would be temporary and any noise would be limited to about 200m from work crews.

Environmental Management Plans (EMPs) would be prepared subject to approval for the Kyoto Energy Park project. EMPs shall consist of a Construction Environmental Management Plan (CEMP), which shall be prepared prior to commencement of construction, including all sub management plans as referred to in Part D Revised Statement of Commitments (SoC).

**10. *What will the hours of operation be for construction workers and traffic?***

General hours of operation are proposed from Mon to Fri (7am to 7pm) and Sat (7am to 1pm), excluding Sundays and Public holidays. Some work activities would be required outside these times. These works include some scheduled deliveries of oversize and over mass vehicles and also some erection works on site as described in Section 3.1.13 of Volume 1 of the EA.

**11. *Decommissioning will not be done by the developer as it will cost too much. Huge scars will be left on the landscape.***

At the end of the service life of each generator component (wind, solar or hydro) an option exists to dismantle the equipment and remove it from site. Decommissioning of all components of the Energy Park is described in Section 3.3 of the EA. Alternatively components may be refurbished or replaced with more efficient technology to continue operations.

Wind turbines once decommissioned leave very little evidence of impact. Towers and generators, substation

components and foundations can be completely removed. Access tracks would remain for original farm use and access to the property.

**12. How many months will it take after approval is gained to complete the development?**

**13. The EA is not the final document to be submitted. There is a lot of missing final design details. When will final design documents be made available along with management plans for traffic, construction and environmental monitoring?**

The Development timeframe includes the final design period and electrical connection agreement (approximately 7-11 months) and construction works program (approximately 20 months duration). The final design stage shall include design of civil and electrical works and preparation of tenders and contracts prior to construction works. It is likely that an EPC contract (Engineering, Procurement and Construction or turnkey) be awarded for the project.

Section 3.4 of the EA outlines the Development Timeframe for the project subject to receipt of approval from the Minister.

## **5. Community Participation**

**14. Concerns have been received that community consultation was not good enough. What did Pamada do to ensure all affected residents were kept aware of project developments?**

Community awareness of the project commenced as early as 2005 with the amendment to the Upper Hunter Shire Council LEP. Pamada commenced direct consultation with the community in late 2006 during preparation of a Preliminary Assessment Report accompanying the Development Application. Pamada sent an introductory letter to over 200 of the closest residents in Scone in January 2007 and a Flyer introducing the KEP project. An office was set up in the main street of Scone in 2007 and staffed on a part time basis of at least 2 days per week. This office was very successful in engaging the community and creating awareness of the project. Further Community engagement and consultation continued as the planning and environmental investigation stages intensified.

Full details of ongoing public consultation is provided in Section 5.3.2 of the EA.

**15. Adequate documentation was not available during Public exhibition. Please discuss what Pamada did to ensure accessibility to the EA.**

The Public Exhibition Period was for a period of 30 days from 18 June 2009 to 20 July 2009. A summary of consultation during this period is as follows:

- Pamada published a notice in the General News Section under Clause 8F 3(a) to run in the Scone Advocate and Muswellbrook Chronicle.
- A letter was sent to 240 of the closest residents advising of the public exhibition period, locations for advertisement of the EA, closing date for comments and notification of a temporary office at Scone.
- Pamada set up and maned a shop front over a two week period during public exhibition period to answer concerns and explain real impacts directly with local residents. The office also included a display of project information, a presentation on solar PV from BP Solar and smart load technology from the CSIRO. A total of 143 local residents visited the shop front to discuss concerns directly with Pamada representatives.
- There was local media coverage surrounding the proposal including several local newspaper articles (mainly in the Scone Advocate) featuring the proposal and announcing of the public exhibition period. Pamada were involved with many radio interviews (mainly with the ABC in Muswellbrook and Newcastle) discussing the project and advising the public of the Scone office.
- Site visits were organized during the public exhibition period to Mt Moobi on Mountain Station, including a trip with local residents, all Upper Hunter Shire Councillors and Town Planner, and finally a trip with some local business people.
- One meeting was arranged with a resident at their household to directly discuss impacts from turbines on Mt Moobi.

- Some meetings were organised with local Council, and Federal Member for the Hunter giving progress updates, community feedback and status of the project.

**16. *There is no guarantee that the Mt Moobi Foundation will ever be actually delivered.***

The Moobi Foundation is discussed in Section 6.6.5 of the EA and committed to in the revised SoC in Part 3 of this submission.

## **6. Strategic Justification**

### **6.4 Mitigation of Greenhouse Gases (GHG)**

**17. *Life cycle analysis is not clear on the energy and carbon dioxide involved in the development when considering environmental benefits of the project. Please provide more information on this and expected energy payback. Please include carbon intensity of producing the Portland cement or other cement planned to be used. Consider transport of international parts and steel fabrication and creation.***

The Energy Payback period is described in Section 6.4.7 of Volume 1 of the EA. The Energy Payback period for an installed wind turbine generator (Vestas 3MW) has been estimated at 5-6 months. The Energy Payback period for the Solar PV plant (fixed array) has been estimated at 12-13 months.

The embodied energy (the energy required to manufacture and install the generator component to the point of use) includes concrete (i.e. cement), fabrication and transportation.

**18. *There is no mention to the planned amount of Greenhouse Gas tonnes reduced due to the project going ahead.***

A summary of Greenhouse Gas Emissions (GHG) displaced are provided in Section 6.4.6 of Volume 1 of the EA. These GHG estimates were calculated assuming a total of 42 wind turbines. Based on a revised total 34 wind turbines a total GHG emissions savings of 260,000 tonnes p.a. would result. This equates to a maximum of 7.8 million tonnes over a 30 year lifecycle for all generators.

### **6.5 Socio-economic Impacts**

**19. *Concern is raised that tourism will be negatively affected by visual impact. The area has a reputation as a scenic area and less tourism will result from the development. It is considered more will be gained by the land-owner than by the community as a whole. Discuss.***

Existing tourism within the Upper Hunter is fragmented with major tourist activities and services occurring within the lower hunter region mainly off the back of the extensive wine industry. The location of the KEP project is anticipated to be a significant factor in 'green tourism' potential within the Upper Hunter. The KEP would represent the largest combined renewable energy park within the world (wind solar PV and mini-hydro) and a large draw card for tourists to visit the region. The Upper Hunter Shire Council have already commented on the positive economic contribution from increased tourism generation in Scone.

Generation of tourism from wind farm projects has proved to be considerable within Australia and overseas. The addition of a tourism component in the form of the Visitor's and Education Centre would provide further economic benefit to the local area. It would provide employment on the site and additional income from visitors. As a consequence other businesses in the area may benefit; especially those equipped to supply the tourist trade such as accommodation and food providers. Other tourism drawcards for the Upper Hunter (such as the equine industry) may also benefit from the increased profile that Scone and the Upper Hunter would receive as a supplier of renewable energy.

**20. *Farming property value was reduced by 15% and rural residences by 30-40%. How will residences that***

***experience a drop in value be compensated? This is based on research by John Jess a property valuer in Gippsland.***

Property values are influenced by a range of factors, including planning controls, supply and demand, and broader economic conditions. Sustainability Victoria (A Victorian Government Agency) has recently released a document entitled “Wind Farms – Myths and Facts” which concludes that: ‘While no formal studies have been carried out in Australia, studies in the USA and Denmark have found there is little to suggest the wind farms impact negatively on the value of neighbouring properties.

In contrast to these examples research has also claimed that wind farms have a negative impact upon property and land values. A study conducted by the *Royal Institution of Chartered Surveyors* found that there is more detrimental impacts upon residential than agricultural properties. The *RICS* survey stated that “60% of the sample suggested that wind farms decrease the value of residential properties where the development is within view” (*Sims and Dent*). The main factors cited as contributing to this negative impact upon property values are; visual impact, fear of blight (plant disease) and the proximity of a property to a wind farm. The *RICS* survey also suggested that this negative impact decreases after two years.

Overall there is no reliable consensus in international research that indicates wind turbines add a positive or negative value to property prices and agricultural land. However research has identified factors that may contribute to the impacts wind farms have on property value. The most frequently reported impacts are noise and visual aspects. It is suggested that these factors lead to economic impacts (such as decreases in property land values).

The KEP project has significantly reduced the impacts of noise and visual impact of the project on the locality in most affected areas. A total of 13 turbines have been removed from the original proposal to effectively reduce noise and visual impacts at most effected residents. Noise issues have been addressed through the strategic removal of turbines and the selection of a suitable turbine model for the area. Noise issues were identified at the ‘Peakhill’ residence directly east of Mountain Station. 5 turbines were removed from this ridgeline in 2008 to mitigate noise at this residence and reduce visual clutter along this ridgeline.

A further 8 turbines have been removed from the Glen Range along Middlebrook Station (Jul 2009). This will significantly reduce visual impact on residences that are situated in areas identified as ‘highly impacted areas’ requiring further mitigation treatments. These areas include Thompson’s Creek Rd, Lower Sparkes Creek Rd, Dart Brook Rd and Middlebrook Rd, and Moobi (and adjacent) Rds. These areas predominantly include lifestyle blocks and large rural allotments or hobby farms. The reduction in turbines would significantly reduce visual impact on these areas.

The investigation of devaluation potential of the KEP has been further discussed in Section 1.2.2.5 of this submission. This includes predictions of impact by Dupont’s valuers.

**21. *Some landowners are paid an easement fee for hosting power lines however the nearest landowners to the property are not given anything. How is this justified?***

Option 2 and Option 4 (preferred line route options) include an allowance for easements over private land. These easements are variations that would be negotiated once a final preferred route is determined (either Option 2 or Option 4). The final preferred line route cannot be determined until approval of DA (see Part A Section 1.2.15).

**22. *The community should take some benefit for the loss of amenity and the landholders benefit.***

The Moobi foundation would be set up during operations to support and fund community initiatives in the area. The local community will receive direct benefits from the community fund, offered for local community projects including Indigenous programs. In addition, the local community will receive indirect benefits including economic and environmental benefits as outlined in the EA.

Key Insights highlighted the potential for significant local benefit flowing from construction and ongoing in tourism in the region as a direct result of the KEP. The UHSC also concurred with this given the location of the site.

**23. *What is the impact on the other industries if they move out of town. This will have an impact on rate payers***

- in the area.*
- 24. *Employment opportunities are transient and mostly overseas. The increase economic activity is insignificant compared with pre-established equine industry.***

The KEP proposal would generate significant investment in the Scone and Upper Hunter region. While a large proportion of the components would be sourced from outside the region, a large proportion of the construction effort would be sourced from Scone and the Hunter estimated at around 60% of total capital expenditure .

Up to 15 full time jobs would be generated during operations. It is likely that significant local income would be derived from visitors to the area which would further benefit existing tourist drawcards like the equine industry and support local service providers.

- 25. *Why are Aboriginals compensated through an annual trust distribution when landowners who suffer real loss of amenity are not?***

There will be some loss of amenity to some landowners during construction stages of the proposal however this will be minimal and effectively managed through EMPs. Generation of income from the town will also be of benefit to many service providers and local industries which would generate a flow on indirect benefit. Long term loss of amenity is considered to be minimal and likely to complement existing rural activities within the area.

The Moobi Foundation would be set up to distribute funds to community initiatives including Aboriginal initiatives. The amount would be in the order of 0.25% of the annual income of the KEP. The Moobi foundation would include approximately 6 individuals from the community that would be in a position to allocate funds fro community initiatives.

- 26. *Please provide more information on actual jobs created by the operation and construction of the wind farm.***

The Kyoto Energy Park proposal creates the opportunity to establish a sustainable energy market and provide renewable energy to regional electricity markets. Furthermore, it creates the opportunity to contribute to state-wide greenhouse reduction and renewable energy targets, whilst promoting long-term environmental benefits and increased economic activity within the region.

The investment of considerable funds during the construction and establishment of the Kyoto Energy Park will contribute to the creation of employment across a range of industries including construction, transport and manufacturing sectors. The most significant economic component of the project will be during the manufacturing and construction phase. The total expected capital expenditure for the project is between 140 and 190 million dollars depending on the final Kyoto Energy Park overall capacity. It is estimated that the proportion of expenditure that may be captured domestically is in the order of 82 to 122 million dollars, representing a proportion of approximately 60% of total expenditure. The domestic proportion of capture of this expenditure may grow by the time the project is commenced if a higher proportion of components can be sourced within Australia.

Scone has a low unemployment rate (currently around 4% or close to full employment), which combined with a high participation rate of 62.2% may indicate a labour market operating at, or near capacity. It may therefore be the case that additional specialists may need to relocate to Scone for a time to fulfil some positions related to this project. Additional workers to the area will positively impact on local businesses, through an increase in customers and clients.

### **6.7 Strategic Planning Considerations**

- 27. *The energy park is being built in a beautiful part of the country. Why not put these in places that have already been destroyed by mining and development such as the lower hunter? Suggestions were made for the Muswellbrook and Singleton areas. The NSW Wind Energy Atlas shows there is wind resource near Singleton and Muswellbrook.***

The NSW Wind Energy Atlas was published by the CSIRO and is a very broad scale wind map based on high level data.

More accurate wind modelling was undertaken by specialist consultants (using over 9 years of on-site wind data from two wind masts) to confirm the KEP site as suitable for wind farming. Other important factors in consideration of the site as a viable wind farm proposition included the relatively close proximity to a strong grid connection point, land use compatibility, proximity of residences to turbines, vegetation coverage over site, relationship with landowner etc.

**28. *Too few beneficiaries on the project. With only 1 land owner it is not justified to impact on so many for such little community benefit. What does the community really have to gain?***

It is likely that significant benefit will be gained by the leveraging of tourism related activities and increases in visitors as a result of the Energy Park. The community will gain from a showcase renewable energy centre being built in their backyard. The technologies being proposed will bring experts from around the world as well as tourists which will have a directly stimulating impact on the local economy.

**29. *It is too close to Scone and many rural lifestyle residences. Please discuss.***

Approximately 82% of the Upper Hunter Shire area is used for agricultural purposes including horse studs, grazing, cropping and intensive agriculture (e.g. vineyards etc). Subdivision of rural lots is slow with existing surplus stock and generally low demand for new stock (e.g. population growth is predicted at 0.5% over the next 25 years).

Some rural 'lifestyle' blocks are scattered around the sites, mainly within the Thompson's Creek and Moobi Rd areas. Impacts on these lots in close vicinity to the Energy Park is considered low. Potential impacts to lots has been mitigated during the planning and investigation of environmental impacts. This has included removal of 13 turbines from the original proposal. There are no residences within 1km of site. There are two (non-landowners) residences are located within 1.0 - 1.5km of the turbines. All residences are of sufficient distance from turbines with impacts mitigated to acceptable levels.

**30. *How will horse breeders be affected by high tension power lines, EMF and noise of wind farms and blade flicker? Will the re-productive cycles of animals be affected in any way?***

Wind turbines have long considered to have no impact to grazing stock such as cows, sheep and goats with successful integration of wind farms into existing grazing pastures all over the world. Stock has been found to co-exist with turbines quite pleasantly. They will be found grazing right up to the base of towers, sheltering behind towers or even rubbing against towers.

Scone is renowned for its equine industry, adopting the title "Horse Capital of Australia". The area attracts domestic as well as large amounts of foreign capital to produce some of the best race horses in the world. 70% of the Australian thoroughbred population is reared in the Upper Hunter area. The industry supports up to 900 jobs and up to \$100 million in yearling sales each year. Concerns raised by stud owners are that "audio visual pollution" will have detrimental health effects on horses.

General impacts on surrounding land uses are discussed in Section 6.7.6 of the EA. There are some horse studs/training centres located within the area, as shown in Figure 6.8 of Volume 1 of the EA. Most of these studs are located within a distance of 5 to 25km from the subject KEP properties. There are no perceived impacts to horse stock relating to blade flicker and glint, noise or EMF. Furthermore the SA Noise Guidelines (current guidelines adopted in NSW) concluded that infrasound or low frequency noise is not considered to be of concern in modern wind turbines of upwind type design.

Blade Glint has been discussed in Section 11.9 of Volume 1 of the EA. While blade glint is considered very difficult to quantify due to variations in conditions such as light intensity, cloud cover, azimuth, geometry of turbines and moving positions of effected livestock its potential impact can be mitigated. Modern blades are finished with a low reflective matt coating. Blade glint is therefore not expected to be an issue for either livestock, or humans.

Shadow flicker is a well defined phenomenon where sunlight casts a shadow of the moving blades as the blades rotate. Figure 11.4 and 11.5 of the EA represents the extent of modelled Blade flicker. There are no studs within 1km of any

proposed turbines and as such no impacts for stud owners are expected.

## 7.0 Existing Environment

### 31. *We don't want Scone to be the Wind Farm Capital of Australia.*

The Upper Hunter has long identified itself with passive land use activities, a clean environment free environmental impacts of the encroaching mines. Wind turbines and solar PV are one of the most benign technologies for producing electricity when taking into account environmental and social impacts. Renewable energy technologies are likely to complement existing passive land uses activities in the region rather than impact upon them. The Upper Hunter Shire Council have recognized the significant investment opportunity to the region and likely tourism benefit from the Park.

## 8.0 Biodiversity, Flora and Fauna

### 32. *How dangerous are Wind Farms to the Wedge Tail eagle? What is the likely occurrence of bird strikes? It has been stated they will be decimated.*

Wedge-tail eagles have been sighted on the Middlebrook and Mountain station sites and in the surrounds. These occur at low density on both sites as they are higher order predators with specific home ranges. Wedge-tailed eagles were observed across both sites soaring at RSA height, close to the ground and soaring above the ridges searching for food. Nesting activity was observed at the northern end of Middlebrook Station. It is considered likely that a pair of Wedge-tailed eagles occupy a home territory at Middlebrook Station, with a separate pair at Mountain Station.

Despite low population numbers across the site, Wedge-tail eagles were considered to be at moderate risk of collision with turbine blades as their home ranges are located within the airspace of a wind farm. There is still however considered a moderate risk of blade collision and hence the Wedge Tail eagle is a "species of concern" requiring Level 3 Assessment in accordance with *Auswind Wind Farms and Birds: Interim Standards for Risk Assessment*.

A total of 13 turbines have been omitted from the original proposal. This includes a total of 4 turbines from the original turbine layout on Mountain Station and 9 turbines from Middlebrook Station in closest proximity to the Towarri National Park, limiting the potential for collision with both the Wedge-tailed Eagle and the Nankeen Kestrel.

As noted above, the wind turbines are not expected to result in significant blade strike impacts to local wedge-tailed eagles and the Nankeen Kestrel, including young birds. This is based on the experiences at other wind farm sites in Australia, where wind farms are present within eagle home ranges. Low expected mortality rates are not considered to be a threat to local population numbers. The Environmental Management Plan will include a pre-operational and operational Adaptive Management Plan in accordance with Auswind guidelines, include monitoring of 'species of concern' identified on both sites including the Wedge-tailed eagle and the Nankeen Kestrel.

### 33. *Will birds be disorientated by the red glow of aviation lights?*

As a safety precaution, wind turbines require obstacle marker beacons, as prescribed by the Civil Aviation Safety Authority (CASA), to reduce the risk of collision with aircraft. CASA draft guidelines for aviation warning lighting for a group of wind turbines require that sufficient wind turbines should have red obstacle beacons to indicate the extent of the group.

There appears to be no evidence to suggest that the flashing aviation lights used on wind turbines attract or disorientate birds. In a report undertaken for a wind farm project in Vermont, United States (Curry and Kerlinger 2006), concluded that the results of fatality studies undertaken across US and Canada show birds or bats are not disorientated or attracted by wind turbine beacons. They also concluded that the steady burning communication tower lights are higher risk of attracting night migrating birds.

Therefore, this risk is considered manageable by using low wattage, red, intermittent lighting and using the least number of lights required, in accordance with CASA regulations. It is therefore recommended that once the final layout of the proposed Kyoto Energy Park wind turbines is known, CASA is approached to determine if obstacle lighting is still required. If it is required, then a lighting plan will need to be prepared for approval by CASA.

**34. Will the vortex effect of blades create suction and eddy effects that will harm wildlife?**

**35. Moving turbines produce a drop in air pressure which can cause the lungs of bats to expand and explode. Is this correct?**

The major impact posed to bird and bat species is the collision with rotor blades. The potential for trapping of bats in blade tip vortices was identified by the Flora and Fauna consultants CEG Consult in Appendix A Section 5.2 as a potential component of rotor collision resulting in bat injury or death. Avian species (mainly bats) are not considered to be at risk of suction into the blade vortices or as a result of moving air masses or turbulence around blades. Bat species were not found to be of significant numbers, either roosting or migrating across or in proximity to the sites. Isolated individuals were identified on both sites with suitable habitat for both macro and micro bat species.

The assessment concluded that impacts on macro and micro bat species would be minimal and isolated based on infrequent numbers of species in the area and low risk of collision with turbines and lines.

Impacts were found to be low to both macro and micro bat species, due to the low numbers of species on site and flying height of observed species being outside the RSA. CEG Consult concluded that the construction of wind turbines would pose a small level of risk to micro bat species particularly the White-striped Freetail-bat and the Yellow-bellied Sheath-tail-bat. CEG Consult also concluded that isolated collisions would be more likely along forested ridgetops and in close proximity to suitable habitat which was observed within the Towarri National Park. A total of 9 turbines have been emitted from this ridgetop which would significantly reduce potential impacts associated with micro bat species.

**36. The site is next to the Towarri National Park which is considered to be one of the last retreating places for wildlife in the Hunter Valley. Koalas were not found on site however could use the area as refuge.**

An assessment on the presence of Koala's or Koala habitat was undertaken by CEG Consult in 2007/2008 and is summarised in Appendix A – Section 3.2, and Section 8.3 of Volume 1 of the EA. No Koala's were found on site during Fauna surveys and no evidence of Koala's were observed on site during the investigations and surveys. The vegetation found on both sites did not form core Koala habitat as defined in SEPP 44.

A revised summary of habitat removal has been included in Section 34 of this report. Habitat removal has been reduced by 93% on Middlebrook Station with the elimination of 8 turbines (Jul 2009) in closest proximity to Towarri National Park. The remaining 3 proposed turbines on Middlebrook Station (see Figure 3.2 – Revised Layout) will require only minimal disturbance or selective clearing to the existing vegetation along this route.

**37. Please provide more research into the nature corridor between Wollemi National Park and Barrington Tops National Park. Is this a significant thoroughfare for birdlife? A corridor from the Alps to the Atherton.**

This concern has been addressed in Section 1.2.2.6 of this submission.

**38. Too many trees will need to be cleared on the Middlebrook Station site. Wind farms should be built on places that don't require the additional clearing of land.**

This concern has been addressed in Section 1.2.2.6 of this submission.

**39. Flora and Fauna was carried out during drought and hence populations are underestimated.**

Detailed Flora and Fauna surveys were carried out during autumn, winter and spring periods over the 2007/08 period. There were some limitations to the availability of flowering and/or fruiting material as part of the floristic survey over both sites primarily as a result of the existing levels of disturbance to vegetation from grazing and the extent of the drought prior to the 2007/08 surveys. As a result CEG Consult stated that:

*“the diversity of annual herbs and grasses was expected to be under-represented within the recorded ground flora”.*

Previously cleared areas have been utilised for all construction facilities to minimize vegetation modification. Construction activities and transport will utilise all existing access tracks away from large areas of high quality habitat and to avoid modification of existing vegetation and edge effects. It is important to note that vegetation removal would be selective required to increase the width of existing access tracks and hardstand areas. Key habitat types such drainage lines, outcrop areas and caves, hollow bearing trees would be retained.

CEG Consult proposes to carry out further floristic surveys prior to construction activities commencing on site as a precautionary measure. This measure would be adopted in a Vegetation Management Plan as part of the Flora and Fauna Management Plan (FFMP).

**40. *No presence of large bird concentrations are claimed in the EA. What does this actually mean?***

No presence of large concentrations of birds were identified in preliminary studies or site surveys on site or in the surrounding areas. Further there are no coastal habitats or wetlands surrounding the site that could support listed migratory species that may fly across the site.

Further there were no defined corridors or key habitats within the subject site or surrounding areas. Some connectivity with Towarri National Park was identified although impacts from these turbines were not considered of significance. Removal of a further 8 turbines from Middlebrook Station will reduce any residual impacts to bird and bat species in proximity to the National Park.

**41. *\$1500 is too low a price on bird kills. It should be set at the same rate as that imposed as fines on farmers shooting the birds. This is \$11,000. Why the double standard?***

Wind Farms are setup with strict adherence to state and national guidelines to which best practice approaches are taken to reducing the potential impact on flora and fauna. As such an Environmental Management Plan will be established to both assess the real risk to birds and establish process to ensure best practice measures of mitigation that are planned.

**42. *Conacher Travers spent too little time doing the fauna and flora report. They only spent 4 nights observing night time fauna.***

Fauna survey methods were based upon standard methods utilized by the NSW National Parks and Wildlife Service (NPWS), State Forests of NSW, Wyong Shire Council and the Department of Environment and Climate Change (DECC). A full list of fauna survey methods and dates are provided in Appendix A Section 2.2.1. This list shows fauna surveys were carried out over more than 4 nights from the period Apr 2007 to Feb 2008.

## 9.0 Heritage

**43. *Aboriginal survey was not adequately prepared for and time not given to local elders to prepare for the site visit.***

**44. *Some of the local Aboriginal Elders were not made aware of a cultural site visit. What lengths did Pamada go to ensure all Wannarua traditional owners were consulted?***

**45. *Who was invited to be present at these cultural site inspections?***

All Aboriginal persons were given the opportunity to be involved in site visits. All known Aboriginal groups particularly those on the DECC list were contacted. All representatives were contacted in writing, invited personally and through an advertisement in the local newspaper (advertisement appeared in Scone Advocate on 28 June 2007) to an initial presentation/discussion of the project. The initial presentation of the project was conducted on 30 July 2009 at the Wannarua Head Office in Muswellbrook. A list of all Aboriginal Stakeholders contacted is provided in Section 9.2.2 of Volume 1 of the EA.

All those Aboriginal representatives in attendance decided that a preliminary inspection of the subject sites would be preferable prior to a detailed survey of the sites. Those Aboriginal representatives in attendance decided on the time for this and other subsequent inspections. The preliminary inspection was undertaken on 13 August 2007 and a detailed site inspection on the 20 August 2007.

Therefore at least 30 days notification was provided of the initial meeting between stakeholders. At this meeting all those Aboriginal stakeholders in attendance decided on timeframe for additional required inspections.

A detailed discussion of stakeholder consultation is provided in Section 9.2.2 and 9.2.3 of Volume 1 of the EA.

**46. *Employment opportunities for aboriginals are not discussed adequately. Please discuss further.***

The Upper Hunter Valley main employment drivers are from intensive rural activities such as agriculture, grazing, viticulture, equine and coal mining. However as a result of prolonged and continuous drought, high input costs and lower commodity prices rural income viability has been on the steady decline with rural centre populations declining or in decline.

The Kyoto Energy Park brings a strong sustainable jobs creation mechanism for the Hunter region. The KEP will also be directly linked to key tertiary education facilities and TAFE courses in the region for education and skills development.

A socio-economic report has been completed by Key Insights Pty Limited in Newcastle to determine the key employment and social implication on the development of the Kyoto Energy Park in the Hunter. This study showed that a higher proportion of Aboriginal people live in Scone and the Upper hunter region (2.9-3.1%) compared to the NSW average (2.1%).

Direct and indirect employment opportunities during construction and operations would be significant for the Scone and Hunter region. These figures are summarised in Section 6.6.2 of the EA. Other indirect employment opportunities will be generated through increased tourism and support services to the Hunter and Newcastle region. A Visitors and Education Centre has been included in the proposal and would include an option for an Indigenous Cultural and Heritage display of the area and region.

It is not part of the requirements for Aboriginal cultural and heritage assessment to discuss jobs and employment directly with the Aboriginal representatives. The assessment was to identify cultural and archaeological objects and make recommendations based on findings. Employment opportunities should be something that the Aboriginal community takes up directly with the proponent. Employment activities would be discussed with Aboriginal Stakeholders prior to construction.

**47. *Sufficient Aboriginal heritage value is not identified in the report. Can more information be provided on the process Pamada went through to establish their current conclusions.***

The Aboriginal heritage value of the area has been adequately identified in the report. Section 2.3 of Appendix H describes the Aboriginal Heritage value of the area and cultural landscape. Further these values are identified in the context of the site and surrounding landscapes which is described in detail in Section 3.0 of Appendix H. The standard guidelines for survey reporting were followed and conclusions and recommendations made.

**48. *European Heritage assessment has not been done on the "Yarrandi House" which dates back to 1830. How will the development impact the cultural significance of the home?***

Yarrandi House off Yarrandi Road is not known as being identified as a heritage item. It was not found on any statutory lists. All known heritage items were identified and the impact of the proposal on all items was assessed. Yarrandi has no likelihood of being impacted by the development per se nor by the transmission line route.

**49. *Cultural amenity lost due to this development.***

This has been adequately addressed in the report and it is recommended that if the project goes ahead that an agreement be entered into with the Aboriginal community to overcome any loss to cultural amenity given the significance of the landscape. This was the recommendation of the Aboriginal Stakeholders that were involved with the project. It must be remembered that cultural amenity loss is not irreversible as it is with coal extraction.

**50. *Please provide statements by the Aboriginal Community regarding the impact of the development as is claimed in the report.***

The assessment included extensive engagement and consultation with all Aboriginal stakeholders. Site surveys were organized and attended by all Aboriginal stakeholders with adequate time for preparation and attendance.

Aboriginal stakeholders and interested parties were invited to comment on the proposal and attend a formal presentation of the project at Muswellbrook. Following this all respondents were invited to attend a guided site inspection for familiarisation of the site and the scope of the proposal. Following this a further detailed site survey of the sites was undertaken and inspections made at the locations of each component and facility.

Areas which were likely to contain evidence of habitation were not identified. The assessment level of sensitivity was based on landscape, known artefact distribution and predictive modelling and discussion with Aboriginal stakeholders. The report concluded that the development will not impact on known Aboriginal objects and places. The Aboriginal Community recommended that there would be no impact to Aboriginal objects and places within the development. Some impact may occur on the study area as a backdrop from the valley floor some distance away, however, this impact will not destroy, deface or damage an Aboriginal object or place.

Recommendations were made by the Aboriginal community and presented in a signed letter of agreement. There is a personally signed statement from representatives of the stakeholders contained in the report. The statement is from a meeting of the Aboriginal community. It is not a statement from the archaeologist. It is a record of the recommendations of the meeting which was signed by all Aboriginal persons at the meeting as a true and accurate record of that meeting. The report does not make any unsubstantiated claims. Any reasonable person reading the report would readily see the signatures of the people in attendance that make the recommendations.

**51. *When did Pamada or the Archaeologist hold meetings to discuss the development with the Native Title Holders?***

The only Native Title Holders are the descendants of Sarah Madoo, identified by the court as the Wannarua People. The Land Council and Registered Native Title Claimants were advised and included on the stakeholder Register. This is made very clear in the report in Section 9.2.2 of Volume 1 of the EA. More importantly the representative of the Native Title holders (Tracey Skene) was engaged to help ensure all Aboriginal people were given the opportunity to be involved.

**52. *The Aboriginal cultural site assessment was not done correctly with little discussion of bird strike and caves beneath the Mt Moobi plateau not fully investigated.***

The issue of bird strikes from rotor blades have been assessed in Appendix A(ii) Bird Impact Assessment. The site assessment meets the adequacy requirements by the DECC. Bird strike is not a consideration for an archaeological report.

It was identified that caves would possibly exist and that such caves add to the significance of the area. However no caves were located neither within the vicinity nor more importantly within the impact zone of the development. Caves below the plateau were therefore not part of the study area and no direct impact was attributable to them. The geological and geotechnical surveys did not indicate that there were any caves below the placement areas for the wind turbines.

- 53. *Wedge tail Eagle is a totem for the Wonnarua people. The totem is strictly not to be eaten or killed by any person and is a core to their identity. The threat to this creature isn't properly understood.***

In the Aboriginal culture most animals were totems. Totems represented an organisational structure for Aboriginal society. They were not totems in the same sense as the American Indian totem, nor like the sacred cows of India. In Aboriginal culture totems were killed and eaten. None of the many Aboriginal people who had the opportunity to mention this as part of their input at the time of the survey did so. Irrespective of this an archaeological survey is confined to physical evidence and protection is given to Aboriginal objects. The impact to the Wedge-tailed eagle and other birds of prey has been adequately addressed in the flora and fauna report.

- 54. *This is likely to be burial grounds in the vicinity with many already known about. Castle Rock is anecdotally a sacred burial site for the Wonnarua people.***

Aboriginal Burials were either in sand, soft ground or in trees. The possibility of burials was addressed in the report and discounted for the location of the turbines. Castle rock is not significant to the Aboriginal people as a burial ground, but for other reasons which has been addressed in the Aboriginal Assessment. There are no works proposed in the vicinity of Castle Rock and there are no likely impacts to this feature.

#### **10.0 Noise Impact**

- 55. *No mention is made of ways to mitigate noise impacts on properties that exceed 35dBa or have noise predicted between 32 and 25dBa. Please provide monitoring and mitigation plans for this.***

Compliance noise monitoring would be undertaken as part of the Operational Noise Management Plan. Compliance noise monitoring would be undertaken during the initial stages of operations to ensure noise levels are below criteria set for closest receivers. The noise monitoring will be undertaken by appropriately qualified independent acoustic experts retained by the proponent. The results of the Noise Compliance Assessment would be submitted to the DoP for assessment.

In the event that the assessment indicates that noise from the wind turbines exceeds the noise limits, the Noise Compliance Assessment must investigate and propose the mitigation and management measures that are available to achieve compliance with the noise limits.

- 56. *How many properties will have noise monitoring equipment and how will this be recorded if there is a complaint? How will I record complaints during construction and operation?***

Noise compliance and ongoing noise monitoring locations would be identified by an appropriately qualified independent acoustic expert during preparation of the Operational Noise Management Plan. This plan would be prepared prior to construction activities commencing and would be submitted to the DoP for approval.

The proponent would also adopt a complaints procedure during construction and ongoing operations as part of the 'Near Neighbours Strategy' for community consultation. A phone line will be provided for residences to record noise complaints during both construction and operation.

- 57. *How far will the "thud"/modulation noise travel?***

- 58. *What is the cumulative impact of noise from clustered turbines and the substation?***

The "thud" or more commonly referred to as whooshing/swooshing noise is a non-tonal sound that is created in certain conditions. Blades can propagate this type of noise in specific atmospheric conditions (determined by wind shear coefficient) when blades pass wind turbine towers at a certain velocity. This type of noise is also called blade modulation and is a result of vertical wind shear occurring when the atmosphere is more stable as discussed in Section

10.3.6 in Volume 1 of the EA.

When multiple turbines run in an acoustically synchronous state the character of noise may be perceived as having a greater modulation. Such effects are more prominent in wind farms with a smaller number of turbines as when the number of turbines increases the distribution of turbine synchronicity tends to be more random and any turbines that are running acoustically synchronous tend to be offset by other turbines that are running out of phase. Clustering of turbines can lead to increases in blade modulation as was mentioned in Section 10.3.6 of Volume 1 of the EA.

A further discussion and summary of potential blade modulation effects is provided in Part A Section 1.2.5.1 of this report.

**59. *Noise implications are not properly understood. Please discuss this. Can noise from wind turbines travel over 3km?***

Predicted wind turbine noise levels indicated that the criterion developed in accordance with the process outlined by the SA EPA Noise Guidelines will not be exceeded at most neighbouring residences. Several instances of exceedances have been predicted by the noise modelling based on the noise specification for the Suzlon s88 2.1 MW V3 wind turbine. This turbine has been used for the noise assessment as it represents the turbine with the highest noise levels for the turbines under consideration for the project.

Audibility is not the criteria proposed for wind farm operation. Audibility does not provide a useful measurable basis for compliance assessment and the SA EPA Environmental Noise Guidelines provide criterion that can be tested and that have been developed to provide adequate amenity protection.

Noise monitoring as required will confirm the noise levels resulting from the operation of the Energy Park. Conditions will be placed on the Energy Park that identifies levels to which a noise assessment exceeds limits if this occurs. The Noise Compliance Assessment will investigate and propose mitigation and management measures that are available to achieve compliance with noise limits.

**60. *Noise modeling has been undertaken on the smaller 2.1MW machine and not the larger 3MW that sits at 105m.***

Noise modelling was undertaken for the Suzlon Energy A/S S88-2.1 MW, V3 turbines which have a maximum sound power level of 104.3dBA. In accordance with IEC 61400-11, these turbines are not defined as tonal at rated power.

Other turbines have been identified as suitable for the site (see Section 2.2.4 of Volume 1 of the EA) and would be selected subject to an Electrical Grid Connection with Energy Australia and a procurement contract for turbine supply. Should other turbine manufacturers be considered (Vestas, GE or RePower) noise levels will not be higher than those modelled in this assessment (i.e. with a sound power level of 104.3 dBA).

**61. *How far does dB(C) travel?***

Infrasound or low frequency sound (dBC) is not audible to the human ear. Most modern wind turbines of upwind design do not produce low frequency noise. The effects or potential for infrasound have been further discussed in Section 1.2.5.1.

## 11. Visual Assessment

**62. *These turbines are larger than any developed in the world. The turbines are too obtrusive on the landscape being perched up on a ridge line. Land height is too miniscule to blend the enormous structure of the turbines. Comments made include: "Why do they need to be so large?" "Bigger is not always better" "Biggest in the world"***

A full description of Wind turbine generators are provided in Section 2.2.1 of Volume 1 of the EA. The project

description is for towers up to a hub height of 105m, with total height up to 150m above ground level. The strategic purpose of this characteristic of the wind farm component was to maximize return on available wind resource. The KEP is situated in what is called a Class 3 wind resource with highly consistent yet moderate wind speeds typical of inland sites within NSW. Newer technology requires longer blades to be installed to taller towers to capture more energy for these sites.

More recent proposals within the US and Australia have adopted similar heights to allow for greater wind yields and viability of installations.

**63. *Where is blade flicker and blade glint referred to in the EA and its effects on locals?***

Shadow Flicker describes an effect caused by the rotating turbine blades periodically blocking the sun's rays and causing a flickering shadow effect at a particular location. The effect in relation to wind farms has been attributed as having potential to cause annoyance and in certain circumstances to have potential for impacts on health of some individuals.

Garrad Hassan has conservatively modelled the duration of shadow flicker for the area around the proposed Kyoto Energy Park, with approximation of shadow diffusion with distance. A map was produced for Mountain and Middlebrook Station showing the predicted hours per annum of shadow flicker. Based on the modelling, no nearby residences have modelled shadow flicker of greater than 30 hours per annum (standard) and therefore shadow flicker is not expected to be a constraint. Shadow Flicker has been assessed in Section 11.8 of Volume 1 of the EA.

Blade glint is an aspect which can be a potential distraction to drivers if roads are aligned towards turbines. The effect can be noticed over considerable distances, but is usually very minor. Blade glint can be effectively and cost effectively managed through the use of matt coatings on the turbine blades.

Blade Glint has been assessed in Section 11.9 of Volume 1 of the EA.

**64. *Middlebrook and the Glen Ranges is currently a "Scenic Zone". This will not be the case after development. Please discuss.***

Zone 7(a) Environmental Protection "A" Scenic Zone is listed under the Scone LEP and covers part of the Glen Range on Middlebrook Station, as shown in Figure 4.2 of Volume 1 of the EA. All proposed works including installation of turbines and access tracks are permissible with consent under the Scone LEP.

In the revised layout (see Section 3) all turbines have been removed from this zoning, to comply with Aviation procedures at Scone Airport and to improve local amenity.

**65. *Aviation markers will be blinking simultaneously and prevent residences from sleeping properly. How will Pamada mitigate these impacts?***

CASA state that obstacle lighting has been used and accepted by Australia and countries all over the world. The effects of night lighting are difficult to ascertain and depend on vegetation, intervening topography and individual perceptions. The night lighting will be designed to minimize the potential for visual intrusion whilst meeting CASA's requirements.

CASA suggest correct alignment and shielding of lights to minimize impact.

**66. *Residences with "High" visual impact will have visual mitigation methods applied. These property owners have not been consulted. When is this planned and how will 150meter tall structures be erased from the skyline?***

The EA recognises that, while the perception of the look of a wind farm is a subjective experience and therefore varies from person to person, distance from the wind turbines and the exposure of the house to a view of the wind turbines can be used to classify the impact level. The sensitivity of areas with a view of the wind farm was also considered in the Visual Assessment.

The visual impact of the Kyoto Energy Park is for the greater part created by the wind turbines as a result of the scale and location of the structures. Areas are represented on the Visual Impact Map which illustrate the overall degree of visual impact on surrounding areas taking into consideration visual impact of the wind farm component. This map is referred to in Figure 11.4 of Volume 1 of the EA. The Visual Impact Map was prepared within a 20km radius surrounding the KEP sites to highlight areas that may require further consideration or detailed investigation. The map takes into account land use (Visual Sensitivity), visibility of turbines and distance from the turbines (Visual effect) to arrive at overall potentially impacted areas. The Visual Impact Map conservatively represents the area of affectation for the visual impact of turbines.

This map illustrates areas (defined as potential for highly visual impact) that will require further detailed investigation for determination if mitigation treatments at residencies is required. Technical assistance through community workshops may be required with planting in highly impacted properties. Some compensatory landscape treatments will be provided for households that are worst affected generally in Thompson's Creek Rd, Lower Sparkes Creek Rd, Dart Brook Rd and Middlebrook Rd, and Moobi (and adjacent) Rds, within highly impacted areas as defined by the Visual Impact Map. The additional removal of 8 turbines from Middlebrook Station (July 2009) would significantly reduce the overall visual impact on these areas.

Within 6 months of commencement of operations a preliminary assessment of homesteads will be undertaken by a specialist visual consultant to determine if visual treatments such as screen planting and integration are warranted. This is described in Section 11.7 of the EA and committed to in the SoC (see revised SoC Part D).

**67. Fencing can be damaged by placing trees on properties to reduce visual impact. Planting trees is not the best way. It will create more damage and maintenance for landowners.**

**68. How far away will tree screening be provided?**

Tree screening can be an effective method for reducing visual impact on a residence. Based on the scale of turbines screening at the site is not feasible. The assessment of worst affected homesteads would take into account orientation of the primary view zones, existing vegetative screening, shading, local suitable species, species preferences for landowners, fencing, growth and maintenance of trees etc. Integration and or screen planting at homesteads that have a primary view impacted and that experience high visual impact will be provided.

Within 6 months of commencement of operations a preliminary assessment of homesteads will be undertaken by a specialist visual consultant to determine if visual treatments such as screen planting and integration is warranted. Areas for consideration are residencies in the Thompson's Creek Rd, Lower Sparkes Creek Rd, Dart Brook Rd and Middlebrook Rd and to a lesser extent areas affected in vicinity of Moobi Rds and areas east of Mountain Station. As of July 2009 8 turbines have now been omitted from the proposal which will reduce the overall visual impact on these identified areas significantly.

**69. Concern that these are the largest wind farms and no one actually knows what they look like.**

A full description of wind turbine components, are provide in Section 2.2.1 of Volume 1 of the EA. Turbine models under consideration are listed in Section 2.2.4 of the EA. These are the models currently available within Australia and proposed for the KEP. The final turbine model selected would be based on availability of turbines (procurement contract), micro-siting specifications and would comply with Australian and International standards as well as the parameters of this EA.

**70. Scone Township is within the pink shaded area meaning 100% of the turbines will be visible. Doesn't this create too significant impact on the community?**

The Zones of Visual Influence (ZVI) are based on turbines heights of 150m above ground level, and topography alone to identify visual impact (i.e. no existing visual screening). When considering visual impact other factors are also taken into account from the orientation of the viewer. It is important to consider overall visual screening from viewer

locations as well as distance to turbines when considering overall visual impact from the Scone township. Scone town is located at least 9 to 10 kilometres from closest turbine positions and while visibility is high in some elevated areas west of the town, the increased distance to the turbines allows for a lesser visual effect. The ZVI is also conservative in that it assumes no buildings and foliage to restrict viewing passage up to the proposed sites.

## 12. Aviation

- 71. What impacts will the development have on the potential expansion of the Scone Airport?**  
**72. The Scone airport is important for the equine industry with horse breeders, investors, jockeys all using the airport to access Scone. Anything that impedes large planes access to the airstrip will reduce the attractiveness of the country town. Please provide comment.**  
**73. The Scone airport is likely to be closed if the wind farm is approved.**  
**74. Positioning of 7 turbines on Middlebrook station will affect landing procedures, missed approach paths, descent profile and minimum safety heights.**  
**75. The turbines on Middlebrook will affect the ability of instrumental landings by larger more sophisticated aircraft.**

Impacts from wind turbines in relation to Scone Airport are addressed in Section 1.3 and 1.4 of this submission.

## 13. Electromagnetic Interference (EMI)

- 76. What will Pamada do to ensure telephone, TV and radio signals aren't lost.**

Impacts on telecommunications and other electromagnetic signals are responded to in Section 1.2.9 –Electromagnetic Interference

## 14. Mineral Resource Sterilisation

- 77. Anglo Coal believe if Pamada utilise the transmission line connection through Dartbrook mine, this will reduce the ability to further mine coal from the Dartbrook mine.**

Option 3 connection to Dartbrook Mine was originally considered as an option for connection to the grid. This option was disregarded following limitations identified by Energy Australia. Dartbrook Mine has since expressed concerns with any line infrastructure on Anglo Coal land. Pamada are therefore not considering this as an option.

Preferred options for connection to the grid have not been revised and are summarised in Part A Section 1.2.15.

- 78. The renewable energy development will not halt the creep of mines up towards the UHSC.**

While mining is an important economic resource with the region it also consumes large amounts of natural resources and degrades viable agricultural land. Renewable energy generation would not fully displace conventional power generation at this stage but would supplement power supply to the region and provide opportunities for diversification of skills and green jobs. It is expected that the KEP proposal would produce enough electricity to power approximately 51,000 households each year.

## 15. Hydrology

## 16. Geology and Soils

## 17. Transportation and Traffic

- 79. Dust from transport will affect amenity along all transport routes. How will Pamada mitigate these**

<p><b>80. <i>impacts? Particularly in relation to dust on the Yarrandi Rd. An impact assessment should be prepared for the noise, and dust impacts on the Yarrandi Rd.</i></b></p> <p>See Part A Section 1.2.13.5</p>
<p><b>81. <i>Routes are inadequate for transport of turbines. Routes will need to be upgraded. Will these be paid for by Pamada and also all associated rehabilitation works post development?</i></b></p> <p>Routes are adequate for transportation of components. Existing heavy vehicle routes to Muswellbrook are well defined and provide sufficient capacity. Back routes shall be utilised to bypass rural centres for some components that are oversize or overmass. Transportation on these routes (for oversize and overmass components) will be subject to a special permit from the RTA. All other general sized heavy vehicles and light vehicles will use main networks which are at sufficient capacity.</p> <p>For further discussion please refer to Part A Section 1.2.13</p>
<p><b>82. <i>Gravel from the Braeside Quarry will need to go through town and has not been considered in traffic movements. This traffic will pass through Scone's largest residential areas as well as a school zone. How will this be managed?</i></b></p> <p>See Part A Section 1.2.13.6</p>
<p><b>83. <i>Judy Wheelers property will be affected significantly by the level of traffic and possibility of a batching plant near her house.</i></b></p> <p>The 'Airdrie' residence (Wheeler property) is located at the entrance to the Middlebrook Station quarry off Bunnan Road. The residence is located approximately 100m from the existing quarry road. Clifford quarries use this access to Bunnan Road. As part of the quarry management Clifford's water the road for dust suppression. A letter of request is also required to haul material on Saturday's.</p> <p>All existing conditions of consent for the Clifford quarry would be adhered to during construction of the KEP. Some additional truck movements would be expected past the Airdrie residence during civil works and pouring of foundations (expected over a 6 month period) however these will remain within the existing consent conditions of the quarry operations. These movements have been included in the EA that was submitted for public exhibition. There is a water cart currently used by Clifford Quarries to water this haul road and prevent dust at the Airdrie residence. In addition a water cart would be provided by KEP for dust suppression along this route and on all internal access tracks.</p>
<p><b>84. <i>During construction it states that hours of operation will be from 7am till 7pm. On top of local quarries of 7am till 4pm this means 13 hours of quarry and construction traffic past several houses. How can this be mitigated?</i></b></p> <p>Hours of operation are proposed from 7am to 7pm Mon-Fri and Saturday 7am to 1pm as described in Section 3.1.13 of Volume 1 of the EA.</p>
<p><b>18. Bushfire Risk</b></p>
<p><b>85. <i>Turbines have been known to start fires. What ways will Pamada mitigate these risks? Poor water resources are available in the near vicinity. Please discuss how Pamada plan to provide accessible water to be used to fight fires. During the drought water had to be sourced from town for fire fighting. It would seem there is inadequate water to provide for the additional risk of fire.</i></b></p> <p><b>86. <i>Prevailing winds will send any fires started by the turbines into Scone. How will this risk be mitigated?</i></b></p> <p><b>87. <i>Lightning strikes often hit the Glen Ranges and are likely to start fires with the turbines each holding 200-</i></b></p>

**400 litres of oil. Please provide comments to how these risks will be minimized.**

The risk of fire at wind farms is considered very low in relation to both fire damage to wind turbine generators and the potential for fire to be caused by the generators themselves. This is mainly due to the following factors:

- The flammable components are located high above the ground
- There is normally no vegetation around the base of the turbine towers
- High-voltage connections are underground
- Access tracks act as firebreaks and provide fire fighting access

To prevent bushfire incidents and reduce risk a Bush Fire Management Plan (BFMP) including a Bushfire Incident and Evacuation Plan would be prepared for construction and operations respectively. This plan would be prepared in consultation with the RFS and include measures for emergency fire fighting, maintenance and prevention and evacuation. Auditing would occur as part of the Project Environmental Management Plan. Emergency fire fighting water has been allowed for on site.

The turbines will be fitted with lightning protection, which is designed to effectively earth any lightning strike. The presence of lightning rods on the turbines would in fact reduce the general risk of wildfire at the site caused by lightning strikes. Relatively minor damage to turbines is expected from lightning strike. The risk of fires being caused by lightning strikes to turbines is remote.

In the event of a fire within a wind turbine or within the substation, the NSW Fire Brigade would have responsibility for control, with the RFS involved in a support role. These officers are trained in the control of structural fires and fires involving electrical infrastructure, which is relatively abundant in the district.

The NSW Fire Brigade, RFS and Council would be consulted regarding safety, communication, site access and response protocols in the event of a fire originating in the wind farm infrastructure, and also in the event of an external wildfire threatening the Energy Park.

**19. Transmission Line Connection to the Grid**

**88. Concern of easement for transmission lines routes and Pamada's ability to negotiate connection agreement with Energy Australia and a power purchase agreement. At what stage is the development at for such agreements and at what stage do they see connection approval/PPA being gained?**

Line route options for connection to the grid were identified in Section 19 of Volume 1 of the EA. In the EA two preferences for connection were identified as Option 2 and Option 4. Options 2 and 4 are still the most feasible options for connection following consideration of responses from government authorities and departments and also from community. A summary of current issues regarding Option 2 and 4 is discussed in Section 1.2.15. These options include provision for transmission line route across private land.

Private easements for transmission line route options have been identified in the EA. Discussions with landholders have been preliminary. Final negotiation of land easements would occur following selection of preferred the line route option.

Pamada have held lengthy discussions with key energy retailers regarding a Power Purchase Agreement (PPA) or off take agreement for sale of power. Further discussions would take place subject to approval from the Minister for the project. The objective would be to acquire a minimum of a 12 year agreement with minimum legislative risk and maximum value for the CPRS. While Pamada are at the level of revenue necessary to make KEP viable the PPA would not be finalised, documented and signed until the project receives approval.

Subject to receipt of approval Pamada would enter into contractual arrangements with Energy Australia for connection to the grid. A summary of the development phases are outlined in Section 3.4 of Volume 1 of the EA.

**89. Dartbrook Mine will not have any transmission lines over their land. No connection into the substation or**

*lines either.*

Dartbrook mine is managed by Anglo-Coal (Dartbrook Management Pty Ltd). Anglo Coal has expressed concerns over any connection or line work within their land. Pamada originally investigated an option for tee connection to the existing Dartbrook Mine switching station (Connection Option 3). Energy Australia has also expressed reservations with a tee connection at Dartbrook Mine due to fault level considerations at the Mitchell STS. Anglo Coal has rejected any transmission lines within their property.

**90. *Connection options are not strong and significant electrical losses detract from the long term viability of the project.***

Final line route options have taken into consideration landuse and planning, environmental impacts and connection points. Connection points have been determined based on technical merit including fault and thermal level considerations, capacity (i.e. strength of connection) and viability (line length, easements etc). Connection capacity limitations were investigated by Econnect Pty Ltd and are summarised in Table 19.0 of Volume 1 of the EA. Line losses is a commercial consideration which has been included in line assessments.

**91. *Line routes create visual impact and cross private landowner's properties. These landowners will not host power lines.***

Pamada have had preliminary discussions with some landowners over easements as discussed in Section 19.7.1 of Volume 1 of the EA. Final negotiations would take place once the preferred line route can be determined and prior to preparation of a grid connection agreement with Energy Australia.

**92. *Clear and definite routes for line options and whether there will be a substation on the Middlebrook Station site as well as Mountain Station***

There is no proposal for a substation at Middlebrook Station. Final connection and line route considerations are covered in Section 1.2.15 of this report.

**93. *Electricity is sent from turbines to Bunnan Rd substation then back where it came through to the Winters Rd. It seems a waste and the line should run into Scone substation as opposed to going back through the site.***

All generators are reticulated to a single substation on Mountain Station, prior to external connection to the grid. The substation has been located on Mountain Station in a cleared, flat and accessible location with low to negligible visual impact. Cumulative noise impacts from the substation conform to relevant noise guidelines.

Option 2 (see Figure 19.2 of Volume 1 of the EA) utilises Winters Rd for more direct access to Scone substation. There are still some land-use conflicts identified in this option (see Section 1.2.15)

**94. *What are the health impacts of living under 132 kV lines?***

**95. *Who is the correct authority to ensure that EMF monitoring and accountability are upheld according to the department's conditions of consent.***

**96. *Where does electro-magnetic frequency dissipate to?***

Wherever electrical equipment operates, electric and magnetic fields (EMF) are created in the surrounding environment. More recently, the question has been raised as to whether or not these fields may be harmful to human health. Despite extensive research and numerous public inquiries, adverse health effects have not been established, but the possibility has not been ruled out.

The main sources of EMF that will be associated with the proposed KEP will be the electrical equipment within the turbine structures, the substation and the interconnecting underground and overhead wiring. The fields associated with all of these items will be quite localised.

The potential for health effects from EMFs generated by HV power lines were investigated by Vemtec (see Appendix M of Volume 2 of the EA) and are summarised in Section 19.4.8 of Volume 1 of the EA. The proposed transmission line routes were inspected by Vemtec and Pamada for EMF compliance with national standards at nearest residencies along proposed 66kV and 132kV routes. The KEP proposal will also be distant from public areas and located on ridge tops that are only occasionally visited by landowners or public. The site substation is to be located at significant distance from Bunnan Road and Clifton Hills Estate.

The EMFs associated with the proposed wind farm will be well within the relevant health standards and, in many cases will be localised to areas not often frequented by people. On this basis, the possibility of human health effects due to EMF, is not considered to be an issue for the project.

## **20. Safety and Environmental Risk**

**97. *Please discuss the potential of anxiety and stress for locals arising from the development. Please refer to 'Wind Farm Syndrome' and best practices to mitigate the effects. It was suggested a study be undertaken by a local university to test the health impacts of living near a wind farm. Dr Nina Pierpont recommendations are that 3MW machines are 3-5km from any residential block. Please discuss Vibro-acoustic disease as part of response.***

For issues surrounding Infrasound and potential impacts from Wind Turbine Syndrome as raised by Dr Nina Pierpoint see Section 1.2.5.1.

**98. *A cumulative impact study should be undertaken based on the potential that the other wind farms be built around Scone. If this approval is the start of several more sites in the area birdlife and other impacts need to studies for the cumulative effects.***

Pamada are aware of other wind developers in the region however these proposed wind farm projects are outside the area of visual reference. The cumulative impacts based on details around other wind farm developments need to be assessed under subsequent applications. It is not possible for impacts to be derived without knowledge of proposals on other projects.

## PART C – MODIFICATIONS TO THE PROPOSAL

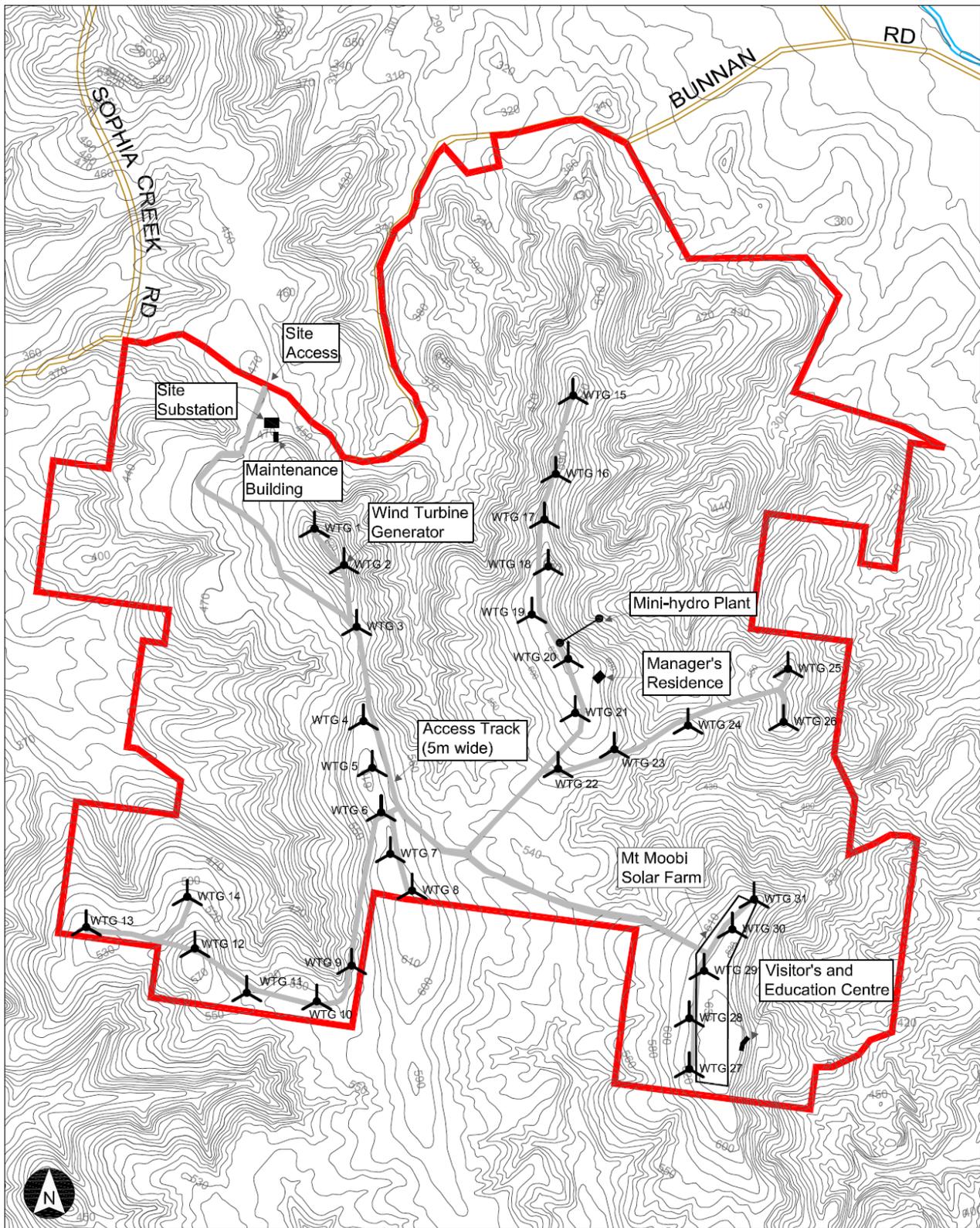
### 3.0 Preferred Layout

Following receipt of all public submissions and responses from Government authorities, a preferred layout is provided below. Based on further technical advice and investigation of impacts a total of 8 wind turbine generators (WTGs) have been removed from the EA proposal that was placed publically exhibited.

These 8 turbines have been removed from the Middlebrook Station site in close proximity to the Towarri National Park. The removal of these turbines would significantly reduce overall impacts from the proposal, listed as follows:

- Eight (8) turbines that were conflicting with PANS-OPS airspace at Scone aerodrome have been omitted from the proposal as advised by Airservices Australia (email dated 27 July 2009);
- By eliminating 8 turbines a total of 93% of anticipated vegetation disturbance will be avoided on Middlebrook Station. This will also conserve 100% of the EEC Community (3.9 ha) within the Middlebrook Station site adjacent to the Towarri National Park. Residual impacts associated with these turbines in proximity to Towarri National Park (and identified in the EA) have been reduced to a minimal residual impact;
- Residual impacts relating to bird and bat strikes from avian species to the adjacent Towarri National Park have been ameliorated;
- Residual impacts and concerns associated with connectivity of the Towarri National Park to the site;
- Reduction in the overall Visual effect of wind turbines and Visual Impact on residents identified in highly impacted areas, particularly south and directly west of Middlebrook Station and also directly east of Mountain Station. These areas have been identified as having the greatest degree of visual impact from turbines (see Figure 11.4 of Volume 1 of the EA –Visual Impact Map) and include areas generally in Thompson’s Creek Road, Lower Sparkes Creek Road, Dartbrook Road and also in the vicinity of Moobi Road.

Other issues have also been considered in submissions following exhibition of the EA and included in Part D Revised Statement of Commitments (SoC).



**Legend:**

- Property Boundary
- National Park/Nature Reserve
- Minor road
- Natural Contour (10m Interval)
- Natural Drainage

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0      0.5      1.5  
 Kilometres

**Kyoto energypark Proposed facilities (Mountain Station)**

**pamada A4**

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Figure 2.0 Final Layout of Proposed Facilities (Mountain Station)

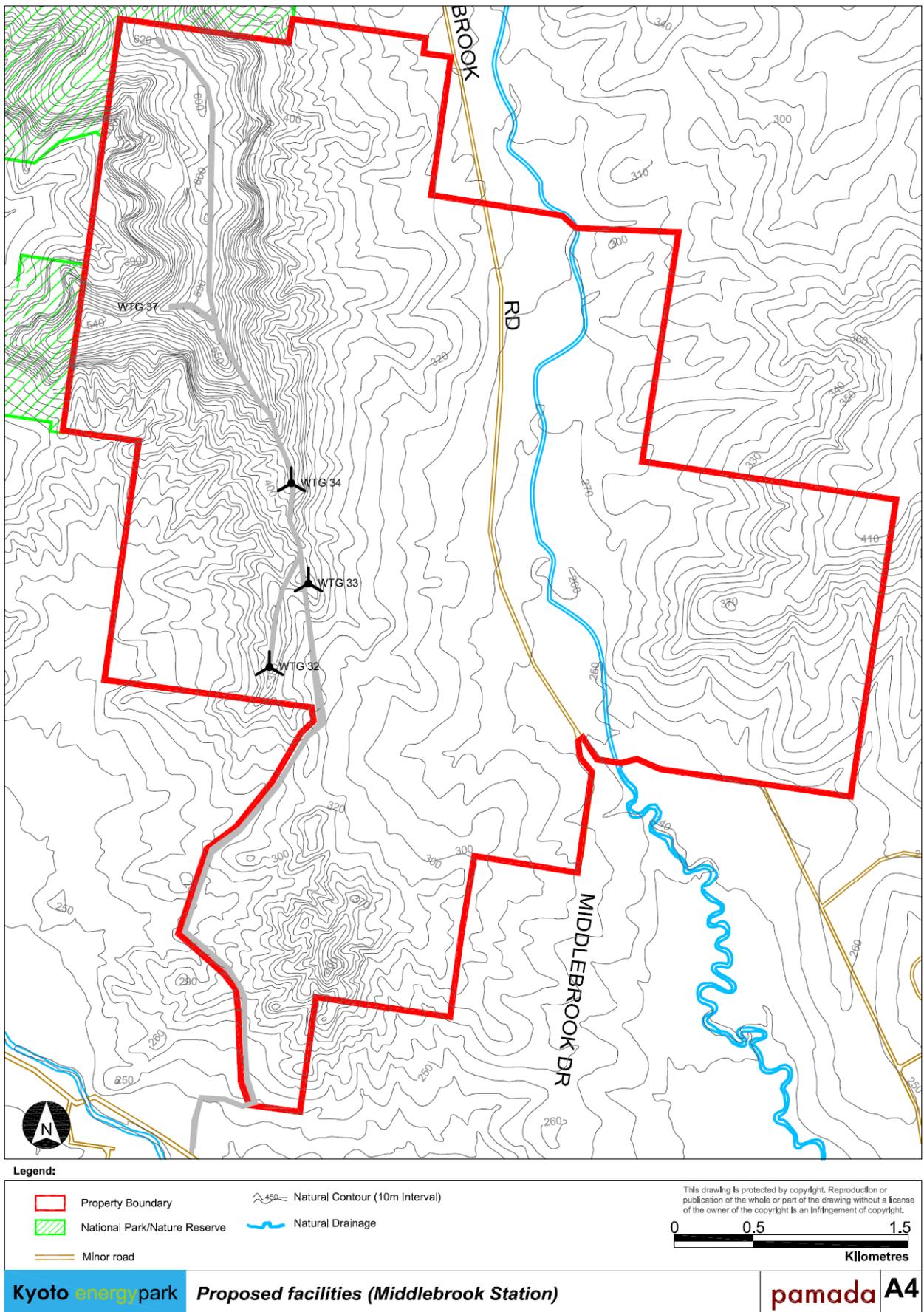


Figure 2.1 Final Layout of Proposed Facilities (Middlebrook Station)

### 3.1 Revised Scope of Works

The revised project application seeks approval for the construction and installation of the following eco-generating devices and associated facilities. Facilities on Mountain Station have not been amended in this submission. Facilities on Middlebrook Station have been amended as described below. These include the following components:

#### **Mountain Station**

- 31 x 2.1-3.0MW Wind Turbine Generators;
- 31 x Kiosk step-up transformers at base of turbines;
- Installation of a 3-10MW Solar Photovoltaic Plant on Mount Moobi (Mt Moobi Solar PV Farm);
- Installation of a 1MW Closed loop Mini Hydro-electric Plant;
- 1 x Site substation, Switchyard and Control room;
- Construction of internal access tracks and hardstand areas;
- A Maintenance shed;
- A Manager's residence;
- A Visitor's and Education Centre;
- 33kV underground internal reticulation cabling.

Proposed facilities on Mountain Station are illustrated in Figure 2.0.

#### **Middlebrook Station**

- 3 x 2.1-3.0MW Wind Turbine Generators;
- 3 x Kiosk step-up transformers at base of turbines
- 33kV underground cable network

Proposed facilities on Middlebrook Station (revised) are illustrated in Figure 2.1 above.

#### **Transmission line Connection to the Grid**

- Either a 66kV (Option 2) or 132 kV (Option 4) overhead transmission line to connection point to grid network;
- Construction of overhead 33kV transmission line for connection of Middlebrook Station turbines to Mountain station site substation;
- Construction of overhead communications lines for connection of Middlebrook Station turbines to Mountain station site substation.

Some temporary facilities will be required during the construction stage of the Kyoto Energy Park including a concrete batching plant, site offices and laydown area.

### 3.2 Conclusion

The Kyoto Energy Park proposal creates the opportunity to establish a sustainable energy market and provide renewable energy to regional electricity markets. Furthermore, it creates the opportunity to contribute to state-wide greenhouse reduction and renewable energy targets, whilst promoting long-term environmental benefits and increased economic activity within the region.

The investment of considerable funds during the construction and establishment of the Kyoto Energy Park will contribute to the creation of employment across a range of industries including construction, transport and manufacturing sectors. The most significant economic component of the

project will be during the manufacturing and construction phase. The total expected capital expenditure for the project is between 140 and 190 million dollars depending on the final Kyoto Energy Park overall capacity. It is estimated that the proportion of expenditure that may be captured domestically is in the order of 82 to 122 million dollars, representing a proportion of approximately 60% of total expenditure.

Existing tourism within the Upper Hunter is fragmented with major tourist activities and services occurring within the lower hunter region mainly off the back of the extensive wine industry. The location of the KEP project is anticipated to be a significant factor in 'green tourism' potential within the Upper Hunter. The KEP would represent the largest combined renewable energy park within the world (wind solar PV and mini-hydro) an expected large draw card for tourists to visit the region. The Upper Hunter Shire Council have already commented on the positive economic contribution from increased tourism generation in Scone.

Preparation of this submission has included specialist advice from external consultants involved in the original assessment in preparing these responses. This Preferred Project and Submissions Report fulfils the requirements of Section 75H of the Environmental Planning and Assessment Act 1979.

In consideration of the assessment of the impacts from the Project contained in the EA and this document and the proposed mitigation measures committed to in the revised Statement of Commitments, it is believed that all relevant issues and concerns have been addressed and that the Project should now proceed for approval by the Minister.

## PART D – REVISED STATEMENT OF COMMITMENTS (SoC)

A revised Statement of Commitments (SoC) table is included in this report and clearly identifies new and modified SoCs. Most of the questions received from government and community stakeholders regarding concerns were relevant to impacts associated with wind turbine structures and balance of plant. All of the impacts of the wind turbines and internal tracks, transmission line and electrical infrastructure were assessed in the EA and this submission.

In line with the statements of commitment already made and the new statements of commitment resulting from the further studies it is considered that impacts are consistent with the environmental assessment.

Table 4.0 Kyoto Energy Park (KEP) - Revised Statement of Commitments

Objective	Mitigation Measures	Responsibility
<b>Environmental Management Plans (EMPs)</b>		
Prepare Environmental Management Plans (EMPs)	<p><b>Environmental Management Plans (EMPs)</b> will be prepared and implemented by qualified environmental specialists for the construction and operation phases of the project to:</p> <ul style="list-style-type: none"> <li>• Confirm the intention to prevent, minimise, and/or offset adverse environmental impacts identified in this Environmental Assessment;</li> <li>• Establish minimum standards and performance measures and mechanisms to set such standards and performance measures for acceptable environmental performance;</li> <li>• Implement regular monitoring and reporting;</li> <li>• Provide for the overview for environmental management of the development.</li> </ul> <p>The Kyoto Energy Park EMPs shall consist of a <b>Construction Environmental Management Plan (CEMP)</b>, which shall be prepared prior to construction operations commencing on site, and an <b>Operational Environmental Management Plan (OEMP)</b>, which shall be prepared prior to operations commencing on site.</p>	EMPs (CEMP and OEMP) shall be prepared by suitably qualified consultants in accordance with the relevant guidelines and recommendations regarding mitigating measures.
<b>Sub-environmental Management Plans</b>		
Prepare sub- Environmental Management Plans	<p><b>CEMP sub plans</b> shall include:</p> <ul style="list-style-type: none"> <li>• Air Quality Management Plan</li> <li>• Flora and Fauna Management Plan;</li> <li>• Construction Noise Management Plan;</li> <li>• Erosion and Sedimentation Control Plan;</li> <li>• Bush Fire Management Plan including a Bushfire Incident and Evacuation Plan;</li> <li>• Spill Control Plan;</li> <li>• Waste Management Plan;</li> <li>• Near Neighbour Consultation Strategy;</li> <li>• Water Management Strategy;</li> </ul>	The CEMP and OEMP shall be prepared by suitably qualified consultants in accordance with the relevant guidelines and recommendations regarding mitigating

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• Greenhouse Gas Strategy;</li> <li>• Traffic and Transportation Management Plan;</li> <li>• Line Construction Management Plan;</li> <li>• Site Health &amp; Safety plan, for Construction</li> <li>• Site Restoration</li> </ul> <p><b>OEMP sub plans</b> shall include:</p> <ul style="list-style-type: none"> <li>• Air Quality Management Plan</li> <li>• Flora and Fauna Management Plan;                             <ul style="list-style-type: none"> <li>▪ Bird and Bat Monitoring Plan (sub-operational and Operational)</li> </ul> </li> <li>• Vegetation Management Plan</li> <li>• Noise Management Plan;</li> <li>• Erosion and Sedimentation Control Plan;</li> <li>• Bush Fire Management Plan including a Bushfire Incident and Evacuation Plan;</li> <li>• Spill Control Plan;</li> <li>• Waste Management Plan;</li> <li>• Water Management Strategy;</li> <li>• Traffic Management Plan;</li> <li>• Site Health &amp; Safety plan;</li> </ul>	measures.
<b>Monitoring and Auditing</b>		
Audit the implementation of the Statement of Commitments and Environmental Management Plans (EMPs)	An audit program will be developed as part of the environmental management plans. This will include regular auditing by qualified environmental consultants during construction and operation of the Kyoto Energy Park as well as internal auditing by contractors and Users.	The proponent commits to such audits as may be required for monitoring
<b>Statutory Planning</b>		
Implementation of Planning controls	<ul style="list-style-type: none"> <li>• If works are required within road reserves to allow for safe transportation of components to site will require consent under Section 138 of the Roads Act 1993.</li> <li>• A licence under the POEO Act will be required for operation of the temporary mobile Concrete Batching Plant at Mountain Station.</li> </ul>	The proponent commits to the implementation of these measures as detailed in the final design stage
<b>Project Management</b>		
Provide effective management during the Construction of the project	<p>Prior to commencement of construction The proponent shall prepare a <b>Project Management Plan</b> (PMP) to control overall management of the all aspects of the construction phase and safe delivery of the project. The PMP shall include:</p> <ul style="list-style-type: none"> <li>• Project details</li> </ul>	The proponent commits to the implementation of these measures

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• Project Management Structure and sub management plans</li> <li>• Environmental Management</li> <li>• Health and Safety</li> <li>• Marketing and Communication</li> <li>• Project review and reporting</li> </ul>	
<b>Air Quality</b>		
Minimise generation of dust and emissions	<p>An <b>Air Quality Management Plan</b> will be prepared as part of the environmental management plan to minimise the generation of dust and atmospheric emissions during the construction and operation of the Kyoto Energy Park. Measures will include:</p> <ul style="list-style-type: none"> <li>• Install and maintain erosion and sedimentation control structures Keep areas of open excavation to a minimum</li> <li>• Minimise stockpiling by coordinating excavation, spreading, regrading, compaction and importation activities</li> <li>• Apply water to active earthwork areas, stockpiles and loads of soil being transported to reduce dust.</li> <li>• Vegetate or cover stockpiles where material is to remain on site for a long period of time</li> <li>• Cease work if excess fugitive dust is observed, or phase down while the source is being actively investigated and suppression measures are implemented</li> <li>• Restrict traffic to defined roads and designated works areas to prevent damage to soils and erosion potential</li> <li>• Implement a speed limit on site and measures to control.</li> <li>• Remove soil adhering to the wheels and undercarriage of vehicles arriving and prior to departure from the site</li> <li>• Progressively landscape and revegetate areas as the construction activities proceed with locally grown species.</li> </ul>	The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP and associated monitoring
<b>Community Participation</b>		
Proactive community participation and awareness for efficient management during construction phase	<ul style="list-style-type: none"> <li>• Develop a <b>Near Neighbour Consultation Strategy</b> for ongoing proactive engagement and communication with surrounding and adjoining residents. Within this strategy, develop and implement policies which aim to increase project knowledge, increase information and staff accessibility, develop community-staff relations, create proactive engagement with residents, and establish strong relations with residents, especially those surrounding residents who may further require impacts to be directly mitigated or may further be affected by electricity connective infrastructure (i.e. Line easements, power lines</li> </ul>	The proponent commits to the implementation of these measures as detailed in the CEMP

Objective	Mitigation Measures	Responsibility
	<p>and connection upgrades).</p> <ul style="list-style-type: none"> <li>• Improve community knowledge and strategically relay project information to Scone residents. Develop a quarterly newsletter during construction to be distributed to surrounding residents, key community organisations and stakeholders, and that can be accessed via the Kyoto Energy Park website and be displayed on community noticeboards.</li> <li>• Inform near neighbours and residents, particularly those living on local traffic routes accessing the site roads to the site, of schedule plans, particularly when increased levels of traffic or noise are expected to cause a disturbance during construction periods.</li> <li>• Establish and maintain an experienced ‘Community Liaison/Relations Officer’ position throughout the application, construction and operational phases of the development. This will ensure the community has an ongoing and reliable ‘point of contact’ with on site Contractors and representatives of the proponent, allowing concerns and questions to be relayed from the community directly to the proponent.</li> <li>• The proponent will continue to operate the website which will be used to publicise information during construction and operational phases. A local number would be advertised in local newspapers and on the website during construction which would have access to site construction management for resolution of issues. Ongoing communication with all community stakeholders to ensure delivery on commitments resulting from the Environmental Assessment.</li> <li>• During the operation of the Kyoto Energy Park, the proponent would facilitate the formation of the <b>Moobi Foundation</b> managed by non politically-aligned community representatives selected from the Kyoto Energy Park Company, Upper Hunter Council, Scone Chamber of Commerce, Country Women’s Association and others as nominated. Through the Moobi Foundation it is proposed The Kyoto Energy Park Company would provide seed funding for on-going community and education programs. The allocation for funding and relevant programs would be decided by the members of the Moobi Foundation.</li> </ul>	
<b>Social and Economic considerations</b>		
<p>Utilise local and regional resources for economic benefits</p>	<ul style="list-style-type: none"> <li>• Promote Scone and the Upper Hunter region through the proposed Kyoto Energy Park and its associated activities, including tourism and education.</li> <li>• Utilise local and regional industries, businesses, resources and materials during both construction and operation,</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the</p>

Objective	Mitigation Measures	Responsibility
	<p>wherever possible, to enhance the local and regional economy.</p> <ul style="list-style-type: none"> <li>• Use local materials such as road base, concrete products etc where possible and feasible.</li> <li>• Promote local heritage, history and communities (Indigenous and non-Indigenous) through the on-site Visitors and Education Centre.</li> <li>• Minimise the impact of visiting groups, tourists and schools on local residents by restricting open hours of the Visitors and Education Centre.</li> </ul>	CEMP and OEMP
<b>Greenhouse gas emissions</b>		
Reducing overall GHG production during the construction and operation periods	<p>A <b>Greenhouse Gas Strategy</b> shall be prepared to</p> <ul style="list-style-type: none"> <li>• Review site greenhouse generating activities</li> <li>• Minimise potential greenhouse gas generation from construction and operational activities</li> <li>• Investigate management procedures for site energy efficiency</li> <li>• Outline management procedures for on-site recycling and material reuse</li> </ul> <p>The GHGS shall include the following considerations:</p> <ul style="list-style-type: none"> <li>• Work scheduling and methods that minimise equipment idle time and double handling of material</li> <li>• Switching off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded. Throttle down or switch off idle construction equipment</li> <li>• Ensure equipment is of a proper standard and not defective and maintained to ensure efficient energy consumption. Regularly maintain equipment to ensure it remains in good condition</li> <li>• Switch off site office equipment and lights after hours and using minimal lighting intensity for security purposes</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p> <p>Comply with mitigation measures in GHGS</p>
<b>Flora &amp; Fauna</b>		
	<p>Subject to receipt of approval for the project The proponent will engage a suitably qualified consultant to prepare a <b>Flora and Fauna Management Plan (FFMP)</b>. The FFMP shall include measures to protect and enhance flora and fauna during construction and operational phases of the project. The FFMP shall also include a separate:</p>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p>

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• Bird and Bat Monitoring Plan</li> <li>• Vegetation Management Plan</li> </ul>	
<p><b>A. Bird and Bat Monitoring Plan</b></p>	<p>Commence an <b>Adaptive Bird and Bat Monitoring program</b> in two parts:</p> <ul style="list-style-type: none"> <li>• pre-operational</li> <li>• operational</li> </ul> <p>Bird and Bat Monitoring procedures are to be included in the EMP in relation to threatened fauna species (<i>Glossy Black-Cockatoo, Grey-crowned Babbler, Spectacled Warbler, Grey-headed Flying-fox, Yellow-bellied Sheath tail-bat, Eastern Bentwing-bat and Eastern Cave Bat</i>).</p> <p>The Bird and Bat Monitoring will also target ‘species of concern’ and particularly will be completed to include information as per Level 3 investigations for impacts on Wedge-tailed Eagle and Nankeen Kestrel. This will include population assessments and viability analysis in analysing risks and management for identified ‘Species of Concern’ under Auswind guidelines.</p> <p>Other measures shall include:</p> <ul style="list-style-type: none"> <li>• Reduction of bird activity near turbines through the following measures:</li> <li>• Removing road kill resulting from construction work which would otherwise attack birds of prey</li> <li>• Stopping visitors to the site feeding birds.</li> <li>• Any grain feeding of stock to be well away from turbines</li> <li>• Control vermin (e.g. rabbits) on site to reduce attractiveness to birds of prey,</li> <li>• During lambing remove any dead lambs from the vicinity of the wind turbine structures as a precaution</li> <li>• Where possible add bird averters to overhead wires in the vicinity of the site</li> <li>• Minimise external lighting of buildings or structures required for aviation safety (in accordance with CASA). Exterior lighting to the Managers residence and Visitors and Education Centre to be motion-activated.</li> <li>• Monitor research and mitigation at other wind farms to introduce effective measures to mitigate</li> <li>• impacts on avifauna</li> <li>• Limit the operation of turbines which are causing unacceptable impacts. Implement a control measure to be</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the OEMP</p> <p>Address via monitoring during operational phase, in terms of EMP Monitoring as per the Bird and Bat Monitoring Program recommendation and amelioration measures.</p>

Objective	Mitigation Measures	Responsibility
	able to turn off offending turbine during peak bird strike times, based on adaptive monitoring.	
<b>B. Vegetation Management Plan</b>		
Protect and retain existing vegetation	<p>Components of the <b>Vegetation Management Plan</b> shall include:</p> <ul style="list-style-type: none"> <li>• Monitoring procedures are to be included in the EMP in relation to threatened flora population (<i>Cymbidium canaliculatum</i>), and endangered ecological community EEC (<i>White Box - Yellow Box - Blakely's Red Gum Woodland</i>).</li> <li>• Areas of the EEC shall be protected and retained during construction and operation phases of the project. Existing vegetation extents of the EEC will be protected from localises site works during construction operations. New fencing must allow for movement of mammals such as wombats and echidnas across the ridge and between vegetation stands on the lower foothills and gullies either side of the ridge. Fencing should not prohibit current access to water sources.</li> <li>• Any screening works or landscaping in close proximity to the turbines are not to include specific habitat of birds identified in the Bird Impact Assessment</li> <li>• Existing access tracks are to be utilised at all times as part of the site design in accordance with minimising vegetation removal impacts. Only areas designated in the Environmental Assessment are to be used for works areas.</li> <li>• Existing access tracks are to be upgraded and shall be used to minimise vegetation removal.</li> <li>• A weed control program will be implemented at both sites, particularly within and adjacent to areas disturbed as part of the proposal.</li> <li>• Avoid prolonged exposure or earth through adequate timing and scheduling of construction activities.</li> <li>• Revegetate exposed areas as a priority and use appropriately sized local native species.</li> <li>• Minimise footprint of turbine sites, access roads and buildings, avoid sensitive areas, minimise soil disturbance and erosion.</li> <li>• Restoration and rehabilitation of all works areas including stabilisation replanting and regrassing: <ul style="list-style-type: none"> <li>- Crane hardstand areas</li> <li>- Site works areas and construction facilities</li> <li>- Vegetation screening identified in visual assessment</li> <li>- Revegetation will use plants and grasses grown from seed</li> </ul> </li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p> <p>EMP to include monitoring procedures in relation to threatened flora population; threatened fauna species and; endangered ecological community.</p>

Objective	Mitigation Measures	Responsibility
	<p>collected locally in plantings</p> <ul style="list-style-type: none"> <li>- A vegetation offset strategy will be developed to compensate for the selective removal of the EEC (<i>White Box - Yellow Box - Blakely's Red Gum Woodland vegetation community</i>). This will include vegetation management planning strategies within offset areas and adjacent to site facilities and focus on retaining and restoring areas of the EEC for regrowth. This may include excluding stock to allow for regrowth, restocking and other measures that are deemed suitable. These areas shall be identified by a suitably qualified consultant to determine areas of the EEC to retain.</li> </ul>	
<b>Indigenous Heritage Issues</b>		
<p>Protection of existing Indigenous Heritage cultural significance of sites</p>	<p>Final design stages of the project will need to consider the following:</p> <ul style="list-style-type: none"> <li>• If current wind turbine positions are moved during final design and micro siting analysis, then Aboriginal Stakeholders (identified in the Aboriginal Impact Assessment) shall be consulted and invited to inspect the new turbine sites for Aboriginal objects. If Aboriginal objects are discovered then turbines will be moved or appropriate measures taken in accordance with relevant legislation.</li> <li>• If Aboriginal Objects are discovered during ground disturbance works, then all work shall cease and appropriate mitigation strategies for the area shall be developed in consultation with the Aboriginal Stakeholders.</li> <li>• The proponent shall enter into a binding agreement with the registered Aboriginal communities prior to construction regarding Aboriginal Cultural heritage and enhancement of Aboriginal Cultural value in the area.</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p>
<b>European Heritage Issues</b>		
<p>Protection of existing European Heritage cultural significance along transmission line routes.</p>	<p>Final design stages of the project will need to consider the following:</p> <ul style="list-style-type: none"> <li>• There are no items of heritage significance located on the Middlebrook and Mountain Station properties. All impacts to existing buildings, shearing shed and impacts to the stockyards on site will be avoided during construction and operation.</li> <li>• The preferred route for connection of the Kyoto Energy Park to the grid has not been decided. If the line routes identified in the report change then further assessment will be required to ensure there is no impact on "known items" of heritage.</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p>

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>If Option 2 (transmission line route) is selected then protection and avoidance of the petrified stump along the road edge of Moobi road will be required. Final design of the pole locations are to ensure the maximum distance possible from the stump.</li> </ul>	
<b>Noise Issues</b>		
<p>Comply with noise criteria, and minimise noise during construction and operation phases.</p>	<p>Development of a <b>Operational Noise Management Plan</b> to include:</p> <ul style="list-style-type: none"> <li>A four (4) metre high grassed earth bund wall shall be constructed around the north east corner of site substation to ensure noise compliance.</li> <li>Sector Management of Wind turbines 27,28,29,30 and 31 in adverse wind conditions to maintain noise levels at "Peakhill" property to within noise levels. Sector management would involve programming the turbines to "ramp down" under offending wind conditions.</li> <li>Sector management may also be required for Wind turbines 27,28,29,30 and 31 in adverse wind conditions and when the average wind shear coefficient across the turbine rotor height is greater than 0.2. Mini hydro plant to be limited to a SWL noise emission at source to below 120dB(A).</li> <li>Noise monitoring at sensitive locations to be determined in the vicinity of the sites.</li> <li>Wind Turbine Generators selected to have a maximum Sound Power Level (SPL) &lt; or equal to 104.3 dB(A).</li> <li>Noise compliance monitoring to be undertaken within the first 6 months of commencement of operations.</li> </ul> <p>Monitoring of noise at the Managers Residence to in accordance with the Site OH&amp;S Plan. Development of a <b>Construction Noise Management Plan</b> to include:</p> <ul style="list-style-type: none"> <li>Construction noise expected to comply with DECC criteria.</li> <li>onsite construction activities</li> <li>construction of overhead lines/poles external to the site within 200m residencies</li> <li>Community information during construction. Including scheduled activities involving potential noise exceedances.</li> <li>Ensure equipment noise emissions are in accordance with those criteria modelled in the noise assessment by Wilkinson Murray.</li> <li>Educate staff and contractors about noise and quiet work practices.</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP</p> <p>Address in terms of Construction Noise Management Plan</p> <p>Actions controlled by environmental officer/acoustic consultant during construction activities</p>



Objective	Mitigation Measures	Responsibility
	<p>colour contrast.</p> <ul style="list-style-type: none"> <li>Maintain revegetation on disturbed areas to reduce visual impact.</li> </ul> <p><b>Buildings (Manager's residence, Visitor's and Education Centre, Maintenance shed)</b></p> <ul style="list-style-type: none"> <li>Design of site building facilities shall fit in with rural nature of locality. Final design of facilities should include materials selection, general form and profile.</li> <li>Managers residence and Visitors and Education Centre to have a maximum height of 8m above ground level</li> <li>Building roof to create overhang to create shadow effect on external walls</li> <li>Design and colouring of building elements to achieve minimum contrast with existing colours of receiving landscape</li> <li>Painting with environmentally compatible colours with variety to assist in visually modulating building</li> <li>Supplementary planting to provide integration elements both in front of and behind built form elements</li> </ul> <p>Visual treatments implemented external to the site will include:</p> <p><b>External Transmission Lines for Connection to the Grid</b></p> <p>Treatments to increase visual integration and decrease visibility to sensitive viewing locations include:</p> <ul style="list-style-type: none"> <li>Replacement of old timber poles with new timber or new concrete poles as determined in final line and pole configuration design.</li> <li>Existing distribution circuits are to be placed on the new transmission line poles</li> <li>At viewer locations integration planting should be undertaken as needed in areas such as highly affected rural homesteads,</li> <li>Supplementary planting to occur along alignments within town settings and approaches to achieve visual integration of the transmission line structures.</li> </ul> <p><b>Visual treatments at residencies</b></p> <ul style="list-style-type: none"> <li>Integration and or screen planting at homesteads that have a primary view impacted and that experience high visual impact will be provided.</li> <li>Prior to commencement of operations the existing Visual Impact Map (<i>Figure 11.4-Visual Impact Map of Vol 1 of the EA</i>) shall be updated to identify extent of highly impacted areas.</li> </ul>	

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• Within 6 months of commencement of operations a preliminary assessment of residencies within these highly impacted areas, will be undertaken by a specialist visual consultant to determine if visual treatments such as screen planting and integration is warranted.</li> <li>• Technical assistance through workshops may be required with planting assistance in highly impacted properties. Compensatory landscape treatments will be provided for households that are for worst affected within the highly impacted areas as defined by <i>Figure 11.4 Visual Impact Map of Vol 1 of the EA</i>.</li> </ul>	
<b>Aviation Issues</b>		
<p>Manage aviation risks in accordance with requirements from CASA and Air Services Australia.</p>	<p>The following issues shall be resolved prior to construction:</p> <ul style="list-style-type: none"> <li>• Subject to approval notification of final turbine design and layout , and construction program are to be supplied to CASA to update aeronautical charts</li> <li>• Prepare an Obstacle Lighting Plan in accordance with CASA Advisory Circular AC 139-18(0) titled “Obstacle Marking and Lighting of Wind Farms”. The Obstacle Lighting Plan must be approved by CASA prior to commencement of construction.</li> </ul>	<p>The proponent to comply with CASA directions regulations and recommendations.</p>
<b>Electromagnetic Interference (EMI)</b>		
	<ul style="list-style-type: none"> <li>• The proponent will conduct a final assessment of ‘potentially affected residencies’ during operational period within 1 year of full operation of wind turbine generators of the Kyoto Energy Park.</li> <li>• Radio communication licenses identified in the ACMA database will not be impacted however will be contacted as part of the wider community consultation process prior to and after commencement of wind turbine operations to determine if signals are affected. If radio signal interference is identified it would be rectified by the proponent.</li> <li>• Low frequency radio links associated with emergency service organisations will not be impacted upon however will be contacted as part of the wider consultation process.</li> <li>• These Emergency service licenses for the following: <ul style="list-style-type: none"> <li>• Fire service</li> <li>• Ambulance service</li> <li>• Police service</li> <li>• SES – State emergency services</li> </ul> </li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the final design stage CEMP and OEMP</p>

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• A preliminary assessment of residencies within the areas represented in Figure 6 of the Garrad Hassan EMI report will be undertaken prior to wind farm operation. As television interference from wind turbines is readily identifiable, appropriate mitigation measures (discussed below) can be readily taken if required. Should household TV interference be observed in potentially affected areas (Figure 6) after 1 year of commissioning of wind turbines, options for reinstatement of TV signals will be assessed by a suitably qualified person. Rectification may include: <ul style="list-style-type: none"> <li>• Pointing the householders TV antenna directly towards their existing transmitter;</li> <li>• The installation of more directional and/or higher gain antenna at the affected residences;</li> <li>• Relocating the antenna to a less affected position;</li> <li>• The installation of a digital set top box (and UHF antenna if required);</li> <li>• The installation of cable/satellite TV at the affected residences;</li> <li>• Installation of a TV relay station.</li> </ul> </li> </ul>	
<b>Geology and Soils</b>		
	<p>An <b>Erosion and Sedimentation Control Plan</b> will be prepared prior for construction and operation stages of the Kyoto Energy Park. Erosion and sedimentation control measures will include the following specific requirements for the Mountain and Middlebrook Station sites:</p> <ul style="list-style-type: none"> <li>• Access tracks are to have sufficient cross-fall gradient to allow runoff into the swale drains designated as stormwater controls.</li> <li>• Site substation design to allow for rainfall collection from control facility to provide internal supplies. Overflow from the water supply tank to be directed to avoid scouring. A concrete bund will be designed around the substation as a risk control measure to prevent leaks and spill entering drainage lines.</li> <li>• Preparation and implementation of a <b>Water Management Strategy</b> to ensure water is conserved and recycled wherever possible during both construction and operation and that water quantity impacts are contained within the site.</li> <li>• Install temporary diversion drains to divert potentially hazardous surface waters from the development site of sedimentation basins. Diversion drains shall be placed on the immediate downside of any construction works, on one</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the final design stage CEMP and OEMP</p>

Objective	Mitigation Measures	Responsibility
	<p>or both sides of the ridge as necessary, following natural slopes.</p> <ul style="list-style-type: none"> <li>• Energy dissipaters should be placed at appropriate intervals along the length of these drains to minimise erosion.</li> <li>• Construct temporary sedimentation basins in low-lying areas along the length of the construction sites at the location of each turbine and at all other construction sites. The basins serve as points of discharge into natural drainage paths during operation, and should be cleaned out and modified as appropriate following the completion of construction.</li> <li>• The basins would collect excess surface runoff from all developed areas including the proposed roadway along the ridgeline. Sedimentation basins should be constructed to a size relative to the catchment area.</li> <li>• Construct sediment fences below the construction site and access roads and temporary drainage system on one or both sides of the ridge as necessary, for the length of the site.</li> <li>• Limit vegetation removal and remove vegetation progressively to limit the area and duration that soils are exposed.</li> <li>• Progressively rehabilitate or stabilise disturbed areas to prevent erosion.</li> <li>• Minimise use of surplus stockpiles. Upgrading of access tracks are to be scheduled to reduce transportation of fill around site and minimise stockpiling of material. Excavation works are to be staged with fill works outside of the fenced construction compound.</li> <li>• Install silt fencing around stockpiles outside of the fenced site compound to contain sediment.</li> <li>• Cover or vegetate stockpiles where material is required for long periods.</li> <li>• Place stockpiles clear of drainage lines, natural watercourses, road surfaces and established trees.</li> <li>• Remove stockpiles as soon as possible. Regularly inspect all erosion and sedimentation control devices during construction period to ensure their continued effectiveness.</li> <li>• A bunded designated refuelling area shall be located adjacent to the site office compound located at no greater than 100 m from the nearest drainage line.</li> <li>• Provide spill kits on site during construction. Wherever possible construction water for dust suppression and</li> </ul>	

Objective	Mitigation Measures	Responsibility
	<p>firefighting will be obtained from on site farm dams on Middlebrook and Mountain Stations. If no water is available from dams or stormwater structures water will be obtained from an external water body or from an external water supplier.</p> <ul style="list-style-type: none"> <li>• Ensure portable toilet facilities are located more than 100 m from drainage lines.</li> <li>• Use licensed supply and disposal contractor to manage and dispose of all wastewater from portable toilet facilities.</li> <li>• Provide facilities to temporarily store and infiltrate collected surface runoff from all impervious and developed areas through the use of vegetated swale drains. The placement of these swale drains shall be below the Kyoto Energy Park site on either side of the ridgeline, as necessary. The system will take advantage of natural landforms and levels developed in the construction of the wind turbines and access road.</li> <li>• Revegetate swales with native species with a preference to species that are known to have good pollutant uptake facilities and some low pH tolerance.</li> <li>• Direct excess flow from grassy swales into low-lying areas and through energy dissipation devices before being directed into natural drainage courses.</li> <li>• Remove the existing topsoil layer from infiltration areas (if required) and replace with a sandy organic topsoil mix (0.5m maximum thickness) to increase infiltration and promote vegetation growth.</li> </ul>	
<b>Traffic and Transportation Issues</b>		
	<p>Appointment of experienced haulage contractor, responsible for all aspects of equipment transportation to site.</p> <p>Preparation of a <b>Traffic and Transportation Management Plan</b> including:</p> <ul style="list-style-type: none"> <li>• Design and construction of site tracks to ensure safe and stable activities</li> <li>• Community consultation program to be undertaken throughout transport activities, to ensure residents are informed on program, timing and management</li> <li>• Implementation of controls in TMP to manage traffic on and off-site to minimise impacts on local traffic flows, and impacts on site, eg through designated routes, speed limits, scheduling, maintenance etc.</li> <li>• Handling as per manufacturer's instructions and port requirements.</li> <li>• Special permits are required for all oversize and overmass</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the final design stage CEMP and OEMP</p>

Objective	Mitigation Measures	Responsibility
	<p>components prior to transportation issued by the RTA.</p> <ul style="list-style-type: none"> <li>• Handling and road movement in conformity with RTA licences/permits and NSW Police for oversize and overmass items, which may include surveys, inspections and dilapidation surveys.</li> <li>• Any dilapidation surveys shall include inspection of oversize and overmass routes prior to construction and following completion of construction. Any damage identified in these surveys shall be rectified by the proponent.</li> <li>• Construction and safety management procedures during construction</li> </ul>	
<b>Bushfire Risk Management Issues</b>		
Design measures to reduce bushfire risk.	A <b>Bush Fire Management Plan</b> including a <b>Bushfire Incident and Evacuation Plan</b> shall be prepared prior to construction and operational stages as applicable	The proponent commits to the implementation of these measures as detailed in the CEMP and OEMP
On-going management to prevent build up of combustible fuel.	The BFMP would be designed by a suitably qualified Bushfire Consultant in consultation with the Rural Fire Service (RFS) and to the satisfaction of the Department of Lands where applicable.	
Safe and effective Emergency procedures	<p>Measures adopted shall include:</p> <ul style="list-style-type: none"> <li>• Asset protection zones (APZs) are to be provided and maintained for the Managers Residence and the Visitors and Education Centre. APZs shall take the form of Inner Protection Areas, measured from the exposed wall of the any dwellings. The APZs shall be as nominated in Tables 1 &amp; 2 of the Bushfire Protection Assessment (Conacher Environmental Group August 2007).</li> <li>• Fuel management within the asset protection zones will be maintained by regular maintenance of the landscaped areas / mowing of lawns in accordance with the guidelines provided in Appendix 1, and or as generally advised by Rural Fire Service in their publications.</li> <li>• Construction standards as per Australian Standard AS3959 'Construction of Buildings in Bushfire Prone Areas', in accordance with Part 2.3.4 of the 'Building Code of Australia', will apply to all proximate dwellings to the APZs.</li> <li>• Wind turbine Generators (WTGs 32,33,34) on Middlebrook Station will be installed with internal fire detection and retardation systems as per the manufacturer's guidelines.</li> <li>• Wind turbine Generators (WTGs 15,16,17) on Mountain Station will be installed with internal fire detection and retardation systems as per the manufacturer's guidelines.</li> </ul>	Actions recorded and monitored in terms of CEMP at commissioning.

Objective	Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> <li>• Roof gutters and valleys to all dwellings proximate to the asset protection zones should be leaf proofed by the installation of an external gutter protection shroud or a gutter system that denies all leaves from entering the gutter and building up on that gutter. Any material used in such a system should have a flammability index of no greater than 5 (as measured against AS 1530.2).</li> <li>• A minimum 10,000 litre water tank will be required for the: <ul style="list-style-type: none"> <li>a) Managers residence and;</li> <li>b) Visitors and Education Centre</li> </ul> <p>used solely for the purposes of bush fire fighting. The tank is to be constructed of concrete or metal and if on a stand they is to be protected. A suitable connection for fire fighting purposes is required. A 65mm Storz outlet with a Gate or Ball valve must be provided. All pipes are to be metal and pumps are to be protected.</p> </li> <li>• On-going vegetation and fuel management in consultation with the NSW Rural Fire Service</li> <li>• Compliance with relevant standards for equipment design and construction</li> <li>• Compliance with relevant standards for electrical safety and electromagnetic emissions for equipment design, installation and maintenance</li> <li>• The BEP will provide a procedure in the event of fires threatening the development complex, thus allowing the managers of the site to provide an orderly and well-trained approach to the use of fire protection equipment and the evacuation of the residents / visitors.</li> <li>• The management of all 'hot work' activities</li> </ul>	
<b>Transmission Line Connection to Electricity Grid</b>		
<p>Compliance with environmental criteria and effective management of these criteria during construction of line works external to the sites.</p>	<p>Once the preferred line route has been determined final design of the line and configuration shall be undertaken with the following considerations:</p> <ul style="list-style-type: none"> <li>• A detailed network system design for electrical connection considerations in accordance with Energy Australia requirements</li> <li>• easements for line routes over private land to bypass built up areas and improve safety;</li> <li>• line design configuration generally in accordance with specifications and diagrams in the Vemtec report Overhead Power Line Route Review dated April 2008 and this Environmental Assessment .</li> <li>• line design considerations in accordance with Energy</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the final design of the line route in accordance with Energy Australia design specifications.</p>

Objective	Mitigation Measures	Responsibility
	<p>Australia design parameters and this Environmental Assessment</p> <ul style="list-style-type: none"> <li>• New power poles within an existing mine subsidence area are to be designed in accordance with Energy Australia Standards for Mine subsidence.</li> </ul> <p>A <b>Line Construction Management Plan</b> shall be prepared prior to commencement of transmission line construction works. The LCMP will be implemented for line construction works to minimise the impacts from line construction operations on the local community, surrounding properties and effected landowners. The LCMP will take into consideration the following issues:</p> <ul style="list-style-type: none"> <li>• any seasonal or other land access restrictions likely to influence construction activities;</li> <li>• logistics and materials storage considerations;</li> <li>• line construction over private land easements;</li> <li>• minimising both the number and duration of disruptions to the power supplies of customers affected by the construction works;</li> <li>• During the line construction affected land owners and the broader community will be informed of key project planning and construction activities, by periodic correspondence and/or local media announcements.</li> </ul>	<p>Actions recorded and monitored in terms of CEMP at commissioning.</p>
<b>Safety and Risk</b>		
	<ul style="list-style-type: none"> <li>• Development and implementation of a <b>Site Health &amp; Safety Plan</b>, for construction and operation activities</li> <li>• Handling of all components including oversize and overmass components as per manufacturer’s instructions and port requirements.</li> <li>• Handling and road movement in conformity with RTA licences/permits for oversize and overmass items.</li> <li>• Construction and safety management procedures during construction</li> </ul>	<p>The proponent commits to the implementation of these measures as detailed in the final design stage CEMP and OEMP</p>

## **PART E GLOSSARY OF TERMS & ABBREVIATIONS**

<b>APZ</b>	Asset Protection Zone
<b>BRMP</b>	Bushfire Risk Management Plan
<b>CASA</b>	Civil Aviation Safety Authority
<b>CEMP</b>	Construction Environmental Management Plan
<b>DECC</b>	Department of Environment and Conservation
<b>DoP</b>	NSW Department of Planning
<b>EA</b>	Environmental Assessment
<b>EMP</b>	Environmental Management Plan
<b>EMI</b>	Electro Magnetic interference
<b>EMF</b>	Electro Magnetic Field
<b>GHG</b>	Greenhouse Gases
<b>HV</b>	High Voltage Network
<b>KEP</b>	Kyoto Energy Park Score
<b>LEP</b>	Local Environmental Plan
<b>LGA</b>	Local Government Area
<b>LV</b>	Low Voltage Network
<b>MRET</b>	Mandatory Renewable Energy Target
<b>MW</b>	Mega Watt (One Million Watts)
<b>MWh</b>	Mega Watt Hour
<b>NEM</b>	The National Electricity Market
<b>NEMMCO</b>	The National Electricity Market Management Company
<b>NPWS</b>	NSW National Parks and Wildlife Service
<b>OEMP</b>	Operation Environmental Management Plan
<b>RECs</b>	Renewable Energy Certificates
<b>RFS</b>	Rural Fire Services
<b>TMP</b>	Traffic Management Plan
<b>UHSC</b>	Upper Hunter Shire Council