PREFERRED PROJECT AND SUBMISSIONS REPORT

SILVERTON WIND FARM DEVELOPMENTS

RENEWABLE ENERGY SOLUTIONS FOR NSW

This Preferred Project and Submissions Report has been prepared by Silverton Wind Farm Developments with the assistance of ngh environmental.
January 2009

1 PREFERRED PROJECT AND SUBMISSIONS REPORT

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INTRODUCTION

1. INTRODUCTION

The Silverton Wind Farm is a utility scale wind farm proposal, near Broken Hill in outback New South Wales. It would be developed by Silverton Wind Farm Developments Pty Ltd (the 'Proponent'), a special purpose vehicle jointly owned by Epuron Pty Ltd and Macquarie Capital Wind Fund Pty Ltd.

As the proposed wind farm would involve a capital cost in excess of A$30million, the Proposal is to be assessed as a Part 3A Major Project, under the *NSW Environmental Planning and Assessment Act 1979*. The Proposal is considered Critical Infrastructure under this Act, as it is a power generator with capacity to generate in excess of 250 megawatts.

The Proponent is seeking Project approval for the construction and operation of works associated with Stage 1 of the proposed development and concept approval for all construction and operational works associated with Stage 2.

This Preferred Project Report and Submissions Report has been prepared by Silverton Wind Farm Developments Pty Ltd, with the assistance of **ngh**environmental and specialist consultants.

The Environmental Assessment (EA) was lodged with the Department of Planning in May 2008 and has recently completed the public exhibition period.

This report describes an update to the Stage 1 area for which Project approval is sought and attached as appendices are the further biodiversity and archaeology reports to support this extension of the Stage 1 Project approval area. It then addresses the submissions received in light of the preferred Project.

The Proponent notes that the preferred Project is essentially consistent with the publicly exhibited EA in relation to the order of magnitude of the wind farm proposal, local environmental characteristics, potential impacts from the Proposal, approach and methodology of the further assessments and the proposed mitigation measures.

The additional assessments appended to this report demonstrate the same approach has been applied to the extended Stage 1 area. It identifies that the impacts and mitigation are similar to those described in the publicly exhibited EA.

1.1 PURPOSE OF THIS REPORT

Following public exhibition of the Silverton Wind Farm EA, the Department of Planning provided the submissions received to the Proponent to respond to the issues raised in accordance with Section 75H of the *NSW Environmental and Planning Assessment Act 1979*. The Proponent has considered the issues raised in the submissions and has prepared a Preferred Project and Submissions Report in response.

This Report has a dual purpose:

- Redefine the Stage 1 area which is the subject of Project approval
- Consider and respond to the issues raised in the submissions to the Silverton Wind Farm EA.

Since the lodgement in May of the EA, further studies have been undertaken. Engineering investigations with Transgrid in relation to the electrical connection of the Project into the national electrical grid have identified a larger electrical capacity for Stage 1 of the Project than initially identified. Accordingly, the Proponent wishes to utilise available capacity to optimise Stage 1 before substantial additional electrical infrastructure is required In Stage 2 (the subject of concept approval).

Two further areas were identified within the wind farm site which have been the subject of detailed further biodiversity and archaeological survey and assessment. Inclusion of these two further areas for Project approval would enable a larger Stage 1 to utilise the identified electrical capacity.

The Proponent is now seeking Project approval for the construction and operation of the revised, larger area associated with Stage 1 of the proposed development and concept approval for all construction and operational works associated with Stage 2.

The submissions to the publicly exhibited EA have been considered in the context of the Preferred Project.

This Preferred Project and Submissions Report should be read alongside the exhibited EA to avoid unnecessary duplication.

2

DESCRIPTION OF THE PROPOSAL

2. DESCRIPTION OF THE PROPOSAL

The Silverton Wind Farm is proposed to be located on the elevated ridges of the Barrier Ranges with its southern boundary approximately 3.5 kilometres north of Silverton and approximately 25 kilometres north west of Broken Hill. The site boundary is approximately 20 kilometres from the South Australian border. The proposal encompasses the construction and operation of a wind farm of up to 598 wind turbines, with associated substations, transmission switchyard and electrical infrastructure, onsite control room, maintenance facilities, access tracks and minor upgrades to adjacent roads, transmission line to Broken Hill substation and transmission line to Red Cliffs substation in Victoria (the 'Proposal').

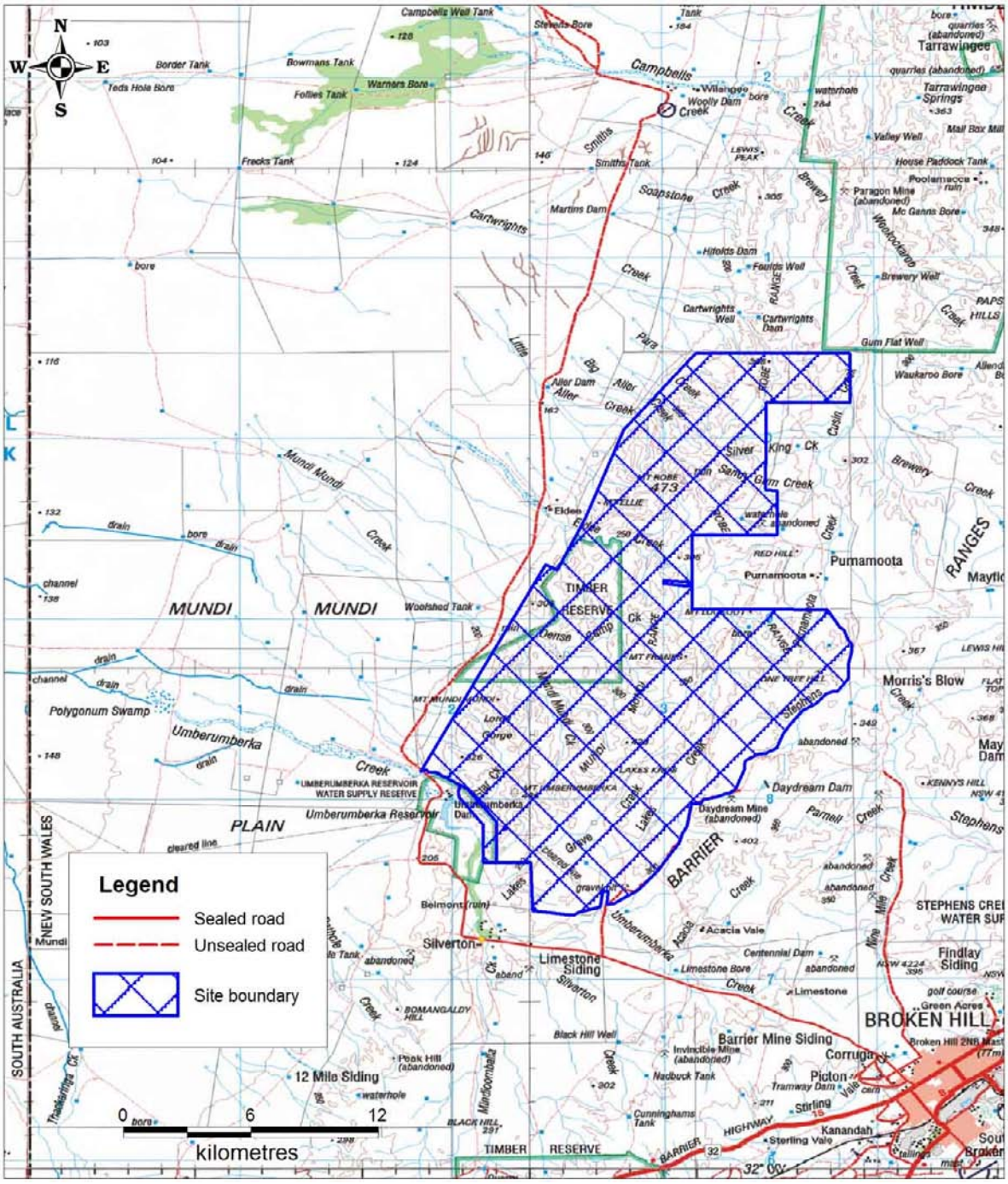

Figure 2.1 Site location and boundary in EA

The Proponent for this proposal is Silverton Wind Farm Developments Pty Ltd and all permits and approvals would sit with this company.

An Environmental Assessment, prepared by **ngh**environmental was submitted to the NSW Department of Planning in May, and was placed on public exhibition from 1 October to 3 November 2008 at:

- The Silverton Hotel, Layard Street , Silverton
- Broken Hill City Council, 240 Blende Street, Broken Hill
- Wentworth Shire Council, 26-28 Adelaide St, Wentworth
- Nature Conservation Council, 301 Kent St, Sydney
- Department of Planning, 22-33 Bridge St, Sydney.

Three further print copies and additional electronic copies of the EA were made available to the Silverton community through the Silverton Village Committee. During the exhibition period, submissions were sought from the local community, interested parties and other stakeholders. The Department of Planning accepted submissions up to 21 November 2008.

Key issues in the EA were identified in consultation with stakeholders (including the community, local Councils, agency representatives and the consent authority) and formalised in the Director General's Requirements for the preparation of the EA. Investigation of these issues formed the major part of the EA. These issues were investigated via specialist reports and by desktop assessment. Biodiversity and Archaeology assessments were undertaken for Stage 1 only but all other studies and assessments were undertaken for the entire site.

Detailed assessment was carried out for the purposes of the EA in key areas , including:

- Visual impacts
- Noise impacts
- Biodiversity impacts
- Indigenous heritage impacts
- Non Indigenous heritage impacts
- Aviation hazard impacts
- Communication impacts
- Socio-economic impacts
- Traffic and transport impacts.

These investigations are appended to the EA in full and are summarised in the body of the EA. They characterise the potential visual, noise, archaeological, biodiversity and traffic and transport impacts of the proposal, and outline mitigation measures required to accompany the proposal to manage the identified impacts.

Additional issues were considered by desktop assessment and consultation in the EA. These included:

- Electromagnetic fields (EMFs)
- Hydrological impacts
- Cumulative impacts
- Lifestyle impacts
- Farming and Grazing impacts
- Resource impacts

— Film and art

— Fire and bushfire impacts

— Mineral exploration impacts

— Community wellbeing

— Tourism impacts

— Health and safety impacts

— Physical impacts

— Land Value.

These assessments indicate that potential impacts are manageable with the implementation of specific mitigation measures.

2.2 SUMMARY OF THE PROPOSAL

The Proposal would involve the construction and operation of a large-scale wind farm in the western region of NSW. The Proposal includes:

— Up to 598 wind turbines, each with three blades mounted on a tubular steel tower and a generator transformer inside or adjacent to each tower

— Electrical connections between wind turbines and the site substations using a combination of underground cable and overhead concrete, timber or steel pole power lines

— Site substations to convert from reticulation voltages (22–66kV) to medium voltages (66–220kV) for connection with the transmission switchyard

— An onsite transmission switchyard that includes high voltage transformers and switchgear for connecting the output of the wind farm to offsite transmission lines

— A new 24 kilometre transmission line connecting the transmission switchyard with TransGrid's existing Broken Hill substation (20 kilometres off site)

— A new 305 kilometre transmission line connecting the transmission switchyard with SP-Ausnet's existing Red Cliffs substation in Victoria (301 kilometres off site)

— Onsite control and maintenance buildings, including storage facilities for equipment, materials and spares and workers facilities building

— Internal access tracks, hardstand areas and other associated infrastructure required for the construction, installation and maintenance of the wind farm

— Minor upgrades to site access via the Silverton Road, Eldee Station Road and Daydream Mine Road.

Additional temporary construction infrastructure would be required during the construction and refurbishment or decommissioning phases.

A number of wind turbines are under consideration for the wind farm. In general, various characteristics of turbine types require different turbine layouts. For the purpose of the EA and this Preferred Project and Submissions Report, one turbine layout is proposed.

The final turbine selection would be carried out through a competitive tender process pending Project approval.

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3

DESCRIPTION OF THE PREFERRED PROJECT

3. DESCRIPTION OF THE PREFERRED PROJECT

The Preferred Project is the Proposal described in the exhibited EA and précised above including the following alterations:

- A minor alteration to the boundary of the site and some internally sited wind turbine locations but not electrical infrastructure placement. See Figure 3.1
- An elevation from Concept Approval to Project Approval for a further 162 wind turbine locations and associated infrastructure following detailed biodiversity and archaeology in the development envelope surrounding these areas. See Figure 4.1
- Approval to construct a temporary water pipeline subject to the grant of all necessary licenses and permits.
- Transmission and access easements required to connect sections of the site together and to the surrounding road network.
- Consent to subdivide the land within the Special Purpose Lease which will be created.

Broadly speaking, the development can be separated into four components:

- Site area – Stage 1
  (Revised Stage 1 turbine locations and all related construction, operation and maintenance infrastructure including site access)
- Site area – Stage 2
  (All remaining turbine locations and all related construction, operation and maintenance infrastructure including site access)
- Transmission line corridor – Site to Broken Hill (NSW) – Stage 1
  (Initial grid connection including 24 kilometre power line from Site to Broken Hill in NSW)
- Transmission line corridor – Site to Red Cliffs (Vic) – Stage 2
  (Final grid connection including 300 kilometre power line from Site to Red Cliffs in Victoria).

The proponent is seeking Project approval for the construction and operation of works associated with Stage 1 of the proposed development and concept approval for all construction and operational works associated with Stage 2 including the transmission line from Broken Hill to Red Cliffs.

The construction of Stage 1 would be in phases to allow for civil and electrical engineering works and turbine delivery with up to approximately 95 wind turbines in any phased group. The first turbines are most likely to be constructed in the Stage 1a area but turbines in the Stage 1a, 1b or 1c areas may be built in any configuration and the final phased construction will be determined by electrical connection and staged financing.

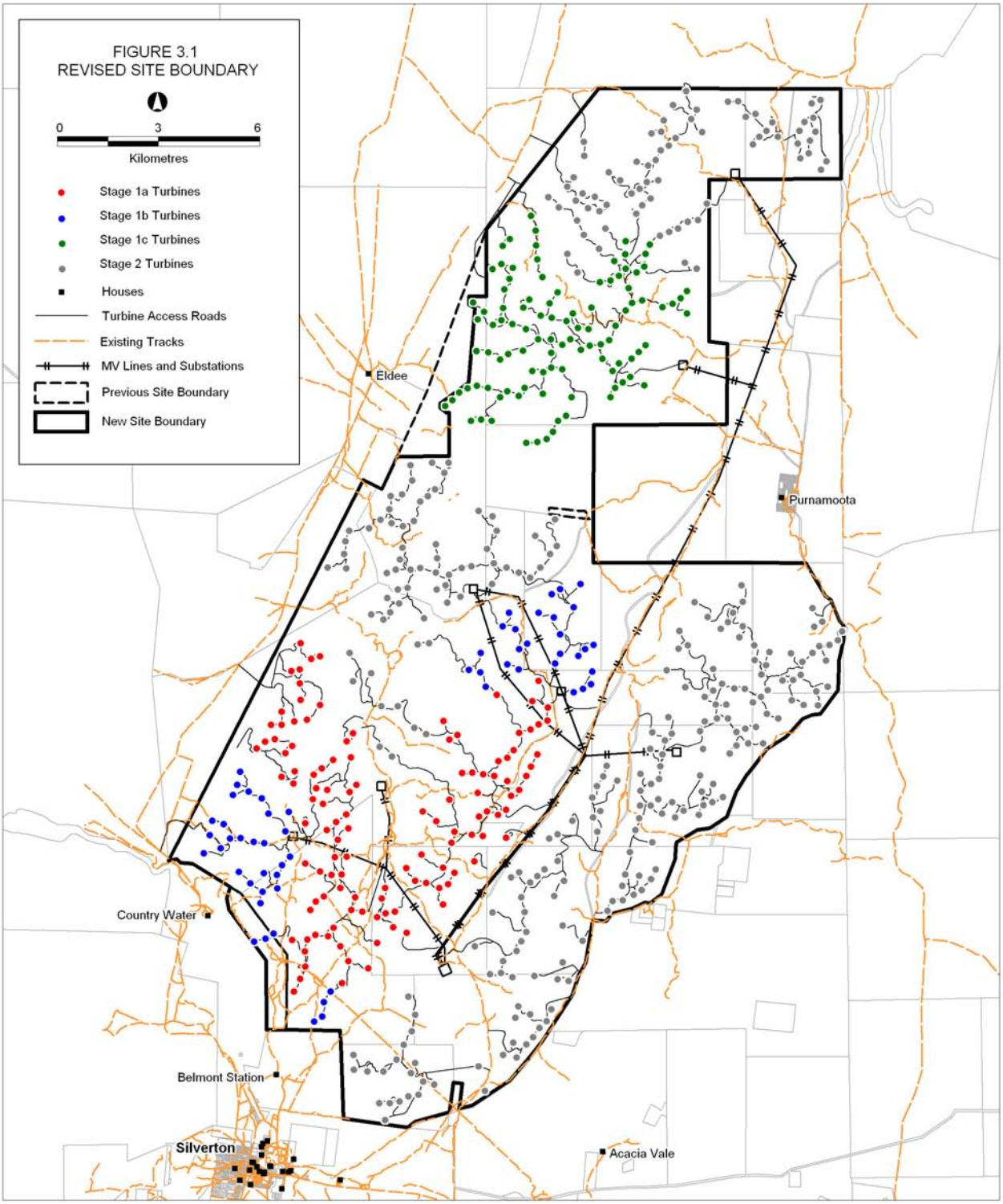


Figure 3.1 Revised site boundary

Stages 1a, 1b and 1c are defined to clarify areas surveyed in 2007 (1a) and 2008 (1b, 1c) field work for biodiversity and archaeology. Biodiversity and archaeology has not yet been completed for Stage 2.

4

PROJECT APPROVAL

4. PROJECT APPROVAL

The additional wind turbine locations for which planning approval is sought have resulted from further studies completed since the lodgement of the exhibited Environmental Assessment. Ongoing investigations with Transgrid have identified a larger electrical connection capacity at the Broken Hill substation than previously understood. As Stage 1 of the proposed wind farm connects in to this substation, a larger connection opportunity would enable a larger number of turbines to be constructed.

To enable this larger Stage 1 connection, two areas within the wind farm proposal have been identified for accelerated construction and therefore earlier Project approval. The impact envelope of these further areas was identified and provided to **ngh**environmental and NSW archaeology for further detailed investigation. See Figure 4.2.

These areas house 162 wind turbine locations and associated infrastructure. In total, the number of wind turbine locations for which Project Approval is sought in this Preferred Project Application is now 282. This includes the additionally surveyed 162 locations and associated works areas (including electrical infrastructure, access tracks) plus the original 120 wind turbine locations of the exhibited Stage 1.

This preferred Stage 1, which consists of three areas, the original Stage 1 (now referred to as Stage 1a), plus Stage 1b and 1c would provide sufficient locations for a phased construction to utilise the full existing Broken Hill electrical connection capacity. Project approval for the 282 wind turbines, associated works and infrastructure would also enable flexibility in the construction packaging and phasing of the wind farm.

The identification of the further survey areas required was appropriately timed in relation to optimal periods for field survey activity. Specialists from NSW Archaeology were able to survey these further identified areas over winter with representatives of the Broken Hill Aboriginal Land Council. Biodiversity teams from **ngh**environmental were able to undertake spring survey work, followed by a targeted Tawny Rock Dragon survey in the breeding season. The results of these surveys are appended.

All of the impact types of the wind turbines and internal tracks, transmission and electrical infrastructure have been assessed in the original EA, including visual impacts and noise impacts, and these addressed all 598 wind turbine locations and associated infrastructure and therefore addressed the maximum possible cumulative impacts from the development. Additional detail was required to properly evaluate and mitigate for biodiversity and archaeology impacts to a Project Approval level of detail, for what is now the Stage 1b and 1c development envelope. This has now been undertaken and is appended to this Report.

The level of detail that all other environmental components (i.e. visual, noise, traffic, physical and social impacts) have been assessed is considered sufficient to allow the conversion of the 162 turbine locations and associated infrastructure from Stage 2 Concept Approval to Stage 1b and 1c Project Approval status.

Elevation of these turbines from Concept Approval to Project Approval is not considered to cause additional environmental impact types to those already identified and evaluated. Cumulative impacts have been assessed within the EA for the full number of turbines proposed and no additional impact types are considered to apply.

The updated Statements of Commitment included in this Preferred Project and Submissions Report outline the environmental management framework for managing impacts on site. They take into account the impact types and sensitivity of the receiving environment for the entire Stage 1 and 2 development envelope. Detailed management actions, specific to each area of impact, would be undertaken as part of prescribed management plans committed to within the Statements of Commitment. The detail of these plans (ie Sediment Erosion, Site Restoration, Spill Control, Goat Management) would be developed concurrent with final design planning, as part of the Construction and Operational Environmental Management Plans.

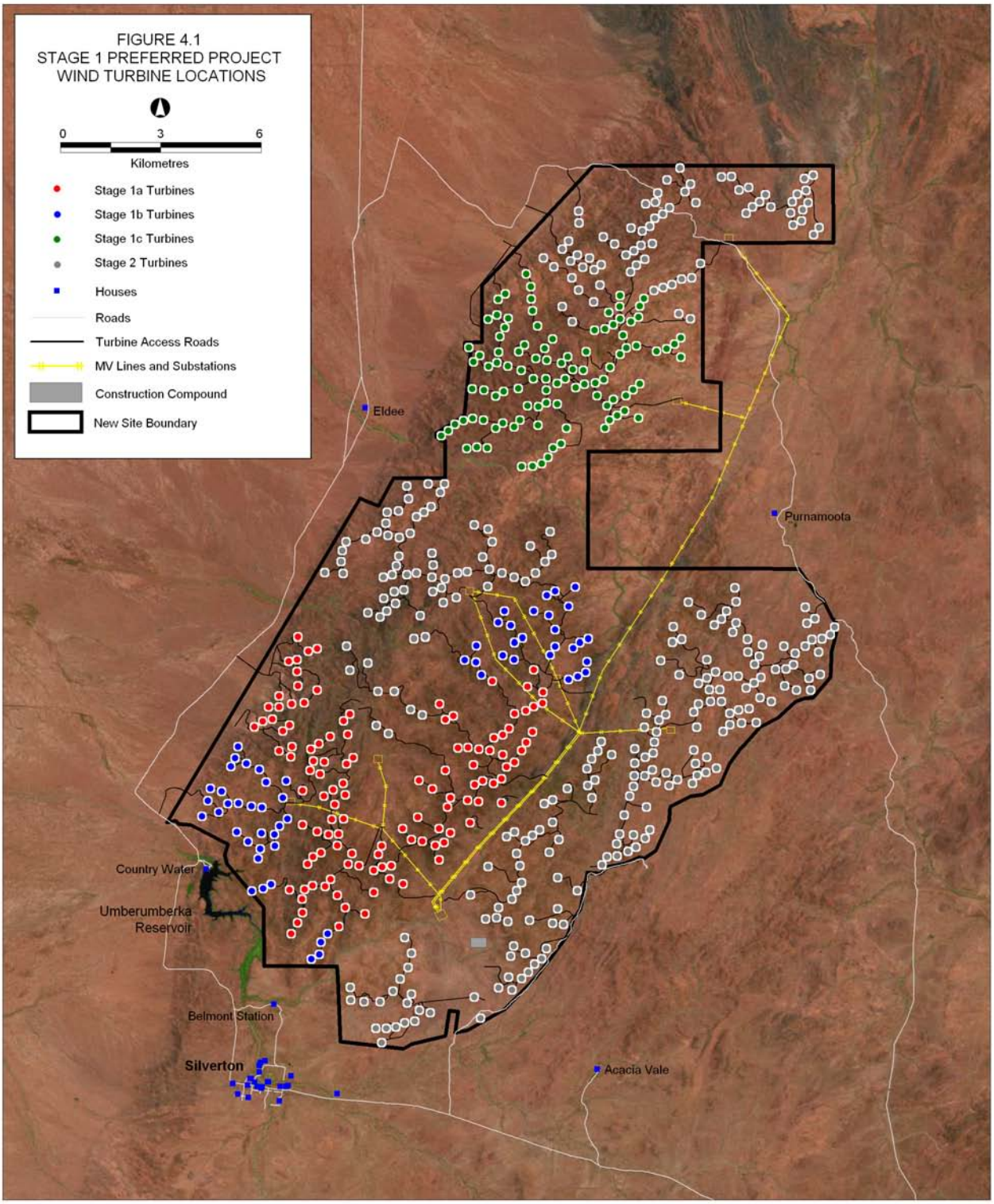


Figure 4.1 Preferred Project wind turbine locations

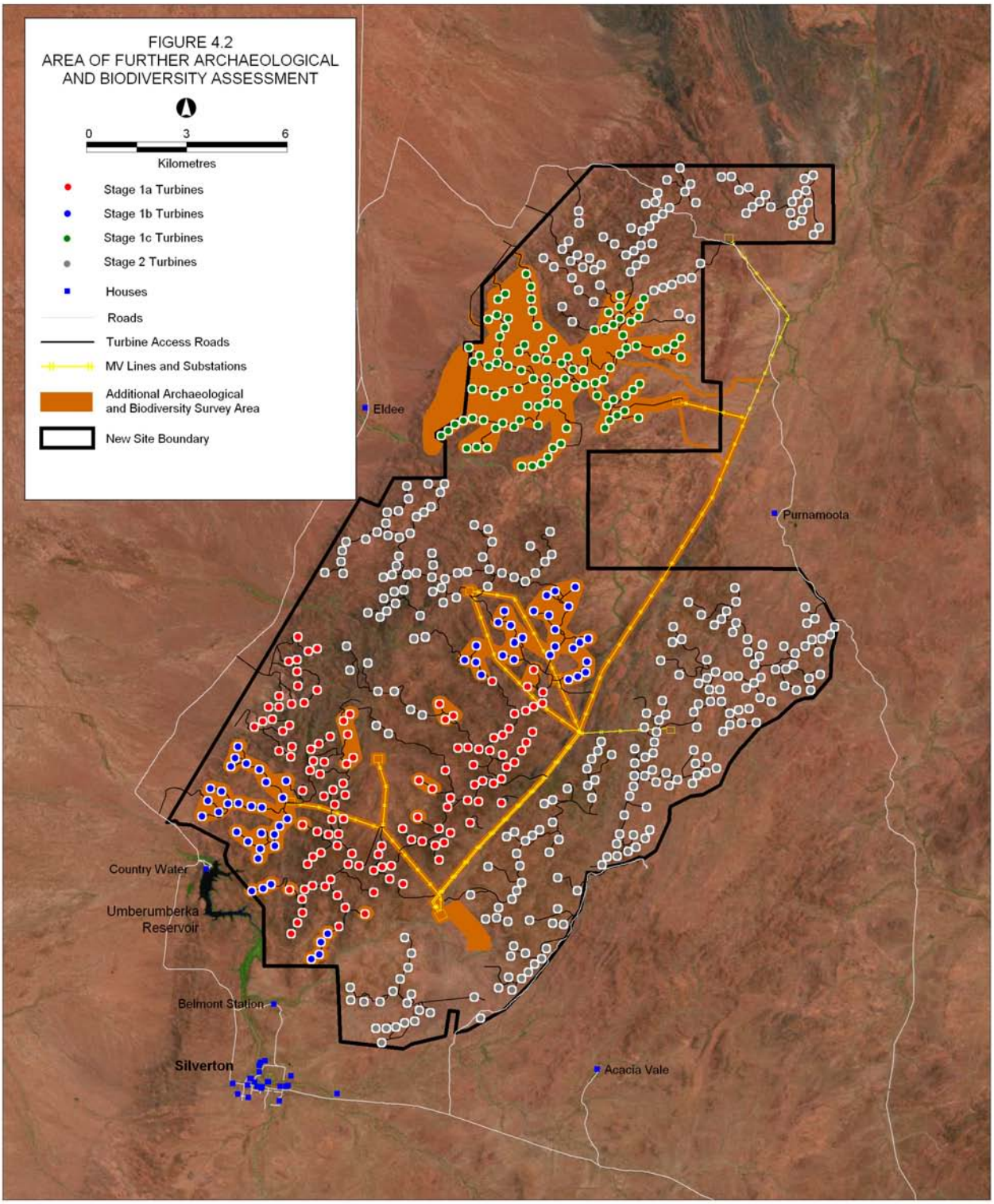


Figure 4.2 Area of further archaeological and biodiversity assessment

4.2 REVISED BOUNDARY

Following an amendment to the *Crown Lands Act*, the subject land of the proposed wind farm would be identified by a Special Purpose Lease including a new Deposited Plan. It is anticipated that this Special Purpose Lease may be subdivided to acknowledge the pastoral leaseholdings over which it is created and consent is sought for this subdivision..

The existing Lot and DP identifiers are detailed in table 4.1 below. This table is in four sections and identifies:

- Land which will be within the Special Purpose Lease or wind farm site boundary,
- Land held by the four pastoralists which is beyond the exhibited boundary and over which connecting access and transmission line easements will be required,
- Transmission line and road easements required on leaseholder and freehold land to Broken Hill and
- Transmission line and road easements required on leaseholder and freehold land to Red Cliffs in Victoria

See Figure 3.1, illustrating the previous and the revised boundary with the road and transmission lines which would be incorporated through the creation of easements.

4.3 DETAILED PROPERTY INFORMATION

The cadastral information for the site is detailed in Table 4.1

Table 4.1 Detailed property information

Site

Property name	Lessee	WLL number	Lot/DP
Eldee	Schmidt	3873	1772/763691
	Schmidt	4669	2525/764488
	Schmidt	4669	2524/764487
Purnamoota	Langford	282	5347/768258
	Langford	545	5380/768291
	Langford	545	5381/768292
	Langford	1141	5366/768277
	Langford	1141	5364/768275
	Langford	1803	71/760633
	Langford	4670	2523/764486
Belmont	Blore	709	43/760242
	Blore	1139	6482/769311
	Blore	1139	6481/769310
	Blore	4668	2526/764489
Acacia (9Mile)	Lawrence	606	5373/768284
	Lawrence	1335	5398/768309
	Lawrence	1367	5374/768285
	Lawrence	1509	47/760243
Lot 25	Lewis (Landholder)	N/A	25/757286
Country Water	Country Water	N/A	845-3015 (Crown Plan)

Transmission and access easements surrounding site

Lot//DP	Lessee
5379//768290, 5365//768276, 5348//768259, 5347//768258, 71//760633	Langford
1772//763691	Schmidt
3161//765366, 2526//764489	Blore
2974//768259	Reference not held

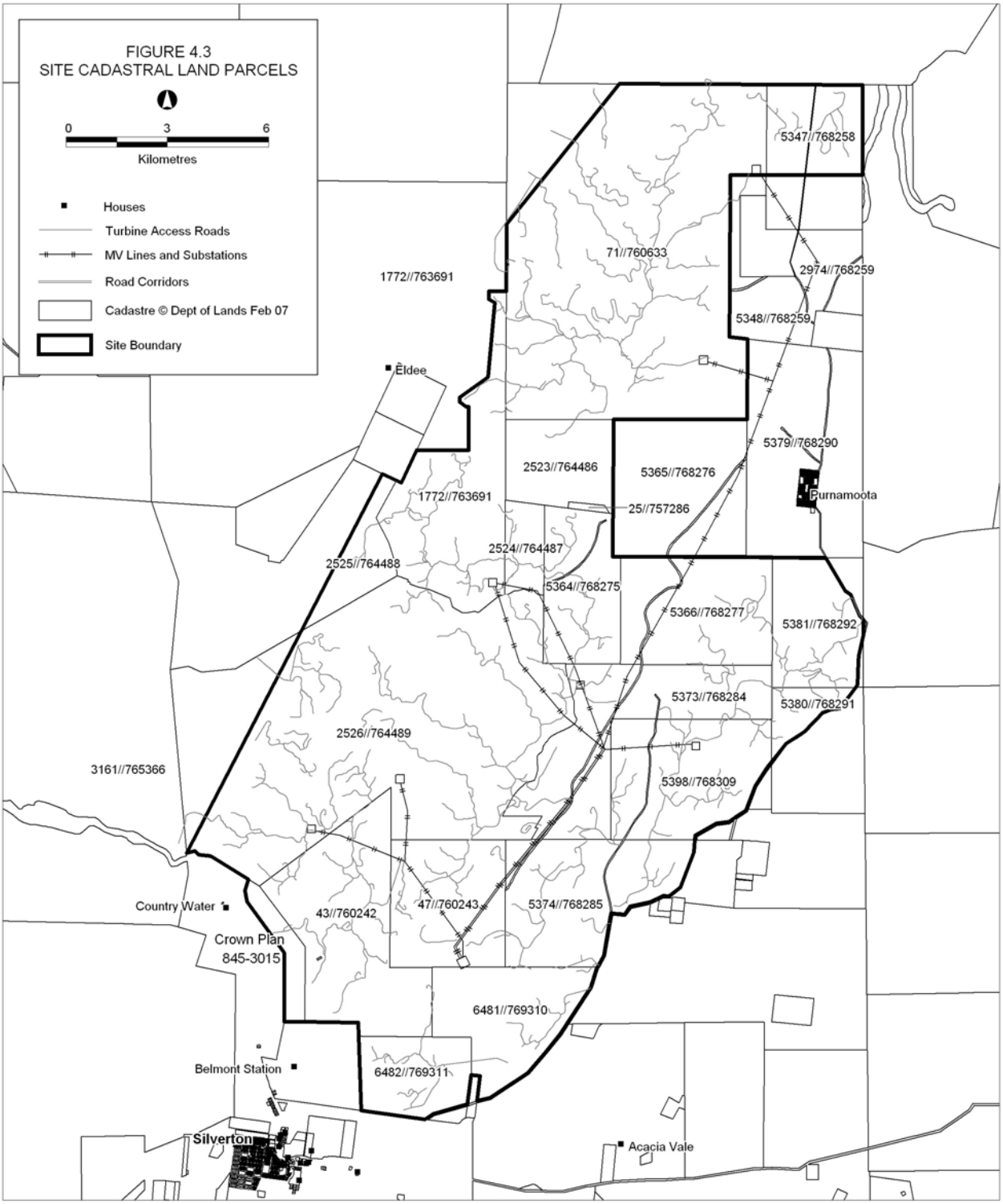


Figure 4.3 Site cadastral land parcels

Transmission line to Broken Hill

Landowner	Lot/DP	Notes
Lessee: Lawrence	47//760243	On-site Substation
Lessee: Lawrence	1//757295	
Lessee: Lawrence	5355//768266	
Lessee: Blore	6481//769310	
Lessee: Coltrev P/L	6672//822014	
Allison	6633//769414	
State of NSW (Crown)	6667//822054	
Aust Rail Track Corp Ltd	1/533250	
Aust Rail Track Corp Ltd	1/533248	
Roots Town Investments P/L	6666//822054	
Lessee: Bemax Resources NL	1//81083729	
Transgrid	2//1102040	Note: BH substation lies within this parcel

Transmission line to Red Cliffs

Lot//DP	Landholder name
1//1083729	Bemax Resources NL
3//1083729	Consolidated Prestige Tours P/L
2//1083729	Perilya Broken Hill Limited
4077//766582, 2//755150	Radford
1865//763777, 29//760275, 8//748877	Anderson
269//760960, 4220/766787, 2129//764015	Harrison
147//760667	Withers
4137//766642, 2128//761014	Harvy
4736//760432	Crettenden
146//760665	McArdle
3969//766442	Wyona P/L
1868//763780	Pearce
148//760640	Seekamp
6475//769304, 6476//769305	Bright
2474//764437	Gatlet P/L
1/1089252 (formerly 207//760830)	Julie Douglas
6165//769011	Withers
5296//768211, 5295//768210	Crettenden
208//760831, 1916//763772, 3280//765536	Cullinan
5279//768194, 4282//766969, 5286//768201	Withers
3248//765453, 1910//763766	Larwood
1914//763770	Watts
3279//765535	Douglas

Lot//DP	Landholder name
2234//764156, 1913//763769	HJ & FM Cillinan P/L
21//760341, 20//760340, 6563//769367, 5485//768394	Kelly
6819//46877	Linklater
2/530098	Voullaire
7//756971	Voullaire
2/1035269	Ribarits
5//636969	Reference not held (no new subdivision parcel)
5142//720089, 5141//720089, 27//756989	Littore
2//1028457	Duncan
6//756969	Kelly, Brownedog Racing P/L
1//1028457	CCI Golden River Ostriches P/L
2//1099648	Desmond & Joyce Lush & Grand Junction P/L
1//1037845 (formerly 4//802730)	Barnfield
1//717938	NSW Electricity Transmission Authority
2//1016054	State of NSW (Crown land)

Wind turbines are not proposed on Travelling Stock Reserves (TSR). Any roads, tracks, transmission lines or other infrastructure which impact upon Travelling Stock Reserves would not be fenced in such a way as to affect the use of the TSR for its recognised purpose.

5

FURTHER ASSESSMENTS UNDERTAKEN

5. FURTHER ASSESSMENTS UNDERTAKEN

All assessments for the further 162 wind turbine locations for which Project approval is sought have now been undertaken in accordance with the requirements of the DGR's. The two assessments previously not completed for this additional development footprint were the Biodiversity and Archaeology assessments. The full Biodiversity and Archaeology assessment reports of the additional areas are appended to this document.

It is worth noting that the noise assessment presented in the EA considered all Stage 1 and 2 turbines – being 598 turbines in total. The visual assessment was undertaken on a worst case basis and included all 598 turbines. Accordingly the noise assessment does not require revision but it was considered prudent to review the visual assessments and some additional photomontages have been provided (please see Section 5.3).

After the submission of the EA, the Stage 1 development envelope was expanded to include areas surrounding the original Stage 1 area and areas to the north, termed Stage 1b and 1c. This was as a result of investigations highlighting that the electrical connection capacity into the substation at Broken Hill was greater than first anticipated. The additional connection potential would increase the economic viability of the Stage 1 works.

This increased connection capacity required an increase in the number of turbine locations for which Project approval was sought and required that additional assessment work be undertaken to ensure that all impacts had been assessed and mitigation measures proposed adequate to address impacts within these additional areas. Specifically, additional specialist investigations included:

Biodiversity Assessment

An addendum to the Stage 1 Biodiversity Assessment was undertaken, looking specifically at Stage 1b and 1c.

Tawny Rock Dragon Assessment

A species specific investigation was carried out on Tawny Rock Dragon distribution and impact management within the Stage 1b and 1c area.

Archaeology Assessment

An addendum to the Stage 1 Indigenous and Non Indigenous Heritage Assessment was undertaken, looking specifically at Stage 1b and 1c.

A summary of the methodology, key findings and additional Statements of Commitment (derived from the recommendations of these reports) is included below. The assessments are appended in full.

5.1 BIODIVERSITY

Approach

The Biodiversity Addendum for Stage 1b and 1c was undertaken by **ngh**environmental. It:

- Identifies and describes the biodiversity values of the subject land, including descriptions of methodologies and results of detailed flora and fauna surveys
- Identifies species and communities of conservation significance which are present or have potential to be present at the subject site, including potential threatened flora and fauna habitat and Endangered Ecological Communities
- Identifies and assesses the significance of the potential impacts and risks associated with the proposed works in relation to biodiversity values
- Assesses the significance of the potential impacts of the proposal on identified threatened species and communities listed in the *Threatened Species Conservation Act 1995* or as Matters of National Environmental Significance, under the *Environmental Protection Biodiversity Conservation Act 1999*
- Specifically assesses the risks from bladestrike and habitat impacts to bird species at the site
- Provides a series of mitigation measures designed to reduce risks and minimise the impacts of the development on flora, fauna and ecological communities.

Furthermore:

— A species-specific investigation was completed for the Tawny Rock Dragon, to understand the significance of impacts and design appropriate mitigation for this species.

The Biodiversity Addendum involved desktop research, consultation, fieldwork, data analysis, significance assessment and report compilation. Site fieldwork was carried out between 28 August and 4 September 2008. The study area was stratified into broad homogeneous survey zones based on vegetation communities recorded during the previous Biodiversity Assessment (nghenvironmental 2008a). A broad-scale vegetation map of the study area was produced with recourse to aerial photograph interpretation and onground validation. Onground flora surveys were undertaken using the 'random meander' method (Cropper 1993), rather than quadrats, to maximise opportunities for detecting significant or sparsely distributed plant species across the additional study area (Map 3). The fauna survey effort is demonstrated in Table 5.1.

Table 5.1 Fauna Survey Effort

Technique	Target group	No of sites	Timing	Total survey effort	Other comments
Bird census	Diurnal birds	41	20 minutes at each site by two observers	27.3 hours	Opportunistic records also collected while driving between sites and within the general study area and walking the ridges during stratification and overview of the study area
Funnel traps (with interconnecting drift fences)	Reptiles and small ground dwelling mammals	3	Traps at each site were opened for 4 days	36 trap nights	
Active searches	Reptiles	21	20 minutes at each site	7 hours	Opportunistic records or larger species such as shinglebacks were also collected while driving between the sites and within the general study area walking the ridges during stratification and overview of the study area
Elliot and cage trapping	Small ground dwelling mammals, larger carnivorous mammals, reptiles	6	10 elliot traps and one cage trap for 3 nights	198 trap nights	
Anabat call detection	Bats	4	1 anabat detector for one night at each site	4 nights	
Nocturnal surveys (call playback, spotlighting)	Nocturnal birds, mammals, reptiles and frogs	2	40 minutes at each site	80 minutes	Opportunistic records while driving between sites using car headlights and spotlighting
Habitat assessment including searches for species signs (scats, runways, feeding signs etc).	Reptiles, birds, mammals, frogs and bats	37	Average of 15 minutes at each site dependent on habitat complexity	Approximately 9 hours	Opportunistic records of all species were collected.

Specific to the Tawny Rock Dragon, a separate survey and investigation was undertaken in November 2008 to understand the distribution of the species within the Stage 1b and 1c area. It also helped determine if the habitat correlates existed and to characterise the potential impact of the proposal on this species.

5.1.1 Assessment – Flora

Seven of the ten vegetation communities recorded in Stage 1a were also identified within the Stage 1b and 1c expanded development envelope. Additionally, two undescribed vegetation communities were also recorded. The nine vegetation types present within Stage 1b and 1c include:

- Benson Veg. Comm ID 123 – Mulga: Dead Finish on stony hills mainly of the Channel Country and Broken Hill Complex Bioregions
- Benson Veg. Comm. ID 136: Prickly Wattle open shrubland of drainage lines on stony rises and plains of the arid climate zone
- Benson Veg. Comm. ID 155: Bluebush shrubland on stony rises and downs of the arid zone
- Benson Veg. Comm. ID 41: River Red Gum open woodland of intermittent watercourses mainly of the arid climate zone
- Benson Veg. Comm. ID 359: Porcupine Grass – Red Mallee – Gum Coolibah Hummock grassland/ low sparse woodland on metamorphic ranges on the Barrier Range, Broken Hill Complex Bioregion
- Benson Veg. Comm. ID 153: Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- Benson Veg. Comm. ID 60: Black Oak Woodland of the semi arid zone
- Undescribed Community 1: Mulga/Red Mallee Shrubland on rocky slopes of the Barrier Range
- Undescribed Community 2: Chenopod - Red Mallee Woodland/Shrubland on gravelly lower slopes.

Vegetation mapping is provided, in Figure 5.1, Figure 5.2 and Figure 5.3.

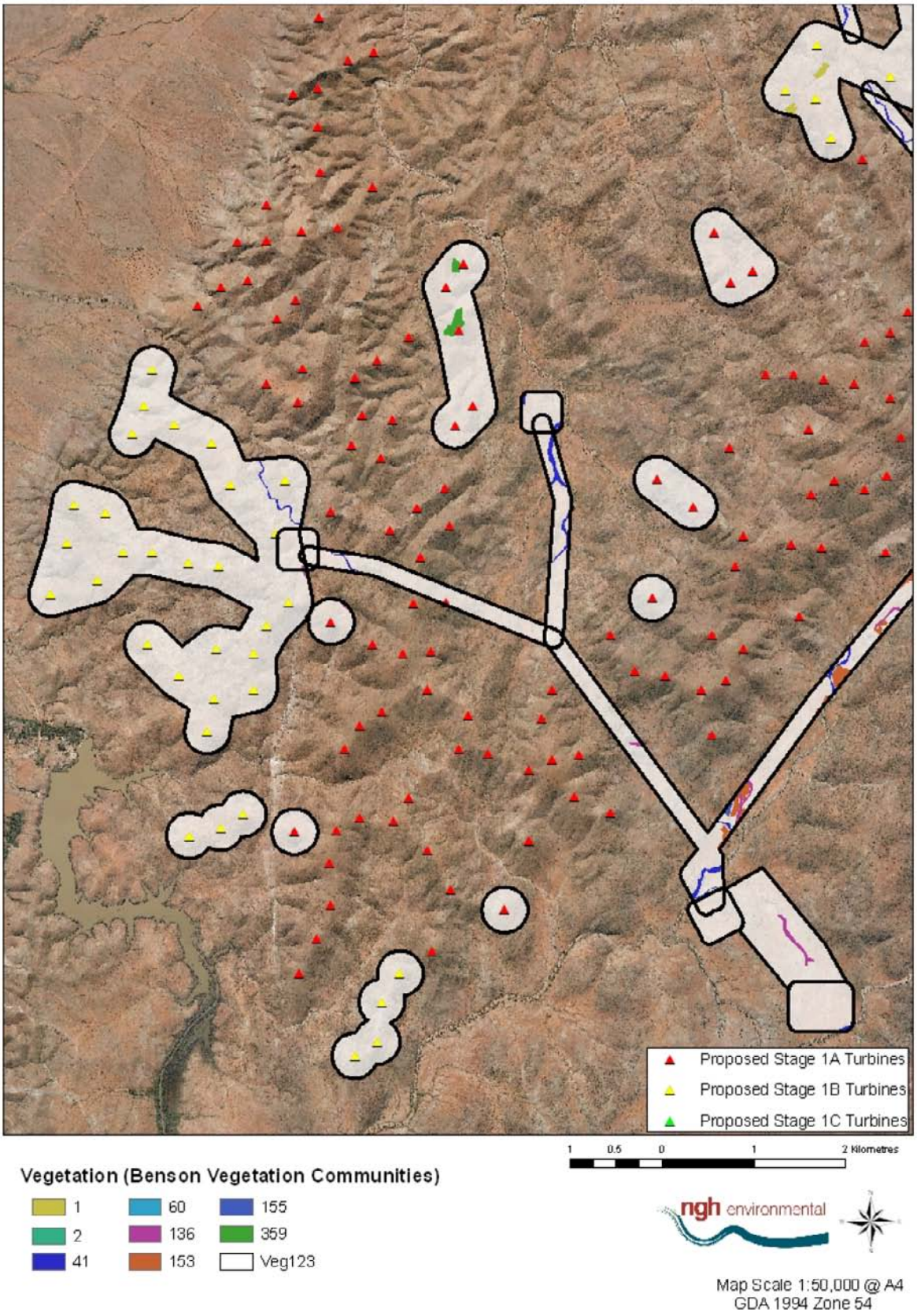


Figure 5.1 Vegetation (Benson Vegetation Communities) 1b

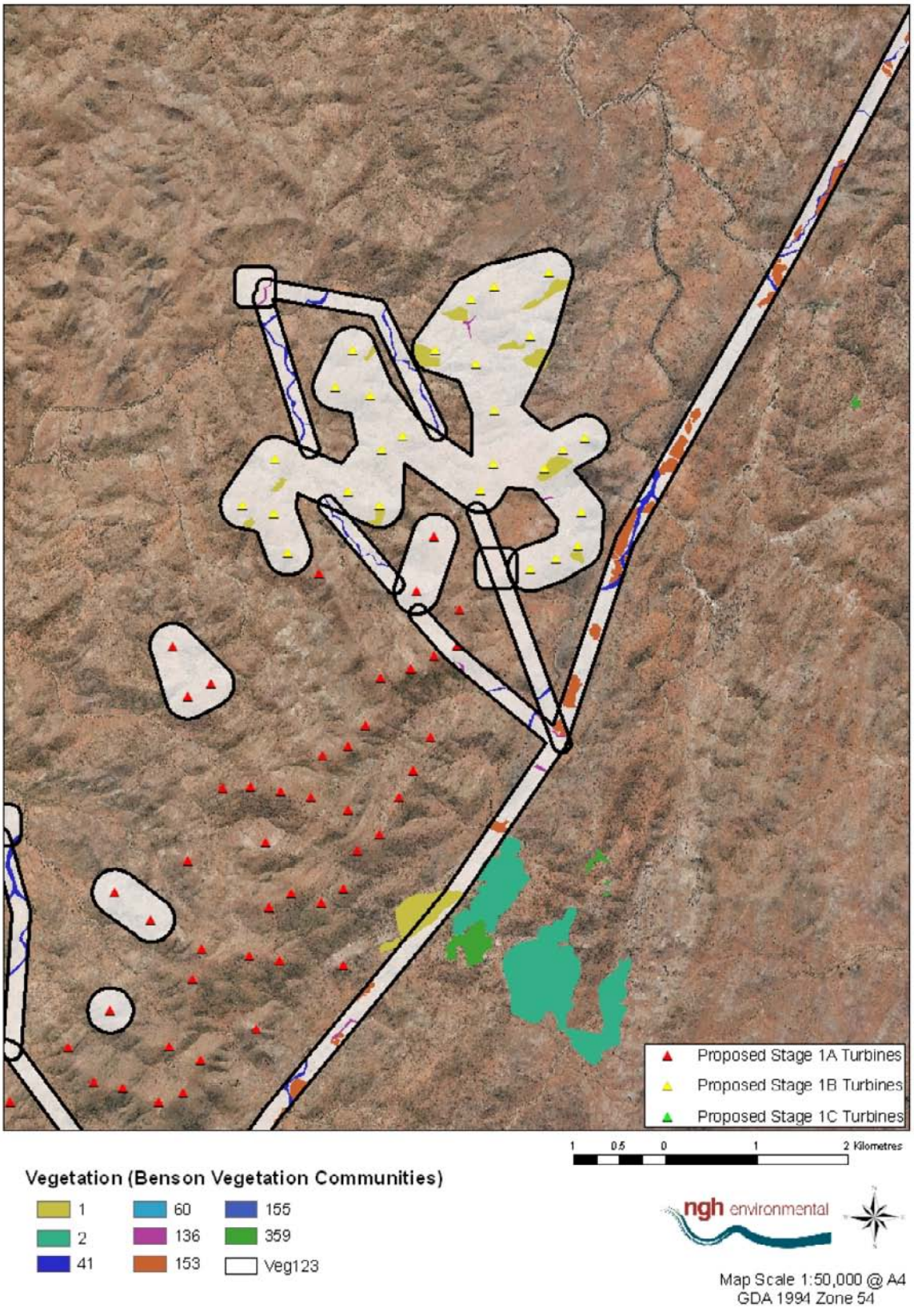
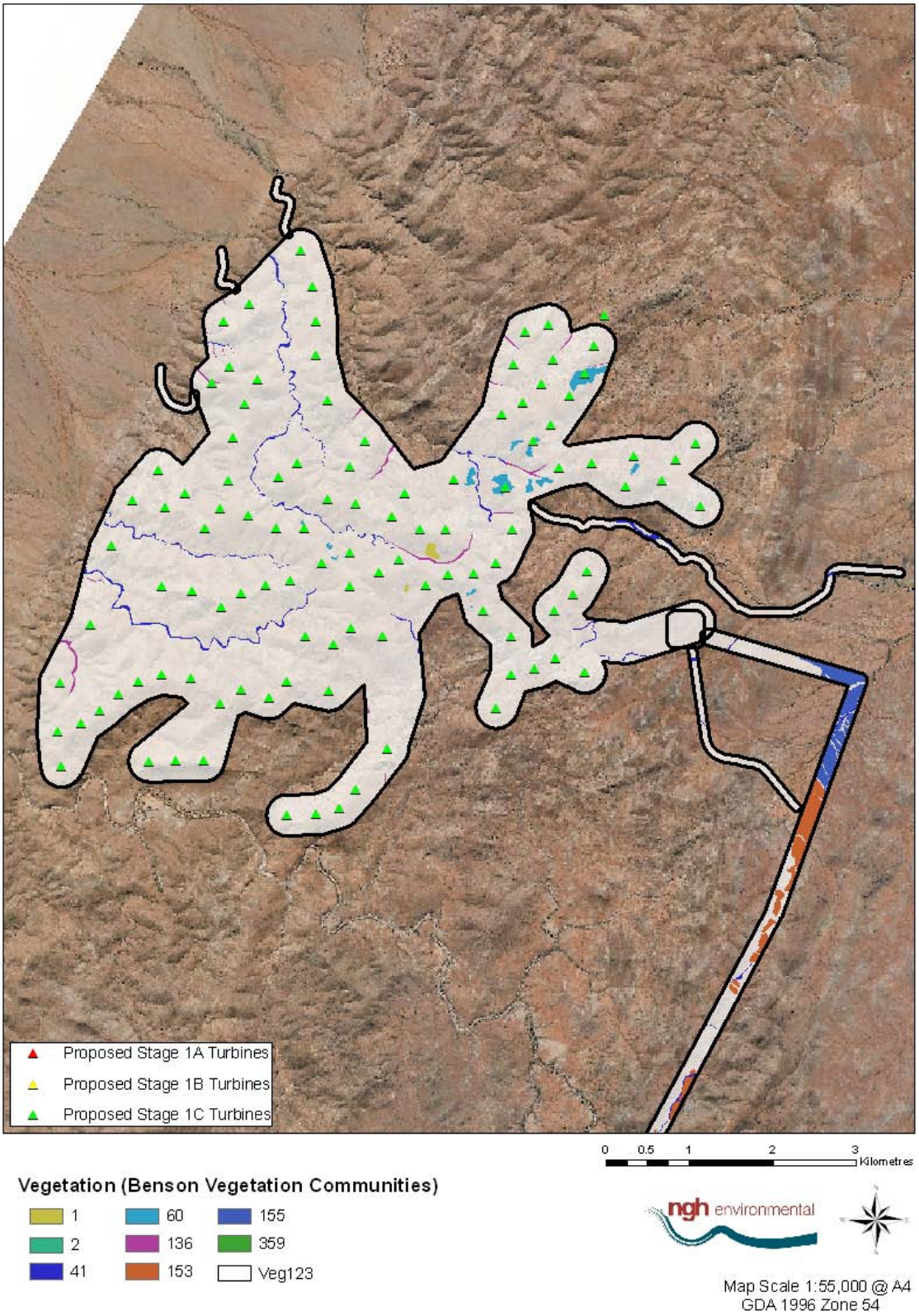


Figure 5.2 Vegetation (Benson Vegetation Communities) 1b



N.B - In the final proposed layout a number of WTGs in the 1c section have been relocated since the boundary and layout was presented to NGH for the survey work. This aligns with the requirements of a leaseholder and accommodates the Tawny Rock Dragon Hot Spots.

Figure 5.3 Vegetation (Benson Vegetation Communities) 1c

Plant species or Endangered Ecological Communities (EECs) detected within areas that would be affected by the proposal were not threatened. The development envelope is large and it is likely that not all species within it were recorded. However, flora surveys targeted representative vegetation types and habitat known to be favoured by threatened species. It is considered unlikely that threatened species or EECs within the development envelope went undetected.

The identification of two additional undescribed vegetation communities is regarded as significant. Both of these communities represent unusual occurrences of Red Mallee as this species typically occurs on red aeolian sand (Harden 1991), and its presence on rocky ridges in the study area is considered significant.

Pursuant to the *NSW Threatened Species Conservation Act 1995*, a seven part test was undertaken to properly characterise the significance of potential impacts on threatened species or communities with potential to occur. This assessment concluded that the potential for significant impact on these species is low (attached as part of the Biodiversity Addendum).

Impact assessment – construction

The proposal would result in the direct removal of vegetation within the development footprint, including turbine towers and the surrounding hardstand areas, control building, substation, new and widened access tracks and power line poles associated with the internal power lines and the power line linking the Mt Robe section to the southern areas of the proposed wind farm. Underground cable corridors would generally follow access tracks constructed between the wind turbines and other facilities.

Table 5.2 provides an estimate of the type and quantum of native vegetation loss required for the development of Stage 1b and 1c of the wind farm. Based on these calculations, these works would displace approximately 132 hectares of native vegetation. Approximately 11 hectares of native vegetation would be disturbed to enable the construction of the turbines; this could be rehabilitated after the construction phase. An additional 97 hectares could be rehabilitated after the life of the Project. Approximately 24 hectares of native vegetation would be permanently displaced (footings would remain insitu after the Project is decommissioned).

Table 5.2 Type and quantum of native vegetation loss

Where possible, the area of impact for proposed infrastructure has been estimated. Turbines and tracks are overlaid on vegetation types. For tracks and building/turbine footings, this would constitute a loss of habitat. For transmission lines, a small area would be removed to install poles. The greater proportion of the transmission line may require lopping where vegetation height exceeds four meters and minimal impact where vegetation is below 4 metres in height. There is some scope to mircrosite infrastructure based on flora values at the time of development.

	Qty. or length	Dimensions	Hectares	Impact area within each vegetation community (hectares)								
				ID123	ID136	ID155	ID41	ID359	ID153	ID60	VEG1	VEG2
Transmission/ switchyard and maintenance compound[3]	2	300x300m	18	0	0	0	18	0	0	0	0	0
Site substations[3]	1	150x150m	2.25	2.25	0	0	0	0	0	0	0	0
Concrete batch plants[1]	4	150x150m	9	6.75	2.25	0	0	0	0	0	0	0
Control and comms building[3]	1	20x30m	0.06	0.06	0	0	0	0	0	0	0	0
Construction compound[1]	1	200x100m	2	2	0	0	0	0	0	0	0	0
Turbine towers and footings	162	15x15m	3.8025	3.78	0	0	0	0	0	0.023	0.0225	0
Access tracks onsite[2]	122km	6m wide	73.026	70.8	0.09	0	0.24	0	1.14	0	0.66	0.096
Underground powerline cabling onsite[2]	122km	2m	24.342	26.3	0.03	0	0.08	0	0.38	0	0.22	0.032
Total hectares			132.4805	109.2	2.37	0	18.32	0	1.52	0.023	0.9025	0.128

1. Areas which could be rehabilitated after the construction phase = 11ha
2. Areas which could be rehabilitated after the life of the Project = 97.368ha
3. Areas permanently impacted (includes all footings) = 24.112haB
Note: Located within access tracks onsite where possible; these areas represent an estimated worst case scenario which is that no tracks could be located within access roads. As the precise location of some infrastructure has not yet been determined, vegetation subtotals do not equal the total impact area.

Considering indirect impacts, vegetation surrounding the development footprint will be affected by vehicle access and parking, materials laydown and spoil deposition and retrieval. Peripheral impacts may include soil compaction, soil erosion and sedimentation. The works have the potential to introduce and spread weed species. The concrete batch plant and associated flush pit, if used, would alter local subsoil conditions over the medium term. Pollution risks are associated with the concrete batch plant, fuels and lubricants and construction chemicals used at the site. With appropriate safeguards and practices (see the exhibited Environmental Assessment), these risks to native vegetation are expected to be low.

Assessments of Significance were carried out for Showy Indigo, Creeping Darling Pea and Yellow-keeled Swainsona via a TSC Act 7-part test. The assessment concluded that the potential for significant impact on these species is low. The assessment also identified a common threat to several species, that being habitat degradation caused by heavy grazing in combination with drought.

In view of the local abundance of the majority of the vegetation communities present and the small development footprint, the proposal is unlikely to have a negative effect on the flora values at the site. Rather, management of current levels of grazing through continued control of feral goats would aid in the long-term sustainability of the vegetation communities within the study area, and potentially further into the surrounding locality as grazing by feral goats is considered a threat to the vegetation communities of western NSW. This management activity would allow recruitment of species currently subject to intensive grazing, increasing vegetative cover over the entire site. This is considered to be a net gain.

Impact assessment – operation

The operational proposal (movement of turbines, turbine noise) may affect the way fauna currently use the sites. These impacts may include changes in the level of biomass and species composition, if herbivores are deterred from some areas. However, these impacts are not expected to be significant.

Impact assessment – decommissioning

Decommissioning impacts would be similar but not as extensive as construction impacts. The area of impact would be reduced because underground footings and cabling would not be removed from the site. The decommissioning phase of the proposal may temporarily affect the use of habitat at the site by fauna, although it is not expected to significantly affect local floral populations in the medium to long-term.

5.1.2 Assessment – Fauna

Investigations of the Stage 1b and 1c study area revealed a number of general habitat types, similar to those identified in the Stage 1a survey areas targeted in 2007. These can be summarised as rocky outcrops and ridges, shrublands, hummock grasslands, drainage lines/water points and plains. Other habitat features were found to include hollow-bearing and mature vegetation and mine shafts and caves. These habitats play an important role in sustaining native fauna populations on site and potentially, in the locality

The use of the site by birds is of particular relevance to wind farm development, as avoidance behaviour and direct collision impacts have potential to affect local populations. There are no Ramsar wetlands close to the study area. Directly adjacent to the southern boundary of the proposed development, Umberumberka dam is an expansive water body covering 145 hectares. It is an artificial dam and is therefore unlikely to be an important regional resource for water birds. Nonetheless, the dam may attract migratory wetland species as it is the only source of permanent free standing water in the locality which has been present for more than 85 years.

As discussed in the Biodiversity Assessment, Stage 1, daily and seasonal migration and movement corridors in the study area are not known. The study area is not located between significant known habitat areas for migratory species, and as a result bird movements across the site may be diffuse and irregular (following rain), rather than concentrated and seasonal. Congregations of waterbirds were not recorded at the subject site during the survey. Given the habitat scale and quality, none will be expected to occur there.

Ten threatened species were recorded in the following 2008 surveys.

- Redthroat (Vulnerable, TSC Act)
- Pied Honeyeater (Vulnerable, TSC Act)
- Yellow-footed Rock Wallaby (possible aged scat) (Endangered, TSC Act/Vulnerable EPBC Act)
- Yellow-bellied Sheathtail Bat (possible anabat file) (Vulnerable, TSC Act)
- Striped-faced Dunnart (subfossilled remain) (Vulnerable, TSC Act)
- Kultar (Subfossilled remain) (Endangered TSC Act)
- Long-haired Rat (subfossilled remain) (Vulnerable, TSC Act)
- Marble-headed Snake-lizard (Vulnerable, TSC Act)
- Tawny Rock Dragon (Endangered, TSC Act)
- Southern Spinifex Slender Bluetongue (Endangered, TSC Act).

One regionally significant reptile species was also identified. This being the Spinifex Snake-lizard *(Delma butleri).*

An evaluation of species of conservation significance with potential to be affected by the proposal was undertaken using searches from the Bionet search tool (Broken Hill Complex Bioregion) and EPBC search engine (30 kilometre buffer). From this, and author experience, twenty-nine species were evaluated as having potential to be affected. These include the Thick-billed Grasswren, Rufous Fieldwren, Pink Cockatoo, Scarlet-chested Parrot, Painted Honeyeater, Pied Honeyeater, Rainbow Bee-eater, White-throated Needle-tail, Barking Owl, Masked Owl, Black-breasted Buzzard, Square-tailed Kite, Australian Bustard, Grey Falcon,Fork-tailed Swift,Little Pied Bat, Inland Forest Bat, Kultarr, Forrest's Mouse, Stripe-faced Dunnart, Yellow-bellied Sheathtail-bat, Sandy Inland Mouse, Long-haired Rat, Yellow-footed Rock

Wallaby, Tawny Rock Dragon, Slender Mallee Blue-tongue Lizard, Ringed Brown Snake Marble-headed Snake-lizard, Woma.

Guided by state and commonwealth legislation, 'assessments of significance' were undertaken to properly characterise the potential impacts on all species this excluded the Tawny Rock Dragon, for which further survey work was undertaken, prior to a more detailed assessment.

Specific mitigation measures were developed based on identified impacts. Considered based on these measures, it is considered, with the exception of the Tawny Rock Dragon, unlikely species or community listed under the *NSW TSC Act* or *Commonwealth EPBC Act* will be subjected to a significant adverse impact. With the effective implementation of these measures, nghenvironmental consider that not only can a significant impact on the subject species be avoided, but across the site habitat improvement would result in a net gain to biodiversity.

Specific to the Tawny Rock Dragon, a separate survey and investigation was undertaken in November 2008 to better understand the distribution of the species within the Stage 1b and 1c area. Also to determine if habitat correlates existed and to characterise the potential impact of the proposal, via an Assessment of Significance. This species was abundant in the Stage 1b and 1c area, and a separate management strategy was developed with respect to this species.

Impact assessment – construction

The ridges and upper slopes are used by a variety of fauna species, but specifically reptiles, birds, macropods, goats and rabbits. Removal of habitat in ridge locations would include substrate for reptiles and small mammals. Larger trees provide habitat for birds, particularly perch sites for Wedge-tail Eagles and other raptors, with some of these requiring removal. Track and turbine footprints would be discrete and are not likely to substantially alter the foraging and refuge habitat available to most species. However, for rock outcrop and spinifex specialists, loss or modification to these habitats would reduce areas of already rare habitat.

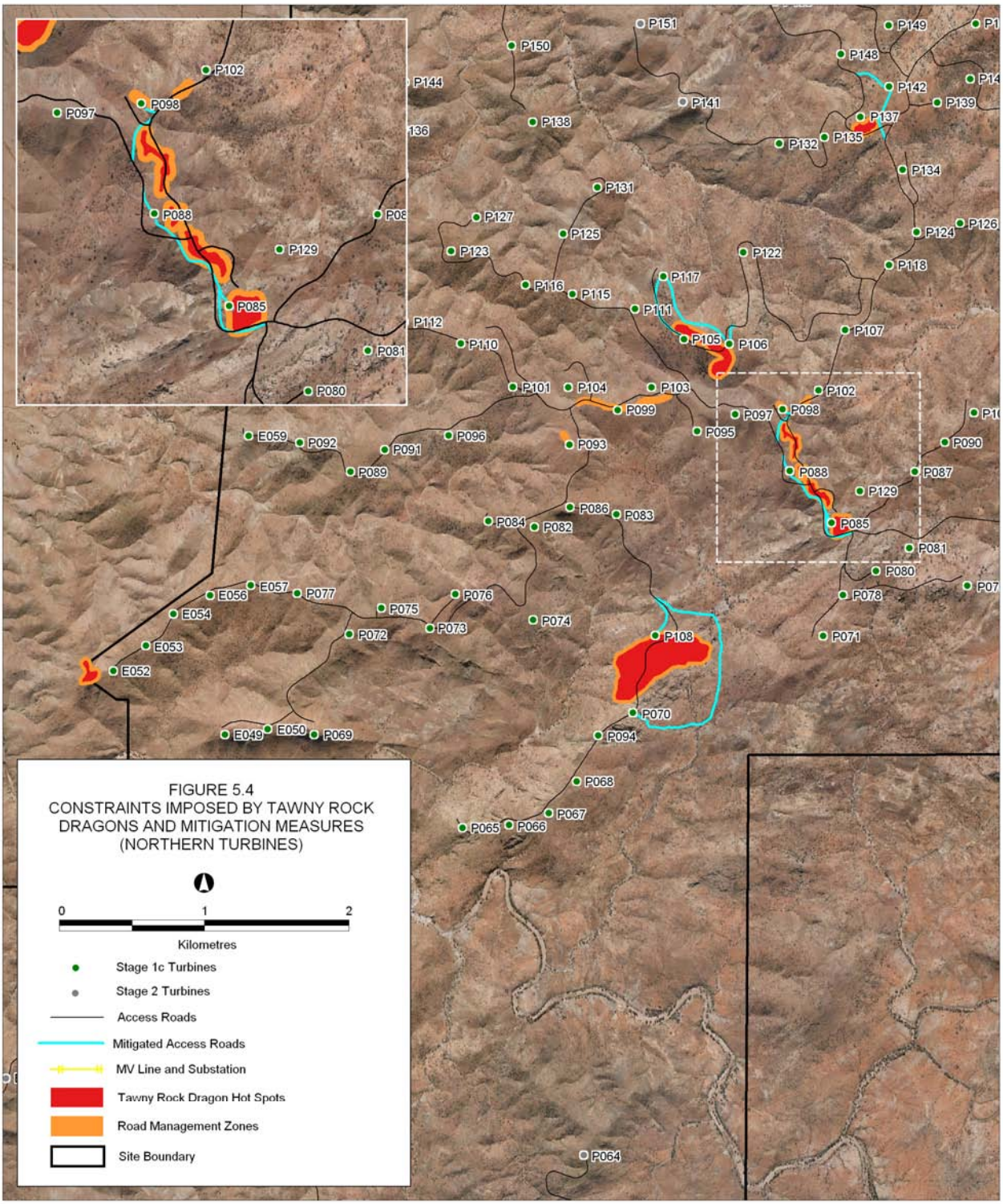
The route of the proposed power line from Mt Robe to the southern section is predominantly through lower ridges and rolling plains and substantially along an existing track. This infrastructure would require a discrete loss of habitat including trees and shrubs. Vegetation is generally sparse in this landscape and the overall pattern and extent of clearing is unlikely to have an adverse effect on local fauna. Conversely, the management of feral goats is likely to have a positive impact on fauna habitat.

During construction, the installation of tracks, turbines, cable laying and associated infrastructure would generate temporary impacts. The dust, noise, vibration and activity associated with the construction phase may temporarily affect the foraging behaviour of local fauna species, particularly birds and macropods. Trenches required for the installation of cabling, predominantly within access roads, would present a trap hazard for local fauna for the time that they are open. Given the local abundance of similar habitat, this temporary effect on habitat utilisation is not likely to significantly affect local populations of these generally highly mobile species.

The concrete batch plant, construction activities using concrete, the storage, use of fuels, lubricants and construction chemicals carries a pollution risk. If the locations of works (including temporary activities such as concrete batching) are situated in already cleared or sparsely vegetated areas, biodiversity impacts should be low.

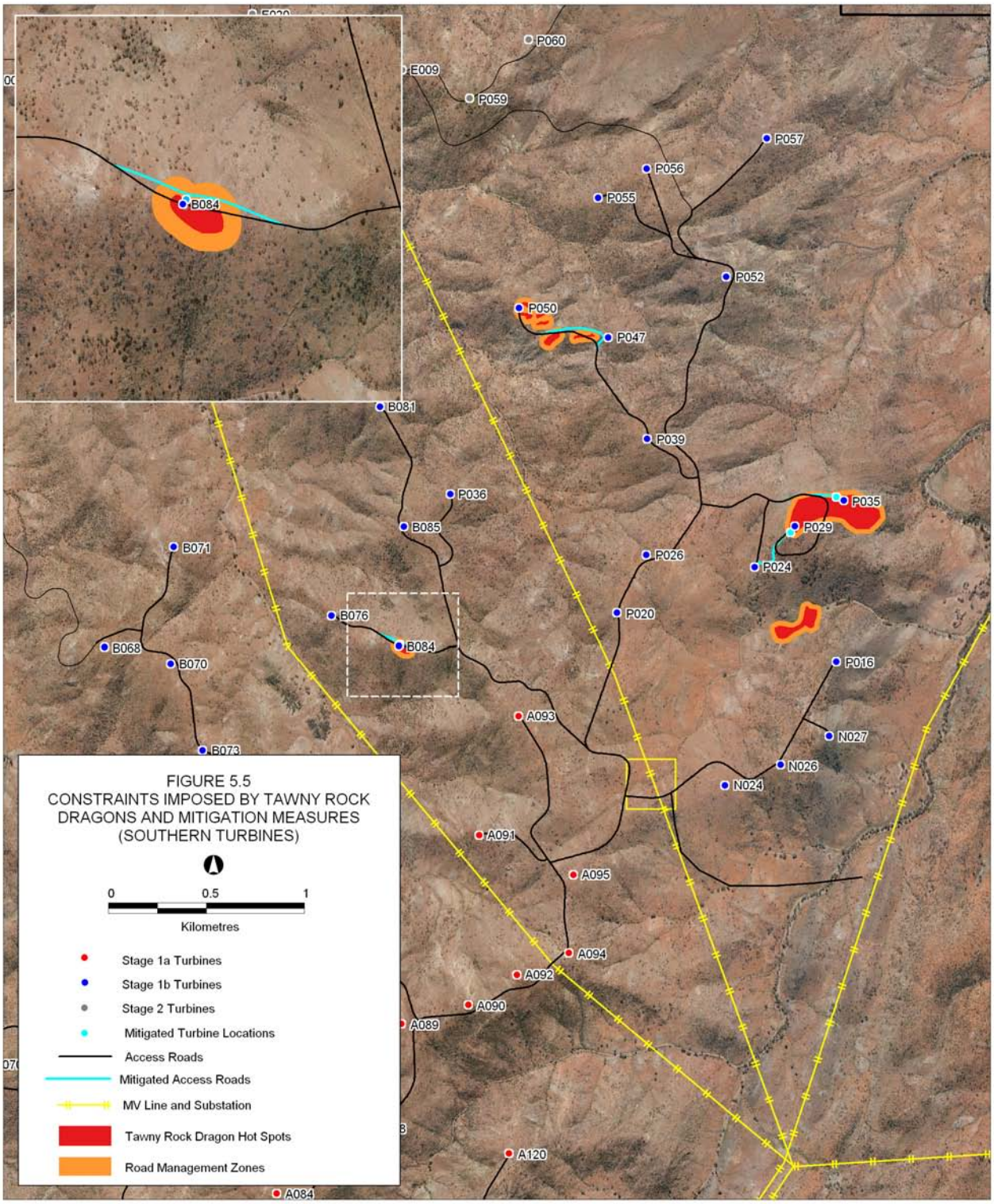
Impacts specific to the Tawny Rock Dragon necessitated the development of protocols to address 'hot spots' (areas of local abundance) located within the development envelope and the threat of traffic to dragons basking on roadside spoil heaps (which were found to provide good habitat). The benefits of a Goat Management Plan were also clear, given the evidence of goat impact on vegetation and other habitat correlates for this species.

Figure 5.4 shows Northern sector Tawny Rock Dragon Hot Spots which are to be avoided and Tawny Rock Dragon Traffic Management Zones in which speed limits would be applied to site traffic to reduce the potential impacts to Tawny Rock Dragons basking or displaying on road side spoil. This map also demonstrates how tracks would be altered, and Figure 5.5 highlights wind turbine locations in the Southern sector would be marginally adjusted to avoid impacts to the Tawny Rock Dragons.



NB - Please be aware that no turbines fall within the TRD Hot Spot zones. Any that may appear to is simply due to the scale of the map.

Figure 5.4 Constraints imposed by Tawny Rock Dragons and mitigation measures (northern turbines)



NB - Please be aware that no turbines fall within the TRD Hot Spot zones. Any that may appear to is simply due to the scale of the map.

Figure 5.5 Constraints imposed by Tawny Rock Dragons and mitigation measures (southern turbines)

Impact assessment – operation

The key operational impacts of the proposal relate to the operation of the wind turbines. The potential bladesweep height of the turbines could range from approximately 34 to 155 metres above the ground, at a diameter of approximately 45 metres (equivalent bladesweep area approximately 6,359 metres squared). The impacts of the wind farm would be most acutely felt by those species utilising aerial habitat within the bladesweep zone; birds and microchiropteran bats. Other terrestrial fauna may be affected by turbine noise and blade flicker, although, given the low fauna diversity and abundance at the site, these latter impacts are likely to be limited.

A qualitative risk assessment for birds and bats, combining assessments of likelihood and consequence was carried out to produce a final risk rating of 'low', 'moderate' or 'high' risk for selected species (see Biodiversity Addendum Stages 1b and 1c, Appendix E, for full risk assessment). The results were incorporated into the statements of commitment to ensure the risk to fauna is low.

Impact assessment – decommissioning

Decommissioning impacts would be similar but not as extensive as construction impacts. The area of impact would be reduced due to underground footings and cabling would not be removed from the site. Access tracks would be upgraded as required. The decommissioning phase of the proposal may temporarily affect the use of habitat at the site by fauna, but is not expected to significantly affect local fauna populations in the medium-long term. Mitigation measures have been developed to ensure the risk to fauna is low.

5.2 ARCHAEOLOGY

Approach

To address the addition of Stages 1b and 1c, in relation to the Project Approval, an addendum to the Indigenous and Non Indigenous Heritage Assessment of the Silverton Wind Farm (SWF) Stage 1 Project was undertaken by NSW Archaeology Pty Ltd.

In accordance with the NSW NPWS guidelines for archaeological reporting (NSW NPWS 1997), the NSW DECC Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (NSW DEC 2005) and the NSW Heritage Manual, the assessment included the following components.

- Aboriginal consultation (as documented in Dibden 2008)
- A description of the proposal and whether or not it has the potential to result in impacts to Indigenous and Non Indigenous cultural heritage (as documented in Dibden 2008)
- A description of the impact history of the proposal area (as documented in Dibden 2008)
- The methodology implemented during the study (as documented in Dibden 2008)
- The landscape and natural resources of the study area in order to establish background parameters (as documented in Dibden 2008)
- A review of archaeological and relevant literature and heritage listings on the NSW DECC Aboriginal Heritage Information Management System (as documented in Dibden 2008)
- A synthesis of local and regional archaeology (as documented in Dibden 2008) and a summary of the initial Stage 1 field survey results
- A predictive model of Aboriginal object type and location relevant to the proposal area (as documented in Dibden 2008) and expanded upon in this report
- A review of the historical context of the proposal area and the results of relevant heritage data base searches (as documented in Dibden 2008)
- An outline of historical themes applicable to the proposal area (as documented in Dibden 2008) and expanded upon in this report

— The results of the current assessment

— The archaeological significance of Aboriginal objects and Non Indigenous items

— An assessment of the impact of the proposal on Aboriginal objects, places and Non Indigenous items as documented in Dibden 2008)

— A description and justification of the proposed outcomes and alternatives (as documented in Dibden 2008 and expanded in this addendum report)

— A series of recommendations based on the results of the current investigation.

The field survey and assessment has been undertaken in partnership with the Broken Hill Local Aboriginal Land Council (BHLALC). Two sites officers and a trainee sites officer conducted the field survey with two archaeologists (NSW Archaeology).

5.2.1 Assessment – Indigenous

Background

A total of 221 Aboriginal object locales were recorded within the proposal area. During the current assessment Aboriginal object locales have been categorised slightly differently to the methodology implemented in the initial Stage 1 assessment. This has resulted in both fewer site recordings and a greater number of Aboriginal object locale types. In the initial Stage 1 study survey, units were defined on a fine scale based primarily on landform morphological type. This resulted in far greater numbers of survey units and concomitantly a greater number of object locale recordings; these being the continuous sparse quartz stone artefact recordings. Given the high levels of redundancy in these recordings in the first survey, the method of categorising survey units in the current study has been refined as described in Section 5.1 above. This refinement in categorising survey units has resulted in far fewer recordings of Continuous Sparse Quartz Stone Artefact locales.

11 different Aboriginal object type categories were recorded in the current study (as summarised in Table 5.3). A total of 36 Aboriginal object locale recordings are very low (<one per square metre) or low density (between 1 per square metre and ten per square metre) continuous distributions of quartz stone artefacts extending across survey units including both ridge crests in hill or low hill land systems or lower rises in rolling downs and lowlands. These recordings account for the background scatter present across the impact area. 26 discrete quartz artefact recordings were made. Many of these are likely to be representative of single knapping events given their small area (often no more that c. five square metres). This pattern of sparse quartz artefact distribution with occasional small, discrete scatters on bedrock landforms is entirely consistent with the results obtained during the initial Stage 1 study survey.

Similarly, the current survey results confirm the presence of relatively higher artefact density in alluvial terraces and flats in lower contexts adjacent to water courses; it is probable that the availability of seasonal water in these areas is likely to be the major factor influencing this pattern. However, it does now seem clearer as a result of the survey of the Stages 1b and 1c area that artefact density in these geomorphological contexts can be considerable, irrespective of the stream order sequence; even first and second order stream contexts which may not have held water for long, can contain moderate artefact density.

It is noted that the geomorphological context and the nature of the sediment in valleys has a significant influence on the presence or otherwise of higher density artefact distributions. In valleys such as that occupied by Lakes Grave Creek (along which part of the transmission line from substation 2a to the switchyard traverses), alluvial sedimentary features adjacent to the Creek (within 50 and 100 metres of the Creek) contain moderate to high artefact density. Low rise, bedrock landforms situated within comparable proximity to the creek would contain very sparse artefact density. Favoured camp site locations appear to be those on soft sediments rather than lithosols or rocky landforms.

Where relatively flat alluvial sediments are present along creek courses and in some wide open depressions, the distribution of higher density artefacts would be continuous across that landform.

Apart from high artefact density, these landforms generally contain high numbers of heat retainer hearths, relatively high frequency of exotic raw materials and rarer artefact types. If intact and stable, these deposits are of high archaeological significance as their research potential is significant.

While these landforms can be relatively stable, aggrading landforms generally contain extensive areas in which high levels of active erosional processes, examples include knick point retreat, gullying, entrenchment of creek beds and minor erosional features, rilling and surface wash. These erosional processes act to expose archaeological materials and also, more significantly, to cause their erosion and either their ultimate destruction/removal and/or seriously compromise the integrity of archaeological deposit.

Stone procurement areas were the most frequent site type found during the current survey; this site type was similarly found in high numbers during the initial Stage 1 field work. The greater amount of survey has now been conducted in valleys and lower landform. A pattern has emerged where quartz outcrops located in these landforms appear to contain greater evidence of extraction in the form of Hertzian cone fractures, batter marks and higher density associated artefacts. An example of this is SU268/L9.

A rock art site was recorded during the current assessment which is a rare site type in the immediate local level.

Table 5.3 Frequency of Aboriginal object recordings.

Feature	Total
Hearth	10
Hearths	3
Isolated artefact	1
Rock art	1
Stone procurement area	116
Stone artefacts (continuous sparse distribution)	36
Stone artefacts (discrete)	26
Stone artefacts and hearth	1
Stone artefacts and hearths	3
Stone artefacts and PAD	3
Stone artefacts, PAD and hearths	21
Total	221

Impact assessment – construction

Significance

The information provided in this assessment and the assessment of significance of Aboriginal objects, provides the basis for the Proponent to make informed decisions regarding the management and degree of protection which should be undertaken in regard to the Aboriginal objects located within the study area.

Aboriginal archaeological sites are assessed under the following categories of significance.

- Cultural value to contemporary Aboriginal people
- Archaeological value
- Aesthetic value

— Representativeness

— Educational value.

Table 6 of the full report (Archaeology Addendum) outlines the archaeological values of each of the recorded Aboriginal object locales recorded during the study. It is emphasised that the majority of the locales are assessed to be of low or low/moderate significance. Some are assessed to be of moderate significance and several locales are assessed to be of high significance. While the archaeological significance of each locale has necessarily been assessed on individual merits it is emphasised that when considered as a suite of sites reflecting the occupation of a larger landscape context, the overall archaeological potential of the archaeological resource in the Project area increased.

It is noted that Aboriginal heritage sites often have high cultural value to the local Aboriginal community given that they provide direct physical and symbolic linkages to their ancestral past and to the landscape. The cultural values of the identified sites may possibly differ to the archaeological significance values.

Management

The aim of this study has been to identify Aboriginal objects within the proposal area, to assess their significance and thereafter, to give consideration to their management within the context of the proposed impacts. A variety of strategies have been considered for the mitigation and management of development impact in relation to the recorded Aboriginal object locales within the proposal area. These are listed and discussed below.

Further Investigation

The current field survey focuses on recording artefactual material present on visible ground surfaces. Further archaeological investigation entails subsurface excavation which is generally undertaken as test pits for the purposes of identifying the presence of artefact bearing soil deposits and their nature, extent, integrity and significance. Survey Units have not been identified in the proposal area to warrant further archaeological investigation. The Effective Survey Coverage achieved during the field survey was relatively high and can be considered to have been generally adequate for the purposes of determining the archaeological status of the proposed impact areas.

The ridges in which the turbines and their associated impacts would be located contain skeletal soil as a result of high levels of erosion and disturbance. Accordingly, these soils have low potential to contain intact and/or stratified archaeological deposit. Given the skeletal nature of these soils the potential to physically conduct subsurface excavation is limited. Elsewhere in locations which contain deeper soil deposits, such as landforms located in a lower landform context, a number of additional factors have been taken into consideration to determine whether further investigation is necessary. Proposed impacts in these landforms are small scale, discrete and generally linear impacts for example road access and transmission line construction. In addition, it is considered that with regard to the archaeology itself, subsurface testing is unlikely to produce results much different to predictions made in respect of the subsurface potential of these landforms. Accordingly a program of subsurface testing is not considered to be necessary or warranted with regard to the proposal.

Conservation

Such a strategy is generally adopted in relation to Aboriginal objects assessed to be of high cultural and scientific significance, but can be adopted in relation to any object irrespective of its significance. The Survey Units in the proposal area have not been identified to surpass scientific significance thresholds which would act to entirely preclude proposed impacts. However, a small number of discrete locales and discrete areas within locales have been identified to warrant total exclusion of impacts and the implementation of a strategy of conservation.

— SU248/L2 (outside proposed impacts)

— SU264/L4 (in TL easement from substation 2a to Switchyard)

— SU267/L8 (in TL easement from substation 2a to Switchyard)

— SU267/L11 (in TL easement from substation 2a to Switchyard)

— SU268/L2 (in TL easement from substation 2a to Switchyard)

— SU268/L3 (in TL easement from substation 2a to Switchyard)

— SU277/L2 (in east end of Construction and Maintenance Compound).

An active conservation strategy would be implemented in regard to these locales to ensure that they are not inadvertently impacted during the construction, operation and decommissioning of the wind farm. It is noted that the majority of these locales are either situated outside areas in which impacts are proposed or within areas in which a strategy of conservation, and hence impact avoidance, is expected to be highly feasible.

Unmitigated impacts

Unmitigated impacts to an Aboriginal object can be given consideration when it is assessed to be of low or low/moderate archaeological and cultural significance, and otherwise in situations where conservation is simply not feasible. Unmitigated impact is considered to be appropriate in regard to the majority of locales in the proposal area.

Mitigated impacts

Mitigated impact usually takes the form of partial impacts only (ie conservation of part of the Survey Unit) and/or salvage in the form of further research and archaeological analysis prior to impacts.

Many of the Aboriginal object locales and/or discrete areas within wider stone artefact distribution locales (including those which are predicted to contain subsurface archaeological deposit), stone procurement areas and locales with heat retainer ovens, are assessed to be of low/moderate or moderate archaeological significance. Accordingly it is generally recommended that avoidance of impacts, or limiting the extent of impacts to these locales, if at all feasible, should be given consideration.

It is proposed that where necessary, an appropriate impact mitigation strategy be implemented. This would be a program of archaeological excavation and analysis. Ideally such a program would entail an adequately designed research program which would aim to address research questions similar to those currently being pursued in the region.

Table 9 of the full report (Archaeology Addendum) summarises the management and mitigation strategies considered to be relevant to each site within the proposal area. The assessed archaeological significance of each Aboriginal object locale is listed, given that site significance forms the basis for rationalising the proposed management strategy. The rationale behind each recommendation is outlined, taking into consideration the nature of the Aboriginal object and its archaeological significance rating. Constraints mapping is provided within the full report (see Archaeology Addendum).

With regard to these locales for which it is recommended that avoidance of impacts be considered, further suggestions are made in the event that avoidance of impacts is not feasible. In some cases, especially those relating to small stone procurement locales, it is recommended that if avoidance is not feasible unmitigated impacts are appropriate. However, in other cases such as locales containing deep soils and hence potential subsurface archaeological deposit with predicted moderate density artefact distribution, locales containing heat retaining hearths and larger and more complex stone procurement areas (and which are assessed to be of low/moderate or moderate archaeological potential), it is recommended that if impact avoidance is not feasible, a strategy of impact mitigation is appropriate.

The result of this further detailed survey work is consistent with the study in the exhibited EA. However, the issue of inadvertent and/or long term impacts to archaeological features resulting from erosional processes being initiated, increased or intensified as a result of construction, maintenance and decommissioning of the proposal needs to be addressed. Erosional processes currently causing impacts, some of which are significant to archaeological features, has been discussed in Dibden (2008). It is now recognised as a result of the recent field work that this matter was not given adequate consideration during the initial assessment. Accordingly, the recommendations set out in Section 10 of the report include attention to this issue and will now be included in an amended Statement of Commitments (SOC83).

Impact assessment – operational

Additional impacts are not considered applicable to the operational phase of the proposal.

Impact assessment – decommissioning

Additional impacts are not considered applicable to the decommissioning phase of the proposal.

5.2.2 Assessment – Non-indigenous

Background

Searches have been undertaken of historical heritage databases including the NSW Heritage Inventory, the Australian Heritage Database and the National Trust of Australia (NSW) Register; these databases include items of local through to world significance. There are no heritage items present in the Stage 1b and 1c Project area that are listed on any of these databases (these searches are documented fully in Dibden 2008). In the course of the survey 63 historical features were recorded. These recordings largely include sites that relate to mining activities, although there are also a small number of recordings that relate to pastoral and transport activities (tabulated in Table 5 of the full report (Archaeology Addendum)

Available maps for the area indicate that there were hundreds of mines both within and in areas adjacent the study area (Wisehart & Co. 1885; County of Yancowinna Map 1964; 1:25,000 Geological Map; 1:50,000 Geological Map). The majority of these mines were relatively small scale and details of their names and owners are not listed on the abovementioned maps. These sites correspond to mining activities that span both the nineteenth and twentieth centuries. The majority of these mines appear to have been exploratory in nature; none had returns that totalled more than A$10,000. Traces of these mines are present throughout the Barrier Ranges in the form of costeans, prospecting pits, mine shafts, adits, drives, quarries, mullock and tailing mounds, and pieces of machinery. Additional features exist that are associated with mining including settlements, old roadways, miners' camps, and graves.

Pastoral history and heritage is a fundamental component of the heritage of far western NSW (Hope 2006). The Stages 1b and 1c study area encompasses a series of modern pastoral stations that correspond to parts of the earlier Mount Gipps and Mundi Mundi Stations. The modern day stations include Purnamoota, Eldee, Belmont, Limestone and Nine Mile. These stations are the result of a series of subdivisions that have taken place since the late nineteenth century when populations increased as a result of mining developments across the Barrier Ranges.

The Stage 1b and 1c turbine envelope includes parts of Purnamoota, Eldee, Belmont and Nine Mile Stations, while the proposed transmission line also crosses parts of Limestone and Stirling Vale. Originally much of the area that comprises the study area was part of the Mount Gipps Station, the history of which is outlined in The Unincorporated Area of New South Wales: A Heritage Study (Hope 2006). Limestone and Nine Mile Stations all correspond in part to sections of the original Mount Gipps Station.

Belmont, parts of Limestone and Nine Mile, Eldee and parts of Purnamoota correspond to sections of the original Mundi Mundi Station. The Mundi Mundi Ruins are located between Belmont and Eldee on Dense Camp Creek. These ruins are a site complex that date to the nineteenth century and include homestead remains, a water tank and well and a series of burials; they are located on Eldee Station. While the Mundi Mundi Ruins do not correspond to proposed turbine envelopes there is the potential that futures stages of the development Project would impact on this item at which stage it would be necessary to document the site and assess the heritage significance and potential impacts. At this stage the Mundi Mundi Ruins are almost definitely of local significance and have the potential to be of State significance. This item would not be materially affected by the Stage 1b and 1c development and as such has not been included in the field work for this report.

The Silverton Tramway was a historically significant development within the context of the development of mining at Silverton and Broken Hill. Although not formally listed on any heritage register, it was discussed in some detail in Hope's (2006) heritage study. Hope (2006) states:

The Silverton Tramway is of exceptionally high state and national significance. As a private railway of approximately 50 kilometre length, its strategic role in the interstate railway network may be unique. For 80 years it was critical to the economic functioning of Broken Hill, by providing the key transport of ore to the smelters at the Port Pirie sea-port. It played a significant role in the politics and recreation of Broken Hill, and a crucial role at times of water shortage (Hope 2006: 342).

A small portion of the Silverton Tramway is within an area of potential direct impacts associated with Stage 1. This is the area where the proposed transmission line would cross the tramway in the vicinity of Acacia/Limestone Siding.

The water pipe from Umberumberka Reservoir to Broken Hill is traversed by numerous impacts associated with the Stages 1b and 1c area, and the transmission line to Broken Hill. The complex as a whole has been assessed by Hope (2006) to be of state significance.

Significance

Historical themes applicable to the Stage 1b and 1c area include:

- Exploration
- Squatters and pastoral stations
- Townships
- Mining
- Road transport and trade.

Each was investigated and predictive statements made, based on the reviews of primary and secondary documentary sources, and the regional databases of known historical sites documented in Dibden (2008). The potential for sites to exist is not a reflection of their potential significance. That is, a high potential does not necessarily imply high significance.

An item would be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the following criteria.

Criterion (a)	An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area)
Criterion (b)	An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area)
Criterion (c)	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)
Criterion (d)	An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons
Criterion (e)	An item has potential to yield information that would contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)
Criterion (f)	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area)
Criterion (g)	An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or a class of the local areas).

The sites recorded during this survey have been assessed against the State Heritage Register criteria and have been guided by the NSW Heritage Office update Assessing Heritage Significance (2001) and the Heritage Council of NSW update Levels of Heritage Significance (2008); Pearson and McGowans (2000) Mining Heritage Places Assessment Manual has also guided the significance assessment. A statement of significance for each site is provided in the full report (Archaeology Addendum).

Management

A variety of items have been recorded in the course of fieldwork undertaken for this Project. A summary of mitigation strategies and management recommendations is provided in Table 10 of the full report (see Archaeology Addendum) ,along with constraints mapping.

It should be noted however that there are no previously recorded heritage items within the proposal area that are on any statutory lists. The vast majority of identified items are assessed to be of insufficient heritage value to warrant any sort of formal listing and eight of the recordings are assessed to be of local significance. The Silverton Tramway is assessed to be of state significance and potentially national significance. However this feature is not formally listed on any current heritage register. Impacts to this site can be minimised, and effectively avoided.

Direct impacts can be avoided to the majority of the heritage items within the proposal area. Given that none of the identified heritage items have been assessed to have a significant aesthetic component to their heritage value, and given that the development could effectively avoid all physical impacts to heritage items within the proposal area, the overall impact on items of Non-Indigenous heritage would be minimal.

Impacts to the broader cultural landscape are unavoidable. Nonetheless, the visual impacts assessment indicates that the cumulative impact on landscape character would be low to moderate only (Green Bean Designs 2008). Furthermore, the proposed development fits within a theme of previous landuse, i.e. exploitation of natural resources and could usefully contribute to an adaptive reuse of the landscape. A result such as this could be ensured if the development was accompanied by a more comprehensive research Project on the history and heritage of the area. Primary objectives of such a study would be to fill in the gaps in the existing history of mining for the region and compilation of a more complete record of heritage items in the Barrier Ranges. This would in turn aid in conservation of heritage values across the landscape, which would serve as a considerable mitigation of the abovementioned impacts to that landscape.

Impact assessment – operational

Additional impacts are not considered applicable to the operational phase of the proposal.

Impact assessment – decommissioning

Additional impacts are not considered applicable to the decommissioning phase of the proposal.

5.3 VISUAL IMPACT REVIEW

A Landscape and Visual Impact Assessment (LVIA) was completed by URS and Green Bean Design for the proposal and forms part of the exhibited EA. This assessment considered the visual impact of all aspects of the Silverton Wind Farm on people living and working, or visiting and travelling in the area surrounding the Wind Farm site.

The LVIA involved a comprehensive evaluation of the visual character of the landscape in which the proposed wind farm and associated structures would be located, and an assessment of the potential visual impacts that may result from the construction and operation of the wind farm, taking account of appropriate mitigation measures.

SWFD with Green Bean Design has undertaken a review of identified visual impact locations from the LVIA in the EA. The LVIA considered impacts arising from both Stage 1 and Stage 2 of the Proposal. Where those impacts were assessed to be either medium or high for either stage of the proposal the higher assessment was presumed for the Preferred Project. In consultation with the Department of Planning, SWFD has prepared further photomontages to assist in the assessment of wind turbines in Stage 1 of the preferred Project. The following locations selected for the preparation of further photomontages were selected by considering:

- Location 12: Representing the elevated views from galleries to the south of Silverton
- Location 27: Representing views from receptor locations 10, 11, 19, 20, 21, 22, 27 in the LVIA
- Location 17: Representing a view from another position within Silverton.

The photomontages were prepared as representative views of locations which may have a medium or high potential visual impact from the construction of the wind turbines in stage one of the preferred Project (282 locations).

Two versions of the view from each location has been created – one has the 282 turbines of the Preferred Project and the second shows all turbines (598) in the full Stage 1 and Stage 2 of the proposal.

View Location 17 – Silverton Village – Stage 1 Preferred Project

View Location 17 – Silverton Village – All turbines

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View Location 27 – residence – on the road to Silverton Cemetery – Stage 1 Preferred Project

View Location 27 – residence – on the road to Silverton Cemetery – All turbines

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View Location 12 – elevated land Silverton South – Stage 1 Preferred Project

View Location 12 – elevated land Silverton South – All turbines

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One further location was reviewed by Green Bean Design – Receptor Location 6 - Country Water Residence, Umberumberka Reservoir. The original assessment of Receptor Location 6 (Country Water residence) assessed a Low visual impact for Stage 1 and a Medium visual impact for Stage 2. As the residence at Receptor Location 6 is not directly visible from surrounding areas, the visual impact assessment was based on a conservative desk top interpretation of aerial photographs and topographic maps available at the time of the assessment.

Green Bean Design has reviewed the original visual impact assessment for the Receptor Location 6 following receipt of additional high resolution aerial photography and detailed ground contour data and confirms that the original Stage 2 Medium visual impact has been re-assessed to be a Low visual impact.

The assessment of a Low visual impact is a result of a combination of factors including:

- The influence of landform rising and undulating north and east of the reservoir to potentially screen views toward the large majority of the Stage 2 turbine locations from the residence
- The screening influence of landform rising from the edge of the reservoir to partially obscure views toward lower portions of the turbine structures from the residence
- The potential screening influence of tree vegetation to the north east corner of the residence, and tree vegetation around the edge of the reservoir (around seven to eight metres below the level of the residence)
- Overall the detailed contour data illustrates that only a very small number of the Silverton Wind Farm turbines would be visible from Receptor Location 6.

The Landscape and Visual Impact Assessment Report included in the exhibited EA is considered to have fully address Landscape and Visual Impact Assessment of the Preferred Project Stage 1 Project Approval and Stage 2 Concept Approval.

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6

MODIFICATIONS TO THE EXHIBITED PROPOSAL RESULTING FROM FURTHER ASSESSMENTS AND DEVELOPMENT WORK FOR THE PREFERRED PROJECT

6. MODIFICATIONS TO THE EXHIBITED PROPOSAL RESULTING FROM FURTHER ASSESSMENTS AND DEVELOPMENT WORK FOR THE PREFERRED PROJECT

As a result of the further survey research and assessments undertaken to satisfy the Project approval criteria for the preferred Project a number of discrete amendments have been made to the proposal.

The key amendments are the following:

- The boundary of the wind farm has been altered over Eldee in line with landholder requirements
- The inclusion of 162 further turbine locations and associated works and infrastructure in Stage 1 of the proposal for which Project approval is sought
- Realignment of tracks in specific sections of 1b and 1c to demonstrate the potential for avoidance of impacts to the Tawny Rock Dragon in identified hot spots
- Minor relocation of three wind turbine locations to demonstrate the avoidance of impacts to Tawny Rock Dragon Hotspots
- Further Statements of Commitment to anchor mitigation of biodiversity and archaeological impacts to the Environment Management Plan (EMP)
- A revised Statement of Commitments table is included in this report and clearly identifies new, modified and renumbered SOCs.

All of the impacts of the wind turbines and internal tracks, transmission and electrical infrastructure were assessed in the EA. Only the full site biodiversity and archaeology remain outstanding. The 162 turbine locations and associated infrastructure which are now also included in Stage 1 in the Preferred Project have also now been the subject of biodiversity and archaeological survey and assessment and constraints have been identified and addressed and avoidance and mitigation put in place in line with the earlier Stage 1 impact areas.

Elevation of these turbines from concept approval to Project Approval does not cause additional environmental impacts to those already stated. In line with the statements of commitment already made and the new statements of commitment resulting from the further field studies it is considered that impacts are consistent with the environmental assessment.

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7

CONSIDERATION OF SUBMISSION

7. CONSIDERATION OF SUBMISSIONS

7.1 EXHIBITION PERIOD AND LOCATION

An Environmental Assessment (EA), prepared by **ngh**environmental, was submitted to the NSW Department of Planning in May and was placed on public exhibition from 1 October to 3 November 2008 at:

- The Silverton Hotel, Layard Street , Silverton
- Broken Hill City Council, 240 Blende Street, Broken Hill
- Wentworth Shire Council, 26-28 Adelaide St, Wentworth
- Nature Conservation Council, 301 Kent St, Sydney
- Department of Planning, 22-33 Bridge St, Sydney.

Three further print copies and additional electronic copies of the EA were made available to the Silverton community through the Silverton Village Committee. Local residents were notified of the exhibition period through newspaper advertisements placed in the local papers by the Department of Planning, a newsletter sent to residents within ten kilometres of the Project or who had registered their interest in the Project and via the general media.

The Department of Planning extended the deadline for submissions until 21 November 2008.

7.2 RESPONSES RECEIVED

The Department of Planning received a total of 17 submissions prior to the deadline of 3 November 2008 and a further eight submissions in the following week, resulting in a total of 25 submissions. Of the 25 submissions, 12 were from individual members of the public or community groups, nine were from government agencies and four were from companies. In accordance with section 75H of the *Environmental Planning and Assessment Act 1979*, this section provides considered responses to the issues raised in submissions received in relation to the EA for the proposed Silverton Wind Farm.

The issues raised in each submission were summarised and tabulated and this matrix forms the basis of the structure of the response to submissions. Issues are addressed in the order in which they appeared in the EA.

7.3 SUMMARY OF SUBMISSIONS

Submissions in Support (or not opposed)	10	40%
Submissions Opposed	11	44%
Submissions with no position	4	16%
Government Agency submissions	8	32%
Submissions representing groups	3	12%
Total number of submissions	**25**	-

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8

PROPONENT'S RESPONSE TO SUBMISSION

8. PROPONENT'S RESPONSE TO SUBMISSIONS

Most submissions raise several issues and a number of recurring themes appear. In order to form a response that is coherent and of relevance to the largest audience, the responses have been made to recurring themes, not to individual submissions. However, as much as possible, specific concerns have been incorporated into the responses.

8.1 LANDSCAPE AND VISUAL IMPACT

Issue	Concerns regarding the impact on the highly valued aesthetic quality of the landscape
Sub. No	8, 10, 15, 19, 20, 24
Response	The impacts on a wide range of aspects and locations are discussed in the Landscape and Visual Impact Assessment report, exhibited as part of the EA. The landscape would be highly valued for its aesthetic qualities by many who live and visit the area. The landscape assessment, as part of its conclusion notes that: — Although a number of wind turbines would be visible from around the Silverton locality and would have the potential to alter the physical characteristics of the landscape, the proposed Silverton Wind Farm site is surrounded by a very large scale and open landscape. It would have the ability to visually accommodate a large wind farm development from a number of receptor locations. The assessment of the wind farm and its associated impacts by the Department of Planning will balance a number of complex factors, not least of which will be the landscape and visual impact considerations. The Proponent relies upon the report written by Green Bean Design who are of the view that, with some minor mitigation, the overall impacts of the proposed wind farm are not unacceptable.
Issue	Concern regarding the visual impact from local properties and proximity of the turbines.
Sub. No	11, 19, 21
Response	The Landscape and Visual Impact Assessment in the EA considered the visual impact from local properties. An assessment and determination of the potential visual impact for the wind farm development on 55 receptor locations identified, indicated that for the combined Stages 1 and 2 (all wind turbines): — 8 of the 55 view locations have been determined to have a NIL visual impact — 26 of the 55 view locations have been determined to have a LOW visual impact — 19 of the 55 view locations have been determined to have a MEDIUM visual impact — 2 of the 55 view locations have been determined to have a HIGH visual impact The LVIA notes that the majority of potential residential receptors within Silverton are unlikely to have a direct view towards the Stage 1 Silverton Wind Farm site from within dwellings. This conclusion can also be applied to the revised Stage 1 as Stage 2 of the proposal broadens the views from Silverton to the east. Some residential receptors would have views toward turbines from areas surrounding their residence. Although some negative comments were received in response to an open house feedback form, a ballot conducted by the Silverton Village Committee indicated that 64 per cent of Silverton residents were in favour of the Silverton Wind Farm. As visual impact for individuals is closely aligned with their perception of a wind farm this majority in favour of the development would assist in viewing the opportunities alongside the impacts of the wind farm which would go some way to mitigating concerns about impacts to individual properties. While the LVIA notes that there would be visual impacts it is not possible to build critical infrastructure without impacting upon some individuals.

The selection of the Barrier Ranges as the site of a wind farm of this stature has already significantly reduced the numbers of individuals who would be visually impacted by such a development in most other areas of NSW.

Within the Statement of Commitments is SOC10, which offers (planting of vegetation) to dwellings categorised as having a moderate or high visual impact

As potential impacts of the wind farm would be borne by those closest to the wind farm, the Proponent has proposed a Solar Silverton program (for further detail, see the EA) to broaden the benefits of the wind farm to the local community. In this Preferred Project and Submissions Report the Proponent (in the Tourism responses section) would also provide, on request, a domestic sized water tank to all inhabited residences within 10 kilometres of the site as an eco-centric addition to the Solar Silverton program.

The LVIA considered intrinsic values through the assessment of Landscape Units surrounding the proposed wind farm. The landscape is generally remote, but the overall visual amenity was considered moderate, although higher in some areas including elevated views from the Mundi Mundi lookout. There is no suggestion or implication in the LVIA that the landscape is "worthless" as stated by one submitter.

Issue	Suggests a 6 kilometre buffer from Silverton
Sub. No	19
Response	From the Proponents perspective, a broad 6km visual buffer around Silverton would result in the loss of around 25+ wind turbines. It is important to state that the loss of 25 wind turbines could impact on the viability of the wind farm. While 598 wind turbine locations may seem like a large number of turbines, the viability of the wind farm depends upon the economies of scale. The cost of the Stage 2 transmission line to Red Cliffs is significant and is funded in effect by being divided up among the wind turbines whose electricity it exports. From a visual impact perspective, even with the loss of 25 turbines, a greater number would remain visible in the landscape from locations identified in the Landscape and Visual Impact Assessment. The Landscape and Visual Assessment identified the closest distance between a wind turbine and residence at approximately 3km, and determined a potential visual impact level for each residence. It determined the majority of residential receptors are unlikely to have direct views toward turbines from within dwellings. Doubling the distance to wind turbines would not 'halve' the impact. Where turbines are located in a landscape and there is a visual impact, the degree of the impact depends on the perceptions a viewer has of wind energy. Seeing 25 wind turbines instead of 50 may result in some improvement to a receiver, but if the viewer does not like turbines it would be a small gain. Regarding current planning controls and the modeling of turbine impacts, a 6km buffer zone appears to be arbitrary. To the best of our knowledge there are no planning controls or principles that would require the implementation of a broad visual buffer between Silverton and the proposed wind farm. We are not aware of any recent Australian wind farm project that has required the establishment of a broad visual buffer between it and surrounding residential receptors. There are, however, circumstances where individual turbines have been removed or relocated to minimise visual impacts for other wind farm projects following discussions between proponent and individual property owners, or at the direction of planning authorities in response to the determination of specific visual impacts. Our approach, similar to other wind farm developments, is to model and evaluate the impact of specific turbines, rather than establish a buffer zone. This provides a much more accurate picture of impacts and the information required for mitigation. It is worth noting that the imposition of an arbitrary buffer distance, not based on site and turbine specific modeling, could set an unfortunate planning precedent.

The distance from residences is generally driven by compliance with the relevant noise guidelines which do not have a set-back distance prescribed or recommended and are based on a performance requirement to achieve compliance with noise levels at residences directly related to amenity.

The Proponent recognizes that there must be a role for community input into the decision making process and understands that a buffer zone has been recommended by several respondents, during the public exhibition process. The Proponent considers that the 3km distance to the closest residence is an adequate buffer distance which both fully mitigates noise impacts and lessens the visual impact to an acceptable degree. While potential turbine locations exist closer than 3km, these have not been pursued or included in the proposal. The higher wind energy yielding slopes in the Silverton Wind Farm are generally around 3kms from homes on the north of Silverton and accordingly the site itself has determined a larger than usual setback. In this way, the Proponent suggests that the 3km distance to the closest turbine is a more accurate and demonstrable reflection of the concerns of the community to see that impacts are minimized appropriately.

Issue	The proposed power line would disturb the uninterrupted views
Sub. No	14, 21
Response	The views of residents and tourists are a significant factor in determining the final route of the transmission line from site to Broken Hill. Other key considerations are archaeology and biodiversity.

Green Bean Design notes:

The proposed transmission line route, as illustrated and assessed in the LVIA report, is unlikely to be visible from the primary abode and adjoining plant nursery production area located on the Limestone property. The fieldwork included two visits to the property and a tour of the nursery production area adjoining the primary abode.

The transmission line crosses the Silverton Road approximately 2.5 to 3km to the west of the primary abode and nursery production area and would be largely screened by undulating landform and tree planting to the west of the primary abode. There were no windows noted on the western façade of the primary abode.

The main windows from the primary abode face south, with distant views toward the proposed transmission line, to the south of the Silverton Road, generally screened by landform rising between the primary abode and the Silverton Road.

The transmission line would be visible from some areas of land within the Limestone property, beyond the primary abode and adjoining nursery area, which we understand is predominantly sheep grazing pasture, but may include some areas of olive orchards to the north of the primary abode.

The LVIA notes that a total of 11 receptor locations were identified as part of the Stage 1 transmission line visual assessment process and included views from residence, tourist facilities and destination and road corridors. An assessment of the visual impact for each receptor location indicated that for the Stage 1 transmission line route:

- 0 of the 11 receptor locations have been determined to have a NIL visual impact,
- 11 of the 11 recpetor locations have been determined to have LOW visual impact
- 0 of the 11 receptor locations have been determined to have a MEDIUM visual impact
- 0 of the 11 receptor locations have been determined to have a HIGH visual impact

The Proponent would continue to discuss the fine detail of the siting of the power line route and the best way to balance the visual impact on visitors and Silverton residents travelling along the Silverton Road with the landholder across whose land the easement would run.

	It is considered that the option proposed in the EA balances the needs of the community with the needs of the individual landowner. Nonetheless further discussion is proposed and will include actively considering ideas from the landholder to reach a final route which minimised impacts to all.
Issue	The visual assessment at receptor no 46 has visitor numbers noted as very low to low but current visitation figures indicate 25,000 people per annum visiting.
Sub. No	10
Response	The assessment of numbers of people visiting this site is based on a traffic counter on the road to the Sculpture Park. Annual Average Daily Traffic Count (RTA 2005) figures were used. Updated figures were requested from the Council but were not supplied. The number of viewers in LVIA Table 10 is per day thus 25,000 people per annum = 25,000/365 = 69 people per day which is Low to Very Low. Even if the site is closed for a few days a year it would still be Low. Even with numbers of 25,000 visitors the distances are 18.5 kilometres to Stage 1 and 14 kilometres to Stage 2 which is beyond the 12 kilometre distant viewpoints. As there are very few view locations at this distance it is not presented as an option on the table and so is banded in the Long to Medium as opposed to Distant category. Had the distant category been used in the table the assessment would continue to be low.
Issue	Visual assessment ignores the view of the entire front of the Barrier Ranges between Eldee and Willangee
Sub. No	15
Response	Views were assessed along the western edge of the Barrier Range and included views from the Blore Film Set, the sealed road toward the reservoir, the Eldee Station access road and two locations at Eldee Station. Public views from the western edge of the Barrier Ranges are generally restricted to the sealed road and dirt road extending to Eldee Station and beyond. Land within pastoral lease areas is not accessible to the general public. The visual assessment did not continue along the dirt road north of Eldee Station as there was no direct evidence to suggest any significant or regular patronage along this portion of dirt road, and views from vehicles travelling north would tend to be directed away from the wind farm once passed Eldee Station. During the course of our fieldwork we noted that the majority of visitors stopped at the Mundi Mundi Lookout, with some proceeding to the reservoir before returning to Silverton or Broken Hill. Those who go on to the Eldee homestead have been considered within the LVIA Report in the EA. The western portion of the wind farm would be visible from sections of the dirt road between Willangee and Eldee Station from a range of distances between approximately 17km, from the general proximity of Willangee homestead, to around 2km west of Eldee homestead. The potential impact for motorists travelling south would be Low, and for visitors would depend on the perception by individual viewers, and influenced by the values they associate with wind farms as a non-polluting and renewable energy source. Notwithstanding the above, the submission has provided no information to indicate who, or how many people would be impacted along this section of road. The Landscape and Visual Impact Assessment report discusses potential impacts on tourism.

Issue	Proponent's reliance on overseas perception of wind farms is not representative of rural Australia
Sub. No	15
Response	The LVIA report clearly states that, at the time that the report was prepared, there was a limited amount of Australian research available into the visual perception of wind farms. Research from Australia and the UK was presented in the report, together with the results of local polls and community consultation. We understand that surveys of people's visual perceptions of wind farms are being undertaken for various ongoing wind farm developments throughout Australia and will provide further data for future wind farm assessments as the wind farm industry continues to grow. It should be noted that while overseas studies are generally cited in wind farm planning applications in Australia due to the wind farm industry being in its infancy here and there being a dearth of pre and post construction studies, in this particular wind farm there has been no reliance on perceptions elsewhere to determine the acceptability of landscape and visual impact. Overseas studies are merely an indication of perception of acceptability or otherwise and where there are a number of such overseas studies reaching similar conclusions they are an indication of a general trend..

8.2 NOISE IMPACTS

Issue	Concerns regarding operational noise impact
Sub. No	3, 19, 21, 23
Response	Heggies, a respected acoustic consultant carried out a Noise Impact Assessment at the proposed site. The assessment considered the proposal in accordance with the South Australian EPA environmental noise guidelines for wind farms in accordance with the DGR's. The SA EPA Guidelines have been developed to protect the amenity of the receiving environment noting that wind farms are often in rural areas with low ambient noise. The SA Guidelines establish a base limit of 35dB(A) which is 5dB(A) less than the equivalent New Zealand criteria (as used in Victoria). The guidelines also consider that noise impacts are marginal and acceptable if the noise generated does not exceed the background by 5dB(A). The noise assessment considers all residences located within a distance of ten kilometres of the proposed wind farm in accordance with the SA EPA Guidelines criteria and in relation to the pre-existing background noise level regression analysis. The noise assessment identified that there are no receivers that would be impacted by noise levels above the appropriate criteria. The noise assessment concluded that Stage 1 and Stage 2 (598 turbines) predicted operational noise levels comply with criteria at all locations and the contour plots are presented in Figure 3 and Figure 4 of the Noise Impact Assessment Additional analysis of the sensitivity of turbine heights was undertaken to determine the effect of physical size of the turbines on noise propagation. Reducing the hub height from 100 to 80 metres resulted in an average increase of 0.2dBA across the site which is statistically insignificant. The noisiest turbine of the group under consideration, for which data exists, was modelled to provide a worst case assessment of noise impacts. This turbine was the Vestas V90 –3MW and identifies that mitigation would be required in certain places if this turbine was ultimately used. The noise assessment results would vary with different turbines and additional noise modelling of the final layout based on the turbine selected would be carried out to confirm relevant noise criteria are likely to be met.

Compliance with the relevant noise guideline is a planning requirement and the Proponent confirms that it would comply with the noise criteria.

SOC15 is amended in line with DECC's request and is now:

SOC15 A final noise assessment will be completed prior to construction based on the final turbine layout and turbine selection to confirm noise criteria will be met at all identified sensitive noise receivers. Where predicted noise levels exceed the criteria, a negotiated agreement will be put in place that includes compensation for noise affectation.

Heggies's consultant responded directly to submission 22

Issue	Proponent failed to address noise impacts at receiver sites on plains, foothills, slopes, creek beds, barrier ranges etc
Sub no	22
Response	The Noise Impact Assessment has the primary objective of predicting wind turbine noise levels and assessing potential impact at residential dwellings. The South Australian EPA Environmental *Noise Guidelines: Wind Farms* states that "The property boundary of the receiving premises is not necessarily a valid measuring position (particularly for large rural properties) unless it is likely that someone would regularly be there or the Development Plan clearly envisages noise sensitive development at such a location. In general, any area within 20 metres of a house and in the direction of the wind farm would be a valid measuring position."
Issue	The noise generated from Turbines will be too loud. It is clearly shown by the noise studies that the WTG noise has a high value of 50 dBA, as the turbines will only be several hundred metres away and these noise levels will scare the sheep being held in the yards for shearing, lamb marking and crutching
Sub no	22 According to the Noise Impact Assessment prepared by Heggies, the predicted WTG noise levels at the submitters Homestead and tourism precinct would be generally less than 38 dBA. The woolshed and sheep yards are located approximately 500 metres to the north–north east of the homestead, where the predicted noise level is also approximately 38 dBA. It is estimated that during periods lamb marking and shearing the noise levels in the yards would be considerably higher than this owing to the noise generated by such activities (sheep, dogs, shearing equipment etc.).
Issue	It is specified that all noise recording devices should not be placed closer than 5 metres from a reflective surface at submitters property they were less than 2 metres from the corrugated iron wall of the homestead and less than 3m from a corrugated iron fence clearly shown in the Environmental Assessment
Sub No.	22
Response	The South Australian EPA Guideline requirement to place the microphone at least five metres from any reflective surface (other than the ground) is primarily intended to reduce the effects of reflected acoustic energy, which otherwise may have the affect of marginally elevating noise levels. The noise logger at this property was placed approximately mid span between a corrugated boundary fence and a corrugated fence that defines the veranda perimeter of the building. The height of each of these walls was approximately equal to or less than the height of the microphone post, which therefore effectively eliminates the possibility of reflected acoustic energy from sources located higher than this level.

Given the complexities of finding a suitable location at the submitters residence (see below), Heggies is confident that the resultant collected data has not been adversely affected by reflected acoustic energy and therefore is consistent with the requirements of the South Australian EPA Guidelines.

Issue	At submitters property the noise recording devise was close to a large reverse cycle air-conditioner unit
Sub no.	22
	The northern side of this homestead was chosen as the most appropriate location to monitor as during the initial site visit it was observed that a significant, and dominant noise source of a pump was located to the south of the house. Further it was decided that the monitoring location would be relatively protected from prevailing winds (wind during the survey period was predominantly from the south-east) thereby ensuring minimal excess wind induced noise on microphone. Elevated noise from the air-conditioner unit (approximately 47 dBA) was identified in the noise monitoring data taken during the afternoon or evenings on the 6th, 8th, 13th, 14th and 15th of December 2007. This data was excluded from the valid data set which formed the basis of the baseline analysis.
Issue	Less than four metres away from the noise recording devise there were three dog yards and one of the dogs was in season
Sub. No	22
Response	The baseline analysis uses the LA90 noise statistic, being the noise exceeded for 90 per cent of the time. It is easier to consider this as being the 'quietest' 10 per cent. This statistic is therefore not affected by intermittent or short term noise events, such as barking etc.
Issue	There was a very bad storm and submitter noticed several days later that the microphone was on the dirt in a garden that received daily watering
Sub. No	22
Response	The acoustic consultant who retrieved the equipment made no observation that the equipment was in any different position or condition from that in which it had been left. The instrument is calibrated at the beginning and end of the measurement period and it was found to be accurate.
	The microphone and windsock combination are relatively tolerant of rain and moisture, as these instruments are designed to be left outside. Should the microphone and windsock have been temporarily dislodged from the microphone mast and subsequently re-attached by the resident we can only conclude that noise levels monitored whilst the microphone and windsock were at ground level would have been marginally lower than those at microphone mast height and hence the lower numbers would be slightly more conservative.

Issue	In relation to the waiving of normal hours on construction sites as it has been suggested that there will be 24 hours of shifts 52 weeks of the year. Consideration needs to be given to residents around and in the development site as we can't leave at the end of our shifts and go home to the peace and quiet as we live here. What does the World Health Organisation and current NSW legislation state about this situation?
Sub. No	22
Response	Out of hours construction work would only be undertaken where it can be demonstrated that construction noise would not adversely impact on the amenity of surrounding residential receptors. For night period construction activity, it is recommended that the noise emissions be assessed, as per the NSW Industrial Noise Policy. It should be noted that construction activities that may occur during the night period, such as WTG tower erection, would likely be inaudible at the submitters homestead.

Issue	Concerns regarding construction noise
Sub. No	3, 19, 23
Response	Construction noise impacts are assessed in Section 7.3 of the EA and Appendix 2. The proposed construction activities including concrete batching, rock crushing, trench excavation and turbine erection have been considered. The predicted worst-case construction noise impacts for most receivers are below the existing daytime background level. Some nearby receivers are anticipated to receive elevated construction noise levels when turbine foundation works, particularly the rock breaker, are located nearby. However, the noise levels are within allowable limits and with the anticipated short duration of these activities, it is unlikely that construction noise would cause any unnecessary impacts. However, considering the potential impacts on local residents, the following SOCs have been made regarding construction noise: SOC11 Employ appropriate noise reduction strategies to ensure the recommendations of the NSW Environmental Noise Control Manual are met. Strategies may include the re-orientation of machinery, re-scheduling of noisy activities, installation of temporary noise barriers, improved vehicle noise control, reduced work times and the use of 'quiet work practices' (such as reducing or relocating idling machinery) SOC12 Use appropriate and effective exhaust mufflers and compressor silencers on machinery SOC13 Respond to noise complaints in a timely manner In line with the request in Submission 25 from DECC and in line with the document quoted in the Noise assessment, SOC14 is amended to read: SOC14 To minimise blasting impacts at residences, all blasting activities will meet the recommended criteria contained in the document technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground vibration (ANZECC, 1990) Statements of Commitment 11, 12, 13 and 14 related to construction noise will be applicable at the Country Water house at Umberumberka which as a residence will be considered in the same manner as other residences in the vicinity of the wind farm.

Issue	Concern about blasting close to Daydream Mine and suggestion to move the wind turbines 3kms away
Sub. No	23, 24
Response	Following discussions between submitter 24 and a mining authority it is understood that concerns about blasting impacting on the Daydream Mine have been answered. Nonetheless the Proponent is comfortable committing to a revised SOC14 which is quoted in the Noise Assessment in the EA and requested by DECC – see SOC14 above. On the question of moving the wind turbines 3km back from the mine this would be to address a concern that the mine may be impacted. There is no indication from investigations and reports completed to date that the mine may be impacted by the development of the wind farm. Such a buffer would result in the loss of 19 wind turbine locations which is a large enough number to have the potential to impact the viability of the project. Nonetheless the proponent acknowledges the unique historical significance of the mine and the nature of the concerns raised and will provide, for information to the submitter, the results of more detailed geotechnical investigations of the wind turbine locations closest to the mine when these have been undertaken.

8.3 BIODIVERSITY

Issue	Concerns regarding the survey effort and mitigation measures applying to threatened species. Specific concerns included: — The surveys focussed on the ridges and neglected the valleys and slopes — The surveys were undertaken during drought and therefore an inaccurate picture of the sites biodiversity has been derived from onsite work — The adverse impact of goats was overstated in relation to the current level of site degradation (the respondent indicates drought is the overriding factor)
Sub. No	9, 12, 17, 21, 23
Response	**Focus on ridges** As most direct impacts of the proposal would be on ridges, the survey effort was skewed to ridges. The survey effort was stratified however, to ensure that the range of habitat types occurring within the development envelope were surveyed representatively and therefore included slopes and valleys. Indirect impacts, such as erosion and sedimentation, are more likely to adversely affect valleys and slopes outside the development envelope. These type of indirect impacts were also considered within the EA and measures developed to manage them. SOC19 Implement weed and sediment erosion controls to minimise onsite habitat degradation resulting from the proposed works. This would include a weed hygiene process. SOC20 Site stabilisation and rehabilitation would be undertaken as work progresses, following the guidelines in the EA. **Drought** The spring survey was timed to coincide with the peak detectability of the majority of species (in particular, flora). The Biodiversity Assessment (BA) discussed how the drought may have impacted on the ability to detect some flora and fauna species, and acknowledges the survey could have resulted in

	the omission of some cryptic, sparsely distributed, ephemeral or seasonal species and that some grazing-sensitive species may not have been detectable in light of the number of native and introduced herbivores present in the study area. In view of this and as a precautionary approach, the known habitat requirements of threatened species which have been recorded or are predicted to occur in the region, were analysed against the vegetation communities of the study area to evaluate their potential for occurrence. Non-detection of a species during the surveys was never used as grounds to rule out consideration of potential for impact. Goats and drought There is little doubt that introduced herbivores have had a major impact on the floral diversity and condition of the study area. Goats are harvested across the majority of the study area at varying levels. However, during all surveys, moderate to high numbers of goats (flocks of 20-30 animals common) or their signs, were regularly encountered across the study area. Compared with short-lived plants, trees and shrubs contribute disproportionately to landscape and ecosystem stability in the arid zone because of their drought resistance and ability to survive in harsh conditions. However, the introduction of goats has led to the suppression of the regeneration of many trees and shrubs on the site. Goat habitation has also degraded the majority of rocky outcrops. Scats and urine litter these areas, which are known to impact on habitat quality for many threatened species. Unless these threats are removed, key vegetation community species such as Acacia would disappear from the landscape when the existing mature specimens die. These threats are well recognised, being listed as a Key Threatening Process by DECC and as a Threatening Process to many of the 214 vegetation communities of Western NSW (Benson et al 2006). The BA also discusses how the vegetation of the study area is also likely to be suffering the effects of other practices including: — Mulga was a principle species for fence posts from the commencement of pastrolism in the 1860s to 1940 — Mulga was cut for drought fodder in the 1890s. Mulga was an important tree species for the mining industry, with most trees being removed within a few days travel of Broken Hill. While it is acknowledged that the drought may have played some role in the current condition of the study area, the physical evidence of goat degradation onsite inhibits the ability of biodiversity to survive sub-optimal conditions. Their continued presence is likely to threaten the long-term survival of the flora and fauna of the study area. Considering this, the impacts of grazing by introduced herbivores is considered by the authors the overriding factor in the current condition of the study area.
Issue	Concerns regarding the intensiveness of bat surveys, specifically whether the harp trapping effort was sufficient to complement the anabat data collected
Sub. No	17
Response	While nghenvironmental prefer to undertake anabat surveys over harp trapping (which can obtain much more data and do not cause any undue stress to the animals) detection is not always suitable for identifying all echolocation calls to species level. Undertaking harp trapping generally addresses two concerns. — Provides some information on the age and sex of species onsite — Provides a means to identify species less able to be differentiated by echolocation call alone. DPI guidelines regarding animal care and ethics obligations during fauna surveys state that anabat echolocation detectors should be used whenever possible as they have no impact on bat fauna. Harp trapping has also been considered 'less productive' in western NSW where sparse vegetation and few obvious flyways limit suitable locations to place harp traps (DEC 2004).

The results of the field work proved the harp trapping was far less successful than the anabat surveys on the site. The authors consider that additional harp trapping would not have been warranted and that the survey effort was appropriate to the habitat qualities of the subject site and the species that are known to, or predicted to occur in the CMA subregion.

Issue	Concerns regarding the alteration of the fragile ephemeral creek micro habitats and the destruction of ridge top vegetation
Sub. No	9, 11, 12, 15, 22
Response	Several submissions were concerned about the impact on ephemeral drainage lines from track and turbine excavation on ridge tops. The soils onsite are known to be rocky and skeletal. In terms of erosion and sedimentation affecting the provision of habitat to native species, the following points should be considered. — Sediment erosion controls have been committed to as a part of the proposal. The need to address the special sensitivity of this steep and rocky site has been specifically discussed within the EA and is committed to as part of the proposal — SOC58 (SOC49) Establish a Sediment/Erosion Control Plan — Drought in combination with feral animal pressure is already adversely affecting drainage lines; reduced vegetation cover contributes to reduced landscape stability, greater rates of soil erosion, which in turn reduces the ability of vegetation to become established, in a downward spiral. This is a particular concern onsite, given the occurrence of windy and heavy rainfall weather events. Given the duration of the drought, the site may be in its worst condition for some time (or possibly ever). The need to address feral animal pressure has been specifically stated and committed to as part of the proposal. Hence, the proposal would address a problem currently degrading the site. Below is SOC30 from the EA which is underlined where the suggested additional wording from DECC has been included in the revised SOC39. SOC39 (SOC30) Prepare and implement a goat management plan across vegetation in the Stage one area with a particular focus on porcupine grass/red mallee/gum coolibah/hummock grassland. The goat management plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, Western Catchment Management Authority, Department of Primary Industries, Broken Hill Rural Lands Protection Board and relevant landholders.

Issue	Risk to birds and bats survey
Sub. No	17, 23
Response	One submission discussed the risk of generating a local population impact for bats and criticised the risk assessment of bat species within the BA. It noted that even with intensive monitoring over the first six months, this may be all the time that is needed to have an irreparable impact on a local population. Base line data collection and mark and recapture methods prior to development were recommended. The DECC submission recommends that turbines not be sited in areas likely to be frequented by birds susceptible to bird strike, particularly breeding raptors. The BA contained a risk assessment for the operational impacts to birds and bats in order to identify and assess species at particular risk. Mitigation measures were designed to reduce risks, addressing the placement of infrastructure, means to reduce the attractiveness of the infrastructure to birds and bats and means to monitor the effect of these measures. This process is considered by the authors to have been sufficient to address DECCs concerns.

SOC55 (SOC46) Design and implement an adaptive management monitoring program to document bird and bat mortalities, remove carcasses and assess the effectiveness of controls. If the results of assessment demonstrate that further mitigation is required, undertake further turbine ridge habitat modification and enhancement of off-site habitats

Issue	Concerns over some vegetation communities being omitted from EA
Sub. No	12, 17
Response	Submission 12 provides a list of several species of flora, known in the area but not detected as part of the BA. The respondent calls into question the validity of the assessment. Survey effort is hampered by spatial and temporal limitations. Even with multiple visits to the site, it is not possible to ensure that all areas are assessed in detail or that conditions would be suitable for the detection of all species. The BA notes: *The limited duration and intensity of the surveys is sure to have resulted in the omission of some cryptic, sparsely distributed, ephemeral or seasonal species. For example, during wetter seasons, increased activity is expected in drainage lines within the study area as ephemeral watercourses provide a flush of resources. The survey duration and intensity were however considered to have been sufficient for the evaluation of biodiversity constraints.* To address this problem, the following tactics are employed. — Surveys are stratified by vegetation and habitat type, to ensure a sample of the diversity of the site is achieved — Onsite survey work is preceded by a desktop assessment to identify threatened species with potential to occur — Survey timing is targeted at the time most conducive to detecting the largest number of species and any threatened species requiring additional consideration. Non-detection is never a basis for ruling out the occurrence or potential to impact a species — Follow-up surveys are undertaken if the results of these previous steps indicate this is required. With reference to the Silverton site, this included Tawny Rock Dragon surveys — Mitigations measures are designed to address remaining risks to threatened species that may occur but were not detected. For example — **SOC27** Make contractors and staff aware of the threatened species that may occur within the site, by disseminating information during 'toolbox' talks, to minimise impacts should any become present.

Issue	Concerns that the use of Broken Hill weather data was not appropriate to extrapolate to the drier rain-shadow environment onsite. Further, the fact that no local climate and atmospheric assessment was undertaken was criticised
Sub. No	12
Response	As a reference point, the closest available weather data was sourced to assist in a broad understanding of site conditions. While it is understood that this would vary from the precise conditions onsite, it was considered an appropriate starting point. The data was not used inappropriately, that is, no species were considered not to occur onsite on account of this information.

Evaluations of potential for impact on threatened species are done in a precautionary manner and utilised the species that are known to, or predicted to occur within the appropriate CMA subregions of the study area. These lists are formulated by DECC using a landscape level approach with consideration of what is known of species ecology and known records across a bioregion. Each species is then evaluated in the BA by considering the habitats of the study area.

Habitat assessment forms are used to formalise the collection of habitat attributes onsite. Literature review, taking in regional context, is considered to provide a level of robustness to this assessment and provide a landscape level approach appropriate to the assessment of impacts across a large range of habitat types and microclimates onsite. By taking a broader look at the potential for these habitats to occur, some resilience is afforded to the fact that onsite surveys would always have spatial and temporal limitations.

It is not considered that a local climate and atmospheric assessment would improve upon or change the conclusions of the BA.

Issue	Potential to introduce the soil fungus Phytophythora cinamonii (12)
Sub. No	12
Response	Infection of native plants by *Phytophthora cinnamomi* (PC) is listed as a Key Threatening Process on Schedule 3 of the *Threatened Species Conservation Act 1995*. 'Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*)' is also listed as a Key Threatening Process under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999.*

Management of PC for Biodiversity Conservation in *Australia Part 2 – National Best Practice Guidelines,* identifies that areas of vulnerability to the threat of PC in NSW and ACT can not be clearly identified for the following two major reasons.

- There is insufficient knowledge of the susceptible species in NSW and ACT
- There is variable susceptibility of plant species depending on climatic conditions, i.e. some species only appear susceptible during sustained periods of unusually high rainfall.

Anecdotal evidence suggests that sites that receive less than 600mm average annual rainfall are not vulnerable to the threat of PC. The risk of infection of native plants on the site which is in a semi arid zone and in the middle of a lengthy drought is considered to be very low. The EA commits to:

- SOC33 (SOC24) Source imported materials such as sand and gravel from certified sources, free from noxious weeds and Phytophthora infection.

Issue	Concerns that cryptograms were not assessed, in either the EA or BA
Sub. No	12
Response	The BA addresses the requirements of Part 3A of the *Environmental Planning and Assessment Act 1979* in considering the impacts on threatened species, populations, communities and their habitats.

No species of cryptogram listed under the *NSW Threatened Species Conservation Act 1995* or the *Commonwealth Environment Protection and Biodiversity Conservation Act 2000* are known to, or predicted to occur in the study area.

The cryptogram duricrust is understood to be a hardened upper soil layer formed by biological and chemical processes. Biological components include highly specialised bacteria. Chemical processes include the accumulation of soluble minerals.

This soil crust is particularly relevant in arid areas as its formation is assisted by evaporation, which is high in arid areas, and, in the absence of vegetative ground cover to protect the soil from erosion in very dry areas, the cryptogram can fulfil this important soil conservation role.

Although the distribution of cryptograms and impacts specific to cryptograms were not evaluated, the EA deals with vegetation and soil impacts. This includes means to reduce areas of disturbance and means to restore disturbed areas to stable states. In this way, it is considered that the function of cryptograms in arid ecosystems has been considered. With the implementation of vegetation and soil Statements of Commitments, it is considered that the proposal would not have an unacceptable impact on the site, with regard to soil crusts and the role they play in this landscape.

Issue	Concerns that the potential for the Desert Mouse and Whites Skink to occur and be impacted was not addressed
Sub. No	17
Response	The Desert Mouse is listed under Part 4 of the *Threatened Species Conservation Act 1995* as 'presumed extinct'. However, in September 2008, the species was detected in Sturt National Park by a PhD student from UNSW. The BA makes an evaluation of the threatened species, populations and communities that are listed by DECC that are known to, or predicted to occur in the specific landscape subregions (CMA subregions). At the time of writing, and at the time of this submissions report, the Desert Mouse was not listed as known to, or predicted to occur in the CMA subregion relevant to the study area. The BA did make an evaluation of other small terrestrial mammals and concluded that the proposal was unlikely to have a significant effect on them should they be present. The adoption of a goat management plan is likely to have a positive impact on the current land management of the site which is known to be a key threatening? Process to vegetation communities and their inhabitants, such as small terrestrial mammals. Therefore, the BA considers the known to or predicted to occur small, terrestrial mammals of the study area. If any additional mammal species did occur in the study area, the assessment and amelioration measures would be considered adequate. The Whites skink Endangered Population of the Broken Hill Bioregion was evaluated within Table C2 of the BA. The BA concluded that the potential for the proposal to impact on this entity was unlikely.

Issue	Inquiry into use of fox and rabbit control as an important measure in managing biodiversity impacts onsite
Sub. No	17
Response	The BA focuses on the impact and methods to control the impact of goats onsite. It commits to a specific Goat Management Program. It recognises that the adverse impacts of foxes and rabbits are present and contributing to the degradation of the site, but the Proponent does not commit to specific measures to control fox or rabbit populations. The reasoning for the focus on goat management takes into account the following points. — Goat impacts were considered to be the most serious factor affecting the biodiversity features of the site. As well, they are harvested for profit from the site, creating an incentive to retain them in good numbers — The excavation required as part of the proposal would remove vegetation and disturb soil, thereby

generating the same impact on site as excess goat numbers. Therefore, offsetting the impacts using a goat management program is a logical step to ensuring that impacts onsite are managed and a net environmental benefit is achieved for the site

- Rabbit and fox control are currently required to be undertaken by land managers and are not considered to be aggravated by the proposal.

Issue	Criticism regarding the lack of assessment detail and specific mitigation for Stage 2 impacts.
Sub. No	16, 17, 23
Response	For Stage 2, only concept approval is currently being sought by the Proponent. Concept approval assessment for Stage 2 of the proposal is focussed on identifying if the proposal is feasible, and key areas requiring further investigation. These (primarily desktop) investigations demonstrated the proposal was feasible and recommended specific additional investigation to properly characterise and assess impacts. Carrying out this additional work was a commitment of the proposal, required to undertake the more detailed design of Stage 2. SOC40 (SOC31) Carry out further field work to ground validate the extent and condition of vegetation of conservation significance and threatened fauna in the Stage 2 site area and Stage 2 transmission corridor SOC41 (SOC32) Carry out additional evaluation of the potential for impact on all flora and fauna species listed as threatened with potential to occur within the Stage 2

Issue	Suggestion to use reseeding and planting methods and not just the encouragement of native recruitment to manage the disturbance of soils onsite
Sub. No	17
Response	The BA considers that: *Landforms in many areas are steep and unstable, which combined with the arid environment introduces significant issues in relation to revegetation. Means to trap soil and moisture and stabilise slopes would provide the best potential for natural regeneration in the long-term* The soils on site are skeletal and natural regeneration in combination with goat management and the commitments below is considered to be the most appropriate and effective action. The Proponent comments to stabilising landforms, as follows: — SOC20 Site stabilisation and rehabilitation would be undertaken as work progresses, following the guidelines in the EA. — SOC59 (SOC50) Prepare a Site Restoration Plan including protocols for restoration works such as: – Site preparation – Site stabilisation – Measures to encourage native vegetation recruitment – Monitoring.

Issue	Details of CEMP and OEMP should be provided prior to works being undertaken. Query the responsibility for implementation of these measures
Sub. No	12, 17
Response	Many of the details of construction for a Construction Environment Management Plan are a result of the further geotechnical and other civil and electrical site work which proceeds after the planning determination for the proposal. Site management practices are by necessity, only able to be developed concurrent with the determination of selected infrastructure models and contractors. The specifics of these factors relate directly to the appropriate management practices to be employed. It is understood that these documents would be prepared prior to onsite works. However, the timing and final requirements of these documents would be specified by the Department of Planning (DoP), as a part of the conditions of consent, pending Project approval. The Proponent would comply with all DoP requirements. For each Statement of Commitment and condition of consent, it is ultimately the Proponent that is responsible for implementation

Issue	Width of roads as per Table 3.3 of EA is excessive
Sub No	17
	Table 3 provided estimated dimensions of the areas of impact of the wind farm infrastructure and was not intended to define the access track details. The access tracks to enable the delivery of turbine components need to be a minimum of 4.5 metres wide. Within the EA (at 3.2.5) it is stated that onside access tracks for construction and operation would generally be unsealed formation up to six metres in width or up to 12 metres in width where passing lanes are required. On corners, the tracks need to be at least 8 metres wide and up to 12 metres. The majority of the access tracks on the site would be around 4.5 metres wide. The tracks providing major access from one part of the site to the other may be double lane or 9.0 metres wide. However, these dimensions (4.5 metres wide and 9 metres wide) don't take into account the verge of the road (say 0.5 metres either side) or the impact of cut and fill where the tracks are traversing across a slope. The use of the 12 metre width in Table 3.3 was intended to provide an estimate of the average impact for all tracks, taking into account the track verge and cut and fill in some areas.

Issue	Concern over the potential impact of chemical spills on soils. One submission made particular reference to the impact of cleaning turbines with alkaline substances
Sub No	12, 17
Response	Cleaning of the external surfaces of the wind turbines is carried out very rarely; it is usually excluded from the scope of supply covered in the standard maintenance agreements. Cleaning of the blades is only carried out if there are particular concerns about the performance of a particular turbine (build up of dirt can cause degradation of the aerodynamic performance of the blades). If required, cleaning would be carried out using a high pressure water cleaning unit, it is not expected that alkaline substances would be used to clean the blades. The potential to impact soils and water bodies through chemical spills was discussed in relation to biodiversity, soils and hydrology within the EA. Specific measures to manage spills are included as part of the proposal. SOC52 Incorporate spill control procedures in the CEMP and OEMP

Issue	Rewording Statements of Commitment
Sub. No	23
Response	The DECC submission suggests rewording three of the Biodiversity Statements of Commitment (SOCs 35(26), (39)30 and (44)35) to include the underlined sections below: SOC35 (SOC26) Procure an appropriately qualified ecologist to assist in locating tracks, cabling routes and other infrastructure so as to minimise the impact on threatened species and the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland identified on site. SOC39 (SOC30) Prepare and implement a goat management plan across vegetation in the Stage one area with a particular focus on porcupine grass/red mallee/gum coolibah/hummock grassland. The goat management plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, Western Catchment Management Authority, Department of Primary Industries, Broken Hill Rural Lands Protection Board and relevant landholders. SOC44 (SOC35) Establish a Vegetation Management Plan to ensure that the ongoing maintenance of the transmission easement has minimal impact on the integrity of any EEC vegetation within the easement. The Vegetation Management Plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, and the relevant Catchment Management Authorities. Amendments to SOC35, SOC39 and SOC44 have been included in the revised Statement of Commitments for the Project. A number of additional comments in the DECC submission are relevant to the development of these plans and would be considered in their preparation. The DECC submission further recommends that if any threatened species are identified prior to construction, then every effort should be made to avoid disturbance. In practice, the purpose of the BA is to identify all areas of conservation significance within the development envelope, arriving at a remaining zone of low constraint, within which infrastructure placement is considered to be acceptable. This 'advanced notice' of constraints is required as the final infrastructure placement would be dependent on a range of overlapping constraints (noise, wind, archaeology, visual) and last minute changes would be difficult to incorporate. There is greater potential for micrositing for tracks and powerlines and this would be undertaken wherever feasible.

Issue	Clarification of supply of construction material sought and licences required
Sub No.	17

The quantity and source of sand, aggregate and other materials cannot be determined at this stage until the design and specification for the works (including tracks and foundations) has been completed. As noted in the submissions, SWFD is aware that it (or its contractors) would need to apply for a licence if it chooses to quarry materials from the site. To reduce the amount of materials needed on site, it is very likely that material excavated for turbine foundations and excavated as part of access track foundations would be used as aggregate for track construction and possibly also for concrete manufacture. It is also possible that concrete could be manufactured in Broken Hill and in that case materials would be supplied from the Broken Hill quarry.

If water from Umberumberka Reservoir, delivered via new temporary pipeline, was the optimum water supply option chosen by our construction contractor, then they (or possibly SWFD) would apply for the licence at the appropriate time.

8.4 HYDROLOGY (WATER, WATER QUALITY AND WATER-TABLE IMPACTS)

Issue	What is the estimated total volume of water required for the Project
Sub No.	3
Response	The Proponent has had discussions with Country Water about water sourcing and, as stated in the EA the estimated peak usage would be about 200 kL/day. This is based on constructing two foundations per day. Therefore the most generous estimated total water requirements for 598 turbines and dust suppression is 200 kilolitres x 600 kilolitres = 120 Megalitres. This was 1.3 per cent of Umberumberka's capacity at the point of discussion with Country Water. Using rock anchor foundations which is highly likely would use considerably less water (possibly 50 per cent less).

Issue	Concerns regarding the potential to impact the recharge of rock fault aquifers within the Barrier Ranges and the follow-on consequences to local water supplies (such as water currently drawn from bores and springs)
Sub. No	3, 13, 22
Response	The recharge of rock fault aquifers located within the proposal area could potentially be impacted by the proposal, during excavation and blasting to secure turbine footings. This was considered within the Environmental Assessment (EA), Section 7.5.

In September 2008, a groundwater research report prepared by Geoscience Australia for the Department of Water, Heritage and the Arts incorporating the proposal area was released (*Assessment of Groundwater Resources in the Broken Hill Region*) providing additional local information. The report identifies that recharge in fractured rock systems occurs mainly in areas of outcropping rock via fractures and other structural zones. Further, the report identifies that groundwater in the vicinity of Eldee Station would likely flow in a general north west direction away from the Mundi Mundi fault escarpment (western portion of the proposal area) to the Umberumberka, Mundi Mundi and Eldee Alluvial Fans.

The EA currently commits to a thorough investigation of hydrological impacts which is considered sufficient to address the concerns of stakeholders.

— SOC57 (SOC48) Undertake detailed geotechnical investigations to ensure that the Project would have no material adverse effect on groundwater/aquifers

— Identify important springs and other water sources through consultation with leaseholders

— Identifies that groundwater extraction for the purpose of construction of the wind farm was unlikely and would only occur if appropriate approvals were granted.

Issue	Question as to why the impacts on permanent soaks and ground water had not been assessed
Sub. No	12
Response	The BA stratified surveys within the habitat types occurring onsite. As such, water bodies and drainage lines were representatively sampled. In terms of ground water impacts, while addressed within the EA in a cursory manner, the Statement of Commitment number 48 is recognition of the need for specialist investigation in this area. The appropriate timing for such an investigation would be pending Project approval and the development of detailed design drawings. SOC57 (SOC48) Undertake detailed geotechnical investigations to ensure that the Project would have no material adverse effect on groundwater/aquifers.
Issue	Concerns regarding the appropriateness of utilising water from Umberumberka and Stephens Creek Reservoirs, given the scarcity of water in the locale
Sub. No	11, 13, 17,19, 21, 22
Response	The EA identified that the preferred primary water source is the Umberumberka Reservoir with Stephens Creek Reservoir the secondary water source. The proponent held a meeting with Country Water in November 2007. Country Water indicated that they would be able to supply water for the construction phase from Umberumberka Reservoir. Based on these discussions, the EA considered that obtaining water from the reservoir was feasible during the construction phase of the proposal. The Environmental Assessments states that it is estimated that approximately 200 kilolitres per day would be required during the construction phase. A commitment was made to: — SOC57 (SOC48) Consult with Country Water on the scope of all further work to be undertaken in relation to the legislative requirements associated with the works in the Umberumberka Creek Special Area.
Issue	Concerns regarding the impacts on drainage lines
Sub. No	3, 11, 17
Response	The Environmental Assessment identified that a number of creek/drainage line crossings would be required for access during the construction and decommissioning phases of the proposal. The Environmental Assessment committed to the following mitigation measure: — SOC62 (SOC53) Design water crossings to prevent impact on existing banks, water flow, animal passage and on the movement of substrate flows (sand moving through the channel). Strategies may include gabion baskets excavated to near ground level, which would facilitate heavy loads without trapping sand carried during high rainfall events. This measure is designed to protect drainage lines within the impact area.

Issue	Concerns regarding dust caused by construction and its potential effect on water quality
Sub. No	3, 22
Response	Dust suppression is addressed as an issue in the Environmental Assessment and a Statement of Commitment has previously been drafted to address such concerns. SOC60 (SOC51) commits to carrying out dust suppression as required, through either watering or chemical means.

Issue	Concerns regarding impacts to existing Country Water infrastructure : CW seeking reassurance that wind turbines are not located in certain areas
Sub. No	3
Response	Discussions are progressing about the land tenure of the area of land which is currently held by Country Water. It is anticipated that this area would form part of either the new Special Purpose Lease or an addendum to it under a separate special purpose lease. Whether it remains under the control of Country Water or the Department of Lands, the placement of wind farm infrastructure would have regard to the key water infrastructure of the Umberumberka dam, the dam wall and the Blue Anchor tank. Given the age of the pipeline from Umberumberka to Broken Hill, wind farm infrastructure near this pipeline would, or a new pipeline tapping in to it would, be the subject of further discussion to ensure compliance with the legislation under which Country water manages these assets. The process by which wind farm infrastructure would be located in proximity to Country Water assets is to be documented in the EMP with appropriate setbacks nominated.

8.5 GEOLOGY AND SOILS

Issue	Concerns regarding the impact of excavation and disturbance to soils
Sub. No	3, 11, 15, 22
Response	Several submissions addressed the impact of excavation and disturbance to soils. Erosion potential is high on the sites steep and skeletal slopes. The site is known for heavy deluges, that can mobilise large quantities of soil, transporting them to drainage lines and leaving slopes and ridges with lessened ability to support native vegetation and associated flora and fauna. The creation of tracks increases the amount of impermeable surface, increasing runoff and its erosive potential and also increasing dust propagation, in windy conditions. Excavations create waste rock and soil that must be removed or stabilised such that spoil does not degrade adjacent habitats. The context of extended drought and feral goat grazing combine to increase the sensitivity of the site to erosion. Due to the sensitive land forms and soils the site contains, a Constructability Study was undertaken by a specialist to understand the feasibility of constructing tracks and anchoring turbines onsite. This information assisted in the development of the infrastructure layout. The following commitments have been designed to address soil impacts onsite: — SOC49 Establish a Sediment/Erosion Control Plan including the following provisions

- Install sediment traps wherever there is potential for sediment to collect and enter waterways
- Bund stockpiles generated as a result of construction activities with silt fencing, (hay bales or similar) to reduce the potential for runoff from these areas
- Establish soil and water management practices guided by the Best Practice guidelines contained within Soils and Construction Vol. 1 (Landcom 2004)
- Ensure all vehicles onsite follow established access tracks and minimise onsite movements
- Operate and maintain machinery in a manner that minimises risk of hydrocarbon spills.

SOC59 (SOC50) Prepare a Site Restoration Plan including protocols for restoration works such as:

- Site preparation
- Site stabilisation
- Measures to encourage native vegetation recruitment
- Monitoring.

SOC137 (SOC124) Avoid compaction of soil resulting from vehicle access and laying of materials, particularly during saturated soil conditions, and remediate as necessary.

SOC138 (SOC125) Undertake ongoing dust suppression throughout the construction phase.

SOC139 (SOC126) Monitor and maintain tracks to ensure landform stability is maintained, in accordance with erosion and sediment control plans.

Issue	Concerns that the EA didn't address the relationship of geology to flora and fauna, regolith and historical mining sites
Sub. No	4
Response	The EA focused on the issues as directed by the Director General's requirements which resulted from full agency consultation and a Planning Focus Meeting. The EA separately considered impacts on soil and landforms, flora and fauna, heritage and mining. Using the approach of avoid, minimise and mitigate impacts it is considered by the various specialists involved in the studies commissioned that with the application of the Statements of Commitment impacts both singularly to each area of assessment, and cumulatively, are acceptable. A discussion of the relationship between these components was not considered necessary to evaluate or mitigate impacts to these environmental parameters. It should be noted that the survey work undertaken for the biodiversity assessment stratified survey sites across vegetation type and landscape position and in this way addressed the variability of the site, due to geology and soils.

8.6 TRAFFIC AND TRANSPORT

Issue	Multiple submissions referred to the adverse impact of construction traffic on local features and activities. For example, the historic stone buildings in Silverton (potential effects of vibration), trees planted on Silverton Road as a memorial (potential to be removed or damaged), local residents travelling to work (potential delays and safety concerns), tourist traffic impacts (adversely affecting the attractiveness of the area), stock transport (delays may be harmful to stock). For the latter two issues, the concern was also related to loss of income or job opportunities, particularly the impact to small businesses The use of out of hours traffic scheduling was suggested by one respondent to minimise the impacts on tourist traffic.
Sub. No	9, 10, 19, 20, 21, 22
Response	The scale of the proposal requires both an extended construction program and the use of large and heavy vehicles. The additional traffic would have serious impacts, particularly along the Silverton Road and through Silverton, and this issue requires significant planning and management throughout, to ensure that adverse impacts on local features and activities are avoided where possible and minimised where avoidance is not possible. A specialist consultant was engaged to consider the traffic and transport implications of the proposal. This is summarised within the EA, Section 7.6, and is appended in full in Appendix 5. It is acknowledged that transport recommendations are not definitive, at this stage. Further work is required to plan, in association with the road authority and affected stakeholders (residents, tourist operators, roads authorities) the details of haulage, including exact transport routes, roads to be sealed or maintained via dust suppression and haulage timing. Detailed traffic and transport planning must involve a transport contractor. The details of the final planning would depend on this contractor who would be engaged in a competitive tender process, pending-Project approval. Statement of Commitment 59 explicitly states this consultation would be a requirement of the Traffic Management Plan and is designed to minimise the impact on local traffic and local businesses (see underlined section). SOC68 (SOC59) Develop and implement a Traffic Management Plan (TMP) in consultation with roads authorities to facilitate appropriate management of potential traffic impacts. The TMP would include provisions for: — Scheduling of deliveries and managing timing of transport through Broken Hill to avoid peak hours (beginning/end of the school day) — Limiting the number of trips per day — Undertaking community consultation before and during all haulage activities — Designing and implementing temporary modifications to intersections and street furniture — Installing required signage to direct traffic flows appropriately during haulage through Broken Hill — The erection of warning signs and/or advisory speed posting prior to isolated curves — Note: community consultation would include all stakeholders affected by construction traffic and thereby would include the Silverton community. Two additional dot points to this commitment are proposed, to address the concerns of delays on haulage route to limit the delays experienced, and to reinstate pre-existing conditions after temporary modifications to the roads and pavement along the route. The specific consequences of construction traffic on heritage, economy, farming and grazing, lifestyle, tourism and safety have been considered within the EA in dedicated sections (Sections 7.7, 7.8, 7.9, 7.11, 8.2, 8.3, 8.5).

Measures were incorporated into the Traffic and transport Statements of commitment to address these and additional to SOC59. These include:

SOC61 Adopt route-specific mitigation measures as appropriate based on guidance provided in the attached Traffic impact study

SOC63 Provide a contact phone number to enable any issues or concerns to be rapidly identified and addressed, through appropriate procedures

SOC68 Provide information signage about the Project at the Mundi Mundi lookout 5 kilometre west of Silverton and on the Silverton Road in the vicinity of Daydream Mine Road.

Under Section 7.11 of the EA, Farming and grazing, a further commitment is made:

SOC90 Develop protocols for construction traffic on access roads where stock may be grazing as part of the Traffic Management Plan.

Issue	Use out of hours traffic scheduling to minimise the impacts on tourist traffic
Sub No.	24
	The timing for the convoys of larger vehicles would be negotiated with the RTA prior to the issue of a permit. The permit would restrict the contractor to times which minimise the impact to local traffic. Consultation with affected stakeholders is a commitment of the Traffic Management Plan. The majority of construction workers would be on site early and leave after for example the Daydream Mine closes for the day.

Issue	Proposition to consider an alternative access route coming in from the Silver City Highway alongside the Limestone Station Western Boundary and the Silverton Common
Sub. No	20
Response	Utilising an alternative access route coming in from the Silver City Highway alongside the Limestone Station Western Boundary and the Silverton Common, as suggested by the submitter, would require an additional new road of potentially greater than 15km to be constructed and maintained to a standard sufficient to service construction traffic. A number of routes were reviewed in the Traffic Impact Study. It is considered that the safeguards that would be adopted to protect local and tourist traffic on existing routes are adequate for road user safety. Environmental impacts such as compaction, sediment erosion, dust, vegetation clearing and loss of habitat would be significantly increased if new roads were constructed where the option exists to use existing roads. Furthermore, the cost impost of building and servicing new roads when there are serviceable roads to utilise would not be justifiable, particularly as any requirement for an additional road, would be temporary in nature.. The Traffic Impact Study concluded that the adoption of safeguards for minimising traffic impacts outlined should reduce community disruption and the risk of traffic accidents to an acceptable level and minimise structural and environmental damage. Environmentally and economically therefore, these roads are considered more appropriate than the route suggested by the submitter. The route suggested, but not detailed in length or route by the submitter, was not included within the Traffic Impact Study or the EA and therefore, no other comparisons can be made with regard to environmental and socio-economic impacts.

Issue	Concerns over regard to memorial trees along Silverton Road
Sub. No	22
Response	This would be included in the Traffic Management Plan or EMP if there is the potential to damage these trees.

8.7 INDIGENOUS AND NON INDIGENOUS

INDIGENOUS

Issue	Three submissions were concerned about impacts on Aboriginal cultural heritage. One submission notes that guided bush food and medicine tours overlap the development envelope and cannot be relocated. The submission notes that these resources are unique to the Barrier Ranges
Sub. No	17, 22, 23
Response	A detailed archaeological assessment was undertaken to understand the values of the site and the scope for mitigation of impacts. This is summarised in Section 7.7 of the EA, which states: The majority of the Aboriginal object locales recorded in the proposal area are low or very low density stone artefact distributions. These are assessed to be of low archaeological significance. In addition, a number of Aboriginal object locales have been identified which are assessed to be of low/moderate, moderate or high archaeological significance. The construction of the wind turbines and associated access roads has the potential to impact any indigenous artefacts that may be located in the vicinity. It is considered that any potential impact from construction of turbine infrastructure would be manageable by one of the following options. — Unmitigated impacts – appropriate when sites are assessed to be of low heritage significance — Mitigated impacts – appropriate when avoidance of impacts is not feasible and when sites are assessed to possess higher significance values. Mitigated impacts can take the form of partial site conservation and/or salvage excavation — Conservation – avoidance of impacting a site is appropriate when a site is assessed to be of high scientific or cultural significance. In light of these investigations, the impacts to sites are considered manageable. The Proponent has committed to five Statements of Commitment to ensure that the impacts are managed appropriately and that further investigation is undertaken where required. However, the submission concerning bush food relates to the living heritage values of the site. The establishment of tracks for the proposal and detailed ecological studies may be useful in assisting the managers of this station to relocate these tours if the final layout is found to interfere with the tours. The following additional commitment is made by the Proponent: SOC85: The Proponent would liaise with any group undertaking educational or tourist ventures within the development envelope, prior to the proposal, with the aim of minimising disruption to these activities. The development of the proposal would not preclude these activities continuing, but may interfere with the visitor experience. Improved road access and vegetation mapping may assist the groups to plan their activities around the development, if required. The Goat Management Plan, which is a commitment of the Proponent, is also likely to improve the abundance of bush food resources.

NON INDIGENOUS

Issue	Four submissions addressed the heritage values of the area. Silverton and its surrounds contain many historic buildings and relics of the mining history of the area. As well as direct impacts (such as the effects of vibration and potential removal), the broader degradation of the historic aesthetic of the areas was a major concern to some respondents. Silverton supports many artists and galleries and tourist experiences that are based in this historic aesthetic
Sub. No	17, 20, 22, 23
Response	The EA addresses the affects of the proposal on the historic aspect of the area and included a specialist assessment of heritage impacts (appended to the EA). Direct impacts (such as damage from direct disturbance, vibration or blasting or removal) were considered, with reference to the significance of the items. The EA summarises the conclusions of these direct impacts: — Direct impacts can be avoided to all heritage items within the proposal area. Given that none of the identified heritage items have been assessed to have a significant aesthetic component to their heritage value and, given that the development could effectively avoid all physical impacts to heritage items within the proposal area, the overall impact on items of Non-Indigenous heritage would be minimal. Strategies for the management of impact avoidance are addressed within SOC74, 79, 80, 81, 82 and strategies to manage unexpected finds are addressed within SOC75. However, the impacts on the broader historic aesthetic of the area, as a consequence of construction traffic and later, from the views of operational turbines are more difficult to manage. The EA concludes: — Impacts to the broader cultural landscape are unavoidable… Nonetheless, the visual impacts assessment indicates that the cumulative impact on landscape character would be low to moderate only (URS 2008). Furthermore, the proposed development fits within a theme of previous landuse, i.e. exploitation of natural resources and could usefully contribute to an adaptive reuse of the landscape. The future development of Silverton will be largely shaped by this wind farm development. While it would have undeniable impacts on the existing heritage aesthetic, it also represents new opportunities for heritage, tourism and development. The incompatibility of the wind farm with enjoyment and appreciation of the history of the area is far from certain. The assessments conducted to date and further assessments required to fulfil the Proponent's requirement prior to development are yielding additional information that could be used in the conservation management of the areas heritage values. Although it does not form a Statement of Commitment, the EA observes there is an opportunity for: — A more comprehensive research Project on the history and heritage of the area. Primary objectives of such a study will be to fill in the gaps in the existing history of mining for the region and compilation of a more complete record of heritage items in the Barrier Ranges. This would in turn aid in conservation of heritage values across the landscape, which would serve as a considerable mitigation of the abovementioned impacts to that landscape. In light of the findings of the assessment, the EA is considered to sufficiently address the concerns raised in the submissions.

Issue	Concern that the removal of mallee and mulga trees means less carbon credits can be claimed in the future as business operators and that less shade and protection of wildlife and stock is available onsite
Sub. No	22
Response	The Environmental Assessment assessed the biodiversity of the site and made a range of recommendations to avoid, minimise or mitigate impacts across the site. Existing native vegetation, particularly of any size or biodiversity value, has been assessed and relevant Statements of Commitment have been made. Carbon credits across the site, if any, have not been identified to the proponent. It is considered that the loss in carbon credits and shade from vegetation removal will be offset by the likely improvements to the condition of vegetation on the site resulting from proposed management of goats. This is likely to have a positive impact on the cultural landscape of the site.

Issue	Concerns over the impact construction would have on the stability of 1880s stone buildings in Silverton
Sub. No	9, 19, 20, 24
Response	The main site access is via DayDream mine road. Traffic through Silverton has been minimised. A Traffic Management Plan would be part of the EMP and would address such issues as speed limits through Silverton. It is expected that through further community consultation prior to construction issues such as unstable or delicate historic structures would be identified to the proponent and mitigation measures would be produced to avoid, minimise or mitigate any impacts appropriately.

8.8 ECONOMIC

Issue	Concerns included whether the number of new jobs had been overstated, the degree of impact on small businesses and tourism and the issue of property devaluation
Sub. No	9, 11, 15, 17, 19, 21, 20, 22, 24, 25
Response	The projected economic stimulus detailed in Section 7.9 of the EA includes additional employment opportunities, flow on trade from the additional employment, benefits from the Community Fund and infrastructure improvements. It was derived using a specifically commissioned background socio-economic study and incorporated the specific infrastructure requirements of the Project. For example, the turbine number and track lengths required onsite determine the scope of employment of contractors. This specialist report prepared by SGS Economics & Planning and headed '*Wind farm: Far West Region NSW, Assessment of the Social and Economic Impacts*' identified the following in relation to jobs in the local area. — These additional jobs can be broken down into 'direct jobs', or those jobs created in Broken Hill as a result of the increased need for labour, goods and services to directly service the Project (put at 2,244 jobs over the life of the Project) and 'indirect jobs', the second wave of jobs created in Broken Hill in order to service the first round of additional economic activity stimulated (put at 1,744 additional jobs over the life of the Project). These direct and indirect effects are in addition to the estimated 80 or so workers employed by Silverton Wind Farm Developments to maintain and operate the turbines.

However it is recognised that the projection is a long-term (30 year) estimate, derived from modelling and consultation with elected representatives, council and community associations. The EA notes:

- Precise economic benefits would vary depending on final site design, turbine suppliers, timing of works and other details
- There are a number constraints related to the potential socioeconomic impacts described. These predominately include supply-side constraints; primarily the supply of labour and the capacity of local business to service new contracts together with the quality of local housing and other physical and social infrastructure and amenities needed to attract and retain workers. The Broken Hill economy is likely to affect the degree to which economic benefits, and hence aggregate employment growth, can be realised.

Hence, realisation of the full economic potential of the Project is in many ways beyond the ability of the Proponent. A series of commitments however, are aimed at just this objective:

- SOC99 (SOC86) Liaise with local industry representatives to maximise the use of local contractors and manufacturing facilities in the construction and decommissioning phases of the Project
- SOC100 (SOC87) Liaise with the local visitor information centres to ensure that construction and decommissioning timing and haulage routes are known well in advance of works and to the extent practical coordinated with local events
- SOC101 (SOC88) Liaise with Broken Hill City Council and the Department of State and Regional Development to provide information to assist in attracting people to the local area to facilitate meeting the expected demand for human resources for both construction and operation of the Proposal
- SOC102 (SOC89) Make available employment opportunities and training for the ongoing operation of the wind farm to local residents where reasonable.

As Silverton is a small village, largely dependant on tourist activity, tourism impacts are an important issue. The economic impacts on small business and tourism have also been discussed in the Tourism Section, Section 7-15, of this Report.

8.9 LAND VALUE

Issue	Community property devaluation
Sub. No	11, 21, 22
Response	Definitive assessment of land value impacts is challenging for wind farm developments in Australia. While this statement can attract criticism, it is important to understand the limitations of any conclusions about land value impacts. Foremost, it is important to understand that land value is driven by several overlapping factors (prevailing and permitted land uses, economic conditions, access and proximity to markets and workplaces, demand for lifestyle features, to mention a few). Secondly, it must be recognised that there are few Australian examples upon which to base conclusions and their comparability to the Silverton area is likely to be very limited. Thirdly, public perception of wind farms is highly variable and subjective and likely to influence individual decisions about land purchase. With these limitations in mind, existing case studies were evaluated and conclusions were reached, specific to the proposed wind farm site. Primarily, land value impacts for this Proposal are likely to relate to community, visual, noise, traffic, mineral exploration, lifestyle and tourism impacts. Successful mitigation of these impact areas would assist to ensure a cumulative adverse effect is not generated and manifested in any lowered value of nearby properties. These impact areas are considered within the exhibited EA (Sections 7.2, 7.3, 7.6, 7.12, 8.2 and 8.2)

In one public submission the respondent nominated tourism and agriculture as the primary drivers of land value. Tourism around Silverton and Broken Hill leverages on historic appeal, wide open spaces, naturalness, and the unique arid ecology of the Barrier Ranges. Agricultural productivity across most of the study site has been affected by a combination of grazing and drought. Most of the wind farm development envelope is now unsuitable for sheep and the harvesting of feral goats has replaced sheep grazing. This places greater pressure on arid ecosystems and presently, under the influence of extended drought, the site is in poor condition. In consideration of this context, the proposal incorporates measures to mitigate impacts specific to heritage, biodiversity, agricultural use of the site and tourism within Sections 7.4, 7.8, 7.11 and 8.3 of the EA. In this way, the proposal addresses the potential for a range of factors to affect land values, and is not limited to the visual aspect of the proposal.

One aspect of land value which has not been discussed is the potential for land value to increase due to a renewed interest in living in Silverton and Broken Hill by individuals who may be employed in the operation and maintenance of the windfarm. These individuals may move to the region or the village either solely or with families and create a demand for housing which may in turn cause upward pressure on house prices locally.

Issue	Individual property value
Sub. No	11, 21, 22
Response	The submitters raised the following issues, specific to property value impacts: **11** Aesthetic impact of turbines 4 km away, affect of aesthetic impact on tourism numbers; **21** Property value – no specific valuation issues were identified; **22** Affect on business opportunities (access to unique natural resources, noise and visual impact on tours, loss of university field camps, loss of agricultural land to roads and footings and temporarily during construction), visual impact of blinking lights. This list is not considered comprehensive. The submitters each raised a number of additional social and environmental issues that may also have a bearing on land value and these issues can be considered cumulative. To distil the affect on land value specific to each submitter, it could be suggested that the degree of land value impact relates to the proximity to the wind farm site (increasing the effects of traffic, visual and noise impacts with increasing proximity) and the compatibility of the existing land use with the wind farm (ie. tourism, educational tours and agriculture have been suggested to be incompatible by the submitter). Following this limited hypothesis, and despite two of the submissions being from unidentified submitters whose property location cannot therefore be confirmed, the following specific comments can be made: **11** The submitter is anonymous but located in Silverton, the land value impacts relevant to this submitter may include the temporary effect of construction impacts (primarily traffic and tourism disruption), visual impacts (at 4km, the visual impact assessment concludes that a medium impact would result from Stage 1 and Stage 2 turbines) and potentially affect business operations, if the submitter operates a commercial enterprise (this is not stated in the submission). Balancing any such potential effects, tourism and business operations are also likely to be positively impacted , potentially during construction and also in the long-term by the draw of an operational wind farm. **21** The submitter is anonymous but a location 2km from the wind farm proposal is indicated. This close proximity suggests that the temporary effect of construction impacts as well as the ongoing visual and noise effects may be the key drivers of land value impacts. No land use is specified by the submitter but several references to the environmental values of the site are made. The proposal includes provisions to ensure a 'maintain or improve' environmental outcome and it is considered that, if reflected in land values, the contribution of this component would have a positive effect on land value. It should be noted that under current management, overgrazing and drought are large stressors on the local environment.

22 This submitter is an involved land owner. The close proximity of the submitter and the perceived potential incompatibility of current commercial operations suggest that the temporary effect of construction impacts as well as the ongoing visual, noise and economic effects may be the key drivers of land value impacts. However, as an involved land owner, direct remuneration is anticipated to address this effect.

The relationship between land value and wind farm projects however, has been identified as more complex than these issues alone (see issue above). While existing case studies have found little evidence to support the contention that land value impact is a significant consideration, in this unique location large assumptions must be made to move forward with the development of mitigation measures. The approach of the EA has been to consider all impact types separately and provide mitigation of specific impacts, under the assumption that by addressing each separate issue, the potential cumulative effects on land value will similarly be reduced.

Beyond this assessment and not specific to the three properties to which the submissions relate, the Proponent's offer of the Solar Silverton scheme and the further offer in this document of domestic water tanks will go some way, for those participating, to improving the value of residential properties.

8.10 MINERAL EXPLORATION IMPACTS

Issue	Proposed Silverton wind farm site encompasses areas of high prospectivity and promising areas for new ore bodies. The proposed Silverton wind farm will sterilise this area for mineral exploration.
Sub. No	2, 4, 5
Response	It is recognised in the EA that the Broken Hill area has one of the world's largest silver-lead-zinc deposits and that the proposed Silverton wind farm site is in an area considered highly prospective. However, despite exploration efforts over the years in the Barrier Ranges there has not been a discovery of an economic mineral resource and no mineral Mining Leases have been granted on the proposed wind farm site. Using the same method of prospecting, proving up and harvesting/mining, the Proponent of the wind farm has identified and quantified a viable renewable energy resource and has lodged a firm proposal to develop a wind farm in the Barrier Ranges. In effect the Proponent is at a comparable stage of development to transitioning between an exploration license and a mining lease. The Silverton Wind Farm infrastructure will occupy approximately two per cent of the total site area and will not unreasonably limit mineral exploration within it. The only limitation to invasive exploration methods will be in close proximity to in-situ infrastructure (turbine, power lines) as a result of operational, engineering and safety considerations. As discussed with the DPI, it is not possible to define permissible activities near infrastructure or exclusion zones for certain activities because it is dependant on what these activities may be. Consequently, it is considered that the greater part of the wind farm site will not be sterilised for mineral exploration. In terms of mitigation to minimise areas subject to restrictions in the vicinity of wind farm infrastructure and to minimise conflicts, the Proponent proposes: — To provide final turbine locations following geotechnical survey to the licence holders to enable exploration in these locations prior to turbine construction — Ongoing liaison and consultation with the Mineral Exploration Licence holders. See SOC109 (SOC96) and SOC110 (SOC97).

Issue	Systematic geochemical exploration has identified anomalies that have not been drilled and there is a chance that deposits may be discovered.
Sub No.	2
Response	The proposed wind farm will not prevent drilling across the site except in areas in close proximity to wind farm infrastructure (approximately two per cent of the site). Where any identified anomalies exist in locations designated for track or wind turbine placement, Mineral Exploration licence holders can explore these areas prior to track and turbine construction. It is not known exactly how close to an in-situ wind turbine it will be possible to drill as structural engineering and safety issues need to be considered, including vibration and peak particle velocities near turbine foundations. While there is a chance that a discovery may be made in the future, there has not been an economic deposit identified in the vicinity of the proposed wind farm site to date nor an identified exploration target that would impact on the wind farm proposal. Should a mineral deposit be identified then an application for a Mining Lease can be made to the Minister in accordance with the Mining Act and planning approval sought from the NSW Department of Planning.

Issue	Mitigation measures proposed do not avoid potential sterilisation of land with respect to mineral exploration or mining.
Sub No.	2
Response	As previously discussed, the proposal does not result in sterilisation of the entire wind farm site for mineral exploration. Exploration activities are still possible across approximately 98 per cent of the wind farm site. The mitigation proposed is related to ongoing communication with Exploration Licence (EL) holders, including the provision of details of the final wind farm infrastructure layout, to avoid potential conflicts and minimise the land restricted for mineral exploration. It also ensures the EL holders have a point of contact with the Proponent to raise issues related to the development and enable dialogue regarding respective activities into the future. It is recognised that co-existence and concurrent land use is achievable with clear and open communication between the EL holders and the Proponent. While this would not avoid potential sterilisation, it would minimise restrictions on exploration, avoid conflicts and ensure the maximum potential for both concurrent activities on the proposed site.

Issue	Co-existence of the wind farm and the mineral exploration industry should occur under a set of quantified and clear rules.
Sub No.	2
Response	The Proponent is seeking concept approval for the entire wind farm proposal and project approval for Stage 1 of the development in accordance with Part 3A (Major Projects) of the *EP&A Act (1979).* The proposal is also considered a Critical Infrastructure Project. The Consent Authority is the NSW Minister of Planning and the Project Application was lodged with the NSW Department of Planning on 24 December 2007. DGR's were issued on 13 February 2008. Mining exploration and mining activity is controlled under the *Mining Act 1992*. It is the Proponent's view that co-existence of the wind farm and mineral exploration should be achievable given the relatively small footprint of wind farm infrastructure across the whole site and only restrictions in the immediate vicinity of wind farm infrastructure may be necessary. It is considered that the proposal would not sterilise significant amounts of land for exploration and the Proponent confirms its willingness to work co-operatively with the mineral exploration industry.

It is also understood that mineral exploration companies want more certainty about the areas that will be restricted in the vicinity of wind farm infrastructure. This however needs to be considered once the activities are known in the context of the operational, engineering and safety constraints around wind turbines, substations and cabling. For example if an EL holder wants to drill near a turbine, the wind farm operator would require assurances from the EL holder that a structural engineer has provided advice on how close such drilling can safely be done. Such advice would consider the type of drill rig and the vibration/particle velocity produced.

The Proponent considers that ongoing liaison and consultation between SWFD and EL holders is the most appropriate approach to minimise conflicts during the construction and operation of the proposed wind farm. These have been included as SOCs 109 and 110 (96 and 97).

Issue	The EA does not consider mineral exploration, geology, the relationship of geology to the flora and fauna, the relationship of geology to regolith and the relationship of geology to historic mining sites. The EA does not comprehensively deal with the environmental effects of the proposed wind farm.
Sub No.	4
Response	The EA is an extensive document that has been prepared by experienced specialist consultants for the Proponent and adequately assesses the requirements of the Director General including potential impacts of the proposal. The EA also provides mitigation strategies to minimise impacts where possible and these are included in the Statement of Commitments. The impacts on current and future mineral exploration activities have been assessed in the EA. The EA notes the historical importance of mining on the area in Chapter 2.4, considers the impact on current and future mineral exploration in Chapter 7.12, biodiversity is thoroughly assessed in Chapter 7.4 (with detailed reports included as Appendix 3 and 4) and mining history addressed in Chapter 7.8 (Non-Indigenous Heritage).

Issue	The presence of wind farm infrastructure, including steel, power lines and concrete would prevent remote sensing techniques including electromagnetic, geophysical and geochemistry.
Sub No.	4, 5
Response	It is acknowledged in the EA that localised wind farm infrastructure may impact upon the use of gravity or electrical remote sensing methods for mineral exploration. This is due to the low sensitivity of the remote sensing technology could be affected by electromagnetic or gravity signatures from wind farm infrastructure such as towers, footings and electrical cabling. It is proposed not to remove underground wind farm equipment, including foundations and electrical cables, at the time of decommissioning because of the environmental impacts of removing sub-surface infrastructure. However the exploration companies could potentially undertake survey work prior to the commencement of construction of the wind farm and this was discussed with DPI during the conference call in July 2008. It was suggested by DPI that the proponent could fund the aerial survey, but the proponent advised that it was not in a position to fund this type of activity. However the Proponent has made a commitment to provide details of the anticipated construction commencement dates, once finalised, to enable EL holders to acquire geophysical airborne data across the site if desired. See SOC109 (SOC96).

Issue	Lack of consultation with mineral exploration license holder
Sub No.	5, 6

Response

Consultation with the DPI and all EL holders occurred prior to the finalisation of the EA and is presented in Table 7.12 in the EA and expanded further below. The consultation with EL holders encompassed potential impacts on their planned exploration activities and any possible future mining operations.

Mining Exploration Pty Ltd provided details of a primary exploration target in EL6452 that is outside of the proposed wind farm site. Other specific exploration targets were not identified by the other EL holders.

Correspondence/contact

Contact	Date	From/to Parties	Issues	Outcome
letter	30 Jan 08	DPI to DOP	DPI comments in relation to the DGRs	Assessment of infrastructure sites to be undertaken prior to construction. Consultation with licence holders and DPI prior to finalisation of locations of turbines and infrastructure.
Meeting	6 Feb 08	SWFD /CBH	SWFD seeking information regarding exploration activities and any concerns related to the wind farm proposal	Comments sought
Letter	7 Mar 08	SWFD to CBH	SWFD identifying licenses held and seeking information regarding exploration activities and any concerns	Comments sought and response received 29 Apr 08
letter	7 Mar 08	SWFD to Mining Exploration P/L	SWFD identifying licenses held and seeking information regarding exploration activities and any concerns related to the wind farm proposal	Comments sought
Letter	7 Mar 08	SWFD to Alliance Resources	SWFD identifying licenses held and seeking information regarding exploration activities and any concerns related to the wind farm proposal	Comments sought
Phone	23 Mar 08	Consultant for Mining Exploration P/L to SWFD	Responding to letter of 7 Mar Will send location of key area of interest	Email sent with detail
Email	3 Apr 08	SWFD to CBH	Maps sent with turbine locations and access tracks	Response received notifying of letter to be sent outlining concerns
Email	17 Apr 08	CBH to SWFD	Thanks for maps and advising outline of concerns to be sent in letter.	
Email	23 Apr 08	Consultant for Mining Exploration P/L	Follow up to phone call of 23 Mar providing Map showing location of area of interest	Email sent with target mineral exploration site detail

Contact	Date	From/to Parties	Issues	Outcome
Letter	29 Apr 08	CBH Resources to SWFD	Numerous general concerns listed and await EA document	EA document exhibited and submission received from CBH
Email	5 May 08	SWFD to consultant for Mining Exploration P/L	Confirmation that area of interest appears not to overlap with wind farm. GIS requested to confirm	Confirmation that interests do not overlap
Telecon-ference	14 Jul 08	DPI reps from Broken Hill & Hunter Region	– SWFD confirm that it will avoid unreasonable limitations on exploration activities. – Propose to send GIS layer to DPI – DPI suggested $500 aeromagnetic survey by helicopter, funded by SWFD – SWFD demonstrated correspondence and consultation with stakeholders	– Only two per cent of site used no unreasonable constraints imposed – Awaiting DPI info to put onto GIS – Wind Farm Project cannot fund such survey action – Correspondence documented in table.
Meeting	18 Nov 08	SWFD and DPI Broken Hill	Discussed proposal re detail on site including mine safety and old shafts	Keep informed of detail of proposal

Issue	Permanent sterilisation following decommissioning of the wind farm if concrete footings, cables are not removed. No decommissioning bonds proposed and this is inconsistent with requirements for mining companies
Sub No.	5
Response	A decommissioning bond is not proposed based on commitments related to decommissioning are covered directly in the lease agreement with the Landowner (Department of Lands, in this case). This is in relation to removing plant at the end of the lease period, conditions of consent and the cost of steel and other commodities is expected to ultimately result in a nil financial burden from decommissioning. This is consistent with the Taralga judgement (*Taralga Landscape Guardians Inc v Minister for Planning and RES Southern Cross Pty Ltd*). It is likely however that the turbines would be refurbished, replaced or overhauled at the end of their design life. The approach of not providing a decommissioning bond may be inconsistent with the mining industry, due to the significant disparity between potential land and environmental impacts of a wind farm when compared to that of a mining operation. As mentioned previously, there is no proposal to remove sub-surface infrastructure should decommissioning occur because of the unnecessary environmental impacts this would cause.

Issue	The proposed Silverton wind farm design life is greater than the known life of the Broken Hill ore body, and the wind farm would only shorten the length of employment if no exploration occurs to replace mined ore
Sub No.	5
Response	This concept seems counter-intuitive on the basis that there is no certainty that a new viable mineral deposit would be found and that jobs from the mining sector in Broken Hill are already being lost. Renewable energy and in particular, a Critical Infrastructure and State Significant Project such as the Silverton wind farm, has the potential to create a significant number of new jobs in relation to construction, operation and potentially manufacturing in NSW. In particular the proposal would create around 3,988 FTE job years in regional Australia. The Broken Hill region would benefit significantly from this new and growing industry.

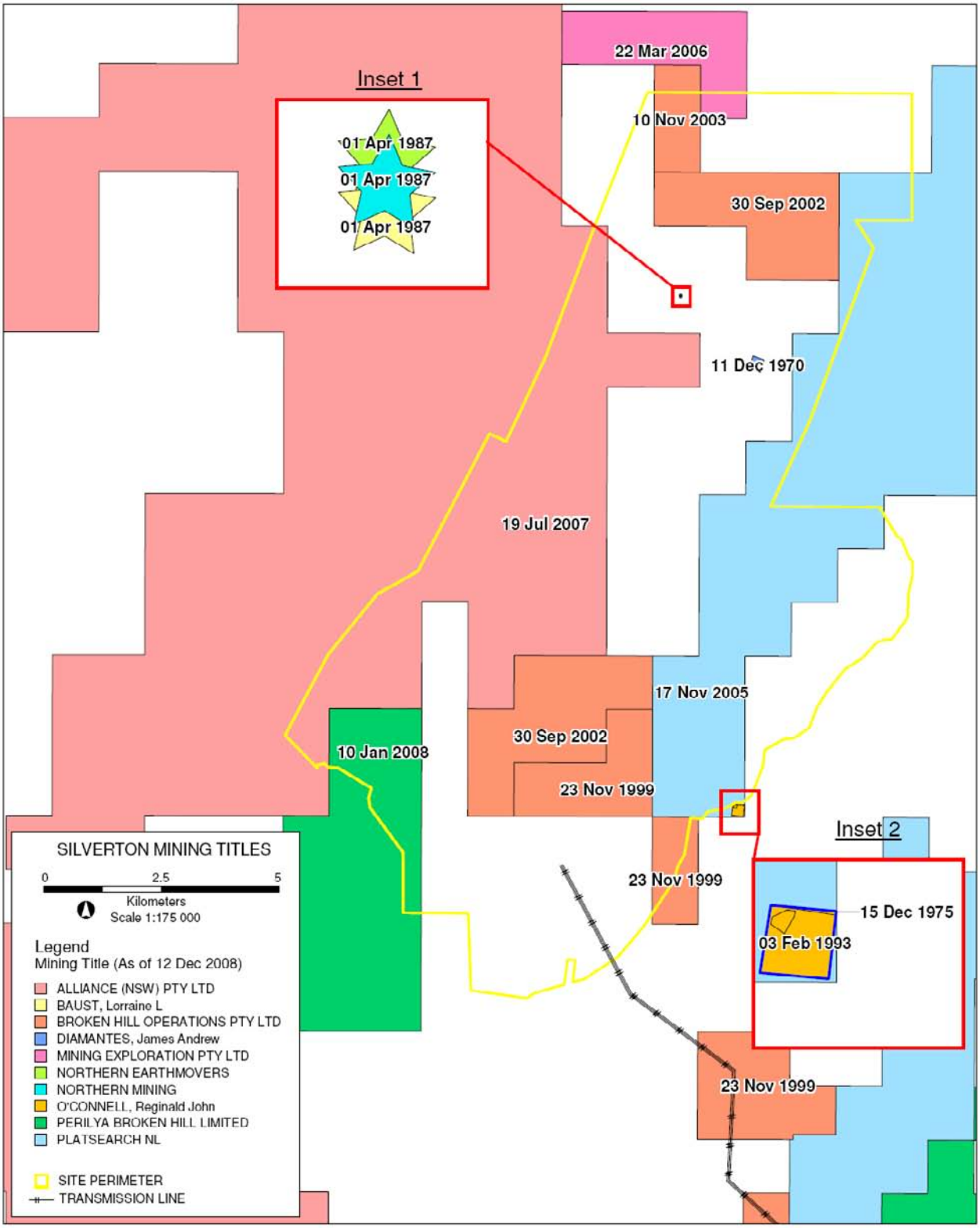
Issue	EA does not adequately address impacts on mineral exploration and mining. No specialist study was conducted
Sub No.	6 DPI
Response	Impacts to mineral exploration from the proposal were addressed in the EA in Chapter 7.12: Mineral Exploration Impacts. This chapter assesses the impact from the construction and operational phases of the proposal, including transmission lines, based on desktop study and consultation with EL holders and DPI. This chapter was reviewed and amended following the adequacy review by Government agencies and a conference call held with DPI on 14 July 2008. Given the limited impact area (2.09 per cent of the total site) from the wind farm, the results of the desktop study and feedback from the consultation, specialist study into Mineral Exploration Impacts was not considered necessary. Ongoing consultation between the EL holders and the Proponent would be required to maximise concurrent land use benefits and avoid potential conflicts.

Issue	DPI regulates Exploration License (EL) holders and provides a right to explore for minerals, requiring certain levels of expenditure on exploration activities. Where exploration is inhibited by the proposed wind farm, EL holders may not achieve their exploration commitments.
Sub No.	6 DPI
Response	It is understood that EL holders commit to a certain level of activity and exploration expenditure as a condition of the Exploration License and that DPI regulates this. As mentioned previously, the footprint of the proposed wind farm is small in relation to the overall site and the wind farm development would not pose any undue influence on any reasonable exploration access.

Issue	The EA suggests that the proposed wind farm would make access for exploration better "at the end of the Projects life" indicates the proponent does not believe it is required to address the impacts on mineral resources and that affected stakeholders would have to wait until the end of the Project life.
Sub No.	6 DPI
Response	As presented in Chapter 7.12 of the EA and discussed directly with DPI at the PFM and during the conference call held in July 2008, the Proponent would not unreasonably restrict access for mineral exploration activities during construction or operation of the wind farm. It is also clearly stated that "*access roads constructed for the proposed wind farm would likely facilitate future exploration works via the creation of easier access as well as making a greater proportion of the exploration lease area more accessible.*" There is no reference to this occurring at the end of the Project life and the intention is that mineral exploration could occur on the site subject to some reasonable operational, engineering and safety considerations. The clear point is that the access tracks constructed by the proposed wind farm would provide benefit and opportunity to EL holders to enable exploration and drilling in extensive areas considered previously inaccessible. Contrary to the comment in the submission, the Proponent has considered the issues raised by stakeholders and has addressed potential impacts on mineral exploration during the various stages of the Project, including construction and operation.

Issue	It is not sufficient to liaise with DPI or EL holders and provide details of proposed infrastructure unless they have the ability to object to or influence layout variations.
Sub No.	6 DPI
Response	The EA contains the details of the proposal including the proposed location of infrastructure for Stage 1 (Project Approval) and Stage 2 (Concept Approval) has undergone public exhibition and stakeholder consultation. Within the site boundaries, there are no Mining Leases for minerals. Following consultation with EL holders, there are no known specific exploration targets that would influence the wind farm layout or design. The economic implications of modifying the wind farm layout are considerable and in the absence of valid and proven mineral finds, the Proponent would not contemplate layout modifications. However, the Proponent in the Statement of Commitments (SOCs 109 and 110 (96 and 97)) has committed to continue to liaise and consult with EL holders and mineral exploration stakeholders to minimise potential conflicts

Issue	Concerns that mineral potential was not considered when locating the turbines or related infrastructure
Sub. No	6
Response	The location of mineral exploration leases on the wind farm site were determined early in the development and consultation with licence holders commenced. Only one licence holder identified a target area and this was to the north of the boundary of the proposed site.


Inset 1
01 Apr 1987
01 Apr 1987
01 Apr 1987
22 Mar 2006
10 Nov 2003
30 Sep 2002
11 Dec 1970
19 Jul 2007
17 Nov 2005
30 Sep 2002
10 Jan 2008
23 Nov 1999
Inset 2
23 Nov 1999
15 Dec 1975
03 Feb 1993
23 Nov 1999
SILVERTON MINING TITLES
0
2.5
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Kilometers
Scale 1:175 000
Legend
Mining Title (As of 12 Dec 2008)
ALLIANCE (NSW) PTY LTD
BAUST, Lorraine L
BROKEN HILL OPERATIONS PTY LTD
DIAMANTES, James Andrew
MINING EXPLORATION PTY LTD
NORTHERN EARTHMOVERS
NORTHERN MINING
O'CONNELL, Reginald John
PERILYA BROKEN HILL LIMITED
PLATSEARCH NL
SITE PERIMETER
TRANSMISSION LINE

8.11 AIRCRAFT HAZARD IMPACTS

Issue	Concerns that the risk of collisions and crashes with higher obstacles would be far greater
Sub. No	22
Response	The proposal considered aviation hazard impacts in Section 7.13 of the EA, including consultation with stakeholders (including CASA, Airservices Australia and Broken Hill Council). Discussion with CASA is on-going and may result in aviation hazard lighting in response to aviation risks presented by turbines. Full technical details of the wind farm infrastructure locations and heights would be provided to CASA, Department of Defence and other relevant agencies

8.12 ELECTROMAGNETIC FIELDS (EMFS)

Issue	Concerns regarding the impact of microwaves on the environment (especially resident fauna) – both short and long term
Sub. No	13
Response	Microwave communication is a widely used method of communication and is employed in many applications worldwide. There is currently no conclusive evidence to suggest that exposure to microwave communication links is harmful to either humans or animals. Any microwave equipment used in the Project would be compliant with applicable regulatory requirements.
Issue	A program for the removal of magnetic material and electrical conductors is not outlined
Sub. No	4
Response	There is no program for the removal of magnetic material and electrical conductors. All inground infrastructure would remain in place to avoid and minimise renewed environmental impacts.

8.13 COMMUNICATION IMPACTS

Issue	Concerns over interference with TV, radio, UHF, HF, telephone lines and internet connection as some phones are connected through radio signals and aerials. HF radio sets are used as an emergency back up for the Flying Doctor.
Sub. No	9, 22
Response	There is a possibility that broadcast analogue TV reception may be impacted (and mitigated), as described in the Environmental Assessment and also Broadcast Australia's response. However, with satellite TV (as with other point-to-point communication devices), unless a particular subscriber's antenna reception direction and elevation is aligned directly with a turbine, no impacts are likely. The submitters satellite dishes are not aligned with the areas in which turbines would be located. No impact is expected on radio, UHF, HF/radio, telephone lines or internet.

Issue	Proposed route of power line differs from original plan. It would not have the stated *"overall low impact on the surrounding landscape character"* and would adversely impact threatened species in area.
Sub. No	16, 17
Response	Two submissions criticised the biodiversity impacts of the proposed transmission line duplication, from the wind farm site to Red Cliffs, Victoria. One submission notes the high biodiversity values near the proposed Murray River Crossing and the potential of the proposal to cause a barrier to fauna movement and remove significant habitat. This submission proposes an alternative route. The second submission suggests that the amount of vegetation to be removed for the easement has been underestimated and is significant. The BA of the proposed transmission line duplication was a preliminary assessment. It was written as a technical report, identifying key areas requiring further investigation. It demonstrated the route was feasible and recommended specific additional survey work to properly characterise and assess impacts. Carrying out this work was a commitment of the proposal, required to undertake the more detailed design of the route. SOC40 (SOC31) Carry out further field work to ground validate the extent and condition of vegetation of conservation significance and threatened fauna in the Stage 2 site area and Stage 2 transmission corridor. SOC41 (SOC32) Carry out additional evaluation of the potential for impact on all flora and fauna species listed as threatened with potential to occur within the Stage 2.

8.14 COMMUNITY WELLBEING

Issue	Lack of equity associated with the proposed Community Fund. Submission 25 suggests that 500 turbines would affect more than the communities with 30-40 turbines, and have a greater impact upon the community and its capacity to meet tourist and construction demands
Sub. No	25
Response	The proposed Community Fund, developed to spread more equitably the benefits of the development to all those potentially affected by it, has been criticised for being inequitable. The fund is a voluntary commitment made by the Proponent and it targets the Silverton community, recognising that the greatest impacts of the development would occur in Silverton. The intent is that this fund is spent on community facilities and activities within the local area and the type of projects which would benefit from it include those that could potentially be impacted by the proposal. Potential projects could include, for example: — Event sponsorship — Tourism promotion — Land care including weed and pest management on community land — Local sporting facilities — Local public infrastructure such as fence upgrades — Community parklands (e.g. Penrose Park) — Academic and vocational scholarships — Rural fire service support — Local heritage management.

To ensure the greatest equability, the structure of the fund and its management would be determined in consultation with the local community, and in particular the Silverton Village Committee, the Penrose Park Trust and the Silverton Commons Trust.

Issue	Lack of public and stakeholder consultation
Sub. No	4, 5, 6, 9, 19, 20, 21
Response	Several respondents questioned the adequacy of the community consultation. Community consultation and engagement is increasingly being seen as a vital aspect of the environmental assessment process. It is a chance to take on local knowledge and concerns to assist in planning for a development, and where achievable addressing community. A Community Consultation Plan was developed to guide this aspect of the assessment. It aimed: — To ensure the community was fully informed about the Proposal — To provide multiple opportunities for the community to receive information and provide feedback about the Proposal — To incorporate the feedback into the design of the wind farm where possible — To provide multiple opportunities for ongoing dialogue with the community. The plan was used to guide consultation during the development of the Proposal. The intention of the plan was that it be adapted as community feedback was received so that consultation activities were a pragmatic response to the issues raised by the community. Consultation activities included in person meetings (group and one on one), follow-up phone calls and correspondence, release of media statements, interviews with local media outlets. There is no perfect time to let a community know about a wind farm proposal but in general once a proposed project is sufficiently well-formed, the earlier the better. The Proponent organised a media launch to announce the proposal in October 2007, prior to the first events such as the Planning Focus Meeting to ensure that media and community were alerted to the Proposal and the forthcoming community consultation. It is very difficult to ensure that every individual who may be concerned about the proposal is contacted. Using multiple means of contact such as direct mail using Council rates lists (where such information exists), feedback forms, emails, website enquiries and phone calls - requesting information, newspaper articles, media releases and continuing the consultation activities concurrently with the environmental assessment schedule (in this case from November 2007 to March 2008 and on-going) ensures that a high level of consultation can be achieved. Sections 6.2.2 and 6.2.3 of the EA details the high level of community consultation undertaken that was achieved prior to finalisation of the EA. The approach included addressing a meeting of the Silverton Village Committee, an Open House, an Open house follow-up meeting, a meeting with the Silverton Village following their own secret ballot, information stand at Agfair 2008, a presentation to Business Broken Hill at their inaugural event, setting up a register of interest with businesses in Broken Hill, Newsletters, and a number of media releases, on-air interviews and responses to questions arising, and articles. This two-way information exchange resulted in modifications to the proposal. Consultation which results in modifications to the project is not solely with members of the community, it also includes consultation with landholders, local businesses, with local authorities and with interest and business groups. One submission noted that items listed as modified after consultation are exaggerated and misleading. Following consultation, a number of modifications were made to the proposal and these are incorporated into the EA.

To give an example of a modification which may not be apparent but was incorporated into the design of the site, following the Open House in Nov 2007 it was apparent, for example, that minimisation of construction traffic through Silverton would attend to some degree to the concerns of some residents.

While Daydream Mine Road was always considered a key site access point, following consultation the brief to the civil engineers undertaking the preliminary track design was amended to ensure turbine delivery used tracks accessible through Daydream Mine road and the site internally rather than through Silverton wherever possible.

As a result of consultation the Silverton Village Committee and some Silverton residents provided submissions to SWFD which would form the basis of community fund discussions should the Project proceed.

Items requested in relation to a community fund include:

- New parking facilities and toilets to deal with increased tourism
- A school and community bus
- Street signs and heritage consultation
- Water tanks for homes in Silverton village
- Apprenticeships or scholarships
- Three phase power to the village.

A number of the above need further research to determine the range and scope of the work or the costings involved.

The Silverton Village Committee wishes to finalise the Solar Silverton Scheme at the same time as construction of the wind farm is completed. The offer originally provided a longer timeframe within which residents may take up this offer. The proponent is happy to accept the amended timeframe and to liaise with the Silverton Village Committee further as required.

In line with the Solar Silverton initiative offered by the Proponent and to address a specific request made by community submission, a further statement of commitment is included by the Proponent. This is SOC144:

SOC144 SWFD would provide on request a domestic sized water tank to all inhabited residences within 10 kilometre of the site. This is in response to community submissions.

As part of the environmental assessment process, community impacts are considered under the heading of Community Wellbeing (EA Section 8.1). This section considers the existing demographics and social make up of the local community and is used to develop specific measures to address key community impacts. The consultation process is invaluable to assessing community wellbeing and deriving these measures. Commitments which accompany this proposal and reflect the findings of this assessment include:

- SOC124 (SOC111) Disseminate accessible and independent information on wind farm impacts including benefits
- SOC125 (SOC112) Establish Community Fund as outlined in the Environmental Assessment

A Planning Focus Meeting was organised to initiate the planning process, formally inviting government agencies to provide comments to guide the environmental assessment. This is a requirement of large or complex Part 3A Major Projects and is not linked to the community consultation.

8.15 TOURISM IMPACTS

Issue	Concerns that turbines would have a negative impact on tourism (submission 15 states tourism supports 400 small businesses). Concerns that insufficient commitment has been given to provide tourists with immediate/direct access to wind turbines
Sub. No	9, 10, 11, 15, 17, 19, 20, 22, 24
Response	Several respondents were concerned about the impact of the proposal on tourist activities. This is an important issue for the village of Silverton and surrounding areas that would have a view of the proposed infrastructure or are located on the haulage route, where galleries, tours, and educational facilities leverage not just on the mining history but also on the natural, undeveloped characteristics or the heritage values of the locale. The concern is that the traffic and views of infrastructure (and potentially noise, where activities occur in close proximity to turbines) would undermine the characteristics upon which these ventures are based and that tourist numbers would decrease, with devastating consequences for local tourist ventures. While the proposal may negatively impact on some aspects relating to tourism, the proposal represents significant additional opportunities. For example, outcomes that could represent future attractions and that have come about as part of the development of this proposal or would come about during development include: The description of previously undescribed vegetation types – a draw card for naturalists as well as an important addition to the scientific literature The discovery of rare and threatened reptiles, previously unknown from the area – similarly, a draw card for naturalists and addition to the scientific literature The documentation of indigenous and non-indigenous heritage sites in areas not previously surveyed and the completion of assessments of heritage impact, that could be used to more fully document the history of the locality The spectacle of wind turbine installation and operation – a draw card to many members of the public and increasingly of interest as a symbol of renewable green house gas emission free energy – in line with many ecotourist enterprise aims. Two respondents suggested that the proposal should include greater tourist accessibility. This may serve as an attraction to some visitors, to offset any sections of the market dampened by the development. Promotion of the wind farm site itself is not part of this proposal, however the Proponent is not averse to a third party organising such tours as a commercial activity. Appropriate road signage, a pull over area and information signage is a commitment of the proponent in consultation with relevant agencies. Current commitments of the Proponent to address the potential for adverse economic impacts to tourism include: — SOC126 (SOC113) Co-ordinate construction activities with local events — SOC127 (SOC114) Provide wind farm promotional information to the local visitor information centres — SOC128 (SOC115) Support educational and promotional tours subject to safety concerns and the permission of landholders being addressed — SOC129 (SOC116) Work with the Silverton Village Committee and involved landholders to allow for the development of the wind farm as a tourist attraction, in so far as this is desirable to these parties — SOC68 Provide information signage about the Project at the Mundi Mundi lookout 5 kilometre west of Silverton and on the Silverton Road in the vicinity of Daydream Mine Road.

8.16 FILM AND ART IMPACTS

Issue	The area is highly valued in a cultural sense and the landscape is utilised by artists and film makers
Sub. No	9, 20, 22
Response	The potential for the proposal to affect film and art enterprises was considered in several sections of the EA. The EA acknowledges that the Western Lands leases are used for grazing, tourism and film-making purposes and that the region possesses a vibrant art industry. The far west film industry was estimated to yield $400,000 annually (pers com D.Haskard, Manger Film Broken Hill, February 2008). 18 areas utilised previously and promoted to the film industry were located within approximately 120 kilometre radius of Broken Hill. Potential impact on the film and art industry during construction and operational impacts was assessed. Impacts likely to result that relate to construction were identified as visual, traffic and noise impacts. These impacts are temporary and manageable however, residual impacts will affect some members of the community and may have economic ramifications. The impact during operation of the wind farm would relate to the visual impact. The Landscape and Visual Assessment, summarised in Section 7.1 of the EA, assessed the potential visual impact on receptor categories including the film and art industry. It included views from two nearby film making locations as having a low visual impact; a factor of distance and low numbers of visitors. While the EA determined that small scale subjects (ie close ups of trees) will be only minimally affected by views of wind farm infrastructure, larger scale subjects (ie broad landscape pictures), including filming vantages, may be affected by views of infrastructure. Furthermore the natural aesthetic may also be negatively impacted for sections of the community. There are few means to mitigate this impact. The proponent commits to: — SOC130 (SOC117) Liaise with Film Broken Hill and West Darlings Arts to ensure that these parties are informed regarding the construction activities and timing to minimise the potential for inconvenience caused to filming and art endeavours during construction

8.17 HEALTH AND SAFETY

Issue	Concerns regarding health effects from low frequency vibrations produced by wind turbines (based on report released by ACCC, 2008), and that there is potential for a turbine to go out of control
Sub. No	21, 22
Response	As the wind farm industry in Australia is in its infancy, it generates a level of concern over health and safety issues. These issues have been discussed at length with community members during the community consultation process. In public submissions, operational noise, the potential for turbines to malfunction and impact of blasting overpressure when undertaken close to mines were of concern to respondents. Overseas operations have demonstrated modern wind turbines to be safe and reliable, with a history of independent certification and compliance of over 25 years. They are designed and built to high industry standards. Type Certification of particular wind turbine models is provided by independent certification authorities that specialise in wind turbines. The Type Certification process establishes the safety and reliability of the design and the validity of its supporting calculations, including the assumptions and inputs on which the certificates are based.

The wind turbine foundations are designed to meet the requirements and loads for the particular wind turbine model, as well as the site specific geotechnical, seismic and climatic conditions. The design and construction of the wind turbine foundations will be in accordance with the Australian Standard for concrete structures (AS3600).

Blasting may be required during construction however, where required, the Proponent commits to ensuring detailed geotechnical investigations accompany any work to minimise risk of damage to mines or aquifers in the area (see SOC48 and 122 (39 and 109)).

SOC57 (SOC48) Undertake detailed geotechnical investigations to ensure that the Project would have no material adverse effect on groundwater/aquifers Identify important springs and other water sources through consultation

SOC135 (SOC122) Undertake detailed geotechnical investigations (such as core samples) in the area of the proposed turbines to determine ground stability and soundness of the strata taking into account the potential for any mine shafts

Operational turbines operate within a specific window of wind conditions, shutting down in strong winds. This is done to protect the turbines from damage in high wind conditions and ensures that turbines cannot spin out of control in these conditions.

Operational noise issues plagued earlier turbine designs, generating a component of low frequency sound that can be intrusive and disturbing to some residents in close proximity to wind farms. Refined design and noise modelling as per the SA EPA guidelines ensures that operational noise issues do not pose a risk to nearby residents. Within the modelling, any special audible characteristics, such as tonality or low frequency content, which would be deemed annoying or offensive, are assessed and if identified, predicted noise levels are penalised by the addition of 5dBA.

With the implementation of occupational health and safety protocols, as for any similar sized infrastructure Project, the risks to construction and operational staff and the public are able to be managed effectively (see SOCs 131 – 136 (118 – 123),

8.18 PHYSICAL IMPACTS

Issue	Concerns about soil and erosion
Sub. No	3, 11, 15, 22
Response	Several submissions addressed the impact of excavation and disturbance to soils. Erosion potential is high on the sites steep and skeletal slopes. The site is known for heavy deluges, that can mobilise large quantities of soil, transporting them to drainage lines and leaving slopes and ridges with lessened ability to support native vegetation and associated flora and fauna. The creation of tracks increases the amount of impermeable surface, increasing runoff and its erosive potential and also increasing dust propagation, in windy conditions. Excavations create waste rock and soil that must be removed or stabilised such that spoil does not degrade adjacent habitats. The context of extended drought and feral goat grazing combine to increase the sensitivity of the site to erosion. Because of the sensitive land forms and soils the site contains, a Constructability Study was undertaken by a specialist to understand the feasibility of constructing tracks and anchoring turbines onsite. This information assisted in the development of the infrastructure layout. The following commitments have been designed to address soil impacts onsite. — SOC58 (SOC49) Establish a Sediment/Erosion Control Plan including the following provisions:

- Install sediment traps wherever there is potential for sediment to collect and enter waterways
- Bund stockpiles generated as a result of construction activities with silt fencing, (hay bales or similar) to reduce the potential for runoff from these areas
- Establish soil and water management practices guided by the Best Practice guidelines contained within Soils and Construction Vol. 1 (Landcom 2004)
- Ensure all vehicles onsite follow established access tracks and minimise onsite movements
- Operate and maintain machinery in a manner that minimises risk of hydrocarbon spills.

SOC59 (SOC50) Prepare a Site Restoration Plan including protocols for restoration works such as:

- Site preparation
- Site stabilisation
- Measures to encourage native vegetation recruitment
- Monitoring.

SOC137 (SOC124) Avoid compaction of soil resulting from vehicle access and laying of materials, particularly during saturated soil conditions, and remediate as necessary.

SOC138 (SOC125) Undertake ongoing dust suppression throughout the construction phase.

SOC139 (SOC126) Monitor and maintain tracks to ensure landform stability is maintained, in accordance with erosion and sediment control plans.

Additionally, to explicitly address stockpiles, the following measure is now committed to in a modified SOC18: Stockpiles would be located appropriately, to minimise impacts on native vegetation, soils and land forms and drainage lines. They would preferentially be placed in existing areas of disturbance or poor quality vegetation and would be stabilised.

8.19 PROJECT JUSTIFICATION

Issue	The site location of the Project should be justified and whether other areas were considered
Sub. No	4, 15, 20, 21
Response	On 17 December 2008 Treasurer Wayne Swan, Minister for Climate Change Senator Penny Wong and Minister for the Environment Peter Garrett released details on the government's 20 per cent Renewable Energy Target. Wind energy is the key player currently in meeting that target. Suitable sites for wind energy development in Australia are hard to find. Areas of suitable wind resource where other necessary factors align are scarce and so must be developed to their full potential. Other areas for wind energy development were considered, in the Southern Highlands and elsewhere in NSW and are also under development by Epuron, one of the Project's JV partners. Other areas in the region have been proposed by submitters as more suitable for a wind farm site. Including the Thackaringa Hills, the Darling Ranges and a general area between Broken Hill and Cockburn which is close to the railway The site was selected using a range of factors. The key driver in a wind farm site is a good wind resource. As a specialist wind farm developer the Proponent reviewed proprietary meso-scale wind modelling across NSW to identify areas with the potential for wind speeds suitable for wind energy developments. The Barrier Ranges stood out as a suitable prospective target and further investigation revealed both good wind speeds and availability and capacity in terms of transmission.

The proponent has looked extensively across NSW for suitable sites for wind farms and considers areas of low population density is a significant consideration. This site was attractive in the degree to which it complies with all of the necessary parameters for a suitable wind farm location.

Based on our assessment of wind speed, topography characteristics, transmission, connection, site accessibility and low population density it is considered that the Barrier Ranges is the most suitable location within the Broken Hill region.

The justification for the Project is addressed fully in the Environmental Assessment.

Issue	Project should be justified in regards to the value of the project based on the financial difference of a mining operation compared to a wind farm
Sub. No	2, 4
Response	The proposed wind farm has a Critical Infrastructure designation and is compliant with a raft of state and federal policies. It would be key in assisting to meet the new Renewable Energy Target recently announced by the Federal Government. There is no Mining operation on the site, no known plan for one and no planning requirement to justify the development on this site against any other development.

Issue	Submission thought to overstate the carbon abating benefit. The wind program does not reduce the dependence on conventional base load energy. The build cost in carbon is not deducted from the savings
Sub. No	15, 24
Response	Conventional base load electricity generation in these carbon constrained times increasingly has its own difficulties to overcome. There is no single answer to meeting the electricity generation demands of today and of the future. Neither is there any doubt that renewable, sustainable generation, which increasingly has regard for inter-generational equity in the use of resources and lowered environmental impacts, would play an increasingly significant role, notwithstanding its carbon abating benefit. Electricity generation in NSW is traditionally undertaken by the state government and has historically been coal based. Government entities use tax payers money to build their assets, so they must undergo a regulatory test which requires them to make an assessment of the costs and benefits of a project, losses etc to build a case as to whether the Project is credible and worth going ahead with. The wind farm proposal would not be funded using taxpayers money. It would be independently viable in the marketplace. It would clearly result in a net reduction in GHG/emissions even taking into account the entire output offsetting gas-fired generation rather than coal-fired generation and also taking into account the construction of the lengthy transmission line.

Issue	Consideration of implementing a solar scheme in Broken Hill to produce renewable energy as opposed to wind farm
Sub. No	9, 19
Response	The Proponent has some specialist expertise in solar energy development and would be pleased to consider a solar scheme in Broken Hill however that is not the focus of the current proposal.

Issue	Site boundary has been altered since the initial plan. The latest site boundary comes within several hundred metres from sheep yards and related operations
Sub. No	22
Response	The revised site boundary is described and discussed in full in the Preferred Project section of this report. The concerns of the submitter are considered to have been mitigated. Notwithstanding this, sheep are generally unconcerned about wind energy developments and can be seen grazing, resting and sheltering at wind farms around the world. Sheep yards where sheep are mustered, mulesed, crutched or corralled prior to shearing tend to have the sheep focused significantly more on the event for which they are gathered than on the wind farm.

9

MODIFICATIONS TO THE PROPOSAL

9. MODIFICATIONS TO THE PROPOSAL

As a result of the submission from Government agencies and the community, changes have been made to the Statement of commitments. Additional (add) or modified (mod) commitments are summarised below.

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC14 (mod)	Blasting	Minimise annoyance	To minimise blasting impacts at residences, all blasting activities will meet the recommended criteria contained in the document technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground vibration (ANZECC, 1990)	Construction	X	X	X		
SOC15 (mod)	Operational Noise	Compliance	A final noise assessment will be completed prior to construction based on the final turbine layout and turbine selection to confirm noise criteria will be met at all identified sensitive noise receivers. Where predicted noise levels exceed the criteria, a negotiated agreement will be put in place that includes compensation for noise affectation.	Construction	X	X	X		
SOC18 (mod)	Loss of biodiversity value	Avoid or minimise impact	Use existing clearings wherever practical for materials lay down, stockpiling and the deposition and retrieval of spoil. Stockpiles would be located appropriately, to minimise impacts on native vegetation, soils, land forms and drainage lines. They would preferentially be placed in existing areas of disturbance or poor quality vegetation and would be stabilised	Construction Decommissioning		X	X	X	X
SOC19 (mod)	Loss of biodiversity value	Avoid or minimise impact	Implement weed and sediment erosion controls to minimise onsite habitat degradation resulting from the proposed works. This would include a weed hygiene process	Construction Operation Decommissioning	X	X	X	X	X
SOC20 (mod)	Loss of biodiversity value	Minimise impact	Site stabilisation and rehabilitation would be undertaken as work progresses, following the guidelines in the EA	Construction	X	X	X	X	X
SOC21 (add)	Loss of biodiversity value	Minimise impact	Laydown sites for excavated spoil, equipment and construction materials would be selected as being weed free sites or treated for weeds if required, prior to their use	Construction	X	X	X	X	X
SOC22 (add)	Loss of biodiversity value	Minimise impact	Infrastructure placement would avoid areas of high biodiversity value as identified in Map set 6 of the Biodiversity Addendum where possible	Construction	X				

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC23 (add)	Loss of biodiversity value	Minimise impact	Beyond use required for the construction of a transmission line and road widening of an existing track, the undescribed vegetation communities identified (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod - Red Mallee woodland/shrubland on gravelly lower slopes) would be protected from other impacts including use for materials/equipment laydown	Construction	X				
SOC24 (add)	Loss of biodiversity value	Minimise impact	Contractors and staff should be inducted on the significance and sensitivity of the two significant vegetation communities present in the Stage 1b and 1c study areas (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod - Red Mallee woodland/shrubland on gravelly lower slopes)	Construction	X				
SOC25 (add)	Loss of biodiversity value	Minimise impact	All construction works and associated infrastructure must avoid identified Tawny Rock Dragon hotspots. People, equipment, infrastructure or materials should not impact directly or indirectly on any mapped hotspots (Map 3-4 & 3-5). For example, where track construction flanks hotspots, no spoil or sedimentation from these activities are permitted to enter the hotspot	Construction	X				
SOC26 (add)	Loss of biodiversity value	Minimise impact	Road management zones (RMZ) would be included in the final design and enforced during construction and maintenance activities between 1 October and 30 March inclusive when Tawny Rock Dragons are most active. Recommended maximum speed limits would also be applied	Construction Operation	X				
SOC27 (add)	Loss of biodiversity value	Minimise impact	Habitat creation would be undertaken when excavating turbine footings and vehicular tracks by utilising any excess rock (rock not utilised during construction). In order of priority, suitably sized excess rock waste should be placed into rock piles in the vicinity of: – Turbines – Hotspots (not within the hotspot, but adjacent to) – Vehicular tracks. As a general guide, rock piles should be between 0.5 – 1 meters in height and cover an area as large as 4 x 4 meters in area. Multiple rock piles can be provided if excess rock waste allows. Soil should not be mixed in with or placed onto these rock piles	Construction	X				

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC28 (add)	Loss of biodiversity value	Minimise impact	Excavated soil would not be placed on top of any existing 'rocky outcrops'	Construction	X	X	X		
SOC29 (add)	Loss of biodiversity value	Minimise impact	All pre, during and post construction staff should be made aware of the significance of the Tawny Rock Dragon in the study area, through education and awareness and their obligations in regard to hotspots and road management zones	Construction Operation Decommissioning	X				
SOC33 (SOC24) (mod)	Loss of biodiversity value	Minimise impact	Source imported materials such as sand and gravel from certified sources, free from noxious weeds and Phytophthora infection	Construction	X	X	X	X	X
SOC35 (SOC26) mod	Loss of biodiversity value	Minimise impact	Procure an appropriately qualified ecologist to assist in locating tracks, cabling routes and other infrastructure so as to minimise the impact on threatened species and the Porcupine Grass – Red Mallee – Gum Coolibah hummock grassland identified on site	Construction	X	X	X	X	X
SOC39 (SOC30) (mod)	Loss of biodiversity value	Minimise impact	Prepare and implement a goat management plan across vegetation in the stage one area with a particular focus on porcupine grass/red mallee/gum coolibah/hummock grassland. The goat management plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, Western Catchment Management Authority, Department of Primary Industries, Broken Hill Rural Lands Protection Board and relevant landholders	Operation	X	X	X		
SOC44 (SOC35) (mod)	Loss of biodiversity value	Minimise impact	Establish a Vegetation Management Plan to ensure that the ongoing maintenance of the transmission easement has minimal impact on the integrity of any EEC vegetation within the easement. The Vegetation Management Plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, and the relevant Catchment Management Authorities	Operation				X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC68 (SOC59) (mod)	Safety and asset protection	Minimise risk	Develop and implement a Traffic Management Plan (TMP) in consultation with roads authorities to facilitate appropriate management of potential traffic impacts. The TMP would include provisions for: – Scheduling of deliveries and managing timing of transport through Broken Hill to avoid peak hours (beginning/end of the school day) – Limiting the number of trips per day – Undertaking community consultation before and during all haulage activities – Designing and implementing temporary modifications to intersections and street furniture – Installing required signage to direct traffic flows appropriately during haulage through Broken Hill – The erection of warning signs and/or advisory speed posting prior to isolated curves – Limiting the delays experienced on haulage routes – Reinstating pre-existing conditions after temporary modifications to the roads and pavement along the route.	Construction Operation Decommissioning	X	X	X	X	X
SOC81 (SOC72) (mod)	Loss of indigenous heritage items	Minimise impact	Implement an active conservation strategy with regard to the two discrete object locales identified in Stage 1 to ensure that they are not inadvertently impacted during the construction, operation and decommissioning of the wind farm. (Note that these locales are either situated outside areas in which impacts are proposed or within areas in which a strategy of conservation, and hence impact avoidance, is expected to be highly feasible)	Construction	X	X			

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC83 (add)	Loss of indigenous heritage items	Minimise impact	Develop in consultation with an archaeologist and the local Aboriginal Land Council a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to indigenous heritage. Management strategies would be as set out in Table 9 of the Stage 1b and 1c Addendum Report (NSW Archaeology 2008)	Construction Operation Decommissioning	X				
SOC84 (add)	Loss of indigenous heritage items	Minimise impact	Specific to the above SOC, an active conservation strategy would be implemented in regard to the following locales. – SU248/L2 (outside proposed impacts) – SU264/L4 (in TL easement from substation 2a to Switchyard) – SU267/L8 (in TL easement from substation 2a to Switchyard) – SU267/L11 (in TL easement from substation 2a to Switchyard) – SU268/L2 (in TL easement from substation 2a to Switchyard) – SU268/L3 (in TL easement from substation 2a to Switchyard) – SU277/L2 (in east end of Construction and Maintenance Compound).	Construction Operation Decommissioning	X				
SOC85 (add)	Loss of indigenous heritage experience	Minimise impact	The Proponent would liaise with any group undertaking educational or tourist ventures with a component relating to the living heritage of the site within the development envelope, prior to the proposal, with the aim of minimising disruption to these activities	Construction Operation Decommissioning	X				
SOC92 (SOC80) (mod)	Loss of non indigenous heritage items	Minimise impact	Avoid impacts on individual recordings where practical in SU94, which contains a recording assessed to be of local significance and high research potential. Avoid or minimise impacts to the southeast of grid reference 526696e 6480400n	Construction	X	X			
SOC98 (add)	Loss of non indigenous heritage items	Minimise impact	Develop in consultation with an archaeologist a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to non-indigenous heritage. Management strategies would be as set out in Table 10 of the Stage 1b and 1c Addendum Report (NSW Archaeology 2008).	Construction	X				

	Impact	Objective	Mitigation tasks	Project Phase	Site area - Stage 1b and 1c	Site area - Stage 1	Site area - Stage 2	Transmission line corridor - Broken Hill	Transmission line corridor - Red Cliffs
SOC144 (add)	Water usage	Maximise water collection locally	SWFD would provide on request a domestic sized water tank to all inhabited residences within 10 kilometre of the site						

10
CONCLUSION

10. CONCLUSION

This Preferred Project and Submissions Report has:

— Provided the biodiversity and archaeology assessments of the further 162 wind turbine locations and associated infrastructure and works for which Project approval is sought and therefore addresses the full cumulative impacts of the further areas which are the revised Stage 1 of the proposal.

— Responded to the comments and issues raised in submissions from the community and Government agencies following the public exhibition of the Silverton Wind Farm EA.

Specialist advice has been sought from the consultants involved in the original assessment in preparing these responses.

This Preferred Project and Submissions Report fulfills the requirements of Section 75H of the Environmental Planning and *Assessment Act 1979*.

The Proponent of this Critical Infrastructure Project has responded to the challenges and opportunities presented by the development of the proposed Silverton Wind Farm. The larger electrical capacity of the Stage 1 connection, as revealed in ongoing detailed electrical studies, would potentially allow Stage 1 to be larger than initial studies indicated. The opportunity to undertake the further biodiversity and archaeological survey work at appropriate times of year has enabled the inclusion of 162 further wind turbine locations and associated infrastructure to be fully assessed and included in this Preferred Project Stage 1 Project Approval.

In response to the submissions, 14 additional and twelve modified Statements of Commitments have been included as part of the proposal.

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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11
APPENDICES

11. APPENDICES

The revised Statements of Commitment in full includes the proposed measures outlining how any additional impacts would be minimised, and where possible avoided. It includes the original Statement of Commitments. Due to this the numbering has altered, for reference the SOC number used in the exhibited EA has been included in brackets in this appendix and throughout this report. Additional (add) or modified (mod) commitments are indicated.

11.1 APPENDIX 1: REVISED SOC IN FULL

11.1.1 Visual

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC1	Visual Impact to nearby receivers	Minimise view of Infrastructure	Design and construct site control room and facilities buildings sympathetically with nature of locality	Construction	X	X		
SOC2	Visual Impact to nearby receivers	Minimise view of Infrastructure	Locate substations to minimise views from public roads and residences. Locate transmission lines where practical to follow the corridor of existing transmission lines	Construction	X	X	X	X
SOC3	Visual Impact to nearby receivers	Minimise view of Infrastructure	Minimise activities that may require night time lighting, and if necessary use low lux (intensity) lighting designed to be mounted with the light projecting inwards to the site to minimise glare at night	Construction Operation	X	X		
SOC4	Visual Impact to nearby receivers	Minimise view of civil earth works	Rehabilitate any site access track not required during the operation of the wind farm at the completion of the construction phase	Construction	X	X		
SOC5	Visual Impact to nearby receivers	Minimise view of civil earth works	Use local materials wherever possible for access track construction	Construction	X	X	X	X
SOC6	Visual Impact to nearby receivers	Minimise view of civil earth works	Enforce protocols to control and minimise fugitive dust emissions	Construction	X	X	X	X
SOC7	Visual Impact to nearby receivers	Minimise view of civil earth works	Restrict the height of stockpiles to minimise visibility from outside the site	Construction	X	X		
SOC8	Visual Impact to nearby receivers	Minimise view of civil earth works	Minimise cut and fill for site tracks and stabilise disturbed ground as soon as possible after construction	Construction	X	X		
SOC9	Visual Impact to nearby receivers	Minimise view of civil earth works	Rehabilitate disturbed areas, as appropriate, in consultation with landholders	Construction Operation	X	X	X	X
SOC10	Visual Impact to nearby receivers	Minimise view of wind farm	Offer screening (planting of vegetation) to dwellings categorised as having a moderate or high visual impact	Construction Operation	X	X		

11.1.2 Noise

	Impact	Objective	Mitigation tasks	Project Phase	Site area– Stage 1	Site area– Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC11	Construction noise	Minimisation	Employ appropriate noise reduction strategies to ensure the recommendations of the NSW Environmental Noise Control Manual are met. Strategies may include the re-orientation machinery, re-scheduling of noisy activities, installation of temporary noise barriers, improved vehicle noise control, reduced work times and the use of 'quiet work practices' (such as reducing or relocating idling machinery)	Construction	X	X	X	X
SOC12	Construction noise	Minimisation	Use appropriate and effective exhaust mufflers and compressor silencers on machinery	Construction	X	X	X	X
SOC13	Construction noise	Minimisation	Respond to noise complaints in a timely manner	Construction	X	X	X	X
SOC14 (mod)	Construction noise	Minimisation	To minimise blasting impacts at residences, all blasting activities will meet the recommended criteria contained in the document technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground vibration (ANZECC, 1990)	Construction	X	X		
SOC15 (mod)	Operational noise	Compliance	A final noise assessment will be completed prior to construction based on the final turbine layout and turbine selection to confirm noise criteria will be met at all identified sensitive noise receivers. Where predicted noise levels exceed the criteria, a negotiated agreement will be put in place that includes compensation for noise affectation.	Construction	X	X		
SOC16	Operational noise	Minimisation	Implement an adaptive management approach if noise exceedences are identified during wind turbine operation	Operation	X	X		

11.1.3 Biodiversity

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC17	Loss of biodiversity value	Avoid or minimise impact	Design infrastructure layout to minimise clearing. Confine works wherever practical to cleared or sparsely vegetated areas	Construction		X	X	X	X
SOC18 (mod)	Loss of biodiversity value	Avoid or minimise impact	Use existing clearings wherever practical for materials lay down, stockpiling and the deposition and retrieval of spoil. Stockpiles would be located appropriately, to minimise impacts on native vegetation, soils and land forms and drainage lines. They would preferentially be placed in existing areas of disturbance or poor quality vegetation and would be stabilised	Construction Decommissioning		X	X	X	X
SOC19 (mod)	Loss of biodiversity value	Avoid or minimise impact	Implement weed and sediment erosion controls to minimise onsite habitat degradation resulting from the proposed works. This would include a weed hygiene process.	Construction Operation Decommissioning	X	X	X	X	X
SOC20 (mod)	Loss of biodiversity value	Minimise impact	Site stabilisation and rehabilitation would be undertaken as work progresses, following the guidelines in the EA	Construction	X	X	X	X	X
SOC21 (add)	Loss of biodiversity value	Minimise impact	Laydown sites for excavated spoil, equipment and construction materials would be selected as being weed free sites or treated for weeds if required, prior to their use	Construction	X	X	X	X	X
SOC22 (add)	Loss of biodiversity value	Minimise impact	Infrastructure placement would avoid areas of high biodiversity value as identified in Map set 6 of the Biodiversity Addendum where possible	Construction	X				
SOC23 (add)	Loss of biodiversity value	Minimise impact	Beyond use required for the construction of a transmission line and road widening of an existing track, the undescribed vegetation communities identified (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod - Red Mallee woodland /shrubland on gravelly lower slopes) would be protected from other impacts including use for materials/equipment laydown.	Construction	X				

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC24 (add)	Loss of biodiversity value	Minimise impact	Contractors and staff would be inducted on the significance and sensitivity of the two significant vegetation communities present in the Stage 1b and 1c study areas (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod - Red Mallee woodland/shrubland on gravelly lower slopes)	Construction	X				
SOC25 (add)	Loss of biodiversity value	Minimise impact	All construction works and associated infrastructure must avoid identified Tawny Rock Dragon hotspots. People, equipment, infrastructure or materials should not impact directly or indirectly on any mapped hotspots (Map 3-4 & 3-5). For example, where track construction flanks hotspots, no spoil or sedimentation from these activities are permitted to enter the hotspot	Construction	X				
SOC26 (add)	Loss of biodiversity value	Minimise impact	Road management zones (RMZ) would be included in the final design and enforced during construction and maintenance activities between 1 October and 30 March inclusive when Tawny Rock Dragons are most active. Recommended maximum speed limits would also be applied	Construction Operation	X				
SOC27 (add)	Loss of biodiversity value	Minimise impact	Habitat creation would be undertaken when excavating turbine footings and vehicular tracks by utilising any excess rock (rock not utilised during construction). In order of priority, suitably sized excess rock waste should be placed into rock piles in the vicinity of: – Turbines – Hotspots (not within the hotspot, but adjacent to) – Vehicular tracks. As a general guide, rock piles should be between 0.5 – 1 meters in height and cover an area as large as 4 x 4 meters in area. Multiple rock piles can be provided if excess rock waste allows. Soil should not be mixed in with or placed onto these rock piles	Construction	X				

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC28 (add)	Loss of biodiversity value	Minimise impact	Excavated soil would not be placed on top of any existing 'rocky outcrops'	Construction	X	X	X		
SOC29 (add)	Loss of biodiversity value	Minimise impact	All pre, during and post construction staff should be made aware of the significance of the Tawny Rock Dragon in the study area, through education and awareness and their obligations in regard to hotspots and road management zones	Construction Operation Decommissioning	X				
SOC30 (SOC21)	Loss of biodiversity value	Minimise impact	Minimise works where practical during and immediately following heavy rainfall events to protect soils and vegetation	Construction Decommissioning		X	X	X	X
SOC31 (SOC22)	Loss of biodiversity value	Minimise impact	Store excavated topsoil, subsoil and weathered rock on site and replace in a manner that approximates the original ground profile	Construction		X	X	X	X
SOC32 (SOC23)	Loss of biodiversity value	Minimise impact	Replace at least 20 centimetres of cement-free fill as the top layer where cement is included in cable trench backfill	Construction		X	X		
SOC33 (SOC24) (mod)	Loss of biodiversity value	Minimise impact	Source imported materials such as sand and gravel from certified sources, free from noxious weeds and Phytophthora infection	Construction	X	X	X	X	X
SOC34 (SOC25)	Loss of biodiversity value	Minimise impact	Undertake post-construction weed monitoring after the first significant rainfall event to ensure that no weed infestations have resulted from the works	Construction Decommissioning		X	X	X	X
SOC35 (SOC26)	Loss of biodiversity value	Minimise impact	Procure an appropriately qualified ecologist to assist in locating tracks, cabling routes and other infrastructure so as to minimise the impact on threatened species and the Porcupine Grass – Red Mallee – Gum Coolibah hummock grassland identified on site	Construction	X	X	X	X	X
SOC36 (SOC27)	Loss of biodiversity value	Minimise impact	Make contractors and staff aware of type and location of threatened species that occur within the site	Construction Operation Decommissioning		X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1b and 1c	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC37 (SOC28)	Loss of biodiversity value	Minimise impact	Minimise track width through Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland where practical. Strategies would include avoiding routes that require extensive cut and fill, and maximising the use of single lane access tracks Establish clear demarcation (including signage) of the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland to minimise work and access within this community	Construction		X	X	X	X
SOC38 (SOC29)	Loss of biodiversity value	Minimise impact	Prepare and implement recovery plan for the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland vegetation community which occurs onsite and the threatened reptile fauna which rely on it. This plan would aim to achieve a net gain within this ecological community	Operation		X	X		
SOC39 (SOC30) (mod)	Loss of biodiversity value	Minimise impact	Prepare and implement a goat management plan across vegetation in the stage one area with a particular focus on porcupine grass/red mallee/gum coolibah/hummock grassland. The goat management plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, Western Catchment Management Authority, Department of Primary Industries, Broken Hill Rural Lands Protection Board and relevant landholders	Operation	X	X	X		
SOC40 (SOC31)	Loss of biodiversity value	Avoid or minimise impact	Carry out further field work to ground validate the extent and condition of vegetation of conservation significance and threatened fauna in the Stage 2 site area and Stage 2 transmission corridor	Construction			X		X
SOC41 (SOC32)	Loss of biodiversity value	Avoid or minimise impact	Carry out additional evaluation of the potential for impact on all flora and fauna species listed as threatened with potential to occur within the Stage 2 site area and Stage 2 transmission corridor	Construction			X		X
SOC42 (SOC33)	Loss of biodiversity value	Avoid or minimise impact	Peg or otherwise delineate the boundaries of EECs in good condition and flora species listed as threatened which are in the vicinity of proposed works to minimise direct and indirect impacts in these areas	Construction Decommissioning		X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1b and 1c	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC43 (SOC34)	Loss of biodiversity value	Avoid or minimise impact	Design transmission lines to minimise EEC impact. Strategies may include ensuring that the height of the transmission structure over EECs is sufficient to allow minimal impact on these communities, and making use of the existing cleared transmission easement to reduce the clearing required for the new line	Construction				X	X
SOC44 (SOC35) (mod)	Loss of biodiversity value	Minimise impact	Establish a Vegetation Management Plan to ensure that the ongoing maintenance of the transmission easement has minimal impact on the integrity of any EEC vegetation within the easement. The Vegetation Management Plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, and the relevant Catchment Management Authorities	Operation				X	X
SOC45 (SOC36)	Loss of biodiversity value	Minimise impact	Maintain access tracks to minimise ongoing erosion and sedimentation impacts	Operation		X	X	X	X
SOC46 (SOC37)	Loss of biodiversity value	Minimise impact	Confine maintenance access to existing tracks, hardstand or heavily disturbed areas	Operation		X	X	X	X
SOC47 (SOC38)	Loss of biodiversity value	Minimise impact	Design site substations to ensure that the transformers are adequately bunded against any spill	Construction		X	X		
SOC48 (SOC39)	Loss of biodiversity value	Minimise impact	Discuss options to reduce grazing pressures on EEC identified to be in good condition with existing landholders	Operation		X	X	X	X
SOC49 (SOC40)	Loss of biodiversity value	Avoid or minimise impact	Avoid significant clusters of rocks and boulders where these provide shelter to threatened fauna. Where rocks and boulders cannot be avoided, they should be placed directly adjacent to the works area to preserve the availability of refuge	Construction		X	X		

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1b and 1c	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC50 (SOC41)	Loss of biodiversity value	Avoid or minimise impact	Avoid standing dead trees and woody debris where practical. Where they require removal to allow for the tracks and hardstand areas, they should be placed adjacent to the impact areas, to retain these refuges in the immediate area	Construction		X	X		
SOC51 (SOC42)	Loss of biodiversity value	Avoid or minimise impact	Open trenches required for the installation of cabling for the minimal period practical. Check trenches at first light and remove any trapped fauna	Construction		X	X		
SOC52 (SOC43)	Loss of biodiversity value	Avoid or minimise impact	Apply a buffer to mature hollow-bearing trees where practical to minimise indirect impacts (such as noise and dust)	Construction		X	X		
SOC53 (SOC44)	Loss of biodiversity value	Avoid or minimise impact	Apply an appropriate buffer (50 meters) to identified Tawny Rock Dragon habitat to ensure that it is not adversely affected	Construction		X	X		
SOC54 (SOC45)	Loss of biodiversity value	Avoid or minimise impact	Design power poles to minimise perching and roosting opportunities where practical Design power poles and overhead powerlines to reduce impacts to birds (for example by using flags or marker balls, large wire size, wire insulation, wire and conductor spacing) in areas of elevated risk of bird strike	Construction		X	X	X	X
SOC55 (SOC46)	Loss of biodiversity value	Avoid or minimise impact	Design and implement an adaptive management monitoring program to document bird and bat mortalities, remove carcasses and assess the effectiveness of controls. If the results of assessment demonstrate that further mitigation is required, further turbine ridge habitat modification and enhancement of off-site habitats would be undertaken	Operation		X	X		
SOC56 (SOC47)	Loss of biodiversity value	Avoid or minimise impact	Undertake an appropriate fauna assessment, pertinent to applicable legislation at the time of decommissioning	Decommissioning		X	X	X	X

11.1.4 Hydrology

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC57 (SOC48)	Deterioration of water quality	Minimise risk	Consult with Country Water on the scope of all further work to be undertaken in relation to the legislative requirements associated with the works in the Umberumberka Creek Special Area Undertake detailed geotechnical investigations to ensure that the Project would have no material adverse effect on groundwater/aquifers Identify important springs and other water sources through consultation with leaseholders	Construction	X	X		
SOC58 (SOC49)	Deterioration of water quality	Minimise risk	Establish a Sediment/Erosion Control Plan including the following provisions. – Install sediment traps wherever there is potential for sediment to collect and enter waterways – Bund stockpiles generated as a result of construction activities with silt fencing, (hay bales or similar) to reduce the potential for runoff from these areas – Establish soil and water management practices guided by the Best Practice guidelines contained within Soils and Construction Vol. 1 (Landcom 2004) – Ensure all vehicles onsite follow established access tracks and minimise onsite movements – Operate and maintain machinery in a manner that minimises risk of hydrocarbon spills	Construction Decommissioning	X	X	X	X
SOC59 (SOC50)	Deterioration of water quality	Minimise risk	Prepare a Site Restoration Plan including protocols for restoration works such as. – Site preparation – Site stabilisation – Measures to encourage native vegetation recruitment – Monitoring	Construction Decommissioning	X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC60 (SOC51)	Deterioration of water quality	Minimise risk	Carry out dust suppression as required through either watering or chemical means	Construction Decommissioning	X	X	X	X
SOC61 (SOC52)	Deterioration of water quality	Minimise risk	Incorporate spill control procedures in the CEMP and OEMP including the following. – Identify persons responsible for implementing the plan if a spill of a dangerous or hazardous chemical/waste should occur – Locate Material Safety Data Sheets (MSDS) for all chemical inventories on site and readily available – Comply with manufacturers recommendations in relation to application and disposal where chemicals are used – Report any spill that occurs, to the Construction Manager regardless of size or type of spill – Notify the NSW EPA should the spill or hazard reach surface waters – Identify and bund chemical/fuel storage areas to prevent loss of any pollutants – Establish clearly defined works and refuelling areas – Store adequate hydrocarbon spill kits at the site and train site staff in their use	Construction Operation Decommissioning	X	X	X	X
SOC62 (SOC53)	Deterioration of water quality	Minimise risk	Design water crossings to prevent impact on existing banks, water flow, animal passage and on the movement of substrate flows (sand moving through the channel). Strategies may include gabion baskets excavated to near ground level, which would facilitate heavy loads without trapping sand carried during high rainfall events	Construction	X	X	X	X
SOC63 (SOC54)	Destruction of infrastructure	Minimise risk	Identify and mark out the underground pipe line that currently supplies water from the Umberumberka Reservoir. No excavation works would be undertaken within a specified (10 meters) buffer of the identified pipe line without the consent of Country Water.	Construction Decommissioning	X	X	X	X
SOC64 (SOC55)	Deterioration of water quality	Minimise risk	Design of concrete batching plants would ensure concrete wash would not be subject to uncontrolled release. Areas of the batching plants would be bunded to contain peak rainfall events and remediated at the completion of the construction phase.	Construction	X	X		

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC65 (SOC56)	Deterioration of water quality	Minimise risk	Monitor and maintain all sediment and erosion controls implemented during the construction phase along the access tracks	Construction Operation Decommissioning	X	X	X	X
SOC66 (SOC57)	Deterioration of water quality	Minimise risk	Monitor bunded infrastructure to ensure that the amounts of oil could be fully contained in the event of a leak	Operation	X	X		
SOC67 (SOC58)	Deterioration of water quality	Minimise risk	Maintain septic systems, if installed, to meet appropriate Australian Standards	Construction Operation Decommissioning	X	X		

11.1.5 Traffic and transport

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC68 (SOC59) (mod)	Safety and asset protection	Minimise risk	Develop and implement a Traffic Management Plan (TMP) in consultation with roads authorities to facilitate appropriate management of potential traffic impacts. The TMP would include provisions for: – Scheduling of deliveries and managing timing of transport through Broken Hill to avoid peak hours (beginning/end of the school day), – Limiting the number of trips per day, – Undertaking community consultation before and during all haulage activities, – Designing and implementing temporary modifications to intersections and street furniture, – Installing required signage to direct traffic flows appropriately during haulage through Broken Hill – The erection of warning signs and/or advisory speed posting prior to isolated curves – Limiting the delays experienced on haulage routes – Reinstating pre-existing conditions after temporary modifications to the roads and pavement along the route	Construction Operation Decommissioning	X	X	X	X	X
SOC69 (SOC60)	Safety and asset protection	Minimise risk	Use a licensed haulage contractor with experience in transporting similar loads, responsible for obtaining all required approvals and permits from the RTA and Councils and for complying with conditions specified in those approvals	Construction		X	X	X	X
SOC70 (SOC61)	Safety and asset protection	Minimise risk	Adopt route-specific mitigation measures as appropriate based on guidance provided in the attached Traffic impact study	Construction		X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC71 (SOC62)	Safety and asset protection	Minimise risk	Establish procedures to ensure that soil is not carried onto the highway on the wheels of construction traffic	Construction		X	X	X	X
SOC72 (SOC63)	Safety and asset protection	Minimise risk	Provide a contact phone number to enable any issues or concerns to be rapidly identified and addressed, through appropriate procedures	Construction		X	X	X	X
SOC73 (SOC64)	Safety and asset protection	Minimise risk	Prepare road dilapidation reports covering pavement and drainage structures in consultation with roads authorities for the route prior to the commencement of construction and after construction is complete. Repair any damage resulting from the construction traffic (except that resulting from normal wear and tear) as required during and after completion of construction at the Proponent's cost or, alternately, negotiate an alternative for road damage with the relevant roads authority	Construction		X	X	X	X
SOC74 (SOC65)	Safety and asset protection	Minimise risk	Assess the geometric layout of proposed intersections along the Silver City highway to ensure adequate turning paths are available to allow safe turning for construction vehicles. For any intersection determined to be unsuitable, identify mitigation strategies included intersection widening in consultation with the roads authority	Construction		X	X	X	X
SOC75 (SOC66)	Safety and asset protection	Minimise risk	Upgrade and seal the initial section of Daydream Mine Road and negotiate with roads authority to place a speed restriction on the road consistent with Silverton Road (90 kilometres an hour)	Construction		X	X		
SOC76 (SOC67)	Safety and asset protection	Minimise risk	To the extent that it would be extensively used for site access, upgrade and seal the initial section of Eldee Road and negotiate with roads authority to place a speed restriction on the road consistent with Silverton Road (90 kilometres an hour)	Construction		X	X		
SOC77 (SOC68)	Safety and asset protection	Provision of information	Provide information signage about the Project at the Mundi Mundi lookout 5 kilometres west of Silverton and on the Silverton Road in the vicinity of Daydream Mine Road	Construction		X	X		

11.1.6 Indigenous heritage

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC78 (SOC69)	Loss of indigenous heritage items	Minimise impact	Develop in consultation with an archaeologist and the local Aboriginal Land Council a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to indigenous heritage with reference to the recommended management strategies outlined in Table 22 of the archaeological report	Construction Operation Decommissioning		X	X	X	X
SOC79 (SOC70)	Loss of indigenous heritage items	Minimise impacts	Train specified personnel involved in the construction and operation phases of the Project in procedures to avoid disturbance to any cultural heritage places and items	Construction Operation		X	X	X	X
SOC80 (SOC71)	Loss of indigenous heritage items	Minimise impact	Conduct additional archaeological and heritage assessment in any areas which are proposed for impacts that have not been surveyed during the current assessment. Undertake field assessment in partnership with the local Aboriginal community. If Aboriginal objects are identified implement appropriate impact mitigation strategies	Construction		X	X	X	X
SOC81 (SOC72) (mod)	Loss of indigenous heritage items	Minimise impact	Implement an active conservation strategy with regard to the two discrete object locales, identified in Stage 1 to ensure that they are not inadvertently impacted during the construction, operation and decommissioning of the wind farm. (Note that these locales are either situated outside areas in which impacts are proposed or within areas in which a strategy of conservation, and hence impact avoidance, is expected to be highly feasible.)	Construction	X	X			
SOC82 (SOC73)	Loss of indigenous heritage	Minimise impact	Conduct an adequate field survey and assessment of the Stage 2 area and formulate appropriate mitigation and management strategies	Construction			X		X

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC83 (add)	Loss of indigenous heritage items	Minimise impact	Develop in consultation with an archaeologist and the local Aboriginal Land Council a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to indigenous heritage. Management strategies would be as set out in Table 9 of the Stage 1b and 1c Addendum Report (NSW Archaeology 2008).	Construction Operation Decommissioning	X				
SOC84 (add)	Loss of indigenous heritage items	Minimise impact	Specific to the above SOC, an active conservation strategy would be implemented in regard to the following locales: – SU248/L2 (outside proposed impacts) – SU264/L4 (in TL easement from substation 2a to Switchyard) – SU267/L8 (in TL easement from substation 2a to Switchyard) – SU267/L11 (in TL easement from substation 2a to Switchyard) – SU268/L2 (in TL easement from substation 2a to Switchyard) – SU268/L3 (in TL easement from substation 2a to Switchyard) – SU277/L2 (in east end of Construction and Maintenance Compound)	Construction Operation Decommissioning	X				
SOC85 (add)	Loss of indigenous heritage experience	Minimise impact	The Proponent would liaise with any group undertaking educational or tourist ventures with a component relating to the living heritage of the site within the development envelope, prior to the proposal, with the aim of minimising disruption to these activities	Construction Operation Decommissioning	X				

11.1.7 Non indigenous heritage

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC86 (SOC74)	Loss of non indigenous heritage items	Minimise impact	Develop, in consultation with, an archaeologist a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to non-indigenous heritage. A strategy of impact avoidance is entirely feasible for all of the recorded heritage items which warrant such an approach	Construction		X	X	X	X
SOC87 (SOC75)	Loss of non indigenous heritage items	Minimise impact	Train personnel involved in the construction and management phases of the Project in procedures to recognise and avoid disturbance to cultural heritage places and items	Construction		X	X	X	X
SOC88 (SOC76)	Loss of non indigenous heritage items	Minimise impact	Conduct an additional heritage assessment in any areas which are proposed for impacts that have not been surveyed during the current assessment. The proposed impact areas would be subject to an appropriate level of field survey and assessment for the purposes of identifying non indigenous heritage sites	Construction			X		X
SOC89 (SOC77)	Loss of non indigenous heritage items	Minimise impact	Subject any non indigenous heritage sites found in the proposed impact areas to a site significance assessment in order to form the basis for the development of appropriate mitigation and management strategies. This may involve the preparation of more detailed heritage assessments or heritage impact statements for sites if required. These would follow guidelines of the NSW Heritage Office publications 'Statements of Heritage Impact' and 'Assessing Heritage Significance'	Construction		X	X	X	X
SOC90 (SOC78)	Loss of non indigenous heritage items	Minimise impact	Minimise impacts where practical to items assessed not to meet the criteria for heritage listing (e.g. SU32/HS1, SU54/HS1, SU141/HS1, SU141/HS2, SU143/HS1, SU190/HS1, SU191/HS3 & SU226/HS1)	Construction		X	X	X	X
SOC91 (SOC79)	Loss of non indigenous heritage items	Minimise impact	Avoid impacts where practical to items assessed to meet the criteria for heritage listing (e.g. SU62/L1, SU90/L1, SU90/L2, SU90/L3, SU90/L4, SU92/HS1, SU93/HS1, SU94/HS2, SU191/L1, SU191/L2 and the Stone Ruins) and where avoidance is not feasible mitigate impacts in the form of archival recording and/or salvage excavation	Construction		X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1b and 1c	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC92 (SOC80)	Loss of non indigenous heritage items	Minimise impact	Avoid impacts on individual recordings where practical in SU94, which contains a recording assessed to be of local significance and high research potential. Avoid or minimise impacts to the southeast of grid reference 526696e 6480400n	Construction	X	X			
SOC93 (SOC81)	Loss of non indigenous heritage items	Minimise impact	Conserve infrastructure associated with the Umberumberka Reservoir (SU53/HS1, SU57 and SU58) where practical	Construction		X		X	
SOC94 (SOC82)	Loss of non indigenous heritage items	Minimise impact	Conserve Lake's Grave which is assessed to be of high local significance	Construction		X		X	
SOC95 (SOC83)	Loss of non indigenous heritage items	Minimise impact	Avoid impacts at the zinc sintering works if practical or mitigate by archival recording and/or salvage excavation	Construction				X	
SOC96 (SOC84)	Loss of non indigenous heritage items	Minimise impact	Keep all direct impacts associated with the transmission line at least 30 m off the permanent way of the Silverton tramway	Construction				X	X
SOC97 (SOC85)	Loss of non indigenous heritage items	Minimise impact	Train specified personnel involved in the construction and operation phases of the Project in procedures to avoid disturbance to any non-indigenous cultural heritage places and items	Construction Operation		X		X	
SOC98 (add)	Loss of non indigenous heritage items	Minimise impact	Develop in consultation with an archaeologist a Cultural Heritage Management Protocol which documents the procedures to be followed for impact avoidance or mitigation in relation to non-indigenous heritage. Management strategies would be as set out in Table 10 of the Stage 1b and 1c Addendum Report (NSW Archaeology 2008).	Construction	X				

11.1.8 Economic

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC99 (SOC86)	Affect on local community	Maximise positive impact of Proposal	Liaise with local industry representatives to maximise the use of local contractors and manufacturing facilities in the construction and decommissioning phases of the Project	Construction	X	X	X	X
SOC100 (SOC87)	Affect on local community	Maximise positive impact of Proposal	Liaise with the local visitor information centres to ensure that construction and decommissioning timing and haulage routes are known well in advance of works and to the extent practical coordinated with local events	Construction	X	X	X	X
SOC101 (SOC88)	Affect on local community	Maximise positive impact of Proposal	Liaise with Broken Hill City Council and the Department of State and Regional Development to provide information to assist in attracting people to the local area to facilitate meeting the expected demand for human resources for both construction and operation of the Proposal	Construction Operation	X	X	X	X
SOC102 (SOC89)	Affect on local community	Maximise positive impact of Proposal	Make available employment opportunities and training for the ongoing operation of the wind farm to local residents where reasonable	Operation	X	X		

11.1.9 Farming and grazing

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC103 (SOC90)	Impact on current land use	Minimise impact	Develop protocols for construction traffic on access roads where stock may be grazing as part of the Traffic Management Plan	Construction Decommissioning	X	X	X	X
SOC104 (SOC91)	Impact on current land use	Minimise impact	Restrict stock from works areas where there is a risk of stock injury	Construction Decommissioning	X	X	X	X
SOC105 (SOC92)	Impact on current land use	Minimise impact	Ensure the Site Restoration Plan considers farming and grazing opportunities and impacts	Construction Decommissioning	X	X	X	X
SOC106 (SOC93)	Impact on current land use	Minimise impact	Liaise with neighbouring landowners to provide information about the timing of construction activities	Construction Decommissioning	X	X	X	X

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC107 (SOC94)	Impact on current land use	Minimise impact	Provide a point of contact to all landholders adjacent to the infrastructure	Construction Operation Decommissioning	X	X	X	X
SOC108 (SOC95)	Impact on current land use	Minimise impact	Surround switchyard and substation areas with a security fence as a safety precaution to prevent trespassers and stock ingress	Construction	X	X		

11.1.10 Mineral exploitation

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC109 (SOC96)	Conflict with mineral exploration	Minimise conflict	Liaise with current mineral lease holders, providing a final turbine and infrastructure layout, prior to the construction phase	Construction	X	X		
SOC110 (SOC97)	Conflict with mineral exploration	Minimise conflict	Provide a point of contact to the current mineral lease holders	Construction Operation Decommissioning	X	X		

11.1.11 Aircraft hazard

	Impact	Objective	Mitigation tasks	Project Phase	Site area-Stage 1	Site area-Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC111 (SOC98)	Creation of hazard	Minimise risk	Liaise with CASA. Determine the appropriate number, location and type of aircraft warning beacons to be fitted on wind turbines prior to the commencement of construction	Construction	X	X		
SOC112 (SOC99)	Creation of hazard	Minimise risk	Notify all relevant authorities (CASA, AirServices, Department of Defence) of the final position of all wind turbines	Construction	X	X		

11.1.12 Fire and bushfire

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC113 (SOC100)	Increase risk of fire ignition or spread	Minimise risk	Consult with the Rural Fire Service (RFS) and NSW Fire Brigade (NSWFB) in regard to the adequacy of bushfire prevention measures to be implemented on site during construction, operation and decommissioning. These measures would in particular cover hot-work procedures, asset protection zones, safety, communication, site access and response protocols in the event of a fire originating in the wind farm infrastructure, or in the event of an external wildfire threatening the wind farm or nearby properties	Construction Operation Decommissioning	X	X		
SOC114 (SOC101)	Increase risk of fire ignition or spread	Minimise risk	Hold appropriate fire fighting equipment on site and train an appropriate number of site personnel in its use. Determine the equipment and level of training in consultation with the local RFS	Construction Operation Decommissioning	X	X		
SOC115 (SOC102)	Increase risk of fire ignition or spread	Minimise risk	Handle and store flammable materials and ignition sources brought onto the site as per manufacturer's instructions	Construction Operation	X	X	X	X
SOC116 (SOC103)	Increase risk of fire ignition or spread	Minimise risk	Maintain asset protection zones, based on the RFS Planning for Bushfire Protection, around the control room, substations and in electricity transmission easements Develop workplace health and safety protocols to minimise the risk of fire to workers	Construction Operation Decommissioning	X	X	X	X
SOC117 (SOC104)	Increase risk of fire ignition or spread	Minimise risk	Bund substation facilities with a capacity sufficient to contain the volume of transformer oil in the event of a major leak or fire. Maintain bunds to ensure leaks do not present a fire hazard, and to ensure the bunded area is clear (including removing any rainwater)	Construction Operation	X	X		
SOC118 (SOC115)	Increase risk of fire ignition or spread	Minimise risk	Surround substations with a gravel and concrete area free of vegetation to prevent the spread of fire from the substation and reduce the impact of bushfire on the structure	Construction Operation	X	X		

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC119 (SOC106)	Increase risk of fire ignition or spread	Minimise risk	Hold fire extinguishers on site in all control buildings, substation buildings and facilities buildings	Construction Operation	X	X		
SOC120 (SOC107)	Increase risk of fire ignition or spread	Minimise risk	Periodically inspect overhead transmission easements to monitor regrowth of encroaching vegetation	Operation	X	X	X	X

11.1.13 Electromagnetic fields

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC121 (SOC108)	Exposure from EMFs	Minimise exposure	Adhere to standard industry approaches and policies with respect to EMF through maintenance of adequate easements around transmission lines	Operation			X	X

11.1.14 Communications

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC122 (SOC109)	Deterioration of signal strength	No deterioration of signal strength	Locate wind turbines to avoid microwave link paths that cross site	Construction	X	X		
SOC123 (SOC110)	Deterioration of signal strength	No deterioration of signal strength	Ensure adequate television reception is maintained for neighbouring residences: – Assess pre-existing television signal strength at residences within 5 kilometre of the site, prior to construction – In the event that after construction television interference (TVI) is experienced by existing receivers within 5 kilometre of the site, investigate the source and nature of the interference – Where investigations determine that the interference is cause by the wind farm, establish appropriate mitigation measures at each of the affected receivers in consultation and agreement with the landowners.	Operation	X	X		

11.1.15 Community wellbeing

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC124 (SOC111)	Community division	Provide accurate information	Disseminate accessible and independent information on wind farm impacts including benefits	Construction Operation	X	X	X	X
SOC125 (SOC112)	Community division	Provide broad community benefit	Establish Community Fund as outlined in the Environmental Assessment	Operation	X	X		

11.1.16 Tourism

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC126 (SOC113)	Affect on local activities	Minimise disruption	Co-ordinate construction activities with local events	Construction	X	X	X	X
SOC127 (SOC114)	Affect on local activities	Minimise disruption	Provide wind farm promotional information to the local visitor information centres	Construction Operation	X	X		
SOC128 (SOC115)	Affect on local activities	Minimise disruption	Support educational and promotional tours targeting the construction and operation of the wind farm, subject to safety concerns and the permission of landholders permission being addressed	Construction Operation	X	X		
SOC129 (SOC116)	Affect on local activities	Minimise disruption	Work with the Silverton Village Committee and involved landholders to allow for the development of the wind farm as a tourist attraction, if this option is desirable to these parties	Operation	X	X		

11.1.17 Film and art

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SCO130 (SOC117)	Affect on film and art activities	Minimise disruption	Liaise with Film Broken Hill and West Darlings Arts to ensure that these parties are informed regarding the construction activities and timing to minimise the potential for inconvenience caused to filming and art endeavours during construction	Construction	X	X	X	X

11.1.18 Health and safety

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC131 (SOC118)	Safety of persons and stock	Minimise risks	Prepare and implement an appropriate Health and Safety Plan covering all phases of the project. This plan would identify hazards associated with construction works, and prepare appropriate safeguards, protocols and responses including emergency response protocols	Construction Operation Decommissioning	X	X	X	X
SOC132 (SOC119)	Safety of persons and stock	Minimise risks	Induct all site workers on their first day of employment at the site. The induction would include a detailed briefing on health and safety	Construction Occupation Decommissioning	X	X	X	X
SOC133 (SOC120)	Safety of persons and stock	Minimise risks	Ensure all contractors selected for construction are appropriately qualified and trained	Construction Decommissioning	X	X	X	X
SOC134 (SOC121)	Safety of persons and stock	Minimise risks	Install appropriate site fencing and/or signage where there is a risk to the safety of construction workers or the general public	Construction Decommissioning	X	X	X	X
SOC135 (SOC122)	Safety of persons and stock	Minimise risks	Undertake detailed geotechnical investigations (such as core samples) in the area of the proposed turbines to determine ground stability and soundness of the strata taking into account the potential for any mine shafts	Construction	X	X		

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC136 (SOC123)	Safety of persons and stock	Minimise risks	Establish a turbine maintenance program in accordance with industry standards	Operation	X	X		

11.1.19 Physical impact, climate, air quality, soils)

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC137 (SOC124)	Soil	Minimise impact	Avoid compaction of soil resulting from vehicle access and laying of materials, particularly during saturated soil conditions, and remediated as necessary	Construction	X	X	X	X
SOC138 (SOC125	Air quality	Minimise impact	Undertake ongoing dust suppression throughout the construction phase	Construction	X	X	X	X
SOC139 (SOC126	Soil	Minimise impact	Monitor and maintain tracks to ensure landform stability is maintained, in accordance with erosion and sediment control plans	Operation	X	X	X	X

11.1.20 Resource

	Impact	Objective	Mitigation tasks	Project Phase	Site area- Stage 1	Site area- Stage 2	Transmission line corridor – Broken Hill	Transmission line corridor – Red Cliffs
SOC140 (SOC127)	Waste generation	Minimise waste and maximise recycling of materials	Reduce, reuse or recycle wastes whenever possible. Provide separate recyclable materials receptacles near site offices (eg for glass, plastics and aluminium)	Construction Operation	X	X	X	X
SOC141 (SOC128)	Waste generation	Appropriate disposal of waste	Dispose of packaging materials and general construction wastes with Council's approval, at Council operated waste disposal centres	Construction Operation	X	X	X	X
SOC142 (SOC129)	Waste generation	Appropriate disposal of waste	Provide toilet facilities for onsite workers and dispose of sullage from contractor's pump out toilet facilities at the local sewage treatment plants or other suitable facility agreed to by Council	Construction Operation	X	X	X	X
SOC143 (SOC130)	Waste generation	Minimise waste and maximise recycling of materials	Use excavated material in road base construction, as aggregate for footings and construction pads where possible. Dispose of surplus material in appropriate locations on site	Construction Operation	X	X		
SOC144 (add)	Water usage	Maximise water collection locally	SWFD would provide on request a domestic sized water tank to all inhabited residences within 10 kilometres of the site	Construction	X			

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